CONTRACT No. CDC/441/26

FOR THE

NEW/REPLACEMENT SCHOOL AT AMAOTI NO.3 SECONDARY SCHOOL IN PINETOWN DISTRICT, KWAZULU-NATAL FOR THE KWAZULU-NATAL DEPARTMENT OF EDUCATION

CIDB GRADE: 8GB OR HIGHER

BOOK 1:

CLOSING DATE: 25 NOVEMBER

2026 CLOSING TIME: 12H00

PREPARED FOR:

Coega Development Corporation (PTY) Ltd
18 Cranbrook Crescent
Umhlanga Ridge
DURBAN
4319

NAME OF TENDERER:

_____

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BOOK 1: THE TENDER

PART T1: TENDERING PROCEDURES

T1.1 INVITATION TO TENDER

T1.1 INVITATION TO TENDER NOTICE

CONTRACT NO CDC/441/26

NEW/REPLACEMENT SCHOOL AT AMAOTI NO.3 SECONDARY SCHOOL IN PINETOWN DISTRICT, KWAZULU-NATAL

The Coega Development Corporation is headquartered in the City of Gqeberha, Nelson Mandela Bay Municipality, South Africa, with a strategic operational footprint in South Africa and beyond the borders on the African continent. Coega's vision is to be the leading catalyst for the championing of socio-economic development. This it seeks to achieve through the development and operation of the 9 003-hectare Coega Special Economic Zone (SEZ), a transshipment hub and a leading investment destination in Africa, providing highly skilled competence and capacity for the execution of complex infrastructure and related projects throughout South Africa and selected markets on the African continent, and advisory on the development of industrialisation and logistics zones. Coega's advanced capabilities are successful enablers in sustainable economic zone development and management, real assets management, infrastructure planning and development, technology integration while realising related socio-economic impact areas such as skills and SMME development. Coega's high-performance ethos is grounded in its commitment to sustainable development, the protection of its people and the planet, and the delivery of infrastructure solutions that support a just social and economic transition to a low-carbon, resource efficient, and climate resilient future. The foundational culture of Coega's approach, backed by its core values, is innovation and continuous improvement.

The CDC has been appointed by the Department of Education, KwaZulu Natal Province (DoE) to assist with rolling out Infrastructure projects for the KwaZulu Natal School Building Programme.

INVITATION AND SCOPE OF SERVICES

The CDC is inviting capable and competent Contractors with an active CIDB grading of **8GB or higher,** for the New/Replacement School at Amaoti No.3 Secondary School in Pinetown District in KwaZulu Natal. Potential Emerging Contractors with a CIDB **Grading of 7GB PE CIDB are not eligible to make submissions and will not be considered**.

The scope of work for Amaoti No.3 SS comprises of:

Section 1 Decanting: Relocate existing mobile prefabricated units (park home type) from Amaoti No3 Secondary School to the designated temporary Decanting Site, located on the sports field of Brookdale Secondary School. Relocated units include 32 x Classroom / Admin Units, 1 x Kitchen, 3 x Containers (Storage), 1 x Guard hut. Existing Ablutions to be carted away and replaced with new prefabricated mobile Ablutions. Contractor to fully re-instate, refurbish, and make good existing mobile prefabricated units, provide necessary metered service infrastructure connections (water and electrical supply from existing school infrastructure), implement all associated temporary external works such as paving, fence lines, gates, etc.

Section 2 Construction: Construction of permanent School Facilities including, but not limited to:

Learning Spaces: 30 x Standard Classrooms; 7 x Multipurpose Classrooms (with stores); 1 x Media Centre / Library (with stores); 1 x Computer Room (with Store); 1 x Science Classroom (with Store); 1 x Team Teaching.

Administration and Support Spaces: 1 x Principal's Office; 2 x Deputy Principal's Office; 1 x General Offices; 1 x Staffroom and Kitchenette; 1 x Strong room; 1 x Stock Room; 1 x Printing Room; 2 x Sick Room; 1 x Entrance Hall; 5 x HOD's Offices; 1 x Counselling Suite; 2 x General Store; 2 x Large Store; 1 X Guard House; 1 x Refuse Room; Sanitation Facilities.

School Nutrition Programme: 1 x SNP Kitchen; 1 x Tuckshop; 1 x Food Storage; 1 x Nutrition Centre Yard; 1 x Undercover Dining Area.

All associated external works, including roads, parking bays, paving, covered walkways, stairs, bridges, stormwater drainage, soil drainage, water reticulation, rainwater collection tanks, sports field, combi courts, fencing and gates, external benches, external planters, electrical installations, mechanical installations including fire protection, signage, etc.

Section 3 Removal of Decanting: Removal of Decanting structures, service infrastructure (Where applicable), external works paving, walkways, fences, gates, etc and reinstate grassed sports field and make good.

The contract period shall be **24 (twenty-four) calendar months** as stated in the contract document (including the annual builder's holidays).

CONDITIONS

(a) The CDC's Procurement Policy and Procedures shall apply.

(b) Bidders shall be registered with the Construction Industry Development Board (CIDB) and should have a minimum active CIDB Contractor grading of **8GB or higher**, potential emerging contractors with **7GB PE CIDB** grading are not eligible to make submissions and will not be considered. Only those respondents who are registered with the Construction Industry Development Board, or are capable of being so registered within twenty-one (21) working days from the closing date for submission of tenders (to submit a copy of his/her application for CIDB registration with his or her tender submission),

in a contractor grading designation of 9GB, are eligible to have their submissions evaluated in accordance with Regulation of the Construction Industry Development Regulations.

(c) Bidders must ensure that their CIDB registration is valid and active, or that they are capable of being registered, for the required grading and class of works from the bid closing date up to and including the date of award of the contract. CDC reserves the right to verify the bidder's CIDB registration status on the CIDB website at any stage during the evaluation and adjudication process. Where a bidder is not registered with the CIDB at the bid closing date but claims to be capable of being registered, the bidder must submit, as part of its bid, proof of application for CIDB registration. Failure to maintain an active and valid CIDB registration, or to successfully obtain such registration prior to award where the bidder was only capable of being registered at closing, may result in disqualification or rejection of the bid.

(d) The following legislation shall apply:

(i) Public Finance Management Act (PFMA);
(ii) Preferential Procurement Policy Framework Act, 2000;
(iii) The Preferential Procurement Regulations 2022;
(iv) The CIDB Act 38 of 2000;
(v) National Treasury Regulations;
(vi) The National Qualifications Framework Amendment Act (Act No. 12 of 2019);
(vii) The Skills Development Act (Act No. 97 of 1998);
(viii) Occupational Health and Safety Act and Regulations, Act (85 of 1993);
(ix) Compensation for Occupational injuries and disease Act (130 of 1993);
(x) BBBEE Act Number 53 of 2003 (as amended by Act Number 46 of 2013);
(xi) "NEMA" National Environmental Management Act (107 of 1998);
(xii) National Water Act (36 of 1998);
(xiii) Disaster Management Act, (57 of 2002);
(xiv) National Building Regulations and Building Standards Act (103 of 1977);
(xv) National Archive and Records Services Act of South Africa; and
(xvi) Any other applicable legislation.

(e) The Bidders must provide all the required information to enable fair and equitable evaluation of submitted Bids. Failure to submit such information might render the Bid to be deemed as being non-responsive and not to be considered further.

(f) The 90/10 preference point system, as per the Preferential Procurement Policy Framework Act 2000 shall apply. The allocation of points - will apply as follows:

(i) Price - 90
(ii) Specific Goals which are B-BBEE Level of Contributor - 10

(g) Bidders and all its Consortium/Joint Venture (JV) members, if any, must confirm their company registration with Companies and Intellectual Property Commission (CIPC) (formerly CIPRO) as CDC

will not award any bid to any business that appears on the CIPC List of de-registered businesses.

(h) All Bidders must be Value Added Tax (VAT) Vendors and the Form of Offer must include VAT. Bidders must be VAT registered and bids must be submitted VAT inclusive. Non-VAT vendors who submit bids for contracts that would, if successful, take their annual turnover above the threshold of R 1 million are obliged to include VAT in the prices quoted and must therefore immediately upon award of the contract register with the South African Revenue Services (SARS) as VAT vendors. The award of contract would be conditional pending the successful bidder submitting proof of registration as a VAT vendor with SARS. The CDC will only award the Bid to a Successful Bidder who is tax compliant. The tax compliant status of the Bidders (and all the members in the Bidding Team in the case of Consortia or Joint Ventures) will be verified through the CSD and South African Revenue Services (SARS) website.

(i) Bidders (all the members in the Bidding Team in the case of Consortia or Joint Ventures) must provide proof of registration on the National Treasury's Central Supplier Database (CSD) or provide a Treasury CSD registration number e.g. MAAA0

(j) As per amended construction codes, all Generic entities and QSEs with less than 51% Black ownership are required to submit a valid SANAS-accredited B-BBEE Verification Certificate reflecting all applicable B-BBEE elements. QSEs with at least 51% Black ownership and EMEs with an annual turnover of above R 3 million must also submit a B-BBEE verification certificate issued by a SANAS-accredited verification agency, as they are required to comply with 40% sub-minimum for the Skills Development element to avoid a discounting of their B-BBEE level. EMEs with an annual turnover of less than R 3 million are exempted from the sub-minimum requirement and may submit either a sworn affidavit or a certificate issued by CIPC confirming their ownership and annual turnover. In the case of a Joint Venture (JV) or Consortium, a consolidated B-BBEE certificate must be submitted. The JV certificate must be prepared and issued for this specific project. It must also be accompanied by the individual B-BBEE certificates or affidavits of each participating entity to confirm the type and status of each enterprise.

(k) Bidders must complete and sign the POPI Act form. In the case of a Joint Venture/Consortium, a separate form in respect of each party to the JV must be completed.

(l) In case of a Joint Venture (JV) / Consortium, a consolidated B-BBEE certificate would be required, and it must be accompanied by individual B-BBEE Certificates/affidavits of their entities to confirm the type of enterprise.

(m) Bids will be evaluated based on functionality assessment, and bidders are required to meet the minimum threshold of **70 points** to pass functionality to be evaluated further.

(n) The contingency funds will be under the control of the client and not the contractor.

(o) CDC will not award more than two active projects to one bidder, unless one project has reached at least 80% practical completion stage. Capacity assessment may be conducted in an event that the recommended bidder is the only responsive service provider and has already been awarded other

two contracts.

(p) Public servants are prohibited from conducting any form of business with any organ of state, whether in their own capacity as individuals or through companies in which they are directors. Verification will be carried out by the CDC and the Bidders will be disqualified should they be found to be in contravention with this requirement.

(q) The successful bidder will be required to comply with the Occupational Health and Safety Act and Regulations, Act (85 of 1993); Compensation for Occupational Injuries and Disease Act, Act (130 of 1993), and Disaster Management Act, Act (57 of 2002), and all relevant legislation throughout the duration of the contract. Upon appointment of the successful bidder, the Service Provider will be required to develop Occupational Health, Safety and Environmental Management Systems in compliance to the SANS Norms and Standards. CDC SHEQ Unit will monitor compliance and implementation of Occupational Health and Safety, Environmental and Quality requirements for the duration of the contract.

(r) Upon award the successful Bidder will be required to provide valid proof of registered Construction Health and Safety Officer (CHSO) with SACPCMP within the prescribed period. No candidate registration will be accepted. The **CHSO** must have **8 years or more relevant** proven record of years of experience.

(s) Upon award the successful bidder will be required to provide a full time Environmental Officer with National Diploma/B. Tech in Environmental Management with at least **8 years'** experience in Environmental Management, Environmental Authorization, Environmental Management Programme Implementation, etc.

(t) Upon award the successful bidder will be required to provide a Contracts Manager registered with SACPCMP as PrCPM or PrCM. The Contracts Manager must have 8 years relevant experience in the construction of institution of learning, Warehouse / office blocks facilities / hospitals et. (General Building Classification).

(u) This contract will be implemented under the CIDB Best Practice Project Assessment Scheme, known as the BUILD Programme. If so, then the successful bidders will be required to achieve the set targets in the Standard for Developing Skills Through Infrastructure Contracts as published in Government Gazette No. 48491 of 28 April 2023, and the Standard for Indirect Targeting for Enterprise Development Through Construction Works Contracts as published in Government Gazette No. 36190 of 25 February 2013.

(v) The CDC may accept or reject the tender offer or may cancel the tender process and reject all tender offers at any time before the formation of a contract. The CDC shall not accept or incur any liability to a Bidder for such cancellation and/or rejection but will give written reasons for such action.

(w) Entities and/or individual members are not allowed to be members of another Bidding Team, JV/Consortium or subcontractor for this contract.

(x) If there are any changes in the composition of the Key Personnel in the Bidding Team at any point after the award of the bid, the Bidder would be required to advise the CDC of such, where the credentials of the replacement should not be less than those provided in the approved tender submission. Such changes must be approved by the CDC's delegated personnel.

(y) Bidders are requested to provide an Intent to Enter into a JV/Consortium Agreement. The actual Agreement will need to be finalised, signed, and submitted by the JV/Consortium Partners of the successful Bidder at the conclusion of this Bidding process.

(z) Any misrepresentation of information will lead to immediate disqualification of the Bidder and its Submission will be deemed as being null and void. It is imperative that the duly authorised person conducts quality control on all the documentation to be submitted to the CDC as part of the tender document and signs the submission as correct and sound documentation that the CDC could put its reliance on.

(aa) It is incumbent upon and the responsibility of the Prospective Bidders to submit their full and correct contact details when they download the Bid Document to enable any communication that the CDC might need to issue to all the Prospective Bidders during the bidding process to be realized. The CDC will not be accountable for any such omission by the prospective bidders.

(aa) Late Submissions, i.e., Submissions received after the closing date and time for this tender, **Wednesday, 25 November 2026 @ 12h00**, will not be accepted.

(bb) No telephonic or any other form of communication with any other CDC member of staff, other Procurement representative, relating to this request for tender will be permitted. All enquiries regarding this tender must be in writing only and must be directed to e-mail: kzntenders44126@coega.co.za; no queries will be responded to after the **Thursday, 05 November 2026.**

(cc) In case of a JV award, the entity will be expected to provide valid proof of registration with the Compensation Fund or an approved Licensed Insurer specified as the JV entity for a specific duration.

(dd) One person cannot represent more than one entity at the compulsory briefing meeting.

(ee) Incomplete Tender document Submissions will be deemed null and void and shall be considered non-responsive.

(ff) The Tender validity period shall be sixteen (16) weeks from the date of Closure of bids.

Bid documents for this Tender Process can be downloaded free of charge from the CDC website (www.coega.com) and the National Treasury e-tender portal publication from **10h00** on **Friday, 16 October 2026**. The CDC will not take responsibility for any errors that may occur in the downloading of documents. Bidders are therefore required to ensure that they download the full pack with no missing pages.

In a case a Bidder prefers to purchase a physical bid document, Tender documents can be collected from the CDC Umhlanga Office, 18 Cranbrook Crescent, Umhlanga, Durban from Friday, 16 October 2026 from 10h00. Bid documents can be purchased from the CDC Umhlanga Offices during the normal working hours of between 08h00 and 16h30, Monday to Friday. A non-refundable bid fee of R 1 500.00 should be deposited to Account Name: CDC – DoE; Standard Bank, Account No: 080 224 555, Branch Code 050 017 and proof of payment is required upon collection of the bid documents. No tender document will be available at the Briefing Meeting. **NO CASH WILL BE ACCEPTED**

A compulsory briefing meeting will be held on **Friday, 23 October 2026 at** 11h00, at Amaoti No.3 Secondary School situated at Cardham Drive, Brookdale, Phoenix in KwaZulu-Natal, South Africa. **The Co-ordinates to the school are:** (29°41'04"S; 33°59'37"E″). Minutes of the briefing meeting will be shared with all Prospective Bidders who attended the Compulsory Briefing Meeting.

One original completed bid document shall be placed in a sealed envelope clearly marked: **"CDC/441/26 – NEW/REPLACEMENT SCHOOL AT AMAOTI NO.3 SECONDARY SCHOOL, PINETOWN DISTRICT, KWAZULU-NATAL".**

The closing date and time for the receipt of completed bids is **Wednesday, 25 November 2026** at **12h00.**

Completed bids must be placed in the tender box at the reception desk of the **CDC Umhlanga Office, 18 Cranbrook Crescent, Umhlanga, Durban.** Bids will be opened in public, and the opening register will be posted on the CDC website within 48 hours of the tender closure, and no late submissions will be considered.

Bidders must ensure that all bid documents are submitted in a secure, sealed, tamper-proof envelope or container. The submission must be secure against any form of tampering, alteration, removal, or insertion of documents. Any bid submission received in packaging that appears to be torn, unsealed, loose papers or otherwise compromising the integrity of the contents may be deemed non-responsive and disqualified at the discretion of the CDC.

Incomplete RFP Document and failure to provide mandatory information required in this bid will result in the submissions being deemed null and void and shall be considered non-responsive.

Telegraphic, telexed, facsimiled or e-mail submissions will not be accepted.

There shall be no disclosure, other than to the Clients legal and technical advisors of the tender amounts, method of work, conditions, etc., to any service tenderer nor to any parties who have not submitted tender documents. The CDC reserves the right not to accept the lowest proposal in part or in whole or any proposal.

T1.2 TENDER DATA

T1.2 Tender Data

The conditions of tender are the Standard Conditions of Tender as contained in Annexure C of the CIDB Standard for Uniformity in Engineering and Construction Works Contracts (August 2019) as published in Government Gazette No 42622, Board Notice 423 of 8 August 2019 (See www.cidb.org.za).

The Standard Conditions of Tender make several references to the Tender Data for details that apply specifically to this tender. The Tender Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the Standard Conditions of Tender.

Each item of data given below is cross-referenced to the clause in the Standard Conditions of Tender to which it mainly applies.

Clause number	Tender Data
C.1.1	The Employer is: Coega Development Corporation (Pty) Ltd.

C.1.2	The Tender Documents issued by the Employer comprise the following documents: **BOOK 1 – THE TENDER** **PART T1: TENDERING PROCEDURES** Tender Document Checklist T1.1 Invitation To Tender T1.2 Tender Data T1.3 Functionality Scoring Criteria **PART C3: SCOPE OF WORK** C3 Scope of Work C3.1 Description of the Works C3.2 Drawings C3.3.1 Health and Safety Specification C3.3.2 Environmental Specification C3.4 Baseline Risk Assessment C3.5 Contractor's Report C3.6 Social and Economic Deliverables C3.8 Planning Specifications for Contractors – CIDB Grade 1-9 C3.9.1 CIDB Standard for Developing Skills Through Infrastructure Contracts (April 2023) C3.9.2CIDB's Standard for Developing Skills Through Infrastructure Contracts (March 2023) C3.9 CIDB's Standard for Indirect Targeting for Enterprise Development Through Construction works Contracts (January 2013) **PART C4: SITE INFORMATION** C4.1 Site Information

C.1.2 cont...

BOOK 2

PART C1: CONTRACT DATA

C1.1 Form of Offer and Acceptance
C1.2 Contract Data
C1.3 Construction Guarantee (Pro- Forma)

PART C2: PRICING DATA

C2.1 Pricing Instructions
C2.2 Bills of Quantities
C2.3 Final Summary

PART T2: RETURNABLE SCHEDULES

1. SBD 1 - Part A: Invitation to Bid and Part B: Terms of Conditions for Bidding
2. SBD 4 – Bidder's Disclosures
3. SDB 6.1 Preference Point Claim form in terms of the Preferential Procurement Regulations 2022
4. Proof of CIDB Registration (provide CIDB registration number)
5. Schedule of Work carried out by the Tenderer.
6. Schedule of Current Contracts
7. Proposed Key Personnel

7.1 Proposed Key Personnel CV and Qualifications

8. Schedule of Construction Plant and Equipment
9. Financial References
10. Proposed Construction Work Programme and Methodology
11. Record of Addenda to Tender Documents
12. Form L: Occupational Health and Safety Act Specifications
13. Authority For Signatory
14. Joint Venture Disclosure Form
15. BBBEE Preferencing
16. Quality Management
17. Protection Of Personal Information: Consent
18. Certificate Of Acquaintance with Tender Documents
19. Form K – EME/QSE CPG Declaration
20. Form of Offer and Acceptance
21. Bill of Quantities in full
22. Construction Guarantee

(3 x)

C.1.4	The Employer is: Name: **Coega Development Corporation** Address: **18 Cranbrook Crescent** **Umhlanga Ridge** **Durban** **4319** E-mail: kzntenders@coega.co.za
C.2.1	Only those respondents who are registered with the Construction Industry Development Board, or are capable of being so registered within twenty-one (21) working days from the closing date for submission of tenders to submit a copy of his/her application for CIDB registration with his or her tender submission), in a contractor grading designation of 8GB or higher, are eligible to have their submissions evaluated in accordance with Regulation of the Construction Industry Development Regulations,.
C.2.7	The arrangements for a **compulsory briefing meeting** are: **Venue: Amaoti No.3 Secondary School situated at Cardham Drive, Brookdale, Phoenix in KwaZulu-Natal. The Co-ordinates to the school are: (29°41'04"S; 33°59'37"E").** **Date: 23 October 2026** **Time: 11h00**
C.2.12	No alternative tender offers will be considered
C.2.13.3	Parts of each tender offer communicated on paper shall be submitted as an **original only.**
C.2.13.9	Telephonic, telegraphic, telex, tippexed, facsimile or e-Mailed tender offers will not be accepted
C.2.15.1	The employer's details and address for delivery of tender offers and identification details that are to be shown on each tender offer package are: **Location of tender box** : **Coega Development Corporation (Pty) Ltd.** **Physical address** : **CDC KZN Office** **18 Cranbrook Crescent** **Umhlanga, Durban** **4319** **Identification details** : **CDC/441/26**
	Title of Tender : **NEW/REPLACEMENT SCHOOL AT AMAOTI NO.3 SECONDARY SCHOOL, PINETOWN DISTRICT, KWAZULU-NATAL**

	The closing date : **25 November 2026** **Time of the tender closure: 12:00** **Identification details: "CDC/441/26 – NEW/REPLACEMENT SCHOOL AT AMAOTI NO.3 SECONDARY SCHOOL, PINETOWN DISTRICT, KWAZULU-NATAL"**
C.2.16	The tender validity period shall be sixteen (16) weeks.
C.2.18	The tenderer shall, when requested by the Employer to do so, submit the names of all management and supervisory staff that will be employed to supervise the Labour-Intensive portion of the works together with satisfactory evidence that such staff members satisfy the eligibility requirements
C.2.19	Access shall be provided for the following inspections, tests and analysis: **Geotechnical Report available on request.**
C.2.20	The tenderer is required to submit with his tender a letter of intent from an approved insurer undertaking to provide the Performance Bond to the format included in Section **C.1.3** Construction **Guarantee (Pro Forma)** of this document
C.3.4	Tender closing date is **25 November 2026** at **12:00**. Bids will be opened in public; and the opening register will be posted on the CDC website within 48 hours of the tender closure.
C.3.5	A two envelop system will NOT be followed.

C.3.11.1 The CDC Procurement Policy shall apply the 90/10 preference point system, as per the Preferential Policy Framework Act 2000: Preferential Procurement Regulation 2022 is applicable for allocating points for price and points for Specific Goals. The allocation of preference points will apply as follows:

TABLE 4: TENDER EVALUATION POINTS

AREA OF EVALUATION	MAXIMUM POINTS (90/10)
Price	90
Specific Goals: B-BBEE Status Level Contribution	10
Total Points (S)	100

The formula to be used is as follows.

$$Ps = 90\ [1 - \frac{Pt - Pmin}{Pmin}]$$

Where:

PS = Points scored for comparative price of tender or offer under consideration.

Pt = Comparative price of tender or offer under consideration; and

Pmin = Comparative price of lowest acceptable tender or offer.

B-BBEE Status Level of Contributor	Number of points (90/10 system)
1	10
2	9
3	6
4	5
5	4
6	3
7	2
8	1
Non-compliant contributor	0

C.3.13.1	**Compliance Administrative Requirements** (1) Completed and signed **Invitation to Bid (SBD 1).** In the case of a Joint Venture/Consortium, each entity **MUST** provide the CSD number in the SBD 1 form. (2) Completed and signed Bidder's Disclosure Form (SBD 4). In case of a Joint Venture/Consortium, a SEPARATE SBD 4 form in respect of each party to the JV MUST be completed and submitted. (3) Completed and signed Form SBD 6.1 preference points claim form in terms of the Preferential Procurement Regulations 2022. (4) Bidders must complete and sign the POPI Act Consent Form. In case of Joint Venture/ Consortium, a separate form in respect of each party to the JV must be completed **NB: Failure to complete all mandatory information will result in submissions being deemed null and void and shall be considered *"non-responsive"*.** Tender offers will only be accepted if the following completed and original mandatory documents are supplied with the tender: **Mandatory Requirements** (1) Signed the Attendance Register at the mandatory briefing meeting to be completed in the name of the bidding entity. One person cannot represent more than one company. Failure to attend the Compulsory Briefing Meeting WILL lead to the Bidder's elimination and the submission WILL not be evaluated further. (2) Minimum required is an active CIDB grading of **8GB or Higher**. Potential emerging bidders with a 7GB PE CIDB grading are not eligible to bid. (3) Fully Completed and Signed Form of Offer. (4) Signed letter of intent to enter Joint Venture/Consortium or signed JV agreement. To be signed by all parties. (Where applicable). (5) Completed and Signed Certificate of Authority of Signatory to be signed by ALL BIDDING organisations or entities. In case of a Joint Venture/Consortium, the Authority of Lead Partner to sign JV/Consortium documents MUST also be provided and signed by all parties in the JV/Consortium. Proof of authority to sign may be submitted in the form of a company resolution per bidding entity. (6) An original fully completed, priced and handwritten Bill of Quantities (including Mechanical, Electrical BoQ & SHE BoQ (where applicable), must be filled in clearly legible with permanent black ink. In cases where the P&G's is not priced the bidder must explicitly indicate as such. Failure to provide the total amount for P&G's or to state if the amount is covered elsewhere will

result in immediate disqualification. The bidder must expressly state "included or elsewhere covered" for the line items that are considered to be covered elsewhere in measured works items. Non- compliance will lead to immediate disqualification. Any mistakes must be neatly crossed with one line and corrected rate written above it and initialized by the Tenderer. Copies of the priced BoQ, alternatively scanned copies of priced Bills of Quantities are not acceptable and may result in disqualification.

ADDITIONAL INFORMATION REQUIRED.

(1) As per amended construction codes, all Generic entities and QSEs with less than 51% Black ownership are required to submit a valid SANAS-accredited B-BBEE Verification Certificate reflecting all applicable B-BBEE elements. QSEs with at least 51% Black ownership and EMEs with an annual turnover of above R 3 million must also submit a B-BBEE verification certificate issued by a SANAS-accredited verification agency, as they are required to comply with 40% sub-minimum for the Skills Development element to avoid a discounting of their B-BBEE level. EMEs with an annual turnover of less than R 3 million are exempted from the sub-minimum requirement and may submit either a sworn affidavit or a certificate issued by CIPC confirming their ownership and annual turnover. In the case of a Joint Venture (JV) or Consortium, a consolidated B-BBEE certificate must be submitted. The JV certificate must be prepared and issued for this specific project. It must also be accompanied by the individual B-BBEE certificates or affidavits of each participating entity to confirm the type and status of each enterprise.

(2) Provide information that covers the level of education and training and the positions held of the key staff /personnel (specific to the Contracts Manager, Site Agent / Construction Manager and Site Foreman / Construction Supervisor, in a form of a CV. Please provide copies of qualifications with relevant experience to execute the works.

(3) Bidders MUST provide completion certificates or performance reports or reference letters from the previous employer or consultants that they have worked with.

(4) Bidders to provide a Construction Work Programme and basis of schedule

(5) Bidders are to provide documentation indicating the availability of a quality management system or quality management plan that will be utilized for this project, and ISO 9001 certifications

	QUALITATIVE ASSESSMENT (1) The highest scoring bidders will be evaluated on qualitative assessment to determine the acceptable lowest tender price and to ascertain other possible risks pertaining to the bidder's capacity, past performance, and risks i.e. financial etc. The BOQ will be scrutinised to check for arithmetic errors and communicate with the bidders to acknowledge and decide if the bottom price will still stand. Tender offers will be compared against cost estimates as well as the market average to confirm if the tender offers are market related with no risks around the pricing. The bidders will also be checked on the National Treasury Database of restricted suppliers as well as national Treasury defaulters listing. (2) Bidders may be called for a clarification meeting to discuss any risks identified, rates and price methodology.
C.3.17	The number of paper copies of the signed contract to be provided by the Employer is **1 (one)**

Notes:

- **Note 1**: In the case of the CIDB Standard for Skills Development there are NO returnable documents (except for the relevant section of the Bill of Quantities). Following award of the contract to the successful tenderer, the employer shall provide the contractor with the required documents which shall be completed by the contractor and submitted within the stipulated period.
- **Note 2**: In respect of the CIDB Standard for Indirect Targeting & Enterprise Development, there are NO returnable documents (except for pricing the relevant section of the Bill of Quantities). Following award of the contract to the successful tenderer, the employer shall provide the contractor with the required documents which shall be completed by the contractor and submitted within the stipulated period.

T1.3 FUNCTIONALITY SCORING CRITERIA

TABLE A1: -FUNCTIONALITY CRITERIA SCORE

#	FUNCTIONAL CRITERIA	SUB-CRITERIA		REQUIREMENTS FROM BIDDERS
		DESCRIPTION	MAX POINTS	
1.0	Demonstrated experience (past performance) in comparable projects – Construction of Institutions of learning, Warehouse/office block facilities/ Hospitals etc. (General Building – GB classification).		25	This criterion covers the experience and knowledge that the Bidder has with working on other construction projects that are comparable in terms of complexity, size, value, and construction durations. Bidders are to provide details of construction projects that have been **completed in the past 5 years**. **Bidders MUST provide Letter of Appointment(s) and Completion certificate(s) from previous employers.** **The CDC reserves the right to verify this information.**
2.0	Locally based service providers i.e. Service providers based in the area where the school is located within KwaZulu-Natal Province.		20	The Bidders must submit proof of office establishment as evidence to demonstrate locality. The evidence required should be in the form of a Title Deed in the name of the Bidder, a Valid signed Lease Agreement in the name of the Bidder (the landlord's contact number and e-mail address visible), a Municipal account not older than 3 months in the name of the Bidder, or a Municipal Billing Clearance Certificate in the name of the Bidder. Failure to submit sufficient proof of occupancy will render the bid non-responsive. **Please note: CSD, CIPC registration documents, Letterheads, Search engines, Statements, etc. will not be considered as proof of office space.**
3.0	Sub-Contracting with QSEs/ EMES within the targeted areas		15	The bidders are to provide **Form K** – completed and signed – indicating their commitment to the Contract Participation Goal (in %) and rand-values for sub-contracting to EMEs/ QSEs. The areas are defined as follows: • Area: eThekwini Metropolitan Municipality, KZN

4.0	Qualifications, competency	Site Agent / Construction Manager	10	The bidders are to provide information that covers the level of qualifications and competency for the Site Agent/Construction Manager and Site Foreman/Construction Supervisor. Please provide certified, valid copies of qualifications. If no copies of qualifications are supplied, no score will be allocated.
		Site Foreman / Construction Supervisor	10	
5.0	Experience of the key staff personal that will be available to manage the execution of the project (refer to returnable sheet T2.7.1)	Site Agent / Construction Manager	10	The bidders are to provide information that covers the level of experience and the positions held of the key staff /personnel (**Specific to the Site Agent/Construction Manager and Site Foreman/Construction Supervisor).** Please provide copies of CV's. CVs to make specific reference to relevant experience in construction of Institutions of learning, Warehouse/office block facilities/ Hospitals or similar building projects.
		Site Foreman / Construction Supervisor	10	

[1]See **IMPORTANT NOTES** below regarding Key Personnel.

A maximum of **100 evaluation points** will be awarded in respect of functionality scoring

A **minimum of 70 points** of the total number of points will be required to be considered further.

- **Key personnel** will be expected to be available for all site and other meetings (co-ordination and technical meetings) as the project requires.
- Should it be necessary to replace or supplement any of the personnel listed during the course of this contract, they may only be replaced by individuals with similar or better qualifications and experience, who satisfy the minimum requirements and then only with the approval of the Employer.

Details of the key personnel proposed for this project must be included in **Form T2.7**: Proposed Key Personnel **(T2 Returnable Documents)**

TABLE A2: - INDICATORS FOR THE SCORING OF FUNCTIONALITY CRITERIA

#	FUNCTIONALITY CRITERIA		EVALUATION INDICATORS			
		NO RESPONSE (SCORE 0 points)	POOR (25 points)	SATISFACTORY (50 points)	GOOD (75 points)	VERY GOOD (100 points)
1.0	Demonstrated experience (past performance) in comparable projects – Construction repairs and renovations of Institutions of learning, Warehouse/office block facilities/ Hospitals etc. (General Building – GB classification).	Failed to provide information.	**Value of one (1) project** completed in the last 5 years less than R30 Million (incl VAT) per single value project.	**Value of one (1) project** completed in the last 5 years of R30 Million (incl VAT) or more per single value project.	**Value of two (2) projects** completed in the last 5 years of R30 Million (incl VAT) or more per single value of project.	**More than two (2) projects** completed in the last 5 years of R30 Million (incl VAT) or more per single value of project.
2.0	Locally based service providers, i.e. Service providers based in the area where the school is located within KwaZulu-Natal Province.	No information provided	Outside of the province	Within the KwaZulu-Natal Province	The bidder is based within the eThekwini Metropolitan Municipality, KZN	The bidder is based within the Inanda / Phoenix Area.
3.0	Commitment to sub-contracting with QSEs/ EMEs within the targeted area. Area: eThekwini Metropolitan Municipality, KZN	Zero/No commitment to sub-contracting QSEs / EMEs in the eThekwini Metropolitan Municipality,	Commitment to sub-contracting less than 36 % to QSEs/ EMEs in the targeted area: eThekwini Metropolitan Municipality, KZN	Commitment to sub-contracting 36 % to QSEs/ EMEs in the targeted area: eThekwini Metropolitan Municipality, KZN	Commitment to sub-contracting more than 36% up to 38% to QSEs/ EMEs to QSEs/ EMEs in the targeted area: eThekwini Metropolitan Municipality, KZN	Commitment to subcontracting more than 38% up to 40% to QSEs/ EMEs in the targeted area: eThekwini Metropolitan Municipality, KZN

#	FUNCTIONALITY CRITERIA			EVALUATION INDICATORS			
			NO RESPONSE (SCORE 0 points)	POOR (25 points)	SATISFACTORY (50 points)	GOOD (75 points)	VERY GOOD (100 points)
4.0	Qualifications of the key staff/personnel who will be available to manage the execution of the project. Note that these scores will be applied to each required individual before application of the weighting factor.	Site Agent/ Construction Manager	Failed to provide information	Artisan / trade certificate/ accredited certificates in the built environment.	National Diploma in the built environment.	A BSc or BTech Degree in the built environment.	A Post-graduate degree in the built environment.
		Site Foreman/ Construction Supervisor		Short Courses in relevant field, Informal and non-accredited technical training (short course attendance certificates) in the built environment.	Working towards a certificate in the built environment. (studying/registered to write a trade test or similar within a year).	Artisan/trade certificate/ accredited certificates in the built environment.	National Diploma in the built environment.

#	FUNCTIONALITY CRITERIA			EVALUATION INDICATORS			
			NO RESPONSE (SCORE 0 points)	POOR (25 points)	SATISFACTORY (50 points)	GOOD (75 points)	VERY GOOD (100 points)
5.0	Experience of the key staff personal that will be available to manage the execution of the project – (Averaged score for **the Site Agent/Construction Manager and Site Foreman/Construction Supervisor**). Experience must be in the Construction of Institutions of learning, Warehouse/office block facilities/ Hospitals etc. (General Building – GB classification).	Site Agent / Construction Manager		Less than 5 years of relevant experience in the construction of institutions of learning, Warehouse / office block facilities / Hospitals etc. (General Building Classification) as a Site Agent / Construction Manager.	From 5 to 7 years of relevant experience in the construction of institutions of learning, Warehouse / office block facilities / Hospitals etc. (General Building Classification) as a Site Agent / Construction Manager.	More than 7 years but less than 9 years of relevant experience in the construction of institutions of learning, Warehouse/office block facilities / Hospitals etc. (General Building Classification) as a Site Agent / Construction Manager.	9 years plus relevant experience in the construction of institutions of learning, Warehouse/office block facilities / Hospitals etc. (General Building Classification) as a Site Agent / Construction Manager.
		Site Foreman/ Construction Supervisor		Less than 6 years of relevant experience in the construction of institutions of learning, Warehouse / office block facilities / Hospitals etc. (General Building Classification) as a Site Foreman/	From 8 to 10 years of relevant experience in the construction of institutions of learning, Warehouse / office block facilities / Hospitals etc. (General Building Classification) as a	More than 10 years but less than 12 years of relevant experience in the construction of institutions of learning, Warehouse / office block facilities / Hospitals etc. (General Building Classification) as a Site Foreman/ Construction Supervisor	12 years plus relevant experience in the construction of institutions of learning, Warehouse / office block facilities / Hospitals etc. (General Building Classification) as a Site Foreman/ Construction Supervisor

#	FUNCTIONALITY CRITERIA		NO RESPONSE (SCORE 0 points)	EVALUATION INDICATORS			
				POOR (25 points)	SATISFACTORY (50 points)	GOOD (75 points)	VERY GOOD (100 points)
				Construction Supervisor.	Site Foreman/ Construction Supervisor		

Definition of Areas

- Area 1: Inanda / Phoenix Area, eThekwini Metropolitan Municipality
- Area 2: eThekwini Metropolitan Municipality, KZN
- Area 3: KZN Province

PART C3

DESCRIPTION OF THE WORK

C3.1 SCOPE OF WORK

PART C3 – DESCRIPTION OF WORKS

C3.1 SCOPE OF WORKS

Section 1 Decanting: Relocate existing mobile prefabricated units (park home type) from Amaoti No3 Secondary School to the designated temporary Decanting Site, located on the sports field of Brookdale Secondary School. Relocated units include 32 x Classroom / Admin Units, 1 x Kitchen, 3 x Containers (Storage), 1 x Guard hut. Existing Ablutions to be carted away and replaced with new prefabricated mobile Ablutions. Contractor to fully re-instate, refurbish, and make good existing mobile prefabricated units, provide necessary metered service infrastructure connections (water and electrical supply from existing school infrastructure), implement all associated temporary external works such as paving, fence lines, gates, etc.

Section 2 Construction: Construction of permanent School Facilities including, but not limited to:

Learning Spaces: 30 x Standard Classrooms; 7 x Multipurpose Classrooms (with stores); 1 x Media Centre / Library (with stores); 1 x Computer Room (with Store); 1 x Science Classroom (with Store); 1 x Team Teaching; Administration and Support Spaces: 1 x Principal's Office; 2 x Deputy Principal's Office; 1 x General Offices; 1 x Staffroom and Kitchenette; 1 x Strong room; 1 x Stock Room; 1 x Printing Room; 2 x Sick Room; 1 x Entrance Hall; 5 x HOD's Offices; 1 x Counselling Suite; 2 x General Store; 2 x Large Store; 1 X Guard House; 1 x Refuse Room; Sanitation Facilities;
School Nutrition Programme: 1 x SNP Kitchen; 1 x Tuckshop; 1 x Food Storage; 1 x Nutrition Centre Yard; 1 x Undercover Dining Area
All associated external works, including roads, parking bays, paving, covered walkways, stairs, bridges, stormwater drainage, soil drainage, water reticulation, rainwater collection tanks, sports field, combi courts, fencing and gates, external benches, external planters, electrical installations, mechanical installations including fire protection, signage, etc.

Section 3 Removal of Decanting: Removal of Decanting structures, service infrastructure (Where applicable), external works paving, walkways, fences, gates, etc and reinstate grassed sports field and make good.etc.

Exclusions

i) Fluctuations in foreign exchange;
ii) Loose furniture and fittings;
iii) Telephones and PBX installations;
iv) Artworks and graphics;
v) Computers and data cabling; and
vi) Land costs.

CONTRACT PERIOD

The contract period shall be **24 (twenty-four) calendar months as stated in the contract document** (Including annual builder's holidays).

C3.2 DRAWINGS

A set of drawings is attached to the tender documents on a USB. A link to the set of drawings can also be downloaded from the CDC website.

C3.2 DRAWINGS

CONTRACT No. CDC/441/26

FOR THE NEW/REPLACEMENT SCHOOL AT AMAOTI NO.3 SECONDARY SCHOOL IN PINETOWN DISTRICT KWAZULU-NATAL FOR THE KWAZULU-NATAL DEPARTMENT OF EDUCATION

CIDB GRADE: 8GB OR HIGHER

DRAWINGS

CLOSING DATE: 25 NOVEMBER 2026

CLOSING TIME: 12H00

PREPARED FOR:

Coega Development Corporation (PTY) Ltd 18 Cranbrook Crescent
Umhlanga Ridge DURBAN
4319

NAME OF TENDERER:

_____

C3.2 DRAWINGS

A set of drawings is attached to the tender documents on a USB. A link to the set of drawings can also be downloaded from the CDC website.

C3.3.1 OCCUPATIONAL HEALTH AND SAFETY SPECIFICATION

COEGA

Specification:

HEALTH AND SAFETY PROJECT SPECIFICATION FOR THE AMAOTI SECONDARY SCHOOL.

Specification №

CDC-SBU-SPC-223-26

Classification: Public

4 September 2026

DOCUMENT INFORMATION SHEET

Title of Document	:	*Safety, Health and Environment Management System*
Type of Document	:	*Specification*
Document Number	:	*CDC-SBU-SPC-223-26*
Prepared by	:	*Wesley Sullaphen*
Typed by	:	*Yaseen Francis*
Reviewed by	:	*Willem Liebenberg*
Business Unit	:	*Operations*
Prepared for	:	*Bidders/Service Provider*
Date of Issue	:	*4 September 2026*

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DOCUMENT CONTROL SHEET

The purpose of this form is to ensure that documents are reviewed and approved prior to issue. The form is to be bound into the front of all documents released by the Coega.

PROJECT NAME : ***Amaoti Secondary School***
DOCUMENT TITLE : ***OCCUPATIONAL HEALTH AND SAFETY SITE SPECIFICATION***
DOCUMENT No. : ***CDC-SBU-SPC-223-26***

SIGNING OF THE ORIGINAL DOCUMENT

We, the undersigned, accept this document as a stable work product to be placed under formal change control as described by the Procedure for Control of Documented Information.

ORIGINAL	Prepared by	Reviewed by	Approved by
Date: **4 September 2026**	Name: **W. Sullaphen**	Name: **Sisekelo Jali / Msawenkosi Mteki**	Name: **W. Liebenberg**
	Signature:	Signature:	Signature:

Sisekelo Jali | 464a70c8-b847-44e4-95e7-69c4a5b1edb2 | 2026/09/06 4:53:44 PM

Distribution:	***Coega***

REVISION CHART

REVISION 1	**Name:** W. Liebenberg	**Name:**	**Name:**
Date: 4 September 2026	Signature:	Signature:	Signature:

This document, and the information or advice which it contains, is provided by the Centre of Excellence Business Unit solely for the use by the Board of Directors of the Coega Development Corporation (Pty) Ltd and Coega and for reliance by its Executive Management and the Board in performance of that Business Unit's duties.

Amaoti Secondary School
(Specification Document)

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1 INTRODUCTION

In terms of Construction Regulation 5(1)(b) of the Occupational Health and Safety Act, No. 85 of 1993, **The Client** is required to compile a Health and Safety Specification for any intended project and provide such specification to any prospective contractor who, on appointment, shall submit a Health and Safety Plan which shall address the requirements of the Specification.

The objective of this Specification is to assist the Contractor entering into a contract with **the Client** to achieve an acceptable level of OH&S performance. This Specification forms an integral part of the Contract and Principal and other Contractors should make it part of any Contract that they may have with their Contractors and/or Suppliers.

Compliance with this Specification does not absolve **the Client** from complying with minimum legal requirements and **the Client** remains responsible for the health and safety of his employees and those of his Mandataries. **The Client** reserves the right to audit, monitor and where necessary regulate the site work activities of any Principal Contractor or principal appointed sub-contractor as contained in Construction Regulations 5(1)(k) and 7(1)(c)(v).

2 SCOPE

The Specification outlines the requirements for addressing, mitigating and preventing occupational health and safety related incidents on the **Amaoti Secondary School** The specification also addresses legal compliance, hazard identification and risk assessment, promoting a health and safety culture amongst those persons working on the project and those affected by the activities taking place in and around the construction project.

The Health and Safety Specification entails requirements that are generally applicable to construction work and imposes controls associated with activities that impact on human health and safety and provides the overarching framework within which the contractor is required to demonstrate compliance with certain requirements for health and safety during construction, established by the Occupational Health and Safety Act of 1993 and associated Regulations and Standards incorporated under Section 44 of the OHS Act of 1993, even if such standards are not directly referenced in the Specification.

The specification further establishes the manner in which the contractor is to manage the risk of health and safety incidents during the construction and the manner in which NCC Health & Safety will interact with the contractor.

Contractors employed by the Client are to ensure that the provisions of the specification are applied both on the site and in respect of all off site activities relating to the project, in particular in transport activities and project dedicated off site fabrication works and should further, enforce the provisions of the specification amongst all sub-contractors and suppliers to the project

3 PROVISION FOR COST OF HEALTH AND SAFETY

The Principal Contractor shall make and show adequate provision for the cost of adequate and required health and safety measures during the construction process as required by Construction Regulation 5(1)(g).

Further to the adequate provision for the cost of health and safety as outlined above, the Principal Contractor shall ensure that on appointing any other contractor for any portion of the construction project, that each potential sub-contractor submitting tenders for such work, have made sufficient provision for adequate and required health and safety measures during the construction process as required by Construction Regulation 7(1)(c)(ii).

4 DEFINITIONS

Act: the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)

BCEA: Basic Conditions of Employment Act, 1997 (Act No. 75 of 1997)

Disaster Management Act: the Disaster Management Act, 2002 (Act No. 57 of 2002

Client: For the purpose of this specification the client is: **Coega Development Corporation**

Contractor: person or organisation that contracts to provide the works covered by the contract

Contract Manager: person appointed by the employer to administer the contract on his behalf

Competent Person: any person who:

- Has in respect of the work or task to be performed, the required knowledge, training and experience and, where applicable, qualifications specific to that work or task:

  Provided that where appropriate qualifications and training are registered in terms of the provisions of the National Qualification Framework Act, 2000 (Act 67 of 2000), those qualifications and that training must be regarded as the required qualifications; and
- Is familiar with the Act and applicable regulations made under the Act

Danger: anything which may cause injury or damage to persons or property

Employer: person or organisation that enters into a contract with the contractor for the provision of the works covered by the contract, in this instance, **Coega Development Corporation (CDC)**

Client's Health and Safety Agent: the person appointed as agent by the client or clients principals agent in terms of Regulation 5(5) of the Construction Regulations and named in the contract data as being the employer's agent responsible for health and safety matters, in this instance, NCC Environmental Services (Pty) Ltd, Health & Safety Business Unit, hereinafter referred to as **NCC Health & Safety.**

Hazard: a source of or exposure to danger

Hazard Identification: the identification and documenting of existing or expected hazards to the health and safety of persons, which are normally associated with the type of construction work being executed or to be executed

Health and Safety Plan: A project specific documented plan detailing the overarching procedures that shall be adhered to in order to identify and mitigate hazards, manage all accidents and incidents at the workplace and describe communication to all affected and interested parties. The plan shall be developed by the Principal contractor and contractor in accordance to the requirements as detailed in the health and safety specification.

Health and Safety Specification: a site, activity or project specific document pertaining to all health and safety requirements related to construction works which is included in the contractor's contract with the client or an order issued in terms of the framework agreement.

Healthy: free from illness or injury attributable to occupational causes

Incident: an event or occurrence occurring at work or arising out of or in connection with the activities of persons at work, or in connection with the use of plant or machinery, in which, or in consequence of which has an undesired consequence such as injury to person, damage to property or public disturbance.

Section 24 Incident: an event or occurrence occurring at work or arising out of or in connection with the activities of persons at work, or in connection with the use of plant or machinery, in which, or in consequence of which:

- Any person dies, become unconscious, suffers the loss of a limb or part of a limb or is otherwise injured or becomes ill to such a degree that he is likely either to die or to suffer a permanent physical defect or likely to be unable for a period of at least 14 days either to work or continue with the activity for which he was employed or is usually employed;
- A major incident occurred; or
- The health or safety of any person was endangered and where;
  - A dangerous substance was spilled;
  - The uncontrolled release of any substance under pressure took place;
  - Machinery or any part thereof fractured or failed resulting in flying, falling or uncontrolled moving objects; or machinery ran out of control

Near Miss Incident: An unplanned event that could have resulted in an incident under slightly different circumstances.

- **Inspector:** a person designated as such under section 28 of the Act
- **Principal contractor:** A principal contractor is the contractor with control over the construction phase of a project involving more than one contractor. They are appointed in writing by the client to plan, manage, monitor and coordinate construction activities including health and safety during this phase.

- **Reasonably Practicable:** practicable having regard to:
    - the severity and scope of the hazard or risk concerned
    - the state of knowledge reasonably available concerning that hazard or risk and of any means of removing or mitigating that hazard or risk
    - the availability and suitability of means to remove or mitigate that hazard or risk; and
    - the cost of removing or mitigating that hazard or risk in relation to the benefits deriving therefrom
- **Risk:** the probability that injury or damage will occur
- **Safe:** free from any hazard
- **Scaffold:** any temporary elevated platform and supporting structure used for providing access to and supporting workmen or materials or both
- **Structure:**
    - Any building, steel or reinforced concrete structure (not being a building), railway line or siding, bridge, waterworks, reservoir, pipe or pipeline, cable, sewer, sewage works, fixed vessels, road, drainage works, earthworks, dam, wall, mast, tower, tower crane, bulk mixing plant, pylon, surface and underground tanks, earth retaining structure or any structure designed to preserve or alter any natural feature, and any other similar structure
    - Any false work, scaffold or other structure designed or used to provide support or means of access during construction work; or
    - Any fixed plant in respect of construction work which includes installation, commissioning, decommissioning or dismantling and where any construction work involves a risk of a person falling
- **Substance:** any solid, liquid, vapour, gas or aerosol, or combination thereof
- **Suitable:** capable of fulfilling or having fulfilled the intended function or fit for its intended purpose
- **Temporary works:** any false work, formwork, support work, scaffold, shoring or other temporary structure designed to provide support or means of access during construction
- **Workplace:** any premises or place where a person performs work in the course of his employment
- **COVID-19:** Coronavirus Disease 2019
- **Virus:** SARS-CoV-2 virus

5 INTERPRETATION

This Health and Safety Specification is a compliance document drawn up in terms of the current South African legislation and is therefore binding. It must be read in conjunction with the relevant legislation and any other applicable health and safety standards as provided for in Section 44 of the Occupational Health and Safety Act, 85 of 1993.

The Health and Safety Specification contains clauses that are generally applicable to building/construction and to impose pro-active controls associated with activities that impact on human health and safety as it relates to plant and machinery. Compliance to the requirements of the OHS Act is in addition to the requirements of the Specification and is part of the Contractor's responsibility. The Client/NCC Health & Safety will monitor that the contractors comply with the requirements of the OHS Act and Regulations and will not prescribe to the contractor how such compliance is achieved.

The Act and its associated regulations shall have precedence in the interpretation of any ambiguity or inconsistency between the Act and the specification.

Compliance with the requirements of the specification does not necessarily result in compliance with the provisions of the Act.

The following documents are to be read in conjunction with this specification:

- Architects drawings/design reports/specifications
- Electrical engineers design development reports and specification
- Structural engineers design development reports and specification
- Mechanical engineers design development reports and specification
- Fire Engineers design development reports and specification
- Civil Engineers design development reports and specification
- Project Design Risk Register & Report
- Other specialist reports: Geotechnical Engineers Report (not limited to)

6.1. PROJECT RISK PROFILE

6.1 About the Health & Safety Risk Profile

This health & safety risk profile will provide the basis for the initial project baseline health & safety risk assessment, and will be used to identify both known and unknown health & safety risks that could have an impact on the design as well as the maintenance of the AMAOTI SECONDARY SCHOOL The risk profile will focus on a few key areas which are commonly known to create difficulties through the project life-cycle and have an impact on health & safety performance.

The risk profile will form the base from where the majority of client's health & safety controls will be built on for the project, and will be the starting point for developing the baseline risk assessment, project health & safety specifications and designer health & safety specifications

6.2 Brief of area and project

The project consists of providing the school with facilities that are compliant with national building regulations and will also ensure the school meets the norms and standards of the KwaZulu-Natal Department of Education

The project scope is described as follows:

• Demolition of all temporary structures and replacement thereof with permanent structures and supporting facilities.

• Due to the restrictive site conditions and limited developable area, the school will be temporarily relocated to the sports fields of a sister school (Brookdale Secondary School) located only +- 350m towards the South, where a temporary decanting site will be established. Once construction of the classrooms and supporting facilities are completed, the temporary decanting structures will be removed from Brookdale Secondary School (unless instructed otherwise by CDC / KZN DoE) to make way for subsequent rehabilitation of the sports field.

• Design and construction of new permanent school facility and necessary service infrastructure that caters for the maximum enrolment of 1220 learners, that is aligned with KZN DoE Norms and Standards and complies with the National Building Regulations and applicable SANS regulations.

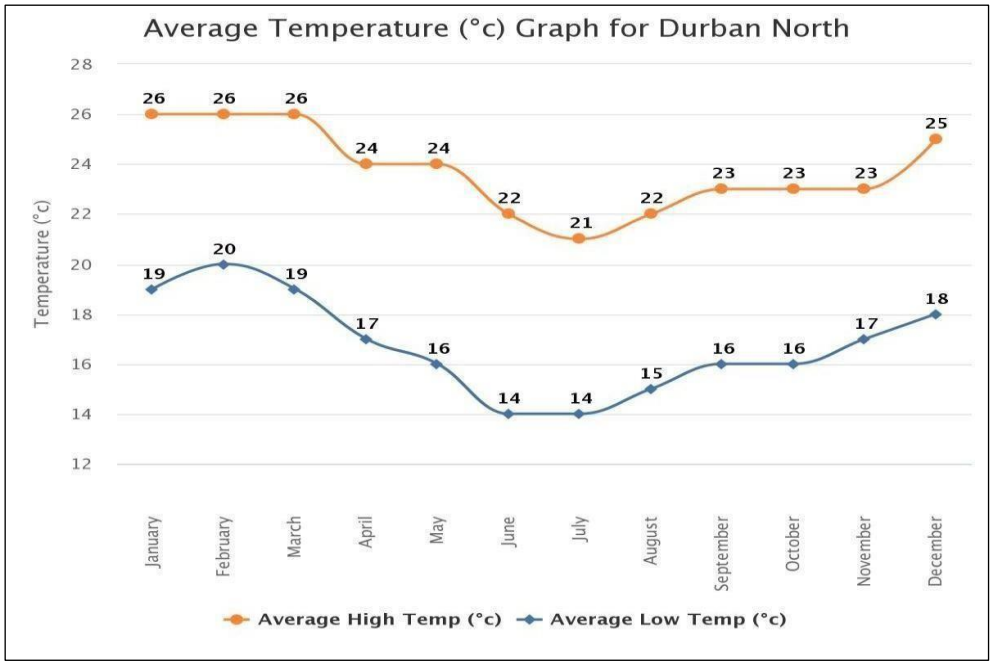
The structures currently housing Amaoti No3 Secondary School is located on Erven 378/842, Rietriver in Ward 53, Township of Mawothi, eThekwini, KwaZulu-Natal Province.

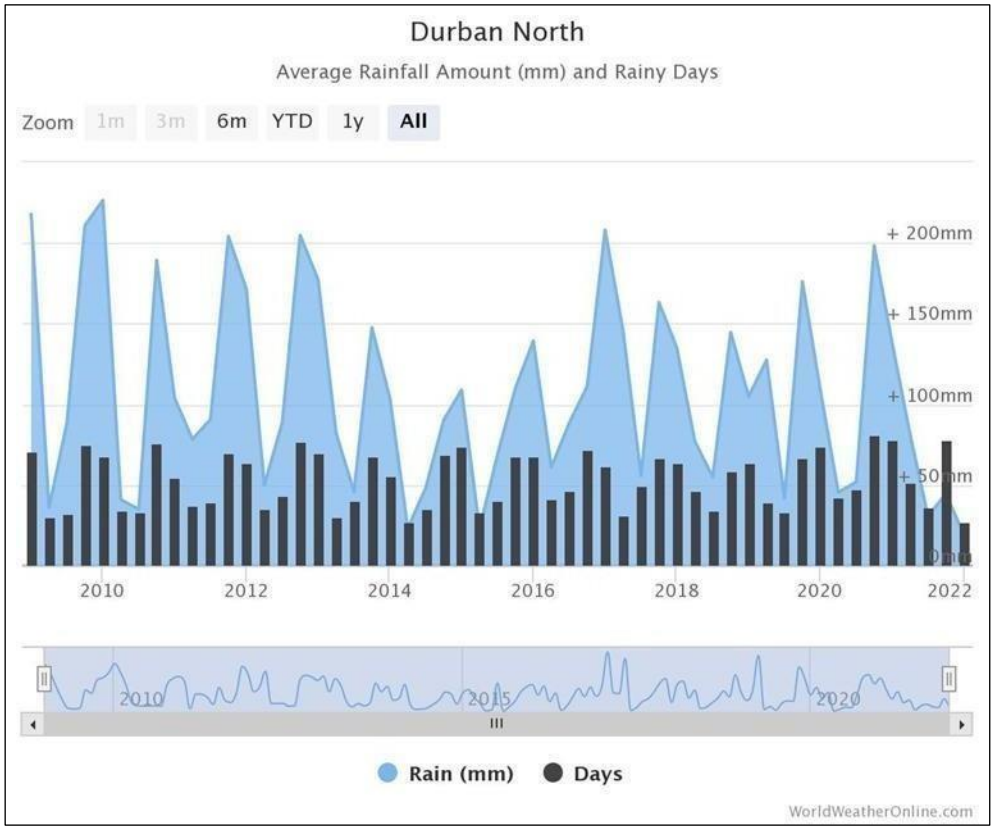
The site however borders on and is accessed via Corkbrook Close, Brookdale, Phoenix, KwaZulu-Natal Province, South Africa (GPS Coordinates: 29°42'02.62" S 30°59'37.22" E).

The site is located on a sloping site and is abutted by residential properties along its entire SE perimeter, along with environmental lines along the SW and NW edges bordered by the Ohlanga river to the north. The site orientation is elongated along a northwest to southeast axis. The site is subject to significant level differences, which along with the environmental lines, places extraordinary constrains on the availability of developable area afforded to the site. The school complex currently consists of a variety of temporary structures (temporary prefabricated classrooms, containers and ablution facilities) and has been fenced off from the rest of the site for security reasons. The school is located on the fringe of a residential area in close proximity to Brookdale Secondary School towards the south, bordered by the Ohlanga river to the north.



6.3 Weather Patterns





6.4 Anticipated design

The design team will need to be issued with a designer health & safety specification to guide them on the feedback required of them in terms of designing for health & safety on the project.

6.5 Surrounding community and community risks

Crime stats for April 2020 to June 2021 taken from the SAPS website show the following information:

- 856 cases of murder
- 792 cases of attempted murder
- 807 cases of illegal firearm or ammunition possession
- 391 cases of carjacking
- 921 cases of motor vehicle or motorcycle theft
- 99 cases of theft from motor vehicles
- 2319 cases of drug related crimes
- 2469 cases of malicious damage to property
- 606 burglaries at non-residential facilities
- 2643 commercial related crimes

There is no information currently available regarding community protests or uprising in the area.

https://www.saps.gov.za/services/downloads/First_Quarter_Crime_Data%202021_2022.xlsx

6.6 Local services and locations

The following community services are available in the area:

- Verulam Police Station which is 8 KMS away situated at 11 Russom Street,Verulam Verulam 4345
- Fire-station which is 4.1 KMS away situated at 1 Achilles Pl, Starwood, Phoenix, 4068
- Mahatma Gandhi Memorial Hospital, which is 7.5 KMS situated at 100 Phoenix Highway Durban 4068

The services available at the Hospitals are unknown, and they may at least be able to provide a support service in case of extreme emergencies until a patient can be taken to a hospital that can accommodate and house various types of emergencies.

With regards to treatment available from these hospitals for snake bites, this is also an unknown and should be considered in terms of the location of the site.

6.7 Environmental risks for consideration

In addition to the requirements as laid out in the Environmental Specification for the Project, the following must be kept in consideration:

- Waste management for the area is serviced by the local municipality, and there are only a few general waste facilities available.
- There are no licensed waste facilities for handling of hazardous waste, with most hazardous waste licenses being held privately
- A private waste provider will most likely need to be brought in to service the site, and consideration will need to be made for the safe disposal of hazardous waste from the project, which may involve taking these to facilities situated further afield resulting in extra costs.
- This could impact waste management on the site, unless costs for storage and transport are adequately allowed for.

6.8 Health risks for consideration

Malaria is not a factor in this region of Kwa-Zulu Natal, and the need for anti-malaria medication is not necessary.

However, risks that need to be communicable health risks that could affect persons on the project include:

1. Tuberculosis
2. HIV/Aids

Other work related health risks that will need to be considered include:

1. Silica (sand and cement products)
2. Dermatological conditions (contact with cement and concrete products)
3. Hazardous Chemical – inhalation and contact conditions
4. Ergonomic risks
5. Dust (respirable) conditions – lung infections
6. COVID-19 (Hazardous Biological Agent)

6.9 Roads and general infrastructure

The site however borders on and is accessed via Corkbrook Close, Brookdale, Phoenix, KwaZulu-Natal Province, South Africa (GPS Coordinates: 29°42'02.62" S 30°59'37.22" E).

6.10 Contractor risks

The size and capabilities of the construction companies in the KwaZulu - Natal rural areas are unknown, and their ability to comply with the health & safety specifications and requirements for the project will need to be managed carefully.

If the client chooses to use a main contractor from outside of KwaZulu - Natal rural areas, this would incur the need for accommodation for the contractor's management team off-site.

The use of local contractors will be a requirement for the C.D.C., and these contractors, whether used as either labour only, domestic or selected, could bring in additional health & safety risks if they are not familiar with or worked with a client with specific health & safety requirements.

Potential problems that could be faced include:

- Provision of medicals for personal
- Turnover of staff or using new employees regularly resulting in medicals not being done for employees, or increasing costs related to having medicals done
- Competencies and evidence of training and qualifications for persons taking legal responsible appointments
- Training and experience of employees on construction sites and strict health & safety requirements
- Communication of health & safety to employees on the site
- Training of the staff on health & safety for the site
- The competency of the health & safety officer(s) used (registered) and their ability to communicate health & safety to all employees and contractors on the project.
- The competencies and qualifications of the Construction Manager used on the project.

Where local suppliers are used, these could also pose additional health & safety related risks which could stem from unsafe equipment being supplied to the site and being used on the project.

7. PROJECT HEALTH AND SAFETY OBJECTIVES

The following Health & Safety Objectives will be set for the project:

- Lost Time Injury Frequency Rate – 0.3
- Lost time injuries – 1
- Medical treatment injuries – 3
- First Aid Injury – 7
- Noise Induced Hearing Loss – 0
- Silicosis – 0
- Occupational dermatitis – 0
- Hazardous Chemical substance – 0
- Accidental release of chemicals, loss of control of machinery, explosions – 0
- Fire related incidents – 0
- Health & safety incidents involving the neighbouring crèche/pre-school – 0

The above objectives must be written into the Principal Contractors Health & Safety plan and be communicated to their management and all employees and contractors on the project as part of the induction programme.

Monitoring of the objectives will be achieved by:

- Audit and monitor all contractors appointed by them
- Stopping work which poses a risk to the health and/or safety of any professional, contractor, tenant or member of public
- Ensuring all hazards and risks of the project are clearly identified and managed through a risk management process

8. DUTIES OF DESIGNERS

8.1. Project design team and responsibilities

Organisation	Name	Discipline	Email

8.2. Duties of designers & design risk management process

Principal Contractor designers

All contractors, including specialist contractors, who meet the following criteria for a designer will be required to follow the requirements of Construction Regulation 6.

The criteria are as follows:

- A competent person who:
- Prepares a design
- Checks and approves a design
- Arranges for any person at work under his/her control to prepare a design, including an employee of that person where he or she is the employer, or
- Designs temporary work, including its components,
- An architect or engineer contributing to, or having overall responsibility for, the design
- A Building services engineer designing details for fixed plant
- A Surveyor specifying articles or drawing up specifications

- A Contractor carrying out design work as part of a design and building project, or
- An interior designer, shop-fitter or
- Landscape architect.

Any contractor meeting the above requirements will be required to comply too the following:

ensure that the applicable safety standards incorporated into these Regulations under section 44 of the Act are complied with in the design;
take into consideration the health and safety specification submitted by the client;
before the contract is put out to tender, make available in a report to the client—
all relevant health and safety information about the design of the relevant structure that may affect the pricing of the construction work;
the geotechnical-science aspects, where appropriate; and
the loading that the structure is designed to withstand;
inform the client in writing of any known or anticipated dangers or hazards relating to the construction work, and make available all relevant information required for the safe execution of the work upon being designed or when the design is subsequently altered;
refrain from including anything in the design of the structure necessitating the use of dangerous procedures or materials hazardous to the health and safety of persons, which can be avoided by modifying the design or by substituting materials;
take into account the hazards relating to any subsequent maintenance of the relevant structure and must make provision in the design for that work to be performed to minimize the risk;
when mandated by the client to do so, carry out the necessary inspections at appropriate stages to verify that the construction of the relevant structure is carried out in accordance with his design: Provided that if the designer is not so mandated, the client's appointed agent in this regard is responsible to carry out such inspections;
when mandated as contemplated in paragraph (j), stop any contractor from executing any construction work which is not in accordance with the relevant design's health and safety aspects: Provided that if the designer is not so mandated, the client's appointed agent in that regard must stop that contractor from executing that construction work;
when mandated as contemplated in paragraph (j), in his or her final inspection of the completed structure in accordance with the National Building Regulations, include the health and safety aspects of the structure as far as reasonably practicable, declare the structure safe for use, and issue a completion certificate to the client and a copy thereof to the contractor; and
during the design stage, take cognisance of ergonomic design principles in order to minimize ergonomic related hazards in all phases of the life cycle of a structure.

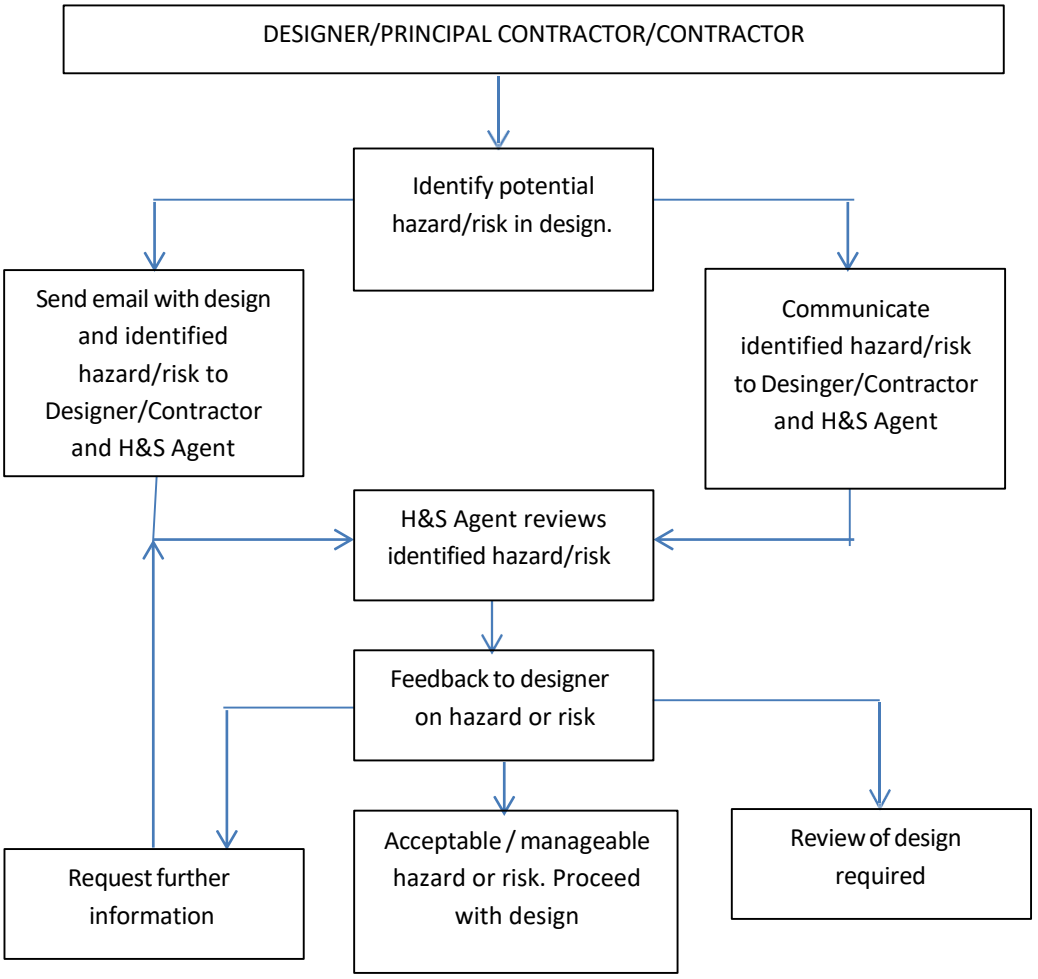
Contractors involved in temporary works designs will need to comply too the following:

a. all temporary works are adequately designed so that it will be capable of supporting all anticipated vertical and lateral loads that may be applied;
b. the designs of temporary works are done with close reference to the structural design drawings issued by the contractor, and in the event of any uncertainty consult the contractor;
c. all drawings and calculations pertaining to the design of temporary works are kept at the office of the temporary works designer and are made available on request by an inspector; and
d. the loads caused by the temporary works and any imposed loads are clearly indicated in the design.

Design reports must be provided the client's design team and client's health & safety agent for review.

All designers must acknowledge in their design or design reports that they have read through this section of the specification.

9. Project Design Risk Management Procedure



9.1. Changes in Design

All persons appointed as Designers on the project, including the Principal Contractor's appointed temporary works designer are required to familiarise themselves with the requirements of Construction Regulation 6 and OHS Act Section 10(1) in respect of the duties incumbent on designers to ensure that the applicable safety standards incorporated into the regulations under Section 44 of the Act are complied with in the design.

Appointed designers are to refrain from including anything in their design necessitating the use of dangerous procedures or materials hazardous to the health and safety of persons.

During the design phase, designers are required to take cognisance of ergonomic design principles in order to minimise ergonomic related hazards in all phases of construction and subsequent use and maintenance of a structure.

Designers shall further take into account the hazards relating to any subsequent maintenance of the relevant structures and must make provision in the design for that work to be performed safely and with minimal risk.

When mandated by the client to do so, each designer shall carry out the necessary inspections at appropriate stages to verify that the construction is carried out in accordance with his design. Furthermore, if so mandated by the Client, stop any contractor from executing any construction work which is not in accordance with the relevant design's health and safety aspects.

10. Special Requirements

Taking into consideration the nature of the work to be performed, the specific identified high risk activities and the existing working environment, the following requirements must be complied to by the contractor:

10.1. Health & Safety Management Personnel

Having taken into consideration the size and complexity of the Construction project at hand, the following requirements are set for the Construction management team:

Construction Manager

- Demonstrated experience in construction and projects of a similar nature, with a detailed CV outlining relevant years of experience and completed projects.
- Minimum **9 years or more** of relevant experience in the construction of institutions of learning, warehouses, office block facilities, hospitals, and similar projects within the General Building Classification, in the capacity of Site Agent and/or Construction Manager.
- Legal Liability Training certificate.
- BSc, BTech Degree, or Postgraduate Degree in the Built Environment.
- Diploma or Degree in Construction or Building Management – Non-negotiable.

Construction Health and Safety Officer

- Must be registered as a Construction Health and Safety Officer (CHSO) or higher with SACPCMP – Non-negotiable.
- Must be appointed on a **full-time basis** within the company and be responsible for managing all projects covered under this contract.
- A detailed CV demonstrating experience on projects of a similar nature must be submitted to the OHS Agent for approval.
- Minimum of **8 years or more** relevant experience in a similar Health and Safety role.
- Minimum NQF Level 5 qualification or higher in Environmental Health, Occupational Health, Safety Management, or a related field.

Construction Supervisor / Site Foreman

- National Diploma in the Built Environment.
- **Minimum 12 years or more** of relevant experience in the construction of institutions of learning, warehouses, office block facilities, hospitals, and similar projects within the General Building Classification, in the capacity of Site Foreman and/or Construction Supervisor.

Risk Assessor

- HIRA Certificate issued in accordance to SAQA unit standard 120330
- Experience CV detailing projects worked on of a similar nature

Fall Protection Plan Developer:

- Fall Protection Plan Developer certificate formal training course to SAQA unit standard 229994

Incident Investigator:

- Formal training course to SAQA unit standard 259617 or 120335

Fire Fighting and Emergency Preparedness:

- Attendance of a course on fire fighting

Electrical Installations:

- Electrical contractors registration with DoL (or equivalent legal registration) as an Electrical Installation Contractor
- Electrician (responsible for all new and temporary installations) registered with DoL as an Electrician with a valid yellow or red card

Roof Work

- Competent roof erectors - Certified roof erector certificate to SAQA unit standard 10120/18
- Experience CV detailing projects worked on of a similar nature

10.2. Direct Contractors

During the course of the works the client may appoint direct contractors to perform specific tasks on site. These contractors are appointed directly by the client and therefore report to the directly to the client. The direct contractors shall be required to conform the requirements of this specification. In addition, the direct contractors must be inducted by the principal contractor, and all work on site must be scheduled with the construction manager, in order to ensure the safety of all persons on site.

The principal contractor shall, as far as reasonably practicable, not restrict the work of direct contractors, unless in the interest of health and safety of all persons involved. In such events, the principal contractor must notify the client and the NCC Health & Safety representative of the stoppage, including the reason for the stoppage and the planned duration of the stoppage.

Examples of Direct contractors would typically include Landscaping and telecommunication / IT installations.

10.3. Selected / Nominated Contractors

During the course of the works the client may nominate specific contractors whom the Principal Contractor shall appoint as Subcontractors to perform specific functions on site. Nominated Contractors shall be managed by the Principal Contractor as a subcontractor, The Principal Contractor must take reasonable steps to ensure co-operation between all contractors to enable each of those contractors to comply with the regulations as per put out in the “Occupational Health and Safety Act of 1993 and associated Regulations”

The nominated contractors shall be required to conform the requirements of this specifications as well as the H&S Plan of the Principal contractor. In addition that, the nominated contractors must be inducted by the principal contractor, and all work on site must be scheduled with the construction manager, in order to ensure

the safety of all persons on site. Nominated Contractors shall be managed by the Principal Contractor as a subcontractor.

10.4. Permit to work

The contractor shall be required to provide a procedure on control and coordination of operational work using a permit to work system that must be approved by NCC Health & Safety prior to the commencement of work.

For this project the permit to work system must be used to control all work / the following activities:

- Hot work
- Working at heights
- Work in confined space
- Work in areas with public access

The minimum requirements that the Permit to work procedure must cover include:

- Definitions of the different types of work,
- The types of permits that may be issued,
- The relevant positions that will be permit issuers and approvers,
- Roles and responsibilities of all persons involved in the process,
- Communication and coordination requirements, and
- Training and instruction on the issuing, use and close out of permits.

11. GENERAL HEALTH AND SAFETY REQUIREMENTS

11.1. Legal compliance

The contractor shall comply with all applicable legislative requirements inclusive of the Act, Other relevant specification and applicable municipal bylaws. This includes but not limited to:

- Create and maintain as reasonably practicable a safe and healthy work environment
- Execute the works in a manner that complies with the requirements of the Act and all its associated regulations and standards and in so doing, minimize the risk of incidents occurring and
- Conspicuously display any site specific number assigned to the construction site in terms of the Construction Regulations 2014 at the main entrance to the site

11.2. Legal registers and legislative references

Before work commences, the Principal Contractor will provide to the Client or Client's Health & Safety Agent a legal register for approval related to the following:

- Health & safety related acts
- Health & safety related regulations
- Health & safety related standards
- Health & safety related by-laws

The legal register will be presented to the client's health & safety agent at each audit, and must be reviewed on a monthly basis.

11.3. Health & Safety File

Prior to commencement of works (inclusive of site establishment) the Principal contractor will be required to supply the following documentation to the Client's Health & Safety agent, for approval and verification.

- Site and project specific Health & Safety Plan
- Site and project specific Fall Protection Plan
- Site and project specific Waste management plan

- Valid Letter of Good Standing (FEM, WCA or RMA) for workmen's compensation
- Proof of sufficient pubic liability insurance
- Notification of Construction work
- Management appointments and management organogram for the project
- Risk Management procedure (may include Environmental and Quality risk management)
- Site and project specific Baseline Risk Assessment and initial risk assessments
- Method of works i.e. Site establishment
- Appointments with proof of competency (where required)

Upon approval, the Principal contractor shall be required to maintain the safety file on site inclusive of the below listed requirements (this list is not exhaustive):

- Copy of the OHS Act and relevant Regulations
- Company policies
- Site specific rules
- Incident and Accident Management procedure
- Specialized plans i.e. Asbestos removal (If applicable)
- Non-conformance/compliance procedure
- Permit system and management procedures
- Emergency plan and telephone numbers;
- H&S induction records (including visitor inductions)
- H&S information session records (toolbox talks)
- Inspection registers – various project-specific planned maintenance inspections, load test certificates, service records, etc.
- Injury and incident investigation reports and first aid dressing book
- Confined space entry management (permit to work)
- Traffic management plan / Road Closure plan
- Rigging/lifting plans
- Safety officer inspection reports – at least weekly hazard survey finding reports;
- Planned Task Observations (PTO's)
- Audit reports – monthly audits on Contractor(s);
- Contractor H&S Plan assessments and approvals;
- Material safety data sheets – haz. chem.;
- PPE issue records;
- Health & safety meeting minutes and attendance registers;
- Certified medical assessment certificates including annexure 3
- Disciplinary records and unsafe act/condition warning notices issued.
- COVID-19 workplace plan and other applicable documents such as screening and inspection registers

Ensuring compliance with Construction Regulation 7(1)(b) It is the responsibility of the Principal contractor to open and **keep on site** a health and safety file, which must include all documentation required in terms of the Act and these Regulations, which must be made available on request to an inspector, the client, the client's agent or a contractor

11.4. Response to OH&S notices

Respond to the notices issued by **NCC Health & Safety** as follows:

1. Life threatening situation - a *PROHIBITION NOTICE/ORDER* will be issued by means of a written instruction in the site instruction book or an explanation/detail in an audit report/e-mail. The activity in question must then be seized immediately and corrective measures taken to the satisfaction of the H&S Agent after which permission will be given to resume the activity.
2. Injury foreseen – a *CONTRAVENTION NOTICE* will be issued by means of an explanation/detail in an audit report/e-mail with a time frame for compliance stipulated. Failure to comply within the time frame may result in a financial penalty per noncompliance item per day that the non-compliance persists.
3. Ongoing contravention for similar non-compliances - a contravention notice will be issued with a time frame for compliance stipulated. Failure to comply within the time frame may result in a financial penalty per non-compliance item per day that the non-compliance persists. On-going noncompliance may also result in a further issue of a prohibition notice/order.
4. Minor or no injury foreseen – an *IMPROVEMENT NOTICE* will be issued. The corrective measures stipulated in an audit report/e-mail must be taken.

12. ADMINISTATIVE REQUIREMENTS

12.1. Administrative controls and the health and safety file (cr7(1)

As required by Construction Regulation 7(1)(b), the Principal Contractor and each sub-contractor appointed by him on the project, will open an maintain a Health and Safety File on site containing the records of information on aspects of the project.

NCC Health & Safety may conduct an audit on the health and safety file of the Contractors prior to appointment by the Client, as deemed necessary and by routine monthly audits. The results of these audit inspections will be communicated to the Client and Principal Contractor with recommendations and corrective action requirements where applicable. Upon receipt of the audit results, the contractor will be required to submit an action plan to address the outstanding issues and to communicate such plan in writing, detailing the measures to be taken and the time frame in which this will be achieved. The principal contractor shall inform NCC Health & Safety of all contractors that will start construction work on the **AMAOTI SECONDARY SCHOOL** at least two weeks in advance.

NB: Any serious non-compliance must be dealt with immediately. In the event of non-compliance of legal requirements, work activities may be curtailed until such time as the non-compliance has been adequately addressed. This will be done after NCC Health & Safety has consulted with The Client/Principal Agent and action will be implemented on their final decision.

On completion of the project or on completion of the sub-contractors work during the cycle of the construction process, the complete health and safety file of each contractor must be submitted to the principal contractor for consolidation into one master file. These records will then be archived by the Client for future reference purposes. (Refer CR 7(1)(e))

12.2. Health and safety plan

A project specific documented plan detailing the overarching procedures that shall be adhered to in order to identify and mitigate hazards, manage all accidents and incidents at the workplace and describe communication to all affected and interested parties. The plan shall be developed by the Principal contractor and contractor in accordance to the requirements as detailed in the health and safety specification.

The principal contractor shall submit the health and safety plan to the appointed Health and Safety Agent for review and approval prior the commencement of any activities on site

The plan shall, as a minimum, comply with the following requirements:

- Scope and brief of the works to be completed
- Process and procedure for the appointment of various roles for the project
- Process and procedure for identifying and verifying the competency of those appointed to the project
- Provide a documented procedure of identifying, evaluating, prioritizing and managing/controlling hazards according to risk profile, which must include all mobilization and site set up activities as per the Baseline Risk Assessment. Including safe working procedures, job observations, PPE surveys and training
- Process and procedure for the identification of all work at height risks, and the development of a documented fall protection plan and training thereof.
- Process and procedure for identifying the training needs for employees on the project and the resulting training (incl. fall protection, risk assessment training, etc.)
- Process and procedure for managing and evaluating emergency's for the project. This must take into consideration the integration and impact on the hotel's emergency procedures
- Process and procedure for dealing with first aid, medical and lost time injuries as well as the reporting thereof
- Process and procedure for the identification of Resources/ Equipment required for the project, including human resources
- Process and procedure for operational control and maintenance of equipment & machinery used on the project. This must include the process for dealing with equipment/machinery that deviates from the norm.
- Process and procedure for control of contractors appointed by the Principal contractor for the project, must include vetting of contractors prior to access to the project
- Process and procedure for induction of all employees, contractors and visitors to the project
- Process and procedure for the control of change management and its impact on the project Process and procedure for closing out, consolidating and handing over of H&S information to the client/client H&S agent
- Must be reviewed and updated by the principal contractor as work progresses.

12.3. COVID-19 workplace plan

The contractor shall be required to submit a COVID-19 workplace plan together with the health and safety for approval detailing the management and implementation of COVID 19 protocols listed in this specification.

12.4. Project Policies and Procedures

The following policies and where required, procedures, will be mandatory for the Principal Contractor and must be reviewed by the Client or Client's Health & Safety Agent before work commences on the project:

- Health & safety policy (may incorporate Quality and Environmental)
- Drug and substance abuse policy and procedure
- Health & safety violation policy and procedure
- HIV/Aids policy
- Children at Work Policy and procedure
- Employee health & wellness policy and management procedure

The procedures stated above are inclusive of procedures required to execute work, these procedures will be requested for under the relevant sections are required in this specification.

12.5. Structure and responsibilities

Overall supervision and responsibility for OH&S:

- The Principal Contractor is to ensure that the contractors appointed in terms of Construction Regulation 7(1)(c)(v), implement and maintain the agreed, approved OH&S plan. ***The Principal Contractor will take full responsibility for the health and safety of all appointed sub-contractors on the project. The Principal Contractor is to ensure that all health and safety legal documentation of all contractors is compliant to the OHS Act of 1993, Construction Regulations of 2014 and the Client's Safety Specification. The Principal Contractor shall further ensure that all legal documentation of all contractors and direct contractors are maintained and kept up to date for the duration of the project.***
- The Chief Executive Officer of the Contractor, in terms of 16(1) of the Act, is to ensure that the Employer (as defined in the Act) complies with the Act. A Legal Compliance Audit shall be conducted by **NCC Health & Safety** for this purpose.

It is a requirement of **the Client**, that when he appoints a Contractor in terms of Construction Regulations 5(1)(k), he includes an OHS Act Section 37(2) agreement 'Agreement with Mandatary' in his agreement with such Contractors. In addition, in order to ensure that the correct structure and related responsibilities are addressed, all the required statutory appointments will be established.

OH&S Specific Supervision Responsibilities:

The following legal appointments **must** be in place for the project from the Principal Contractor:

Legal Reference	Appointment	Requirement
OHS Act	16.1	MD/CEO – Board Resolution
OHS Act	16.2	Project/Contracts Manager
Disaster Management Act	16(6)(a)	COVID-19 Compliance Officer
Construction Regulation	8.1	Competent Construction Manager
Construction Regulation	8.1(a)	Competent Alternate Construction Manager
Construction Regulation	8.5	Competent Construction H&S Officer Full Time
Construction Regulation	9.1	Competent Risk Assessor
Construction Regulation	10.1	Competent Fall Protection Plan Developer
Construction Regulation	28(a)	Competent Stacking and Storage Supervisor
Construction Regulation	29(h)	Competent Fire Fighting Equipment Inspector
General Administrative Regulation	9(2)	Competent Incident Investigator
General Safety Regulation	3	Competent First Aider – Level 2 Will be required by the Principal Contractor at all times whether they have less than 10 employees on site
OHS Act	18	At least two committee members should be designated from the Principal Contractor

The following legal appointments may become applicable should the Principal Contractor or Construction Health and safety Agent deem it necessary or the legal requirement has made it applicable

Legal Reference	Appointment	Requirement
OHS Act	17	Competent Health & Safety Representative
Construction Regulation	8.2	Competent Assistant Construction Manager

		If Principal Contractor decides to divide the project into areas, these will need to be managed by separate construction managers
Construction Regulation	8.7	Construction Supervisors Will be responsible for a specific scope of work/trade
Construction Regulation	8.8	Assistant Construction Supervisors Will assist the Construction Supervisors with a specific scope of work/trade
Construction Regulation	16(1)	Competent Scaffold Supervisor – oversee all scaffold work on site for the Principal Contractor SANS 10085-1:2004 also refers here
Construction Regulation	19(8)(a)	Competent Material Hoist Inspector – oversee the operations and inspections of a material hoist
Construction Regulation	21(g)(i) &(ii)	Competent Explosive Actuated Fastening Device (EAFD) controller – control the issue and return of all equipment and fastening mediums for EAFD's
Construction Regulation	24(d)	Competent Temporary Electrical Installation Inspector – where temporary connections or DB's are used/installed
SANS 10085-1:2004	Scaffold Erector, Inspector and Supervisor	Competent persons to be appointed to manage and control all scaffold on the project

Appointment of Responsible Persons:

The appointments and designations must be in writing, with the responsibilities clearly stated, area of responsibility, together with the period for which the appointment is made. This information must be communicated to and accepted by the appointees.

Copies of appointments together with detailed CV's and where applicable, certificated proof of competency and proof of registration where applicable must be maintained in the contractor's health and safety file and any changes in appointees or appointments are to be amended immediately.

Appointment of Safety Manager/Officer:

Referencing C.R 8(5), A contractor must, after consultation with the client and having considered the size of the project, the degree of danger likely to be encountered or the accumulation of hazards or risks on the site, appoint a full-time or part-time construction health and safety officer in writing to assist in the control of all health and safety related aspects on the site: Provided that, where the question arises as to whether a construction health and safety officer is necessary, the decision of an inspector is decisive.

Referencing C.R 8(6), No contractor may appoint a construction health and safety officer to assist in the control of health and safety related aspects on the site unless he or she is reasonably satisfied that the construction health and safety officer that he or she intends to appoint is registered with a statutory body approved by the Chief Inspector and has necessary competencies and resources to assist the contractor.

Appointment of OH&S Committee:

The Principal Contractor, with his sub-contractors must establish a Health and Safety Committee consisting of all the designated OH&S Representatives together with a number of management representatives whose number shall not exceed the number of OH&S Representatives on the committee. The members of the OH&S Committee must be appointed in writing.

The OH&S Committee must meet a minimum of once per month and consider, at least, the following Agenda:

- Opening and Welcome
- Present / Apologies / Absent
- Minutes of previous meeting
- Matters arising from previous minutes
- OH&S Representative reports
- Incidents reports and investigations
- Incident/injury statistics
- Other matters
- Close / Next Meeting

Assessment of Competency:

The Client must be reasonably satisfied that the Principal Contractor it intends to appoint has the necessary competency and resources to safely conduct the work they will be appointed for and likewise the Principal Contractor must be reasonably satisfied that the sub-contractors he intends to appoint have the necessary competencies and resources to safely conduct the work they will be appointed for. This must be established at the Tender stage and before appointments are made.

In order to ensure this, the Principal Contractor shall demonstrate to the Client that he/she and his/her sub-contractors have a suitable and sufficiently documented OH&S Plan and shall submit the following documentation for perusal and verification by the Client and NCC Health & Safety.

- Site and activity specific Health and Safety Plan
- Management structure as envisaged at Tender (organogram)
- Valid registration certificate with the Compensation Commissioner or FEM
- Proof of management training on the Occupational Health & Safety Act and other related training
- Any previous convictions under the OHS Act
- The Company's previous five years injury claims as reported to your Workmen's Compensation Insurer
- The Company's approach to co-ordination of on-site health and safety (safety officer, safety consultant etc.)
- Competency and Registrations of health and safety persons (safety officer, safety consultant etc.)
- Competency and Registrations of the Construction Manager (Detailed CV, Registration with SACPCMP & other entities and legal liability training)
-

12.6. Health and safety organogram

The Principal Contractor and each of his appointed sub-contractors shall submit and maintain in the health and safety file an organogram, with contact numbers, outlining the health and safety site management structure, including the relevant appointments for competent persons.

Such organograms shall be site specific and in addition are to be updated immediately when any changes to the site management structure are effected.

12.7. Method statements

All tasks to be executed must be accompanied by a method statement before work can commence.
The method statements must compiled must at least follow the following process:

- Must be developed by executing contractor(s)
- Must be specific to the task to be performed on site and must take into consideration existing site conditions
- Must follow the sequence of work according to the task to be performed
- Must take note of specialist competencies required to perform the task
- Must take note of legally appointed persons required to be part of the task
- Must take note of tools, equipment, plant and employee requirements
- Must take note of other legal documents and references that may affect the task
- Must take note of design drawings where applicable

12.8. Hazard Identification and Risk Assessments (cr 9)

The Principal Contractor is to provide their site specific baseline risk assessment based of the design risk register/assessment provided by the client. The clients and the Principal Contractors risk assessment should be provided to the bidding contractors for the project.

The following risk assessment process is to be adopted on the project by all contractors:

- Task specific hazard identification based off the method statement, and must follow the process from start to finish according to the method statement
- the identification of the hazards (incl. ergonomic) for each step of the method statement
- identify the associated risks of each hazard to which persons may be exposed to;
- an analysis and evaluation of the risks and hazards identified based on a documented method (risk matrix);
- the implementation of control measures and re-evaluation of the risks based off the controls;
- a documented plan and applicable safe work procedures to control the risks that have been identified;
- a monitoring plan; and
- a review plan (at least monthly, change in scope of work and/or following any incident or accident).

In addition to the above, the contractor will have a DSTI/JSA/TSA or equivalent procedure in place that is to be monitored and managed by the H&S team on the project.

Based on the risk assessments, the contractor must develop safe work procedures that will be applied to regulate the OH&S aspects of the construction.

The risk assessments, together with the site specific OH&S Plan and safe work procedures are to be submitted to **NCC Health & Safety**, prior to mobilisation and site establishment commence.

NB: A risk assessment shall be performed for all unplanned work and submitted to NCC Environmental Services – Health & Safety for approval, prior to work commencing.

Review of Risk Assessments: The Principal contractor and sub-contractors are to review the hazards identified, risk assessments and safe work procedures (SWP) monthly, or each time an incident occurs and/or changes are made to designs, drawings and construction methods and processes.

12.9. Contractor Management

Referencing Construction Regulations 7, the Principal Contractor shall fulfil all legal obligations with regards to the management of contractors appointed by the Principal Contractor to perform any part of the works., as outlined in Construction Regulation 7(1)(c).

The Principal Contractor must make available a comprehensive and updated list of all the contractors on site accountable to the principal contractor, the agreements between the parties and the type of work being done.

The Principal Contractor shall monitor health and Safety compliance of all appointed contractors to the requirements of their H&S Plan as well as the project health & safety specification by means of regular site audits and documentation verifications. Periods between these audits shall not exceed 30 days, as per Construction Regulations 7)1)(e)(vii).

12.10. OH&S goals and objectives

The contractor will set monthly OH&S objectives and targets, approved by the project manager/ construction manager. Performance towards these goals and objectives shall be monitored and reported on at the monthly health and safety committee meeting.

12.11. Monitoring and review of OH&S performance

The Contractor will maintain and provide to **NCC Health & Safety** the monthly and consolidated man-hours worked on the project, the number of incidents (Lost Time, First Aid Treatment and Medical Treatment) and the total cost and time consumed with respect to Lost Time Injuries. **It must be noted that any Lost Time Injury shall be communicated within 1 hour both verbally and in writing to NCC Health & Safety.**

12.12. Notification of construction work

The Principal Contractor shall, where the contract meets the requirements laid down in Construction Regulation 4, prior to commencing any work on site, notify the Department of Labour of the intention to carry out construction work and proof of such notification retained on site in the OH&S file. A copy of the Notification of Construction as well as proof of submission must be forwarded to **NCC Health & Safety** for record keeping purposes. Annexure 2 in the Construction Regulations to be referenced for this purpose. When changes in the appointments structures occur, the Department of labour must be notified and proof of communication must be retained.

12.13. Training, awareness and competence

Taking into account the definition of competent person contained in the Construction Regulations, the Unit Standard number, where such US is registered, for all training required by the Act and Regulations will be the minimum required proof of competency and training and such unit standard numbers are to be included in the Health and Safety Plan.

General induction training:

All Principal Contractor Management, employees and contractors, Consulting Team members and their visitors, all visitors and all employees of the Client who wish to gain entry onto site are to be in possession of proof of General Induction Training conducted by the Principal Contractor.

Site specific induction training:

The Principal Contractor will be required to develop project specific induction training, which shall be based on the risk profile, specifications and Legislation and provide such training for all employees and contractors and their employees in this regard. As work progresses, induction training must be reviewed and changed to keep it site specific.

All employees, members of the professional team and visitors to the site must undergo a comprehensive health & safety induction conducted by the Principal Contractor which must address at least:

- The scope of work of the project
- The hazards and risks that persons may be potentially exposed to
- The emergency procedure for the project
- Site Health & Safety Rules
- PPE Requirements
- Stop Work Authority

COVID-19 Training

The Contractor shall be required to provide the employees with training on COVID-19 at the workplace. The provided training shall, as a minimum include:

- Training on the workplace plan and risk assessment
- Toolbox talks on COVID-19 and preventive measures such as hand and respiratory hygiene and social distancing
- Training on the correct use and care for COVID-19 specific PPE

Note: Inductions for Principal Contractor employees and employees of contractors shall be conducted at least 24hrs in advance of them starting on the site.

All persons that have been inducted must be issued with an access card as proof of induction which will display:

- Their name and surname
- Company
- Discipline
- Date inducted
- Any known medical condition
- ID Number
- Photo

All employees on the site will undergo a re-induction when:

- They have been off site for more than a month
- Following the builders break
- They have suffered an injury
- The have been issued a non-compliance/conformance
- A major incident/accident has occurred on site

Training and competency:

All Appointees for legal appointments as required by the OHS Act and Regulations are to be in possession of proof of training and certified competent by an accredited training service provider and where a Unit Standard is registered against a legal appointment, that Unit Standard shall be deemed to be the minimum requirement. Where required, a valid medical certificate specific to the task performed as well as psychological assessment where relevant shall be kept on the Health and Safety File (required for operators and drivers of construction vehicles, mobile plant and other motorised equipment as well as for working at heights). All other appointments must be accompanied by training certificates. The Contractor shall ensure that follow-up and refresher training is conducted as the contract work progresses and the work environment or method of work changes. All proof of training required in terms of the OHS Act and Regulations are to be kept in the site OH&S file for audit purposes.

All employees working at height (any work conducted above foundation level) must have attended a course in Basic Working at Heights, aligned to US229998, and be in possession of a certificate of training issued by an accredited training provider. In addition, all employees working at height shall undergo a psychological questionnaire to assess their suitability for safe working at height.

Promoting awareness:

All Contractors are required to have a promotion and awareness campaign in place to create an OH&S culture in employees, using amongst others and not limited to, Toolbox Talks, OH&S Posters, Videos, Competitions, Incentive Schemes and Participative Activities. Toolbox talks to be conducted in open areas where employees can maintain social distancing.

Competence:

Referencing C.R Definitions; "competent person" means a person who-
(a) has in respect of the work or task to be performed the required knowledge, training and experience and, where applicable, qualifications, specific to that work or task: Provided that
where appropriate qualifications and training are registered in terms of the provisions of the National Qualification Framework Act, 2000 (Act No.67 of 2000), those qualifications and that training must be regarded as the required qualifications and training;
and
(b) is familiar with the Act and with the applicable regulations made under the Act;

The contractor shall assess each appointed person based on the Construction Regulations definition of competence.

12.14. Consultation, communication and liaison

Site safety committee meetings will be held at least on a monthly basis and in accordance with the OHS Act or as determined by the associated risks on site. This does not preclude the requirement that each contractor will implement and maintain its own safety meetings where applicable.

In addition to the above, communication may be directed to **the Client** and **NCC Health & Safety**, in writing, as and when the need arises.

Consultation with the workforce on OH&S matters will be through their supervisors, OH&S representatives, the OH&S committee and their elected trade union representatives, if any.

The site manager or his site safety officer will be responsible for the dissemination of all relevant OH&S information to the other contractors, e.g. design changes agreed with **the Client** and the Designer, instruction by **the Client**/Principal Agent/**NCC Health & Safety**, the exchange of information between contractors and the reporting of hazardous and/or dangerous conditions or situations, etc.

In addition to toolbox talks, each supervisor is to conduct a Daily Safe Task Instruction (DSTI) talk with his team, relevant to the area of work and tasks to be performed. The risk assessment/s relevant to the daily activities to be executed is to be communicated during the DSTI. In addition, the Contractors will be required to conduct Toolbox Talks with their employees on a **weekly basis** as a minimum and records of such kept on the OH&S file. Employees must acknowledge the attendance of Toolbox Talks, which record must likewise be kept on the OH&S file.

The Contract Manager or suitable designate of each appointed contractor is required to attend all site OH&S meetings.

12.15. Audits, inspections and reporting of corrective actions

Monthly audit by Client: NCC Health & Safety will conduct a monthly health and safety audit and document verification to comply with the requirements of Construction Regulation 5(1)(o), to ensure that the Contractor has implemented and is maintaining the agreed and approved OH&S Plan. Written proof of rectification in instances of non-compliance is to be issued to NCC Health & Safety.

A senior representative of the Contractor must accompany **NCC Health & Safety** on all Audits and Inspections and may conduct his/her own audit inspection at the same time.

Other Required Audits and Inspections by NCC Health & Safety: Where the Principal Contractor as appointed in terms of Construction Regulation 5(1)(k) elects to appoint a contractor/sub-contractor in terms of Construction Regulation 7(1)(c)(v), the Principal Contractor shall conduct monthly health and safety audits and document verification of the sub-contractor's health and safety system and health and safety file as required by Construction Regulation 7(1)(c)(vii) and the Client or NCC Health & Safety reserves the right to conduct detailed verification audits and inspections to verify their compliance to the OH&S Plan, OHS Act and regulations. (Refer Sec. 8.4.2. above).

NCC Health & Safety will conduct regular site inspections on a schedule as agreed with **the Client.** In the event of a Contravention Notice being issued during the inspection, the Contractor shall provide documented proof that the Contravention Notice has been closed out as per the remedial action recommended by **NCC Health & Safety**, within the stipulated time frame of the inspection report.

Contractor's Audits and Inspections: The Contractor is to conduct his own monthly internal audits to verify compliance with his own OH&S Management system as well as with this specification and is further required to conduct monthly audits of each of his sub-contractors to verify compliance with their OH&S Plans as well as with this specification and retain documented proof thereof. Such audit reports must be made available to NCC Health & Safety upon request. Audit scores and major findings to be communicated to the Client & NCC Health and Safety during site meetings.

Inspections by OH&S Representatives and other Appointees: The Principal Contractor's OH&S Representatives are to conduct monthly inspections of their areas of responsibility and report thereon to their foreman or supervisor whilst other appointees must conduct inspections and report thereon as specified in their appointments.

Recording and Review of Inspection Results: Individual Contactors shall be responsible to ensure that all the results of abovementioned inspections are recorded in writing, reviewed at OH&S meetings, endorsed by the chairman of the meeting and placed on the OH&S file.

Reporting of Inspection Results: The Principal Contractor shall be required to provide NCC Health & Safety with the documented findings of the contractor's inspections as well as any remedial actions implemented, in a concise monthly report.

12.16. Accident and incident recording, reporting and investigation:

Accident and Incident Recording: The Principal Contractor shall open and maintain an Accident and Incident Register for the duration of the project, in which the contractor shall record all accidents and incidents.

This register shall be structured to identify accident and incident trends by recording the type and location of injury and the cause of injury.

Reportable incidents: Referencing Section 24 of the OHS Act and General Administrative Regulation 8, the contractor must report all incidents where an employee is injured on duty to the extent that he/she:

- Dies
- Becomes unconscious
- Loses a limb or part of a limb
- Is injured or becomes ill to such a degree that he/she is likely either to die or to suffer a permanent physical defect or likely to be unable for a period of at least 14 days either to work or continue with the activity for which he/she is employed

  OR WHERE
- A major incident occurred
- The health of safety of any person was endangered
- Where a dangerous substance was spilled
- The uncontrolled release of any substance under pressure took place
- Machinery or any part of machinery fractured or f ailed resulting in flying, falling or uncontrolled moving object
- Machinery ran out of control

Where any of the abovementioned reportable incidents has occurred, the Contractor shall report to **the Client**, **NCC Health & Safety** and the Provincial Director of the Department of Labour immediately by telephone and fax or email.

The Contractor is required to provide **the Client** and **NCC Health & Safety** with copies of all statutory reports required in terms of the OHS Act within 7 days of the incident occurring.

The Contractor is required to provide **the Client** and **NCC Health & Safety** with copies of ALL internal and external accident/incident investigation reports including the reports contemplated above and below, within 7 days of the incident occurring.

Accident and Incident Investigation: Referencing General Administrative Regulation 9, the Contractor is responsible for the investigation of all accidents/incidents where employees and non-employees are injured to the extent that they have to be referred for medical treatment by a doctor, hospital or clinic. Results of such investigations are to be entered into the Accident/Incident register mentioned above.

The contractor is responsible for the investigation of all major and non-injury incidents as described in Section 24(1)(b),(c) of the OHS Act and keeping a record of the results of such investigations including the steps taken to prevent similar accidents in future.

The contractor is required to investigate and record all high potential near miss incidents in order to implement proactive preventative measures.

The Contractor in conjunction with the Site Manager is responsible for the investigation of all construction related road traffic accidents and keeping a record of the results of such investigations including the steps taken to prevent similar accidents in future.

The Client and **NCC Health & Safety**, reserve the right to hold its own investigation into any incident or to call for an independent external investigation as deemed necessary. All minor incidents and accidents are to be reported on a weekly basis to **NCC Health & Safety**.

12.17. Duty to inform

Referencing Section 13 of the OHS Act and General Administrative Regulation 8, without derogating from any specific duty imposed on an employer by this Act, every employer shall:

- As far as reasonability practicable, cause every employee to be made conversant with the hazards to his health and safety attached to any work which he has to perform, any article or substance which he has to produce, process, use, handle, store or transport and any plant or machinery which he is required or permitted to use, as well as with the precautionary measures which should be taken and observed with respect to those hazards;
- Inform the health and safety representative concerned beforehand of inspections, investigations or formal inquiries of which he has been notified by an inspector, and of any application for exemption made by him in terms of section 40; and
- Inform a health and safety representative as soon as reasonably practicable of the occurrence of an incident in the workplace or section of the workplace for which such representative has been designated.

- High rated and high potential incidents / accidents must be formally communicated to all contractors. Personal details of injured or affected persons must be redacted.

13. OPERATIONAL CONTROL

13.1. Security and access control

Referencing General Safety Regulation 2C and Construction Regulation 27, the Principal Contractor will develop and establish an Access Management Plan outlining the procedures to be taken to prevent unauthorised access to site and site access rules and shall further ensure that the access management plan is effectively implemented and maintained throughout the construction period.

The site shall be adequately protected on all sides by means of diamond fencing, 1.8 meters in height, adequately secured to prevent unauthorised access to the construction activities. The site office and laydown area shall be adequately hoarded with a controlled access point and any additional gates where no access control measures are in place are to be kept locked at all times.

In the event that a portion of the hoarding is temporarily removed or an access gate is unlocked for temporary access, for whatever reason, the Contractor shall ensure that suitable access control is maintained at such opening by deploying security/authorised personnel, pending the closure/locking of such temporary access area. The hoarding shall be maintained and kept in good condition for the duration of the project.

The access management plan is to make provision that non-employees will not be allowed on site unaccompanied and without good reason and provision shall be made for the induction of visitors to the site.

The Principal Contractor or Site Manager shall develop a set of Site Security Rules and Procedures and maintain these throughout the construction period.

13.2. COVID-19 Symptom screening

The contractor shall develop, document and implement a screening and monitoring programme and ensure that no person entering the workplace has any of the associated symptoms of COVID-19 infection. The plan should also allow for periodic random testing or testing of employees that are developing any of the listed symptoms during the course of the day.

The primary symptoms that must be screened for /monitored include:

- Cough,
- Sore throat,
- Redness of eyes,
- Shortness of breath,
- Difficulty in breathing, and
- A body temperature exceeding 37,8°C using an infrared thermometer.

The following symptoms can also be screened for:

- Body aches
- Diarrhoea,
- Loss of smell,
- Fatigue,
- Loss of taste,
- Weakness, and/or
- Nausea
- Tiredness.
- Vomiting,

13.3. Public health and safety

Referencing OHS Act Section 9, all Contractors will be responsible for ensuring that all non-employees, consulting team members and their visitors, all visitors and all **Client** employees who wish to gain entry onto site in addition to all non-employees working on this project and are affected by the construction work are made aware of the dangers likely to arise from said construction work as well as the precautionary measures to be observed to avoid or minimise those dangers.

Examples of non-employees are: Non-employees entering the site for whatever reason, the surrounding community, passers-by to the site (pedestrians and road users) and the general public.

Appropriate signage warning of construction related hazards must be posted in prominent positions in and around the construction site and all employees on site must be instructed to ensure that non-employees are protected at all times.

The construction site area shall be fenced as a minimum with a diamond mesh fence of at least 1.8 meters in height. The contractor will ensure that all access to the construction area is controlled and enforced.

All non-employees on **entering** the site must receive induction on the hazards and risks and the control measures to mitigate these, and shall be accompanied to the site office by a person designated thereto.

Adequate dust suppression measures must be implemented to minimise the exposure of the surrounding community and general public to excessive levels of airborne dust.

All truck loads must be covered or adequately secured to prevent the fall of material onto public roads.

Noise levels are to be managed during construction to minimise disturbance to neighbouring properties and the general public in proximity to the construction site.

COVID-19 Signage

The contractor shall install signage with site rules specific to the prevention of spreading the COVID-19 virus at the access control points of the site.

Furthermore the contractor shall install relevant and applicable signage at all points designated for washing of hands and sanitising areas, as well as general COVID-19 awareness signage throughout the workplace.

13.4. Occupational health

Noise induced hearing loss

Noise induced hearing loss is a highly underrated occupational condition. Occupational noise emitted by construction machinery and power tools must be controlled as far as possible by implementing engineering solutions such as noise dampening, regular maintenance, servicing and inspection, screening off the noise, and reducing the number of persons exposed. Personal protective equipment such as earmuffs and earplugs must also be used in conjunction with engineering controls so as to reduce noise exposure to below the acceptable levels. Each and every contractor is required to identify sources of noise which could impact on its personnel, to then assess the levels of noise, followed by implementing the necessary control measures to reduce the noise to acceptable levels. This must be clearly set out in the Contractor's hearing conservation programme contemplated in the NIHL Regulations

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Ergonomics

Ergonomics is the study of how employees relate to their workstations. We advise the Principal Contractor and Contractors to take this into consideration when conducting risk assessments, thereby improving the employee-task relationship, which will in turn improve productivity and reduce chronic conditions such as back strains, joint problems and mental fatigue, amongst others.

Dust control

Dust control (silica dust) – The Contractors must ensure that dust control measures are implemented and enforced in order to minimise the levels of exposure to below the legal limits.

COVID-19 Ventilation

The workplace must be always kept well ventilated by natural or mechanical means to reduce the viral load. It is suggested to keep rooms ventilated when the AC is not running; very high humidity should be avoided. The contractor's workplace must specify how the workplace shall be ventilated.

13.5. Welfare facilities

The Principal Contractor shall provide, construct where necessary and maintain on the construction site, the necessary facilities as required by Construction Regulation 30 and Facilities Regulations.

In the event that the Principal Contractor appoints other contractors as contained in CR 7(1)(c)(v), the principal contractor shall ensure that any contractor so appointed provides welfare facilities for his employees as

contained in CR 30. In the event that such appointed contractor is unable to make provision for the required facilities, it shall be incumbent on the Principal Contractor to provide such facilities for the employees of his sub-contractors and number such employees with his own to maintain the ratios as specified in Construction Regulation 30.

Sanitary facilities are to be cleaned on a daily basis and free toilet paper as well as hand washing facilities provided. In the instance of hired chemical toilets, the supplier shall be mandated by the Contractor to service and thoroughly clean the toilets on a bi-weekly (twice a week) basis, regardless of the ratio. The maximum ratio of employees to sanitary facilities is 30:1 and separate facilities for each gender.

In the event that the Contractor/s is required to hire chemical toilets on a Hot Site / Brownfields site, it's important that the placement / location thereof is planned and approved by the client in order to assure serviceability and to minimise public exposure to unpleasant odours.

Where required, separate facilities for changing, for each gender are to be provided.

Eating areas are to be constructed in such a manner that they provide shelter from sun, wind, rain and other inclement weather and shall be large enough for all employees employed by the Contractor. Such eating areas shall be constructed taking into account the employees of sub-contractors in the event that the sub-contractor is unable to provide adequate facilities.

The contractor shall detail how they will manage shift work and breaks, such as tea and lunch times, at the workplace in order to facilitate compliance to the requirements of this specification, specifically the requirements for social distancing .

- Site conditions

Housekeeping

The requirements of Construction Regulation 27 shall be implemented by Contractors on the site and maintained at all times.

Work and access areas and walkways shall be kept clear of materials and equipment for use at all times and scrap, waste and debris removed at appropriate intervals.

The Contractor shall ensure that the construction site is adequately hoarded with controlled access points to prevent unauthorised access.

COVID-19 Cleaning and sanitising

The contractor shall be required to develop, document and implement a strict cleaning and sanitising programme that must be implemented on site. This programme must include:

- Cleaning and sanitising agents that shall be permitted to be used on the project (MSDS's must be available on site)
- Schedule for cleaning different areas,
- Separate schedule for sanitising work areas,
- Special considerations for high traffic areas and surfaces, and
- Safety measures for cleaning employees with relation to the use of the cleaning products and exposure to the COVID-19 virus.

Stacking and storing

The Contractor shall ensure that the requirements of Construction Regulation 28 and General Safety Regulation 8 are implemented and maintained for all stacking operations for the duration of the construction.

Stacking and storage areas to be clearly defined and demarcated and kept under control so as not to encroach onto roadways and walkways.

Brick pallets are preferably to be stacked in single layers. In the event that space for stacking and storage is limited, brick pallets are not to be stacked more than two tiers high under any circumstances and the stability of such stacked tiers to be monitored and maintained.

Where piping is stacked, adequate chocks are to be utilised to prevent the movement of pipes.

Stacks are to be dismantled from the top and employees are to be trained by all contractors in the correct and safe dismantling of stacks. Unstable or unsafe stacks are to be dismantled and re-stacked immediately.

13.6. Emergency preparedness and response

The Principal Contractor must develop a site emergency preparedness and response plan, accompanied by a site layout, detailing the appropriate appointments for the firefighting team, bulk first aid and the emergency coordination team. In addition to which, emergency escape routes throughout the site and emergency assembly points are to be identified and depicted by the use of appropriate symbolic signage.

The emergency preparedness and response plan must be approved by NCC Health & Safety in consultation with the Principal Contractor. Instances where the client has existing emergency plans in place, the Principal Contractor's emergency preparedness and response plan must be aligned with the existing client emergency plan. Should the early warning fire alarm system not be integrated alternate adequate means of notification must be implemented i.e. Sirens, each zone/area must by definition be accommodated in the site evacuation plan. (Refer to Environmental Regulation 9 and Construction Regulation 29).

The Site Manager shall conduct regular emergency identification inspections and establish what emergencies could potentially develop. He/she must then develop a detailed contingency plan and emergency procedure, taking into account any emergency plans that may already be in place. Such inspections and revision of the contingency plan and emergency procedures shall be conducted as the project progresses and the construction site changes.

The Principal Contractor shall conduct emergency drills at least quarterly to test their efficiency and to familiarise employees with them. Records of such drills will be kept in writing on the OH&S file.

The Principal Contractor and each sub-contractor shall appoint a competent person to act as their Emergency Controller/Coordinator, supported by an appointed team of first aiders/ fire fighters / marshals.

A site-specific contact list of all emergency service providers (Fire Department, Ambulance, Police, Medical and Hospital, etc.) must be maintained and readily available to site personnel. Emergency contact lists are to be prominently displayed in the site office laydown area. An emergency situation, which is likely to require outside emergency assistance, may attract mass circulation, written media or electronic media attention and be harmful to the Client's reputation. No person may comment on any incidents on site without prior approval from the Client.

13.7. Fire prevention

Fire precautions

The Contractors must provide adequate, regularly serviced fire-fighting equipment located at strategic points on site such as at their stores and during hot work activities. Such extinguishers should be suitable for all classes of fire foreseen. The appropriate notices and signs must be posted up as required. The Principal contractor will need to conduct a preliminary fire risk assessment of the site and office/stores compound before starting work as part of this 'completion project'. Should any questions arise as to the validity of such fire risk assessment conducted by the Principal Contractor, the local Fire Department's fire prevention division must be consulted for assistance with such site fire risk assessments to ensure that the necessary fire-fighting equipment is adequate during the construction phase. Such fire risk assessment will have to be reviewed at least monthly and after any incident and/or before any new hot work activity. Wherever *'hot work' is taking place, additional fire extinguishers must be on hand. Contractors are responsible for ensuring compliance with hot work procedures and must be in possession of method statements detailing the safe working procedures.

*'Hot work' includes all work that generates a spark or flame.

Hot works

The Principal Contractor shall ensure that all employees and all contractors doing hot work, which includes steel cutting, grinding, welding, operating generators or other fuel driven equipment, shall do so in strict compliance to General Safety Regulation 9 and Construction Regulation 29(f). It is a requirement of **the Client** that a dedicated fire extinguisher is available at each hot work site, regardless of proximity to other hot works taking place.
Specific PPE for hot work shall be provided, including fire resistant overalls, leather chaps and/or aprons, leather gloves, face shields and adequate eye protection. Such PPE shall be regularly inspected, maintained and replaced when necessary. Use of PPE provided for hot work activities to be enforced as per the requirements of GSR 2(6).

Use and temporary storage of flammable liquids

The contractor is to ensure that all flammable liquids are used and stored in strict compliance to Construction Regulation 25 and General Safety Regulation 4.

In particular, it is a requirement of the Client that all flammable liquids left on site are stored in a flammable liquids store and the requirements of General Safety Regulation 4(10) in respect of flammable liquids stores are to be stringently followed and will be rigorously enforced by **NCC Health & Safety**.

Flammable substances must be stored separately, away from other materials, and in a well-ventilated area (appropriate cross ventilation). A competent person should be appointed to be in control of this portfolio.
Stores must be well ventilated, preventing the build-up of flammable and toxic gases/vapours.

No bulk storage of chemicals and similar substances are permitted on this premises – maximum of 40 litres per substance. Should substances have to be held in larger quantities, the contractor concerned will have to notify the local fire department which will have to conduct the necessary inspection and assessment of the site and report accordingly.

Plant and machinery may only be serviced and repaired in designated areas where control measures can be effectively implemented to prevent spills, leaks and other environmental contamination. Drip trays must be used.

13.8. First aid

The Principal Contractor must provide First Aid equipment and if necessary a stretcher and have as a minimum one qualified, full time, First Aider/s and further required as per General Safety Regulation 3 of the OHS Act.

The Contingency Plan of the Contractor must include the arrangements for speedily and promptly transporting injured/ill person/s to a medical facility or of securing emergency medical aid to person/s that may require it.

All contractors on site shall wherever possible assist other contractor's injured employees as the need arises.

13.9. Alcohol and drugs

Referencing General Safety Regulation 2A, Contractors shall develop a Drug and Alcohol Policy and communicate such policy to their employees and sub-contractors, proof of such policy and communication to be retained in the health and safety file.

No alcohol and drugs will be allowed on site. No person may be under the influence of alcohol or any drug or have in his/her possession any alcohol or drug while on the construction site. Any person appearing to be under the influence of alcohol or any drug shall not be permitted to remain on site or be granted entry onto the site.

Any person on prescription medication must inform his/her superior, who shall in turn report this to the Principal Contractor forthwith. Any person suffering from any illness/condition requiring medication that may have a negative effect on his/her/anyone else's health or safety performance must report this to his/her superior.

Any person suspected of being under the influence of alcohol or other drugs shall be removed from site and sent home immediately.

Alcohol testing in the workplace may only be conducted using single use test units. The testing units shall be disposed of in the accordance with the manufacturer's specifications and contractors waste management plan (biological waste).

Drug testing will only be permitted to be done by an occupational health facility either using urine or blood sampling.

13.10. Demolition

All demolition work shall be done with close reference to the requirements of Construction Regulation 14 and all necessary precautionary measures as outlined in CR 14 to safeguard persons from controlled and uncontrolled collapse of the structure and fall of material from demolition and/or disposal of material shall be stringently applied.

A detailed structural engineering survey of the structure to be demolished shall be carried out and a method statement for the procedure to be followed for the demolition of the structure or part thereof, to be developed by a competent person, prior to any demolition work commencing.

A detailed Risk Assessment shall be compiled from the Method Statement and reviewed by **NCC Health & Safety**, **prior** to the commencement of any demolition work.

Demolition work shall only be carried out under the constant supervision of a competent person who has been appointed in writing.

As the demolition progresses, the integrity of the structure shall be checked at intervals as determined in the method statement, by the appointed competent person, in order to prevent any premature and/or unplanned collapse.

Steps shall be taken to ensure that where a structure is being demolished, no floor, roof or any other part of the structure is overloaded with debris or material that would make it unsafe. It is a prerequisite that the floor and roof load bearing capacity be established prior to any storage or accumulation of tools and equipment, building rubble and materials. **The established load capacity may under no circumstances be exceeded.**

13.11. Excavations

All excavation and piling shall be conducted with close reference and compliance to Construction Regulation 13 and the recommendations contained in the geotechnical report. Where excavations will exceed 1m in depth, the Contractor will be required to submit a Method Statement and Risk Assessment to **the Client** and **NCC Health & Safety** for approval prior to commencing with piling and excavation, and **the Client/Client's Principal Agent** will issue a permit to proceed once the Risk Assessment and Method Statement are approved.

Every excavation must be provided with a safe means of access and egress that must be within 6 metres of any employee within the excavation and extend a minimum of 900mm above the ground. Upon entering any excavation deeper than 1.8m the precautionary measures contained in General Safety Regulation 5 – Work in confined spaces must be observed and complied with at all times.

Warning signage to that effect is to be prominently displayed next to any excavations within which or where persons are working or carrying out inspections or tests. Where such excavations in which persons are working are in proximity to construction vehicle and mobile plant thoroughfares, demarcation shall be placed at least 1m away from the edges of such excavation to ensure that no vehicle or plant moves near the edge of such excavation and may cause its collapse.

The location and nature of any existing services such as water, electricity, gas etc. must be established before any excavation is commenced with and any service that may be affected by the excavation must be protected and made safe before employees enter the excavation.

Where excavations are done in close proximity to any existing structure, where the foundations of said buildings will be exposed, the Contractor shall ensure that the stability of the structures is not affected, by installing adequate support measures to the structures and sufficient shoring of such excavations.

The contractor shall ensure that no load, material, plant or equipment is placed or moved near the edge of any excavation where it may cause its collapse and endanger the safety of persons. Where excavations are in proximity to construction vehicle roadways, the contractor shall make provision for the erecting of barricading at a distance from the edge of the excavation that will ensure the stability of such excavations is not compromised.

Every excavation including the shoring and bracing or any other method to prevent collapse must be inspected by the appointed competent person as follows:

- Daily before work commences and before every shift

- After every blasting operation
- After an unexpected collapse of the excavation
- After substantial damage to any supports or after rain, high winds or any other adverse weather condition.

The results of all inspections must be recorded in a register kept on site.
Special precautions to be taken against conditions outlined in the Geotechnical Report 21013-R01 by Shriram Geotechnical Consulting

13.12. Electrical safety

Portable electrical tools and equipment

Portable electrical tools and equipment includes every unit that draws electrical power and is moved around for use in the workplace i.e. drills, saws, grinders, portable lights, etc. and the Contractor shall comply with the requirements and provisions of Electrical Machinery Regulation 10 for the standards, maintenance and inspection of portable electrical tools and equipment.

In addition electrical appliances such as fridges, hotplates, heaters, etc. must be inspected and maintained to the same standards as portable electrical tools and equipment.

Extension cords are deemed to be portable electrical equipment and must be inspected and maintained to the same standards as portable electrical tools.

Portable electric lights when used as an additional source of light in work areas with inadequate natural light, shall be constructed, insulated, safeguarded and used in compliance to Electrical Machinery Regulation 11. The contractor is to ensure that wherever work is performed where the lighting conditions are less than the minimum requirement as defined in Environmental Regulation 3 and relative schedules, that this is supplemented with additional lighting capacity to ensure that all works contemplated can be conducted safely.

The Principal Contractor and any sub-contractor shall not undertake any night work without written permission from **the Client** or its Principal Agent. **NCC Health & Safety** is to be notified in all instances when night work occurs. The principal contractor shall ensure that adequate lighting is provided for all night work and failure to do so shall result in the work being stopped.

Electrical installations and machinery

The installation, use and inspection of temporary electricity installations for the construction project shall be in strict accordance with Construction Regulation 24 and Electrical Installation Regulations.

The Contractor shall appoint in writing a Temporary Electrical Installation Controller, who shall keep all temporary DB's locked and under his control at all times. Main switches shall be accessible through a cut-out in the door of the housing cabinet.

The Contractor shall further appoint a master electrician, registered with the Department of Labour to conduct weekly inspections as well as a monthly earth leakage test of all temporary DB's, including any DB's in temporary containers and site offices.

A copy of the certificate of compliance for each temporary electrical installation shall be kept in a weather proof sleeve on the inside of the door of the housing cabinet and a copy to be retained in the Contractor's site safety file.

Electrical and mechanical lock out

The Principal Contractor shall develop an Electrical and Mechanical Lockout Procedure referencing Driven Machinery Regulations, General Machinery Regulations and Electrical Machinery Regulations, which lockout procedures shall be submitted to **the Client** and **NCC Health & Safety** for approval prior to commencing construction. This lockout procedure must be communicated to and adhered to by all contractors on site.

13.13. Working in elevated positions

Fall protection planning

Referencing Construction Regulation 10 and General Safety Regulation 6, a pre-emptive Risk Assessment and Fall Protection Plan will be required for any work to be carried out above two metres from the ground or any floor level, such work being classified as Work in Elevated Positions/Working at Height. The fall protection plan shall contain all the requirements of Construction Regulation 10(2) and in addition a procedure addressing the review of the fall protection plan and a documented disciplinary process for non-compliance to the fall protection plan. Employees working in elevated positions must be trained to do this safely and without risk. It will be required that all employees will undergo a basic working at heights training programme aligned to US 229998 before they will be allowed to commence work. Proof of training must be maintained on the contractors site safety file.

The Principal Contractor's fall protection plan must detail the following safety measures: Protection of decking edges; finished floor slab edges; stairways; floor penetrations; lift shafts; and all other openings and areas from where a person may fall.

The Principal Contractor and contractors' fall protection plans must include the strategies for management of edge protection and penetrations.

As far as is practicable, any person working in an elevated position will work from a platform, ladder or other device that is at least as safe as if he/she is working at ground level and whilst working in this position be wearing and using a **double lanyard, full body harness with shock absorbers** that will be worn to prevent the person falling from the platform, ladder or other device utilised.

This safety harness will be, as far as is possible, secured to a point away from the edge over which the person might fall and the double lanyard must be of such a length that the person will not be able to move over the edge. Where work is conducted in close proximity to edges, work positioning belts/lanyards shall be utilised to prevent persons from falling.

Medical fitness

Specific medical certificates of fitness for all employees working in elevated positions must be available on site. All medical certificates must be issued by a registered Occupational Health Practitioner. In addition, every employee working in elevated positions shall complete an assessment questionnaire to ascertain their physical and psychological suitability to work at heights.

Roof work

Where work on roofs is carried out, the Risk Assessment must take into account the possibility of persons falling through fragile material, skylights, soffits and openings in the roof, steel support work trusses and purloins so designed to support the roof structure.

The Risk Assessments shall place specific emphasis on the placing and handling of roofing materials such as Inverted Box Rib Sheeting (IBR sheeting) or similar materials, (including contingency safety measures), which when exposed to windy conditions represent a serious safety hazard.

Life lines

All life lines and secure/anchor points must be designed and signed off by a competent appointed person or Design Engineer. Anchors must comply with SANS 50795:1996, in particular: "Anchors must comply with SANS 50795:1996

Persons that select, install and test anchors classified as "basic anchors" must be competent to perform that work. {Basic anchors are limited to class "A1" anchors as defined in SANS50795:1996 set into not less than C20/25 quality concrete}."

Life lines, fall arrest equipment and fall prevention equipment must have a SWL displayed and the SWL certificate must be kept on site. All fall arrest and fall prevention equipment shall be subject to inspections and tests as required by the Regulations and SANS standards and records of such inspections and tests kept in the site health and safety file.

Edge protection and barricading

Referencing the requirements and provisions of Construction Regulation 10, the Principal Contractor must ensure that all exposed edges and openings are guarded and demarcated at all times until permanent protection has been erected. All temporary guarding and edge protection shall be of sufficient, height, strength and stability to prevent the fall of persons.

The Contractor has the following options when contemplating the protection of openings, slabs and edges:

- A physical barrier at the edge of the opening/slab, which must be of sufficient strength to support the weight of a person in the event of a fall (wire and/or orange netting will not be deemed sufficient fall prevention).
- External façade scaffold complete with a fully boarded platform at the same level as the slab with a handrail and knee rail.
- A visual barrier in the form of orange webbing, at a distance of at least 1.5 metres from the actual edge of such slab, opening.

Regardless of the edge protection provided, any employee working in proximity to edges or openings shall attach a double shock absorbing lanyard full body harness to a stable structure, able to support the weight of the employee and any equipment he may be working with in the event of a fall.

Should none of the above be achieved, as a last resort, the Contractor must endeavour to gain exemption from Construction Regulation 10(4)(a), as contained in Section 40 of the OHS Act and obtainable in writing from the Department of Labour.

Site management team will need to undertake daily inspections of all areas to ensure that drop-off edges and openings are guarded and protected adequately. Such inspections must be logged on an inspection register(s). The formwork contractor must do the same in areas under its control.

Scaffolding

Broadly speaking, scaffolding is considered as a structure whereas mobile access towers is deemed to be equipment used by trained individuals for the purpose of gaining access to elevated work positions to carry out light-duty, short duration maintenance type of activities.

If steel scaffolding is to be erected on any premises for the purpose of carrying out “alterations, renovations, repairs, demolition or dismantling of or addition to a building or any similar structure” {see full definition of construction work in Construction Regulations 2014} then such scaffolding must comply with both Regulations 12 and 16.

Scaffolding must be erected, used and maintained safely in accordance with Construction Regulation 16 and SA Bureau of Standards Code of Practice, SANS 10085-1 entitled, "The Design, Erection, and Use & Inspection of Access Scaffolding”.

Detailed consideration must be given to all scaffolding to ensure that it is properly planned to meet the working requirements, designed to carry the necessary loadings and maintained in a sound condition. It must also be ensured that there is sufficient material available to erect the scaffolding properly.

Scaffolding may only be erected, altered or dismantled by a person who has the appropriate training and experience in this type of work or under the supervision of such a person, who has been appointed in writing.

Specific attention must be given to the appointment of Scaffolding Inspectors and Scaffolding Erectors who shall not be the same person. The continuous inspection of each scaffolding structures must be recorded and kept up to date on the applicable scaffold inspection register.

Tags/Signs reflecting the status of the scaffold must be used and fixed to the structure at all times. These tags will reflect either ‘Safe to use’ or ‘Scaffold not Safe’ on both sides of the tag/sign, to avoid confusion regarding the status of the scaffolding structure. Scaffolding with no tags attached will be deemed to be non-compliant.

On completion of the erection of scaffolding, the appointed scaffold inspector will inspect the structure and will ensure it is in sound working order and complies with all statutory regulations. In the event that the scaffolding is erected by a supplier, the supplier will then issue a handover certificate to the Contractor as the user of the scaffolding. Drawings, design and specifications shall be signed by a registered professional engineer.

The completed scaffold shall also be inspected by the registered professional engineer for approval prior to use. Should any additional load i.e. a hoist or advertising banners be added to the scaffold at a later stage, the professional engineer must approve the modification.

Ladder work

Referencing General Safety Regulation 13A, The Principal Contractor must ensure that all ladders are fit for purpose, compliant to the requirements as set out in the regulation, are noted on a register, are visually inspected daily prior to use, with monthly checklists maintained and kept up to date.

All extension ladders are to be maintained in good safe working order; the correct height for the task being performed; extend at least 900mm above the landing being accessed; fastened and secured against any movement and placed at a safe angle.

Stepladders are to be maintained in a good state of repair, safe for use, must be the correct height for the task and the top two rungs may not be used. All spreaders and locking devices provided for safety are to be in place, undamaged and maintained in good working order.

Records of inspections must be kept in a register on site. Contractors using their own ladders shall comply with the provisions of General Safety Regulation 13A.

13.14. Temporary works

The placement of edge protection at deck edges must be coordinated so as to minimise the time that such edge protection is not in place through communication between the Principal Contractor and Temporary Works Supervisor.

The Temporary Works Contractor and other relevant Contractors must ensure that the provisions of the Construction Regulations are adhered to. These provisions must include but not be limited to ensuring that all design drawings are available on site, that all formwork and support work equipment used is examined for suitability before use (by the supplier) with proof of these inspections forwarded to the hirer/user, that all formwork and support work (including back-propping) is inspected by a competent person appointed in writing, immediately before, during and after placement of concrete or any other imposed load and thereafter on a daily basis until the formwork and support work has been removed. Records of all inspections must be kept in a register on site held by the Temporary Works Contractor. The inspection records must be suitably sequenced and filed for easy reference by the H&S Agent and other interested party. The necessary edge protection guard rails must be fitted before any trade begins work on a formwork deck or related structure. Such guard rail system must be of a recognised/acceptable design and must be suitably strong to carry the lateral force of a person.

In addition any platform, slab, deck or surface forming an edge over which a person may fall must be fitted with guard rails at two different heights as prescribed in SANS 10085-1 Code of Practice for the Design, Erection, Use and Inspection of Access Scaffolding, and such guard rails shall be of adequate strength and stability to prevent the fall of persons.

The removal of edge protection from temporary works decks and the subsequent replacement thereof at the finished floor edge must be systematically coordinated by the Principal Contractor, as soon as practicable after the casting of concrete slabs.

During the erection of temporary works, warning signage shall be prominently displayed at the access landing point of temporary works decks as well as at any openings in the temporary works deck not safeguarded by edge protection.

The edges of all decking must be provided by edge protection fence panels preventing the chance of objects falling under or through such panels.

In order to ensure compliance to the requirements of CR12, the Contractor shall ***have a separate file available for audit*** *that contains the requirements of CR 12, specifically as outlined below:*

CR 12(1)

A contractor must appoint a temporary works designer in writing to design, inspect and approve the erected temporary works on the site before use: Each contractor to appoint a competent (proof of competency to be available) temporary works designer. In the event that the temporary works is contracted out to a sub-contractor, in addition to the 7(1)(c) sub-contractor appointments, the competent persons must be appointed as the Temporary Works designer by the Principal Contractor.

Such person appointed as the Temporary Works Designer, shall further be conversant with and comply with the requirements contained in CR 6 Duties of designer, section (2) outlining the duties of the temporary works designer, in respect of ensuring the integrity and safety of temporary works at all times.

CR 12(3)(b); CR 6(2)(b)

All temporary works structures are done with close reference to the structural design drawings, and where any uncertainty exists the structural designer should be consulted;

CR 12(3)(c); CR 6(2)(c)

Detailed activity specific drawings and calculations pertaining to the design of temporary works structures are kept on the site and are available on request to an inspector, other contractors, the client, the client's agent, NCC Health & Safety or any employee: Temporary works design drawings and calculations to be kept and maintained (latest available drawings) in the temporary works file as mentioned above.

CR 12(3)(f)

All temporary works structures are inspected by a competent person immediately before, during and after the placement of concrete, after inclement weather or any other imposed load and at least on a daily basis until the temporary works structure has been removed and the results have been recorded in a register and made available on site: Competent temporary works inspector (proof of competency to be available) to be appointed. Inspection checklist to be compiled and maintained, allowing for inspections as per the required schedule contained in above sub-regulation. In addition, proof to be available of demarcation & isolation of the area below concrete pour as well as spotters in safe, strategic positions during concrete pour, below the pour area to monitor integrity of temporary works during pouring operations.

CR 12(3)(g)

No person may cast concrete, until authorization in writing has been given by the competent person contemplated in paragraph (a); CR 12(3)(a) refers: all temporary works structures are adequately erected, supported, braced and maintained by a competent person so that they are capable of supporting all anticipated vertical and lateral loads that may be applied to them, and that no loads are imposed onto the structure that the structure is not designed to withstand; Competent person to be appointed and written permission to be documented and filed prior to the casting of concrete.

CR 12(3)(n)

A temporary works drawing or any other relevant document includes construction sequences and method statements: Temporary works drawings to be available for all sections of temporary works, including construction sequence and method statement for erecting, supporting and bracing temporary works structure.

CR 12(3)(q)

The temporary works drawings are approved by the temporary works designer before the erection of any temporary works: All temporary works drawings as contemplated in CR 12(3)(n) are to be available and signed off by the appointed temporary works designer prior to any construction of temporary works begins.

13.15. Structures

The Contractor will ensure that in terms of Construction Regulation 11:

- That the structure on/in which works is to be performed has been inspected by a certified structural engineer declaring the structure to be safe for use for the intended work processes.
- Steps are taken to ensure that no structure becomes unstable or poses a threat of collapse due to demolition and construction work being performed on it, or in the vicinity of it, including excavations and blasting operations.
- No structure is overloaded to the extent where it becomes unsafe. If uncertainty arises then the structural engineer is to be consulted.
- He/she has received from the designer the following information:
  - Information on known or anticipated hazards relating to the construction/demolition work and the relevant information required for the safe execution of the construction/demolition work
  - A geo-technical report (where applicable)
  - The loading the structure is designed to bear
  - The methods and sequence of the construction/demolition process
  - All drawings pertaining to the design are on site and available for inspection

- The structural engineer shall carry out inspections at appropriate and sufficient intervals of the construction work involving the design of the relevant structure, to ensure compliance with the design and record the results of these inspections in writing. These records shall be maintained on the relevant site safety files as per Construction regulation 11(2).

13.16. Ramps

Ramps constructed for access to and from the basement excavation shall be constructed in accordance with accepted technical standards and be designed with a safety factor of at least two with respect to the load it is expected to carry during construction.

The design of the ramps shall further make sufficient provision for the load on the ramp as a result of turning, braking and acceleration of construction vehicles and mobile plant.

The contractor shall ensure that ramps shall not have an inclination to the horizontal of more than 34 degrees or one vertical to one and a half horizontal.

Ramps shall preferably not be used for employee access and egress of the basement excavation and in the event that it is not practicable to provide a permanent scaffolding staircase for access and egress, the Contractor shall ensure that the ramp is designed and constructed to provide a dedicated walkway with stepping lathes and guard rails which are at least 900mm in height.

In compliance to CR 23(1)(g) the contractor shall ensure that adequate edge protection is provided to prevent the fall of construction vehicles and mobile plant in the event of uncontrolled movement on the ramp. The minimum requirement shall be a berm wall of not less than 1m in height, which wall shall be inspected on a daily basis and maintained to provide adequate protection at all times.

13.17. Explosive actuated fastening device

The Contractor shall ensure that all the requirements and provisions of Construction Regulation 21 are implemented and maintained for explosive actuated fastening devices.

Controllers, inspectors and operators of explosive actuated fastening devices are to be appointed in writing and specifically trained and proof of training held on the OH&S file.

Operators shall be issued with suitable protective equipment, and the use thereof enforced.

A cartridge issue and return register shall be maintained by the appointed person and cartridges shall be kept in a lockable facility and under the control of the appointed person at all times.

Warning signage to be prominently displayed in areas where explosive actuated fastening devices are used on site and such area shall be demarcated to prevent access of unauthorised persons.

13.18. Mobile plant and vehicles

Construction vehicles and mobile plant may be inspected by **the Client** or **NCC Health & Safety** prior to being allowed on the project site and suppliers of hired vehicles, plant and equipment will be required to comply with this specification as well as the OHS Act and Regulations.

The Contractor shall develop and implement a site specific traffic management plan and procedure, accompanied by a schematic site plan to comply to the requirements of CR23(1)(f) and CR23(2)(b). Such traffic management plan is to include the procedure and signalling arrangements for construction vehicles and mobile plant accessing into and egressing from the site into public and campus roadways, as well as the management and control of movement of construction vehicles and mobile plant on the site.

In addition to the above, the traffic management plan shall include the procedure and arrangements for safeguarding the public from stationary construction vehicles on public roads, including mobile plant and supplier's vehicles.

All signallers (flag men) appointed to ensure compliance to the traffic management plan, shall be adequately trained to ensure the safety of the public and construction personnel. Proof of such training is to be available in the site safety file.

Compliance to the requirements and provisions of Construction Regulation 23 shall be enforced by **NCC Health & Safety** and the Contractor shall ensure that all construction vehicles on site are used and organised in accordance with CR 23 to ensure their continued safe operation.

Any construction vehicle left unattended at any time shall have stop blocks and the wheels chocked on either side of the vehicle to prevent uncontrolled movement.

13.19. Lifting operations

Referencing Construction Regulation 22, Construction Regulation 27, Driven Machinery Regulation 18 and SANS 12480-1, cranes and lifting equipment must be designed and constructed in accordance with generally accepted technical standards and operated, used, inspected and maintained in accordance with the requirements of the Driven Machinery Regulation.

The requirements of Construction Regulation 22 and Driven Machinery Regulation 18 are to be stringently applied and maintained in respect of all tower cranes, mobile cranes, lifting tackle and lifting operations. SANS 12480 shall further be applicable for the installation and use of tower cranes.

Prior to the establishment of the base area of a tower crane, the soil conditions for the base area must be signed off by a registered professional engineer. Prior to use, a full inspection by an independent LMI shall be conducted after erection of a tower crane and documented proof of such inspection kept in the site safety file.

In addition to the required legal appointment of operators, supervisors and inspectors in respect of cranes and lifting machines, appointments shall also be made for Slingers and Banksmen/Signallers, with the required proof of competency and experience. All persons so appointed and trained must be registered with an LMI.

Furthermore, all training providers in respect of operators of lifting machines and cranes are required to be accredited by the Transport Seta as contained in notice R.910 of 2015 (G.G. 39252 of 02/10/2015). Proof of such accreditation by the Transport Seta is to be attached to any certification issued by such training provider.

Evacuation procedures, risk assessments, safe working procedures and lifting plans are to be developed in respect of tower cranes and communicated to all relevant persons involved in the operation of tower cranes. Documented proof of such communication is to be kept in the site safety file.

Documented proof of tower crane services and maintenance are required. The last major service record is to be present in the safety file, and services should be conducted every 1,000 hours. The tower crane operating log book and all other legal documentation is to be available for inspection and audit.

The Principal Contractor shall be responsible for ensuring that the necessary inspections and performance tests by a competent registered LMI as outlined in the Driven Machinery Regulations for tower cranes and lifting equipment are conducted, and documented proof of such inspections and performance tests retained in the health and safety file.

- DMR 18(5): Annual inspection and performance test of the whole installation and all working parts;
- DMR 18(6): Ropes, chains, hooks or other attaching devices, sheaves, brakes and safety devices at intervals not exceeding six (6) months;
- DMR 18(10)(e): Lifting tackle at intervals not exceeding three (3) months.

All lifting operations are to have a clearly defined and demarcated safe operating area below the lifting area, with warning signage strategically placed and a watcher/spotter shall be deployed to prevent unauthorised access to the lifting operations area.

Where the lifting arc shall cause loads to be moved above public roadways and pedestrian walkways and thoroughfares, such areas shall have barricading erected to prevent persons from passing below suspended loads. Where barricading is not practicable, the Principal Contractor shall provide dedicated enclosed safe walkways, constructed in such a way and utilising material able to adequately protect pedestrians from any potential falling load.

As per the requirements of SANS 12480-1, guide ropes or steady lines shall be fitted to the slings of tower cranes and lifting equipment to eliminate manual handling of suspended loads.

Worn and damaged steel wire ropes, slings and lifting tackle must be discarded (not used any further for lifting purposes, regardless of the load) when excessive wear and corrosion is evident. Furthermore under normal operating conditions the ropes must be examined by a competent person every three months for this purpose and the results recorded.

If required, the Contractor shall notify the Civil Aviation Authority of the erection of a tower crane or use of a mobile crane that exceeds the allowable limits.

13.20. Pressure equipment

The Principal Contractor shall ensure that all employees and contractors shall comply with the requirements of the Pressure Equipment Regulations, including:

- Providing competency and awareness training for operators and/or users
- Providing relevant and adequate PPE and clothing and enforcing the use of such PPE and clothing. PPE issued for the use of pressure equipment shall be regularly inspected and replaced when necessary.
- Inspect equipment on a monthly basis and keep records of inspections
- Provide appropriate fire fighting equipment on hand
- Gas cutting and welding gas cylinders to be secured on a trolley in an upright position, must not show any signs of corrosion or damage and must have flashback arrestors fitted to both the cylinders and torches.
- Where LPG cylinders are used in elevated positions, such cylinders shall be securely attached on a trolley for safe movement to the work area. No LPG cylinders are to be manually handled to any work areas.

When not in use, all gas cylinders shall be stored in a dedicated storage facility in an upright position and for oxy-acetylene cylinders, secured at all times. Such storage facility shall be kept locked at all times and under the control of an appointed person, trained in the safe handling and storage of pressure equipment.

Where pressure equipment is utilised on the site, the Contractor shall keep a register of such equipment as well as pressure test certificates and an inspection checklist for each item of equipment, in the site safety file.

13.21. Hazardous chemicals

The Contractor shall ensure that hazardous chemical substances are stored in strict compliance to the requirements and provisions of Construction Regulation 25, General Safety Regulation 4 and the Regulations for Hazardous Chemical Substances.

The use and storage of hazardous chemical substances shall be under the control of an appointed person, trained in the correct use and storage of hazardous substances and conversant with the necessary safety precautions to be taken to ensure the safety of persons at all times.

All users of hazardous chemical substances shall receive the necessary information, training and personal protective equipment to be able to safely use and store hazardous chemical substances.

A hazardous chemical substances register and MSDS's (material safety data sheets) for each hazardous chemical substance used on site shall be implemented and maintained for the duration of the construction.

Disposal of hazardous chemical substances (Recommended but not limited to):

An employer / contractor shall, as far as is reasonably practicable

- Recycle all HCS waste.
- Ensure that all collectable HCS waste is placed into containers that will prevent the likelihood of exposure during handling.
- Ensure that all vehicles, re-usable containers and covers which have been in contact with HCS waste are cleaned and decontaminated after use in such a way that the vehicles, containers or covers do not cause a hazard inside or outside the premises concerned.
- Ensure that all HCS waste which can cause exposure, is disposed of only on sites specifically designated for this purpose in terms of the Environmental Conservation Act, 1989 (Act No. 73 of 1989), in such a manner that it does not cause a hazard inside or outside the site concerned.
- Ensure that all employees occupied in the collection, transport and disposal of HCS waste, who may be exposed to that waste, are provided with suitable personal protective equipment.
- Ensure that if the services of a waste disposal contractor are used, a provision is incorporated into the contract stating that the contractor shall also comply with the provisions of these regulations.

13.22. Confined space

Work in confined spaces shall be deemed to be any work in an enclosed, restricted or limited space where a hazardous substance may accumulate or an oxygen deficient atmosphere may occur, including any chamber, tunnel, pipe, pit, sewer, container, deep excavation or similar construction in which a dangerous liquid or dangerous concentration of gas, vapour, dust or fumes may be present.

The contractor shall ensure that all the requirements of general safety regulation 5 are strictly complied with and that such confined space shall only be entered by an employee or any other person after the air therein has been tested and evaluated by a person competent to pronounce the safety thereof.

The contractor shall develop a procedure for work in confined spaces and such procedure shall outline the requirements of general safety regulation 5 as well as the safety requirements and rescue procedure for the retrieval of employees if required.

Where required, effective breathing apparatus shall be provided to any and all persons entering a confined space and the contractor shall keep available apparatus for resuscitation where work is conducted in confined spaces.

13.23. Asbestos

The Principal Contractor, shall appoint an Asbestos Contractor with a current valid registration as such. Such registered asbestos contractor shall be required to submit a plan of work encompassing all the requirements of the asbestos regulation, including but not limited to control of exposure to asbestos, information and training of employees required to work with asbestos, assessment of potential exposure, air monitoring, medical surveillance, control of exposure to asbestos of persons other than employees, identification of respirator zones, records and record keeping, personal protective equipment and facilities, maintenance of control measures, labelling, packaging, transportation and storage and disposal of asbestos for approval at least thirty (30) days prior to the commencement of that work, to an approved asbestos inspection authority (AIA).

A copy of the approved plan of work which has been signed by the AIA, the asbestos contractor or mandatary of such contractor shall be submitted to the provincial director at least fourteen (14) days prior to the commencement of any work with asbestos.

The requirements of Asbestos Regulation 2001, published under GN R155 in GG23108 of 10 February 2002 shall be complied with at all times by the contractor.

The contractor shall provide **NCC Health and Safety** with the approved asbestos plan of work as well as the monitoring report from the AIA and also a Safe Disposal Certificate for all asbestos removed from the site.

Copies of all abovementioned documentation and disposal certificates shall be kept on the health and safety file on site.

13.24. Personal protective equipment

The Contractor is required to identify the hazards in the workplace and deal with them appropriately. He must either eliminate hazards or, where impracticable take steps to protect employees and make it possible for them to work safely and without risk to health and safety under the hazardous conditions.

Personal Protective equipment (PPE) should, however, be **the last resort** and there should always first be an attempt to apply engineering and other solutions to mitigate hazardous situations before the issuing of PPE is considered.

Where it is not possible to create an absolutely safe and healthy workplace the Contractor is required to inform employees regarding this matter and to issue, free of charge, suitable PPE to protect them from any hazards.

It is a further requirement that the Contractor maintain this PPE and that he instructs and trains the employees in the correct use and maintenance of the PPE as required in GSR 2(5). PPE shall be fit for purpose at all times and provide the required and intended protection.

No person shall be permitted to work on the site if the correct PPE is not used. The Contractor shall ensure that the prescribed, required and correct PPE is used by the employees as per GSR 2(6) at all times.

Employees shall comply to OHS Act Section 14(b) and (c) and do not have the right to refuse to utilise or wear the equipment prescribed by the employer and, if it is impossible for an employee to use or wear prescribed protective equipment through health or any other reason, the employee may not be allowed to continue working under the hazardous condition/s for which the equipment was prescribed.

The Contractor may not charge any fee for protective equipment prescribed by him/her but may charge for equipment under the following conditions:

- Where the employee requests additional issue in excess of what is prescribed
- Where the employee has blatantly abused or neglected the equipment leading to early failure
- Where the employee has lost the equipment

All employees, visitors and non-employees shall, as a minimum, be required to wear the following PPE on any of **the Client's** construction sites:

- Protective overalls (employees only)
- Protective (steel toe) footwear
- Protective headwear
- Eye protection
- Hearing protection
- High visibility vests/jackets
- Fall arrest equipment when working in elevated positions i.e. double lanyard shock absorbing safety harness
- Chin straps on protective headwear when working in elevated positions

All PPE Shall conform to the relevant SANS Code.

▪ COVID 19 Personal protective equipment

As per the COVID-19 Occupational Health and Safety Measures In Workplaces COVID-19 (C19 OHS), 2020 Directive the use of face mask is mandatory when in public places. Furthermore the contractor shall:

- Provide each of its employees, free of charge, with a minimum of two cloth masks, which comply with the requirement set out in the Guidelines issued by the Department of Trade, Industry and Competition, for the employee to wear while at work and while commuting to and from work,
- Require any other employee to wear masks in the workplace,
- Ensure that employees are informed, instructed, trained and instructed as to the correct use of cloth masks, and
- Make appropriate arrangements for the washing, drying and ironing of cloth masks

The general requirement for employees to wear masks does not derogate from the fact that, where a risk assessment indicates that PPE is required for respiratory protection, those categories of employees must be provided with the accredited PPE in accordance with Department of Health guidelines

The number and replaceability of cloth masks that must be provided to an employee or required of other employees must be determined in accordance with any sectoral guideline and in the light of the employee's conditions of work, in particular, where these may result in the mask becoming wet or soiled.

In instances where an employee is required to interact with the public, or with a high volume of employees, the contractor may consider implementing additional controls to limit exposure to respiratory droplets. It is recommended that the contractor considers the use of face shields for such employees.

When a face shield is utilized as PPE for COVID-19 the contractor must:

- Issue the PPE free of charge to the employee,
- Require the use of the face mask in addition to the face shield,
- Provide the employee with the correct equipment and material to regularly clean and disinfect the face shield
- Replace the face shield periodically, or as required for visibility,
- Train the employee on the use and maintenance of the PPE and its limitations with respect to its application, and
- Ensure that measures are in place to prevent the sharing of PPE

14. SPECIFICATION AND DESIGN CHANGE

Where it becomes necessary for **the Client**/Client's Principal Agent to effect material changes to the design and project requirements, then such changes may necessitate an addendum to the site Health and Safety Specification.

On final appointment of the Principal Contractor, the contractor shall provide NCC Health and Safety with their project construction methodology, after which the Health and Safety Specification may be amended to preclude any items not relevant to the construction process of the Contractor.

Such addendums shall be drafted by **NCC Health and Safety** and issued as required and/or incorporated into the initial specification and will thereafter be defined revision (No.).

It is a requirement of the Contractor to submit and obtain approval for any alterations or changes to the OH&S Plan in order to comply with the revised Health and Safety Specification.

Annexure A – Penalties

Should, at any time, the works or part of the works be stopped due to unsafe acts or non-

compliance with this OHSS, the Contractor's SHE Plans and Method Statement, no Contractor shall have a claim for extension of time or any other compensation. In cases of any repetitive non-conformances, the non-conforming party shall be penalised as per the table below. The following constitute the non-conformances that will attract penalties:

MINOR	MEDIUM	SEVERE
Fine: R250 per occurrence	Fine: R1,000 per occurrence, plus a non-conformance and/or activity stoppage	Fine: R5,000 per occurrence, plus employee/activity/work stoppage
Non-use of required PPE supplied to personnel	Non-completion of registers for plant and equipment on site	Principal Contractors working without an approved SHE Plan
Lack of required SHE signage in work areas	Working without the required training or appropriate SHE Method Statements / SWP / HIRA	Employees being transported in contravention of the SHE Plan or legal requirements
Tools and equipment identified as being in poor condition during inspections	No internal monthly SHE Audit Report available on file	Invalid or expired Letter of Good Standing with a licensed Compensation Insurer
Poor housekeeping	Previous non-conformances not addressed within the agreed timeframe	Toilets not provided or regularly serviced and/or lack of drinking water
	Unsafe work at heights	Correct PPE not worn or properly secured/tied off where there is a risk of falling
	Allowing persons to work at heights without the required training	Third offence relating to unsafe work at heights
	Threat to the SHE of persons	No valid Medical Certificate of Fitness for relevant employees

Acknowledgement:

I, _____representing

_____Contractor have satisfied myself with the content of the Standard health and safety Specification for New/Replacement School at Amoati secondary school and shall ensure that the we will comply with all relevant obligations in respect thereof.

_____ _____
Signature of Contractor Date

_____ _____
Signature of Agent Date

Comments:

C3.3.2 ENVIRONMENTAL SPECIFICATION

COEGA

Specification:

PROJECT ENVIRONMENT SPECIFICATION FOR THE - CONSTRUCTION OF AMAOTI SECONDARY SCHOOL

Specification №

CDC-SBU-SPC-224-26

Classification: Public

25 SEPTEMBER 2026

DOCUMENT INFORMATION SHEET

Title of Document	***: Construction of Amaoti Secondary School***
Type of Document	**: Project Environmental Specification**
Document Number	**: CDC-SBU-SPC-224-26**
Prepared by	**: Sisekelo Jali**
Typed by	**: Sisekelo Jali**
Business Unit	**: KZN Programme**
Prepared for	**: Bidders**
Date of Issue	**: 25/09/2026**

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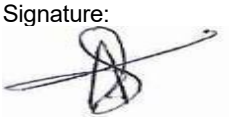
DOCUMENT CONTROL SHEET

The purpose of this form is to ensure that documents are reviewed and approved prior to issue. The form is to be bound into the front of all documents released by the Coega.

PROJECT NAME	:	*Amaoti Secondary School*
DOCUMENT TITLE	:	*Project Environmental Specification*
DOCUMENT No.	:	CDC-SBU-SPC-224-26

SIGNING OF THE ORIGINAL DOCUMENT

We, the undersigned, accept this document as a stable work product to be placed under formal change control as described by the Procedure for Control of Documented Information.

ORIGINAL	**Prepared by**	**Reviewed by**	**Approved by**
Date: **25/09/2026**	Name: Sisekelo Jali	Name: W. Liebenberg (NCC)	Name: Msawenkosi Mteki
	Signature: 	Signature: 	Signature: 

Distribution:	***Coega***

REVISION CHART

REVISION 1	**Name:**	**Name:**	**Name:**
Date:	Signature:	Signature:	Signature:

This document, and the information or advice which it contains, is provided by the Centre of Excellence Business Unit solely for the use by the Board of Directors of the Coega Development Corporation (Pty) Ltd and Coega and for reliance by its Executive Management and the Board in performance of that Business Unit's duties.

PROJECT ENVIRONMENTAL SPECIFICATION

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SCOPE

This Specification covers the requirements for controlling the impact on the environment of construction activities undertaken for Amaoti Secondary School

INTERPRETATION

Supporting specifications

Where this Standard Environmental Specification Programmes (SESC-EP) is required for a project the Standard Vegetation Specification (SVS) shall also, where applicable, form part of the Contract Documents:

Application

This SESC-EP contains clauses that are generally applicable to the undertaking of construction works as it is necessary to impose pro-active controls on the extent to which the construction activities impact on the environment.

Definitions

For the purposes of this SESC-EP, the following definitions and abbreviations shall apply:

2.3.1. CDC:

Means Coega Development Corporation (Pty) Ltd.

2.3.2. Agent:

Means a competent person who acts as a representative for the Client;

2.3.3. Principal Agent (PA):

Means a person or entity appointed by a client and who has full authority and obligation to act in terms of the construction contract;

2.3.4. SHE Agent

Means a person or entity appointed by a client who has full authority and obligation to act in terms of Safety, Health and Environmental Legal Compliance of the construction contract;

2.3.5 SHE Project Manager (SHEPM)

Means the client's Safety, Health and Environmental Project Manager who oversee the performance of the Contractor and ECO in terms of SHE compliance of the construction;

2.3.6. Cement laden water:

Means water containing cement or concrete arising from the Contractor's activities.

2.3.7. Contaminated water:

Means water contaminated by the Contractor's activities such as with hazardous substances, hydrocarbons, paints, solvents and runoff from plant, workshop or personnel wash areas but excludes water containing cement/ concrete or silt.

2.3.8. Environment:

Means the surroundings within which human beings exist and these comprise of:

The land, water and atmosphere of the earth;

Micro-organisms, plant and animal life;

Any part or combination of (i) and (ii) and the interrelationships among and between them; and

The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

2.3.9. His:

Means his or her, as applicable;

2.3.10. Method Statement:

Is a written submission by the Contractor in response to the Specifications or to a request by the SHE Agent/SHE Project Manager setting out the plant (construction equipment), materials, labour and method the Contractor proposes using to carry out an activity, identified by the relevant specification or the SHE

Agent/SHE Project Manager when requesting the Method Statement. The Method Statement shall be in such detail that the SHE Agent/SHE Project Manager is able to assess whether the Contractor's proposal is in accordance with the Specifications and/or will produce results in accordance with the Specifications.

The Method Statement shall cover applicable details with regard to:

Construction procedures;
Materials and equipment to be used;
Getting the equipment to and from Site;
How the equipment/ materials will be moved while on Site;
How and where materials will be stored;
The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
Timing and location of activities;
Compliance/ non compliance with the Specifications; and
Any other information deemed necessary by the SHEPM.

2.3.11. Potentially hazardous substance:

Is a substance, which, in the reasonable opinion of the SHE Agent/SHE Project Manager can have a detrimental effect on the environment. Hazardous Chemical Substances are defined in the Regulations for Hazardous Chemical Substances published in terms of the Occupational Health and Safety Act.

2.3.12. Reasonable:

Means, unless the context indicates otherwise, reasonable in the opinion of the SHE Agent/SHE Project Manager after he has consulted with a representative of the Contractor;

2.3.13 Silt laden water

Means water containing sand and silt arising from the Contractor's activities and/or as a result of natural run-off.

2.3.14 Site

This is the area in the possession of the Contractor for the construction of the Works. Where the area is not demarcated, it will include all adjacent areas, which are reasonably required for the activities for the Contractor, and approved for such use by the PA.

2.3.15 Solid waste:
Means all solid waste, including construction debris, excess cement/ concrete, wrapping materials, timber, tins, cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers);

Special requirements

Taking into consideration the nature of the works to be performed the specific high environmental aspects and possible impacts the following requirements must be complied to by the contractor:

Environmental Officer

- Full-Time Competent Environmental Officer for the entire duration of the contract for Contractor.
- 8 years experience and have
- National Diploma/ Bsc in Environmental Management qualification of minimum NQF 6

MATERIALS

Materials handling, use and storage

The Contractor shall ensure that any delivery drivers are informed of all procedures and restrictions (including "no go" areas) pertaining to their work activities required to comply with the Specifications. The Contractor shall ensure that the delivery drivers are supervised during off loading, by someone with an adequate understanding of the requirements of the Specifications.

Materials shall be appropriately secured to ensure safe passage between destinations. Loads including, but not limited to sand, stone chip, fine vegetation, refuse, paper and cement, shall have appropriate cover to prevent them spilling from the vehicle during transit. The Contractor shall be responsible for any clean up resulting from the failure by his employees or suppliers to properly secure transported materials.

All manufactured and/ or imported material shall be stored within the Contractor's fenced-off camp, and, if so required by the Project Method Statement, out of the rain. All lay down areas outside of the construction camp shall be subject to the Principal Agent approval.

Imported gravel, fill, soil and sand materials shall be free of weeds, alien invasive seed matter, plant material, litter and contaminants and shall be obtained from sources approved by the PA. A Method Statement detailing the source and methods to ensure compliance with this specification shall be submitted to the ECO and PA.

Stockpiling

Any stockpiling of gravel, cut, fill or any other material including spoil shall be in areas approved by the PA within the defined working area.

The Contractor shall ensure that the material does not blow or wash away. If the stockpiled material is in danger of being washed or blown away, the Contractor shall spray it with Dustex or cover it with a suitable material, such as hessian or plastic. Stockpiles of topsoil shall not be covered with plastic.

Solid waste management

No on site burning, burying or dumping of any waste materials, litter or refuse shall occur.
The Contractor shall provide vermin and weatherproof bins with lids of sufficient number and capacity to store the solid waste produced on a daily basis. The lids shall be kept firmly on the bins at all times.

Bins shall not be allowed to overflow and shall be emptied at least once a day. The waste from bins may be temporarily stored on Site in a central waste area that is weatherproof and scavenger proof, and which the ECO AND PA have approved.

Recyclable waste shall be disposed of into separate skips/bins and removed off-site for recycling.

All solid waste shall be disposed of off-site at an approved landfill Site. The Contractor shall supply the ECO with the appropriate disposal certificates.

The Contractor shall submit a solid waste management Method Statement to the SHE AGENT.

Water use

All source of water for construction purposes must be approved by the PA in writing before any such sources can be used to obtain water.

Hazardous substances

The transportation and handling of hazardous substances must comply with the provisions of the Hazardous Substances Act (Act No.187 of 1993) and associated regulations as well as SABS 0228 and SABS 0229. The Contractor shall also comply with all other applicable regional and local legislation and regulations with regard to the transport, use and disposal of hazardous substances. Hazardous chemical substances (as defined in the Regulations for Hazardous Chemical Substances) used during construction shall be stored in secondary containers. The relevant Safety Data Sheets (SDS) shall be available on Site. Procedures detailed in the SDSs shall be followed in the event of an emergency situation. The Contractor shall be responsible for the training and education of all personnel on Site who will be handling hazardous materials about their proper use, handling and disposal.

If potentially hazardous substances are to be stored or used on Site, the Contractor shall submit a Method Statement to the ECO detailing the substances / materials to be used, together with the transport, storage, handling and disposal procedures for the substances.

Contaminated water

Potential pollutants of any kind and in any form shall be kept, stored, and used in such a manner that any escape can be contained and that the water table is not endangered. Water containing such pollutants as chemicals, washing detergents, sewerage, fuels, paints and solvents and hydrocarbons shall be contained and discharged into an impermeable storage facility for removal from the site or for recycling. This particularly applies to runoff from fuel depots/workshops/vehicle washing areas. The Contractor may direct contaminated water into a sewerage main, provided that authorisation has been obtained from the local authority and that the PA has provided written permission for this action.

Wash down areas shall be placed and constructed in such a manner so as to ensure that the surrounding areas are not polluted. The Contractor shall notify the ECO and the PA immediately of any pollution incidents on Site.

The Contractor shall submit a Method Statement to the ECO and the PA detailing how the contaminated water will be managed on Site.

Cement and concrete batching

The proposed location of batching areas (including the location of cement stores and sand and aggregate stockpiles) shall be indicated on the Site layout plan and approved by the PA.

All wastewater generated from the operation and cleaning of concrete batching equipment and other sources of concrete shall be passed through a concrete wastewater settlement system as depicted in the appropriate drawing. The water from this system shall not be allowed to flow into any "no go" area or water

course but must permeate through the ground before it reaches any such water course. The accumulated sludge in the settlement system must be regularly cleaned out and appropriately disposed of as solid waste.

The Contractor shall ensure that minimal water is used for washing of concrete batching equipment.

Used cement bags shall be disposed of in weatherproof bins on site to prevent the generation of wind-blown cement dust and the bags from blowing away. Disposing of such bags in the hospital's refuse bin is strictly prohibited.

During construction, the contractor must ensure that concrete is mixed on mortar boards, all visible remains of concrete are removed and disposed of as waste and that all surplus aggregate is removed.

A Method Statement detailing all actions to be taken to comply with the cement and batching requirements shall be submitted to the ECO and the PA.

PLANT

FUEL (PETROL, DIESEL) AND OIL

Fuel Storage
Fuel can be stored on site. The location of the fuel storage area will be approved by the PA and will be situated at least 100m away from any major drainage systems, residential areas or "no go" areas. All necessary approvals with respect to fuel storage and dispensing shall be obtained from the appropriate authorities. Symbolic safety signs depicting "No Smoking", "No Naked Lights" and "Danger" conforming to the requirement of SABS 1186 shall be prominently displayed in and around the fuel storage area. There shall be adequate fire-fighting equipment at the fuel storage area.

The Contractor shall ensure that all liquid fuels and oils are stored in containers with lids, which are kept firmly shut and under lock and key at all times. The capacity of the container shall be clearly displayed and the product contained within the container clearly identified using the emergency information system

detailed in SABS 0232 part 1. Fuel storage tanks shall have a capacity not exceeding 9000 litres and shall be kept on site only for as long as fuel is needed for construction activities, on completion of which they shall be removed.

Tanks on site shall not be linked or joined via any pipe work, but shall remain as separate entities. The tanks shall be situated on a smooth impermeable base with a bund. The volume inside the bund shall be 110% of the total capacity of the largest storage tank. The base may be constructed of concrete, or of plastic sheeting with impermeable joints with a layer of sand over to prevent perishing. The impermeable lining shall extend to the crest of the bund. The floor of the bund shall be sloped to enable any spilled fuel and/or fuel-contaminated water to be removed. Appropriate material, approved by the PA that absorbs/ breaks-down or encapsulates minor hydrocarbon spillage and which is effective in water shall be installed in the sump.

The tanks and bunded areas shall be covered by a roofed structure, as detailed in appropriate drawing, to prevent the bunded area from filling up with rain water. This structure shall be constructed in such a way, and to the approval of the PA, to ensure that it is not dislodged by wind. If any water does collect in the bunded area it shall be removed within a day of this occurring and taken off Site to a disposal site approved by the PA, and the material that absorbs/ breaks-down or encapsulates minor hydrocarbon spillage shall be replenished.

Only empty and externally clean tanks may be stored on the bare ground. Empty and externally dirty tanks shall be sealed and stored on an area where the ground has been protected.

Adequate precautions shall be provided to prevent spillage during the filling of any tank and during the dispensing of the contents. The dispensing mechanism for the fuel storage tanks shall be stored in a waterproof container when not in use.

A Method Statement shall be submitted to the ECO and the PA detailing the design, location and construction of the fuel storage area as well as for the filling and dispensing from storage tanks and for the type of absorbing/ breaking-down or encapsulating material to be used.

Refuelling
Where reasonably practical, plant shall be refuelled at a designated re-fuelling area/depot or at a workshop as applicable. If this is not reasonably practical, then the surface under the refuelling area shall be protected and appropriately bunded against pollution to the reasonable satisfaction of the ECO and PA prior to any refuelling activities.

If fuel is dispensed from 200 litre drums, the proper dispensing equipment shall be used, and the drum shall not be tipped in order to dispense fuel. The Contractor shall ensure that the appropriate fire-fighting equipment is present during refuelling operations.

The Contractor shall ensure that there is always a supply of absorbent material readily available to absorb/breakdown or where possible, be designed to encapsulate minor hydrocarbon spillages. The quantities of such materials shall be able to handle a minimum of 200 ℓ of hydrocarbon liquid spill. Prior to any refuelling or maintenance activities, the PA must approve this material.

Used oil and hydrocarbon contaminated materials
Used oil shall be stored at a central location on Site prior to removal off Site for disposal at an approved disposal or recycling site.

Old oil filters and oil, petrol and diesel-soaked material shall be treated as hazardous waste. The Contractor shall remove all oil, petrol, and diesel-soaked sand immediately and shall dispose of it as hazardous waste or treat it on site with material that breaks-down or encapsulates such spillages as approved by the ECO and the PA.

Ablution facilities

Washing, whether of the person or of personal effects, and acts of excretion and urination are strictly prohibited other than at the facilities provided; The Contractor shall provide the necessary ablution facilities

for all his personnel prior to the commencement of work and shall ensure that his personnel make use of the facilities.

Toilet facilities shall be supplied by the Contractor for the workers at a ratio of at least 1 toilet per 15 workers in areas approved by the PA. Every 1-man urinal will be taken as supplying the equivalent of 5 men in addition to the 15 men per toilet on site. Toilets shall be situated within 200m of any area where work is taking place in numbers sufficient to meet the ratio depicted above for the workers in the area.

The facilities shall be maintained in a hygienic state and serviced regularly. Toilet paper shall be provided. Temporary/ portable toilets shall be secured to the ground to prevent them toppling due to wind or any other cause, to the satisfaction of the PA.

Discharge into the environment and burial of waste is strictly prohibited. The Contractor shall ensure that no spillage occurs when the toilets are cleaned or emptied and that the contents are removed from the Site. Toilets shall be emptied before the Contractors' holidays or any other temporary site closure.

Eating Areas

The Contractor shall designate eating area/s, subject to the approval of the PA and the SHE Agent. No cooking is allowed outside of the Contractor's camp area on Site.

At meal times all workers must eat in designated eating areas. More than one area may be required for large Sites. These areas shall have shade for the workers. The eating areas may be in existing structures or in temporary/ transportable structures that shall be well constructed using wood or metal for the frame and screened on the top and sides with shade cloth/ canvas or other material to the satisfaction of the PA/SHE Agent. These areas shall be well demarcated and in locations approved by the PA and shall not be within 100m of any "no go" areas or any major drainage systems, on or adjacent to the Site.

Sufficient bins as specified in Section 3.3 of this Environmental Specification shall be present in these areas. All disposable food packaging must be disposed of in the bins after every meal.

The feeding or leaving of food for animals is strictly prohibited.

Site Structures

All site establishment components (as well as equipment) shall be positioned to limit visual intrusion on neighbours and the size of the land area disturbed. The type and colour of roofing and cladding materials to the Contractor's temporary structures shall be selected to reduce reflection.

The Contractor shall supply and maintain adequate and suitable sheds for the storage of materials. Sheds for the storage of materials that may deteriorate or corrode if exposed to the weather shall be weatherproof, adequately ventilated and provided with raised floors.

Lights

The Contractor shall ensure that any lighting installed on the Site for his activities does not interfere with road traffic or cause a reasonably avoidable disturbance to the surrounding community or other users of the area.

Workshop, equipment maintenance and storage

Where practical, all maintenance of equipment and vehicles on Site shall be performed in a workshop. If it is necessary to do maintenance outside of the workshop area, the Contractor shall obtain the approval of the PA prior to commencing such activities. No maintenance, including emergency maintenance, of plant can take place within 20m of any "no go" area or drainage system.

The Contractor shall ensure that in his workshop and other plant maintenance facilities, including those areas where, after obtaining the PA's approval, the Contractor carries out emergency plant mainten¬ance, there is no contamination of the soil or vegetation. The workshop shall have a smooth impermeable (concrete or thick plastic covered with sand) floor. The floor shall be bunded and sloped towards an oil trap

or sump to contain any spillages. When servicing equipment, drip trays shall be used to collect the waste oil and other lubricants. Drip trays shall also be provided in construction areas for stationary plant (such as compressors) and for "parked" plant (such as scrapers, loaders, vehicles).

All vehicles and equipment shall be kept in good working order and serviced regularly. Leaking equipment shall be repaired immediately or removed from the Site.

The washing of equipment shall be restricted to urgent or preventative maintenance requirements only. All washing shall be undertaken in the workshop or maintenance areas, and these areas must be equipped with a suitable impermeable floor and sump/oil trap. The use of detergents for washing shall be restricted to low phosphate and nitrate containing and low sodding type detergents.

A Method Statement must be submitted to the PA and ECO detailing the design of the bunding of the workshop and how run-off from the workshop will be managed as well as how drip trays used under plant will be managed.

Noise

The Contractor shall take precautions to minimise noise generated on Site (e.g. Install and maintain silencers on machinery where possible). The Contractor shall comply with the Noise Induced Hearing Loss Regulations published under the Occupational Health and Safety Act of 1993.

Appropriate directional and intensity settings are to be maintained on all hooters and sirens.

No amplified music shall be allowed on Site. The use of radios, tape recorders, compact disc players, television sets etc. shall not be permitted unless the volume is kept sufficiently low as to avoid any intrusion on members of the public within range. The Contractor shall not use sound amplification equipment on Site unless in emergency situations.

Dust Control

The Contractor shall be responsible for the continued control of dust arising from his operations. The Contractor shall inform the PA/ECO 48 hours in advance of anticipated 'unavoidable' dust generating activities. The Contractor shall take all reasonable measures to minimize the generation of dust as a result of construction activities to the satisfaction of the ECO AND PA. Appropriate dust suppression measures include: spraying or dampening with water, using a commercial dust binder (such as Hydropam or Dustex), rotovating straw bales, planting of open cleared space and the scheduling of dust-generating activities. If the conditions are such that the Contractor cannot satisfactorily dampen the dust, then the Contractor must halt operations until such time as the conditions are more suitable for lower dust generating construction.

Damping of all gravel haul and access roads with water must be ongoing and special attention must be given to roads close to residential areas. Should dust still be a problem on any specific road, the allowable speed will be reduced to 20km/h.
Areas that are to have the topsoil stripped for construction purposes must be limited and only stripped when work is about to take place.

Other activities and situations that may result in a dust nuisance include: site clearance and other earth moving operations, open cleared space, stockpiles of topsoil or sand and activities associated with concrete batching plants.

A Method Statement detailing how dust will be managed for different operations on the site must be submitted to the ECO and PA for his approval before any work that could result in dust being generated is undertaken.
CONSTRUCTION

Method Statements

The following Method Statements shall be provided by the Contractor and submitted with the SHE file for reviewing prior to the Contractor starting work on site.

Solid waste management (Clause 3.3)
Expected solid waste types, quantities, methods and frequency of collection and disposal as well as location of disposal sites;

Contaminated water (Clause 3.6)
Methods of minimising, controlling, collecting and disposing of contaminated water.
Contractors SHE Officer (Clause 5.2)
The name and letter of appointment of the Contractors SHE Officer must be included in the SHE file and the terms of reference for the work to be undertaken by the SHE Officer must be detailed including time on site, CV, roles and responsibility, interaction with the Contractor and environmental offices, etc.

Site division (Clause 5.4)
The location, layout and method of establishment of the construction camp (including all buildings, offices, lay down yards, vehicle wash areas, fuel storage areas, batching areas and other infrastructure required for the running of the project)

Emergency procedures (Clause -10797166245.15.10)
Emergency procedures for fire and accidental leaks and spillages of hazardous substances (including fuel and oil); Include details of risk reduction measures to be implemented including fire-fighting equipment, fire prevention procedures and spill kits (materials and compounds used to reduce the extent of spills and to breakdown or encapsulate hydrocarbons).

Other Method Statements that will be required during the course of construction are to be provided by the Contractor a minimum of 20 days prior to commencement of the works or activities to which they apply (no work can commence on site before these Method Statements have been approved):

Importing of material (Clause 3.1)

Detail the source of any gravel, soil, aggregate or sand imported onto site and precautions taken to ensure no vegetative contamination.

Hazardous substances (Clause 3.5)
Details of any hazardous substances / materials to be used, together with the transport, storage, handling and disposal procedures for the substances;

Cement and concrete batching (Clause 3.7)
Location, layout and preparation of cement/ concrete mixing areas including the methods employed for the mixing of concrete and particularly the containment of run-off water from such areas and the method of transportation of concrete.

Fuel storage and use (Clause 3.8)
The design, location and construction of the fuel storage area as well as for the filling and dispensing from storage tanks;

Workshop and drip trays (Clause 4.34.6)
Location, layout, design and pollution control for Workshop as well as management of drip trays under plant.

Dust (Clause 4.34.8)
Details on the methods for managing dust on the site.

Environmental awareness training (Clause 5.3)
Number, dates, trainer and logistics for awareness courses for the Contractor's employees and for the management staff.

Access Routes (Clause 5.7)
Details, including a drawing, showing where and how the access points and routes will be located and managed;

Any additional Method Statements as required by the ECO must be provided by the Contractor. The Contractor shall not commence the activity until the Method Statement has been approved in writing and shall, except in the case of emergency activities, allow a period of 7 working days for approval of the Method Statement.

The ECO and PA may require changes to a Method Statement if the proposal does not comply with the specification or if, in the reasonable opinion of the ECO and PA, the proposal may result in, or carries a greater than reasonable risk of, damage to the environment in excess of that permitted by the Specifications or any legislation.

Approved Method Statements shall be readily available on the Site and shall be communicated to all relevant personnel and subcontractors. The Contractor shall carry out the Works in accordance with the approved Method Statement. Approval of the Method Statement shall not absolve the Contractor from any of his obligations or responsibilities in terms of the Contract. No claim for delay or additional cost incurred by the Contractor shall be entertained due to inadequacy of a Method Statement.

Details of the following appointments are required within 7 days of commencing work on site:

Assistants to the Contractor's SHE Officer (Clause 5.2)
The name and appointment letter of at least one assistant to the Contractor's SHE Officer must be given to the SHE Agent/SHEPM and the work to be undertaken by this assistant must be detailed including time allocated to these roles and their responsibility and interaction with the Contractors SHE Officer.

Fire Officer (Clause 5.9)
The name and appointment letter of the Fire Officer must be included in the SHE organogram.

Contractor's SHE Officer and Assistant

The Contractor shall appoint a Contractor's SHE Officer who shall be responsible for undertaking a daily site inspection to monitor compliance with this Specification and the relevant Project Specification.
The Contractor shall submit the name of the Contractor's SHE Officer as well as a Method Statement detailing his CV, roles and responsibilities to the SHE AGENT/SHEPM for his approval before work can commence on site.

The Contractor will also appoint a competent SHE Representative, who will assist and report to the Contractor's SHE Officer, to the following positions:

Litter Assistant to ensure that the site is cleaned every day and that dustbins are not overflowing and litter does not blow off the site into the surrounding areas.
Hydrocarbon and Contaminated Water Assistant to ensure that any hydrocarbon spills or leaks are dealt with immediately, vehicles are not leaking hydrocarbons on site, there is no pollution of any water course/ drainage system on or adjacent to site due to any construction activities, all stationary plant has bunds around them that are kept in good working order, the fuel storage and refuelling area is free of spills and leaks of hydrocarbons and any other issues to do with hydrocarbon housekeeping on site. He will also ensure that no contaminated water is escaping onto the site and that the toilets are kept in a clean and good working condition.
Demarcation and Dust Assistant to ensure that all fencing and demarcation is in place when it is required and that such fencing or demarcation is in good order on a daily basis. This person will also be responsible to ensure that excessive dust is not generated from the construction area and will ensure that the roads are watered and other areas dampened where necessary and any other actions taken to limit dust generation from site.

These appointments will be made within the first 7 days of work commencing on site and will be given to the SHE Agent/SHE PM in writing.

Environmental Awareness Training

Environmental awareness training ('toolbox' talks) shall be run for all personnel on site. Toolbox talks shall be run during normal working hours at a suitable venue provided by the Contractor. All attendees shall remain for the duration of the talk and sign an attendance register on completion that clearly indicates participant's names, a copy of which shall be kept in the SHE file.

The size of each session shall be limited to 30 people. The Contractor shall allow for sufficient sessions to train all personnel.
Subsequent sessions shall be run for any new personnel coming onto site. A Method Statement with respect to the organisation of these courses shall be submitted.

Notwithstanding the specific provisions of this clause it is incumbent upon the Contractor to convey the sentiments of this Environmental Specification to all personnel and Subcontractors involved with the Works.

Site Division

The Contractor shall restrict all his activities, materials, equipment and personnel to within the area specified.

A Method Statement detailing the location, layout and method of establishment of the construction camp (including all buildings, offices, lay down yards, vehicle wash areas, fuel storage areas, batching areas and other infrastructure required for the running of the project) shall be submitted to the PA. No accommodation for any staff is permitted on the Site.

Site Demarcation

The Contractor shall erect and maintain permanent and / or temporary fences of the type and in the locations directed by the PA and SHE Agent. Such fences shall be erected before undertaking designated activities.

"No Go" Areas

If so required, certain areas within or next to the Site may be declared as "no go" areas. The Contractor shall ensure that, insofar as he has the authority, no person, machinery, equipment or materials enter the "no go" areas at any time.

Access Routes/ Haul Roads

On the Site, the Contractor shall control the movement of all vehicles and plant including that of his suppliers so that they remain on designated routes, are distributed so as not to cause an undue concentration of traffic and that all relevant laws are complied with. In addition, such vehicles and plant shall be so routed and operated as to minimise disruption to regular users of the routes not on the Site. On gravel or earth roads on Site and within 500m of the Site, the vehicles of the Contractor and his suppliers shall not exceed a speed of 20 km/hr or as directed by the SHE Agent.

The Contractor shall supply the ECO and PA with a Method Statement detailing the location and management of all access points.

Construction Personnel Information Posters

The Contractor shall erect and maintain information posters for the information of his employees depicting actions to be taken to ensure compliance with the SES. Construction personnel information posters shall be laminated and erected in all eating areas, workshops and site offices. The Contractor shall ensure that the construction personnel information posters are not damaged in any way, and shall replace them if any part becomes illegible.

Fire Control

The Contractor shall take all the necessary precautions to ensure that fires are not started as a result of his activities on Site. No open fires shall be permitted on the Site. Any fires that occur shall be reported to the ECO and PA immediately. Smoking shall not be permitted inside offices and those areas where there is a fire hazard. Such areas shall include the workshop and fuel storage areas and any areas where the vegetation or other material is such as to support the rapid spreading of an initial flame.

The Contractor shall appoint a Fire Officer who shall be responsible for ensuring immediate and appropri¬ate actions in the event of a fire and shall ensure that employees are aware of the procedures to be followed. The Contractor shall forward the name of the Fire Officer to the PA for his approval within 7 days of being on site.

The Contractor shall ensure that there is basic fire fighting equipment available on Site at all times. This shall include at least rubber beaters when working in urban open spaces and natural areas, and at least one fire extinguisher of the appropriate type when welding or other "hot" activities are undertaken. The Contractor shall be liable for any expenses incurred by any organisations called to assist with fighting fires that were started as a result of his activities or personnel, and for any cost relating to the rehabilitation of burnt areas, or consequential damages.

Emergency Procedures

Emergency procedures, including the names and contact details of responsible personnel and emergency services shall be made available to all staff and shall be clearly displayed at relevant locations at the Site. The Contractor shall advise the PA/ECO of any emergencies on Site, together with a record of action taken, within 24 hours of the emergency occurring.

Telephone numbers of emergency services shall also be posted conspicuously in the Contractor's office near the telephone.

The Contractor shall submit a Method Statement covering the procedures for the following emergencies:

Fire:

The Contractor shall advise the relevant authority of a fire as soon as one starts and shall not wait until he can no longer control it. The Contractor shall ensure that his employees are aware of the procedures to be followed in the event of a fire.

Accidental leaks and spillages:

The Contractor shall ensure that his employees are aware of the procedures to be followed for dealing with spills and leaks, which shall include notifying the ECO and PA and the relevant authorities. The Contractor shall ensure that all the necessary materials and equipment for dealing with spills and leaks are available on Site at all times. Treatment and remediation of the spill areas shall be undertaken to the reasonable satisfaction of the PA.

In the event of a hydrocarbon spill, the source of the spillage shall be isolated and the spillage contained. The area shall be cordoned off and secured. The Contractor shall ensure that there is always a supply of absorbent material readily available to absorb/ breakdown or where possible, be designed to encapsulate minor hydrocarbon spillages. The quantities of such materials shall be able to handle a minimum of 200 ℓ of hydrocarbon liquid spill.

Any spills must be cleared and the contaminated soil/sludge disposed of in an appropriate manner, approved by the PA, or at a licensed hazardous waste disposal site.

Community Relations

The Contractor shall keep a "Complaints Register" on Site. The Register shall contain all contact details of the person who made the complaint, and information regarding the complaint itself and note the date and time that the complaint was resolved.

The PA shall be responsible for responding to queries and/or complaints and may request assistance from the Contractor's Management Staff.

Protection of Natural Features

The Contractor shall not deface, paint, damage or mark any natural features (e.g. rock formations) situated in or around the Site for survey or other purposes unless agreed beforehand with the PA. Any features affected by the Contractor in contravention of this clause shall be restored / rehabilitated to the satisfaction of the PA.

The Contractor shall not permit his employees to make use of any natural water sources (e.g. springs, streams, and open water bodies) for the purposes of swimming, personal washing and the washing of machinery or clothes.

Stormwater Management

Natural run-off must be diverted to stormwater arrangement. The Contractor shall take appropriate measures to prevent sand, silt and silt-laden waters from entering any surface water course. The Contractor shall take reasonable measures to control the erosive effects of stormwater runoff particularly where excavation and construction activities form temporary channels. Suitable energy breaking devices, cut-off drains, diversions and retention ponds shall be employed to ensure that storm water runoff from the Site is dissipated and does not exceed the capacity of the surrounding stormwater system and excessive suspended solids are settled before they enter the stormwater system or any surface water course.

Erosion and Sedimentation Control

The Contractor shall take all reasonable measures to limit erosion and sedimentation due to construction activities and shall, in addition, comply with such detailed measures as may be required by the Project Specification.

Where erosion and/or sedimentation, whether on or off the Site, occurs despite the Contractor complying with the foregoing, rectification shall be carried out in accordance with details specified by the PA. Where erosion and/or sedimentation occur due to the fault of the Contractor, rectification shall be carried out to the reasonable requirements of the PA/ECO and at the expense of the Contractor.

Aesthetics

The Contractor shall take reasonable measures to ensure that construction activities do not have an unreasonable impact on the aesthetics of the area.

Temporary site closure

If the Site is closed for a period exceeding 5 days, the Contractor's SHE Officer in consultation with the ECO shall carry out the following checklist procedure and ensure that the following conditions pertain and report on compliance with this clause:

5.16.1 Fuels / flammables / hazardous materials stores
Fuel stores are as low in volume as practicable.
There are no leaks.
The outlet is secure and locked.
The bund is empty.
Fire extinguishers are serviced and accessible.
The area is secure from accidental damage through vehicle collision and the like.
Emergency and contact numbers are available and displayed.
There is adequate ventilation in enclosed spaces.
There are no stores or containers within the 1:50 year flood line.

5.16.2 Safety

Site safety checks have been carried out in accordance with the Occupational Health and Safety Act (No. 85 of 1993) prior to site closure.
An inspection schedule and log for use by security or contracts staff is developed.
All trenches and manholes are secured.
Applicable notice boards are in place and secured.
Emergency and Management contact details are prominently displayed.
Security personnel have been briefed and have the facilities to contact or be contacted by relevant management and emergency personnel.
Night hazards such as reflectors, lighting, traffic signage etc. have been checked.
Fire hazards identified and the local authority notified of any potential threats e.g. large brush stockpiles, fuels etc.
Pipe stockpiles are wedged / secured.
Scaffolds are secure.
Structures vulnerable to high winds secure.

Erosion

Wind and dust mitigation measures such as straw, brush packs, irrigation etc. is in place.
Excavated and filled slopes and stockpiles are at a stable angle and capable of accommodating normal expected water flows.
Re-vegetated areas have a watering schedule and the supply to such areas is secured.
There are sufficient detention ponds or channels in place.

5.16.4Water contamination and pollution
Hazardous fuel stores are secure.
Cement and materials stores are secure.
Toilets are empty and secured.
Refuse bins are empty and secured.
Bunding is clean and treated with appropriate material that will absorb/ breakdown and where possible be designed to encapsulate minor hydrocarbon spillage.
Drip trays are empty & secure.

BASIC PRINCIPLES

Except as noted below as Scheduled Items, no separate measurement and payment will be made to cover the costs of complying with the provisions of this Specification and such costs shall be deemed to be covered by the rates tendered for the items in the Schedule of Quantities completed by the Contractor when submitting his Tender.

Scheduled Items

Protection of stock piles from blowing or washing away:
The spraying or covering of stockpiles, including the supply of the spray or cover material, as required, shall be measured as a lump sum.

Storage of fuel and oils:
The supply, construction, installation, transport, upkeep and removal of all facilities required for storage and management of fuel and oils will be measured as a lump sum.

Cement laden water management:
The supply, construction, installation, transport, upkeep and removal of all facilities required for the management of wastewater from concrete operations will be measured as a lump sum.

Contaminated water management:
The supply, construction, installation, transport, upkeep and removal of all facilities required for managing contaminated water will be measured as a lump sum.

Storm water management:
The supply, construction, installation, transport, upkeep and removal of all facilities required for managing storm water run-off from the site will be measured as a lump sum.

Bunding and management of run-off from workshop areas and supply of drip trays for stationary and "parked" plant:

The supply, construction, installation, transport, upkeep and removal of all facilities required for bunding and managing the run-off from workshop areas as well as all drip trays required will be measured as a lump sum.

Dust management:

The supply, application, transport, upkeep and removal of all materials required to ensure that dust is adequately controlled will be measured as a lump sum.

Fire Control:

The supply, transport, upkeep and removal of all material required for fire control will be measured as a lump sum.

Eating areas:

The supply, construction, installation, transport, upkeep and removal at the end of the construction of all eating areas structures shall be measured as a sum.

Ablutions:

The supply, maintenance, regular emptying and removal of toilets shall be measured as a sum.

Site demarcation:

The supply, installation and removal at the end of the construction of all temporary fences shall be measured by length for each type of fence scheduled.

Construction personnel information posters:

The supply, installation and removal at the end of the construction of all construction information posters shall be measured by number of posters for each type of poster scheduled.

6.1.14Solid waste (including hazardous waste) management:

The supply of bins and skips as well as transport of waste to appropriate waste disposal facilities shall be measured as a sum.

Spill kits:
The supply, use and replenishment of spill kits, to be used at fuel storage areas and refuelling areas shall be measured as a sum.

Method Statements: Additional Work:
No separate measurement and payment will be made for the provision of Method Statements but, where the PA requires a change beyond the requirements of the Specification on the basis of his opinion that the proposal may result in, or carries a greater than warranted risk of damage to the environment, then any additional work required, provided it could not reasonably have been foreseen by an experienced Contractor, shall be valued in accordance with the Contract document.

A stated sum is provided in the Schedule of Quantities to cover payment for such additional work.

Acknowledgement:

I,_____representing

_____Contractor have satisfied myself with the content of the Standard Environmental Specification, EMPR, Heritage assessment report, Environmental Authorization, Water Use Licence for Construction of Amaoti Secondary School and shall ensure that the we will comply with all relevant obligations in respect thereof.

_____ _____

Signature of Contractor *Date*

_____ _____

Signature of ECO

water & sanitation
Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

Private Bag X54304, DURBAN, 4000 , Southern Life Building 88 Joe Slovo Street, DURBAN, 4000,
www.dws.gov.za

LICENCE IN TERMS OF CHAPTER 4 OF THE NATIONAL WATER ACT, 1998 (ACT NO. 36 OF 1998) (THE ACT)

I, **Mr Ashley Starkey** in my capacity as Provincial Head: KwaZulu-Natal in the Department of Water and Sanitation and acting under the powers delegated to me by the Minister of Water and Sanitation, hereby authorises the following water use in respect of this licence.

Serial Number : 5627888829001804163
Provincial Head: KwaZulu-Natal
Date: Mar 27 2024 11:09AM

LICENCE NO: 11/U30B/CI/14270
FILE NO: 27/2/1/U230/4/5/37
REF. NO: WU25762

Licensee: KwaZulu-Natal – Department of Education and Culture

Amaoti No. 3 Secondary School,

Postal Address: Private Bag X9137
Pietermaritzburg
3200

Physical Address: KZN Department of Education,
Farm 842 Riet Rivier Portion 378,
EThekwini
KwaZulu-Natal

Provincial Head

1. Water Uses authorised by this licence

Table 1: Summary of water uses authorised

1.	Section 21(c) of the Act	Impeding or diverting the flow of water in a water course; subject to the conditions set out in Appendices I and II.
2.	Section 21(i) of the Act:	Altering the bed, banks, course or characteristics of a watercourse; subject to the conditions set out in Appendices I and II.

2. Property (ies) in respect of which the water use licence is issued

Table 2: Property details where the water use(s) will take place

Activity	Farm Name	Farm Portion	Owner's Name	Title Deed Number
Construct buildings and associated infrastructure, including sewerage infrastructure, within the regulated area i.e. within 500m from wetlands	Farm Riet Rivier No. 842	Portion 378	KZN Department of Human Settlements / Housing	T13906/1985
Construct a section of stormwater pipe infrastructure within the regulated area i.e. within a wetland and within the 1:100-year floodline of the Ohlanga River				

3. Licence and Review Period

3.1 This licence is valid for a period of forty (40) year(s) from the date of issuance and it may be reviewed at intervals of not more than five (5) years.

3.2 On review of the licence, a Responsible Authority may amend any condition of the licence, other than the period of validity thereof.

4. Definitions

Any terms, words and expressions as defined in the National Water Act, 1998 (Act 36 of 1998) shall bear the same meaning when used in this licence."

4.1 The following definitions are of relevance, but not exclusive, to this licence

Act	National Water Act, 1998 (Act 36 of 1998)
Commencement date	The date on which water use starts.
Days	Calendar days.
Delegated Authority	The person that has been delegated certain functions of the Act.
Department	The Department of Water and Sanitation.
Minister	The Minister of the Department of Water and Sanitation.
Provincial Head	Head of Provincial Operations: KwaZulu-Natal, Private Bag X 54304, Durban 4000 or 9th Floor Southern Life Building, 88 Joe Slovo Street, Durban 4000

5 Description of activity and affected water resource(s)

The licence authorises KwaZulu-Natal – Department of Education and Culture for the construction of the Amaoti No. 3 Secondary School and associated infrastructure. The infrastructure associated with the proposed development includes buildings and parking area, grassed sport field, multipurpose hard surface court, water pipeline, stormwater pipeline, stormwater attenuation pond, stormwater discharge outlets, stormwater manholes, a 160mm diameter sewer pipeline, a 400mm diameter sewer pipeline and sewer manholes.

The associated water use activities are the construction of buildings and associated infrastructure, including sewerage infrastructure within the regulated area i.e. within 500m from wetlands; and the construction of a section of stormwater pipe infrastructure within the regulated area i.e. within a wetland and within the 1:100-year floodline of the Ohlanga River.

The proposed development is located at -29.683655683496735; 30.993149698488867, in eThekwini Municipality within the Brookdale/Phoenix area. The water uses will take place on portion 378 which forms part of the U30B quaternary catchment within the Pongola-Mtamvuna Water Management Area. A perennial watercourse, the Ohlanga River, flows more-or-less from west to east bordering the northern site boundary of the property (portion 378). Two HGM wetland units, a channelled valley bottom and a seep, are situated on the property.

APPENDIX I

GENERAL PROVISIONS AND CONDITIONS OF THE LICENCE

1. GENERAL PROVISIONS

Legal Framework

1.1 This licence is subject to all applicable provisions of the National Water Act, 1998 (Act 36 of 1998) as amended from time to time.

1.2 The licence shall not be construed as exempting the Licensee from compliance with the provisions of any other applicable Act, Ordinance, Regulation or By-law.

Administrative duties/obligations/responsibilities of the Licensee

1.3 The responsibility for complying with the provisions of the licence is vested in the Licensee and not any other person or body.

1.4 The Licensee will be responsible for any water use charges or levies imposed by a Responsible Authority according to the pricing strategy. The levies / charges will be charged from the date of the issuance of this licence.

1.5 No water taken may be pumped, stored, diverted, or alienated for any other purpose other than as intended in this licence without the written approval of the Delegated Authority.

1.6 If the water use licence is not exercised or fully exercised within the 5 (five) year period and the extended 2 (two) year period, as referred to in condition 2.4 and condition 2.5 in Appendix I, the licence may be amended to reflect the extent of the water use that is being exercised, or the licence may be withdrawn

Change of property details

1.7 Amendment of the licence to reflect the name of the new owner will not be approved if there are any outstanding charges or levies imposed by the Responsible Authority to the previous owner.

Monitoring

1.8 The Licensee must adhere to the monitoring programmes submitted with the application.

1.9 Any changes to the monitoring programmes must be approved by the Provincial Head.

Effecting of the Reserve

1.10 While effect must be given to the Reserve as determined in terms of the Act, where a desktop determination of the Reserve has been used in issuance of a licence, when a comprehensive determination of the Reserve has finally been made, it shall be given effect to.

Liabilities and Rights

1.11 The Department accepts no liability for any damage, loss or inconvenience, of whatever nature, suffered as a result of, shortage of water; inundations or flood; siltation of the resource; and required Reserve releases.

1.12 The Minister reserves the right to construct water storage works at any time in any watercourse and to store all surplus water reaching the storage works, as well as to control the allocation of such water.

Restrictions

1.13 The Licensee must adhere to any restrictions that are gazetted and imposed on the respective water resource.

Manholes

1.14 The Licensee must ensure that:

1.14.1 Manholes are covered at all times with a suitable cover that is not prone to theft and cannot be removed by unauthorised persons; and

1.14.2 No new manholes are constructed in the 1:100-year flood line or riparian habitat, whichever is the greatest and/or within the temporary zone of a wetland. Existing manholes situated within the 1:100-year flood lines must be sealed adequately to ensure no ingress of water during any rainfall event.

Stormwater Management

1.15 Stormwater leaving the Licensee's premises shall in no way be contaminated by any substance, whether such substance is a solid, liquid, vapour or gas or a combination thereof which is produced, used, stored, dumped or spilled on the premises.

Amendments

1.16 The Licensee may apply for amendment of this licence in terms of the Act at any time during the period of validity of this licence. Applications must be submitted to the Provincial Head.

Appeals

1.17 If this licence is appealed, it is automatically suspended and the water use activities must cease upon receipt of a notification of the appeal from the Department, alternatively the Licensee may request the Minister to lift the suspension pending conclusion of the appeal via the Chief Director Legal Services at the address below:

Private Bag X313,
Pretoria,
0001

2. GENERAL CONDITIONS

Administrative duties / obligations / responsibilities of the Licensee

2.1 The Licensee must avail an original copy of the water use licence and the supporting reports upon request by the Department.

2.2 The conditions of the authorisation must be brought to the attention of all persons (employees, sub-consultants, contractors, etc.) associated with the undertaking of these activities and the Licensee must take such measures that are necessary to bind such persons to the conditions of this licence.

Commencement of a water use licence.

2.3 The Licensee must inform the Provincial Head in writing within seven (7) days after the Licensee commences with the water use licence and again within thirty (30) days upon completion of the activity/ies.

2.4 The water uses authorised in this licence must be fully exercised within five (5) years from the date of issuance of this licence.

2.5 If the Licensee cannot exercise or fully exercise the water use licence within 5 (five) years, the Licensee may request from the Provincial Head, with reasons, an extension of time to fully utilise the said water use licence, at least three months before the expiry of the 5 (five) years. Only one request for extension of time, with maximum of 2 (two) years for commencement or of fully exercising of water use licence will be considered.

Change of details of Licensee or property

2.6 The Licensee must inform the Provincial Head of any change of ownership, name, address, premises and/or legal status within sixty (60) days of such change taking place.

2.7 If the properties in respect of this licence is/are subdivided or consolidated, the Licensee must provide full details of any change(s) in respect of the properties to the Provincial Head within sixty (60) days after the registration of title deed(s).

2.8 If the Licensee is not the end user / beneficiary of the water user related infrastructure and will not be responsible for long term maintenance and management of the infrastructure, the Licensee must provide a hand over report to the successor in title including a brief management / maintenance plan and the agreement for infrastructure along with allocation of responsibilities, within sixty (60) days after the date of change of end user or beneficiary.

Early renewal for the Licence

2.9 The Licensee must, if needed, apply for early renewal of this licence in terms of the Act within one (1) year before the expiry date of a licence. The application must be submitted to the Provincial Head.

Malfunctions, incidences, contingencies and pollution prevention

2.10 The Licensee must service all vehicles and other machinery outside the extent of the watercourse/s.

2.11 Oils and other potential pollutants must be disposed of at a licensed site, with the necessary agreement from the owner of such a site.

2.12 The Licensee must handle, transport, store and use any hazardous substances according to the relevant legislation or South African National Standards (SANS).

2.13 Accurate and up-to-date records must be kept of all system malfunctions resulting in non-compliance with the requirements of this licence. The records must be available for inspection by the Provincial Head upon request. Such malfunctions must be tabulated under the following headings with a full explanation of all the contributory circumstances:

2.13.1 operating errors;

2.13.2 mechanical failures (including design, installation or maintenance);

2.13.3 environmental factors (e.g. flood);

2.13.4 loss of supply services (e.g. power failure); and

2.13.5 other causes.

2.14 The Licensee must, within 24 hours, notify the Provincial Head of the occurrence or potential occurrence of any incident which has the potential to cause, or has caused water pollution, pollution of the environment, health risks or which is a contravention of the licence conditions.

2.15 The Licensee must, within 14 days, or a shorter period of time, as specified by the Provincial Head, from the occurrence or detection of any incident referred above, submit an action plan which must include a detailed time schedule to the satisfaction of the Provincial Head of measures to be taken to:

2.15.1 correct the impacts resulting from the incident;

2.15.2 prevent the incident from causing any further impacts; and

2.15.3 prevent a recurrence of a similar incident.

2.16 The Licensee must adhere to the Wastewater Incident Management Protocol.

2.17 The Licensee must compile / develop an environmental call and reporting centre protocol, which must ensure the investigation of every complaint within 24 hours.

2.18 The Licensee must implement and promote an environmental call and reporting centre.

2.19 The Licensee must rectify all valid issues reported within seven (7) days of the issue being reported to the Licensee. All valid complaints must be recorded in complaints registers which will include reasons for non-rectification of issues raised.

Water Conservation and Water Demand Management (WCWDM)

2.20 The Licensee must establish and implement a continual process of raising awareness among itself, its workers, and stakeholders with respect to Water Conservation and Water Demand Management initiatives.

2.21 The Licensee must continually investigate new and emerging technologies and put into practice water efficient devices and/or apply technique for the efficient use of water, in an endeavour to conserve water at all times.

2.22 The Licensee must report annually on the implementation of WC/WDM plan including retrofitting with water efficient technologies and devices, reduction of total water demand, improvement in water use efficiency benchmarks and target.

2.23 The Licensee must update the WC/WDM plan every five (5) years and submit to the Provincial Head for approval.

Water measurement and reporting

2.24 The Licensee shall ensure that all monitoring devices are properly maintained and in good working order as per design specification and must be easily accessible. This shall include a programme of checking, calibration, and/or renewal of measuring devices.

2.25 Calibration / verification certificates of the monitoring devices must be available for inspection by the Provincial Head or the representative upon request.

Membership to a Water Users Association

2.26 If a Water User Association exists or is established in the area to manage the resource, it is compulsory for the Licensee to be a member of the Water User Association. The Licensee must adhere to the rules, regulations, and water management stipulations of the water user association.

Monitoring, Methods of analysis and Reporting

2.27 Sample analysis must be conducted by a recognized analytical laboratory, accredited by the South African National Accreditation System (SANAS), or that participates in a recognised Proficiency Testing Scheme to analyze the relevant constituents in wastewater.

2.28 The monitoring points must not be changed without prior notification to and written approval by the Provincial Head.

2.29 The date, time and monitoring point in respect of each sample taken shall be recorded together with the results of the analysis.

2.30 The Licensee shall submit the results of analysis for all the monitoring requirements to the Provincial Head on an annual basis under Reference number 27/2/1/U230/4/5/37.

2.31 The Licensee must submit an Annual Report to the Provincial Head for the purposes of quantifying the potential impacts of the Amaoti No. 3 Secondary School and associated infrastructure to the water resources.

Stormwater Management

2.32 Increased runoff due to vegetation clearance and/or soil compaction must be managed, and steps must be taken to ensure that stormwater does not lead to erosion and excessive levels of silt entering the stream.

2.33 Stormwater management facilities must be constructed, operated and maintained in a sustainable manner throughout the project as detailed in the Storm Water Management Plan.

2.34 All stormwater that would naturally run across the dirty areas must be diverted via lined channels and drains designed to contain the 1:50 year flood.

2.35 The dirty stormwater system shall be designed and implemented to provide suitable routing and pumping capacity for contaminated stormwater from the individual facilities to the respective stormwater dams in accordance with the design specifications.

2.36 Clean stormwater must be diverted from the Amaoti No. 3 Secondary School and associated infrastructure, and must be managed in such a manner as to disperse runoff and to prevent the concentration of stormwater flow.

2.37 The Licensee must ensure that no stormwater should ingress into the wastewater system and that there is no wastewater ingress into the stormwater system.

Restrictions on access

2.38 Strict access procedures must be developed and followed in order to control access to the property. Access to the facility/ies must be limited to authorised persons and animals.

2.39 Notices prohibiting unauthorised persons from entering the areas as well as internationally acceptable signs indicating the risks involved in case of an unauthorised entry must be displayed along the boundary fence of these areas.

Pipelines

2.40 Pipelines used for the conveyance of effluent must be painted in a conspicuous colour or manufactured of a coloured material distinctly different from the colour of the pipelines in which drinking water is flowing to avoid the possibility of any cross-connections of different pipelines.

2.41 All stop-valves and taps on the pipelines conveying water containing waste must be of a type that can be opened and closed by means of a loose wrench. This wrench must be in the safekeeping of a responsible member of the staff to prevent unauthorised use thereof.

2.42 Pollution caused by spills from the pipelines used for conveyance of effluent must be prevented.

2.43 The Licensee must have the full length of the sewer lines inspected on an annual basis. The results of the inspection must be reported in writing within one month of finalisation to the Provincial Head.

Auditing and reporting

2.44 The Licensee must conduct annual internal audits on compliance with the conditions of this licence. The first audit must be conducted within ninety (90) calendar days from the date of commencement of water use entitlement. A report on internal audits must be submitted to the Provincial Head within sixty (60) calendar days of the finalisation of the audits.

2.45 The Licensee must appoint an independent external auditor to conduct biennial (every two (2) years) external audits on compliance with the conditions of this licence. The first audit must be conducted and finalised within one (1) year after commencement of a water use. A report on the audit must be submitted to the Provincial Head within sixty (60) calendar days of the finalisation of each audit.

Compensative measures

2.46 The Licensee must prevent adverse effects on other water users. All complaints must be recorded in complaints registers and be investigated by a suitable qualified person, accredited by an institution / registration body, appointed by the Licensee, and if investigations prove that the Licensee has impaired the rights of other water users, the Licensee must implement appropriate compensative measures as determined by the Minister.

Closure Plan

2.47 A closure plan of any of the water use activities must be submitted one (1) year before commencing with closure to the Provincial Head for written approval.

APPENDIX II

Section 21(c) water use: Impeding or diverting the flow of water in a watercourse/s
Section 21(i) water use: Altering the bed, banks, course or characteristics of a watercourse/s

1. Section 21 (c) and (i) activities

1.1 This licence authorises the Section 21(c) or (i) water use activities as set out in Table 3 and in the water use licence application reports submitted to the Department or the Provincial Head (refer condition 1.2)

Table 3: Water uses authorised

Water Use description	Purpose	Property/(ies)	Extent / Dimensions (m)	Coordinates	
				(Start Point)	(End Point)
Section 21(c) and (i) Water Uses					
Impeding or diverting the flow of water in a watercourse Altering the bed, banks, courses or characteristics of a watercourse	Construct buildings and associated infrastructure, including sewerage infrastructure, within the regulated area i.e. within 500m from wetlands	Farm Riet Rivier No. 842 Portion 378.	Height: 4 m Width: 128 m Length: 192 m	-29.68497 30.993030	-29.684047 30.994697
Impeding or diverting the flow of water in a watercourse Altering the bed, banks, courses or characteristics of a watercourse	Construct a section of stormwater pipe infrastructure within the regulated area i.e. within a wetland and within the 1:100-year floodline of the Ohlanga	Farm Riet Rivier No. 842 Portion 378.	Width: 0.3 m Length: 80 m	-29.683655 30.993149	-29.683447 30.992311

Water Use description	Purpose	Property/(ies)	Extent / Dimensions (m)	Coordinates	
				(Start Point)	(End Point)
	River				

1.2 The Licensee must carry out and complete all the activities listed under condition 1.1 according to the following:

1.2.1 Basic Assessment Report (NCC, August 2023)

1.2.2 Environmental Management Programme (NCC, August 2023)

1.2.3 Wetland Assessment (NCC, March 2023)

1.2.4 Aquatic Assessment (NCC, March 2023)

1.2.5 Hydropedological Assessment (Nature Stamp (Pty) Ltd, September 2023)

1.2.6 Geotechnical Assessment (Shriram Geotechnical Consulting (Pty) Ltd, April 2022)

1.2.7 Hydrological Assessment (JG Afrika (Pty) Ltd, September 2023)

1.2.8 Floodline Assessment (SRK (Pty) Ltd, April 2023)

1.2.9 Method Statement (NCC, August 2023)

1.2.10 Stormwater Management Plan (Nako Iliso Engineers (Pty) Ltd, May 2023)

1.2.11 Civil Design Report (Nako Iliso Engineers (Pty) Ltd, April 2023)

1.2.12 Civil Design Drawings (Nako Iliso Engineers (Pty) Ltd, May 2023)

1.2.13 Water Resource Monitoring Plan (NCC, August 2023)

1.2.14 Contingency Plan (NCC, August 2023)

1.2.15 Integrated Water and Waste Management Plan (NCC, September 2023)

1.2.16 WULA Summary Report (NCC, October 2023)

1.3 No activity must take place within the extent of a watercourse/s, unless authorised by this licence.

1.4 No fundamental alterations of the work method statement, site plan/s and drawings are allowed, unless a modification is requested and granted by the responsible authority in writing; and

2. FURTHER REQUIREMENTS

2.1 For all the activities listed under condition 1.1, Table 3, "as-built" plans and engineering drawings prepared by a registered professional engineer, must be submitted to the responsible authority within six (6) months of completion of new activities. These plans and drawings must indicate the watercourse/s including wetland boundaries and layout and structure location/s of all infrastructure impeding and/or diverting flow of water in the watercourse/s as well as alternations to watercourse/s on the property/ies.

2.2 Structures, Construction Plant and Materials

2.2.1 Structures must withstand a 1:100 year flood.

2.2.2 Structures must be non-erosive, structurally stable and must not induce any flooding or safety hazard.

2.2.3 Structures must be inspected for a minimum of once a quarter for accumulation of debris, blockage, erosion of abutments and overflow areas - debris must be removed and damages must be repaired and reinforced within a reasonable time.

2.3 Water Quality

2.3.1 In-stream water quality must be analysed on a two-weekly basis during construction otherwise monthly at monitoring points both upstream and downstream of the activities for the following variables until pre-construction water quality levels have been reached:

2.3.1.1 Sodium (mg/ℓ)

2.3.1.2 Magnesium (mg/ℓ)

2.3.1.3 Chloride (mg/ℓ)

2.3.1.4 Calcium (mg/ℓ)

2.3.1.5 Sulphate (mg/ℓ)

2.3.1.6 Chlorine (mg/ℓ)

2.3.1.7 Potassium (mg/ℓ)

2.3.1.8 Fluoride (mg/ℓ)

2.3.1.9 Phosphate (mg/ℓ)

2.3.1.10 Nitrate (mg/ℓ)

2.3.1.11 Ammonia (mg/ℓ)

2.3.1.12 pH (pH units)

2.3.1.13 Electrical conductivity (mS/m)

2.3.1.14 Total Dissolved Solids (mg/ℓ)

2.3.1.15 Turbidity (NTU)

2.3.1.16 Dissolved Oxygen (mg/ℓ)

2.3.1.17 Faecal Coliforms (counts / 100mℓ)

2.3.1.18 Total Coliforms (counts / 100mℓ)

2.3.2 Monitoring must be undertaken as set out in condition 3.

2.3.3 Activities must be scheduled to take place during the dry seasons when flows are lowest where reasonably possible.

2.3.4 The Licensee must ensure that the quality of the water to downstream water users does not decrease because of the water use activities listed under condition 1.1.

2.4 **Riparian and Instream Habitat (Vegetation and Physical Structure)**

2.4.1 Activities must start up-stream and proceed into a down-stream direction where feasible, so that the recovery processes can start immediately, without further disturbance from upstream works.

2.4.2 Operation and storage of equipment within the riparian habitat must only take place within the approved limits of disturbance indicated in the site plans and work method statements.

2.4.3 Activities must not occur in sensitive riffle habitats unless authorised by this licence.

2.4.4 Indigenous riparian vegetation, including dead trees, outside the limits of disturbance indicated in the site plans must not be removed from the area.

2.4.5 Alien and invader vegetation must not be allowed to further colonise the area, and all new alien vegetation recruitment must be sustainably eradicated or controlled.

2.4.6 Soils that have become compacted through the water use activities must be loosened to an appropriate depth to allow seed germination.

2.4.7 Stockpiling of removed soil and sand must be stored outside the extent of the watercourse/s, to prevent being washed into the watercourse/s and must be covered to prevent wind and rain erosion.

2.4.8 The use of machinery within the instream and riparian habitat will lead to compaction of soils and vegetation and must be restricted to demarcated areas only.

2.5 **Biota**

2.5.1 The Licensee must allow movement of aquatic species, including migratory species where applicable.

2.5.2 Ensure implementation of all mitigation measures not to disturb the breeding, nesting and/or feeding habitats and natural movement patterns of aquatic biota.

2.6 **Rehabilitation and Management**

2.6.1 The Licensee must implement the rehabilitation programme to restore the watercourse/s to environmentally acceptable and sustainable conditions after completion of the activities as outlined in the rehabilitation plan.

2.6.2 The rehabilitation must be implemented according to the approved Rehabilitation Plan.

2.6.3 A photographic record must be kept as follows and submitted with reports as set out in condition:

2.6.3.1 Dated photographs of all the sites to be impacted before construction commences;

2.6.3.2 Dated photographs of all the sites during construction on a monthly basis; and

2.6.3.3 Dated photographs of all the sites after completion of construction, seasonally.

2.6.4 All disturbed areas must be re-vegetated with indigenous plants in consultation with an indigenous plant expert, ensuring that during rehabilitation only indigenous shrubs, trees and grasses are used in restoring the biodiversity.

3. MONITORING AND REPORTING

3.1 The monitoring plan must be implemented, and reporting done to the Provincial Head as stipulated under condition 3.2.

3.2 Six (6) monthly monitoring reports must be submitted to the Provincial Head for the duration of the construction phase and yearly thereafter or until otherwise agreed in writing with the Provincial Head.

4. Construction and Operational Phase

4.1 At least two water quality monitoring points, one upstream and one downstream of the affected length of the watercourse/s.

4.2 A bio-monitoring programme (SASS) must be implemented along the affected length of the watercourse/s and must include a habitat assessment.

4.3 Exact positions of monitoring points must be indicated on the master layout plan (including their co-ordinates).

5. SITE SPECIFIC CONDITIONS

5.1 The Hydropedological assessment must be continuously undertaken to determine in part, the risk posed by the development or land use change to water resources around the jurisdiction area of proposed site.

5.2 The Licensee may not develop along any slopes steeper than 12° and any 1:100 year floodline.

5.3 Access roads in areas exceeding 12° must have temporary silt traps during construction and appropriate storm water infrastructure for operation.

5.4 Flow dissipation points must not be concentrated towards the identified wetland, rather spaced out to alleviate large volumes entering the wetland during peak events.

5.5 Only clean water may be directed towards the wetland system.

5.6 Natural areas must be vegetated with natural grassland.

5.7 Once the Amaoti School Development is completed, a hydrocarbon spill kit must be kept on site. This must be used in the clean-up process in the event of an oil spill from vehicles in the parking areas, so that hydrocarbons do not impact upon the downstream environment.

5.8 As the tributaries of the Ohlanga River are in close proximity to the proposed development, a detailed floodline study of these drainage lines must be undertake to provide a higher degree of confidence in the location of the floodlines, which could impact on the recommendations on the extents of the proposed development. This study must be submitted to this Office for review and approval within six months of issuance of the Water Use Licence.

5.9 In order to protect the ecological integrity of the wetlands, the Ohlanga River and associated riparian zone, a 15m ‘no go’ buffer for wetlands must be implemented for all built infrastructure, with the exception of the portion of the stormwater infrastructure (concrete pipeline and headwall) which is proposed to be constructed within HGM2.

END OF LICENCE

Provincial Head

KWAZULU-NATAL PROVINCE
ECONOMIC DEVELOPMENT, TOURISM AND ENVIRONMENTAL AFFAIRS
REPUBLIC OF SOUTH AFRICA

22 Dorothy Nyembe Street, Durban 4001
9th Floor, The Marine Building
4001

Private Bag X9152
Pietermaritzburg, 3200
www.kznded.gov.za

Programme/Sub-Programme: Environmental Management
Enquiries: Ms. Nombulelo Zungu
Telephone: 031 310 5310
Email: Nombulelo.Zungu@kznedtea.gov.za
Reference: DM/0016/2023
KZN Reference: KZN/EIA/0001941/2023

Date: 15 / 01 /**2024**

Email Transmission

KwaZulu Natal Department of Education
Mr. Sabelo Dube
15 Scott Street
Pietermaritzburg
3201

Tel: 072 152 0030
Email: Sabelo.Dube@kzndoe.gov.za

Dear Sir

DM/0016/2023: THE DEVELOPMENT OF AMAOTI NO. 3 SECONDARY SCHOOL ON FARM NO. 842 RIETRIVIER IN WARD 53 SITUATED IN THE TOWNSHIP OF MAWOTI WITHIN THE ETHEKWINI MUNICIPALITY.

The KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs has **authorised** the above-mentioned project. This environmental authorisation and reasons for the decision are attached herewith.

ENQUIRIES
Please note that:

- All queries regarding this application for environmental authorisation (including the Department's decision) must be directed to the official of this Department with contact details provided on the letterhead above.
- **Only** queries regarding appeals must be submitted to the Office of the MEC (details provided below)

NOTIFICATION OF DECISION ON APPLICATION
In accordance with regulation 4(2) of the EIA Regulations 2014, the applicant must in writing **within 14 days** of the date of this decision ensure that:

a. All registered interested and affected parties are provided with access to this decision and the reasons for the decision; and
b. The attention of all registered interested and affected parties is drawn to the fact that an appeal may be lodged against the decision in terms of the National Appeal Regulations 2014, if such appeal is available in the circumstances of the decision.

APPEALS

In accordance with regulation 4(1) of the National Appeal Regulations, 2014, an appellant must submit an appeal to the appeal administrator and a copy of the appeal to the applicant, any registered interested and affected party and organ of state with interest in the matter within **20 days** from the date of notification of this decision.

An appellant must comply with regulation 4(2) and submit the appeal in writing, on the form obtainable from the Appeal Administrator and **by post, fax, e-mail or hand delivery** to the following address:

The Appeal Administrator,
Office of the KwaZulu-Natal MEC for Economic Development, Tourism & Environmental Affairs

POSTAL/ FAX/ E-MAIL:	**PHYSICAL:**
Private Bag X9152 PIETERMARITZBURG 3200 Tel: 033 264 2651 / 081 731 7361 E-Mail: haresh.inderlall@kznedtea.gov.z (Haresh Inderlall)	Room 218.23, 2nd Floor 270 Jabu Ndlovu Street PIETERMARITZBURG 3201

Yours faithfully

for: **Acting Head of Department**
KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs
Signed by: Ms. Nombulelo Zungu
Designation: District Manager
District: eThekwini
EAPASA Registration: 2022/5399

cc: NCC Environmental Services (Pty) Ltd, Mr Craig Burne, Tel: 078 467 3685email: craigb@ncc-group.co.za

KWAZULU-NATAL PROVINCE
ECONOMIC DEVELOPMENT, TOURISM AND ENVIRONMENTAL AFFAIRS
REPUBLIC OF SOUTH AFRICA

Environmental Authorisation

In terms of regulation 25 of the Environmental Impact Assessment Regulations, 2014

Project Title: THE DEVELOPMENT OF AMAOTI NO. 3 SECONDARY SCHOOL SITUATED ON FARM NO. 84 RIETRIVIER IN WARD 53, MAWOTHI TOWNSHIP.

Municipality: eThekwini District

Application number	:	DM/0016/2023
NEAS number	:	KZN/EIA/0001941/2023
Date of issue	:	15 / JANUARY /2024
Environmental Authorisation Holder	:	Kwa Zulu Natal Department of Education
Location of activity	:	Farm no. 84 Rietrivier in ward 53, Mawothi Township, Coralbrook Road, Brookdale, Phoenix

Scope of Project

In alignment with the School Building Programme, the KZN Department of Education is authorised to develop Amaoti No. 3 Secondary School on Farm no. 842 Rietrivier in Ward 53 situated in the township of Mawothi within the eThekwini Municipality. A school is currently operating out of prefabricated containers used as classrooms by learners and staff on the proposed development site footprint. The purpose of the project is to upgrade the current informal school into a new formal school to provide learners with proper infrastructure that supports and improves teaching and learning.
Existing infrastructure at the site consists of 41 temporary prefabricated/container structures which include:

a) 25 x Single-Storey Classroom Structures;
b) 5 x Temporary Single-Storey Staff Structures,
c) 2 x Temporary Single-Storey Ancillary Structures;
d) 1 x Temporary Single- Storey Kitchen Structure;
e) 3 x Temporary Single-Storey Ablution Structures;
f) 3 x Temporary Single-Storey Store Room Structures;
g) 1 x Temporary Single-Storey Library Structure; and,
h) 1 x Timber Single-Storey Guard House.

Other temporary structures on the property include a prefabricated structure located east of the school, portable chemical toilets and picnic benches located in the central courtyard.
The site is located in a built-up residential area and is currently serviced by an existing waterborne type sewage system. A municipal water connection point is located near the existing main entrance to the site/school and an existing municipal customer distribution unit (CDU) is situated across the road from the current school entrance that feeds into a 60A prepaid meter in the admin office building.

The authorized development will comprise of bulk earthworks to construct level platforms for the following infrastructure:

1) **Learning Spaces** which accommodates 30 x Standard Classrooms;
2) 7 x Multipurpose Classrooms (with stores);
3) 1 x Media Centre / Library (with stores);
4) 1 x Computer Room (with Store);
5) 1 x Science Classroom (with Store);
6) 1 x Team Teaching Room.
7) **Administration and Support Spaces** which accommodate 1 x Principal's Office,
8) 2 x Deputy Principal's Offices,
9) 1 x General Office,
10) 1 x Staffroom and Kitchenette,
11) 1 x Strong room, 1 x Stock Room,
12) 1 x Printing Room,

13)2 x Sick Rooms,
14)1 x Entrance Hall, 5 x HOD's Offices,
15)1 x Counselling Suite,
16)2 x General Stores,
17)2 x Large Stores,
18)1 X Guard House, 1 x Refuse Room,
19)1 x SNP Kitchen,
20)1 x Tuckshop,
21)1 x Food Storage,
22)1 x Nutrition Centre Yard,
23)1 x Food Garden;
24)1 x Undercover Dining Area; and,
25)36 x vehicle parking bays for staff.

Construction will include civil/service infrastructure for water, sewerage, stormwater and electricity. With no formal sports facility on the site, a portion of the site previously levelled is to be redeveloped into 2 x combi courts and 1 x new soccer / rugby field along the western site boundary as per **Annexure 2: Locality Map**. Stormwater infrastructure will be constructed directly within HGM2[1] itself as well as the 15m 'no go' buffer for HGM2. A 300mmØ concrete stormwater pipe (totalling 97.2m in length) and an associated headwall is proposed to be constructed directly within HGM2 for a distance of 83m. The function of the pipe will be to divert stormwater flows from hardened/impermeable surfaces, via an overflow attenuation pond, into the Ohlanga River as depicted in **Annexure 3: Development Layout Plan** attached herewith.

Decision

By virtue of the powers conferred on it by the National Environmental Management Act, 1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2014 as amended, the

KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs
(hereafter referred to as the "Department")
grants Environmental Authorisation
to:
KZN Department of Education
(herein after referred to as "the holder of the Environmental Authorisation")

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[1] Hydrogeomorphic Unit 2

Details of the contact person:
Mr. Sabelo Dube
15 Scott Street
Pietermaritzburg
3201

Tel: 072 152 0030
Email: Sabelo.Dube@kzndoe.gov.za

to undertake the following activities (hereafter referred to as "the activities") as described in section 1 below:

1. Activities authorised

The following activities in Government Notice Number Regulation (GNR) 327 dated 04 December 2014, as amended are triggered by the abovementioned project:

1.1 Description of Activity and location

21 Digit Surveyor General Codes for each property

N	0	E	T	0	0	5	7	0	0	0	0	0	0	2	2	0	0	0	0	0

This application is described as triggering the following listed activities:

Listing Notice / Activity No.	Activity description	Component of the project
Activity 12(d)(v) of Listing Notice 3 of Government Notice Regulations, 2014 as amended	*The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.* ***d. KwaZulu-Natal*** *v. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;*	The development will result in approximately 8852m^2 of indigenous vegetation being cleared within an endangered ecosystem, the KZN Coastal Belt Grassland (CB3).

Listing Notice / Activity No.	Activity description	Component of the project
Activity 19 of Listing Notice 1 of Government Notice Regulations, 2014 as amended	*The infilling or depositing of any material of more than 10 cubic metres into/from a watercourse.*	The development will result in approximately 83.5m^3 of material being removed from the wetland adjacent to the Ohlanga River with infilling thereafter for the purposes of the construction and operation. Stormwater infrastructure will be constructed directly within HGM2 itself as well as the 15m 'no go' buffer for HGM2. A 300mmØ concrete stormwater pipe (totalling 97.2m in length) and an associated headwall is will be constructed directly within HGM2 for a distance of 83m. The function of the pipe will be to divert stormwater flows from hardened/impermeable surfaces, via an overflow attenuation pond, into the Ohlanga River. .

Table 1: Listed activities triggered

1.2 **The activity triggering the need for an EA is located at the following GPS co-ordinates:**

Authorised alternative	Latitude (south)	Longitude (east)
Farm no. 84 Rietrivier in ward 53, Mawothi Township, Coralbrook Road, Brookdale, Phoenix	29° 41' 6 85"	30° 59' 33 21"

Table 3: GPS co-ordinates of the activity

2. General

2.1 **Compliance with the conditions of this environmental authorisation (EA)**
In terms of section 49A (1) (c) of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, failure to comply with the conditions of this environmental authorisation constitutes an offence for which a convicted person may be liable to a fine not exceeding R10 million or imprisonment for a period not exceeding ten years or both such fine and such imprisonment, in terms of section 49 B (1).

2.2 **Understanding the conditions of this authorisation**
It is the responsibility of the holder of the EA to understand the conditions of this authorisation. Any queries regarding this EA must be submitted in writing to the Department as per contact details specified in condition 2.4 herewith.

2.3 **Amendments to the project and update of the Environmental Management Programme (EMPr)**

2.3.1 This EA does not negate the EA holder's responsibility to comply with any other statutory requirement that may be applicable to the carrying on of the activities.

2.3.2 The Department retains the right to inspect the project area at any time during all phases of the development in accordance with relevant legislation.

2.3.3 It is the responsibility of the EA holder to ensure that the Department is made aware of any change of ownership or contact details within **thirty (30) days** of such changes. Where applicable, an amendment application must be submitted.

2.3.4 The holder of the EA must ensure that all workers be supplied with appropriate personal protective equipment/clothing (PPE/C) and management must ensure that all staff wear the necessary PPE/C during the construction phase.

2.3.5 Please note that it is the responsibility of the EA holder to ensure the details are correct at the time of submitting any documentation and that the documentation reaches the relevant official.

2.4 **Contact details of the Department**

The following contact details for the Department must be used for all reports, notices etc. which must be submitted to the Department:

Physical Address: The Marine Building, 22 Dorothy Nyembe Street, 9th Floor, Durban, 4001

Attention: The Control Environmental Officer –

Component	Email Address	Telephone No.	Cell. No.
Compliance, Monitoring & Enforcement (CME)	Siyabonga.Sikhakhane@kznedtea.gov.za / Yugeshni.Govender@kznedtea.gov.za	031 - 310 5326 031 - 310 5314	081 541 7583 082 921 9540
Environmental Impact Assessment (EIA)	Natasha.Brijlal@kznedtea.gov.za / Sibusisiwe.Mthimkhulu@kznedtea.gov.za	031 – 310 5315	079 898 0491 / 0813417137
Pollution & Waste Management (P&W)	Shireen.Mahabeer@kznedtea.gov.za	031 - 310 5313	082 322 1871

Table 3: eThekwini District office component contact email addresses and telephone numbers

2.5 The removal, cutting, pruning or relocation of any indigenous or protected trees must be authorised by the Department of Forestry Fisheries and Environment (DFFE) or Ezemvelo KwaZulu-Natal Wildlife (EKZNW), if applicable.

2.6 The chance find procedure[2] provided by the specialist must be implemented.

2.7 Amafa aKwaZulu-Natali must be contacted immediately should there be any objects of heritage significance and/or graves are identified during earthmoving activities and all development must cease immediately and must only continue until further notice is received from Amafa aKwaZulu-Natali.

3. Conditions of Environmental Authorisation

This Environmental Authorisation (EA) is subject to the conditions set out below:

3.1. **Period of Validity**: The listed activities authorised must commence within **ten (10) years** from the date of issue. If commencement of the authorised activity / any of the authorised activities does not occur within that period, this EA lapses.

3.2. **Notification to interested and affected parties**

3.2.1 The holder of the EA must notify all registered interested and affected parties, in writing and within **fourteen 14 calendar days from date of** the Department's decision to authorise the activity.

3.2.1.1 The notification referred to must –

3.2.1.1.1 Specify the date on which the authorisation was issued;

3.2.1.1.2 Inform the interested and affected party of the appeal procedure provided for in the National Appeal Regulations, 2014 as amended; and,

3.2.1.1.3 Advise the interested and affected party that a copy of the authorisation will be furnished on request.

3.3. **Environmental Management Programme (EMPr)**

3.3.1 The Environmental Management Programme (EMPr) prepared by NCC Environmental Services (Pty) Ltd and submitted as part of the Final BAR received by the Department on 05 September 2023, for the construction and operational phases of this project as submitted for the EA of this project complies with section 24N of NEMA and Appendix 4 of the EIA Regulations, 2014, as amended. This EMPr is hereby **approved** and must be implemented throughout the above-mentioned phases of the project.

3.3.2 The EMPr must be kept on site throughout the construction and rehabilitation phases of the development.

3.3.3 Any changes to, or deviations from, the project description set out in this EA must be approved, in writing, by the Department before such changes or deviations may be effected.

[2] As contained in the Heritage Impact Assessment, by PGS Heritage, dated 28 January 2021

3.3.4 Any subsequent amendments to the approved EMPr must also be submitted to the Department for review. The amendments must only be implemented after being approved by the Department.

3.3.5 Non-compliance with the approved EMPr will constitute non-compliance with the conditions of this EA.

3.3.6 The EMPr is considered as an extension of the EA. Each official and/or worker operating on site must be educated about the EMPr and made aware of his/her responsibilities. Proof of this must be attached to the first audit report submitted to the Department as per contact details specified in condition 2.4 herewith.

3.3.7 The approved EMPr must be:

3.3.7.1 Made binding on all parties operating on the site during all phases of the project; and,

3.3.7.2 Included in all contractual documentation for the construction and operational phase of the development.

3.3.8 A copy of the approved EMPr together with any documents that need to be attached to the EMPr must be forwarded to the Department: CME unit with contact details as specified in condition 2.4 herewith.

3.4. Monitoring and Reporting to the Department

3.4.1 All requirements for the management, monitoring and reporting of impacts for all phases of the project must be as specified in the EMPr or environmental audit report.

3.4.2 An independent Environmental Control Officer (ECO)[3] must be appointed **prior** to the commencement of the construction phase to monitor the implementation of the approved EMPr and EA.

3.4.3 Should the ECO for the approved development change at any time, this must be communicated, in writing, to the CME unit with contact details as specified in condition 2.4 herewith within **fourteen (14) calendar days** of appointing the new ECO.

3.4.4 The notification in terms of condition 3.4.3 above must include contact details for the ECO, details pertaining to the ECO's relevant experience, and reasons for the change in ECO.

3.4.5 The ECO must conduct environmental audits as per the time intervals specified below:

3.4.5.1 **Monthly audits** during the construction phase. The audit report must be submitted within **five (05) days** from the date of the site visit to the

[3] The ECO must be independent and have the necessary experience and qualifications to understand, interpret, monitor, audit and implement the EMPr and the conditions of this EA. Feedback must be given in the form of an audit report which must address any non-compliance that may have risen from the audit.

Department: CME unit as per contact details contained in condition 2.4 herewith; and,

3.4.5.2 **One (01) post construction** audit. This audit report must be submitted sixty (60) days from the date that construction is completed to the Department: CME unit as per contact details contained in condition 2.4 herewith.

3.4.6 The responsibilities of the ECO must include *inter alia*:

3.4.6.1 Performing all tasks assigned to the ECO in the approved EMPr;
3.4.6.2 Keeping record of all activities on site, problems identified and transgressions noted;
3.4.6.3 Assisting the EA holder in ensuring/enforcing implementation of the EA and EMPr; and,
3.4.6.4 Providing guidance/advice that ensures implementation of appropriate environmental management measures and adherence with environmental legislation/regulations.

3.4.7 Records relating to monitoring and auditing must be kept on site by the ECO and made available for inspection to this Department and other relevant authorities.

3.4.8 The activity authorised must only be carried out at the location/s as described in **Section 1** above.

3.5 Written notice of the commencement of the construction phase

3.5.1 Not less than **seven (07) days** written notice must be given to the Department that the construction phase will commence. Commencement for the purposes of this condition includes site preparation. The notice must include the EIA reference number DM/0016/2023, a date on which it is anticipated that construction will commence.

3.6 Availability of this EA

3.6.1 The EA holder must keep a copy of this EA on site during the construction phase and also be made available to any authorised official of the Department on request.

3.6.2 The Department shall not be held responsible for any damages or losses suffered by the holder or successor in title in any instance where construction/commissioning may be temporarily or permanently stopped for reasons of non-compliance by the holder of the EA with the conditions of the EA as set out in this document or any other subsequent document emanating from these conditions of the EA.

Commissioning of the activity

3.7 The development must comply with the approved Layout Plan Drawing No. A-ASS (02)1000, dated 07 July 2023 and as submitted to this Department on 05 September 2023 which is depicted as **Annexure 3: Development Layout Plan** attached herewith.

3.8 Any deviations from the layout in Condition 3.7 above, must be approved by the Department prior to the implementation of such deviation, in accordance with all relevant legislation applicable at the time.

3.9 All sensitive areas beyond the development footprint and in the D'MOSS area must be demarcated with shade cloth and warning signage to clearly indicate "no-go" areas to the contractors and any personnel, except for rehabilitation purposes.

3.10 A buffer area of 15m for the wetlands on site must be demarcated and deemed as a no-go area except in areas designated for:
3.10.1 The construction of the stormwater pipe;
3.10.2 The construction of the attenuation pond; and
3.10.3 Portions of the sports fields as depicted in the authorized site layout plan, attached as Annexure 3 herewith.

3.11 Access of construction vehicles must be strictly controlled and restricted to the construction areas outside of the buffer (No-Go Areas) to control impacts on the sensitive environmental features on site.

3.12 All construction activities must be restricted to the development footprint area. This includes laydown and storage areas, ablutions and offices.

3.13 The construction camp must be situated away from the wetlands and the associated buffers.

3.14 The location of the construction camp/s must be negotiated and agreed upon by the holder of the EA, the contractor and ECO for the project.

3.15 Prior to the commencement of the construction phase, a shade cloth screen must be erected around the working areas close to public roads and populated areas to prevent the unnecessary spread of any material into neighbouring properties.

Construction Phase

3.16 Warning signage must be erected on the site to warn workers and the community that construction is in progress.

3.17 A geotechnical specialist must be present on site during the pre-construction and construction phase to attend to geotechnical-related issues.

3.18 The following conditions apply to the storage of dangerous substances on site during the construction phase:

3.18.1 Dangerous substances must be stored in the construction camp under lock and key;
3.18.2 The site Engineer or ECO must ensure that the storage and utilisation of any potentially dangerous materials such as, but not limited to, diesel, petrol, oils and/or lubricants do not result in any form of soil and water pollution; and,

3.18.3 Any soil/groundwater polluted during construction must be removed, stored in a sealed container and disposed thereof at a licensed disposal facility. Safe disposal certificates must be obtained and made available to the Department upon request.

Traffic Management

3.19 Construction vehicles must be parked in a designated area which must not disrupt vehicle traffic from surrounding areas. All vehicles to remain in the parking area designated within the construction site when not in use.

3.20 Construction vehicles and machinery must make use of existing access routes. Should this not be possible, an alternative route must be agreed upon with the ECO and the CME unit of the Department.

3.21 Traffic control measures must be implemented should the access roads be affected by the ingress and egress of construction vehicles and equipment.

3.22 Traffic management must be in accordance with the approved EMPr.

Air Quality and Noise

3.23 Machinery and equipment must always be used in accordance with the approved EMPr.

3.24 Surrounding land owners must be notified by the ECO within **seven (07) days** prior to the commencement of disruptive activities during the construction phase and proof must be submitted to the Department: CME unit as per contact details provided in condition 2.4 herewith.

Stormwater Management

3.25 Any wastewater (i.e. dirty construction water) generated must not be discharged into the natural environment. Measures to contain wastewater and to safely dispose of it must be implemented in accordance with the approved EMPr.

3.26 Drainage must be contoured to ensure that runoff from the site is contained and does not culminate in off-site pollution downstream of any stormwater discharge.

3.27 Earthworks and drainage measures must be designed in such a way as to prevent ponding of, or high concentrations of, stormwater or groundwater anywhere on the site, both during and after the development has been completed.

3.28 Stormwater from hardened surfaces (e.g., roads, paved areas, etc.) must be treated prior to entering the natural environment, so as to prevent oils, cleaning agents, etc. from entering and contaminating surface or ground water.

3.29 Stormwater and any runoff must flow into energy dissipation structures prior to being discharged back into the natural watercourses (such as retention ponds or areas with rock

/ grassed with indigenous vegetation to encourage the trapping of silt and attenuation of flows).

Dust and Erosion Control

3.30 Sufficient soil erosion control measures to prevent erosion and degradation in the vicinity of the site must be implemented.

3.31 Soil erosion prevention measures and soil erosion control measures outlined in the approved EMPr must be implemented during the construction and rehabilitation phase.

3.32 Soil must be exposed for a minimum time possible once cleared such that the timing of clearance is coordinated with the onset of construction to prevent wind and water erosion.

3.33 All stockpiles must be covered if the stockpile is to be exposed for a longer than One (1) month.

Spillage

3.34 The holder of the EA must ensure that all personnel/workers on site are appropriately trained to deal with a spill/leak in accordance with relevant environmental legislative requirements.

3.35 A Spill Contingency Plan[4] for the construction phase of the project must be compiled by the holder of the EA and should spillage occur, the following actions must be considered:

3.35.1 Stop the source of the spill;
3.35.2 Contain the spill;
3.35.3 All spills must be reported to this Department's Control Environmental Officer: Pollution and Waste (P&W) Component as per contact details specified in condition 2.4 herewith as well as any other mandated authorities such as the Department of Water and Sanitation (DWS); and,
3.35.4 The incident must be documented.

3.36 In the event of a spillage which poses a serious threat to the environment, the following Departments must be informed within **forty-eight (48)** of an incident[5] and/or emergency situation[6]:

3.36.1 The eThekwini Municipality;
3.36.2 DWS;
3.36.3 KZN Department of Economic Development, Tourism & Environmental Affairs: P&W component as per contact details specified in condition 2.4 herewith;
3.36.4 The Local Fire Department; and,
3.36.5 Any other mandated department.

[4] It is the responsibility of the EA holder to ensure that all emergency contact numbers on the SCP are updated regularly.
[5] 'Incident' as described in terms of Section 30 of National Environmental Management Act (NEMA), Act no. 107 of 1998 (as amended).
[6] 'Emergency Situation' as described in terms of Section 30(A) of NEMA, Act no. 107 of 1998 (as amended).

Ecological and Vegetation[7]

3.37 All construction activity in close proximity (between 15-32m) from freshwater resources should take place when soil conditions are drier i.e. during low rainfall periods and/or the drier winter months.

3.38 Construction activity should also cease during and 5 days after significant rainfall events (i.e. > 10mm) to allow sufficient time for soils to dry out.

3.39 No storage or dumping of any excavated soils (i.e. stockpiles) and no storage or dumping of any equipment or materials (including rubble) must be allowed within and in close proximity to freshwater resources.

3.40 All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised and be surrounded by erosion berms.

3.41 The soil stockpiles should be stored at a maximum height of 2m to avoid compaction and loss of micro-organisms.

3.42 Soil stockpiles must also be kept free of weeds and potential alien plant invasion.

3.43 The soil excavated for the sewer pipeline trench, the topsoil and subsoil must be separated in order to backfill.

3.44 During the replacement of soil within the trenches, replacement of subsoil must precede the topsoil replacement, and all material must be well compacted.

3.45 The following conditions apply to the management of alien invasive species:

- 3.45.1 An Invasive Alien Plants management plan must be implemented by the holder of the EA to prevent the spread of current invasive species, particularly those situated within the D'MOSS habitats.
- 3.45.2 All alien invasive species must be removed from within the development footprint in accordance with the approved EMPr; and
- 3.45.3 Alien invasive species must be removed mechanically and not chemically so as to have minimal ecological and biological impacts.

3.46 The holder of the EA must ensure that landscaping with suitable locally indigenous vegetation is used throughout the rehabilitation of the site.

3.47 Rehabilitation of all sensitive areas must commence immediately after the completion of construction or at the earliest time prescribed by the ECO, in accordance with the approved EMPr.

3.48 All landscaping must use only indigenous plant species and the corridor on the northern portion of the property maintained. This non-developable area must be revegetated with

[7] Ecological Specialist Report undertaken by Ronaldo Retief of NCC Environmental Services (Pty) Ltd, dated May 2022

indigenous plant species according to the recommended species provided in the vegetation assessment report.

3.49 A suitably qualified wetland/aquatic specialist must be appointed to:
3.49.1 Monitor the two wetlands (HGM1, HGM2) and Ohlanga River during the construction phase on a quarterly basis and for a period of a year post construction; and
3.49.2 An aquatic monitoring survey must be conducted quarterly during the course of the construction phase to assess the impacts and implement sufficient and adaptive management measures.

Solid Waste Management

3.50 All waste material generated during all phases of the development must be identified and classified. Waste generated must be handled/stored/disposed according to its classification in terms of the National Environmental Management Waste Act (NEMWA).

3.51 All waste material collected must be stored under cover and within a designated waste collection/storage area which must be on an impermeable surface. Access control to this area must be properly managed.

3.52 The holder of the EA is responsible for the removal and disposal of solid waste including surplus of spoil material and rubble. All waste that cannot be reused or recycled must be disposed off accordingly at a landfill site registered in terms of section 20(b) of the National Environmental Management: Waste Act, Act No. 59 of 2008. The contractor responsible for the removal of the waste must supply the applicant with a certificate indicating safe disposal. Within **fourteen (14) days** of its issue, a copy of the safe disposal certificates must be forwarded to the Control Environmental Officer: CME Component as per contact details specified in condition 2.4 herewith.

3.53 It is the responsibility of the holder of the EA to identify any sources of pollution from the undertaking of the activity and to take appropriate measures to prevent any pollution of the environment.

3.54 The site engineer or ECO must ensure that the storage and utilisation of potentially dangerous materials such as diesel, petrol, oils and/or lubricants during the construction phase does not result in any form of soil and underground water pollution.

3.55 Chemicals or dangerous substances must not be allowed to pollute the soil or groundwater. In the event of this occurring, the necessary clean up measures must be undertaken immediately. Any soil/groundwater polluted during construction must be removed, stored in a sealed container and disposed of at a licensed disposal facility.

Operational phase

3.56 The EA holder is responsible for compliance with the provisions for *Duty of Care and remediation of damage* in accordance with section 28 of NEMA, Act no. 107 of 1998 (as amended). Determination of damage vests in this Department.

3.57 The holder of the EA is responsible for the rehabilitation, management and general upkeep of the site which must be conducted in accordance with the approved EMPr.

3.58 Should the activity ever cease or become redundant, the EA holder must contact the Department in writing to determine the required actions for the rehabilitation and closure of the site.

Compliance with section 24H of NEMA and associated Regulations

In terms of section 24H of the NEMA and the Section 24H Amendment Regulations (GN R2320 of 29 July 2022), all tasks referred to in regulation 14(2) of the section 24H Amendment Regulations in relation the assessment, evaluation and consideration of all reports and documents required to inform the decision on this application for environmental authorisation in terms of the EIA Regulations, have been undertaken by the following registered environmental assessment practitioners:

Name	Designation	EAPASA Reg. No.	Role
Ndumiso Masuku	Environmental Officer	Pending	Lead Assessing Officer
Natasha Brijlal	Control Environmental Officer	2022/5378	Peer review

Date of environmental authorisation: 15 JANUARY 2024

for **Acting Head of Department:**
KwaZulu-Natal Department of Economic Development Tourism and Environmental Affairs
Signed by: Ms. Nombulelo Zungu
Designation: District Manager
District: eThekwini
EAPASA Registration No: 2022/5399

Annexure 1: Reasons for Decision

1. Information considered in making the decision

In reaching its decision, the Department took, *inter alia,* the following into consideration –

a) Application form compiled by NCC Environmental Services (Pty) Ltd, and received by the Department on 10 June 2023;

b) The information contained in the final BAR and EMPr, both compiled by NCC Environmental Services (Pty) Ltd, dated August 2023 and received by the Department on 15 September 2023;

c) The conclusions and recommendations from the specialist reports received by the Department as part of the final BAR dated 15 September 2023;

d) Meeting with applicant, project team and EAP to discuss issues raised in the public participation process held on 16 September 2023. All issues have been adequately addressed.

e) The findings of the site visit undertaken by Mr. Ndumiso Masuku from the Department of Economic Development, Tourism and Environmental Affairs, in the presence of Mr. Craig Burne of NCC Environmental Services (Pty) Ltd, Siphelele Zungu and Sisekelo Jali on 17 October 2023.

2. Key factors considered in making the decision

a) The Final BAR (August 2023)

i. The Final BAR prepared by NCC Environmental Services (Pty) Ltd dated August 2023 and received by the Department on 15 September 2023;
ii. The Final BAR included a description of the environment that may be affected by the activity and the manner in which the physical, biological, social, economic and cultural aspects of the environment may be affected by the activity; and,
iii. The methodology used in assessing the potential impacts identified in the final BAR has been indicated.

a) Public Participation

i. The public participation process complies with the requirements of Chapter 6 of the EIA Regulations, 2014 as amended and the comments from the organs of state and interested & affected parties have been addressed and included in the final BAR received by the Department on 15 September 2023.
ii. The meeting with the EAP, held on 16 September 2023 and organized by the Department aimed to address some issues.
    - *Need for eThekwini Municipality: Biodiversity Management Department (BMD) approval for any encroachment into the D'MOSS buffer prior to submission of the Final BAR and also confirm whether any conservation servitudes are required to be registered.*

- This matter was resolved and permission from BMD was received.

- *The confirmation of the availability of capacity at Phoenix WWTW by eThekwini Municipality: Water and Sanitation (EWS) and dated 03 March 2023 must be attached to the final BAR.*
  - This matter was resolved and the EAP provided a letter indicating that the Phoenix WWTW can receive the sewerage generated by the school.

b) **Need and Desirability**[8]

In terms of zoning, the property is zoned for special residential whereby special consent can be granted for a number of other land use which includes an education establishment i.e. a secondary school. The project area is located in a community where the demand for quality education is high by virtue of the fact that only 26% of the eThekwini Municipal population have some secondary education. The need for a secondary school within ward 53 is a societal need of the local community.

The most recent IDP (2021-2022) has identified priorities for the communities in the various wards across the EMA according to a Community Needs Matrix. This was an outcome of discussions between the Municipality, Ward Committee Members and Community Based Organisations. For ward 53, improving education (priority 4) is one of the five priorities. Priority 2 is to 'Build a multipurpose centre that combines Education, Skills development and Recreation. Temporary / informal schooling facilities exist on the property however they are not fully equipped to cater holistically to secondary school students. This proposed development aims to provide formal school infrastructure more conducive to a learning and sporting environment to provide the youth i.e. learners a better opportunity to receive a good education which increases their likelihood of becoming further qualified, find employment and improve the quality of their lives. The proposed school development will create a safer and healthier learning environment than the current scenario that will not only benefit current and future learners and educators, but the community as a whole, through the uplift of the community in support of positive social change. The proposed upgrade will also remedy the current education and unemployment problems in the local community by providing them with an opportunity to further their careers and secure permanent employment.

c) **Heritage Impact Assessment** [9]

The school occurs in an area where the palaeontology is assessed as being almost entirely of moderate sensitivity. Deep excavations are not anticipated, and impacts will be managed through the chance finds protocol and having a post-mitigation impact rating of low negative. No heritage resources were identified during the field work and no impact is expected. Possible subsurface chance finds will have a post-mitigation impact rating of low negative. It is possible that cultural material will be exposed during construction and may be recoverable, keeping in mind delays can be costly during construction and as such must be minimised. Development surrounding infrastructure and construction of facilities results in significant disturbance, however foundation holes do offer a window into the past and it thus may be possible to rescue

[8] Extracted from the Final BAR dated June 2023

[9] Heritage Impact Assessment, by PGS Heritage, dated 28 January 2021

some of the data and materials. It is also possible that substantial alterations will be implemented during this phase of the project and these must be catered for. Temporary infrastructure developments, such as construction camps and laydown areas, are often changed or added to the project as required. In general, these are low impact developments as they are superficial, resulting in little alteration of the land surface, but still need to be catered for. During the construction phase, it is important to recognize any significant material being unearthed, making the correct judgment on which actions should be taken. It was recommended that the chance find procedure provided by the specialist must be implemented and as such a condition has been added in this EA.

d) **Wetland and Aquatic Assessment**[10]

In terms of the combined Aquatic Biodiversity Compliance Statement and Wetland/Watercourse Delineation Assessment – three wetlands one of which is a NFEPA wetland (HGM3), one perennial river and non-perennial drainage line were identified and delineated within the area regulated by key legislation (NEMA and NWA). The river and the seep wetland (HGM1) will not be encroached by the proposed development. The large soccer field will have a vegetated grass surface which will allow a near-natural infiltration rate of rainwater and hence will not pose a significant erosion threat or source of excess sediment runoff into HGM1. The valley bottom wetland (HGM2) adjacent to the Ohlanga River will be impacted upon due to material (vegetation and /soil) being removed with infilling thereafter during the construction of the concrete stormwater pipe and headwall. It was the opinion of the specialist that if all mitigation measures provided are adhered to, the proposed development can be favourably considered. Based on the potential disturbances posed by the development on freshwater resources, a 15m buffer from the outer edge of HGM1 and HGM2 (i.e. wetlands) was recommended (See Table 30). The '2017 Buffer Zone Guidelines for Wetlands, Rivers and Estuaries' (Macfarlane and Bredin, 2017) and associated wetland buffer tool was utilised recommend these refined aquatic impact buffers based on available spatial data including the mitigation measures. By adhering to and maintaining a 15m 'no go' buffer for built infrastructure from the edge of wetlands, protection of the integrity of the river and riparian zone would, in effect, be afforded by the wetland buffers. With no deviations beyond these buffers the impacts to any Resource Quality Objectives (RQOs) or downstream water users would arguably be minor.

e) **Ecological Specialist Report**[11]

The site falls within an endangered ecosystem, the KwZulu-Natal Coastal Belt (Endangered) with a target being 25%. It was established that the original primary grasslands have been transformed to secondary grasslands due to anthropogenic activities. With most of the site being transformed, signs of indigenous vegetation were however still observed on parts of the site footprint towards the Ohlanga River. The site still has a functional role to play in regional ecological functioning with ecological connectivity that still exists between the wetlands, Ohlanga River and grasslands, even though such connectivity has been influenced by human-related impacts. About 50% is transformed for cultivation, by urban sprawl and for road building. However, the site falls

[10] Wetland and Aquatic Assessment, by NCC Environmental Services (Pty) Ltd, dated March 2023

[11] Ecological Specialist Report undertaken by Ronaldo Retief of NCC Environmental Services (Pty) Ltd, dated May 2022

within an urban area and has been disturbed by anthropogenic activities and this is evident in the presence of exotic vegetation species which have replaced the grasslands reducing the grasslands to secondary grasslands. Anthropogenic activities, i.e., hardening of ground for the construction of roads, building of the temporary school features, construction of a soccer field within the floodlines, and a sustainable garden within the 32m buffer of the wetlands was also observed. Destruction of, and fragmentation of, the remaining vegetation community and area classified as CBA and displacement of faunal communities received an overall rating of low post mitigation. The site consists of areas of contrasting sensitivity with the transformed areas being classified as Low sensitivity and the intact remnants as High sensitivity, i.e., the wetlands and Medium sensitivity for the river system. The report recommended that such areas should be considered no-go areas from a development perspective as it is not usually possible to mitigate impacts to such areas appropriately on account the unique biodiversity or important ecological function such areas may provide. The transformed grasslands and hardening of surfaces by anthropogenic activities were classified as a low sensitivity.

f) **Floodline Assessment Report**[12]

From the results of the flood analysis it was found to be evident that the development is situated outside of the 1:50 year and1:100-year floodline. There is a portion of the site that is below the 1:50 year floodline however was found to be outside of the development infrastructure. The 1:50 year and 1:100-year flood levels extend to the existing soccer field embankment and would require erosion protection as the platform will be developed as part of the site development plan.

g) **Alternative Options**

1. Design/Layout alternative

Layout alternatives were considered in terms of avoiding encroaching into sensitive environments whilst maximising the area available for the school layout in accordance with municipal building standards and regulations and the applicant's enrolment figures and spatial requirements/needs of a functional secondary school. Notwithstanding the spatial limitations already on the site in terms of the proposed school building layout, the layout was designed based on the environmental constraints and sensitivities of the site which included the 1: 100 year floodline, the D'MOSS, the Ohlanga River and the associated wetlands. Based on the spatial constraints on portion 378 one design layout in the form of a spatial development plan (SDP) was drafted to avoid/minimise any encroachment into sensitive environments. From a design perspective relating to sanitation/sewerage management, there is already an existing municipal sewerage system which services the area (which is residential) and urban in nature. Based on an existing municipal sewerage reticulated/waterborne system being available to connect to and service the new school buildings, it was not considered feasible to investigate a design alternative to manage sewerage in an alternative way by investigating and proposing alternative designs which may have included, for

[12] Floodline Assessment Report by SRK Consulting (Pty), dated April 2023

example, a septic tank and soakaway system, a conservancy tank or Ventilated Improvement Pit (VIP) toilets which would all need to be serviced periodically. In addition, altering the design of the school by reducing the area of the footprint was not considered feasible based on the number of students (+/-1200) and the space requirements needed to provide ample teaching and sporting facilities/activities. Reducing the size of the proposed layout footprint any further would compromise the capacity of accommodating the typical requirements of a functional secondary school.

2. **Site Alternative**
No feasible alternative site locations were identified or assessed, primarily owing the fact that available land in the area (ward 53) is limited as well as an informally (temporarily) established school currently in operation on portion 378 since circa 2016. From a practical and financial perspective the need for education facilities in ward 53 has been established as a priority in the municipal IDP and there is already existing services and infrastructure around the site (access roads, water and wastewater) to connect with the proposed new school buildings. Furthermore, the landowner, the Department of Human Settlements, has provided consent for the school to be developed at/on this location i.e. portion 378.

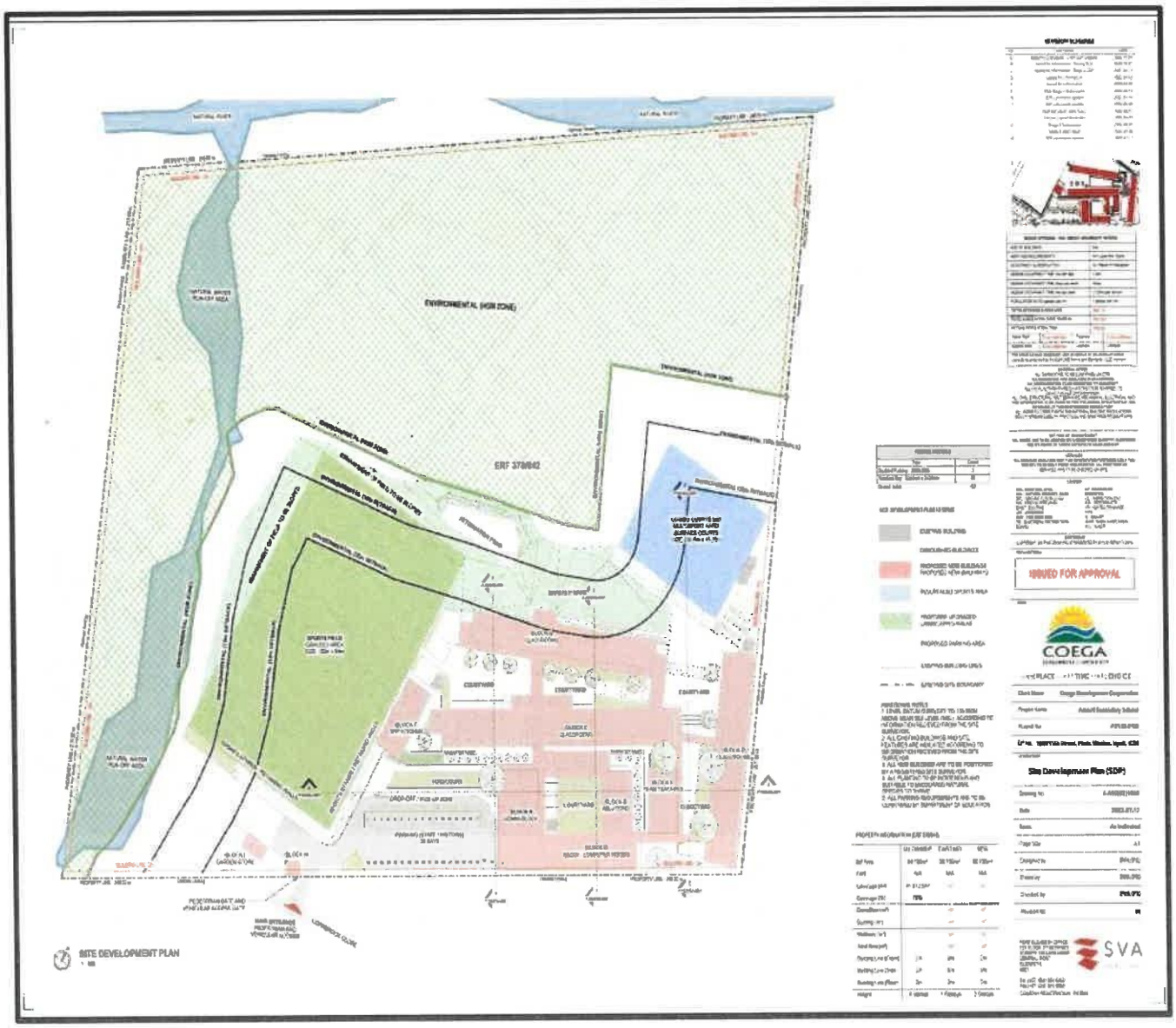
3. **The 'No-Go' alternative**
Should it be selected that the school is not authorised to be developed, the site would remain as informally developed land which would continue to be used by the local community for purposes of an informal sub-standard school as well as limited small-scale subsistence agricultural (primarily vegetable crops within the more fertile 1: 100 year floodplain). Illegal or otherwise unauthorised settlement of people seeking land for housing is another potential scenario which could become a reality should the No-Go alternative be opted for portion 378. This will not address the issue of inadequate educational facilities available to the surrounding community, thus maintaining the status quo in terms of the number of youth not gaining access to a quality schooling facility and acquiring the associated benefits from a safe and healthy learning environment. This will potentially result in an increase in the number of youths not attending secondary school and resultantly, not finishing a complete schooling career. This would likely further exacerbate the level of unemployable individuals in the area which will place a further strain on both local government and the community.

In view of the above, the Department is satisfied that, subject to compliance with the conditions contained in the environmental authorisation, the activity will not conflict with the general objectives of integrated environmental management laid down in Chapter 5 of the National Environmental Management Act, 1998 and that any potentially detrimental environmental impacts resulting from the proposed activity can be mitigated to acceptable levels. **The Development of Amaoti Secondary School situated on Farm no. 84 Rietrivier in ward 53, Mawothi township, within the eThekwini Municipality is hereby approved.**

Annexure 2: Locality Map



Annexure 3: Preferred Layout Plan



KZN Department of Economic Development Tourism and Environmental Affairs	Environmental Authorisation: DM/00016/2023	N.C Initials

PROPOSED DEVELOPMENT OF AMAOTI NO. 3 SECONDARY SCHOOL SITUATED ON FARM NO. 842 RIETRIVIER IN WARD 53, MAWOTHI TOWNSHIP, ETHEKWINI MUNICIPALITY, KWAZULU-NATAL

Environmental Management Programme

REVISION: EMPr v02

PREPARED FOR:

The KZN Department of Education (KZN-DoE)

The Coega Development Corporation (CDC)

The KZN Department of Economic Development, Tourism and Environmental Affairs (EDTEA)

DATED:

August 2023

PREPARED BY:

NCC Environmental Services (Pty) Ltd

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ENVIRONMENTAL MANAGEMENT PROGRAMME

Completed in terms of the National Environmental Management Act, 1998 (Act No.107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014 (as amended).

AUGUST 2023

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DOCUMENT GUIDE

The table below summarises the requirements of the 2014 NEMA EIA Regulations (as amended in 2017) in terms of the content of EMPrs (Appendix 4 of GN.R326) and the relevant sections in the report where these requirements are addressed.

Appendix 4	Description	Page / Section in this report
1 (a)	An EMPr must comply with section 24N of the Act and include details of:	Refer below:
	(i) the EAP who prepared the EMPr; and	Page 11 & Annexure A
	(ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae.	Section 1 & 4
1 (b)	a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description.	Section 3 & 4
1 (c)	a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers.	Section 3, Figures 1 - 7.
1 (d)	a description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including (i) planning and design; (ii) preconstruction activities; (iii) construction activities; (iv) rehabilitation of the environment after construction and where applicable post closure; and (v) where relevant, operation activities.	Sections 6, 7, 8 & 9
1 (e)	a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) comply with any prescribed environmental management standards or practices; (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable.	Sections 6, 7, 8 & 9
1 (g)	the method of monitoring the implementation of the impact management actions contemplated in paragraph (f).	Section 5 & 6
1 (h)	the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f).	Section 6
1 (i)	an indication of the persons who will be responsible for the implementation of the impact management actions.	Section 6
1 (j)	the time periods within which the impact management actions contemplated in paragraph (f) must be implemented.	Sections 5 & 6
1 (k)	the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f).	Section 6 & 8
1 (l)	a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations.	Section 5
1 (m)	an environmental awareness plan describing the manner in which:	Refer below:
	(i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and	Sections 6, 7 & 8
	(ii) risks must be dealt with in order to avoid pollution or the degradation of the environment;	
1 (n)	any specific information that may be required by the competent authority.	TBC
2	Where a government notice *gazetted* by the Minister provides for a generic EMPr, such generic EMPr as indicated in such notice will apply.	n/a

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ABBREVIATIONS

BA	Basic Assessment
BAR	Basic Assessment Report
CAR	Corrective Action Report
CBA	Critical Biodiversity Area
CDC	Coega Development Corporation
DEA	Department of Environmental Affairs
DEAT	Department of Environmental Affairs and Tourism
DFFE	Department of Forestry, Fisheries and the Environment
D'MOSS	Durban Metropolitan Open Space System
DOE	Department of Education
DSW	Durban Solid Waste
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EDTEA	Economic Development, Tourism and Environmental Affairs
EIA	Environmental Impact Assessment
EKZNW	Ezemvelo Kwa-Zulu Natal Wildlife
EM	eThekwini Municipality
EMA	eThekwini Municipal Area
EMPr	Environmental Management Programme
EO	Environmental Officer
ESA	Ecological Support Area
GN	Government Notice
IAP	Invasive Alien Plant
IDP	Integrated Development Plan
I&AP	Interested and Affected Party
KZN	Kwa-Zulu Natal
MSDS	Material Safety Data Sheet
NCR	Non-Conformance Report
NEMA	National Environmental Management Act
PM	Project Manager
ROSE	Recycling Oil Saves the Environment
SAHRA	South Africa Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SDC	Safe Disposal Certificate
SDF	Spatial Development Framework
SHE	Safety, Health and Environmental

GLOSSARY OF SELECTED TERMS AND DEFINITIONS

CONTAMINATION	The release/spillage of a substance into an environment where it is not normally found, which is detrimental to that environment, its ecosystems and to humans.
CORRECTIVE (OR REMEDIAL) ACTION	Reactive response required to address an action that is in conflict with the requirements of the Site Documentation. The need for corrective action may be determined through monitoring, audits or management review.
DEVELOPER	The KZN Department of Education, an Organ of State, who is also the Applicant for the proposed Project.
DOMESTIC WASTE	Means waste, excluding hazardous waste that emanates from premises that are used wholly or mainly for residential, educational, health care, sport or recreation purposes; *(NEM: WA, Act No. 59, 2008).*
ENVIRONMENT	Means the surrounding within which humans exist and that are made up of: (i) The land, water and atmosphere of the earth; (ii) Micro-organism, plant and animal life; (iii) Any part or combination of (i) and (ii) and the interrelationships among and between them; and the physical, chemical aesthetical and cultural properties and conditions of the foregoing that influence human health and wellbeing *(NEMA, Act 107 of 1998).*
ENVIRONMENTAL IMPACT ASSESSMENT (EIA)	Means the systematic process of identifying, assessing and reporting environmental impacts associated with an activity and includes the basic assessment report and/or scoping and environmental impact assessment report (NEMA EIA Regulations GN. R982 of 2014, as amended).
IMPACT	A description of the potential effect or consequence of an aspect of a development on a specified component of the biophysical, social or economic environment within a defined time and space.
INCIDENT	An undesired event which may result in a significant environmental impact but can be managed through internal response.
MITIGATION	Measures designed to avoid, reduce or remedy the proposed adverse impacts (*DEAT, 1998*).
MONITORING	The repetitive and continued observation, measurement and evaluation of environmental criteria to follow changes over a period of time and to assess the efficiency of control measures *(DEAT, 1998).*
POLLUTION	Means any contamination or change in the environment caused by: • Substances; • Radioactive or other waves; or • Noise, odours, dust or heat Emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or organ of state, where that change has an adverse effect on human health or wellbeing or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future (*NEMA, Act No. 107 of 1998).*
PROJECT	The proposed expansion of Amaoti No. 3 Secondary School located on Farm No. 842 Riet Rivier portion portion in Mawothi (Ward 53) in the eThekwini Municipality, KwaZulu-Natal where the triggering of Listed Activity No. 19 in Listing Notice 1 of 4 December 2014 (GN. R983) requires environmental authorisation.
WASTE	Any substance, whether or not that substance can be reduced, re-used, recycled and recovered – (a) that is surplus, unwanted, rejected, discarded, abandoned or disposed of; (b) which the generator has no further use of for (he purposes of production; (c) that must be treated or disposed of; or (d) that is identified as a waste by the Minister by notice in the Gazette, and includes waste generated by the mining, medical or other sector, but— (i) a by-product is not considered waste; and (ii) any portion of waste, once re-used, recycled and recovered, ceases to be waste *(NEM: WA, Act 59 of 2008).*

1 INTRODUCTION

1.1 Background

The Coega Development Corporation (Pty) Ltd (**CDC**) (the Developer's Agent) is assisting the KwaZulu-Natal Department of Education (**KZN-DOE**) (The Developer) in implementing various projects within the province of KwaZulu-Natal. NCC Environmental Services (Pty) Ltd (**NCC**) were appointed by CDC to assist with proactive environmental management services for the *"Proposed development of Amaoti No. 3 Secondary School situated on farm no. 842 Rietrivier in Ward 53 situated in the township of Mawothi within the eThekwini Municipality, KwaZulu-Natal* (hereafter referred to as the "Project"). This Environmental Management Programme (**EMPr**) has been prepared as part of a Basic Assessment (**BA**) process to provide specific environmental guidance to the Developer, Engineers and Contractor(s) for the planning, construction and rehabilitation phases of the proposed development highlighting the associated responsibilities in terms of sound environmental management.

The competent authority, the KZN Department of Economic Development, Tourism and Environmental Affairs (**EDTEA**), requires that an EMPr be submitted in accordance with Section 19 of the EIA Regulations published in Government Notice No. R. 982 of 4th December 2014 (as amended) (**EIA Regulations**). Section 19 should be read in conjunction with Section 24N of the National Environmental Management Act, 1998 (Act 107 of 1998), as amended and hereby referred to as '**NEMA**' throughout this document.

1.2 Scope of the EMPr

This EMPr is to be implemented by the Principal Contractor as well as any employee, agent or sub-contractor appointed to act on behalf of the DoE and the Contractor in the execution of the Project, in order to ensure environmental compliance on site. The effectiveness of the EMPr is limited by the level of adherence to the conditions set forth in the EMPr. It is further assumed that conformance to the EMPr will be monitored and audited as set out in this EMPr.

1.2.1 Description of an EMPr

This **EMPr** provides generic and site-specific information on environmental management tasks and activities related to the project in terms of minimising potential negative environmental impacts and enhancing positive environmental impacts for the duration of the project. The EMPr has been compiled to form the basis of a management system to implement on this particular project to regulate and control construction-phase activities. An EMPr is a stand-alone document used to prescribe management mechanisms/ methods for the prevention of undue or reasonably avoidable adverse environmental impacts and for the enhancement of the positive environmental benefits of a given project. The EMPr is primarily based on the

principles of NEMA, which therefore bestows a 'Duty of Care' on those who cause, have caused or may in future cause pollution or degradation of the environment, as per of Section 28(1) of NEMA.

1.2.2 Purpose of this EMPr

This EMPr has been compiled to provide recommendations and guidelines for mitigation measures against environmental impacts and the monitoring thereof for the duration of the proposed project as to ensure that all relevant impacts are considered for the undertaking of environmentally responsible activities. The purpose of this EMPr is to provide both generic and direct specifications for "good environmental practice" for application during the planning, construction and rehabilitation (post-construction) phases of the project.

The EMPr informs the relevant project role-players (the Contractor, Project Engineers, Contractor, Environmental Control Officer and all other staff employed on the project and at the site) as to their duties in the fulfilment of the environmental legal requirements during the construction and rehabilitation phase with particular reference to the prevention and mitigation of anticipated and potential negative environmental impacts. Furthermore, it aims to organise and coordinate the environmental management and mitigation measures with all construction activities implemented on the project and pragmatically describe these measures in order to prevent, reduce or otherwise manage the potential negative environmental impacts associated with the Project. Where opportunities exist to enhance any favourable impacts of the project, these have also been described in this EMPr. The objectives of the EMPr are:

a) Ensure compliance with regulatory authority stipulations and guidelines which may be local, provincial, national and/or international;
b) To assign roles and responsibilities to parties involved regarding the implementation of this EMPr;
c) Verify environmental performance through information on impacts as they occur;
d) Outline mitigation measures and environmental specifications which are required to be implemented for all phases of the project in order to minimise the extent of negative environmental impacts, and to otherwise manage environmental impacts associated with the proposed project;
e) Detail specific actions deemed necessary to assist in minimising the environmental impact of the project;
f) Identify measures that could optimise beneficial impacts;
g) Create management structures that address the concerns and complaints of I&APs with regards to the project;
h) Propose mechanisms for monitoring compliance with the EMPr and reporting thereon;
i) Specify time periods within which the measures contemplated in the final EMPr must be implemented, where appropriate.

1.2.3 Structure of the EMPr

The EMPr is divided into four Project phases. Each phase has specific issues and activities related to that period. The impacts are identified and given a brief description in line with the Project phases outlined in Regulation No. 982, Appendix 4, Section 1(d) highlighted below:

a) Planning and Design Phase

This section of the EMPr provides management principles for the planning and design phase of the project prior to the undertaking of any construction activities. The primary environmental objective during this phase is to ensure the best suited environmental option for the project is selected based on the final design (*i.e.* plans, drawings, layouts, surveys, environmental assessments and specialist studies) undertaken for the proposed development footprint.

b) Pre-Construction Phase

This section will provide guidelines on pre-construction activities including site establishment; environmental induction and training and awareness; site access and health and safety. Environmental actions, procedures and responsibilities are specified. Management principles are outlined and the Contractor will be required to follow these specifications to the satisfaction of the Project/Site Manager and ECO.

c) Construction Phase

This section of the EMPr provides management principles for the construction phase of the project. Environmental actions, procedures and responsibilities are specified. These specifications must form part of the contractual documentation and the Contractor will be required to comply with these specifications to the satisfaction of the Project/Site Manager and ECO.

d) Post-Construction (includes site de-establishment and Rehabilitation)

This section of the EMPr provides management principles for the rehabilitation phase of the project. This will include best practice, procedures and responsibilities as required for various associated activities.

An EMPr should be seen as a dynamic document which can be, if necessary, updated as required on a continuous basis to ensure environmental best practice prevails. Any substantive EMPr amendments considered necessary must first be submitted to the Site Manager and ECO for consideration. Final amendments to the EMPr must be submitted to the authority (EDTEA) for consideration and a final decision.

1.3 Author of the EMPr

Appendix 4(1) of the EIA Regulations, 2014, indicates that the EMPr must contain details of the EAP who prepared the document and the relevant expertise of the EAP. The EMPr has been prepared by Craig Burne and reviewed by Nick Gates of NCC Environmental Services (Pty Ltd) (hereafter referred to as 'NCC'). NCC is a Cape Town based environmental consulting firm with regional offices in Durban and Johannesburg. The company as extensive consulting experience in a variety of private and public sector development and construction projects throughout South Africa.

Craig Burne is a Senior Environmental Consultant at NCC whose highest qualification is an MSc (by dissertation) in Aquatic Ecology obtained from the University of the Witwatersrand and has been employed with the company since February 2008. Craig is a registered professional natural scientist with the South African Council for Scientific Professions (SACNASP) in the field of Environmental Science and an accredited SASS5 practitioner with the Department of Water and Sanitation (DWS). The CV of the author is attached as **Annexure A.**

The EMPr was reviewed by Nick Gates, a Senior Environmental Consultant and Service Line Manager at NCC with 14 years of experience focuses on legal compliance of projects and applying for various environmentally related licences, permits and authorisations; sourcing, co-ordinating and managing specialist processes, liaising with various government department, liaising with clients to improve and expedite application processes, ground-truthing of information, compiling construction and operational Environmental Management Plans and undertaking various environmental compliance monitoring and implementation functions on various projects including Environmental Control Officer, Environmental Manager and Environmental Auditor. Nick has a B.Soc.Sci. in Environmental & Geographical Science awarded in 2007 from the University of Cape Town.

1.4 Legal requirements

The Constitution of the Republic of South Africa (Act No. 108 of 1996) Section 24 states:

> ***Everyone has the right to an environment that is not harmful to their health or well-being; and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.***

As such, certain activities associated with development projects may trigger particular environmental legislative requirements, either under the various Duty of Care provisions found in some of the Environmental Acts (Section 28 of NEMA), or as identified in the NEMA Listing Notices, or other approvals which are required prior to Project commencement. Other relevant legislation is provided in **Annexure B.**

1.5 Environmental authorisation

According to section 2, subsections 1, 2 & 3 of **NEMA**, all organs of state have to apply certain principles set out in the Act when taking decisions that may significantly affect the environment. The key principles of this Act include that all "actions" approved must be economically, socially and environmentally sustainable and justifiable. It further states that "*environmental management must place people and their needs at the forefront of its concern*" and that their collective interests must be served equitably.

In accordance with NEMA and the relevant EIA Regulations, NCC engaged with EDTEA on behalf of KZN-DOE in order to assess the legal requirements to be met in order to undertake the proposed upgrade work. It was confirmed that the proposed upgrade work required an application for environmental authorisation (EA). The works carried out on the project will be undertaken in accordance with the revised NEMA EIA Regulations: GN982 of 4 December 2014. The activities requiring authorisation are referenced below:

Government Notice and Activity No.	Description of the Listed Activity	Description of the proposed development as per the project description that relates to the listed activity
19 (GN R327)	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse.	The proposed development will result in more than 10m³ of material being removed from the wetland adjacent to the Ohlanga River with infilling thereafter for the purposes of the construction and operation of a 300mm diameter concrete stormwater pipeline with headwall to be constructed within a wetland.
12 (GN R324)	The clearance of an area of 300 square meters or more of indigenous vegetation in KwaZulu-Natal within a critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004.	The proposed development will result in more than 300m² of indigenous vegetation being cleared within an endangered ecosystem, the KZN Coastal Belt Grassland (CB3).

Project associated activities should be implemented and managed according to the best and current industry practice, as identified in the contractual, project-specific documentation. This EMPr, which forms an integral part of any contractual documents, informs the project role-players as to their duties in the fulfilment of the project objectives, with particular reference to the prevention and mitigation of environmental impacts caused by the project. Where applicable, the content of this EMPr are aligned with the requirements as set out in Section 19 (4) of the EIA Regulations.

The Contractor should note that obligations imposed by the approved EMPr are binding in terms of any agreements between the Developer's Agent (CDC) and themselves and will therefore be part of the terms of additional conditions and the general conditions of contract that pertain to this project. The Contractor shall identify and comply with all South African national and provincial environmental legislation, including associated regulations and all local by-laws relevant to the project. Key legislation currently applicable to the design, construction and implementation phases of the project must be complied with. The list of primary applicable legislation provided below (**Annexure B**) is intended to serve as a guideline only and is not exhaustive.

2 PRIMARY LEGISLATION

Refer to **Box 1** on following page.

2.1 Municipal By-laws

Refer to **Box 1** on following page.

Box 1: Primary Environmental Legislation and Municipal By-Laws.

National Legislation and Regulations

- **The Constitution** of the Republic of South Africa (Act 108 of 1996)
- Environment **Conservation** Act (Act 73 of 1989)
- **National Environmental Management** Act (Act 107 of 1998) (as amended)
- NEMA **EIA Regulations**, 2014 (as amended)
- National **Road Traffic** Act (Act 93 of 1996)
- National **Road Traffic** Regulations 2000 (as amended)
- National Environmental Management: **Waste Management** Act (Act 59 of 2008)
- White Paper on Integrated **Pollution and Waste Management** for South Africa
- The **White Paper** on Environmental Management Policy for South Africa
- National Environmental Management: **Air Quality** Act (Act 39 of 2004)
- National **Water** Act (Act 36 of 1998)
- **Water Services** Act (Act 108 1997)
- **Hazardous Substances** Act (Act 15 of 1973)
- **Mineral and Petroleum** Resources Development Act (Act 28 of 2002)
- National **Forest** Act (Act 84 of 1998)
- National **Veld and Forest Fire** Act of 1998 (Act No. 101 of 1998)
- National Environmental Management: **Protected Areas** Act (Act 57 of 2003)
- **Mountain** Catchment Areas Act (Act 63 of 1970)
- National Environmental Management: **Biodiversity Act** (Act 10 of 2004)
- **Alien** and **Invasive** Species Regulations, 2014
- White Paper on the Conservation and Sustainable Use of South Africa's **Biological Diversity**
- **Animals Protection** Act of 1962 (Act No. 71 of 1962)
- **Agricultural Pests** Act of 1983 (Act No. 36 of 1983)
- Conservation of **Agricultural** Resources Act (Act 43 of 1983)
- National **Heritage** Resources Act (Act 25 of 1999)
- World **Heritage** Convention Act, 1999
- National **Health** Act (Act 61 of 2003)
- **Health** Act (Act 63 of 1977)
- Occupational **Health and Safety** Act (Act 85 of 1993)
- National Dust Control Regulations, 2013
- **Noise** Control Regulations GN R 154 in GG No. 13717 of 10 January 1992 (published in terms of Section 25 of the Environment Conservation Act 73 of 1989)
- **Hazardous** Substances Act (Act 15 of 1973)
- **Fertilizers**, Farm Feeds, Agricultural Remedies and Stock Remedies Act (Act 36 of 1947)

Provincial Legislation

- Kwazulu-Natal Nature Conservation Management Amendment Act 5 of 1999
- Nature Conservation Ordinance No. 15 of 1974
- Nature and Environmental Conservation Ordinance No. 19 of 1974

Municipal By-laws[2]

By-laws are laws passed by the Executive Council of a municipality to regulate the affairs and the services it provides within its area of jurisdiction. A municipality derives the powers to pass a by-law from the Constitution of the Republic of South Africa, which gives certain specified powers and competencies to local government as set out in Part B of Schedules 4 and Part B of 5 to the Constitution.

The EM has developed, adopted and promulgated various municipal by-laws. These by-laws are under the custody of various municipal departments and the department ensure the by-laws are adhered to. Likewise, all businesses and developments within the municipal area are expected to operate within the municipal by-laws. All by-laws have clear punitive measures should they be breached. The council together with the relevant government stakeholders monitor adherence of businesses to the by-law and ensure that all culprits face appropriate and laid-out penalties or punishments.

The following by-laws promulgated and listed below have relevance to this proposed development:

Rules of order by-law, 2014

eThekwini Municipality Planning and Land Use Management by-law 2021 (Notice 95 of 2021)

Planning and Land Use Management

Stormwater Management by-law 2020 MN 96 of 2021

Sewage Disposal By-law 2016

Waste Removal By-law 2016 [Commencement Date 26 February 2017]

Nuisances By-law Commencement Date 11 March 2016

Informal Trading By-Law 2014

Buildings

Water Supply

Public Health

Fire Prevention and Flammable Liquids and Substances

The following draft by-laws which are pending promulgation are as follows:

Planning and Land Use Management Second Amendment

Fire Safety

Sanitation

[2]Attention is drawn to the proposed municipal by-laws in the above list as they will likely have relevance in the context of this Project during the pre-construction/planning, construction and operational phases.

3 PROJECT DESCRIPTION

Reference should be made to the Basic Assessment Report (BAR) dated June 2023 for more detail regarding the project details, the affected environment and the potential environment impacts associated with the implementation of the Project.

3.1 Description of the proposed development

The Coega Development Corporation (Pty) Ltd (CDC) is assisting the KwaZulu-Natal Department of Education (KZN-DOE) in implementing projects within the province of KwaZulu- Natal (KZN). This is being done under the School Building Programme of the DOE-KZN which is aimed at providing quality teaching facilities and to improve the quality of life of the previously disadvantaged communities. The programme is also aimed at creating jobs, developing and transferring skills and fighting poverty. In alignment with the School Building Programme, it is proposed that Amaoti No. 3 Secondary School (NatEIMS Ref no. 500102305) be developed on portion 378 of farm 842 Rietrivier situated in ward 53 in the township of Mawothi, eThekwini Municipality, KZN.

Prior to the compilation of this EMPr, a temporary school facility was and is currently operating on the site where prefabricated structures are being utilised for classrooms and offices. Other temporary structures on the property include a prefabricated structure located east of the school, portable chemical toilets and picnic benches located in the central courtyard. The site is located in a built-up residential area where refuse collection takes place on a weekly basis and is currently serviced by an existing waterborne type sewage system. A municipal water connection point is located near the existing main entrance to the site/school and an existing municipal customer distribution unit (CDU) is situated across the road from the current school entrance that feeds into a 60A prepaid meter in the admin office building. Therefore municipal water, sewerage and electricity connections do exist around and within the site to which the proposed new service infrastructure servicing the proposed new buildings can be connected to.

Due to the temporary nature of the existing structures, interventions are required in order for the school to comply with the KZN DOE Norms and Standards as well as the National Building Regulations and SANS 10400. It is being proposed by the applicant that the current temporary structures are demolished and the school is replaced with permanent structures, along with the provision of the necessary service infrastructure designed to cater for the maximum enrolment range of 1240 learners. The intention is to maintain the waterborne nature and expand the service capacity of the existing sewerage system. The provision of sanitation facilities will be according to the requirements of SANS 10400 and based on a maximum design capacity of 1220 learners with a 50/50 split between girls and boys and 34 staff members.

Construction activities will comprise of bulk earthworks to construct:

- **Learning Spaces** which accommodate 30 x Standard Classrooms, 7 x Multipurpose Classrooms (with stores), 1 x Media Centre / Library (with stores), 1 x Computer Room (with Store), 1 x Science Classroom (with Store) and 1 x Team Teaching Room.
- **Administration and Support Spaces** which accommodate 1 x Principal's Office, 2 x Deputy Principal's Offices, 1 x General Office, 1 x Staffroom and Kitchenette, 1 x Strong room, 1 x Stock Room, 1 x Printing Room, 2 x Sick Rooms, 1 x Entrance Hall, 5 x HOD's Offices, 1 x Counselling Suite, 2 x General Stores, 2 x Large Stores, 1 X Guard House, 1 x Refuse Room, 1 x SNP Kitchen, 1 x Tuckshop, 1 x Food Storage, 1 x Nutrition Centre Yard, 1 x Food Garden, 1 x Undercover Dining Area and 65 x vehicle parking bays for staff and visitors.
- **Civil/service infrastructure** for water, sewerage, stormwater and electricity.

With no formal sports facility on the site, a portion of the site previously levelled is proposed to be redeveloped into 2 x combi courts and 1 x new soccer / rugby field is proposed to be created along the western site boundary. See **Tables 1** and **2** for a description of the proposed buildings and associated infrastructure.

Table 1: List of buildings proposed to be constructed for Amaoti No. 3 Secondary School.

Description		
Learning Spaces comprising:	**Administration and Support Spaces** comprising:	
30 x Standard Classrooms	1 x Principal's Office	1 x Counselling Suite
7 x Multipurpose Classrooms (with stores)	2 x Deputy Principal's Offices	2 x General Stores
	1 x General Office	2 x Large Stores
1 x Media Centre / Library (with stores)	1 x Staffroom and Kitchenette	1 X Guard House
	1 x Strong room	1 x Gate House
1 x Computer Room (with Store)	1 x Stock Room	1 x Refuse Room
1 x Science Classroom (with Store)	1 x Printing Room	1 x SNP Kitchen
1 x Team Teaching Room	2 x Sick Rooms	1 x Tuckshop
	1 x Entrance Hall	1 x Food Storage
	5 x HOD Offices	

Table 2: List of the other associated amenities proposed for Amaoti No. 3 Secondary School.

Description	
29 x visitor parking bays	2 x multisport hard surface courts (30.5m x 15.25m)
36 x staff parking bays	1 x 54x90m sports field
1 x forecourt	Civil/service infrastructure for:
5 x courtyards	▪ water;
1 x nutrition centre yard	▪ sewerage;
1 x food garden	▪ stormwater; and
1 x undercover dining area	▪ electricity

3.2 Site Location

The site where the development is proposed is located on Farm No. 842, Rietrivier RE/378 in Ward 53 in the township of Mawothi suburb of Brookdale in the central region of the eThekwini Municipality in the province of KZN (**Figure 1a**). Road access to the entrance to the property/site is via Corkbrook Close. **Figure 1b** shows the overall Master Layout Plan for the proposed development. The Site Development Plan (SDP) for the proposed school infrastructure on portion 378 is shown in **Figure 2**. The site is accessible from Murray Street in the township of Mawothi (Ward 1). The GPS coordinates (WGS84 datum) of the corners of the property boundary of the site footprint are provided below:

	Points	**Latitude (S):** (deg.; min.; sec)			**Longitude (E):** (deg.; min.; sec.)		
Coordinates of the site (Portion 378)	**NW Corner**	30°	31′	54.20″	29°	26′	17.47″
	NE Corner	30°	31′	52.14″	29°	26′	25.25″
	SW Corner	30°	32′	2.19″	29°	26′	23.37″
	SE Corner	30°	32′	0.11″	29°	26′	25.64″



Figure 1a: Location of site footprint for the proposed Amaoti No. 3 school development.

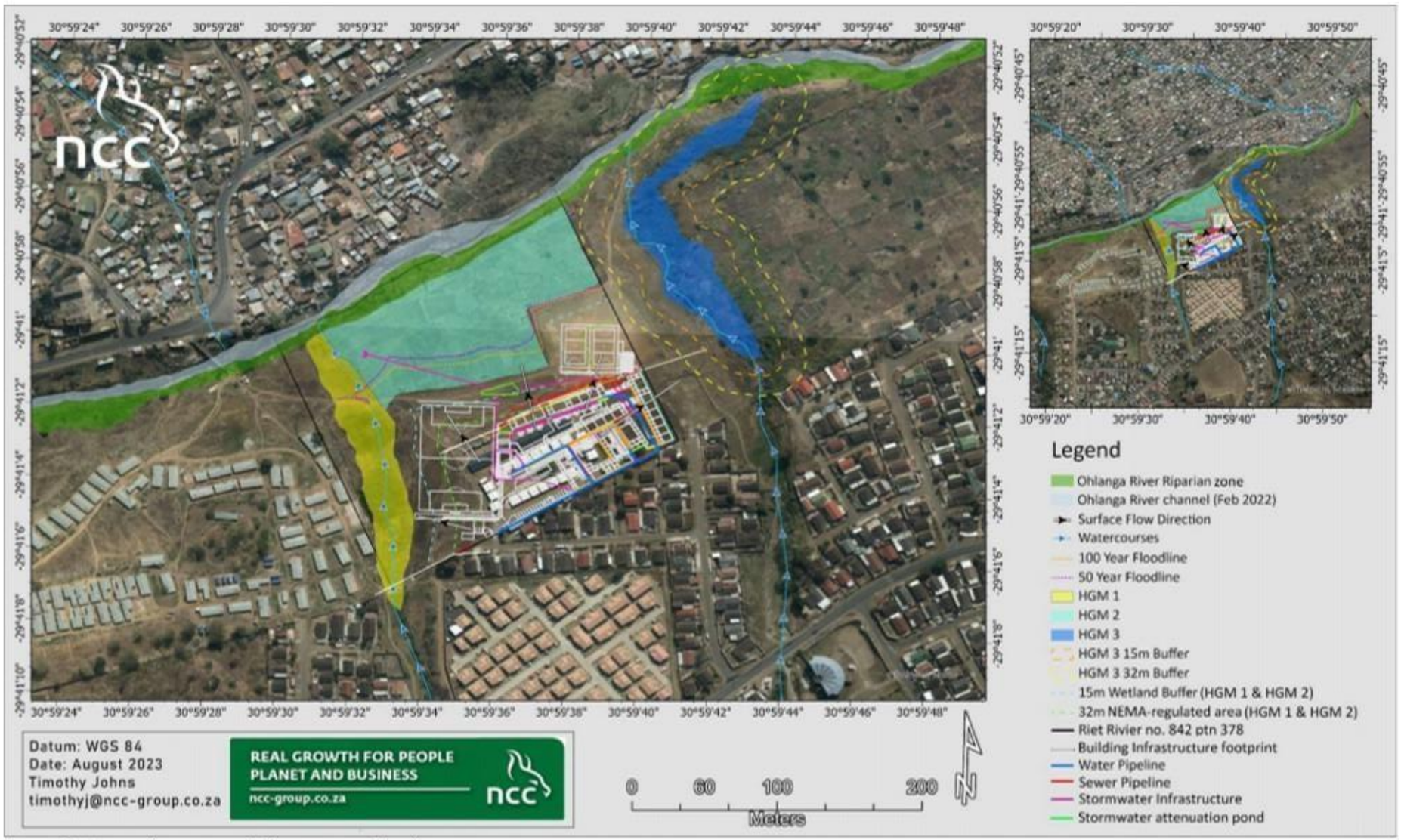


Figure 1b: Master layout map of the proposed development.



Figure 2: Amaoti School development/layout plan (*Drawing no*. A-ASS(02)1000).

3.3 Site sensitivities

A number of sensitivity maps have been created to be referred to for further detail below. In terms of the DFFE (formerly DEA) National Screening Tool, this database was queried as an initial basis to determine to the environmental sensitivity and whether an Industrial Development Zone (IDZ), Environmental Management Framework (EMF) or bio-regional plan applied to the specific area. The proposed footprint in relation to the aquatic and terrestrial biodiversity sensitivity themes, as per the screening tool, is illustrated in **Figures 3** and **5**. Wetlands present within the boundary of the site are illustrated in **Figure 4.** From a terrestrial perspective, the site is situated within a Critical Biodiversity Area (CBA) (**Figure 6**). The site does not fall within any Ecological Support Area (ESA) or Important Bird and Biodiversity Area (IBA).

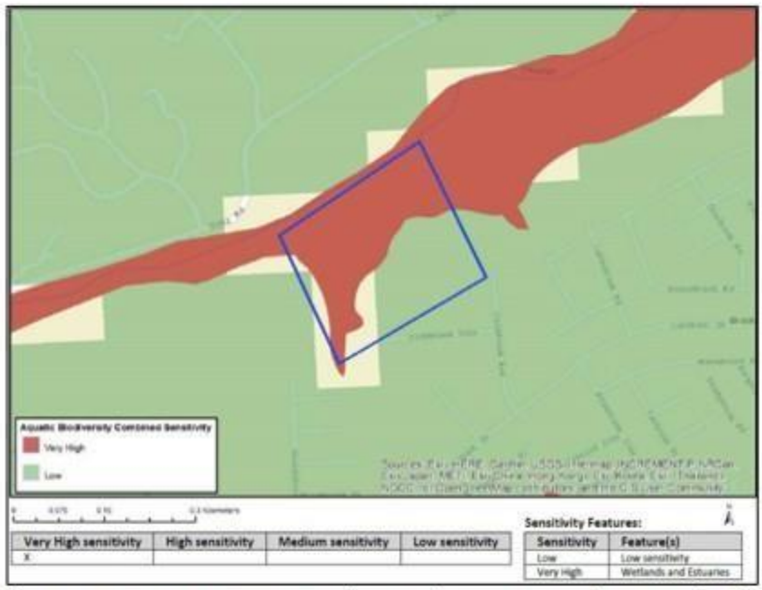


Figure 3: Screening report map showing the sensitivity of aquatic biodiversity sensitivity in relation to the site footprint/site area shown in blue. Source: DEA Screening tool: https://screening.environment.gov.za

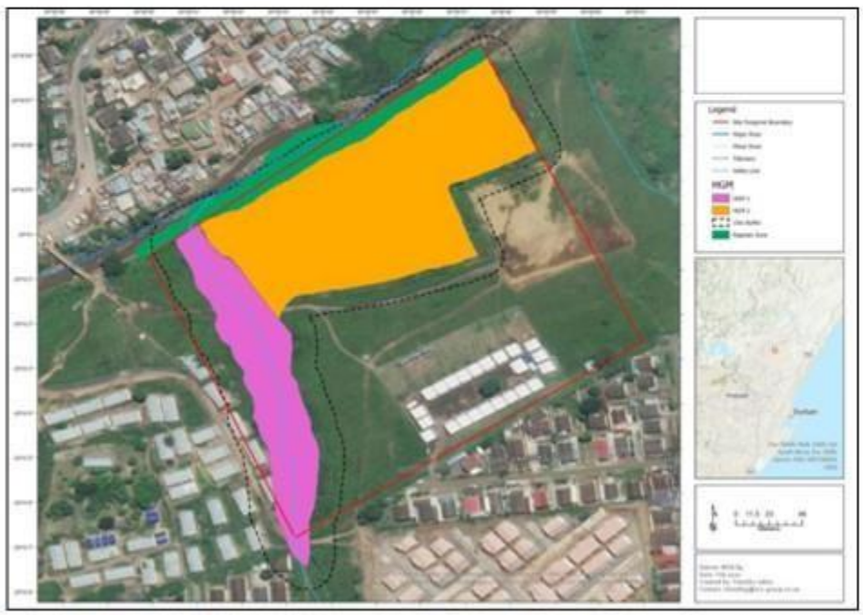


Figure 4: Wetlands (higher sensitivity) on the site footprint where a 15m 'no go' wetland buffer is recommended.



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Critical biodiveristy area 1
Very High	Critically endangered ecosystem
Very High	Protected Areas Expansion Strategy

Figure 5: Screening report map showing the sensitivity of terrestrial biodiversity sensitivity in relation to the site footprint/site area shown in blue. Source: DEA Screening tool: https://screening.environment.gov.za

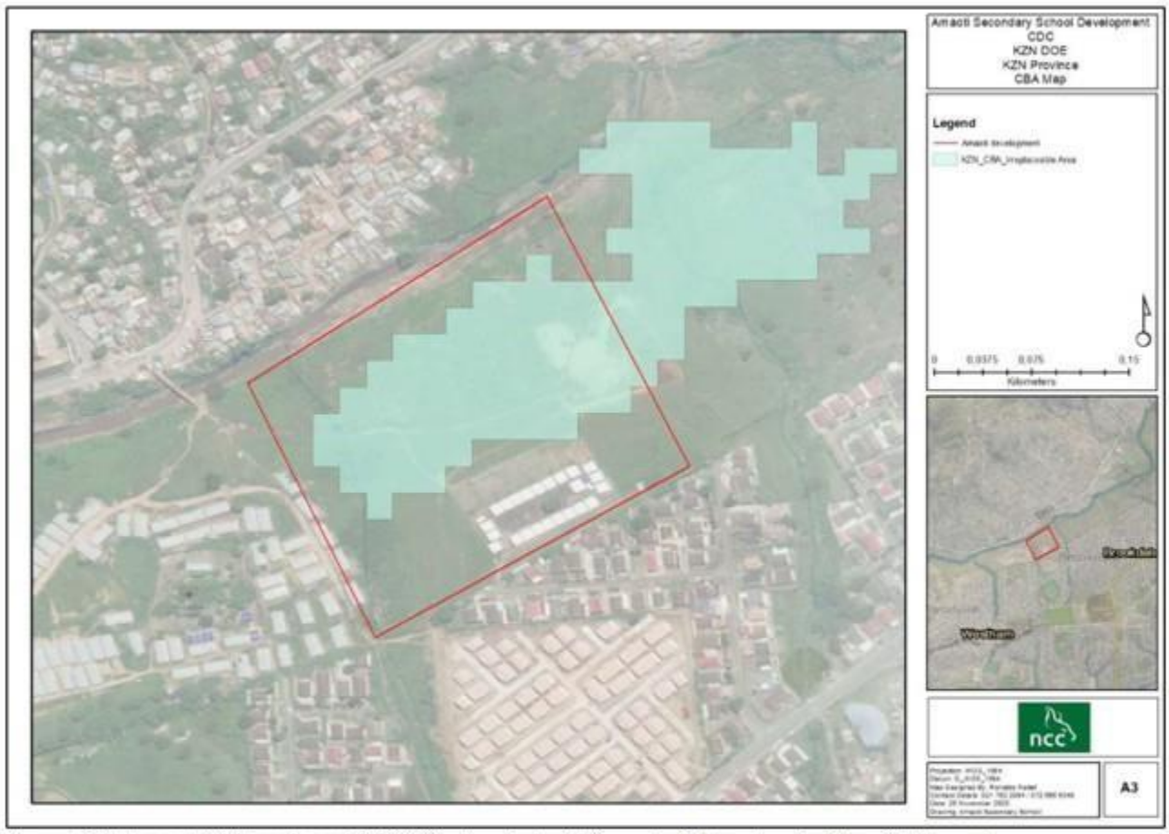


Figure 6: A terrestrial 'Irreplaceable' CBA is located within part of the extent of the site boundary. (*Source*: KZN Biodiversity Sector Plan, 2014).

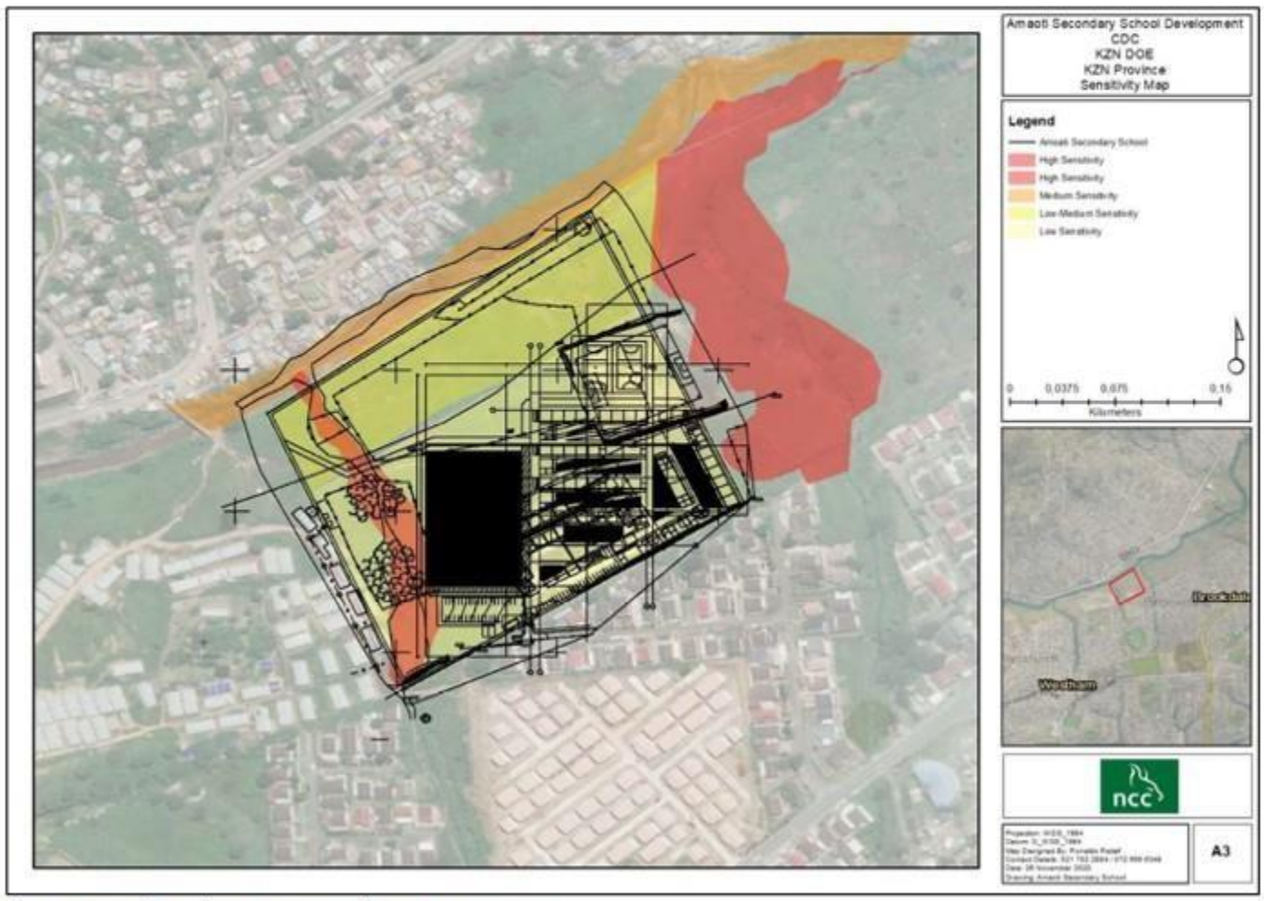


Figure 7: Combined environmental sensitivity map.

In terms of surface water and drainage, a perennial river (Ohlanga River) flows through the township of Mawothi forming the northern border of portion 378. One NFEPA wetland and two NWM5 wetlands exist within 500m from the boundary of the site footprint i.e. portion 378. Two additional wetlands (HGM1 and HGM2) and one non-perennial watercourse are also situated within the NEMA and NWA regulated area (See **Figure 4**). The Specialist Freshwater Report (BAR Appendix 4) can be referred to for further detail. The wetlands on the site itself (portion 378) do not form part of the development footprint i.e. there is no need to access them during construction and they should be regarded as 'no go' areas. The non-perennial watercourse and HGM 1 (seep) on the western boundary should be treated as areas of higher ecological sensitivity and where possible, construction activity should not encroach to within the recommended 15m buffers.

From a terrestrial biodiversity perspective, there are transformed areas of what was once primary grassland to predominantly secondary grassland of low sensitivity. See BAR Appendix 5 (Specialist Terrestrial Report) for further detail. **Figure 7** shows a combined sensitivity for both the freshwater and terrestrial areas on and around the site where the freshwater resources (wetlands and watercourses) are of higher sensitivity where further transformation should be avoided.

3.4 Construction Activities

The development project will, during the Construction phase, include the following activities:

a) Establishing and operating a Contractor's temporary site camp comprising offices, material laydown/storage areas, portable ablution facilities.
b) Procurement and transferring materials, plant and equipment from commercial sources to and within the site's construction footprint.
c) Receiving and storing construction materials.
d) Site preparation and levelling including vegetation clearance and removal.
e) Earthworks, stockpiling and spoiling of materials, including any gravel, soil, rocks and boulders.
f) Storing construction waste and rubble for collection and disposal.
g) Excavation of trenches for the installation/connection of new water and electrical services to existing services.
h) Construction of parking areas, buildings, perimeter fence, access gate
i) Installation of new service infrastructure.
j) Site rehabilitation activities.

3.5 Operation Activities

The functioning and operation of the school is expected to be long-term and fully functional once Construction i.e. "the project phase" is complete.

4 POTENTIAL ENVIRONMENTAL IMPACTS

The construction activities associated with the Project and the broad manner in which these may impact on the biophysical and human environment have been summarised in the BAR. In summary, the range of potential impacts (either positive or negative) that may occur or result from the project's activities during construction if not managed correctly include:

- Soil erosion/pollution;
- Surface and/or groundwater pollution;
- Spread of invasive alien species;
- Public nuisance including risk to public and safety and security;
- Landscape change and visual/aesthetic impacts;
- Air pollution;
- Terrestrial ecosystem and biodiversity impacts;
- Socio-economic impacts;
- Cultural, historical, archaeological and/or palaeontological impacts.

It is expected that the significance of any negative impacts on the surrounding biophysical and human environment associated with the Project *i.e.* during Construction will be largely reduced provided this EMPr is strictly adhered to. The Environmental Specifications (ES) described in Chapter 6 aim to avoid, reduce and minimise construction related adverse impacts accordingly.

The operations-related benefits can be enhanced through effective management and maintenance planning, as supported by monitoring and auditing programmes. It is recommended that an "Operation Manual/Plan" is developed by the Developer which details the protocols and procedures for relevant management and maintenance actions during the school's Operational Phase. This will require open communication and a collaborative effort between the school's management staff, the DOE and the EM, particularly with regard to water and waste management services at the school.

5 IMPLEMENTATION, MONITORING AND REVIEW

5.1 Roles and Responsibilities

a) Competent Authority

The authorities or regulatory bodies (including the local authority and provincial government) will be responsible for the processing and issuing of any required permits or approvals relating to the proposed development activities. The various authorities may conduct inspections to audit compliance to this EMPr, the EA or any other permits and conditions thereto. In such cases, the DoE, CDC and the Contractor will cooperate with the authorities to ensure compliance.

b) Project Manager / Project Engineer

The Project Manager (**PM**) will firstly regulate, control and manage activities associated with the project, and secondly monitor and minimise project associated impacts on the environment by overseeing the implementation of the EMPr. The PM will ultimately be responsible for implementing or conforming to the environmental management measures by any person acting on their behalf, including but not limited to contractors, sub-contractors or service providers associated with the project. The PM will arrange for a post-construction meeting to discuss any issues that need immediate corrective or remedial actions, or to ensure preventative actions are implemented to improve the management of the project.

c) Contractor Representative

The Contractor shall appoint an Environmental Officer (**EO**) or Safety, Health and Environmental (**SHE**) representative that reports to the Developer for effective implementation and monitoring of the EMPr specifications. The EO shall compile method statements for proposed activities and submit these to the Project Engineer and ECO for approval. Develop and maintain a daily on-site monitoring system to comply with the EMPr. Implement environmental training and awareness. Report on incidents, public complaints and implement corrective and preventative measures. Maintain all on-site environmental records, including waste disposal records. Ensure internal auditing of the EMPr.

d) Environmental Control Officer

The independent Environmental Control Officer (**ECO**) will ensure that environmental mitigation measures are implemented through collaboration with the PM and compile a post-construction audit report which will record the project's conformance to the EMPr. The report will be made available on completion of the works to all other stakeholders upon request. It must be noted that the responsibility of the ECO on this project is to monitor compliance and provide advice on the implementation of the EMPr as and when needed and not to implement measures to ensure compliance.

5.2 Monitoring and Reporting

A monitoring programme must be implemented for the duration of the Project and should include:

a) A once-off monitoring inspection by the independent ECO prior to site establishment by the Contractor. The establishment of a baseline by taking selective, point-based photographs of identified environmental aspects and potential impact sites, should be done prior to commencement of construction. The ECO shall retain the *pre-construction* photographic record, including any pre-existing damaged areas inside and outside the site footprint (i.e. construction area).

b) Daily and weekly monitoring by the Contractor during the Construction phase;

c) A register of all complaints from landowners or the community must be maintained on site by the Contractor. All complaints / claims shall be handled immediately to ensure timeous rectification / compensation by the responsible party and should be directed to the PM and independent ECO for review and appraisal;

d) Monthly compliance monitoring, auditing and reporting by the ECO during the Construction phase, focusing on EA and EMPr compliance. The ECO shall obtain additional photographic records *during construction* of any damaged areas requiring interim protection and/or rehabilitation. An indication of the date, time, type of damage and reason for the damage shall be recorded to ensure the responsible party is held liable. The Contractor shall be held liable for all unnecessary damage to the environment as a result of any negligent behaviour.

e) A post-rehabilitation inspection three (3) months after rehabilitation activities are complete must be conducted by the ECO and/or freshwater ecologist to ensure conformance to the rehabilitation requirements, and where necessary, provide recommendations for any required corrective action.

f) Compilation of a close out audit report by the ECO, focusing on final EA and EMPr compliance and the success of rehabilitation completion.

5.2.1 Environmental Emergency Response Plan

The Contractor must compile an Environmental Emergency Response Plan/Method Statement in conjunction with and in alignment with the approved "Health and Safety Specification" for the Project. Emphasis should be placed on environmental aspects such as fire, flood and pollution incidents and prevention and any other Section 30 NEMA incidents and the associated reporting protocol. As far as any mitigation measures to prevent or avoid environmental incident and emergencies from occurring, which are within reasonable parameters for the Contractor to control, such should be specified in a project-specific plan/method statement.

5.3 Documentation and record keeping

The following documentation must be kept on site by the Contractor in order to record conformance to the conditions of the EA and EMPr. A site-based environmental file should include:

a) Copy of the EA and EMPr;
b) Method Statements compiled by the Contractor and approved by the PM / ECO;
c) Copy of the Rehabilitation Plan/Method Statement;
d) A set of environmental registers which include:
    i. Complaints register, including details of complaints and actions required/taken (with dates);
    ii. Incident register, including copies of notification of Emergencies and Incidents (this must be accompanied by dated photographic records);
    iii. Waste registers and waste manifests;
e) Copies of all waste documentation such as Safe Disposal Certificates (SDCs);
f) Material Safety Data Sheets (MSDSs) for all hazardous substances;
g) Minutes and attendance registers of all progress meetings held;
h) Monitoring results including environmental audit and inspection reports, checklists, register of audits, etc;
i) Copies of any environmental Non-Conformance Reports (NCRs) issued;
j) Copies of any Corrective Action Reports (CARs) in response to NCRs issued;
k) Notifications of Emergencies and Incidents.

5.3.1 Method Statements

It is a statutory requirement to ensure the well-being of employees and the environment. To allow the mitigation measures in this document to be implemented, task-specific Method Statements should be developed for each set of tasks. A Method Statement details how and when an activity will be carried out, detailing possible dangers/risks, and the methods of control required.

The Contractor will be accountable for all actions taken in non-conformance of the approved Method Statements. The Contractor shall keep all the Method Statements and subsequent revisions on file, copies of which must be distributed to all relevant personnel for implementation. Determining which activities require a Method Statement involving environmental impacts may be decided upon by The Contractor, the ECO, the Project Manager or the Contractor themselves prior to the said activity commencing.

5.3.2 Environmental Registers

The Contractor, with assistance by the ECO, will establish various Environmental Registers (as templates) for the Project. The Contractor will ensure that the information is recorded for all complaints/incidents as per the register templates (attached as **Annexure E** at the end of this document). The Environmental Registers will form an integral part of the Project records to be transferred to the Developer's Agent (CDC) upon

Project completion. These records will be kept with the EMPr and will be made available on requested by the authorities and ECO.

5.4 Communication and Stakeholder Engagement

The Contractor must ensure that relevant authorities and stakeholders are informed and updated throughout the project. Sufficient signage should be erected around the site (including at the entrance), informing the public of the activities taking place. It is suggested that signboards be erected and include the following information:

- The name of the Contractor; and
- The name and contact details of the site representative to be contacted in the event of emergencies or raising a public complaint.

5.5 Non-Conformance Reporting

A Non-Conformance Report (**NCR**) must be issued to the Contractor as a final step towards rectifying any persistent or intentional failure to comply with requirements of the EMPr. This will be issued by the ECO or Project/Site Manager to the Contractor in writing. Preceding the issuing of an NCR, the Contractor must be given an opportunity to rectify the issue. Should the ECO assess a non-EMPr related incident or issue and find it to be significant (e.g. non-repairable damage to the environment), it must be reported to the relevant authorities and escalated to the level of an NCR.

6 DETAILED ENVIRONMENTAL MANAGEMENT PROGRAMME

The EMPr specifies the minimum requirements to be implemented by the Contractor as per the contractual scope of works, in order to minimise and manage the potential environmental impacts and ensure sound environmental management practices. It also provides the framework for environmental monitoring throughout the Construction and Rehabilitation phases. It is essential that the EMPr requirements be systematically reviewed, understood, implemented and adhered to at all times. This section (Chapter 6) comprises the environmental specifications (ES) for the Project.

6.1 Environmental Specifications (ES)

The approach for ES implementation and the associated monitoring requirements relating to specific measures/aspects of ES implementation (for the duration of the Project) are divided into 3 stages:

a) Pre-Construction (includes Design and Project Planning)
b) Construction (included Site Establishment)
c) Post-Construction (includes Site de-establishment and Rehabilitation)

6.1.1 Scope of Application for the Environmental Specifications

The implementation of the EMPr and the associated ES are focused primarily on the principal Contractor and all sub-contractors and staff involved in the Project. The entire site footprint, including the site camp, site offices, designated working areas, internal access routes and the immediately adjacent areas fall within the scope of the EMPr. Any new personnel, plant, machinery and materials brought to site will need to comply with the EMPr.

6.1.2 Environmental Principles for the Construction Phase

The following core environmental principles apply:

- Construction is a disruptive activity and maximum consideration must be given to minimising disturbances on the surrounding community and natural environment.
- Only the authorised construction 'footprint' approved for development should be utilised and occupied. No site 'creep' or increasing of the footprint to an area beyond which is authorised is permitted.
- All relevant legislation should be adhered to and any relevant permits and permissions, where required, must be obtained and complied with at all times.
- The Contractor should foster a collaborative and cooperative relationship between the school staff and all relevant stakeholders including the authorities (*i.e.* EDTEA, DWS, DFFE, local ward councillor) any other neighbouring landowners/land users and members of the adjacent local communities. Professional and timely communication with these parties as and when required will assist in the successful completion of the Project.

- The Contractor and other project role-players should acknowledge and sign the Letter of Acceptance (**Annexure D**) confirming their environmental commitments for the duration of the Project.
- Wherever possible, the Contractor should seek to employ local labour and maximise the involvement of small, local business enterprises into the project.

6.2 PLANNING AND DESIGN PHASE

This section covers mitigation measures and recommendations that should be considered during the planning and design stage of the Project. The Project team is responsible for ensuring that the design of the school responds to the environmental constraints and opportunities as highlighted in the overarching and municipal Strategic Development Framework (SDF) and Integrated Development Plan (IDP) which have planning jurisdiction in relation to the site footprint and proposed school development. Planning and design activities should be undertaken in accordance with all relevant legislative requirements and that adequate consideration has been taken regarding any authority requirements and any landowner and local community concerns. Where appropriate, these should be addressed through adequate design and planning in terms of the final building plans and layout to be submitted to the Municipality, for approval.

6.2.1 Management Objectives

The primary environmental objective during this phase is to ensure the best suited environmental option for the Project is selected based on the final design (*i.e.* plans, drawings, layouts, surveys, environmental assessments and specialist studies) undertaken for the proposed development footprint. The project-specific **BAR** and all respective **Appendices** and **Annexures** which supplement the **BAR** represent the overall management framework which should be adhered to during the Construction Phase. To ensure that construction activities are undertaken without significant disruption to other land uses and activities in the surrounding area, the following objective, impact management outcome and monitoring requirement has been identified:

Objective	Ensure the best suited environmental option for the Project is selected based on the final design. The final design should be based on project plans, drawings, layouts, surveys, environmental assessments and specialist studies undertaken and should be in alignment with municipal plans (SDF & IDP)
Impact Management Objective	-The design meets the objectives and does not degrade the environment. -Design and layouts should respond to the mitigation measures and recommendations in the BAR. - Construction phase sequencing should align with current school activities with minimal impact on teachers, learners and local residents.
Monitoring	-Review of the final design by the Project Manager, Engineer, Local Municipality and Environmental Authorities prior to the commencement of Construction.

6.3 PRE-CONSTRUCTION PHASE

6.3.1 Authorisations, Permits and Licences

- All necessary authorisations, permits and licences must be obtained by the Developer/Contractor prior to the commencement of Construction.

6.3.2 Appointment of Contractor

- The Contractor must ensure that this EMPr forms part of any contractual agreements with other contractors and sub-contractors for the execution of the Project. All contractors must make adequate provision in their budgets for implementation of the EMPr.
- The Principal Contractor (including sub-contractors and suppliers) must comply with the relevant provisions of the EMPr, applicable environmental legislation, associated regulations and any applicable local by-laws.

6.3.3 Appointment of an ECO

- An independent ECO must be appointed by the holder of the EA (the Developer) at their cost to monitor the implementation of the EMPr.
- The ECO must be appointed at least 30 days prior to the commencement of any construction activity on site. During this period the ECO will review all relevant documentation pertaining to the Project.
- Once an ECO has been appointed he/she must undertake monthly site inspections and provide monthly environmental audit reports for the duration of the construction and rehabilitation phases. Each audit report must contain the full results of the audit and should determine, by way of audit findings, whether the various aspects of the Project (audit criteria) are deemed to be *compliant*, *non-compliant* or *not applicable*. Where relevant, any *not applicable* conditions or findings must explicate any aspects (audit criteria) of construction which have not commenced or state which recommended actions may, for example, be required from any other Organs of State, Stakeholders, etc.

6.3.4 Preparation of Method Statements

- Method Statements (MS) must be submitted by the Contractor to the ECO and must be adhered to by the Contractor, sub-contractors and the PM for the duration of the Project. These can relate to water and storm water management requirements, traffic requirements, solid waste management requirements, fuel storage and filling and dispensing of fuel (diesel and petrol), hydrocarbon spills, contaminated water management, the storage of hazardous materials, standard emergency procedures and biohazard control, and any further activities which the ECO and/or PM deem necessary.
- The ECO will monitor the implementation of the Method Statements. All copies of the statements and plans must be submitted to the appointed ECO for review.

6.3.5 Environmental Training and Awareness

It is important to ensure that the Contractor has the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and ongoing minimisation of environmental harm. It is vital that all personnel are adequately trained to perform their designated tasks to an acceptable standard. The Contractor shall ensure that its employees and sub-contractors who carry out all or part of the Contractor's obligations are adequately trained with regard to the implementation of the EMPr, as well as environmental legal requirements and obligations. Training shall be conducted by the Contractor EO/SHE Officer as and when required, as determined by the ECO by means of and initial (once-off) Induction, continuous toolbox talks, awareness posters, meetings etc. General EA and EMPr requirements should form part of the formal site induction for all Contractors, sub-contractors and casual labourers, preferably in their native language.

Awareness training must be provided in a verbal and/or visual format. Induction training should be a once-off event for all staff on site and repeated for any new staff as and when they deploy to site. The Contractor should however make provision for internal weekly training, holding of toolbox talks and displaying of environmental awareness posters. In addition to training, general environmental awareness must be fostered among the project's workforce to encourage the implementation of environmentally sound practices for the full duration of the Project. The aim is to ensure environmental accidents are minimised and good environmental compliance is continuously attained.

The environmental training is aimed at:

- Promoting environmental awareness;
- Informing the Contractor of all applicable environmental procedures, policies and programmes;
- Providing generic and simplified training on the implementation of environmental management specifications; and
- Providing job-specific environmental training in order to understand the key environmental features of the construction site and the surrounding environment.

The Contractor shall ensure that attendance records of all training interventions are kept in accordance with the record keeping and document control requirements and records must be sent to the ECO at intervals determined by the ECO. The training records shall verify each of the targeted personnel's training experience. If necessary, the ECO and/or a translator should be called to the site to further explain any aspects of environmental or social behaviour which are unclear. Basic environmental awareness material is attached as an **Annexure B**.

6.4 CONSTRUCTION PHASE

To simplify the EMPr requirements, each aspect related to the EMPr has been addressed in the tables below under relevant sub-headings. Each action number within the tables is supported by mitigation measures and actions which will need to be adhered to / implemented by the responsible party. The terms used in the tables are briefly described below for ease of reference.

- **Mitigation Measures and Actions**

  This section indicates the environmental measures, actions and controls required to either prevent and/or minimise the potential impacts on the environment that is associated with the project.

- **Responsibility**

  This section indicates the party responsible for implementing the mitigation measures and actions laid out in the EMPr.

6.4.1 Site Establishment

Action no.	Mitigation Measures (Impact Management Actions)	Responsibility
1.	The Contractor shall make all efforts to establish their construction camp, offices, workshops and any other infrastructure on **previously disturbed/impacted areas** and in a manner that does not adversely affect the environment.	Contractor
2.	Prior to the establishment of the site camp/office, the Contractor will produce a site **layout plan** showing the positions of all equipment storage, waste stockpiling, fuel storage areas and other infrastructure for approval by the ECO and PM.	Contractor
3.	The construction area must be **clearly demarcated** on the layout plan, and all other areas (in particular any environmentally sensitive buffers) must be considered **no-go areas** for construction personnel.	Contractor
4.	Adequate **signage** must be placed in the area where construction will take place warning the public of the activities taking place.	Contractor
5.	For security measures, it is recommended that the site be secured and manned by security on a 24 hour basis for the duration of the Project.	Contractor
6.	The construction camp's **housekeeping** must be kept in an orderly state at all times (managing stacking, storage, waste areas, etc.)	Contractor
7.	**Vegetation** removed for the site establishment is to be kept to a minimum. No trees are to be removed, where applicable, with the exception of alien weeds and invader plants.	Contractor
8.	The construction camp must be located a minimum horizontal distance of 32m from any **watercourse** and any associated riparian buffers identified on or around the site, and higher than the 1: 100 year flood line.	Contractor
9.	The Contractor must ensure that **storm water drainage** on the camp site is such to prevent standing water and/or sheet erosion from taking place.	Contractor

6.4.2 Ablution/Sanitation

Action no.	Mitigation Measures (Impact Management Actions)	Responsibility
1.	The Contractor must provide a minimum of one **mobile chemical toilet** per 15 persons.	Contractor
2.	The chemical toilets must be **strategically placed** and **re-positioned** (to allow easy access to workers, preferably no more than a 100m from each work area) and must not be situated within any watercourse, wetland or associated buffers.	Contractor
3.	All ablution activities must take place in these facilities, and waste material must be stored and **disposed** of at the registered waste disposal site or collected by a registered waste service provider on a regular basis. Waste disposal certificates must be kept in the Site Environmental file.	Contractor
4.	The Contractor must ensure that toilets are **serviced** (cleaned or emptied) regularly (minimum of once per week, possibly twice) and that no spillage occurs during routine servicing and maintenance.	Contractor
5.	All temporary/portable toilets must be **secured** to the ground to prevent them from toppling due to wind or any other cause.	Contractor
6.	**Unauthorised dumping** / spilling of waste from toilets into the environment and burying of waste are strictly prohibited.	Contractor
7.	**Mobile chemical toilets** must be provided to construction personnel until such time that permanent connections and/or new ablution buildings are connected to the municipal wastewater infrastructure.	Contractor

6.4.3 Access Routes and Associated Infrastructure

Action no.	Mitigation Measures (Impact Management Actions)	Responsibility
1.	The construction site should have strict **access control** to reduce the risks associated with vehicular transportation and pedestrian access on the site. Only existing access routes on the property should be used in addition to any additional access points to be created, as per the Project's design and layout plan.	Contractor
2.	Any **steep gradients** on site must be avoided as far as practically possible.	Contractor
3.	Any **No-go areas** on the site footprint must be indicated as such with warning signs. This includes the ecologically sensitive areas i.e. the watercourse and rocky ridge habitat identified on and adjacent to the site.	Contractor
4.	Adequate drainage and **erosion protection** in the form of cut-off berms or trenches must be provided around the sites, where necessary.	Contractor
5.	Where applicable, the Contractor must mark any **internal access routes**. Markers should show the direction of travel to which the access route leads.	Contractor
6.	All **speed limits** must be strictly adhered to at all times.	Contractor
7.	If there are **high volumes** of construction traffic along site access routes, dust prevention measures must be implemented to reduce dust creation and to prevent any driving over adjacent areas.	Contractor
8.	Any **temporary** access routes should remain as one-way with a maximum width of 3-4m.	Contractor
9.	No vendors or other similar traders must be allowed to access the site.	Contractor

6.4.4 Ecologically Sensitive and No-go Areas

Action no.	Mitigation Measures (Impact Management Actions)	Responsibility
1.	The ecologically sensitive areas (watercourses and wetlands) are considered as 'No Go' areas and the recommended wetland buffers should be adhered to as far as possible. Apart from the authorised footprint, these areas should not be accessed by heavy vehicles or plant/machinery. Any unauthorised encroachment or damage caused within these 'No-go' areas for no valid reason should be discouraged by way of penalising the offender(s) according to a fining schedule/system established for the Project.	Contractor
2.	No removal, capture or destruction of any plant or animal from these 'no go' areas is permitted for any purpose.	Contractor

6.4.5 Plant & Equipment Maintenance

Action no.	Mitigation Measures (Impact Management Actions)	Responsibility
1.	Heavy machinery and construction vehicles should be parked in a dedicated area when not operating, This area must be illustrated on the construction camp layout.	Contractor
2.	If applicable, a dedicated maintenance area on site must be demarcated with an impermeable surface leading to an oil-water separator or containment sump. No vehicle may be extensively repaired in any place other than in a dedicated maintenance yard, or alternatively, off site at a dedicated workshop.	Contractor
3.	Washing of vehicles should not be permitted on site or at the construction camp and should be done off site at an appropriate commercial facility.	Contractor
4.	Access of all maintenance and material delivery vehicles must be strictly controlled.	Contractor
5.	Vehicles and equipment must be serviced regularly to avoid the contamination of the area from oil and hydraulic fluid leaks etc.	Contractor
6.	Servicing of vehicles must be done off-site or in a dedicated service bay which is impermeable, bund and is equipped with spill kit material.	Contractor
7.	Machinery or equipment used on site must not constitute a pollution hazard in respect of hydrocarbon substances.	Contractor
8.	The Contractor must order such equipment to be repaired or withdraw from use if they consider the equipment or machinery to be polluting and irreparable.	Contractor
9.	Suitably covered receptacles must be available at all times and conveniently placed for the disposal of waste. All used oils, grease or hydraulic fluids must be placed therein and these receptacles will be removed from the site on a regular basis for disposal at a registered or licensed disposal facility.	Contractor
10.	All speed limits must be adhered to.	Contractor

6.4.6 General and Hazardous Substances and Materials

Action no.	Mitigation Measures (Impact Management Actions)	Responsibility
1.	Refuelling, servicing or storage of hazardous substances must not take place within 100m of any watercourse or wetland.	Contractor
2.	Storage areas must be designated, demarcated and fenced off within the confines of the site footprint.	Contractor
3.	A Hazardous Substance Storage area should be secured, under lock and key, so as to minimise the risk of theft or unauthorised handling.	Contractor
4.	Suitable fire prevention facilities (extinguishers) must be available at all storage facilities.	Contractor
5.	All fuel storage tanks and associated facilities must be designed and installed in accordance with the relevant oil industry standards, SANS codes and other relevant requirements.	Contractor
6.	Symbolic safety signs illustrating 'No Smoking', 'No Naked Flames' and 'Danger' are to be prominently displayed in and around the fuel storage area.	Contractor
7.	Appropriate storage facilities for the storage of oils, paints, grease, fuels, chemicals and any hazardous materials to be used must be provided to prevent spillages onto the ground around the storage area(s). These pollution prevention measures for storage should include a bund wall high enough to contain at least 110% of any stored volume. Such a facility must be on an impervious surface. The storage area must be securely fenced and all hazardous substances such as fuel, oils, chemicals, etc, must be stored therein. Drip trays, a thin concrete slab or a facility with a durable PVC lining, must be installed in such storage areas with a view to prevent soil contamination and surface and ground water pollution.	Contractor
8.	The capacity of any fuel storage tank on site must be clearly displayed and the product contained within the tank clearly identified.	Contractor
9.	Only empty and externally clean tanks may be stored on the bare ground. All empty and externally dirty tanks must be sealed and stored in an area where the ground has been protected.	Contractor
10.	If fuel is dispensed from 210 litre (44 gallon) drums, the proper dispensing equipment must be used and accompanied by a drip tray. The drum must not be tipped in order to dispense fuel. The dispensing mechanism of the fuel storage tank must be stored in a waterproof container when not in use.	Contractor
11.	Any spilled/contaminated fuel, oil and chemical contaminated rags must be stored in leak-proof containers and disposed of at an approved hazardous waste site. Safe disposal certificates (SDCs) must be obtained for any hazardous wastes which are disposed of and such documentation must be maintained for record-keeping purposes on site.	Contractor
12.	Storage sites will be provided with bunds to contain any spilled liquids and materials. These storage facilities (including any tanks) must be on an impermeable surface that is protected from the ingress of stormwater from surrounding areas in order to ensure that accidental spillage does not pollute local soil or water resources.	Contractor
13.	Material Safety Data Sheets (MSDSs) must be readily available on site for all chemicals and hazardous substances to be used on site. Where possible the available, MSDSs should additionally include information on ecological impacts and measures to minimise negative environmental impacts during	Contractor

	accidental releases or spillages.	
14.	Staff dealing with these materials / substances must be aware of their potential impacts and follow the appropriate safety measures.	Contractor
15.	A registered waste disposal service provider (sub-contractor) must be employed to remove any waste oil and other hazardous waste. Such waste must only be disposed of at licensed landfill sites designed to handle hazardous waste. Appropriate Safety Disposal Certificates must be provided for all hazardous waste being disposed of.	Contractor
16.	The Contractor must ensure that all staff are made aware of the health risks associated with any hazardous substances used and has been provided with the appropriate protective clothing/equipment in case of spillages or accidents and have received the necessary training.	Contractor
17.	Any cement / concrete must not be mixed directly on the ground. Mixing trays and/or impermeable sumps must be used at all mixing and supply points. Unused cement bags are to be stored so as not to be effected by rain or runoff events.	Contractor
18.	If applicable, the washing of concrete trucks on site is prohibited unless disposed of into a designated wash area approved by the ECO.	Contractor
19.	Used cement bags must be stored in weather-proof containers to prevent windblown cement dust and water contamination. Used cement bags must be disposed of on a regular basis via the solid waste management system, and must not be used for any other purpose.	Contractor
20.	All remains of excess/un-used cement or concrete must be physically removed on completion of the plaster or concrete pour section and disposed of. Washing the remains into the ground is not acceptable as soil contamination and groundwater pollution may occur.	Contractor
21.	No paint products may be disposed of on site.	Contractor
22.	The storage thresholds contained in the 2014 EIA Regulation Listing Notices as well as the Waste Management Listed Activities contained in Category A and B should not be exceeded.	Contractor
23.	The Contractor must maintain a record of the sourcing of all materials used during construction.	Contractor

6.4.7 Spills, Incidents and Pollution Control

Action no.	Mitigation Measures (Impact Management Actions)	Responsibility
1.	Any spillage which may occur must be investigated and immediate action must be taken according to the requirements of the Spill Contingency Plan. This must also be reported to the ECO and Site Manager.	Contractor
2.	In the case of a spill of hydrocarbons, chemicals, bituminous or asphalt materials in the Contractor's laydown storage/areas or on the construction site, the spill should be contained and cleaned up and the material together with any contaminated soil collected and disposed of as hazardous waste to minimise pollution risks and reduce bunding capacity.	Contractor

3.	Should a pollution incident occur on site, the Contractor must: • Implement reasonable measures immediately to contain and minimise the impacts of the incident; • Notify all persons whose health may be affected by the incident; • Undertake clean up procedures immediately; • Notify the Client of the incident immediately who will advise the employee as to the measures that should be implemented; • Record the incident in the Environmental Incident Register; and • Implement measures to prevent similar incidents from occurring in the future.	Contractor
4.	Where applicable, concrete mixing must be confined to as few areas as possible and *ad hoc* mixing is to be avoided. Any areas where concrete mortar is mixed must be cleaned up after use. Concrete mixing is to be undertaken on impervious surfaces, such as on mortar boards.	Contractor
5.	Stockpiles of soil and construction material are to be bermed to prevent any lateral spread of leachate or polluted runoff.	Contractor

6.4.8 Waste Management

6.4.8.1 General Waste

Action no.	Mitigation Measures (Impact Management Actions)	Responsibility
1.	General waste produced on site will likely include: • Office waste (e.g. printer cartridges, paper, plastics, packaging, etc); • Construction waste (scrap metal, wood, glass, rubble, packaging); and • General domestic waste (food, cardboards, paper, bottles, tins). An adequate number of general waste receptacles (including skips and bins) must be positioned around the Construction camp laydown area and on site (working areas) to collect all waste types and domestic refuse and to minimise littering.	Contractor
2.	Bins must be clearly marked/labelled and appropriately lined for efficient control and safe containment and disposal of waste.	Contractor
3.	Different waste bins, for different waste streams must be provided to ensure correct waste separation.	Contractor
4.	Where applicable, a demarcated area must be allocated for waste sorting and disposal on the site.	Contractor
5.	All waste receptacles must be appropriately covered to ensure waste does not affected by wind, rain or vermin.	Contractor
6.	Larger quantities of general waste produced on site (e.g. rubble) are to be collected in skips for disposal at a registered landfill site. Hazardous waste in not to be mixed or combined with general waste earmarked for disposal at the municipal landfill site.	Contractor
7.	Under no circumstances is waste to be burnt or buried on site. The excavation and use of rubbish pits on site is forbidden.	Contractor
8.	Waste bins must be cleaned out on a regular basis to prevent any windblown waste and/or visual disturbance.	Contractor
9.	All general waste must be removed from the construction areas on a daily basis and disposed of in suitable waste receptacles at the designated waste storage area in the Construction Camp.	Contractor

10.	The Contractor must ensure that all general waste is disposed of at an appropriately licensed waste disposal facility. Through exploring practical means for reducing, reusing and recycling waste generated in undertaking the activity, the Contractor should aim to produce and dispose of a minimum amount of waste as possible.	Contractor

6.4.8.2 Hazardous Waste

Action no.	Mitigation Measures (Impact Management Actions)	Responsibility
1.	Hazardous wastes which may be produced on site, derived from hazardous substances, include: • Oil and other lubricants, diesel, petrol, paints, solvents; • Containers that contained chemicals, oils or greases; and • Other material (e.g. used rags), soils, gravel and water contaminated by hazardous substances (oil, fuel, grease, chemicals or bitumen).	Contractor
2.	Hazardous waste is to be disposed of at a Licenced Hazardous Waste Landfill Site. A licensed waste disposal site must be identified at the inception of the Project.	Contractor
3.	Hazardous waste bins must be clearly labelled, stored in a contained area (or have a drip tray) and covered (either stored under a roof or the top of the container must be securely covered with a lid).	Contractor
4.	A hazardous waste disposal certificate, or safe disposal certificate (SDC) must be obtained from the waste removal company as evidence of correct, lawful disposal.	Contractor

6.4.8.3 Wastewater

Action no.	Mitigation Measures (Impact Management Actions)	Responsibility
1.	All wastewater generated from activities related to the site must be disposed of in a suitable manner so as not to cause any surface or subsurface water pollution or health hazard.	Contractor
2.	Wastewater including cement-contaminated water must not be allowed to enter any stormwater infrastructure or watercourse and must be managed by the Contractor to ensure that any existing water resources beyond the site footprint are not polluted by site-based construction activity.	Contractor
3.	Where applicable, used oil / hydrocarbon-contaminated wastewater should be collected and transported to a ROSE-registered facility (https://rosefoundation.org.za/) for recycling or disposed of at an appropriate hazardous wastewater treatment facility. All SDCs are to be obtained and maintained as records by the Contractor.	Contractor

6.4.9 Emergency Preparedness

Action no.	Mitigation Measures (Impact Management Actions)	Responsibility
1.	An emergency fire mitigation and prevention plan / method statement should be drafted before construction to ensure preparedness toward preventing fires starting from construction or elsewhere to limit or prevent damage to surrounding areas. The fire management plan must specify how fires will be prevented from breaking out and causing damage to any surrounding areas during construction. Fire outbreaks could be a major risk to human life, property and vegetation in the surrounding area.	Contractor

6.4.10 Heritage

Action no.	Mitigation Measures (Impact Management Actions)	Responsibility
1.	If any heritage site, grave or artefact is uncovered or discovered on site, work in the immediate vicinity must be stopped immediately. Any identified site must be clearly marked as a "No-go" area. In the event that a historical grave or heritage site is exhumed/discovered, the Heritage Resource Authority (AMAFA) should be informed immediately. A specialist archaeologist will be required to facilitate any process pertaining to such a find/discovery.	Contractor
2.	The Contractor must take reasonable precautions to prevent any person from removing or damaging any such artefact. Upon any discovery thereof, the Contractor must immediately inform the Project Manager of such discovery who, in turn, must inform AMAFA and a registered archaeologist. The Chance Find Protocol in the Heritage impact report (BAR Appendix 6) must be followed.	Contractor
3.	Any permits, if necessary, shall be obtained from the relevant Heritage Resources Authority (AMAFA) for the destruction/removal of any Cultural or Heritage Artefacts.	Contractor
4.	Any mitigation measures recommended by a specialist archaeologist should be followed. Work may only resume once clearance is given in writing by AMAFA and/or the archaeologist.	Contractor

6.4.11 Noise Control

Action no.	Mitigation Measures (Impact Management Actions)	Responsibility
1.	Neighbouring landowners / community residents adjacent to the site must be notified about Construction prior to commencement.	Contractor
2.	All construction vehicles and equipment are to be kept in good repair and must be fitted with Standard silencers prior to construction.	Contractor
3.	Where possible, stationary noisy equipment (for example compressors, generators etc) must be encapsulated in acoustic covers, screens or sheds. Portable acoustic shields should be used in the case where noisy equipment is not stationary (e.g. for drills, angle grinders, chipping hammers).	Contractor
4.	Construction activities, and particularly excessively noisy activities, are to be limited to reasonable working hours during the day.	Contractor

5.	Any machines used intermittently must be shut down in the intervening periods between work or throttled down to a minimum.	Contractor
6.	In general, operations must meet the noise standard requirements of the Occupational Health and Safety Act (Act No 85 of 1993).	Contractor
7.	Construction staff working in areas where the 8-hour ambient noise levels exceed 75dBA must wear ear protection equipment.	Contractor
8.	Noise levels must be kept within acceptable limits. All noise and sounds generated must adhere to the relevant SANS standard.	Contractor
9.	No pure tone sirens or hooters may be utilised except where required in terms of SANS standards or in the event of Emergencies.	Contractor
10.	Noise from the workforce must be controlled, toolbox talks should remind workers to keep noise to a minimum.	Contractor
11.	Noise suppression measures must be applied to all construction equipment. Construction equipment must be kept in good working order and where appropriate fitted with silencers which are kept in good working order. Should the vehicles or equipment not be in good working order, the Contractor may be instructed to remove the offending vehicle or machinery from site.	Contractor
12.	The Contractor must take measures to discourage labourers from loitering in areas and causing noise disturbances. Where possible labourers must be transported to and from the site by the Contractor or by dedicated service providers using appropriate transport.	Contractor
13.	Construction activities are to be contained to reasonable hours during normal working hours.	Contractor
14.	If applicable, neighbours are to be given at least three days warning prior to any blasting or piling activities.	Contractor

6.4.12 Dust Control

Action no.	Mitigation Measures (Impact Management Actions)	Responsibility
1.	If water is required to be abstracted from a water resource for construction and dust suppression purposes and if such water use falls within the ambit of a section 21 water use in terms of the National Water Act (Act 36 of 1998), it must be confirmed with the Department of Water and Sanitation (DWS) if any type Water Use Authorisation is required.	Developer, Contractor
2.	Any dust created during construction should not affect the school (teachers and learners), surrounding residents in the local community or any of the Contractor's workforce. Dust should not reduce the visibility for private vehicles making use of the public road passing by the site.	Contractor
3.	All construction vehicles and equipment are to be kept in good working order.	Contractor
4.	Shade cloth fencing is to be used to reduce dust aggravation in high usage/exposed areas, particularly during high wind conditions and in the drier winter season. In areas where there is a large potential for dust liberation, wet suppression using water and/or eco-friendly dust suppressants should be applied to the affected areas.	Contractor
5.	A protective vegetation layer must be established on any topsoil stockpiles in order to further reduce dust creation.	Contractor
6.	Construction activities are to be contained to reasonable hours during the day avoiding periods of sunrise and sunset.	Contractor

7.	A dust suppression register (water and/or dust suppressant usage) as well as a complaints register need to be established, updated and maintained on site.	Contractor
8.	All complaints received need to be investigated with remedial action taken communicated to the affected party within 14 days.	Contractor

6.4.13 Sediment Management

Action no.	Mitigation Measures (Impact Management Actions)	Responsibility
1.	Before any earthworks commence, sediment control/silt capture measures (e.g. berms, bidim, silt curtains) must be installed, where appropriate, to limit any sedimentation of the existing stormwater drainage system and road networks around and adjacent to the site. Quantities of silt fences/curtains shall be decided on site with the engineer, Contractor and ECO.	Contractor, ECO, Engineer
2.	Any installed sediment control/silt capture measures must be regularly checked and maintained (dredged, cleared, de-silted to ensure continued capacity to trap sediment and silt), and repaired where necessary.	Contractor, ECO

6.4.14 Soil and Erosion Management

Action no.	Mitigation Measures (Impact Management Actions)	Responsibility
1	Topsoil shall be removed from all areas cleared of vegetation, and retained (stockpiled) for future rehabilitation use, where applicable. Topsoil shall be stockpiled in areas identified by the ECO and PM not higher than 2m (or in accordance with the engineering specifications) and may not be removed from site, or used for any purpose other than in the final rehabilitation and levelling/landscaping of the site.	Contractor
2.	Topsoil stockpiles must be kept free of contaminants, not be compacted or disturbed, kept separate with any materials or equipment and domed at the top to promote runoff. Topsoil should be transferred to its intended site of storage immediately following site clearance. The period between stockpiling of topsoil and its final re-use should be as short as practically possible.	Contractor
3.	Where feasible, it is recommended that the cleared grass vegetation containing the existing seedbank be retained and stored in conjunction with topsoil stockpiles. Stockpiles that are to be stored for less than three (3) months should be covered with shade-cloth, Geotech materials or similarly suitable material to prevent erosion, and kept moderately moist in order to maintain the viability of the soil. If stockpiles are to be stored for more than three (3) months, a protective vegetation layer must be established on the topsoil in order to protect it against erosion, dust and desiccation. Stockpiles must be kept moist in order to maintain the viability of the seedbank, organic matter and vegetation. Vegetation should not consist of weeds but of indigenous grass cover (sourced from the original stripped grass and/ or a regional plant nursery).	Contractor
4.	Soil erosion on site must be prevented at all times, *i.e.* pre, during and post construction activities. Suitable erosion control measures must be	Contractor

	implemented in areas sensitive to erosion, such as water supply points and edges of slopes. Erosion prevention / run-off attenuation measures include sand bags, logs, silt fences, stormwater catch-pits, shade nets, rip-rap, stone pitching, brush packing or temporary mulching over denuded areas, as required.	
5.	The inherent erosion risk potential of all soil and ground surfaces on the site (particularly when exposed / free of vegetation) must be taken into consideration and appropriate control and preventative measure put in place to minimise erosion. The Contractor must take responsibility for the site to conform to all Contractual aspects and environmental standards applicable.	Contractor

6.4.15 Stormwater Management

Action no.	Mitigation Measures (Impact Management Actions)	Responsibility
1.	Detailed plans to control and prevent erosion by storm water must be agreed between the Contractor and Site manager/Engineer, and approved by the ECO prior to the commencement of any works, including site clearance, on any portion of the site.	Contractor, Engineer/Site Manager, ECO
2.	Earthworks on sites are to be kept to a minimum. Where any sloped embankments have to be created, stabilisation and erosion control measures must be implemented immediately.	Contractor
3.	No chemicals, fluids or hazardous substances are permitted to enter the stormwater drainage system as these could have a cumulatively detrimental effect on the flora, fauna and any aquatic life in watercourses, in the downstream environment beyond the site footprint. Regular visual monitoring of the site and the immediate surrounding road/drainage network should be undertaken.	Contractor
4.	No stormwater, wash water, or wastewater may be directed towards any permanent water body or wetland without the installation of a suitable filtration system to prevent pollution, including silt, from entering such waterbody. Watercourses and wetlands adjacent to and beyond the site footprint should be considered as "No go" areas and are to be avoided.	Contractor
5.	Construction activities should be scheduled to minimise the duration of exposed bare soils on site, especially on any steep slopes. The Contractor must regularly monitor the site for erosion damage after every rainfall event and rectify / rehabilitate any damage immediately. Construction activity during and after rainfall should cease. Only once the ground surface has dried out sufficiently should scheduled construction activities resume.	Contractor
6.	Run-off generated from cleared and disturbed areas/slopes must be controlled using erosion control and sediment trapping measures like silt fences, sandbags, earth berms and synthetic logs, particularly on exposed slopes. These control measures must be established at regular intervals perpendicular to the slope to break surface flow energy and reduce erosion as well as trap sediment. Sediment barriers should be regularly maintained, cleared and repaired (where necessary) so as to ensure effective drainage.	Contractor
7.	Any erosion control and sediment trapping measures must only be removed once vegetation cover has successfully re-colonised any ground areas post-rehabilitation.	Contractor

6.4.16 Biodiversity (Terrestrial Ecosystem) Management

Action no.	Mitigation Measures (Impact Management Actions)	Responsibility
1.	Removal of indigenous vegetation must be restricted to the immediate area for construction (the footprint) as instructed by the PM and ECO.	Contractor, ECO, Site Manager
2.	Any protected vegetation species identified by a botanist or ECO may not be removed or cut without a permit from the relevant Conservation Authority. If applicable, the removal of any protected floral or fauna species should only be done once the necessary permit(s) have been obtained.	Developer, Contractor
3.	Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas. Where alien plants have been introduced on to the site, they must be removed immediately. Any cleared alien vegetation must be disposed of to a suitable landfill site. Invader species and weeds must be removed and disposed of in accordance with existing legislation (Conservation of Agricultural Resource Act (No. 43 of 1983) on a regular basis.	Contractor
4.	The Contractor must develop an Action Plan/Method statement for the control and removal of alien invasive species and submit it to the ECO for approval.	Contractor
5.	No poaching of any animal is permitted and no animal may be killed, destroyed, hunted, trapped, snared or captured for any purpose. The removal of any protected fauna from site or surrounds is strictly prohibited, unless done so for the protection of the species with the applicable permits. Any dangerous animals should be handled by a competent person. Harsh contractual fines and penalties must be imposed and the immediate dismissal on any contract employee who is found attempting to kill, snare or otherwise harm animals.	Contractor
6.	The speed of vehicles and plant to and around the site should be limited to avoid injuries and killing of any fauna within the site.	Whole Project Team

Impact Management Outcomes

With effective implementation of the EMPr during this phase, a list of the overarching impact management outcomes which can be achieved include:

- Prevention of soil erosion
- Prevention of soil contamination
- Prevention of loss of biodiversity
- Minimisation of waste and pollution
- Maintenance of surface water flow
- Prevention of groundwater contamination
- Minimisation of atmospheric emissions
- Minimisation of noise pollution
- Maintenance/improvement of the livelihood of the surrounding community
- Minimisation of safety concerns and public complaints

6.5 POST-CONSTRUCTION / REHABILITATION PHASE

6.5.1 Site de-establishment

Action no.	Mitigation Measures (Impact Management Actions)	Responsibility
1.	On completion of the Project, the Contractor shall ensure that all temporary structures, equipment, materials, waste, litter, rubble, notice boards and structures fences used during construction are removed with minimum damage to the surrounding area.	Contractor, ECO, Project Manager
2.	The Contractor shall clean and clear the site to the satisfaction of the PM and ECO.	Contractor
3.	After construction completion, any remaining disturbed/exposed soil surfaces on the site footprint which do not constitute permanent hard surface infrastructure shall be rehabilitated by scarifying the surface and allowing areas to rehabilitate.	Contractor

6.5.2 Rehabilitation

Action no.	Mitigation Measures (Impact Management Actions)	Responsibility
1.	A rehabilitation programme should be implemented as soon as practically possible after completion of each main construction activity (once no further disturbances will occur). If applicable, locally appropriate indigenous vegetation must be used for the site in accordance to the Rehabilitation Plan/Method Statement.	Contractor
2.	All disturbed surfaces compacted by construction activities should be ripped and scarified to allow organic contaminants to breakdown and to promote vegetation re-establishment.	Contractor
3.	Rehabilitation or re-vegetation of disturbed areas must take place during or immediately after construction is complete once no further disturbances will take place.	Contractor
4.	If applicable, only appropriate indigenous vegetation should be used for the rehabilitation and re-vegetation within the disturbed area in accordance to the Rehabilitation Plan.	Contractor
5.	Final rehabilitation must be completed within a period specified by the PM and ECO.	ECO, Project Manager
6.	All disturbed areas must be rehabilitated immediately upon completion of the project	Contractor
7.	Rehabilitation efforts must strive to ensure that no visible erosion scars remain after completion of the Contract.	Contractor
8.	Disturbed areas of natural vegetation as well as any cut and fills must be rehabilitated to prevent soil erosion.	Contractor
9.	Ideally, the timeframe for rehabilitation should be planned to coincide with the growing season to allow vegetation to establish successfully.	Contractor
10.	It may be necessary that a landscaper or botanical/ecological specialist is consulted prior to the undertaking of rehabilitation and re-vegetation of all affected areas, as identified by the ECO in consultation with the PM.	Project Manager, ECO
11.	Photos of all affected and rehabilitated areas must be taken during and *post* Rehabilitation in order to compare with the site condition *pre*-Construction.	Contractor ECO
12.	Rehabilitation is to be monitored by the ECO according to the requirements of the EMPr and specialist recommendations.	ECO

6.5.3 Revegetation

Action no.	Mitigation Measures (Impact Management Actions)	Responsibility
1.	The Project area must be monitored, for a period between 3 to 6 months after the development is complete, to ensure that: • Erosion is not taking place and re-vegetation is successful; • Any additional maintenance activities where intrusive works are deemed necessary adhere to the mitigation measures in this EMPr.	Contractor, Developer, ECO
2.	It may be necessary for the Contractor to appoint a suitably experienced landscaping contractor/botanist who is familiar with the local vegetation and rehabilitation methods. Such appointment must first be approved by the PM.	Contractor, Project Manager
3.	Original topsoil retained and stockpiled during construction should be used during rehabilitation.	Contractor
4.	The Contractor's Rehabilitation Method Statement should include details of any re-seeding and/or re-vegetation methods proposed to be used for any affected i.e. exposed/bare ground surfaces. This will be reviewed by the ECO prior to approval by the Site Manager.	Contractor, ECO, Botanist
5.	The recommended method for rehabilitating disturbed areas is by collecting seed from plants in the same community in nearby undisturbed vegetation for sowing on disturbed areas. If this is not possible, indigenous grasses (seeds or sods) may be sourced from the original stripped grass and/ or a regional plant nursery.	Contractor, ECO, Botanist

6.5.4 Erosion control measures

Action no.	Mitigation Measures (Impact Management Actions)	Responsibility
1.	Precautions should be taken to prevent soil erosion during the Rehabilitation Phase. Erosion control measures (e.g. application of straw mulches or soil binders to exposed soil) shall be put in place in all rehabilitated areas, including access roads, stockpiles and any other disturbed areas associated with the affected area operations.	Contractor
2.	If necessary, wind protection measures such as shade cloth screens shall be erected to protect the soil and vegetation.	Contractor

7 OPERATION OF SCHOOL

The functioning and operation of the school is expected to be long-term and fully functional once rehabilitation is complete. In terms of any future (long-term) environmental monitoring and maintenance requirements at the school, the scope of this EMPr is limited to the phases as defined in the timeframe of the Project. An Operational EMPr (OEMPr) is not considered necessary for this proposed development, should it be authorised. Once successful rehabilitation of the footprint has been verified by a post-closure audit (and report) conducted by the independent ECO, no further post-closure requirements are considered necessary. Mitigation measures, actions and responsibilities for management, beyond the construction and rehabilitation phase of the school, are recommended below.

Action no.	Mitigation Measures (Impact Management Actions)	Responsibility
1.	Any long-term (future) environmental monitoring and management required during the Operational Phase of the school (primarily waste management, water management and alien vegetation management) should be via written agreement between the Developer (DOE) and the Municipality (EM). An "**Operation Manual/Plan**" is recommended to be developed detailing procedures to be followed and responsibilities for waste, water and vegetation management at the school. It should include any financial, servicing and long-term monitoring and maintenance requirements.	Developer, Local Municipality
2.	If there are any potential (future) maintenance requirements which are deemed necessary beyond the contractual Project timeframe, a specific Method Statement should be developed by each and any appointed Maintenance Contractor prior to performing any required maintenance on the school premises. Standard business procedures, in terms of requesting for quotations and approving/appointing Service Providers, should follow.	Developer, School Management, Maintenance Contractors/Service Providers

8 CONFORMANCE WITH THE ENVIRONMENTAL SPECIFICATIONS

It is necessary for the Contractor to make provisions as part of their budgets for the implementation of the EMPr. In terms of NEMA, every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment and is liable to pay costs both to the environment and human health and the preventative measures to reduce or prevent additional pollution and/or environmental damage from occurring. This is referred to as the Polluter Pays Principle. Section 28 of NEMA embodies the Polluter Pays Principle.

The Contractor is deemed not to have adhered with the Environmental Specifications/EMPr if:

- There is evidence of contravention of clauses within and beyond the boundaries of the site footprint;
- Environmental damage is caused due to negligence;
- The Contractor ignores or fails to comply with corrective or other instructions issued by the PM or ECO within a specified time; and
- The Contractor fails to respond to and adequately resolve reasonable complaints from members of the public or project stakeholders.
- The Contractor fails to conform with corrective or other instructions issued by the PM or ECO within a specific time period;

The Developer (holder of the EA) and/or the Contractor will be deemed not to have adhered with the Environmental Specifications/EMPr/EA if:

- Any unauthorised construction activities or unauthorised NEMA EIA listed activities knowingly take place in the context of those activities that are authorised for the Project.

8.1 Non- conformance

The Contractor shall act immediately when any notice of non-conformance (NCR) is received and correct whatever is the cause for the issuing of the notice. Complaints received regarding activities on the construction site pertaining to the environment shall be recorded in a dedicated register and the response noted with the date and any actions of resolution taken. The ECO should be made aware of any complaints received.

Any non-conformance to the procedures of this EMPr may also be deemed a transgression of the various statutes and laws that define the manner in which the biophysical (natural) and socio-economic environment is managed. Any chronic or persistent negligence or failure to redress serious transgressions or

contraventions shall be reported to the relevant authority for them to consider, mediate and officially advise upon on a basis that the authority deems to be environmentally fair, reasonable and justifiable.

It is recommended that the application of a penalty clause on the Project is implemented for incidents of major legal non-compliance or persistent negligence which significantly negatively impacts the environment. The Contractor will be allowed one offence and a written warning issued by the ECO or PM. Failure to rectify the offence within two (2) working weeks of the issue of the warning or a repeat offence should result in a fine, as decided by the PM or ECO. The principle of any fines or penalties should be consistent with any clauses in the contractual documentation for the Project where fines or penalties may be issued to the Contractor for any time delays/extensions or material or workmanship defects relating to the Project which are not allowed for in the contract and the associated budget.

It is recommended that the PM in collaboration with the ECO implement an integrated system of financial penalties and/or conditions for dismissal for less serious transgressions, and any others determined during the course of the Project, such as those listed below:

- Littering on site;
- Unlawful lighting of fires on site;
- Persistent or un-repaired fuel and oil leaks;
- Excess dust or excess noise emanating from site;
- Possession or use of intoxicating substances on site;
- Any vehicles being driven in excess of designated speed limits;
- Theft/removal and/or damage to any fauna, flora or cultural or heritage objects on site;
- Urination and defecation anywhere except at designated facilities;
- Any persons, vehicles or equipment related to the Project found within any designated "No-go" areas.

9 EMPR ANNEXURES

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Annexure A
Curriculum Vitae of Author

Craig Burne

Senior Environmental Consultant

Profession

Environmental Consulting and Management

Qualifications

MSc (Dissertation): Freshwater Ecology

- *University of the Witwatersrand 2013-2015*

BSc (Hons): Environmental Science

- *University of KwaZulu-Natal 2007*

BSc: Zoology & Environmental Science

- *Rhodes University 2003-2005*

Accredited SASS5 Practitioner

- *Departments of Water & Sanitation and Environmental Affairs 2019*

Professional certification

Professional Natural Scientist (*Pr. Sci. Nat.*)

- *South African Council for Natural Scientific Professions (SACNASP)*
- *Membership no: 115213*

Short courses

Environmental Law

- *Centre for Environmental Management; 2010*

Lead Auditing Course: ISO 14001

- *DQS; 2010*

Years of experience

- 15 years

Key skills/knowledge areas

- Environmental management (ISO14001)
- Environmental compliance monitoring
- Environmental risk assessment
- Environmental permitting/licensing
- Auditing & EMS implementation
- Aquatic (freshwater) ecology
- Water quality assessment/reporting
- Freshwater macroinvertebrate assessment
- Aquatic assessment & biomonitoring
- Wetland assessment & monitoring
- Alien vegetation assessment & monitoring
- Scientific report writing
- Technical proposal writing
- Basic statistical techniques
- Basic mapping
- Applied and basic research

Personal Details

- Gender: Male
- Date of Birth: 1982-10-26
- Nationality: South African
- Identity: 8210265850088
- Drivers License: Code EB
- Languages: English (native) Afrikaans (basic)

NCC Environmental Services (Pty) Ltd

Feb 2008 – present

Previous and current roles and responsibilities

Aquatic and water quality assessments, aquatic biomonitoring, delineation and assessment of freshwater resources, compilation of river rehabilitation and alien vegetation management plans, river rehabilitation monitoring, alien vegetation monitoring and environmental/risk assessment. Participation in the coordination of environmental assessments, EMPRs & environmental license/permit applications. Undertaking environmental legal compliance monitoring and implementation functions on various projects across South Africa. Compilation and implementation of environmental method statements, site-specific rehabilitation plans, environmental risk assessments (ERAs) and construction work procedures. Preparing, undertaking and reviewing customised environmental audits for various projects/clients, stakeholder and authority engagement, public participation facilitation, management; mentoring and advice to internal staff on multiple projects, conducting rehabilitation assessments and cost estimates post-construction, closure reporting, coordination of waste management and recycling programmes on civil and building construction sites, management and resourcing of sub-contractors.

Current and previous projects

Consulting Projects:

- Thembalethu Secondary School Basic Assessment & WULA, KZN
- Khuba Secondary Schools Basic Assessment, KZN
- Freshwater assessments (wetland & aquatic) & risk assessments for proposed Battery Energy Storage Systems for existing Solar Plants in the Northern Cape & Free State - 2021-2022
- Freshwater assessment (wetland & aquatic) and risk assessment for Athene-Invubu 400kV transmission line guy anchor refurbishment, KZN - 2020-2021
- Freshwater assessment (wetland & aquatic) and risk assessment for proposed development of Amaoti Secondary School, KZN - 2021
- Thembinkosi Primary School Basic Assessment, KZN - 2019-2020
- Freshwater Assessment (wetland & aquatic) and risk assessment for a proposed hydroponic facility on farm Klein Dassenberg 39/20, Western Cape - 2019-2020
- Freshwater Assessment (wetland and aquatic) and risk assessment for the upgrade of provincial road D4407 between Hluvukani and Timbavati, Mpumalanga - 2020
- Freshwater Assessment (wetland & aquatic) and risk assessment for the proposed Modelkloof X18 Township Development, KZN - 2020
- Seasonal Aquatic Biomonitoring Mhlathuze River, KZN - 2019-2020
- Environmental Management Programme for proposed hydroponic facility on farm Klein Dassenberg 39/20, Western Cape - 2019-2020
- Wetland rehabilitation monitoring, aquatic habitat assessment, wetland assessment, aquatic biomonitoring (fish & macroinvertebrates) & water quality monitoring for N2 Road Upgrade, KZN - 2017-2020
- Sabi Game Reserve Watercourse Risk Assessment, Mpumalanga - 2019
- Surface water verification assessment for erf 803 & 804 in the Newcastle Local Municipality, KZN - 2019
- SANS 241-1:2015 drinking water quality assessment, monitoring & reporting in the Port of Durban - 2019-2021
- Water resource use licensing & SANS water interpretation for 'Rocking the Daisies 2018', Western Cape - 2018
- Environmental screening/feasibility assessment Kalahari Films, Northern Cape - 2017
- Participation in basic assessment for D281 road upgrade, Mpumalanga - 2015-2016

Compliance Monitoring Projects

- Melkhout-Dieprivier-Kouga WUL audit, Eastern Cape - 2022
- Taweni-Mfinizo 132kV powerline, Eastern Cape - 2022
- Makaula Substation, Eastern Cape - 2020-2021
- Dube Tradeport Corporation (DTPC) Agrizone, KZN - 2018-2020
- DTPC Hlawe/Tongaat Trunk Sewer Line, KZN - 2018-2019
- Daggakraal D281 Road Upgrade, Mpumalanga -2018-2019
- Cornubia Sigma and Cornubia II, Durban, KZN - 2018-2019
- Crown Cornubia Cold Storage Facility, Durban, KZN - 2017
- Ingula Pumped Storage Scheme, KZN - 2016
- Everest-Merapi 400kV transmission line construction, Free State - 2016
- Lower Thukela Bulk Water Supply Scheme, KZN - 2016
- SANBI Botanical Garden Upgrade, Durban & Pietermaritzburg, KZN - 2015-2017
- Cornubia BFS Cold Storage Facility, Durban, KZN - 2015
- NCC Team Manager for Eskom and Transnet Infrastructure Projects - 2012-2017
- Medupi 400kV Transmission Integration: Phase Alpha, Limpopo & NW - 2010-2012
- Majuba-Mfolozi 765kV transmission line construction, KZN - 2009
- Mercury 765kV Substation, Free State - 2008
- VRESAP Bulk Water Pipeline, Gauteng and Mpumalanga - 2008
- VRESAP Bulk Water Pump Station, Vaal Dam, Gauteng - 2008

Annexure B
Awareness Training

Basic Environmental Awareness Training



Workers & equipment must stay inside the site boundaries at all times.



Do not harm any animals on the site.
Report any animals on site to the site manager.



Report any petrol, oil & diesel leaks or spills to the Site Supervisor.
Use a drip tray under vehicles & machinery during refueling.



Put cigarette butts in designated bin.
Do not smoke near gas, paints or petrol.
Do not throw cigarettes into veld.



Know all the emergency phone numbers.



Do not light any fires.
Know the positions of fire fighting equipment.
Report all fires to the site supervisor.
Do not burn rubbish/vegetation.



Avoid producing dust – keep to speed limit.



Use the toilets provided.
Report full or leaking toilets to site supervisor.



Do not make loud noises around the site, especially near homes/business.
No employees to be using headphones/earphones on site.
Report noisy vehicles or machinery to the site supervisor.



Do not litter – put all rubbish into the bins provided.
Report full bins to site supervisor.



Always keep to the speed limit.
Drivers - check & report leaks.
Ensure loads are secure & do not spill.
NO vehicle/machinery washing is permitted.



Do not damage or cut down any trees or plants without the necessary permissions.
Do not pick flowers.



All employees entering site must have appropriate Personal Protective Equipment (PPE) on them at all times.



Report any breaks, floods, fires, leaks and injuries to the site supervisor.
Ask questions!

Annexure C
Environmental Registers

WASTE REGISTER TEMPLATE

Waste streams		Contractor	Service provider	Recycled / Recovered Waste								General Waste Disposed		Hazardous Waste Disposed							Comments	Collection slip received	Disposal slip received	Date Filed
Week	Slip date			Paper	Cardboard	Plastic	Scrap metal	Wood	Rubble	Printer Cartridges	Recycled Oil	General Waste	Clean cement bags	Sewage: Mobile toilets	Sewage: Coservancy tank	Chemical Waste	Oil Contaminated Waste	Sanitary Waste	Medical Waste					
				kg	kg	kg	kg	kg	m3	units	Litres	kg	kg	litres	litres	litres	litres	kg	kg	kg				

WATER USAGE TEMPLATE

Date/ Week	Water source		Water Used on site (Weekly)			Water figures (Monthly)			Comments
	Water collected at *source	Grey/ treated water	Dust suppression	Civils works	Potable water/ Offices	Monthly Abstraction	Monthly Total Used	Monthly Total Stored	
	Litres	Litres	Litres	Litres	Litres	Litres	Litres	Litres	

ENVIRONMENTAL INCIDENT / SPILL / NCR REGISTER TEMPLATE

No.	Date	Source/ Originator	Responsible party / Contractor	Type	Impact	Location	Estimated volume of spill	Significance Classification	Repeated Offence	Description of Incident	Cause	Remedial Action		Action Date	Status	Escalated to NCR
								Minor/ Moderate/ Major		What, Where, When, How, Why did it happen?		Immediate Corrective Actions	Preventative measures			
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																

COMPLAINTS REGISTER TEMPLATE

Ref No.	Notification Date	Category	Compliment, complaint or issue identified	Source of the issue	Significance of issue	Mitigation Measures		Lessons Learned	Response to initiator	Closure Status
						Corrective action	Preventive action	New or Additional controls required		

Annexure D
EMPr Acceptance

LETTER OF ACCEPTANCE OF THE EMPr

This letter is to be signed by the Principal Contractor and other project role-players, printed and kept on site.

RE: Acceptance of the Construction Environmental Management Programme

Dear Sir/Madam,

This is to state that the undersigned have received a copy of the approved Environmental Management Programme (EMPr) for the development of Amaoti No. 3 Secondary School by NCC Environmental Services (Pty) Ltd dated May 2022. The undersigned parties hereby agree to implement and abide by the conditions and environmental specifications of the EMPr. Any contraventions of the EMPr should be recorded and appropriate corrective actions duly carried out.

Any suggested amendments and/or changes to the EMPr should be motivated and approved by the appointed Environmental Control Officer (ECO) in conjunction with the relevant Authority. Any such changes are to strictly be made in writing in terms of Chapter 5 of the 2014 NEMA EIA Regulations (as amended).

As Agreed on this day _____of_____(Month)_____(Year)

Environmental Control Officer (ECO)

Name _____ Signature _____

Date_____

Principal Contractor

Name _____ Signature _____

Date_____

Site Engineer/Agent

Name _____ Signature _____

Date_____

Developer/Client Agent

Name _____ Signature _____

Date_____

Annexure E

Method statement guideline and basic template

Guideline for Method Statements

Method statements must be submitted to and approved by the ECO and updated/revised as may be necessary. Method statements must contain information on the following basic aspects:

- **Activity Description** - a brief description of the specific activity;
- **Specifications** - referencing relevant documents such as South African Bureau of Standards, the EMPr, the Environmental Authorisation, Legislation, etc.;
- **Drawings** - where relevant;
- **Major Equipment** - listing the major equipment that will be involved in the specific construction activity;
- **Programme** - identifying when the activity is expected to take place;
- **Construction Sequence and Method** - detailing the activity process that must be followed;
- **Resources** - resources that will be required for the activity; and
- **Environmental** - information regarding awareness, training, precautions, etc.

Basic Template

METHOD STATEMENT TEMPLATE

CONTRACT: _____

DATE: _____

PROPOSED ACTIVITY (give title of method statement and reference number from the EMPR):

WHAT WORK IS TO BE UNDERTAKEN (give a brief description of the works):

WHERE ARE THE WORKS TO BE UNDERTAKEN (where possible, provide an annotated plan and a full description of the extent of the works):

START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Start Date: _____

End Date: _____

HOW ARE THE WORKS TO BE UNDERTAKEN (provide as much detail as possible, including annotated maps and plans where possible):

PROPOSED DEVELOPMENT OF AMAOTI NO. 3 SECONDARY SCHOOL SITUATED ON FARM NO. 842 RIETRIVIER IN WARD 53, MAWOTHI TOWNSHIP, ETHEKWINI MUNICIPALITY, KWAZULU-NATAL

FRESHWATER (WETLAND AND AQUATIC) ASSESSMENT AND AQUATIC BIODIVERSITY COMPLIANCE STATEMENT

PREPARED FOR:

COEGA DEVELOPMENT CORPORATION

PREPARED BY:

ncc Environmental Services

DATED:

March 2023

DOCUMENT CONTROL

PROJECT TITLE:	PROPOSED DEVELOPMENT OF AMAOTI NO. 3 SECONDARY SCHOOL SITUATED ON FARM NO. 842 RIETRIVIER IN WARD 53, MAWOTHI TOWNSHIP, ETHEKWINI MUNICIPALITY, KWAZULU-NATAL
REPORT TITLE:	Freshwater (Wetland and Aquatic) Assessment & Aquatic Biodiversity Compliance Statement
LOCATION:	Riet Rivier 842, Mawothi Township, eThekwini Municipality, KwaZulu-Natal
CLIENT:	Coega Development Corporation
CONSULTANT:	NCC Environmental Services (Pty) Ltd
REPORT REVISION NO:	03
REVISON DATE:	31-03-2023

PREVIOUS REVISON DATES:

Revision no.	Revision date
01	03-03-2021
02	26-03-2021

CLIENT REPRESENTATIVE:
Nompumelelo Ntombela
Project Manager
T · 031 584 1762
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AUTHOR:
Craig Burne
Freshwater Ecologist
T · 078 467 3685
E · craigb@ncc-group.co.za

DOCUMENT GUIDE

The table below provides the 2014 NEMA requirements (as amended) for specialist reports and the relevant sections in the report where these requirements are addressed:

EIA Regulations 2014, GN982 (as amended in 2017)	Description	Page/Section in the report
Appendix 6 (a)	A specialist report prepared in terms of these Regulations must contain details of— i. the specialist who prepared the report; and ii. the expertise of that specialist to compile a specialist report including a curriculum vitae;	**Page 5** Also **see BAR**
Appendix 6 (b)	A declaration that the specialist is independent in a form as may be specified by the competent authority;	**Page 5**
Appendix 6 (c)	An indication of the scope of, and the purpose for which, the report was prepared;	**Page 5** & **Sections 2, 5** & **6**
Appendix 6 (cA)	An indication of the quality and age of base data used for the specialist report;	**Sections 7, 8, 10 & referenced throughout**
Appendix 6 (cB)	A description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	**Section 10.10**
Appendix 6 (d)	The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	**Section 9 & 12**
Appendix 6 (e)	A description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	**Section 9**
Appendix 6 (f)	Details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Maps in **Sections 3, 10** & **11** & **Annexure M** Also see **BAR**
Appendix 6 (g)	An identification of any areas to be avoided, including buffers;	**Sections 10, 11, 12 &** Figure 7
Appendix 6 (h)	A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	**Section 3** (Figure 1) & **10 (**Figure 7)
Appendix 6 (i)	A description of any assumptions made and any uncertainties or gaps in knowledge;	**Section 7** & **8**
Appendix 6 (j)	A description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	**Section 10**
Appendix 6 (k)	Any mitigation measures for inclusion in the EMPr;	**Section 12** & **Annexure Q**
Appendix 6 (l)	Any conditions for inclusion in the environmental authorisation;	**Section 12** & **Annexure Q**
Appendix 6 (m)	Any monitoring requirements for inclusion in the EMPr or environmental authorisation;	**Section 12 & Annexure Q**
Appendix 6 (n)	A reasoned opinion— i. whether the proposed activity, activities or portions thereof should be authorised; (iA) regarding the acceptability of the proposed activity or activities; and ii. if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	**Pages 8-9** & **Sections 11, 12, 13** & **14**
Appendix 6 (o)	A description of any consultation process that was undertaken during the course of preparing the specialist report;	**See BAR**
Appendix 6 (p)	A summary and copies of any comments received during any consultation process and where applicable all responses thereto;	**See BAR**
Appendix 6 (q)	Any other information requested by the competent authority.	**TBC**

The table below outlines the gazetted NEMA procedures published in GN320 dated 20 March 2020 (Government Gazette 43110) which relates to the specialist assessment and minimum report content requirements for environmental impacts on aquatic biodiversity for activities requiring environmental authorisation.

No.	Criteria/requirements for the assessment and reporting of impacts on aquatic biodiversity for activities requiring environmental authorisation	Page/Section in this report
-	In the event that aquatic biodiversity features are found to have a "low" sensitivity for aquatic biodiversity, an aquatic biodiversity compliance statement must be prepared by a suitably qualified specialist in the field of aquatic science and must verify:	Refer below:
1.	that the site is of "low" sensitivity for aquatic biodiversity;	**Page 8, Section 11** & **Annexure M**
2.	whether or not the proposed development will have an impact on the aquatic features;	**Page 8, Section 11** & **Annexure Q**
-	The compliance statement must contain, as a minimum, the following information:	Refer below:
3.	Contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae;	**Page 5** & **Annexure S** (also see BAR)
4.	A signed statement of independence by the specialist;	**Page 5**
5.	Baseline profile description of biodiversity and ecosystems, including the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	**Section 4, 5.2, 5.7, 6.5.4, 8** & **Annexure K**
6.	Methodology used to verify the sensitivities of the aquatic biodiversity features on the site including the equipment and modelling used, where relevant;	**Section 8** & **9**
7.	Where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPr;	**Section 12** & **Annexure Q**
8.	A description of the assumptions made as well as any uncertainties or gaps in knowledge or data as a statement of the timing and intensity of site inspection observations; and	**Section 7**, **8** & **13**
9.	Any conditions to which this statement is subjected.	**Section 12** & **Annexure Q**
10.	A signed copy of the compliance statement must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.	Noted

DECLARATION OF INDEPENDENCE

I, Craig Burne, as duly authorised representative of NCC Environmental Services (Pty) Ltd (NCC), hereby confirm my independence as a specialist and declare that neither I nor NCC have any interest; be it business, financial, personal or other, in any proposed activity, application or appeal in respect of NCC being appointed as environmental assessment practitioner in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), other than fair remuneration for the work performed. This is specifically in connection with the appointment of NCC by NCM Quantity Surveyors (Pty) Ltd, on behalf of the Coega Development Corporation (CDC), to undertake a Basic Assessment (BA) for the proposed development of Amaoti No. 3 Secondary School. In terms of the prerequisites of the Natural Scientific Professions, 2003 (Act No. 27 of 2003) and as a registered member of the South African Council for Natural Scientific Professions, I will undertake my profession in accordance with the Code of Conduct of the Council. I declare this study to be my own work prepared independently of any influence or prejudice with respect to any other party where the findings and conclusions have been made, to the best of my ability, with objective and truthful intention.



Craig Burne *Pr.Sci.Nat*.

MSc (Freshwater Ecology)

31 March 2023

NCC Environmental Services (Pty) Ltd

EXECUTIVE SUMMARY

1. Brief introduction

NCM Quantity Surveyors (Pty) Ltd was appointed by the Coega Development Corporation (CDC) for project managing the planning and design related to the proposed development of Amaoti No. 3 Secondary School on farm Riet Rivier in the eThekwini Municipality, KwaZulu-Natal. NCC Environmental Services (Pty) Ltd (NCC) was appointed by NCM to conduct an assessment owing to the potential triggering of NEMA listed activities and potential water use activities in terms of the National Water Act (NWA). As part of the regulated screening process and specialist studies required to complement any confirmed application for environmental authorisation (EA) and water use authorisation (WUA) to the relevant authorities, an assessment relating to freshwater resources (watercourses/drainage lines, riparian zones and wetlands) in relation to the proposed development was undertaken.

2. Overview of assessment methods

An initial desktop study and literature review was conducted followed by a field visit and ground-truth verification for purposes of more accurate delineation and mapping of freshwater resources in the broader study area. As part of the scope of the delineation, the 32m watercourse regulated area in terms of the NEMA EIA Regulations and the respective 100m and 500m watercourse and wetland regulated areas in terms of section 21 (c) & (i) of the NWA were used for the delineation and for recommending 'no go' buffers, where applicable, to afford protection to freshwater resources within the confines of the site boundary.

Wetlands within the regulated area were classified and assessed in terms of their present ecological state (PES) and ecological importance and sensitivity (EIS) using the widely utilised tools namely Wet-Health (after Macfarlane *et al*., 2020), Wet-Ecoservices (after Kotze *et al*. 2020) and EIS assessment criteria (after Kleynhans, 1999). A riparian and instream habitat assessment of the reach of river adjacent to the site was conducted using the Index of Habitat Integrity (IHI) method (after Kleynhans, 1996), a SASS assessment (after Dickens and Graham, 2002), an *in-situ* water quality assessment and an IHAS assessment (after McMillan, 1998). Background literature, studies, reports and aerial imagery combined with the field observations informed the watercourse PES and EIS assessments. A risk assessment relating to potential impacts of the development on watercourses in terms of section 21 (c) and (i) of the NWA was carried out using the DWS-regulated risk matrix approach promulgated in GN509 dated 26th August 2016 and DEAT guidelines on impact assessment. Freshwater resource maps were developed to indicate the location of freshwater features in relation to the site footprint.

3. Results summary

A perennial watercourse, the Ohlanga River, flows more-or-less from west to east bordering the northern site boundary of the proposed development footprint. Two NWM5 wetlands (a channelled valley bottom and a seep) were identified within 500m of the site/project boundary. The boundary of the NWM5 valley bottom wetland was refined during the field assessment and is referred to as HGM2 in this report. The hillslope seep (HGM1) adjoins HGM2, both are within the site boundary and both are connected to the Ohlanga River. An additional hillslope seep (HGM3) is located beyond the site boundary but it is within 500m from the proposed school footprint.

Historical aerial imagery and topographical maps indicate commercial agricultural activity, largely sugarcane cultivation, has altered surface and sub-surface-soil hydrology and modified the original vegetation of the KZN coastal belt and wetlands within this belt for over 100 years. Sugarcane plantations have gradually been replaced by the expanded peri-urban settlement of eMawothi which prior to 1981, existed and expanded mainly to the north of the Ohlanga River in more rural settings. Urban settlement has therefore gradually encroached closer to freshwater habitats in the broader study which includes the proposed development site, however hard/permanent urban infrastructure has not yet transformed HGM1, HGM2 and HGM3. Hydrophytic grasses, sedges and reeds are still present in both wetlands with facultative species, predominantly *Imperata cylindrica*, occurring in zones of temporary soil saturation. **C** PES categories and *Moderate* EIS ratings were assigned to all three wetlands based on the assessment criteria. The ecological category (EC) for wetlands in the same catchment in the Mvoti WMA is a **C/D**. The recommended ecological category (REC) for wetlands on site, in the regulated area, is also a **C/D** with no further decline in the PES and EIS. Maintaining a **C/D** EC is attainable for site wetlands will however be contingent on rehabilitation being carried out effectively after construction.

In terms of the ecological condition of the Ohlanga River adjacent to the site, the SASS scores for freshwater macroinvertebrates at both sample sites was the same (n = 63) with largely a similar number of taxa at either site (17 upstream and 15 downstream) and similar ASPT (3.7 upstream and 4.2 downstream). The *in-situ* water quality results for pH, temperature, dissolved oxygen and total dissolved salts at both sample sites was largely in conformance with the 1996 South African Water Quality Guidelines for Aquatic Ecosystems. A visual interpretation of the river's turbidity on the day of sampling found it to be high owing to recent rainfall events prior to sampling and a high sediment load in the river, conditions which are typical of the summer rainfall season in KZN and which are exacerbated by human-induced impacts upstream. The IHAS scores reflected adequate/fair invertebrate habitats at both sample sites which is somewhat divergent to the notion that that the relatively low SASS scores may be partly attributable to poor and/or transformed

aquatic habitats. It has been acknowledged within the South African freshwater research community that the IHAS method still requires more rigorous testing and validation.

The author's estimation of the PESEIS categories for the river reach directly adjacent to the proposed footprint is a **D** PES and *Moderate* EIS (**C**). The REC for this reach of river is to maintain the PES and EIS ratings *i.e.* no further deterioration in aquatic ecosystem integrity and functioning. This estimation and recommendation is made with due acknowledgement to and notwithstanding the *High* EIS for another reach (U30B-04498) along the Ohlanga River in the same catchment, as published in GN 1097 of 12th October 2018 relating to the 'Reserve Determination of Water Resources in the Mvoti to Umzimkulu Catchments'.

In terms of the conservation planning in KZN, freshwater planning units across the province are either available or earmarked however at the time of this assessment, no Critical Biodiversity Areas (CBAs) for rivers or wetlands, no Ecological Support Areas (ESAs) for specific fish species or no Fish Support Areas or fish sanctuaries have been delineated which overlap with the same locality of the proposed project footprint in catchment U30B. Although aquatic biodiversity is considered to be *high* across the site footprint based on the national desktop screening tool, the proposed site footprint does not encroach into the aquatic ecosystem itself. If a 15m 'no go' buffer for permanent infrastructure relating to the Ohlanga River and associated riparian zone is strictly adhered, the residual impacts on aquatic biodiversity will be *low* with no significant losses of aquatic biodiversity.

In terms of risks to freshwater resources during construction, threat ratings based on expert workshops indicate that threats posed by the Civic and Social Infrastructure Sector (Education) are mostly low to very low. In this scenario, sedimentation and turbidity are the main potential risks/threats rated as being high. Possibly the overarching risk to the downstream resource quality from the proposed development is the loss of natural vegetation and creation of hard surface which changes the site-specific infiltration capacity of the ground surface resulting in altered hydrology and patterns of flow. An efficiently designed stormwater management system capable of handling the increase in hard surface area and appropriate monitoring and maintenance during the operational phase will mitigate any risks posed to water resource quality in the downstream receiving environment to a low level and will not result in the requirements of the ecological reserve and other downstream water users being compromised.

The outcomes of the watercourse risk assessment on impacts to watercourses posed by the proposed development found that if detailed control and mitigation measures are implemented, a low residual risk rating is achievable for most of the construction-related activities as well as operational activities. Based on the space constraints of the site for the collective school infrastructure footprint and the significant level

(elevation) differences across the site, the exception is the placement of a portion of stormwater infrastructure directly within HGM2 which poses a higher risk to the wetland and will require an application for a water use license in terms of section 21 (c) and (i) of the National Water Act. Based on the risks posed by the proposed development on freshwater resources and in order to protect the ecological integrity of the wetlands, the Ohlanga River and associated riparian zone, a 15m 'no go' buffer for wetlands is recommended for all built infrastructure, with the exception of a portion of the stormwater infrastructure (concrete pipeline and headwall) which is proposed to be constructed within HGM2.

4. Specialist findings and conclusions

NEMA Impact Assessment	An application for an environmental authorisation (EA) is required based on more than 10m^3 to be removed from a watercourse (HGM2) for the construction of stormwater infrastructure (activity 19 in LN1) and more than 300m^2 of indigenous vegetation to be cleared within an endangered terrestrial ecosystem (activity 12 in LN3).
	If the proposed site layout for the development of the school is adhered to with no overlap or encroachment of permanent infrastructure into or across the Ohlanga River's channel, bed, banks, and associated riparian zone, the residual impacts on aquatic biodiversity can be reduced to low and will not lead to any loss of aquatic biodiversity. This can be achieved through strict and effective implementation of appropriate mitigation and rehabilitation measures, as have been recommended.
NWA Risk Assessment	A water use license application (WULA) is required based on the higher risk associated with a portion of stormwater infrastructure proposed to be constructed directly within HGM2 as well as the connection of a new section of sewer pipeline (to service the new school) with the existing municipal sewer network within the regulated area of watercourses i.e. within 100m from a watercourse and within 500m from wetlands.
Mitigation Measures	Refer to Section 8 and Annexure K. For both the construction and operational phase of the development, the impacts range from moderate to low without mitigation. With mitigation fully implemented, the significance of negative impacts can be reduced to Low.
Does the Specialist support the proposed development?	Yes. Based on the assessment findings described in this report, impacts can be reduced, via mitigation, to an acceptable level and the specialist does support the proposed development if all mitigation measures provided in this report as well as general good environmental practice is strictly adhered to.
Specialist opinion	Contingent on there being no significant disturbance to freshwater resources during construction and by adhering to the 'no go' buffers, as far as practically possible, most risks to watercourses can be reduced to be of low risk through the strict implementation of effective and appropriate mitigation and rehabilitation measures as recommended. The impacts on HGM2 posed by the construction and operation of the stormwater pipe and headwall will not result in a net loss of the wetland extend and functionality if appropriate rehabilitation measures are effectively implemented during and after construction. As part of the water use license application process, it is not recommended that wetland offsets be calculated and specified as conditions of the license. It is the opinion of the specialist that a WUL and an EA be issued to the applicant by the respective authorities.

TERMINOLOGY

BAR	Basic Assessment Report
CBA	Critical Biodiversity Area
CDC	Coega Development Corporation
CDNGI	Chief Directorate National Geospatial Information
CMA	Catchment Management Agency
CSIR	Council for Scientific and Industrial Research
CVB	Channelled Valley-Bottom
DEA	Department of Environmental Affairs
DEAT	Department of Environmental Affairs and Tourism
DoE	Department of Education
DWAF	Department of Water Affairs and Forestry
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EC	Ecological Category
EDTEA	Economic Development, Tourism and Environmental Affairs
EKZNW	Ezemvelo KwaZulu-Natal Wildlife
EIA	Environmental Impact Assessment
EIS	Ecological Importance and Sensitivity
EM	Ethekwini Municipality
EMF	Environmental Management Framework
EMPr	Environmental Management Programme
EPCPD	Environmental Planning & Climate Protection Department
FEOW	Freshwater Ecoregions of the World
FRAI	Fish Response Assessment Index
GA	General Authorisation
GN	Government Notice
GPS	Global Positioning System
HGM	Hydrogeomorphic Unit
IAP	Invasive Alien Plant
IHAS	Invertebrate Habitat Assessment System
IHI	Index of Habitat Integrity
IUA	Integrated Unit of Analysis
IUCN	International Union for the Conservation of Nature
LN	Listing Notice
MIRAI	Macroinvertebrate Response Assessment Index
NBA	National Biodiversity Assessment
NEMA	National Environmental Management Act
NEMBA	National Environmental Management: Biodiversity Act
NFEPA	National Freshwater Ecosystem Priority Area
NWA	National Water Act
PES	Present Ecological State
RAM	Risk Assessment Matrix
REC	Recommended Ecological Category
SASS	South African Scoring System
SAIAB	South African Institute of Aquatic Biodiversity
SANBI	South African National Biodiversity Institute
SEA	Strategic Environmental Assessment
SDF	Spatial Development Framework
ToR	Terms of Reference
WMA	Water Management Area
WULA	Water Use License Application

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1 INTRODUCTION

1.1 Broad overview

The inland aquatic and wetland biodiversity of Southern Africa is highly diverse and of great regional importance to local livelihoods and economies. Functional, un-polluted rivers serve as sources of freshwater for various domestic, industrial, agricultural and ecological requirements. Healthy river systems provide various goods and services (*i.e.* water supply, breakdown of pollutants, natural habitat, flood attenuation, natural resource-use supply and recreation) and in so doing, they significantly support and contribute towards human welfare, socio-economic growth and biodiversity conservation (Van Deventer *et al*. 2019). Wetlands are one of the most valuable and diverse ecosystems on the planet and are essential for human existence. Wetlands filter the water we drink as well as provide nutritious food in the form of plants and fish, provide organic materials which can be used for medicinal purposes, help protect settlements from flooding and storm surges, store water which is released in times of drought, provide key habitat for a significant array of critically endangered flora and fauna and play a key role in the mitigation of climate change which is predicted to have a major impact on human livelihoods (Macfarlane *et al*. 2008).

South Africa's status as a water-stressed country facing a potential freshwater deficit by 2025 (DWAF 2004a, Oberholster and Ashton, 2008) is of concern, yet the country remains highly dependent on natural resources for economic health and prosperity (Hill *et al*. 2011). Predictions associated with future global climate change and some of the climatic effects currently being observed rank the region amongst some of the most vulnerable in the world (IPCC, 2013). South Africa's freshwater biodiversity is therefore under significant pressure from human activities (Darwall *et al*. 2009). Freshwater species and habitats are, on average around the world, more imperilled than their terrestrial counterparts. Yet, large-scale conservation planning efforts have rarely targeted freshwater biodiversity. Impacts include aquatic ecosystem destruction/loss, habitat transformation, loss of biodiversity, climate change and invasion of alien species.

River health is deteriorating more rapidly than it can be measured with existing data suggesting that human impacts are detrimentally compromising biodiversity and healthy functioning of freshwater ecosystems (Darwall *et al*. 2009). The 2011 National Biodiversity Assessment (NBA) found that 55% of South Africa's river ecosystems are threatened by pollution and over-abstraction and that only 21% of these systems are moderately or well protected (Nel and Driver, 2012). The more recent 2018 NBA found that 64% of South Africa's river ecosystem types and 79% of wetland ecosystem types are threatened, a significant deterioration in six years (Van Deventer *et al*. 2019).

Other research indicates that on a global scale, freshwater ecosystems are the most endangered in the world which presents a major threat to the ~126 000 described species that depend upon freshwater habitats for

any critical part of their life cycle (Dudgeon *et al*. 2006). If people continue to utilise aquatic systems in a non-sustainable and over-consumptive manner, the impacts may be permanently detrimental with the loss of their functional ability to adequately support our needs. The fundamental need to protect and maintain these ecosystems in a state of good ecological health to ensure a future and sustainable supply of their various benefits to both nature and society is unequivocal. The importance of implementing conservation and management strategies that protect all elements of freshwater biodiversity and guarantees future freshwater availability in the future is paramount. The National River Health Programme (RHP) was first launched in 1994 in response to the need for more detailed information on the state of South Africa's aquatic ecosystems. The programme assesses river health by measuring selected ecological indicator groups (e.g. fish, invertebrates or riparian vegetation) that represent the condition of the larger ecosystem. The data are simplified and represented as various indices.

The initiation of the National Freshwater Ecosystem Priority Areas (NFEPA) programme was another response to the declining integrity of freshwater ecosystems in South Africa as documented during the 2004 National Spatial Biodiversity Assessment (NSBA) (Driver *et al.* 2004). This programme intends to respond to high levels of threats prevalent in river, wetland and estuary ecosystems of South Africa (Driver *et al*. 2005) by providing strategic spatial priorities for conserving the country's freshwater ecosystems and supporting sustainable use of water resources. The South African National Wetland Map (NWM) also provides information on the location, spatial extent and ecosystem types of aquatic ecosystems including inland aquatic (freshwater) ecosystems. Owing to the poor representation of inland wetlands in previous versions of the NWM, it was recently enhanced and updated to version 5 (NWM5) (Van Deventer *et al*. 2020) in preparation for the 2018 National Biodiversity Assessment (NBA). The main stakeholders in terms of conserving freshwater ecosystems and sustainably using water resources include all government departments, SANBI, SAIAB, provincial conservation agencies, municipalities, non-governmental organisations and large state-owned enterprises such as Eskom, SANRAL and Transnet, including others.

1.2 Project background

The Coega Development Corporation (Pty) Ltd (CDC) is assisting the KwaZulu-Natal Department of Education (KZN-DoE) in implementing projects within the province of KwaZulu-Natal (KZN) under the DoE's School Building Programme. The programme aims to provide quality teaching facilities and improve the quality of life of previously disadvantaged communities. The intention of the programme is also to create local employment, develop and transfer skills and reduce poverty. Within the context of the programme the KZN-DoE is proposing to formalise Amaoti Secondary School where temporary infrastructure is currently being utilised. The site is located on Riet Rivier Farm No. 842 (portion 0 and 378) in Ward 53 within the jurisdictional boundary of the eThekwini Municipality, KZN. From a water resource management perspective, the proposed school upgrade development site is located within the Mvoti to uMzimkulu Water

Management Area (WMA 11) and the relevant Department of Sanitation (DWS) authority which has jurisdiction over this geographical area is the Pongola-uMzimkulu proto-CMA.

2 TERMS OF REFERENCE

NCC Environmental Services (Pty) Ltd was appointed by CDC (the client) on behalf of the DoE to conduct a freshwater assessment and delineation of watercourses present on the proposed [1]development footprint. This report includes the watercourse delineation and also provides an assessment on the ecological state of freshwater resources. The field work component of the freshwater assessment was carried out on 18th November 2020. The aims of the study are highlighted under section 6.

3 STUDY AREA BACKGROUND

3.1 Location

The proposed site is located on Farm No. 842, Riet Rivier in Ward 53 in the suburb of Brookdale in the central region of the eThekwini Municipality in the KZN province. Road access to the site is via Corkbrook Close. The proposed infrastructure footprint layout for the school is indicated in **Figure 1**. The GPS coordinates of the four (4) corners of the proposed site footprint, area and perimeter are indicated in the table below:

Site footprint GPS co-ordinates (WGS84 datum)					
Corner	**Latitude**	**Longitude**	**Corner**	**Latitude**	**Longitude**
1 (top left/NW)	29°41'0.52"S	30°59'30.03"E	**3** (bottom right/SE)	29°41'2.59"S	30°59'41.05"E
2 (bottom left/SW)	29°41'6.87"S	30°59'33.21"E	**4** (top right/NE)	29°40'55.87"S	30°59'37.51"E
Area: 5.4ha			**Perimeter**: 936m		

3.2 Climate

The climate in the eThekwini municipal region along the coastal belt is warm and subtropical with significant rainfall during the year even in the drier winter months. The average annual temperature is 20.9 °C with an average rainfall of 975 mm per year. The Köppen-Geiger climate classification is Cfa (humid subtropical). (https://en.climate-data.org/).

3.3 Freshwater resources

Figure 2 shows the surrounding drainage (non-perennial and perennial rivers) in relation to the proposed development footprint. At the catchment and water management level, the footprint is situated in quaternary catchment U30B in the Mvoti to uMzimkulu WMA. **Figure 3** indicates the location of NFEPA and NWM5 wetlands in relation to the site footprint.

[1]As stated throughout this report wherever the words 'the project' or 'site footprint' are used, they are synonymous with and refer to the proposed 'Amaoti Secondary School Development'.

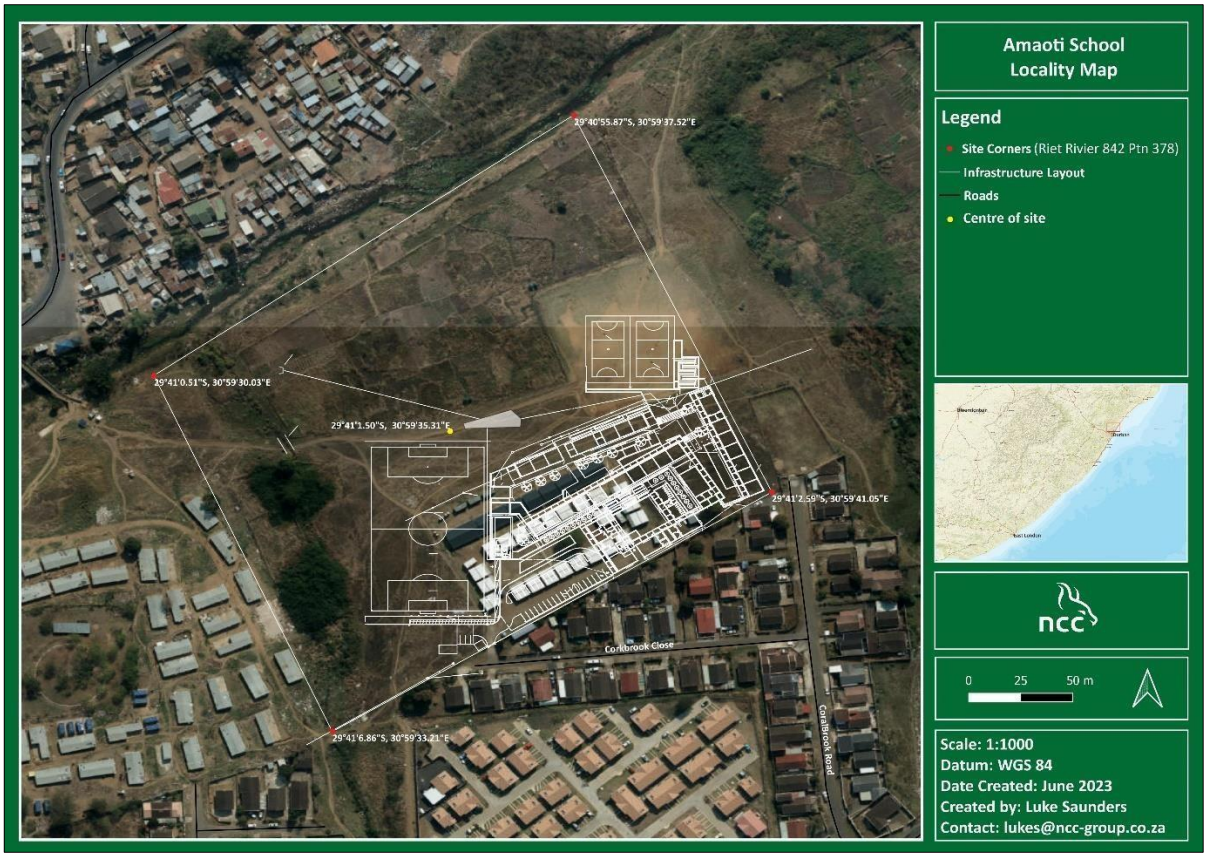


Figure 1: The proposed infrastructure footprint layout for Amaoti Secondary School No. 3 on farm No. 842, Riet Rivier in Mawothi township, Inanda, eThekwini Municipality.

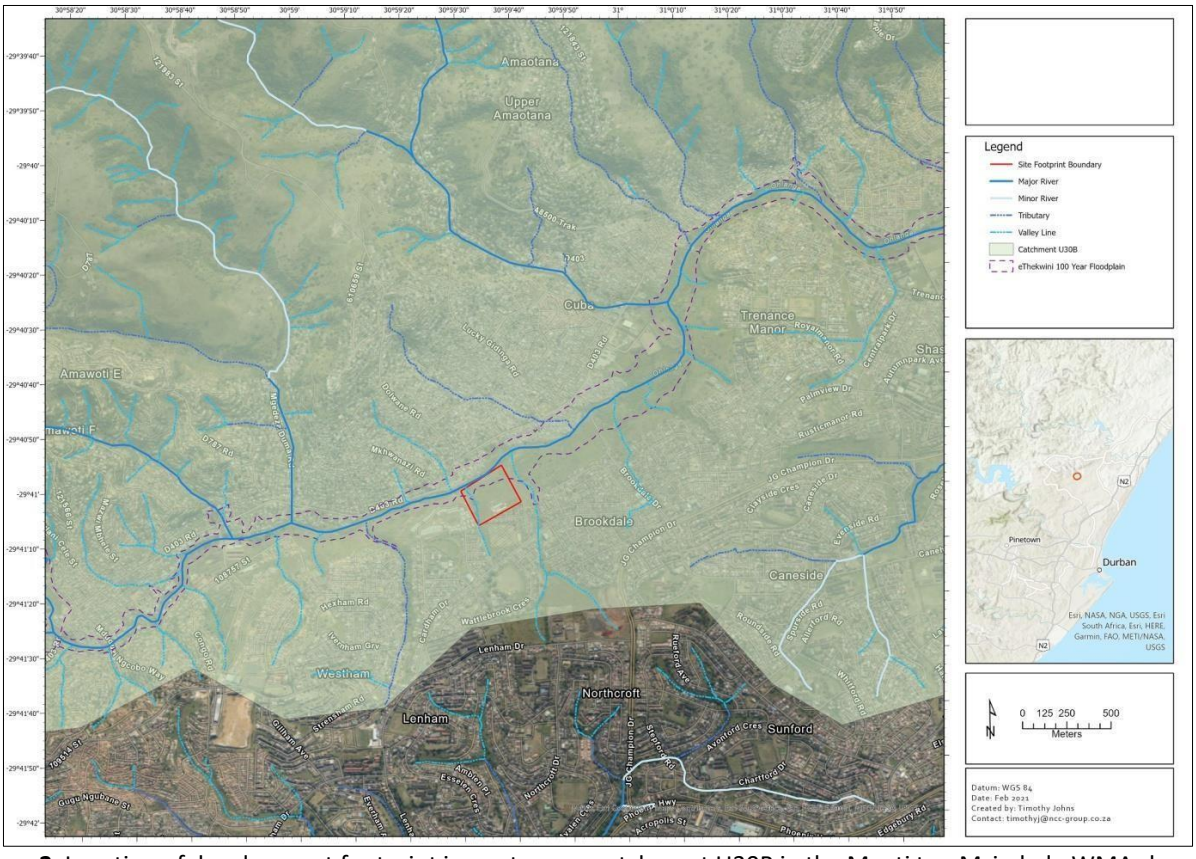


Figure 2: Location of development footprint in quaternary catchment U30B in the Mvoti to uMzimkulu WMA showing non-perennial drainage, perennial rivers and the 1:100 year flood-line mapped and modelled in 2006.

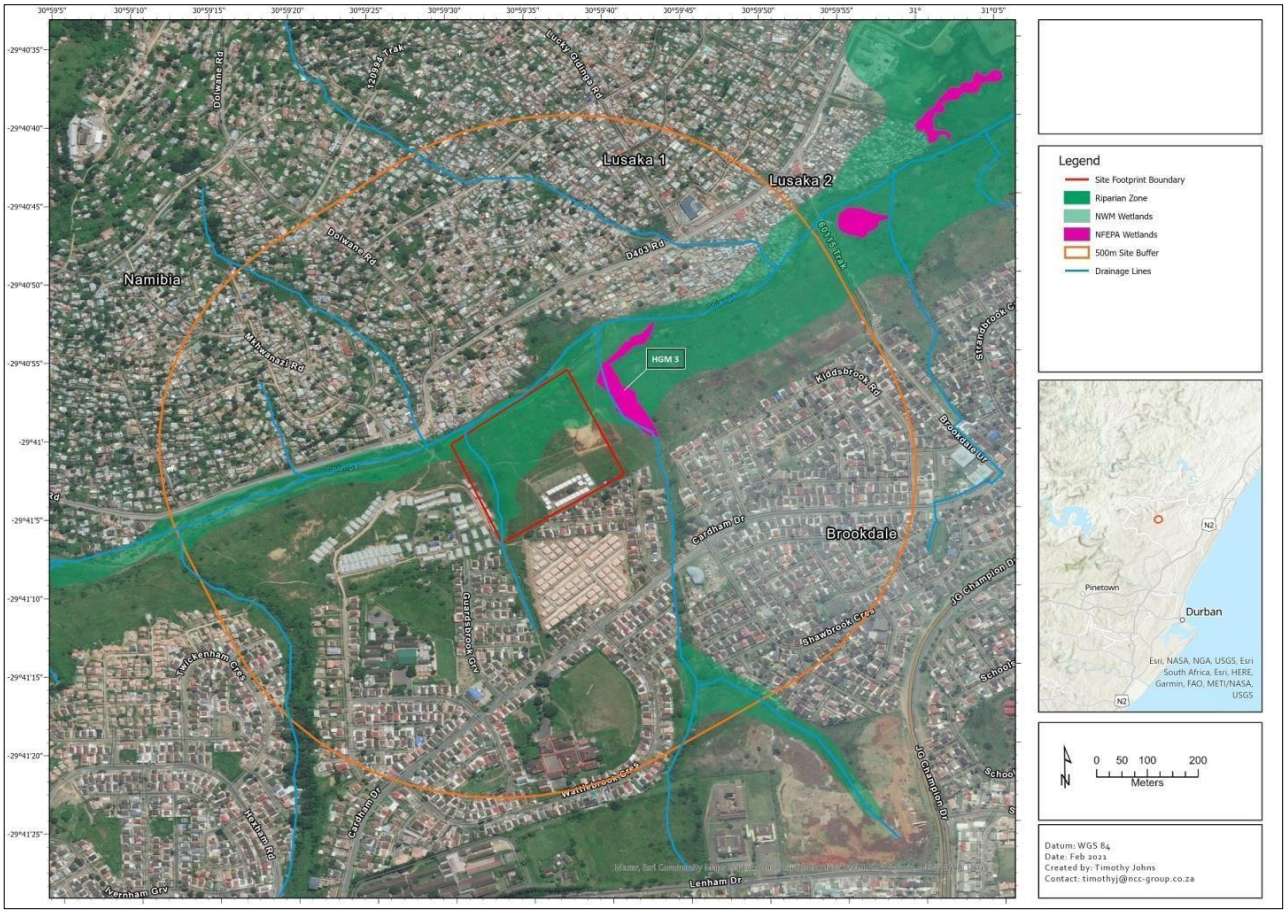


Figure 3: NFEPA and NWM5 wetlands within 500m from the proposed site footprint boundary.

3.4 Geology and Soils

Ordovician Natal Group sandstone, Dwyka tillite, Ecca shale and Mapumulo gneiss within the Dwyka Group makes up the regional site geology (Council for Geoscience, 2003). Berea red sands occur in places with soils tending to be shallow over hard sandstones and deeper over younger rocks. The Fa land type dominates the region with the Ab land type of being of relatively minor importance (Mucina & Rutherford, 2006). Soils have an erodibility K-factor of between 0.30 and 0.34 and are generally clay-loam in nature in lower lying elevations on site. Alluvial deposits are found within the floodplains of rivers within the region. Refer to **Annexure H** for maps of the geology and soil erodibility relating to the study area.

3.5 Vegetation

The vegetation in the study area falls within the Indian Ocean Coastal Belt (IOCB) Biome and more specifically in the KwaZulu-Natal Coastal Belt (CB 3) (Mucina & Rutherford 2006) and Savanna (Scott-Shaw & Escott, 2011). The terrestrial biodiversity study and report for the project, carried out by NCC (2020), can be referred to for further information on terrestrial vegetation.

4 BACKGROUND TO FLUVIAL AND WETLAND PROCESSES

Wetlands form at the interfaces between terrestrial and aquatic environments and between groundwater and surface-water systems. They vary from small seeps on steep slopes in headwater settings to massive low-gradient floodplain wetlands that may be tens of thousands of hectares in extent. As wetlands are neither terrestrial nor aquatic, they are not solely determined by either groundwater or surface water (fluvial) processes alone. The formation, size and persistence of wetlands are controlled ultimately by hydrological factors where a surface water supply at or close to the soil surface is required for a sufficiently prolonged period to cause anaerobic conditions in the rooting zone of herbaceous plants. Rivers, lakes and dams also have excess water supply that leads to the creation of anaerobic conditions in the soil however they either have fast flowing water (rivers) or are inundated to too great a depth (perennial rivers and lakes) to permit the colonisation of macrophytic plants.

Inland wetlands essentially rely on rainfall for their water supply, either from direct rainfall over their surfaces which also becomes runoff (surface flow or river flow), and from infiltrated rainwater which contributes to groundwater recharge entering a wetland (subsurface flow). In terms of the hydrological cycle, moving water and the sediment it carries therefore play a fundamental role in shaping the earth's surface providing significant insight into the occurrence, morphology and dynamics of wetlands. The potential sources of water supplying a wetland include rainfall, surface runoff, river or stream inflow and groundwater inflow (Mitsch and Gosselink, 1993). Wetland water budgets are characterised by a positive storage component where the sum of the input components is greater than the sum of the output components for some time (either permanently or seasonally) within an annual cycle of seasons. Processes that that add water rapidly to a site include rainfall and surface inflow via rivers; processes that inhibit the movement of water away from a site include geological and geomorphological barriers to streamflow, dense stands of vegetation and gentle topographical gradients (Mitsch and Gosselink, 1993).

Wetlands may be subject to surface inflows of several types namely, hillslope runoff, direct streamflow or indirect streamflow through the overtopping of channel banks during floods. Groundwater inflows occur when the surface water level of a wetland is at a lower elevation than the water table of the surrounding landscape. In this situation wetlands are referred to as discharge wetlands as groundwater discharges into the wetland. Another type of discharge wetland is known as a spring or a seep wetland which are often found at the base of slopes where the groundwater surface (water table) intercepts with the land surface. In the reverse situation, wetlands that recharge groundwater are referred to as recharge wetlands based on their elevated position in the landscape. When a wetland positioned well above the groundwater of an area, it is referred to as being perched. Many wetlands also occur where soils have poor permeability where the major sources of water are usually restricted to surface water runoff with losses occurring only through evapotranspiration and other surface outflows. These types of wetland often have fluctuating hydroperiods

and intermittent flooding where standing water (surface inundation) is largely dependent on seasonal surface inflows.

Within the South African drainage network, wetland hydrology is predominantly controlled by the geomorphology and geology of the valleys within the drainage network (Tooth and McCarthy, 2007; Ellery *et al*, 2009). In real terms, particularly in South Africa where elevation is relatively higher than other regions owing to geological and geomorphological factors, most rivers are currently in a state of downward incision with catchments typically highly varied along the respective downstream longitudinal profiles. Formation of local base levels is common between the headwaters of a stream and the ultimate final base level, the ocean (Leopold and Bull, 1979) and this is generally the case for many South African fluvial systems (Ellery *et al*, 2009). Research on a number of wetlands within the interior of the subcontinent by Tooth *et al.* (2002a; 2002b; 2004) and Grenfell (2007) indicate that structural, lithological and geomorphological barriers to incision and flow occur extensively throughout the interior of the subcontinent and that these controls have significantly influenced the prevailing evolution of parts of the drainage network, leading to wetland formation.

5 LEGAL CONTEXT

The legal requirements for activities affecting watercourses/freshwater ecosystems and for using water are summarised below:

5.1 National Environmental Management Act (Act 107 of 1998) (NEMA)

In terms of the NEMA EIA Regulations (as amended), activity number 12 and number 19 in GNR983 (Listing Notice 1) dated 4 December 2014 require that prior to any development taking place within 32m of a watercourse or if more than 10m^3 is to be dredged from any watercourse, an application for environmental authorisation (EA) process needs to be followed via a Basic Assessment (BA) process in term of GNR982 should any of these activities be triggered. As the proposed development site is approximately 5.4ha where more than 1ha but less than 20ha of indigenous vegetation would be cleared / transformed, listed activity 27 in Listing Notice 1 (GNR983) would also trigger the need for a BA.

5.2 The National Water Act (Act 36 of 1998) (NWA)

The NWA recognises that the entire aquatic ecosystem and not just the water itself in any given water resource constitutes the resource and as such, needs to be conserved and sustainably utilised. As such, the NWA provides the overarching legal framework for the effective and sustainable management of the country's water resources. Other than a Schedule 1 water use, no other water use activity, including where any development footprint area(s) are situated within the "regulated area" for watercourses (which include wetlands and riparian zones) may take place unless authorised by the relevant authority within the Department of Water and Sanitation (DWS).

Amongst the various types of water uses as contemplated in section 21 of the Act, Government Notice (GN) 509 in Government Gazette No. 40229 promulgated on 26 August 2016 provides further effect for the implementation of section 39 of the NWA. Section 39 outlines procedures for applying for a General Authorisation (GA) to use water in terms of sections 21(c) and (i). To further clarify, a section 21(c) water use is one which *can impede or divert the flow of water in a watercourse* while a section 21(i) water use can *lead to the altering of the bed, banks, course or characteristics of a watercourse*. The primary objective of GN509 is to allow water users or potential water users to apply for a GA as opposed to a full Water Use Licence Application (WULA).This is contingent on the level of risk that the water uses will have on resource quality and includes the risks to affected water resources/watercourses. Depending on the context, section 21(c) and (i) water uses *i.e.* those within the regulated area of a watercourse as defined within GN509, can occur within either one or across several Phases which include Construction, Operations, Maintenance and/or Emergency work, River and Stormwater management and Wetland or River Rehabilitation.

5.2.1 Risk Matrix

In order for an existing or potential water use to qualify for a GA under GN509, the water uses/ water use activities must be subject to assessment using the approach in the Department of Water and Sanitation's (DWS) Risk Assessment Matrix (RAM). A suitably qualified natural scientist professionally registered with the South Africa Council for Natural Scientific Professions (SACNASP) should carry out the risk assessment. Any licensing or authorisation of regulated water uses is then subject to application to the relevant DWS authority, in this case the Pongola Umzimkulu proto-Catchment Management Agency (CMA). The Risk Assessment Matrix (RAM) is used to determine the risk of the proposed water uses/activities to the receiving aquatic ecosystem in terms of Section 2(c) and (i) of the Act. In its design, the RAM factors in the inclusion of risk mitigation measures. Assuming the recommended risk mitigation and controls are carried out, the rationale is that rating (scoring) of risks can be reduced to acceptable levels. The three risk rating classes are Low, Moderate or High. If the water uses are determined to be a Low risk to the watercourse, then they may fall within the ambit of a GA subject to confirmation with the relevant authority.

If the risks are calculated to fall within a Moderate or High class, then the water uses/activities would be subject to an application for authorisation via a full WULA process. The difference between the two processes (GA vs WULA) is the timeline of assessment and subsequent outcome decision. Depending on availability of information, the WULA process can take from anywhere between 90-300 days whilst a GA process has the potential to be concluded within 30 - 60 days. **Figure 4** illustrates an overview of the generic steps/stages to follow during a WUA process.

Phase	Description	Responsible person	Time frames
1. Pre-application process	Engagement between the applicant and DWS to determine type of authorisation, conduct site inspection and information requirements.	Applicant	No count
	Applicant submits the application, technical report supporting the application is identified. Applicant compile technical report and submit to the Department		
2. Screening of technical report	The technical reporting supporting the application is screened, resulting in its acceptance or rejected. If rejected the application is closed.	Department	90 days
3. Assessment and decision	The application and technical report are evaluated, leading to recommendations and decision.		

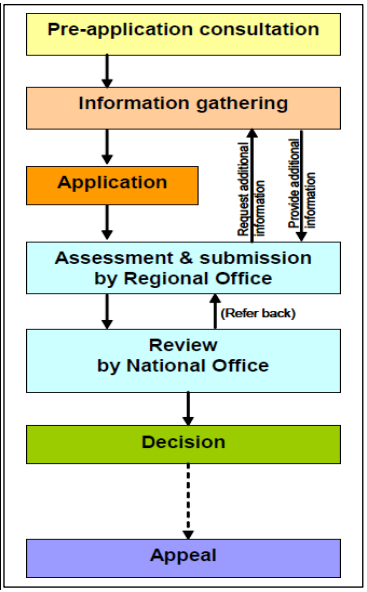


Figure 4: Diagram outlining the process for applying for a Water Use Authorisation. (Source: https://www.dws.gov.za/ewulaas/WUL.aspx and DWS, 2018a).

5.2.2 Exclusions

It should be noted that what is contemplated in GN509 does not apply to the following water use activities: Water use for the rehabilitation of a wetland as contemplated in GN1198 in Government Gazette No. 32805 promulgated on 18 December 2009;

- Use of water within the "regulated area" of a watercourse where the Risk Class is *Moderate* or *High*.
- Where any other water use as defined in section 21 of the Act must be applied for;
- Where storage of water results from section 21 (c) and/or (i) water uses;
- Any water use associated with the construction, installation or maintenance of any sewerage pipeline, pipelines carrying hazardous materials and to raw water and wastewater treatment works.

5.3 Other relevant legislation relating to freshwater ecosystems

- The Constitution of the Republic of South Africa (Section 24)
- National Environmental Management: Biodiversity Act, No. 10 of 2004
- National Environmental Management: Protected Areas Act, Act No. 57 of 2003
- National Environmental Management: Waste Act, No. 59 of 2008
- Conservation of Agricultural Resources Act, Act No. 43 of 1983
- KwaZulu-Natal Nature Conservation Management Act, Act No. 9 of 1997
- The Ramsar Convention of 1971

6 AIMS OF THE STUDY

- Identification and assessment of freshwater resources (wetlands and watercourses) associated with the proposed development and within the NWA regulated area (500m from a wetland and 32m from a watercourse);

- Assess risks to watercourses associated with the proposed development project;
- Provide mitigation and management measures for the impacts that the proposed infrastructure development the will have on freshwater resources;
- Provide monitoring recommendations for the management and mitigation of negative impacts on affected freshwater resources;
- Provide recommendations for rehabilitation of damage to freshwater resources post-construction;
- Provide recommendations for the application for an environmental authorisation (EA) and water use authorisation (WUA) for the project.

7 LIMITATIONS AND ASSUMPTIONS OF THE STUDY

It was assumed during this assessment that information and available ecological data on freshwater/aquatic ecosystems from previous reserve determination studies were reliable sources to utilise. Wherever data from existing sources and previous reports or literature are presented or discussed in this report, the relevant sources have been duly acknowledged in the text and are provided in the reference list. Maps produced were aided by the available data at the time of this study and physical ground-truthing of the entire study area within a 500m radius from the site boundary was not undertaken given time and physical access constraints.

As one aquatic component not assessed as part of this study area, fish are useful bio-indicators in flowing streams and rivers, either at a site or in a given river reach/study area to assess impacts on habitat conditions (or integrity) or PES of the freshwater ecosystem. Aquatic macroinvertebrates are also typically assessed using a combined approach using the Invertebrate Habitat Assessment System (IHAS) after by McMillan (1998) in conjunction with the South African Scoring System Version 5 (SASS5) (after Dickens and Graham, 2002) and the Macro-Invertebrate Response Assessment Index (MIRAI) (after Thirion, 2008) in order to determine the Ecological Condition (or PES) using reference data in combination with an assessment of the current situation *i.e.* a site-specific study. Whilst reference fish and macroinvertebrate data exists for perennial rivers in the broader catchment and/or could be obtained and modelled in terms of MIRAI and FRAI assessments, these did not form part of the terms of reference. The nature of the proposed school development arguably does not warrant assessments of this extent and the author considered it unfeasible for any field-based fish sampling or bio-assessment as part of this study. As a result, neither a MIRAI nor a FRAI assessment was carried out.

8 BACKGROUND RATIONALE TO METHODS USED

The 'Ecological Importance' of a water resource is an expression of its importance to the maintenance of ecological diversity and functioning on local and wider scales. "Ecological Sensitivity" refers to the system's

ability to resist disturbance and its capability to recover from disturbance once it has occurred. The 'Ecological Importance and Sensitivity' (EIS) provides a guideline for determination of the 'Recommended Ecological Category' (REC) (Kleynhans and Louw, 2007). In terms of wetlands, the 'Present Ecological State' (PES) is estimated based on any deviations from a theoretical reference condition, where the reference condition is defined as the unimpacted condition in which wetland ecosystems show little or no influence of human actions. It is thus appropriate to consider deviation from the natural or reference condition, with the ecological state of a wetland taken as a measure of the extent to which human impacts have caused the wetland to differ from the natural reference condition (Macfarlane *et al*. 2020). At a broad scale where more resources and skills are available (*i.e.* at a regional or catchment level), it is a competency of the National Department of Water and Sanitation (DWS) to determine the ecological reserve for all water resources and in so doing, the process of 'Ecoclassification' is followed and applied. This mostly occurs during reserve determination studies which typically involve collaborative efforts by the authority (DWS), input and studies by specialists and participation by various public sector bodies and water users. There are many types of water users in any given catchment or water management area whose activities and livelihoods depend on a regular water supply as well as the ecosystem goods and services provided by watercourses.

The methods/tools used for water resource Ecoclassification (the term used for the ecological classification process) refers to the determination and categorisation of the PES (or health/integrity) of various biophysical attributes of watercourses, which includes wetlands, relative the natural or close to the natural reference condition (Kleynhans & Louw, 2007). The purpose of the EcoClassification process is to gain insight and understanding into the causes and sources of the deviation of the PES of biophysical attributes from the reference condition. This provides the information needed to derive desirable and attainable future ecological objectives for the watercourse. The procedure of EcoClassification describes the health of a water resource and derives and formulates management targets / objectives / specifications for the resource. Recent studies over several years were initiated for various Water Management Areas (WMAs) in South Africa and are available in various volumes of reports published and made available by the Resources Directed Measures (RDM) Directorate, a competency within DWS. Reserve determination studies for the Mvoti - Umzimkulu WMA, in which the proposed development is situated, are available online (http://www.dwa.gov.za/rdm/WRCS/default.aspx) and were consulted to inform this study.

9 METHODS

9.1 Desktop study

A desktop study and literature review relating to the project and the receiving natural environment was first carried out to gather existing information to inform a more detailed fieldwork assessment. Tasks/activities which formed part of the overall assessment included:

- Desktop review of available / existing information, spatial data, literature and studies;
- Desktop screening and mapping of watercourses and wetlands within the broader study area to inform which watercourses are likely to be directly or indirectly impacted upon by the proposed development footprint(s) and associated construction activities.

9.2 Fieldwork site visit including wetland delineation

This site visit was undertaken on 18th November 2020 and included:

- A rapid survey of wetland and riparian vegetation habitats;
- Identification and more refined ground-truthing/verification of watercourses and associated freshwater resource units/ecosystems located within the study area and within 32m and 500m ("regulated areas") from the boundary of the proposed development footprint(s). The approach, methods and techniques in the '*Updated Manual for the Identification and Delineation of Wetlands and Riparian Areas*' (DWAF, 2008) were consulted during the study when assessing the outer boundary of any wetlands, riparian areas or watercourses within the regulated area. Soil auger samples were taken and inspected in the field for diagnostic signs of wetness;
- Identify water resources in the DWS "regulated area" of the development footprint where Section 21 (c) and/or (i) water uses will require authorisation.

9.2.1 SASS5

An upstream and downstream SASS5 survey (freshwater macroinvertebrates) in conjunction with an *in-situ* water quality assessment was conducted in the field. Macroinvertebrates are recognised as valuable organisms for biological assessments due to their sedentary nature, rapid lifecycle, visibility to the naked eye and the ease with which they can be identified (Dickens and Graham 2002). The SASS5 method is the current index-based approach adopted in South Africa to assess the status of riverine macroinvertebrates and is largely based on the presence of aquatic invertebrate families and their perceived sensitivity to water quality changes. Different families exhibit different sensitivities to pollution with sensitivities ranging from highly tolerant families (e.g. Chironomidae) to highly sensitive families (e.g. Oligoneuridae). SASS5 uses the diversity of invertebrate taxa and changes thereto to provide an indication of the conditions in the aquatic ecosystem. The index has been proven to be an effective and efficient means by which to assess water quality impairment and general river health (Dallas, 1997; Chutter, 1998).

The SASS5 method relies on a standard sampling protocol where the various habitats (biotopes) present at the selected sites is carried out with the aid of a net (300mmm x 300mm, 1000 micron mesh size) using specified sampling times and areas. Habitats sampled include stones (both in-current and out-of-current), vegetation (both aquatic and riparian/marginal) and gravel, sand & mud (GSM). SASS requires sampling across all representative and available biotopes, utilised by macroinvertebrates as habitats, to establish the

diversity and abundance at a given site, river reach, quaternary catchment or ecoregion. The results are expressed both as an index (SASS score) and the Average Score Per Taxon (ASPT).

9.2.2 IHAS

The Integrated Habitat Assessment System (IHAS) after McMillan (1998) evaluates the structure of the surrounding physical habitat that influences the quality of the water resources and the condition of the resident aquatic community. The aim of the IHAS is to record details and provide immediate information about the biotopes sampled during the SASS5 assessment for further interpretation in the MIRAI. Habitat assessment includes evaluating the quality of the substrate, channel morphology, bank structure, and riparian vegetation. When habitat diversity is extensive and un-impacted, the biotic community structures tend to be good. IHAS attempts to account for the variability in the amount and quality of SASS biotopes which are sampled in the field.

The aim of the IHAS assessment is to record details about the SASS biotopes sampled, both to provide immediate information on SASS biotopes assessed and to begin the process of testing and validating the method. In the current version habitats have been divided into 'stones in current' (SIC), 'vegetation' and 'other' (stones out of current, gravel, sand, mud). A modified IHAS version based on McMillan (1998) has been followed though it should be noted that the scoring system in the method still requires more rigorous testing and validation. The method for determining habitat quality is often subjective and inconsistent amongst users specific due to the inherent variability in the approach.

Notwithstanding any inherent inconsistency, the IHAS is still routinely used in conjunction with SASS5 as a measure of the variability of aquatic macroinvertebrate biotopes available at the time of the survey (McMillan, 1998). The scoring system was traditionally split into two sections, namely the sampling habitat (comprising 55% of the total score) and the general stream characteristics (comprising 45% of the total score), which were summed together to provide a percentage and then categorised according to the descriptions (See **Table 1**). Several habitat components (*i.e.* vegetation, physical features and substrate) are assessed and assigned sub-scores which are totalled to an overall IHAS score, as a %).

Table 1: Adapted IHAS scores and associated description of available macroinvertebrate habitat (after McMillan, 1998).

IHAS Score (%)	Rating description
>75	Excellent
65-74	Good
55-64	Adequate / Fair
<55	Poor

9.2.3 IHI

Data for an in-stream and riparian Index of Habitat Integrity (IHI) assessment (after Kleynhans, 1996), was obtained concurrently in the field and completed using the necessary model datasheet. Refer to report section **9.5** for a background description of the IHI method.

9.3 Freshwater Ecosystem classification

Freshwater resources in the study area were classified using the approach in the '*National Wetland Classification System for Wetlands and other Aquatic Ecosystems in South Africa*' (after Ollis *et al*. 2013).

9.4 Wetland assessment

This component of the study included a Present Ecological State (PES) and Ecological Importance and Sensitivity (EIS) functional assessment of wetlands likely to be impacted upon in term of their biodiversity value and ecosystem functioning.

9.4.1 Present Ecological State (PES)

WET-Health Version 2 (after Macfarlane *et al*. 2020) consists of a series of four tools/modules developed to assess the PES or "ecological health" of wetland ecosystems of different hydrogeomorphic (HGM) types at three different levels of detail/resolution. These tools build on previous assessment methods, including WET-Health Version 1 and Wetland-IHI, in response to the need that was identified to develop a refined and more robust suite of tools for the assessment of the PES of wetland ecosystems in South Africa. The tool is designed to assess the PES of a wetland by scoring the perceived deviation from a theoretical reference condition, where the reference condition is defined as the un-impacted condition in which wetland ecosystems show little or no influence of human actions. It is thus appropriate to consider 'deviation' from the natural or reference condition, with the ecological state of a wetland taken as a measure of the extent to which human impacts have caused the wetland to differ from the natural reference condition. The PES is assessed by evaluating the extent to which anthropogenic activities have altered wetland characteristics across the four inter-related components/modules of wetland health namely:

-Hydrology; defined in this context as the distribution and movement of water through a wetland and its sediments;
-Geomorphology; where changes to geomorphic processes and the geomorphic structure of the wetland are assessed;
-Water quality; where physico-chemical attributes of the water in a wetland are assessed based on potential diffuse runoff from land-uses within the wetland and from the areas surrounding the wetland together with point-source discharges of pollution entering directly into the wetland and/or into streams that flow into that wetland;

-Vegetation; where changes in vegetation composition and structure as a consequence of current and historic on-site transformation and/or disturbance are evaluated.

An aggregation of scores for the 4 components is calculated in the model according to the following formula:

[Overall (Combined) PES Score] = ([(Hydrology score) x 3] + [(Geomorphology score) x 2] + [(Water Quality score) x 2] + [(Vegetation score) x 2)] ÷ 9)

This produces a final score ranging from 0 (pristine) to 10 (critically impacted in all respects). The extent and intensity are then combined to determine an overall magnitude of impact. The Present State categories are provided in **Table 2** which illustrates how the resultant impact scores fall into one of six health categories (A – F) on a gradient from "unmodified/natural" (Category A) to "severe/complete deviation from natural" (Category F).

Table 2: Health categories used by WET-Health for describing the integrity of wetlands (**Source**: Macfarlane *et al*. 2008).

Health (PES) category	Description	Impact score range	Impact category
A	Unmodified, natural.	0-0.9	None
B	Largely natural with few modifications. A slight change in ecosystem processes is discernible and a small loss of natural habitats and biota may have taken place.	1-1.9	Small
C	Moderately modified. A moderate change in ecosystem processes and loss of natural habitats has taken place but the natural habitat remains predominantly intact.	2-3.9	Moderate
D	Largely modified. A large change in ecosystem processes and loss of natural habitat and biota and has occurred.	4-5.9	Large
E	The change in ecosystem processes and the loss of natural habitat and biota is great but some remaining natural habitat features are still recognisable.	6-7.9	Serious
F	Modifications have reached a critical level and the ecosystem processes have been modified completely with an almost complete loss of natural habitat and biota.	8-10	Critical

9.4.2 Wetland Eco-services

To facilitate with wetland EIS determination, the ecosystem goods and services that wetlands within the development footprint and within a 500m radius from the boundary provide was assessed using version 2 of the rapid scoring method, Wet-EcoServices (after Kotze *et al*. 2020). The tool qualitatively and rapidly assesses and scores the various ecosystem goods and services which are supplied by wetland ecosystems. The various benefits and aspects assessed in terms of their importance/sensitivity are indicated in **Table 3**. As per the datasheets a rating of zero (low importance) to four (very high) is allocated to each factor/service assessed. The tool is designed to assign either an estimated *percentage range* or a *qualitative description* (e.g. low or high) in conjunction with the score and depends on the type of services which are provided by the wetland under assessment.

Table 3: Ecosystem services supplied by wetlands and assessed by WET-EcoServices (after Kotze *et al*. 2009).

INDIRECT BENEFITS (Regulating and supporting)	Flood attenuation		The spreading out and slowing down of floodwaters in the wetland, thereby reducing the severity of floods downstream.
	Carbon storage		The trapping of carbon by the wetland, principally as soil organic matter.
	Streamflow regulation		Sustaining streamflow during low flow periods.
	Water quality enhancement	Sediment trapping	The trapping and retention in the wetland of sediment carried by runoff waters.
		Phosphate assimilation	Removal by the wetland of phosphates carried by runoff waters.
		Nitrate assimilation	Removal by the wetland of nitrates carried by runoff waters.
		Toxicant assimilation	Removal by the wetland of toxicants (e.g. metals, biocides and salts) carried by runoff waters.
		Erosion control	Controlling of erosion at the wetland site, principally through the protection provided by vegetation.
DIRECT BENEFITS	Biodiversity maintenance		Through the provision of habitat and maintenance of natural process by the wetland, a contribution is made to maintaining biodiversity.
	Cultural	Cultural heritage	Places of special cultural significance in the wetland, e.g. for baptisms or gathering of culturally significant plants.
		Tourism and recreation	Sites of value for tourism and recreation in the wetland, often associated with scenic beauty and abundant birdlife.
		Education and research	Sites of value in the wetland for education or research.
	Provisioning	Provision of water for human use	The provision of water extracted directly from the wetland for domestic, agriculture or other purposes.
		Provision of harvestable resources	The provision of natural resources from the wetland, including livestock grazing, craft plants, fish etc.
		Provision of cultivated foods	The provision of areas in the wetland favourable for the cultivation of foods.

Indicators, where the rationale and method for each are incorporated into the tool, are used to generate scores for the ecosystem services where the indicator scores are combined to generate supply and demand scores for individual ecosystem services (**Table 4**). Individual supply and demand scores are integrated into an overall wetland importance score. The assessment examines and rates the ecosystem services according to their degree of importance and the degree to which the services are provided (**Table 5**). As per the rating criteria a rating of zero (*very low importance*) to four (*very high importance*) is allocated to each factor/service assessed.

Table 4: Integration of scores for supply & demand to obtain an overall importance score (after Kotze *et al*. 2020).

Demand		**Supply**				
		Very Low	Low	Moderate	**High**	**Very High**
		0	1	2	3	4
Very Low	0	0.0	0.0	0.5	1.5	2.5
Low	1	0.0	0.0	1.0	2.0	3.0
Moderate	2	0.0	0.5	1.5	2.5	3.5
High	3	0.0	1.0	2.0	3.0	4.0
Very High	4	0.5	1.5	2.5	3.5	4.0

Table 5: Rating of importance categories (after Kotze *et al*. 2020).

Importance Category		**Description**
Very Low	0-0.79	The importance of services supplied is very low relative to that supplied by other wetlands
Low	0.8 – 1.29	The importance of services supplied is low relative to that supplied by other wetlands
Moderately-Low	1.3 – 1.69	The importance of services supplied is moderately-low relative to that supplied by other wetlands
Moderate	1.7 – 2.29	The importance of services supplied is moderate relative to that supplied by other wetlands
Moderately-High	2.3 – 2.69	The importance of services supplied is moderately-high relative to that supplied by other wetlands
High	2.7 – 3.19	The importance of services supplied is high relative to that supplied by other wetlands
Very High	3.2 - 4.0	The importance of services supplied is very high relative to that supplied by other wetlands

9.4.3 Wetland Ecological Importance and Sensitivity (EIS)

The method used for the EIS determination was initially adapted from the method as provided by DWS (1999) for floodplains. A series of determinants for EIS are assessed on a scale of 0 to 4, where 0 indicates no importance and 4 indicates very high importance. The mean of the determinants is used to assign the EIS category as listed in **Table 6**. The method takes into consideration PES scores obtained for WET-Health as well as function and service provision to enable the assessor to determine the most representative EIS category for the wetland feature or group being assessed. The EIS score is calculated by using the EI score for a wetland system with moderate sensitivity as a starting (benchmark) score and adjusting scores up or down by up to one class based on actual sensitivity. The criteria included in the EIS calculation include biodiversity support, landscape scale and wetland sensitivity.

9.4.4 Recommended Ecological Category (REC)

The Recommended Ecological Category (REC) is a recommendation from an ecological viewpoint which is considered within the decision-making process in the National Water Resource Classification System (NWRCS). This recommendation (*i.e.* set of management objectives) is based on either maintenance or improvement of the PES. The REC is based on ecological criteria only and considers the EIS, the restoration potential and attainability thereof. According to DWAF (2007b), the PES and EIS of water resources must drive management objectives when there is no water resource classification (*i.e.* EcoClassification) available yet for a water management area/catchment. For water resources that do not yet have a REC allocated for the system, information illustrated in **Table 7** may be utilised. The intersection of the PES and EIS categories provide the basis for the derivation of the REC.

Table 6: EIS categories and the interpretation of median scores for freshwater biota and habitats (adapted after DWA, 2013 and Kleynhans, 1999).

EIS rationale/general description	Score range	EIS Categories
Wetlands/quaternary catchments that are not unique or ecologically important and sensitive at any scale. The biodiversity of these systems (in terms of biota and habitat) is ubiquitous and not sensitive to flow and habitat modifications and they play an insignificant role in moderating the quantity and quality of water of major rivers and have a substantial capacity for use.	**>0 and ≤1**	**Low / Marginal (D)**
Wetlands/quaternary catchments that are considered to be ecologically important and sensitive on a provincial or local scale due to habitat diversity, species diversity, unique species and rare/endangered species. The biodiversity of these systems (in terms of biota and habitat) are not usually sensitive to flow and habitat modifications and they play a small role in moderating the quantity and quality of water of major rivers and often have a substantial capacity for use.	**>1 and ≤2**	**Moderate (C)**
Wetlands/quaternary catchments that are considered to be unique, ecologically important and sensitive on a national scale due to habitat diversity, species diversity, unique species and rare / endangered species. The biodiversity of these systems (in terms of biota and habitat) may be sensitive to flow and habitat modifications and they play a role in moderating the quantity and quality of water of major rivers. May still have substantial capacity for use.	**>2 and ≤3**	**High (B)**
Wetlands/quaternary catchments that are considered ecologically important and sensitive on a national or even international level based on unique biodiversity due to habitat diversity, species diversity, unique species and rare/endangered species and the biodiversity of these systems (in terms of biota and habitat) are usually very sensitive to flow and habitat modifications. They play a major role in moderating the quantity and quality of water of major rivers with no or only a small capacity for use.	**>3.0 and ≤ 4**	**Very high (A)**

Table 7: PES and EIS as management objectives for watercourses/wetland resources for derivation of the REC.

PES	EIS			
	Very High	High	Moderate	Low
A	*Maintain*	*Maintain*	*Maintain*	*Maintain*
B	*Improve*	*Improve*	*Maintain*	*Maintain*
C	*Improve*	*Improve*	*Maintain*	*Maintain*
D	*Improve*	*Improve*	*Maintain*	*Maintain*
E/F	*Improve*	*Improve*	*Maintain*	*Maintain*

9.5 Watercourse habitat assessment

9.5.1 Index of Habitat Integrity (IHI)

The 1996 Index of Habitat Integrity (IHI), version 2 (Kleynhans, 1996) was used to obtain a habitat integrity class for the instream habitat and riparian zone. The IHI tool was applied to the channels/riparian areas in order to inform the rating of the condition, or PES, of the upstream and downstream SASS sites. The tool compares the current state of the in-stream and riparian habitats, with any existing impacts, relative to the estimated reference state (in the absence of human impacts). This involves the assessment and rating of a range of criteria scored individually (from 0-25) (**Table 8**) for in-stream and riparian habitats (see **Table 10**) with weights assigned to the various criteria, as shown in **Table 9**.

The assessment was first informed by the field visit and further refined based on a desktop literature review of reach and catchment-scale impacts based on existing catchment studies, historical satellite and aerial imagery and land cover information. The instream and riparian components were analysed separately to yield two separate ecological conditions (*i.e.* Instream and Riparian components). However, it should be noted that the data for the riparian area is primarily interpreted in terms of the potential impact upon the instream component. Owing to the qualitative nature and subjectivity of the IHI scoring system the most recent version of the IHI application (after Kleynhans *et al.*, 2008) and the Model Photo Guides (after Graham and Louw, 2008) were consulted where necessary to assist in moderating the scoring approach.

Table 8: Summary rating table used to determine the Index of Habitat Integrity (after Kleynhans, 1996).

IMPACT CLASS	DESCRIPTION	RATING
None	No discernible impact or the modification is located in such a way that it has no impact on habitat quality, diversity, size and variability.	0
Small	The modification is limited to very few localities and the impact on habitat quality, diversity, size and variability are also very small.	1-5
Moderate	The modifications are present at a small number of localities and the impact on habitat quality, diversity, size and variability are also limited.	6-10
Large	The modification is generally present with a clearly detrimental impact on habitat quality, diversity, size and variability. Large areas are, however, not influenced.	11-15
Serious	The modification is frequently present and the habitat quality, diversity, size and variability in almost the whole of the defined area are affected. Only small areas are not influenced.	16-20
Critical	The modification is present overall with a high intensity. The habitat quality, diversity, size and variability in almost the whole of the defined section are influenced detrimentally.	21-25

Table 9: Criteria and weights used for the assessment of Habitat Integrity.

INSTREAM CRITERIA	Weight	RIPARIAN ZONE CRITERIA	Weight
Water abstraction	14	Vegetation removal	13
Flow modification	13	Exotic vegetation encroachment	12
Bed modification	13	Bank erosion	14
Channel modification	13	Channel modification	12
Water quality modification	14	Water abstraction	13
Inundation	10	Inundation	11
Exotic macrophytes	9	Flow modification	12
Alien aquatic fauna	8		
Solid waste disposal	6	Water quality	13
TOTAL	**100**	**TOTAL**	**100**

Table 10: Description of criteria to assess river habitat integrity (after Kleynhans, 1996).

CRITERIA	RELEVANCE/ DESCRIPTION
INSTREAM	
Water abstraction	Direct impact on habitat type, abundance and size. Also implicated in flow, bed, channel and water quality characteristics. Riparian vegetation may be influenced by a decrease in the supply of water.
Flow modification	Consequence of abstraction or regulation by impoundments. Changes in temporal and spatial characteristics of flow can have an impact on habitat attributes such as an increase in duration of low flow season, resulting in low availability of certain habitat types or water at the start of the breeding, flowering or growing season.
Bed modification	Regarded as the result of increased input of sediment from the catchment or a decrease in the ability of the river to transport sediment (Gordon *et al*., 1993). Indirect indications of sedimentation are stream bank and catchment erosion. Purposeful alteration of the stream bed, e.g. the removal of rapids for navigation (Hilden & Rapport, 1993) is also included.
Channel modification	May be the result of a change in flow which may alter channel characteristics causing a change in marginal instream and riparian habitat. Purposeful channel modification to improve drainage is also included.
Water quality modification	Originates from point and diffuse point sources. Measured directly or agricultural activities, human settlements and industrial activities may indicate the likelihood of modification. Aggravated by a decrease in the volume of water during low or no flow conditions.
Inundation	Destruction of riffle, rapid and riparian zone habitat. Obstruction to the movement of aquatic fauna and influences water quality and the movement of sediments (Gordon *et al*., 1992).
Exotic macrophytes	Alteration of habitat by obstruction of flow and may influence water quality. Dependent upon the species involved and scale of infestation.
Alien aquatic fauna	The disturbance of the stream bottom during feeding may influence the water quality and increase turbidity. Dependent upon the species involved and their abundance.
Solid waste disposal	A direct anthropogenic impact which may alter habitat structurally. Also a general indication of the misuse and mismanagement of the river.
RIPARIAN ZONE	
Vegetation removal	Impairment of the buffer the vegetation forms to the movement of sediment and other catchment runoff products into the river (Gordon *et al*., 1992). Refers to physical removal for farming, firewood and overgrazing. Includes both exotic and indigenous vegetation.
Exotic vegetation encroachment	Excludes natural vegetation due to vigorous growth, causing bank instability and decreasing the buffering function of the riparian zone. Allochthonous organic matter input will also be changed. Riparian zone habitat diversity is also reduced. Environmental consequences of invasion by exotic woody species: Exotics often have a higher water consumption than indigenous plants. They restrict access to banks for animals (and people) They disrupt indigenous plants and Wet and Dry Bank Zone vegetation. They can increase fire hazard by increasing fuel loads and burning more fiercely than indigenous riparian plants and increase indigenous plant fire deaths. They often cause increased sedimentation. The effects of floods becomes more severe and devastating floods become more common-place. (Dr C Boucher, Botany Department, University of Stellenbosch, Dec 2001).
Bank erosion	Decrease in bank stability will cause sedimentation and possible collapse of the river bank resulting in a loss or modification of both instream and riparian habitats. Increased erosion can be the result of natural vegetation removal, overgrazing or exotic vegetation encroachment.
Channel modification	May be the result of a change in flow which may alter channel characteristics causing a change in marginal instream and riparian habitat. Purposeful channel modification to improve drainage is also included. Any densification of woody exotic species would lead to channel shape change through

	increased sediment deposits. This has serious implications for more extensive bank over-topping during flood events with increased scouring along outer edges of the Dry Bank. It is the extremes, i.e. drought or very wet events, which are particularly crucial sensitive periods to be considered. (Dr C Boucher, Botany Department, University of Stellenbosch Dec 2001).
Water abstraction	Direct impact on habitat type, abundance and size. Also implicated in flow, bed, channel and water quality characteristics. Riparian vegetation may be influenced by a decrease in the supply of water.
Inundation	Destruction of riffle, rapid and riparian zone habitat. Obstruction to the movement of aquatic fauna and influences water quality and the movement of sediments (Gordon *et al*., 1992).
Flow modification	Consequence of abstraction or regulation by impoundments. Changes in temporal and spatial characteristics of flow can have an impact on habitat attributes such as an increase in duration of low flow season, resulting in low availability of certain habitat types or water at the start of the breeding, flowering or growing season.

9.5.2 Watercourse PES

In this context, the PES of a freshwater ecosystem (at the time of an assessment or survey) describes the extent to which a river or wetland has been altered by humans from its original, natural condition. The PES is described in six ecological categories ranging from A (natural) to F (critically/extremely modified) and is derived using expert assessment of criteria known to influence the condition of freshwater ecosystems (See **Table 2**). The ecological categories represent a simplified measure of the extent of ecological alteration as assessed by regional experts.

9.5.3 Watercourse EIS

Ecological Importance (EI) of a river is an expression of its importance to the maintenance of ecological diversity and functioning on local and wider spatial scales. EI relates to biophysical aspects such as diversity, uniqueness and scarcity in a sub-quaternary reach that relate to the capacity to function sustainably. Ecological sensitivity (or fragility) refers to the system's ability to tolerate disturbance and its capacity to recover from disturbance once it has occurred (resilience). ES considers the attributes of the sub-quaternary reach that relates to the severity of response to stressors i.e. the sensitivity of biophysical components to general environmental changes such as flow, physico-chemical and geomorphic modifications DWAF, 1999b). Essentially, the EI and the ES of sub-quaternary reaches are assessed to obtain an indication of its vulnerability to environmental modification within the context of the PES. This would relate to the ability of the sub-quaternary reach to endure, resist and be resilient enough to recover from various forms of human use (DWA, 2013). The EIS rationale in **Table 6** adapted from DWAF (1999b) can also be used as surrogate for the estimation of the EIS of a river reach or sub-catchment.

Ecological aspects considered in the EIS assessment should include, as far as possible, the presence of any rare and/or endangered species, unique species (*i.e.* endemic or isolated populations) and communities, intolerant species, species diversity, habitat diversity (e.g. pools, riffles, runs, rapids, waterfalls, riparian forests, etc), the importance of a river or river reach in providing connectivity between different sections of the river, e.g. presence of migration routes/corridors for species movements, presence of

conservation or relatively natural areas along the river, the sensitivity of the system and its resilience (*i.e.* the ability to recover following disturbance) of the system to environmental changes should also be considered.

9.5.4 Watercourse REC

The Ecological Category (EC) is a simplified measure of the extent that a freshwater ecosystem has been altered from natural condition due to human impact. As with PES, there are six ecological categories ranging from A (natural) to F (critically/extremely modified) derived using expert assessment of specific criteria. The Recommended Ecological Category (REC) for the study area was based on a desktop study of available literature for the catchment in which the site is located combined with the observations during the field-based assessment.

9.6 Risk/Impact assessment on watercourses

Impact (risks) of the development on watercourses in terms of Section 21 (c) and/or (i) of the NWA were assessed using the DWS-regulated risk matrix approach promulgated in terms of GN509 of 26th August 2016. Refer to **Annexure R** for the risk assessment methodology. As per DWS (2018), borderline low/moderate risks can be manually adapted downwards up to a maximum of 25 where additional mitigation is provided.

9.7 Freshwater biodiversity assessment

The Guideline Documentation on EIA Regulations (DEAT, 1998) provided guidance on methods for the assessment of potential impacts on aquatic biodiversity. The criteria forming part of the impact assessment and the terminology descriptions are summarised below:

Nature of the Impact - This is an appraisal of the type of effect the project would have on the environment. This description includes what would be affected and how and whether the impact is expected to be positive (+ve) or negative (-ve).

Extent of the Impact - A description of whether the freshwater biodiversity impact will be local, limited to the study area and its immediate surroundings, regional, or on a national scale.

Duration of the Impact - This provides an indication of the lifespan of the impact (the time period over which freshwater biodiversity is affected).

Severity (Magnitude) of the Impact - This indicates the degree to which the impact would affect freshwater biodiversity.

Probability of Occurrence - This describes the probability of the impact on freshwater biodiversity actually occurring. This is rated as improbable (low likelihood), probable (distinct possibility), highly probable (most likely) or definite (impact will occur regardless of any prevention measures).

Degree of Confidence - This describes the degree of confidence for the predicted impact on freshwater biodiversity based on the available information and level of knowledge and expertise. It has been divided into low, medium or high.

Table 11 presents an overview of an impact characterisation and criteria matrix with the various impact criteria described and rated on a numerical scale using numerical values.

Table 11: Characterisation and criteria matrix for impacts on freshwater biodiversity.

		Description	Numerical value		Description	Numerical value
Occurrence	Duration	Temporary - period of less than 1 year	1	Likelihood	Unlikely - probably will not happen	1
		Short term - period of less than 5 years	2		Improbable - some possibility, but low likelihood	2
		Medium term - period of less than 15 years	3		Likely - distinct possibility	3
		Long term - period of less than 20 years	4		Highly likely - most likely	4
		Permanent - a period that exceeds the life of the development	5		Definite - impact will occur regardless of any prevention measures	5
Severity	Extent	On-site - impacts that are limited to the site/project footprint	1	Severity	No effect - will have no effect on the environment	0
		Local - impacts that are limited to the project site and adjacent properties	2		Minor - minor and will not result in an impact on processes	2
		Regional - impacts that are experienced at a regional scale e.g. municipal/provincial	3		Low -low and will cause a slight impact on processes	4
		National - impacts that are experienced at a national scale	4		Moderate - moderate and will result in processes continuing but in a modified way	6
		Trans-boundary / International - impacts that are experienced outside of South Africa	5		High - processes are altered to the extent that they temporarily cease	8
					Very high - results in complete destruction of patterns and permanent cessation of processes	10

The environmental significance of each potential impact is then calculated using the following formula:

Significance Points (SP) = *(Severity + Duration + Extent) x Likelihood*

The maximum value is 100 significance points (SP) with potential impact significance ranked as *HIGH*, *MODERATE* or *LOW* based on the criteria in **Table 12**.

Table 12: Significance criteria ranking.

≤ 30 significance points	**LOW** environmental significance
31 - 60 significance points	**MODERATE** environmental significance
≥ 61 significance points	**HIGH** environmental significance

9.7.1 Cumulative impacts

The approach to assessing cumulative freshwater biodiversity impacts is to screen potential interactions with other land-uses on the basis of past, present impacts and future impacts and surrounding land uses and development pressures. This cumulative impact assessment took into consideration the eThekwini SDF (2020-2021) the Durban Metropolitan Open Space System (D'MOSS) tool and the current 2020 Durban Strategic Environmental Assessment (SEA) (still underway). Whilst districts in KZN primarily have Biodiversity Sector Plans (BSPs), the eThekwini Metro uses the D'MOSS as the primary tool guide protection and management of threatened and valuable natural resources with the municipal region. Key considerations for assessing cumulative effects are current and future land uses and local anthropogenic activities.

9.8 Freshwater resource mapping and recommended buffers

The development of freshwater resource maps in relation to the proposed infrastructure/footprint and the delineation of recommended no go' buffers around freshwater resources was carried out for purposes of affording a level of protection against significant negative impacts on watercourses and freshwater biodiversity.

10 RESULTS

10.1 Desktop study

Table 13 summarises the background of the study area from jurisdictional, water resource, geo-climatic and ecological perspectives. Wetlands generally form in areas of poor drainage so the topography (shape) of the land and contour data was examined. Valleys or basins are areas where water naturally accumulates and wetlands are most likely to be found in these low lying areas however there are numerous wetland areas within the Ethekwini Municipality (EM) that are not in low lying areas. **Annexure I** provides an overview of the topography in relation to the wetlands in relation the proposed site footprint. The relevant accessory information and data which was collated during the desktop study is included as various Annexures at the end of this report. This includes desktop information in the form of historical topographical maps, aerial imagery, geological, soil and vegetation maps, an overview of aquatic biodiversity including reference lists of fish and macroinvertebrates (See **Annexure O** & **P**).

Table 13: Summary of jurisdictional, water resource, geo-climatic & ecological information for the study area.

Province	KwaZulu-Natal
Metropolitan Municipality	eThekwini
1: 50 000 grid reference	2930DB
Parent farm	Riet Rivier Farm No. 842 (portion 0 and 378)
Ward no.	53
WMA	Mvoti to Umzimkulu (WMA 11)
CMA (proto)	Pongola-Umzimkulu
Primary catchment	U
Quaternary catchment	U30B
Main rivers / drainage	Ohlanga
DWS Ecoregion Level I (Kleynhans *et al*. 2005)	17 North Eastern Coastal Belt
DWs Ecoregion Level II (Kleynhans *et al*. 2005)	17.01
Freshwater Ecoregion of the World (FEOW)	Zambezian Lowveld
Biome (Mucina & Rutherford, 2006)	Indian Ocean Coastal Belt (IOCB)
Vegetation Unit (Mucina & Rutherford, 2006; Scott-Shaw & Escott, 2011, Vegmap, 2018)	KwaZulu-Natal Coastal Belt (CB 3)
KZN Veg type name	KwaZulu-Natal Coastal Belt (CB 3)
Geomorphic Province (Partridge *et al*., 2010)	South-eastern Coastal Hinterland
Terrain Morphology: Broad division (dominant types in bold) (Primary)	Plains: Low Relief (limited) Plains: Moderate Relief (limited); **Closed Hills, Mountains; Moderate and High Relief**; Table Lands; Moderate and High Relief
Vegetation types (dominant types in bold) (Primary)	**Coastal Bushveld\Grassland; Coast Hinterland Bushveld**; Coastal Grassland, Subarid Thorn Bushveld; **Valley Thicket**; Short Mistbelt Grassland (limited); Patches Coastal forest and Patches Afromontane Forest
Ecoregion altitude (m a.m.s.l)	20-450m (80-90m on site)
Geology (Council for Geoscience, 2003)	Dwyka Group. Ordovician Natal Group sandstone, Dwyka tillite, Ecca shale and Mapumulo gneiss.
Soils (Schulze, 2007; Mucina & Rutherford, 2006)	Berea red sands in places. Soils are shallow over hard sandstones and deeper over younger rocks. Fa land type dominates area, Ab land type of minor importance.
Mean annual temp (°C)	16 to >22
Mean annual precipitation MAP (mm) (Source: WR2012 data)	700 - 1000mm
Rainfall seasonality	Early to late summer
Rive EIS Category (EI and ES) (DWS, 2014)	EI = *High*, ES = *Very High* (Ohlanga sub-quaternary U30B-04498)
Wetland EIS - average for Mvoti WMA (DWS, 2015 and DWS, 2018b)	**Moderate** (U30B)
Wetland PES -average for Mvoti WMA (DWS, 2015 and DWS, 2018b)	**C/D** (is also the baseline EC)
Catchment PES and **REC** (DWS, 2018b)	**B/C** and **B/C** (for Black Mhlashini sub-quaternary U30B-04465) in U30B

10.2 Freshwater resource delineation

Drainage and contour data derived from reliable data sources were obtained from the Chief Directorate: National Geospatial Information (CD: NGI) and the National Department of Water and Sanitation (DWS). Aerial imagery (**Annexure E**), topographical maps (**Annexure G**) aided in the combined desktop and field-based wetland delineation and mapping. Various accessory spatial data to inform the desktop delineations was obtained from the South African National Biodiversity Institute (SANBI) BGIS (http://bgis.sanbi.org/). Longitudinal profiles of the watercourse with the associated wetlands are illustrated in **Annexure I**. Guidance on wetland classification and wetland soil, vegetation identification and riparian delineation is summarised respectively in **Annexure J** and **Annexure K**. **Figure 5** illustrates the locations of the four soil cores sampled on the site including the locations of the upstream and downstream SASS5 sample sites.

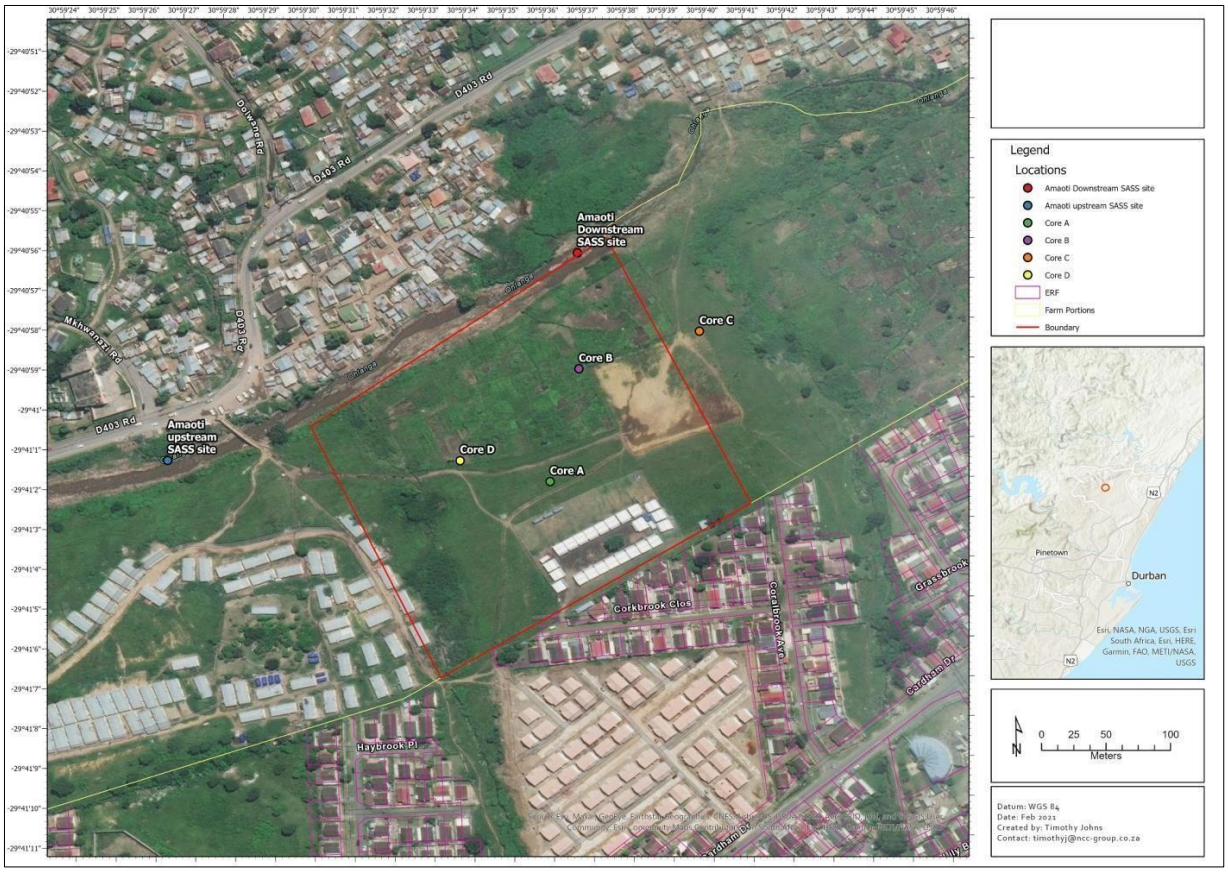


Figure 5: Locations of the sample sites (soil cores and SASS5 sites) in relation to the site footprint.

10.2.1 Watercourse and riparian zone

A perennial watercourse, namely the Ohlanga River flows more-or-less from west to east bordering the northern boundary of the site where the Amaoti school development is proposed (**Figure 5**). The extent of the watercourse and associated riparian zone exists where a distinct active channel was observed in the field as well as where hydrophytic plant species were observed including perceived changes/transitions in the vegetation's physical structure, *i.e.* where more vigorous and robust growth forms were identified to be different to that of adjacent (*i.e.* terrestrial) areas. Permanent and/or prolonged periods of soil moisture and

saturation provided localised conditions for a more robust vegetation growth form in the riparian zone whose size and character is directly related to water delivery to, storage within and fluxes through the catchment (NRC, 2002). Historical imagery in Google Earth Pro facilitated in mapping the extent of the riparian zone where vegetation has changed in both shape and form due to increasing encroachment of human settlement over the last decade.

10.2.2 Wetlands

One NFEPA natural valley bottom (HGM3) and two NWM5 wetlands (a channelled valley bottom and a seep) were identified at a desktop level within 500m of the site/project boundary (**Figure 3** and **Annexure F**). An additional hillslope seep (HGM1) was identified during the site visit, delineated and assessed. The boundary of the NWM5 valley bottom wetland was refined during the field assessment and named HGM2 for report reference purposes (**Figure 6**). Traditional diagnostic signs of soil wetness *i.e.* mottling and/or gleying, colour, hue and presence of organic material were qualitatively inspected in the soil core samples taken within and adjacent to the perceived wetland boundaries. **Annexure B** illustrates reference photographs and descriptions derived from the field-based soil core inspections. The hydric soils in lower elevations on the site have a predominantly clay-loam texture however it is important to note that previous land-use activities, specifically any infilling and /or previous soil disturbances due to sugar cane farming (historical) and subsistence agriculture (current) (See **Annexure E** and **G**) are likely to have resulted in a high degree of modification and/or alteration in original soil characteristics and sub-surface hydrology.

Seeps (*i.e.* HGM1) are the most common type of wetland typically positioned, in their natural setting, on the mid- and foot-slopes of hillsides, either as isolated systems or connected to downslope valley bottom wetlands. They are characterised by slow movement of subsurface flow at or near the surface (Kotze *et al.* 2007; Ellery *et al*. 2009). Subsurface seepage occurs either where springs decant into the soil profile near the surface causing hydric conditions to develop or where through-flow in the soil profile is forced close to the surface due to impervious layers, such as plinthite layers or where large outcrops of impervious rock force sub-surface water to the surface (DWAF, 2008a). Seeps are dominated by colluvial (*i.e.* gravity-driven), unidirectional movement of water and material down-slope (Ollis *et al*. 2013) See **Figure J4, Annexure J** for a diagrammatic illustration of a seep.

Channelled valley bottoms (HGM2 and HGM3) tend to be found in upper catchment areas, are linear fluvial, net depositional valley bottom surfaces which have a straight channel where flow can be either permanent or seasonal. Episodic flow is thought to be unlikely in this wetland setting where the channel tends to flow parallel with the direction of the valley (*i.e.* there is no meandering) and no ox-bows or cut-off meanders are present (DWAF, 2008a). The valley floor is a depositional environment such that the channel flows through fluvially-deposited sediment. These wetland types occur in valley-bottom areas that typically have a well-

defined stream but lack characteristic floodplain features (as described in Kotze *et al.* 2007; Ewart-Smith *et al*. 2006) and may be gently-sloping characterised by the net accumulation of alluvial deposits, or alternatively relatively steeply sloping characterised by net loss of sediment (Kotze *et al*. 2007). Water inputs are mainly from adjacent slopes with limited inputs from the main channel when flow overtops the channel banks during exceptional floods (Kotze *et al.* 2007; Ellery *et al*. 2009). Flow within the valley-bottom areas elevated above the channel is predominantly diffuse as hillslope seepage generally drains toward the main channel (Kotze *et al*. 2007). The main channel represents the main reason for the loss of water from these wetlands, with smaller losses occurring due to evapotranspiration (Ellery *et al*. 2009). See **Figure J3, Annexure J** for a diagrammatic illustration of a channelled valley bottom (CVBW).

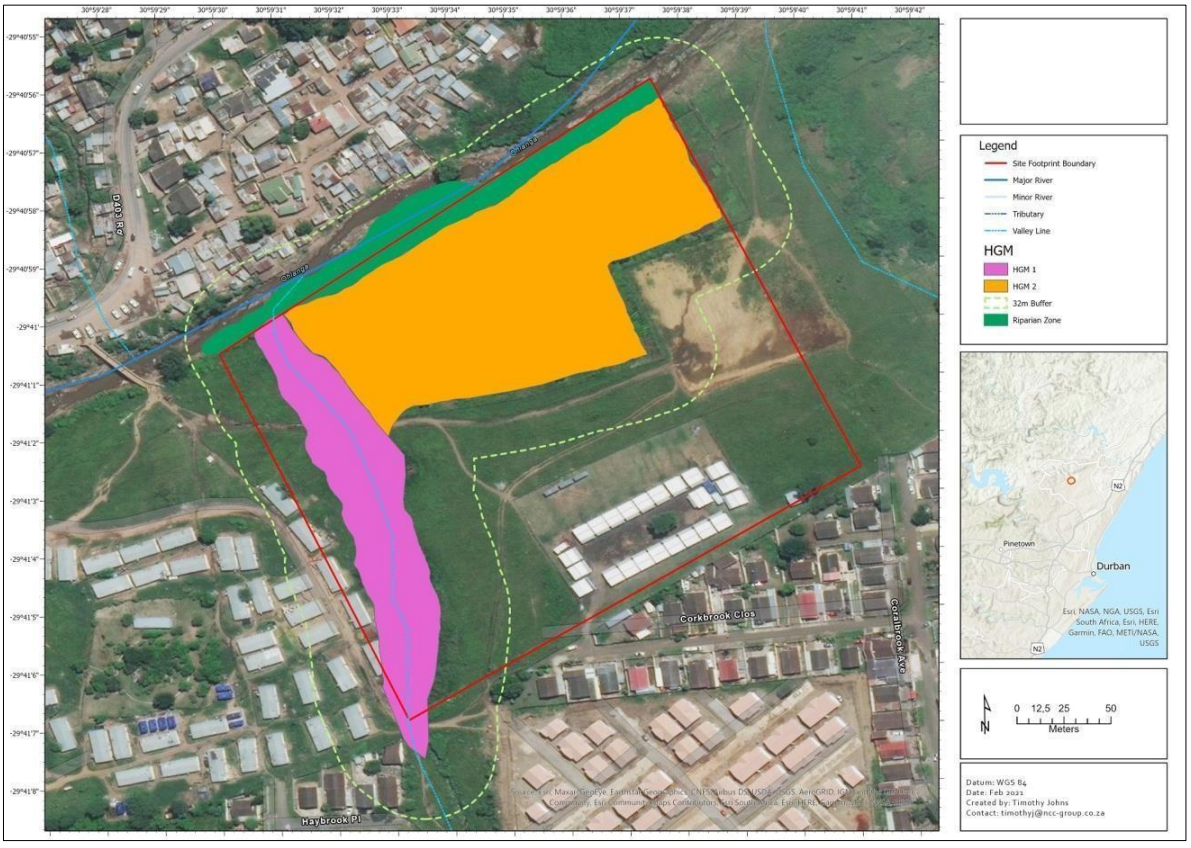


Figure 6: Freshwater resources (river, wetlands and riparian zone) in relation to the proposed development footprint. The 32m buffer line from the edge of watercourses on the site is indicated for reference purposes to listed activities numbers 12 and 19 in terms of the NEMA EIA regulations (GNR983 Listing Notice 1 dated 4 December 2014).

10.2.3 Freshwater buffers

Figure 7 illustrates the proposed 15m freshwater buffers (*i.e.* 'no go' areas for infrastructure) around the outer edge of HGM1 and HGM2 (which overlaps with the 1:100 year floodplain) which by extension and if implemented and adhered to, will afford protection to the Ohlanga River and its associated riparian zone.

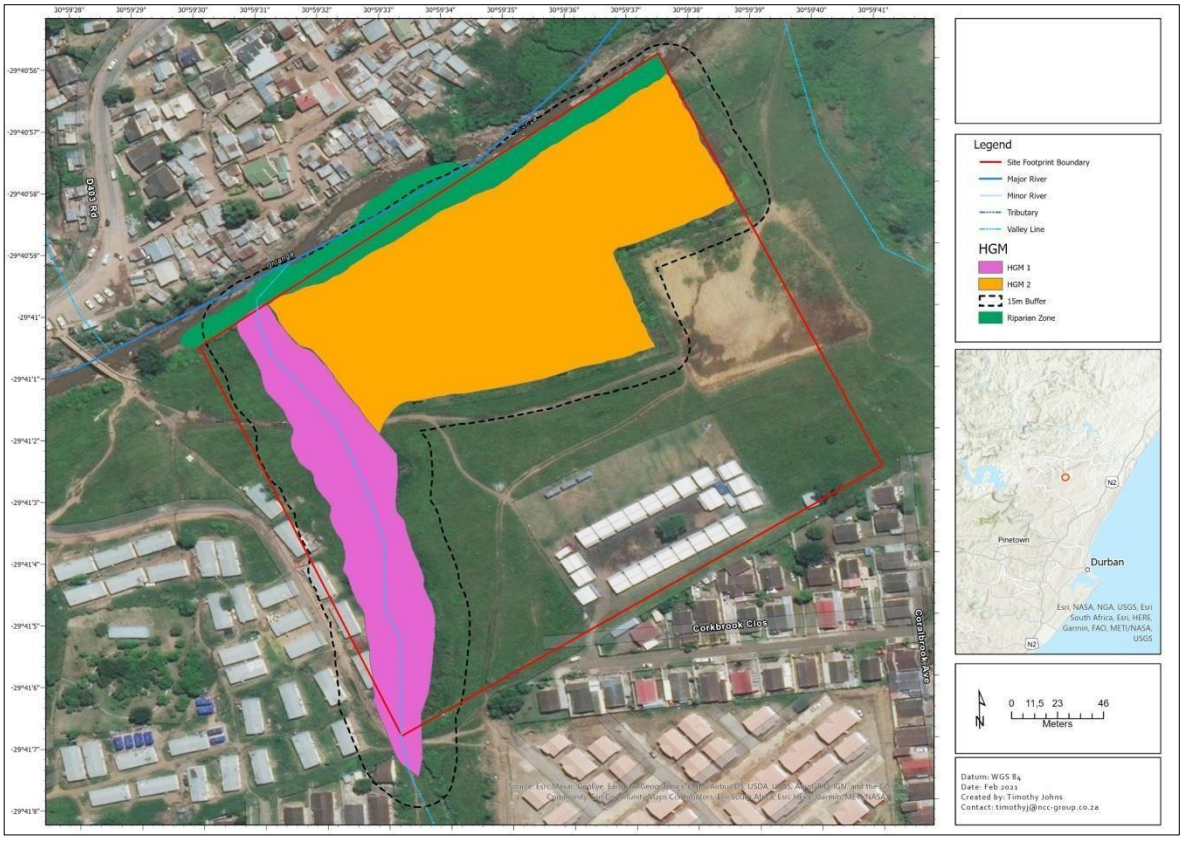


Figure 7: Proposed 15m freshwater buffers ('no go' area) for the proposed Amaoti secondary school infrastructure based on residual risks to watercourses after effective implementation of mitigation measures.

10.2.4 Indigenous wetland and aquatic plants observed

A list of some of the hydrophytic plants associated with freshwater resources observed during the field visit is provided below (**Table 14**) with selected photographs provided in **Annexure A**.

Table 14: Hydrophytic plant species observed on site within both temporary and permanently saturated soils.

FAMILY	GENUS & SPECIES
CYPERACEAE	*Cyperus digitatus*, *Cyperus* spp, *Kyllinga* spp.
TYPHACEAE	*Typha capensis*
POACEAE	*Imperata cylindrica*, *Eragrostis plana*, *Cynodon dactylon*, *Paspalum dilatatum, Dactyloctenium giganteum*

10.3 Freshwater ecosystem classification

Classification of freshwater resources in the study area is summarised in **Table 15**. The perennial Ohlanga River adjacent to the site (on its' northern border) has been classified as a lower foothill (Rowntree *et al*. 2000). There is currently no formal geomorphological zonation classification for the non-perennial drainage line which flow into the Ohlanga on the western border of the site (within 32m from the site boundary). This drainage line is associated with HGM1, a seep wetland.

Table 15: Classification of wetlands within a 500m radius and watercourses within 100m from the development footprint.

Freshwater resource (study unit name)	Level 1	Level 2		Level 3	Level 4: HGM unit			Level 5	Level 6
	System	DWS Ecoregion	NFEPA WetVeg Group/s	Landscape Unit	4A	4B	4C	Hydrological regime	Descriptor
HGM1	Inland	North Eastern Coastal belt	Indian Ocean Coastal Belt Group 2	Seep	Seep	n/a	n/a	Permanent & seasonal zone	Natural (vegetated)
HGM2 (NWM5 ID 86045)	Inland	North Eastern Coastal belt	Indian Ocean Coastal Belt Group 2	Valley floor	Channelled valley bottom	n/a	n/a	Seasonal	Natural (vegetated, cultivated)
HGM3 (NFEPA ID 4498)	Inland	North Eastern Coastal belt	Indian Ocean Coastal Belt Group 2	Seep	Seep	n/a	n/a	Permanent & seasonal zone	Natural (vegetated)
Ohlanga (Previously called the Mhanjela and Riet in 1942)	Inland	North Eastern Coastal belt	n/a	Stream / River	n/a	Lower foothill	n/a	Perennial	Natural

10.4 Wetland habitat assessment

Historical aerial imagery and topographical maps indicate commercial agricultural activity has modified the original vegetation (Indian Ocean Coastal Belt biome, KZN coastal belt) associated with wetlands within a 500m radius around the site footprint (and beyond) for >80 years and in reality for >100 years. The reference vegetation was likely a mosaic of a grass-herbaceous layer with scattered coastal trees and possibly swamp forest habitats in lower altitudes with high water table levels, high soil saturation and periodic flooding in freshwater conditions. Altered surface-soil hydrology & surface run-off from the previous land-use *i.e.* predominantly commercial sugarcane plantations (see **Annexure G**) has gradually given way over the years to an expanded urban settlement (eMawothi) which prior to 1981, existed and expanded mainly to the north of the Ohlanga River in rural settings. From circa 2000, human settlement continued to spread south of the river where it exists today as a high-density peri-urban sprawl with associated road infrastructure, formal buildings and informal dwellings.

There is very limited infrastructure and/or service delivery in terms of effluent/wastewater, provision of potable water to communities as well as disposal of solid waste, as observed during the field visit and shown in this report's Annexure photographs (**Annexure C**). There is some invasion of woody species into HGM1 whilst subsistence crop production (mainly vegetables) has continued in HGM2 after sugar cane cultivation

gave way to an expanding human population in the catchment, resulting in the need for localised food production. Urban settlement has therefore gradually encroached closer to freshwater habitats in the broader study area however hard/permanent infrastructure has not yet fully transformed HGM1 and HGM2. Remnant patches of natural and semi-natural vegetation communities provide habitats to invertebrates, birds, frogs and other animals which forage and/or seek refuge in these habitats. Hydrophytic grasses and obligates sedges and reeds (*Typha capensis* and *Cyperus* sp.) are still present in distinct zones within both wetlands with facultative species, predominantly *Imperata cylindrica*, occurring in zones of temporary soil saturation.

10.4.1 Wetland PES

The results of the Wet-Health PES assessment on wetlands in the study area is summarised in **Table 16**.

10.4.2 Wet-Ecoservices

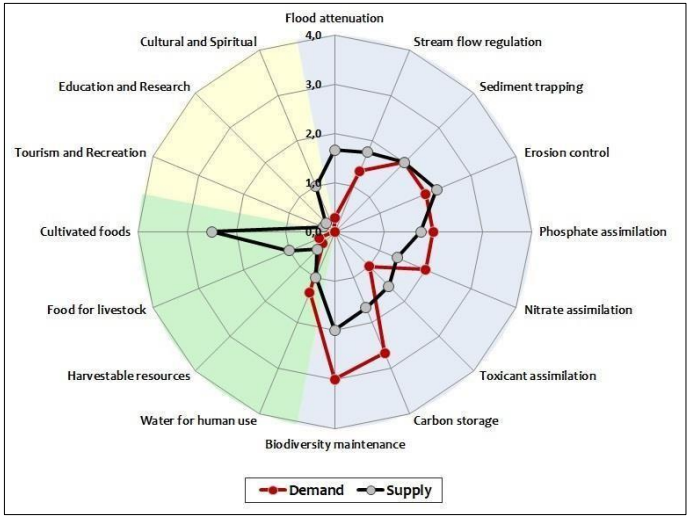
The results of the Wet-Ecoservices assessment on wetlands in the study area is summarised in **Table 17**.

Table 16: December 2020 PES and associated scores for study area freshwater units, assessed using Wet-Health version 2.

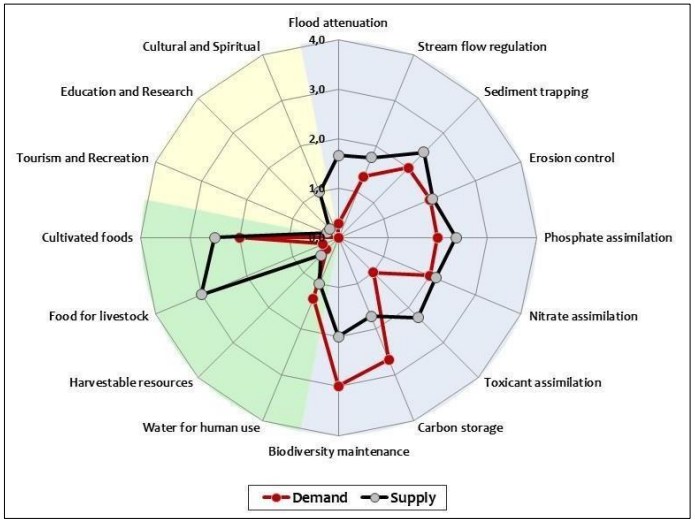
HGM wetland type	Study unit name	HGM size (ha)	PES Category & Trajectory of change (Dec 2020)				Dec 2020		PES (For selected wetlands in U30B assessed by DWS, 2012 & DWS, 2015)	Comments (Recommended to be read in conjunction with in Annexures A, E & G)
			Hydr	Geo	WQ	Veg	PES	Combined Scores (%)		
Hillslope Seep	HGM 1	0.65	C→	B→	C→	C↓	**C**	71 (2.85)	**C/D**	Historical aerial imagery/maps indicate agricultural activity has modified the original vegetation (Indian Ocean Coastal Belt biome, KZN coastal belt) associated with the wetlands for >80 years and in reality for >100 years (likely mosaic of a grass-herbaceous layer with scattered coastal trees and swamp forests as a reference state). Altered surface-soil hydrology & surface run-off from the previous land-use (*i.e.* predominantly commercial sugarcane plantations) has gradually given way over the years to an expanded urban settlement (eMawothi) which prior to 1981, existed and expanded mainly to the north of the Ohlanga River. From *circa* 2000, the informal settlement continued to spread south of the river where it exists at present as a sprawl with associated road infrastructure, formal buildings and informal shacks. Infrastructure and service delivery in terms of effluent/wastewater is present albeit limited and the provision of potable water to communities as well as disposal of solid waste is under strain, as observed during the field visit and shown in this report's Annexure photographs. There is some invasion of woody species into HGM1 whilst subsistence crop production (mainly vegetables) has continued in HGM2 after sugar cane cultivation gave way to an expanding human population in the catchment, resulting in the need for localised food production. Urban settlement has therefore encroached ever closer to the wetland units however hard/permanent infrastructure has not yet transformed these systems with remnant patches of natural and semi-natural vegetation communities providing habitats to frogs and other animals which forage and/or seek refuge in wetland habitats.
Channelled Valley Floor Bottom	HGM 2 (NWM5 ID 86045)	1.61	C↓	C↓	C↓	D↓	**C**	66 (3.35)		
Hillslope Seep	HGM 3 (NFEPA ID 4498)	0.68	C→	B→	C→	C↓	**C**	71 (2.85)		

Table 17: Wetland ecosystem service importance scores (December 2020) for the wetland units in the DWS 'regulated area' evaluated using the 2020 Wet-EcoServices tool. *The corresponding radar diagrams are illustrated adjacent to the table summarising the score distribution.

ECOSYSTEM SERVICE		HGM1			HGM2			HGM3		
		Supply	Demand	Importance	Supply	Demand	Importance	Supply	Demand	Importance
REGULATING AND SUPPORTING SERVICES	Flood attenuation	1,7	0,3	0,0	1,7	0,3	0,3	1,7	0,3	0,0
	Stream flow regulation	1,8	1,3	1,3	1,8	1,3	0,9	1,8	1,3	1,3
	Sediment trapping	2,0	2,0	0,0	2,4	2,0	1,9	2,0	2,0	0,0
	Erosion control	2,3	1,5	0,0	2,1	2,0	1,6	2,3	1,5	0,0
	Phosphate assimilation	1,8	2,0	0,4	2,4	2,0	1,9	1,8	2,0	0,4
	Nitrate assimilation	1,4	2,0	0,4	2,1	2,0	1,6	1,4	2,0	0,4
	Toxicant assimilation	1,6	1,0	0,0	2,3	1,0	1,3	1,6	1,0	0,0
	Carbon storage	1,7	2,7	0,9	1,7	2,7	1,6	1,7	2,7	0,9
	Biodiversity maintenance	2,0	2,0	0,0	2,0	3,0	2,0	2,0	2,0	0,0
PROVISIONING SERVICES	Water for human use	1,0	1,3	0,7	1,0	1,3	0,2	1,0	1,3	0,7
	Harvestable resources	0,5	0,3	0,0	0,5	0,3	0,0	0,5	0,3	0,0
	Food for livestock	1,0	0,3	0,0	3,0	0,3	1,7	1,0	0,3	0,0
	Cultivated foods	2,5	0,0	0,8	2,5	2,0	2,0	2,5	0,0	0,8
CULTURAL	Tourism and Recreation	0,3	0,0	0,0	0,3	0,0	0,0	0,3	0,0	0,0
	Education and Research	0,3	0,0	0,0	0,3	0,0	0,0	0,3	0,0	0,0
	Cultural and Spiritual	1,0	0,0	0,0	1,0	0,0	0,0	1,0	0,0	0,0
Overall Importance		**0.28**			**1.06**			**0.28**		



HGM 1 and 3 radar diagram



HGM2 radar diagram

10.4.3 Wetland EIS

The EIS assessment was applied to the delineated HGM units described in the previous section to estimate the levels of sensitivity and ecological importance of the wetlands. EIS scores summarised below (**Table 18**) reflect the observations during the field visit coupled with the desktop literature review and assessment of historical maps, imagery and catchment-specific ecological reports relating to DWS reserve determination studies (which include catchment U30B). More detailed rationale relating to the wetland EIS ratings are illustrated in **Table 19**.

Table 18: Summaries EIS for wetlands within the 500m "regulated area" of the project footprint.

Wetland unit	EIS Score (combined)	EIS Category	Biodiversity support / maintenance	Landscape scale	Wetland sensitivity
HGM1	1.08	Moderate / C	0.33	1.6	1.3
HGM2	1.08	Moderate / C	0.33	1.6	1.3
HGM3	1.08	Moderate / C	0.33	1.6	1.3

Based on the scope of works and time constraints associated with a field visit conducted in one day restricted to daylight hours, very limited species-specific data was gathered in terms of populations of unique or potentially obligate animal species (such as invertebrates, amphibians, birds or mammals) which rely on wetlands for habitats, migration, breeding, or feeding sites within wetlands. Hydrophytic plant species observed in the field were identified to family level and as far as possible, to species level. From a terrestrial biodiversity perspective, in terms of the occurrence of any sensitive animal or plant species occurring or predicted to occur within the study area, the terrestrial biodiversity assessment (NCC, 2021) can be consulted.

At an ecosystem / landscape level, the wetlands in relation to the site footprint are not afforded any international protection status (*i.e.* are not Ramsar sites) however HGM2 has a degree of formal protection being considered a NWM5 wetland in terms of the South African Inventory of Inland Aquatic Ecosystems (SAIIAE) and which is situated within (*i.e.* coincides with) the 1: 100 year floodline for the Ohlanga River. In terms of size and rarity of the wetland type/s present, those in relation to the site footprint are relatively small in size (<1ha) and are more common features in the landscape in comparison to other more rare wetland types, such as endorheic pans in dry inland environments, or larger wetland types, such as floodplain wetlands typically found along coastal regions. In terms of habitat diversity, intact patches of hydrophytic vegetation remain where fauna such as invertebrates and frogs, and water birds may utilise as habitat for foraging and feeding.

Table 19: EIS rationale / motivational explanations for wetland units within the NWA regulated area of the project footprint.

ECOLOGICAL IMPORTANCE & SENSITIVITY (EIS)	Score for each HGM unit (0-4)			Confidence (1-5)	Rationale/explanation
	HGM1	HGM2	HGM3		
Biodiversity Support	0.33	0.33	0.33		
Presence of red data species	0	0	0	2	There are terrestrial invertebrate species such as *Doratogonus rubipodus* (Ruby-legged Black Millipede) which is *EN* as well as *Hyperolius pickersgilli* (Pickersgill's Reed Frog) (*CR*) which both potentially occur in the broader study area (DEA Screening report, Nov 2020) (IUCN Red List). No *EN* or *CR* red data species observed during field visit or found to occur in the site wetlands. Although adult frogs are classified as terrestrial, they do in reality rely on aquatic habitats (semi-aquatic) with eggs and tadpoles being fully aquatic (either wetlands or rivers). A series of intensive nocturnal surveys across seasons would reduce any uncertainty and may change the scores (upwards) in relation to the scores in this assessment.
Populations of unique species	0	0	0	2	No endemic or unique aquatic/wetland biota observed in the field or from existing literature sources such as FBIS, https://amphibiaweb.org, SANBI, SAIAB, EKZNW and EWT databases.
Migration/ breeding / feeding sites	1	1	1	3	Breeding, foraging and refuge sites (*i.e.* habitats) for various water birds as well as amphibians such as frogs and other invertebrate species are nonetheless still present along the Ohlanga River riparian zones and in the wetlands.
Landscape scale	1.6	1.6	1.6		
Protection status of the wetland	2	2	2	4	All wetlands are provided with legal protection in terms of the NWA (Act 36 of 1998). None are classified as Ramsar sites however HGM 2 & 3 are classified as an NWM5 and NFEPA wetland respectively (with some overlap with the NWM 5 delineated wetland and HGM1).
Protection status of the vegetation type	3	3	3	4	The footprints do not overlap with any azonal subtropical alluvial wetland vegetation (EKZNW, 2005; Jewitt, 2018). The KwaZulu-Natal Coastal Belt Grassland (IOCB) is 'Not Protected' however is Critically Endangered (CE) according to EKZWN (Jewitt, 2018). The NFEPA WETVEG group is the Indian Ocean Coastal Belt (Group 1). The wetlands do not intersect with any nature reserves, IBAs, ESAs or ecological corridors. In terms of biodiversity there is an EKZNW-delineated irreplaceable CBA (a national CBA as referred to on the FBIS database) which has a very *high sensitivity* and which overlaps with the site footprint.
*Regional context of the ecological integrity (*EI)	1	1	1	3	A **C/D** PES category range exists for adjacent catchments (DWS, 2018). Habitat transformation, primarily in terms of the original vegetation species, has taken place. The EI for wetlands in the region can be considered *Moderate* based on the site visit and local impacts / levels of human disturbances observed.
Size and rarity of the wetland type/s present	1	1	1	1	Seeps and valley-bottom wetlands are not typically rare wetland types unlike floodplains, endorheic pans or rare 'cryptic' wetlands which are found in other drier regions of the country, such as northern Mpumalanga or N. Cape. Commercial farming (sugarcane) in the area originally modified/ reduced the original wetland extent over the last ~100 years. Urbanisation has taken over as the dominant land-use which has likely further reduced the original extent (area) of wetlands.
Diversity of	1	1	1	3	Natural habitats in HGM2 have largely been modified, firstly

habitat types					by mono-specific sugarcane cultivation (historically) and more recently (currently) by the cultivation of subsistence vegetables/crops. Surface inundation still provides habitat for semi-aquatic vertebrates (e.g. frogs), verifiable via a nocturnal field assessment. HGM1 has some available reed and sedge habitats with both slow flowing water and standing water column for aquatic invertebrates and frogs (tadpoles).
Wetland sensitivity	1.3	1.3	1.3		
Sensitivity to changes in floods	1	2	2	3	The wetlands are all vegetated and surrounded by vegetation. The surrounding catchment is mostly urbanised residential settlement (hard surfaces). The wetland and riparian areas natural capacity to buffer and retain stormwater is important in preventing floods and should be maintained with suitable implementation of mitigation measures (sediment and erosion control). The inherent capacity of wetlands to attenuate floods in the wet season during periodic high rainfall / floods events is not likely to be significantly altered if development remains out of these systems and their respective buffers. Development should remain outside of the 1:100 year flood-line.
Sensitivity to changes in low flows/dry season	2	1	1	3	Both valley bottoms and seeps have functionality/capacity to attenuate floods and augment higher flows in the early wet (winter) season. The augmentation capacity (function) continues to be performed by seeps more so than valley bottoms to the end of the late wet (summer) season.
Sensitivity to changes in water quality	1	1	1	3	HGM1 (a seep) is more likely to enhance/ improve/ maintain water quality by removing any toxicants and nitrates in stormwater runoff to a higher degree than HGM 2 and 3 (valley bottoms). Sensitivity to water quality changes are not considered high based on the nature of the proposed development. Any decline in water quality (turbidity, sedimentation, pathogens) is considered to be a low risk if effective mitigation measures are implemented.

10.4.4 Wetland REC

A Reserve determination study relating to water resources in the Mvoti to Umzimkulu catchments was carried out by the national authority (DWS) and gazetting of the ecological reserve was published in GN1097 dated 12 October 2018 (Government Gazette No. 41970). The average wetland EIS for the Mvoti WMA is *Moderate* for catchment U30B with an average **C/D** wetland PES (DWS, 2018b). The ecological category (EC) is also a **C/D**. The REC for HGM1 and HGM2 on the site footprint (in U30B) is for no further decline in the PES and EIS ratings. Maintaining a **C/D** REC should in the author's opinion be attainable for these wetlands however it will be contingent on rehabilitation being carried out rigorously and effectively after construction to. Maintaining wetland functioning and integrity during the operational phase of the school is important for these freshwater resources which remain threatened in an ever expanding urban (built) environment.

10.5 Riparian and Instream habitat assessment

10.5.1 Index of Habitat Integrity

The results of the IHI assessment, based on criteria in **Tables 9 & 10**, are summarised in **Table 20** includes comments on the major impacts.

Table 20: Index for Habitat Integrity (IHI) values obtained during December 2020 for Ohlanga River (U30B) on farm Riet Rivier in the context of the surrounding catchment and land-use.

Site	Component	IHI (%)	EC	Major Impacts
Ohlanga River (29°40'56.25"S 30°59'36.79"E)	Instream Habitat	40	D/E	The river's beds and channels have been modified from natural conditions as a result of general landuse in the upper catchment. Informal human settlement upstream often have an impact on water quality (e.g. increased turbidity due to poor farming practise) as well as introduction of pathogens due to a lack of wastewater/sewerage infrastructure. Rubbish dumping is a major problem in the area with little to no service provision, resulting in wastes being transported in stormwater drains and accumulating in the river. Livestock trampling and overgrazing as well as alien invasive vegetation in the riparian zones have led to substrate exposure and increased erosion. Deteriorated water quality due to increased sedimentation resulting in higher turbidity. Decreased baseflows and floods and reduced habitat abundance. Google Earth imagery indicates significant riparian vegetation removal occured from 2018-2019 (compared to previous dates) which is still the case currently (2021). A number of alien invasive biota occurs within the river e.g. gastropods snails such as *Tarebia granifera* and some fish species such as guppies (*Poecilia reticulata*) are likely to occur in the river.
	Riparian Habitat	39	D/E	

10.5.2 PES, EIS and REC

Existing aerial imagery and available DWS studies were consulted during this component of the assessment. In terms of the KwaZulu-Natal 2007 Freshwater Systematic Conservation Plan (FSCP), the provincial conservation authority (EKZNW) has earmarked freshwater planning units across the province (EKZNW, 2007). However no aquatic landscape corridors were identified at the time of this assessment and no ESAs for specific fish species (*i.e.* Fish Support Areas) have been formally mapped/delineated within the same locality of the project footprint in catchment U30B. This is also the case for River CBAs, ESAs or 'Important sub-catchments', as reflected in the 2011 NFEPA Atlas (Nel *et al*. 2011).

In terms of a 2012 DWS desktop study, EIS and Ecological Category (EC) for watercourses which have connectivity to the study area, a reach of the Ohlanga River (SQ: U30B-04498) was assigned a '*High'* mean EI and a '*Very High'* mean ES class and an '**A**' default Ecological Category (EC) (See **Table 21**). **Annexure N** displays a map of the PES & EIS for the Ohlanga River as assessed during the 2012 DWS desktop study. However no formal Recommended Ecological Category (REC) was assigned to this particular watercourse/catchment/reach in the 2012 study.

Table 21: Summary of desktop 2012 PES and EIS scores for the associated watercourse (Ohlanga River).

SQ REACH	SQR NAME	PES ASSESSED BY EXPERTS?	PES CATEGORY (MEDIAN)	MEAN EI CLASS	MEAN ES CLASS	LENGTH (km)	STREAM ORDER	DEFAULT EC (BASED ON MEDIAN PES AND HIGHEST OF EI OR ES MEANS)
U30B-04498	Ohlanga	Y	**D**	High	V. High	23.6	1	**A**

Gazetted legislation was published in GN 1097 dated 12th October 2018 as part of the Reserve determination of water resources in the Mvoti to Umzimkulu catchments. Although the Ohlanga River in catchment U30B is not specifically included, the ecological reserve for another river in the same catchment U30B (*i.e.* the Black Mhlashini River) has been assigned a **B/C** PES and a B/C **REC**. With due consideration of the results of the 2012 DWS desktop study and the 2018 Ecological Reserve for catchment U30B, where findings are largely based on desktop studies conducted at a broad scale and where extrapolations are often based on only one or a few reference sites, **Table 22** below provides the author's estimation of the EIS categories for the watercourse (Ohlanga River) directly adjacent to the proposed footprint. These estimations were aided by the site visit observations, the IHI assessment, historical aerial imagery and a desktop review of available literature and reports.

Table 22: Summary of December 2020 PES and EIS categories for the Ohlanga River directly adjacent to the project footprint.

Watercourse	PES	EI	ES	EIS Category	REC (Qualitative management objective)
Ohlanga	**D**	Moderate	Moderate	**C**	Maintain PES and EIS (no deterioration)

The recommended management objective (based on a combined PES and EIS rating) should be to maintain the current condition (status quo) of the watercourse without any further loss of ecosystem integrity/functioning (PESEIS) during the construction and operation phase. If correct control and mitigation measures are implemented, site-specific impacts on the watercourse and aquatic biodiversity should remain

low during both the construction and operational phases. The need for any river rehabilitation to improve any significant damage caused, should the proposed development be authorised and go ahead, will depend on how effectively and rigorously mitigation and protective measures (*i.e.* stormwater management, erosion control, remaining out of proposed buffers, etc) are followed by the developer and the appointed contractor.

10.6 Macroinvertebrates

The results of the SASS5 surveys undertaken upstream and downstream of the proposed site boundary are summarised in **Table 23**. The raw data is provided in **Annexure D**. Photographs of the two sites showing the available habitat/biotopes are included in **Annexure C**.

Table 23: SASS5 results for the two selected sites on the Ohlanga River adjacent to the proposed site footprint.

Site	Date	Catchment	Altitude (m)	GPS point (WGS 84 datum)	SASS score	No. of taxa (n)	ASPT
Upstream	18 Nov 2020	U30B	80	29°40'56.25"S 30°59'36.79"E	63	17	3.7
Downstream	18 Nov 2020	U30B	79	29°41'1.31"S 30°59'26.44"E	63	15	4.2

In terms of the SASS indices, the SASS score and no. of taxa at both sites were largely similar, albeit for two additional taxa being found upstream. The ASPT was slightly higher downstream due to the variation in taxa between the two sites which gives some indication that the ecological condition downstream was slightly better, with more diverse and available habitats, compared to the upstream site. Although the sampler did aim to sample all habitats at either site consistently and in a systematic, identical manner, it remains difficult to eliminate all subjectivity and human error during ecological surveys of this nature. The relatively low SASS scores and low number of taxa observed can be expected on a river reach such as the one surveyed based on the current (*i.e.* present day) level of disturbance (habitat transformation/loss due to human settlement/anthropogenic activities) in comparison to a reference condition of aquatic macroinvertebrate prior to such disturbance.

10.7 Water quality

The *in-situ* water quality results the undertaken upstream and downstream of the proposed site boundary are summarised in **Table 24**. The results, when comparing the two sites, are largely in conformance with the South African Water Quality Guidelines for Aquatic Ecosystems (DWAF, 1996). Turbidity and dissolved oxygen (DO) are also typically fundamentally important parameters to measure and interpret in the context of the biological (*i.e.* macroinvertebrate) response however were unfortunately not measured during the SASS survey. A visual interpretation of the river's turbidity on the day of sampling was that it was *high* to *very*

high owing to recent rainfall events and a high sediment load in the river – conditions which are typical of the summer rainfall season in KZN and exacerbated by human-induced impacts upstream.

Table 24: *In-situ* water quality results for the two SASS sites on the Ohlanga River adjacent to the proposed site footprint.

Site	GPS (WGS 84 datum)	Date	Time	Temp (°C)	pH	TDS (mg/l)	EC (mS/m)
Upstream	29°40'56.25"S 30°59'36.79"E	18 Nov 2020	0930am	23.8	6.9	160	35
Downstream	29°41'1.31"S 30°59'26.44"E	18 Nov 2020	0945am	24	7	160	35

10.8 IHAS

Table 25 shows the combined IHAS scores for the two SASS sites. The IHAS assessment scoresheets for the upstream and downstream sites are included in **Annexure L**. Whilst the scores reflect adequate/fair habitats at both sites, which is somewhat divergent to the notion that that the low SASS scores may be partly attributable to poor and/or transformed aquatic habitats, it should be noted that the scoring system in the IHAS method still requires more rigorous testing and validation. The method for determining habitat quality is often subjective and inconsistent amongst users specific due to the inherent variability in the approach.

Table 25: Adapted IHAS scores for two SASS sites on the Ohlanga River adjacent to the proposed site footprint.

Site	IHAS %	Description
Upstream	63	Adequate / Fair
Downstream	64	Adequate / Fair

10.9 Watercourse impact assessment

Refer to **Annexure Q** for the full risk assessment matrix (RAM).

10.10 Impact Assessment

Existing impacts

The following existing impacts, observed in or directly adjacent to freshwater resources extend into the broader study area:

- Anthropogenic / human development within the broader catchment areas has resulted in freshwater resources being encroached upon and in some instances, irreversibly altered from their original size, condition and functionality.
- Agricultural activity, primarily commercial sugar cane cultivation historically (up to roughly 30 years ago) impacted on freshwater resources including riparian areas, which previously are likely to have been more

extensive. These impacts are the result of indigenous vegetation removal (terrestrial and riparian) and crop cultivation which has already resulted in ecosystem modification and loss of biodiversity;

- The land-use gradually shifted away from sugarcane, being progressively replaced by urban human settlement (hard surfaces) where from circa 2000, the informal settlement of Amawothi (which existed as far back as the 1930s at a much smaller scale) rapidly spread south of the Ohlanga River increasing in size where it exists today as a peri-urban sprawl with associated road infrastructure, formal buildings and informal shacks;
- Presence of various alien invasive vegetation species in and around the Ohlanga River's riparian zone including *Chromolaena odorata* (Bugweed), *Lantana camara* (Tickberry), *Melia azedarach* (Syringa), *Ricinus communis* (Castor oil) and *Xanthosoma* spp (Water plantain).

Additional impacts based on the project's activities

Table 26 provides a list of the anticipated additional (*i.e.* potential) freshwater impacts associated with the proposed development.

Table 26: Potential freshwater impacts which may occur as result of aspects and activities associated with the proposed development (construction phase).

Impact	Aspects and activities associated with refurbishment project	
1. Loss of wetland /riparian areas	a. Aspects that can cause loss of wetland areas	i. Soil/trench/foundation excavations and stockpiles ii. Heavy vehicle access iii. Temporary construction camps & laydown areas iv. Vegetation clearance
	b. Secondary impacts associated with direct loss of wetlands	i. Loss of ecosystem services
2. Altered hydrological regime	a. Aspects that can causes changes to surface hydrology	i. Vegetation removal ii. Soil excavations iii. An increase in extent of hardened, impermeable surfaces iv. Infrastructure (buildings, etc) v. On-site stormwater management
	b. Secondary impacts associated with an altered regime	i. Loss of ecosystem services ii. Decline in the ecological status of wetland ecosystems iii. Increased or reduced runoff dependent on system manipulation iv. Loss of wetland ecosystem services through interruption of seasonal recharge and natural flow v. Loss of soil fertility and topsoil recharge through interruption of seasonal recharge and natural flow, including natural sedimentation vi. Scouring and erosion of wetlands and further downstream the river
3. Impaired water quality	Aspects/activities that can impact on local water quality	i. Clearing of vegetation ii. Earth moving (removal and storage of soil) iii. Pollution of water courses due to dust fallout, chemical (organic/inorganic/hydrocarbon) spills and contaminated stormwater and/or construction material runoff iv. Erosion/sedimentation v. Untreated wastewater runoff (sewage/pathogens)
4. Erosion and sedimentation of wetlands/	a. Aspects that can cause increased erosion and sedimentation	i. Vegetation removal ii. Soil excavations and stockpiles iii. An increase in extent of hardened, impermeable surfaces iv. Erosion

riparian areas		v. On-site stormwater management
	b. Secondary impacts associated with sedimentation	i. Loss of ecosystem services
5. Spread and/or establishment of alien and/or invasive species	a. Aspects that can cause the spread and/or establishment of alien and/or invasive species	i. Vegetation removal ii. Soil excavations, transportation and stockpiling of building materials iii. Transportation vehicles spreading exotic seed while moving on, to and from working areas iv. Disturbed conditions surrounding infrastructure promoting the establishment of alien and/or invasive flora and fauna species *incl.* pests
	b. Secondary impacts associated with the spread and/or establishment of alien and/or invasive species	i. Deterioration in the ecological status of wetlands

A summary of impacts on freshwater resources and within the NEMA and NWA "regulated areas" are summarised in **Tables 27** and **28**.

Cumulative impacts

The long terms cumulative impacts of urban development are, in general, considered cumulatively destructive to natural habitats *i.e.* 'nibbling loss' concept (See Hegmann *et al*, 1999); more so on terrestrial biodiversity but likewise on aquatic biodiversity. Residual flora and fauna (*i.e.* biodiversity) that does persist is often artificially maintained and may generally be modified into assemblages of more resilient (hardy) plant and animal species with evolved biological traits/mechanisms and inherent and/or learnt strategies to tolerating cumulative anthropogenic disturbances and loss of natural habitat.

In the context of this proposed development, historical imagery and topographical maps indicate large scale agricultural activities have taken place within the catchment (U30B) for over 100 years however sugarcane farming in this region has undergone gradual transformation to built-up urban human settlements over recent decades *i.e.* since the onset of the 1980s (**Annexures E** and **G**). The Ohlanga River and riparian zone, although already in a transformed state, do not form part of the project/development footprint and if the recommended buffers for the associated wetlands (HGM1 and HGM2) are adhered to as far as practically possible, the intrinsic (underlying) ecological processes, hydrological functions and ecosystem goods and services provided by the river and associated wetlands will largely be retained.

Considering that the planning of the proposed development has taken into account the 1:100 year floodline and wetlands where only a portion of stormwater infrastructure is proposed to be developed in HGM2; and with the continuation of growing of vegetables/crops on the Ohlanga River floodplain directly in HGM2; this area will be maintained and continue to be utilised by the local community for subsistence vegetable production. On that basis there is therefore unlikely to be any cumulative loss of freshwater biodiversity.

Table 27: Assessment of significant potential impacts on freshwater resources associated with the proposed development (Construction phase).

Phase	Impact	Pre-mitigation					Post-mitigation				
		Duration	Spatial Scale / Extent	Severity	Likelihood	Significance	Duration	Spatial Scale / Extent	Severity	Likelihood	Significance
CONSTRUCTION	Loss of wetlands	4	2	6	3	**36**	4	1	4	2	**18**
		long term	local	moderate	likely	moderate	permanent	on-site	low	unlikely	low
	Loss of riparian areas	4	1	4	2	**18**	4	1	4	2	**18**
		long term	on-site	low	unlikely	low	permanent	on-site	low	unlikely	low
	Impaired water quality	2	3	4	3	**27**	2	2	2	2	**12**
		short-term	regional	low	likely	low	short-term	local	minor	unlikely	low
	Altered hydrological regime	2	2	6	4	**40**	2	1	4	4	**28**
		short-term	local	moderate	highly likely	moderate	short-term	on-site	low	highly likely	low
	Erosion and sedimentation of wetlands	2	2	6	4	**40**	2	1	4	2	**14**
		short-term	local	moderate	highly likely	moderate	short-term	on-site	low	unlikely	low
	Erosion and sedimentation of watercourses	2	2	6	4	**40**	2	1	4	2	**14**
		short-term	local	moderate	highly likely	moderate	short-term	on-site	low	unlikely	low
	Spread and/or establishment of alien and/or invasive species	2	2	6	4	**40**	2	1	4	4	**28**
		short-term	local	moderate	highly likely	moderate	short-term	on-site	low	highly likely	low
	Loss of freshwater biodiversity	2	2	4	2	**16**	2	2	4	2	**16**
		short-term	local	low	unlikely	low	short-term	local	low	unlikely	low

Table 28: Assessment of significant potential impacts on freshwater resources associated with the operational phase.

Phase	Impact	Pre-mitigation					Post-mitigation				
		Duration	Spatial Scale / Extent	Severity	Likelihood	Significance	Duration	Spatial Scale / Extent	Severity	Likelihood	Significance
OPERATION	Loss of wetlands	4	2	4	2	**20**	4	2	4	2	**20**
		long term	local	moderate	unlikely	low	permanent	on-site	low	unlikely	low
	Loss of riparian areas	4	2	6	2	**24**	4	2	4	2	**20**
		long term	local	moderate	unlikely	low	permanent	on-site	low	unlikely	low
	Impaired water quality	2	3	4	2	**18**	2	3	2	2	**14**
		short-term	regional	low	unlikely	low	short-term	local	minor	unlikely	low
	Altered hydrological regime	2	2	6	2	**20**	2	2	4	4	**32**
		short-term	local	moderate	unlikely	low	short-term	on-site	low	highly likely	low
	Erosion and sedimentation of wetlands	2	2	6	3	**30**	2	2	4	2	**16**
		short-term	local	moderate	likely	moderate	short-term	on-site	low	unlikely	low
	Erosion and sedimentation of watercourses	2	2	6	3	**30**	2	2	4	2	**16**
		short-term	local	moderate	likely	moderate	short-term	on-site	low	unlikely	low
	Spread and/or establishment of alien and/or invasive species	2	2	6	3	**30**	2	2	4	3	**24**
		short-term	local	moderate	likely	moderate	short-term	on-site	low	likely	low
	Loss of freshwater biodiversity	2	2	4	2	**16**	2	2	4	2	**16**
		short-term	local	low	unlikely	low	short-term	local	low	unlikely	low

11 AQUATIC BIODIVERSITY COMPLIANCE STATEMENT

Draft NEMA Protocols for the assessment and reporting of impacts on aquatic biodiversity in terms of Protocol 3(b) were first published in GN648 in Government Gazette no. 45421 dated 10 May 2019 relating to the specialist assessment and minimum report content requirements for environmental impacts on aquatic biodiversity for activities requiring environmental authorisation (EA). The NEMA procedures were subsequently published in GN320 dated 20 March 2020 (Government Gazette no. 43110).

An applicant intending to undertake an activity on a site identified as being of "very high sensitivity" for aquatic biodiversity on the national web-based environmental screening tool (https://screening.environment.gov.za/screeningtool/) must prepare and submit an Aquatic Biodiversity Impact Assessment. If information on freshwater biodiversity gathered during an initial site sensitivity verification specialist assessment differs from the designation of "very high" aquatic biodiversity sensitivity as reflected in the national web based environmental screening tool and the site is found instead to be of "low" sensitivity, an Aquatic Biodiversity Impact Assessment is not required. Rather an Aquatic Biodiversity Compliance Statement, with motivational and substantive reasons, is required.

A SASS5 survey of freshwater macroinvertebrates was carried out at two sites (upstream and downstream of the footprint site boundary) on the Ohlanga River with the results provided under report section 10.6 and **Annexure D**. Such data could be used to guide any additional and more detailed aquatic assessments, as may be deemed necessary, such as the macroinvertebrate response assessment index (MIRAI). A data record/list of macroinvertebrates which have been found to occur (Source: DWS Rivers Database) along the Mgeni River in the same ecoregion as the site along the Ohlanga River is provided in **Annexure O** which could be used as a proxy/preliminary reference list for macroinvertebrates. Data exploration in the freshwater biodiversity information system (FBIS) revealed that no up-stream data sites exist specifically for the Ohlanga River system in the same level 2 Ecoregion (17.01) in the North Eastern Coastal Belt.

A photographic record of plants observed within freshwater resources at the site are included under **Annexure A**, **B** and **C**. In terms of the KZN Freshwater Systematic Conservation Plan, EKZNW have earmarked freshwater planning units across the province (EKZNW, 2007) however at the time of this assessment, no Ecological Support Areas (ESAs) for specific fish species (Fish Support Areas) have been delineated which overlap with the same locality of the proposed project footprint in catchment U30B. This is also true for river CBAs, ESAs or fish sanctuaries (Nel *et al*. 2011; FBIS [https://freshwaterbiodiversity.org/map/]). No sub-quaternary catchments upstream from the study area are classified as 'Upstream Management Areas' (Nel *et al*. 2011) (See **Figure 8**).

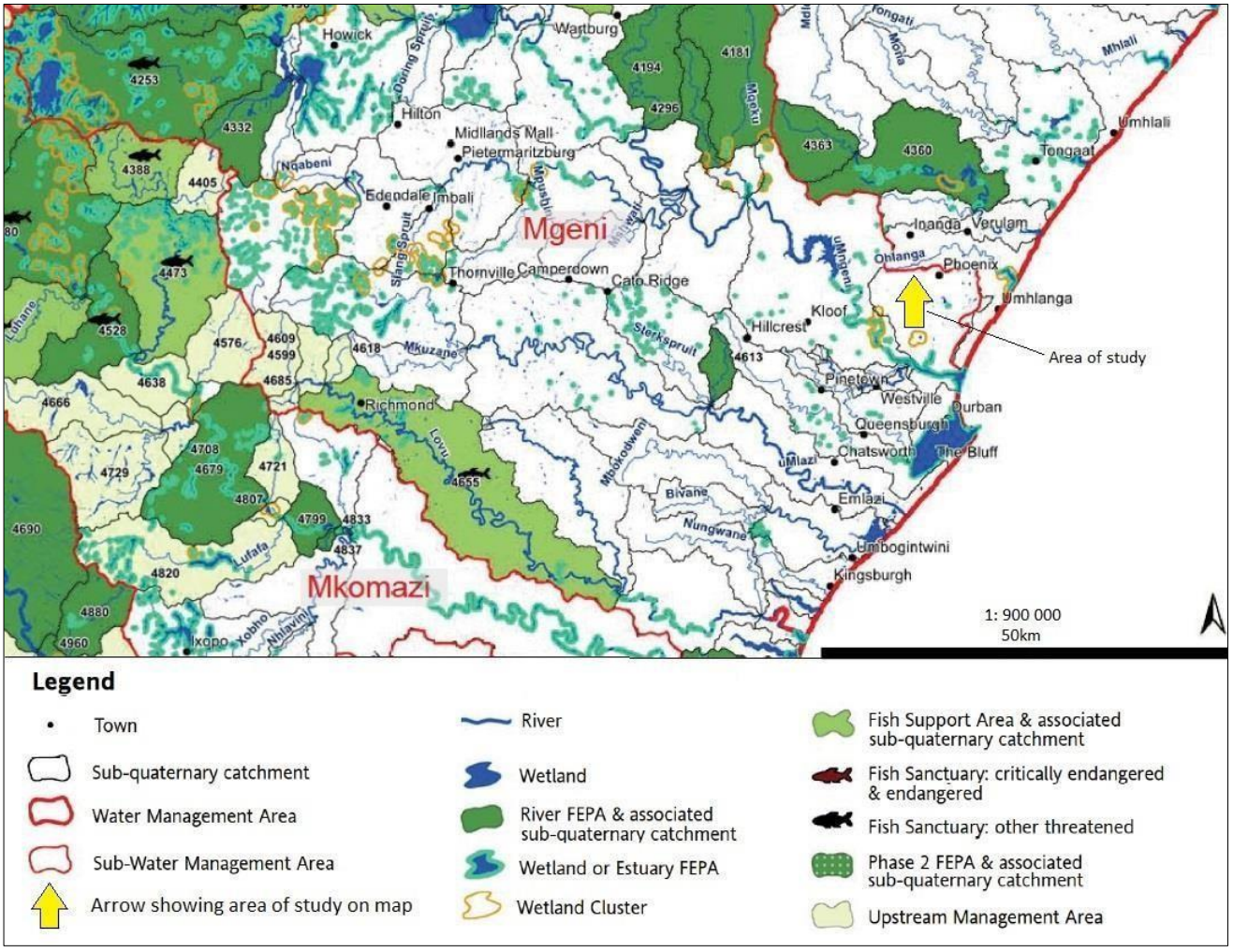


Figure 8: The proposed development as denoted by the yellow arrow in the map falls within the Mgeni Sub-Water Management Area (after Nel, *et al*. 2011) which is within the Mvoti to Umzimkulu WMA.

No field-based fish surveys/collections were carried out and no fish assessment using the Fish Response Assessment Index (FRAI) was carried out owing arguably to a lack of reference data in the Ohlanga River in catchment U30B. **Annexure P** provides a list of fish species compiled for the Tongati River in the adjacent catchment U30D (after Kleynhans *et al*. 2007) which could be utilised in conjunction with any other available fish data if a fish survey (via electrofishing and/or netting) and fish biomonitoring was to be deemed necessary by the authority for any future monitoring. It is likely that additional non-native fish, such as swordtails and guppies, have already been introduced into the Ohlanga River and as author, I have evidence in this regard in terms of my own research. Other semi-aquatic and terrestrial animal species (e.g. invertebrates, frogs, birds and small mammals) likely utilise freshwater resources and riparian areas adjacent to the proposed site as habitats for feeding, foraging, breeding and as refuge from predators.

Notwithstanding the Ohlanga River and floodplain is considered to have a "high" desktop-rated sensitivity for aquatic biodiversity adjacent to the proposed site footprint (**Annexure M**), it is the author's opinion that the information provided in this report meets the requirements for the assessment and reporting of impacts

on aquatic biodiversity in terms of the 2020 NEMA Procedures. If the proposed site layout for the development of the school is strictly adhered to with no overlap or encroachment of the footprint (*i.e.* any permanent infrastructure) into or across the Ohlanga River's channel, bed, banks, and associated riparian zone, the residual impacts on aquatic biodiversity will be "low" and will not lead to any significant loss of aquatic biodiversity.

In terms of other freshwater resources/features directly on portion 378, these include HGM1 (a valley-line seep wetland) and HGM2 (a channelled valley-bottom wetland). A description of aquatic and wetland ecosystems was undertaken including a desktop and field verification assessment, classification of freshwater resources and PESEIS assessments for these freshwater resources. Impact/risk assessments on freshwater resources have been carried out and recommended mitigation measures have been provided. A summary of aquatic impacts on watercourses and freshwater biodiversity and within the NEMA and NWA "regulated areas" have been summarised in **Tables 27** and **28**. Furthermore, if construction activities are carried out strictly in accordance to the recommendations in this report and the EMPr, it is the author's opinion that there will be no significantly negative impacts on downstream water quality (*i.e.* RQOs) and freshwater fauna (fish and macroinvertebrates) in the Ohlanga River (*i.e.* the ecological reserve).

12 RECOMMENDED MITIGATION MEASURES

12.1 Pre-planning mitigation

A geo-hydrological, geotechnical and floodline study pertaining to the proposed development should be carried out by suitably qualified and experienced specialists in the appropriate fields of discipline. Any appropriate mitigation measures from a geo-hydrological and geotechnical perspective should be incorporated into the design and feasibility of the development.

12.2 Threats/risks to watercourses

In terms of risks to watercourses during construction, threat ratings based on expert workshops are highlighted in **Table 29**. These ratings indicate the threats which are mostly low (L) to very low (VL) for the Civic and Social Sector (education infrastructure). In this scenario, sedimentation and turbidity are the main threats rated as being potentially high (H).

12.3 Recommended buffers based on activities

In terms of the eThekwini Municipality Development Guidelines (EPCPD, 2010) and the Durban Metropolitan Open Space System (D'MOSS), wetlands usually require a buffer of at least 30m between the development footprint and the edge of the wetland. The width of the buffer depends on the size and functionality of the system as well as the density and nature of development and may be increased or decreased following a more detailed assessment. It may be deemed appropriate to permit encroachment within recommended

buffers as long as such encroachment does not result in any deterioration of the wetland buffers, riparian zone and the watercourse (See Granger *et al*. 2005). Based on the potential disturbances posed by the development on freshwater resources, a 15m buffer from the outer edge of HGM1 and HGM2 (*i.e.* wetlands) was recommended (See **Table 30**). The '2017 Buffer Zone Guidelines for Wetlands, Rivers and Estuaries' (Macfarlane and Bredin, 2017) and associated wetland buffer tool was utilised recommend these refined aquatic impact buffers based on available spatial data including the mitigation measures.

Freshwater resource maps were developed for the proposed development indicating the location of freshwater features (See **Figure 6** and **7**) where it was recommended that the maps be considered during all phases of the development (construction and operation) to aid in the protection of freshwater features and wetland/riparian habitats. The Ohlanga River (bed, banks and channel) and its riparian zone is naturally buffered by HGM2 (an NWM5 wetland). This wetland also essentially largely represents the 1:100 year floodline for the river. By adhering to and maintaining a 15m 'no go' buffer for built infrastructure from the edge of wetlands, protection of the integrity of the river and riparian zone would, in effect, be afforded by the wetland buffers. With no deviations beyond these buffers the impacts to any Resource Quality Objectives (RQOs) or downstream water users would arguably be minor.

12.3.1 Constraints

Placement of stormwater infrastructure on the site however is the one exception where the recommended 15m 'no go' development buffer was not applicable or possible to adhere to. From a civil engineering (technical and design) perspective, it was initially investigated whether the stormwater layout could be designed to divert stormwater to HGM1 on the western boundary of the site via a concrete attenuation pond, 300mmØ stormwater pipes, 110mmØ subsoil pipes, 100mmØ spillways and headwalls with the 90mx54m permeable grassed sports field also functioning to capture and attenuate stormwater prior to discharge to the stream channel within HGM1. It was however not physically possible to design a stormwater system to divert stormwater from the eastern section of the site to the sports fields due to the significant level differences on the site.

A re-design/alteration of the initially proposed stormwater layout resulted in stormwater infrastructure being proposed directly within HGM2 itself as well as the 15m 'no go' buffer for HGM2. A 300mmØ concrete stormwater pipe (totalling 97.2m in length) and an associated headwall is proposed to be constructed directly within HGM2 for a distance of 83m. The function of the pipe will be to divert stormwater flows from hardened/impermeable surfaces, via an overflow attenuation pond, into the Ohlanga River. Based on the space constraints allocated for the collective school infrastructure footprint and no other alternatives for the stormwater system, construction within the wetland itself as well as its recommended no-go buffer poses a

higher risk and therefore will require an application for a water use license (WUL) in terms of section 21 (c) and (i) of the National Water Act. A WULA was confirmed by the authority during a pre-application meeting held on 02 February 2023.

12.4 Wetland rehabilitation or offsetting?

The arguably complex process relating to wetland offsetting may be an option if the placement of infrastructure directly in freshwater resources is unavoidable resulting in an actual loss of wetland functioning. The DWS approach to wetland offsets is that they should not be considered an alternative but rather a compensation measure and should only be recommended as a last resort (See **Figure 9**). It is always better to first avoid impacts on wetlands and then minimise impacts on wetlands by careful planning and rehabilitating any residual wetland impacts on the site.



Figure 9: The Impact Mitigation Hierarchy. Compensation (which includes wetland offsets) is only aimed at mitigating or compensating for residual impacts of development projects on the environment after all appropriate and feasible steps have first been taken to avoid/prevent, minimise/reduce and remediate/rehabilitate impacts.

If there are residual impact on wetlands a potential approach for dealing with unavoidable residual impacts is the use of wetland offsets where DWS decides if any changes posed to the resource quality characteristics are acceptable. The problems with wetland offsetting is that it is a very risky and expensive approach, wetlands are a result of a set of ecosystem drivers which cannot be recreated, an offset site must be located in a catchment where it provides similar ecosystem services, there must be secure tenure of land and wetland offsets must be part of the licence assessment process as this will determine the decision.

12.4.1 Specialist opinion

It is the opinion of the author of this report that impacts on the wetland (HGM2) posed by the development of the stormwater pipe and headwall will not result in a net loss of wetland functioning if appropriate rehabilitation measures are implemented during construction and therefore it is not recommended that wetland offsets be calculated and recommended to be specified as license conditions as part of the WULA process. With appropriate rehabilitation measures implemented, the wetland will still continue to function.

Backfilling the trench with the originally excavated soil material (a geomorphological wetland indicator) will allow and promote the re-growth of vegetation (another wetland indicator) post-construction. Sub-surface lateral water flow into HGM2 from the Ohlanga River will continue as one component of the natural, localised hydrological processes as will the input of precipitation during rainfall events.

12.5 Threat and risk mitigation

In terms of mitigation measures for threats/risks to watercourses during Construction and Operations, these have been summarised in **Tables 31** and **32**.

Table 29: Desktop threat *ratings for construction activities based on expert workshops (adapted from Macfarlane *et al*. 2009).

DESKTOP THREAT RATINGS FOR CONSTRUCTION PHASE ACTIVITIES											
SECTOR	Land use / activity	Water Quantity - volumes of flow	Water Quantity – patterns of flow	Sedimentation and turbidity	Water Quality - Increased inputs of nutrients	Water quality - Increased organic contaminants	Water Quality - increased metal contaminants	Water quality – changes in acidity (pH)	Water quality - concentration of salts (salinization)	Water temperature	Water quality - pathogens
Civic and Social	Education	VL	VL	H	VL	VL	L	VL	N/A	VL	VL

*VH - Very High; H - High, M - Moderate; L - Low; VL – Low; N/A - Not Applicable

Table 30: Recommended minimum buffer widths for wetland and rivers in the presence of civic and social infrastructure development, in this case a secondary school (adapted from Graham and de Winnaar, 2009).

	Land Use Activity		**Buffer width (m) for freshwater ecosystems**	
	Primary Category	**Secondary Category**	**Watercourse (Riverine)**	**Wetlands (Riverine) – refined** (based on '2017 Wetlands tool')
Low to Moderate	Civic and Social infrastructure	Education	**32**	**15**

Table 31: Proposed threat/risk mitigation measures during the Construction Phase for the proposed development adjacent to freshwater resources in the regulated area.

Threat type	Threat Class	Additional mitigation measures?	Basic description of proposed mitigation measures (See also Annexure Q)	Refined Threat Class	Specialist justification for refined threat ratings
Water Quantity - volumes of flow	VL	N	Adequate infrastructure and stormwater design and management.	VL	
Water Quantity - patterns of flow	L to VL	Y	**Remain out of proposed watercourse buffers**. Adequate design, stormwater management plan and method statements during construction phase including on-site attenuation, appropriate design of any culverts and storm water drainage system (inlets & outlets) to minimise concentrated flows and erosion. Earth berms, gabions, rock mattresses to be constructed to limit erosion and prevent concentrated flow paths forming. Implementation of rehabilitation measures at the end of construction prior to the Operational phase.	L	A residual risk of increased runoff remains during construction. Efforts to slow down flow velocity and dissipate energy of flows before entering freshwater resources and to implement an effective storm-water management system will aid to reduce these threats. Stormwater management system should be designed to ensure that stormwater releases are closely aligned with pre-development conditions.
Sedimentation and turbidity	H to VH	Y	**Remain out of proposed watercourse buffers**. Adequate design and stormwater management plan and method statements with practical on-site management measures to control erosion, measures to dissipate/reduce flow velocity from hard surfaces leading to wetland/ watercourse sedimentation. For example, use of silt fences, sandbags, stone-pitching, storing and reuse of topsoil for rehabilitation of disturbed areas after construction, ceasing construction activity in wet conditions. Where possible, fully construct the individual footprints in workable sections to limit the timeframe where disturbed ground surfaces can contribute to sedimentation of watercourses. Consider methods of reducing the risk of erosion through dewatering activities, managing earthworks/activities on steep slopes, rehabilitating erosion points.	L	A residual risk of increased sedimentation and turbidity remains during construction during vegetation clearing and excavations. Efforts to slow down flow velocity and dissipate energy of flows before entering freshwater resources and to implement an effectively designed storm-water management system will aid to reduce these threats.
Water Quality -Increased inputs of nutrients	VL	Y	Generic pollution control measures aimed at reducing risk of spills, managing potential soil and water contamination on site which may persist and have potential negative ecological effects. No chemical fertilisers to be used for open/grassed spaces, mechanical weed control recommended.	VL	Not a proposed industrial or agricultural land-use development.
Water quality - Increased toxic organic contaminants	VL	Y	Generic pollution control measures aimed at reducing risk of spills, managing potential soil and water contamination on site which may persist and have potential negative ecological effects. No chemical fertilisers to be used for open/grassed spaces, only mechanical weed control recommended.	VL	Not a proposed industrial or agricultural land-use development.
Water Quality - Increased metal contaminants	L to VL	Y	Generic pollution control measures aimed at reducing risk of spills, managing potential soil and water contamination on site which may persist and have potential negative ecological effects.	L	Not a proposed industrial or agricultural land-use development.
Water quality - Changes in acidity (pH)	L to VL	N	Not likely based on non-industrial and non-agricultural nature of residential land-use. Use of fertilisers unlikely, only mechanical weed control recommended.	VL	Not a proposed industrial or agricultural land-use development.
Water quality - concentration of salts (salinisation)	N/A	N	Salinisation unlikely given proposed land-use, *i.e.* non-agricultural. Adequate design of appropriate wastewater system to service the school at full capacity.	VL	Not a proposed industrial or agricultural land-use development.
Water temperature	VL	N	None required, no discharge of wastewater directly to adjacent water resources.	VL	Not a proposed industrial or agricultural land-use development.
Water quality - pathogens	VL	Y	Generic recommendations for management of wastes / sanitation. (See risk matrix **Annexure Q**).	VL	The risk of this impact is considered low provided that on-site management of wastewater (*i.e.* temporary chemical ablutions and permanent sewerage infrastructure) is successfully implemented/installed.

Table 32: Proposed threat/risk mitigation measures during the *Operational Phase for the proposed development adjacent to freshwater resources in the regulated area.

Threat type	Threat Class	Additional mitigation measures?	Description of proposed mitigation measures (See also Annexure Q)	Refined Threat Class	Specialist justification for refined threat ratings
Water Quantity - volumes of flow	VL	N	Adequate infrastructure and stormwater design and management.	VL	
Water Quantity - patterns of flow	M	Y	Monitoring, maintenance, service and repair of stormwater infrastructure, as and when necessary. Appropriate, competent ground staff to be appointed.	L	A residual risk of increased surface runoff remains during the operational phase owing to paved/hard surfaces. Monitoring and maintenance of the storm-water management system will aid in controlling this risk. Ensure a vegetated/grassed surface is maintained on the school property.
Sedimentation and turbidity	H	Y	Monitoring, maintenance, service and repair of stormwater infrastructure, as and when necessary. Appropriate, competent ground staff to be appointed.	L	A risk of increased runoff from a paved (hard) surfaces will remain during operational phase. Monitoring, maintenance and repairs to the storm-water management system will aid in controlling this risk. Ensure a vegetated/grassed surface is maintained on the school property.
Water Quality - Increased inputs of nutrients	VL	Y	Generic pollution control measures aimed at managing potential soil and water contamination on site which may persist and have negative ecological effects, reducing risk of spills, etc.	VL	Not a proposed industrial or agricultural land-use development.
Water quality - Increased toxic organic contaminants	VL	Y	Generic pollution control measures aimed at managing potential soil and water contamination on site which may persist and have negative ecological effects, reducing risk of spills, etc. No chemical fertilisers to be used for open/grassed spaces, only mechanical vegetation incl. weed control recommended.	VL	Not a proposed industrial or agricultural land-use development.
Water Quality - Increased metal contaminants	L	Y	Generic pollution control measures aimed at managing potential soil and water contamination on site which may persist and have negative ecological effects, reducing risk of spills, etc.	L	Not a proposed industrial or agricultural land-use development.
Water quality - Changes in acidity (pH)	VL	N	Not likely based on non-industrial and non-agricultural nature of residential land-use. Use of fertilisers unlikely, only mechanical vegetation incl. weed control recommended.	VL	Not a proposed industrial or agricultural land-use development.
Water quality - concentration of salts (salinisation)	N/A	N	Salinisation unlikely given proposed land-use, *i.e.* non-agricultural. Adequate design of appropriate wastewater system to service the school at full capacity.	VL	Not a proposed industrial or agricultural land-use development.
Water temperature	VL	N	None required, no discharge of wastewater directly to adjacent water resources.	VL	Not a proposed industrial or agricultural land-use development.
Water quality - pathogens	VL	N	Generic recommendations for management of wastes / sanitation. Adequate design of appropriate wastewater system to service the school at full capacity and appropriate, competent ground staff to be appointed.	VL	The risk of this impact is considered v.low provided that adequately designed permanent sewerage infrastructure is installed.

*The assumption is that appropriate rehabilitation measures post-construction, to resemble the surrounding (natural) topography, will be implemented as far as possible.

12.6 Monitoring and management recommendations

In addition to the recommendations provided above, best practice for the mitigation of negative impacts specific to the project footprint and the associated sensitive environments *i.e.* freshwater resources should be detailed in a project-specific Environmental Management Programme (EMPr). Additionally, amongst the detailed environmental method statements which should be developed by the developer and/or appointed contractor(s), a method statement for working within a distance of 32m from all delineated freshwater resources should be prepared and submitted for approval.

The following mitigation measures are recommended as standard best practice measures applicable to a development of this nature and should be implemented during all phases of the development, during construction and where applicable, the operational phase. These are made in support of ensuring the protection of watercourse and wetland systems within the total project footprint and by extension, beyond (*i.e.* downstream) of the site footprint:

Construction Phase

- A suitably qualified and independent Environmental Control Officer (ECO) should be appointed to monitor and report on environmental compliance relating to construction activity on the project and should remain until appropriate rehabilitation has been undertaken.
- All contractors and employees should undergo induction which includes a component of environmental awareness. Inductions and tool-box talks should include aspects such as sensitive 'no-go' areas, the need to avoid littering, use of ablutions, smoking rules, fire awareness, health and safety, wildlife interactions, reporting and cleaning of spills and leaks and general good housekeeping.
- The river, wetlands, riparian area and associated buffers must be treated as areas of higher ecological sensitivity. These systems fall within the 'regulated area' and as such, any construction activity or access in or within these systems should not form part of the development footprint, whether temporary or permanent. They should therefore be avoided at all times and be considered as 'no-go' areas for construction vehicles and personnel. Adequate 'no-go' signage should be placed at suitable, visible location(s) adjacent to these systems.
- As the Ohlanga is a perennial river, sub-surface soil saturation will likely increase in HGM2 during summer/rainfall periods due to lateral inputs from the active channel, resulting in potential wetland damage if any construction activity and/or vehicle access encroaches towards and into HGM2. As far as practically possible, all construction activity in close proximity (between 15-32m) from freshwater resources should take place when soil conditions are drier *i.e.* during low rainfall periods and/or the drier winter months. Construction activity should also cease during and several days after significant rainfall

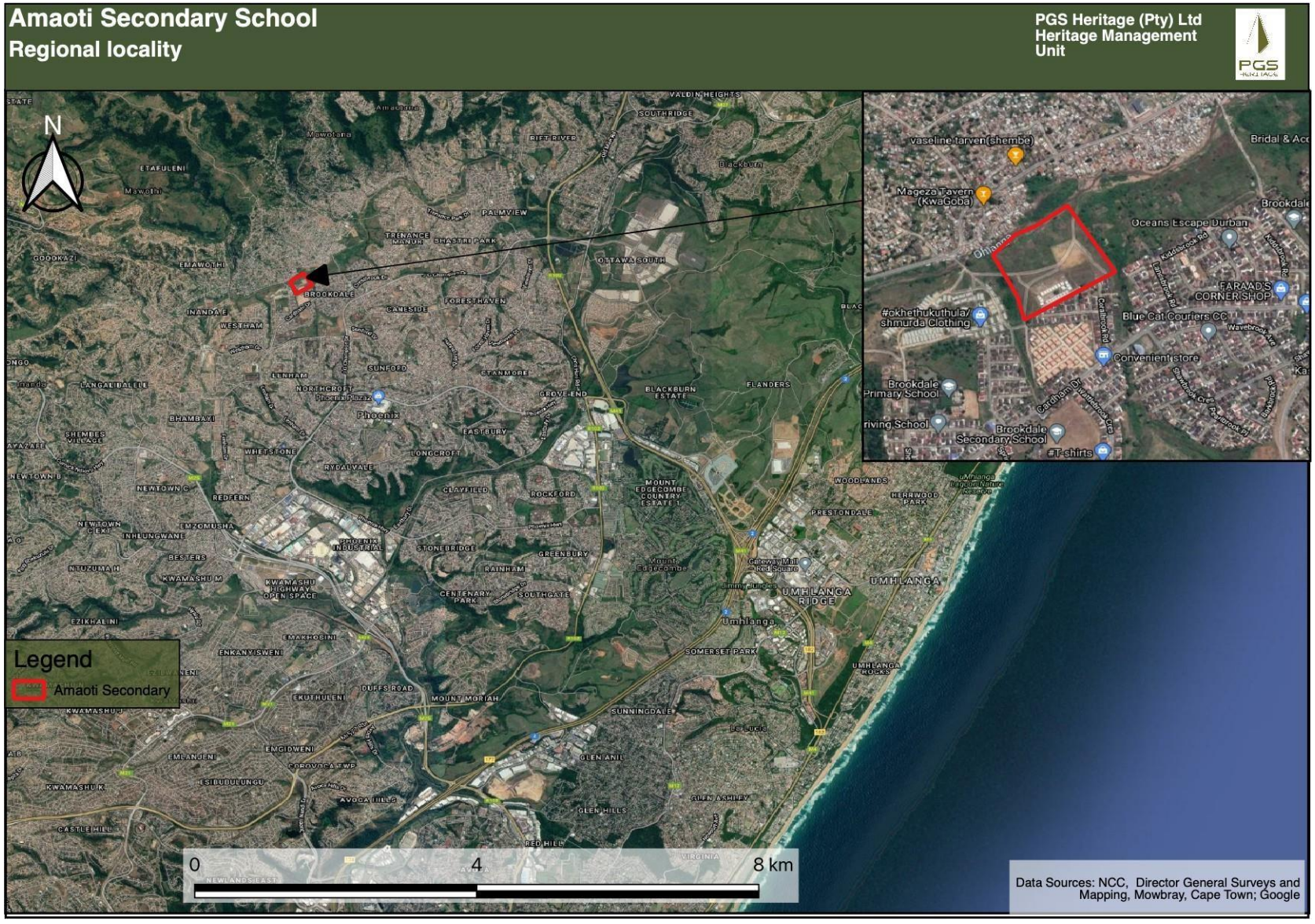


Figure 2 – Regional setting of the study area



Figure 3 – Locality of the Amaoti school

2.2 Project Description

The Coega Development Corporation (Pty) Ltd (CDC) is assisting the KwaZulu-Natal Department of Education (DoE-KZN) in implementing projects within the province of KwaZulu- Natal. This is being done under the School Building Programme of the DoE-KZN which is aimed at providing quality teaching facilities and to improve the quality of life of the previously disadvantaged communities. The programme is also aimed at creating jobs, developing and transferring skills and fighting poverty.

The structures currently housing Amaoti Secondary School was is located in Brookdale, Phoenix, Durban, in the Pinetown District. The school is located on the fringe of a residential area in close proximity to the Brookdale Primary School and Brookdale Secondary School, bordered by the Umhlanga river to the north. The school complex consists of a variety of temporary structures (temporary prefabricated classrooms, containers and ablution facilities) and has been fenced off from the rest of the site for security reasons.

The current proposed layout is provided in **Figure 4**.

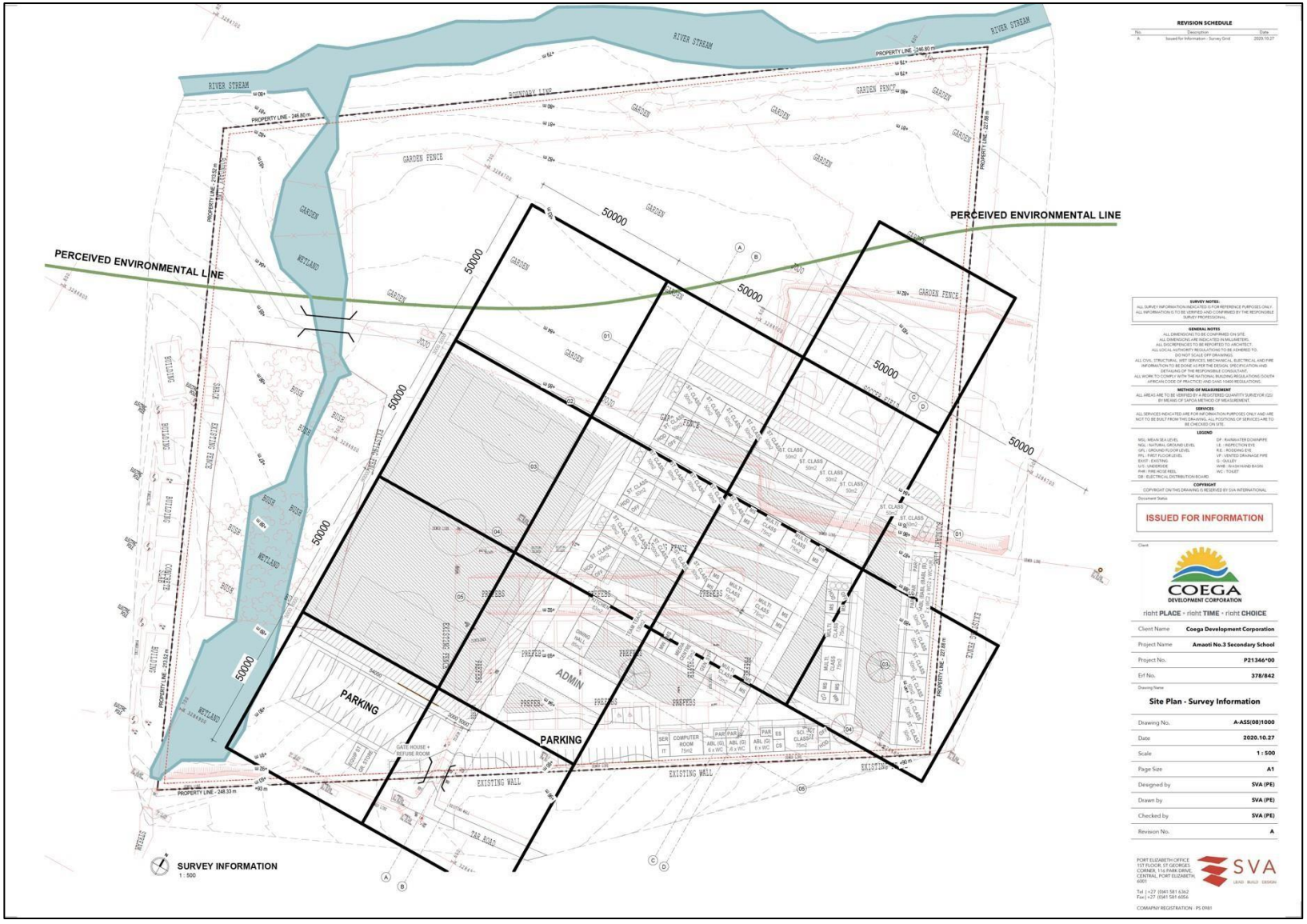


Figure 4 – Proposed school layout

3 CURRENT STATUS QUO

3.1 Site Description

The boundaries of the precinct are firmly demarcated by a razor wire security fence. The lower portion of the precinct, within the river floodplain is fenced off and under small scale vegetable production. A platform has been excavated into the overlying decomposed shale beds down slope towards the river, serving as a rudimentary playing field. Both the latter and the vegetable gardens have a perched water table and the going was wet and muddy during the field inspection.



Figure 5 - Prefabricated Amaoti No.3 Secondary School. View upslope (SE) from river floodplain.



Figure 6 - Playing field and precinct's N boundary looking towards Amaoti Community Farm



Figure 7 - Ohlange River flood plain at the bottom (N) end of the precinct.

4 HISTORICAL BACKGROUND OF THE REGION

4.1 The Archival findings

The archival research focused on available information sources, which were used to compile a background history of the study area and surrounds. This data then informed the possible heritage resources to be expected during field surveying.

4.1.1 *Archaeological background*

The archaeology of KwaZulu-Natal spans three archaeological periods: the Stone Age, Iron Age and Historical/Colonial period. The early periods in the Stone Age archaeology of the region are recorded, amongst others, in Sibudu Cave on the coast of KwaZulu-Natal, which shows evidence for early forms of cognitive human behavioural patterns in the Middle Stone Age of South Africa some 40 000 years BP (Wadley, 2005). The caves, plains, valleys and hills of KwaZulu-Natal are known to once have been occupied by the San people. Evidence for this includes stone artefacts and an abundance of rock art, predominantly in the form of rock paintings in areas such as the Giants Castle and Kamberg in the Drakensburg Mountains (Vinnicombe, 1976). Rock art sites have been also been documented in the areas around Estcourt, Mooi River and Dundee.

Stone Age

The Stone Age can be roughly divided into three periods:

Earlier Stone Age (400 000 – 2 million Before Present/BP)
Middle Stone Age (30 000 – 300 000 BP)
Later Stone Age (30 000 BP – recent times)

Border Cave

Border Cave is situated some 40 kilometers to the north east of the study area at the Ingodini Border Cave Museum Complex. The site is probably the most well-known archaeological site in the larger Pongola area and is a tourist attraction.

The site was first investigated by Raymond Dart in 1934. His excavations exposed a thick deposit of archaeological material dating from the Iron Age overlaying Middle Stone Age (MSA) artefacts. During the early 1940s the archaeological deposits were disturbed by guano collectors.

The guano excavations revealed bone fragments that were forwarded to Dart, in 1941. The remains were that of a human infant dating back to around 100 000 years ago. A single perforated Conus shell was found with the infant remains (Wells, 1945).

Further excavations by Beaumont in the early 1970's exposed a complete MSA sequence succeededby Early and Later Iron Age deposits. The Iron Age deposits datebetween 200-800BP, with the MSA stratigraphy dating from 130 000 to 35 000BP (Klein, 1977).

Iron Age

The Iron Age as a whole represents the spread of Bantu speaking people and includes both the Pre-Historic and Historic periods. It can be divided into three distinct periods:

The Early Iron Age: Most of the first millennium AD.
The Middle Iron Age: 10th to 13th centuries AD
The Late Iron Age: 14th century to colonial period.

The Iron Age is characterised by the ability of these early people to manipulate and work Iron ore into implements that assisted them in creating a favourable environment to make a better living. Iron is a very hard metal to work with compared to gold and copper, which have lower melting temperatures and therefore are easier to forge. However, a drawback of gold and copper is the occurrence of the ore, which is relatively limited compared to iron.

In Africa, we proceeded technologically directly from the Stone Age to the Iron Age, whereas in Eurasia there was a prolonged Copper and Bronze Age preceding the Iron Age. In southern Africa, metallurgical techniques made their first appearance in a rather advanced state that permitted the smelting of Copper and Iron directly after a Stone Age economic way of life.

This scenario provides a strong argument that metallurgical technology was introduced from elsewhere and did not develop locally. To effectively smelt iron oxide ore by reduction requires a temperature of at least 1100°C, that is 400°C below the metal's melting point. To obtain a temperature this high was probably unattainable in ancient furnaces. But the prolonged heating of ore in contact with abundant charcoal, needed to obtain a sufficiently high temperature for the reduction of the oxide ores, enabled the iron to obtain enough carbon to make it into mild steel. If this mild steel is repeatedly heated and hammered during the forging process, it will harden.

Early Iron Age

Early in the first millennium AD, there seems to be a significant change in the archaeological record of the greater part of eastern and southern Africa, lying between the equator and Natal. This change is marked by the appearance of a characteristic ceramic style that belongs to a single stylistic tradition. These Early Iron Age people practiced a mixed farming economy and had the technology to work metals like iron and copper.

A meaningful interpretation of the Early Iron Age has been hampered by the uneven distribution of research conducted so far; this can be partly attributed to the poor preservation of these early sites.

Linguistic and archaeological research has developed a commonly accepted theoretical model of Bantu distribution from Central Africa down towards Southern Africa from around 1000 BC to 500 AD. This model is believed tohave resulted in the current tribal distribution as known today (**Figure 8**).

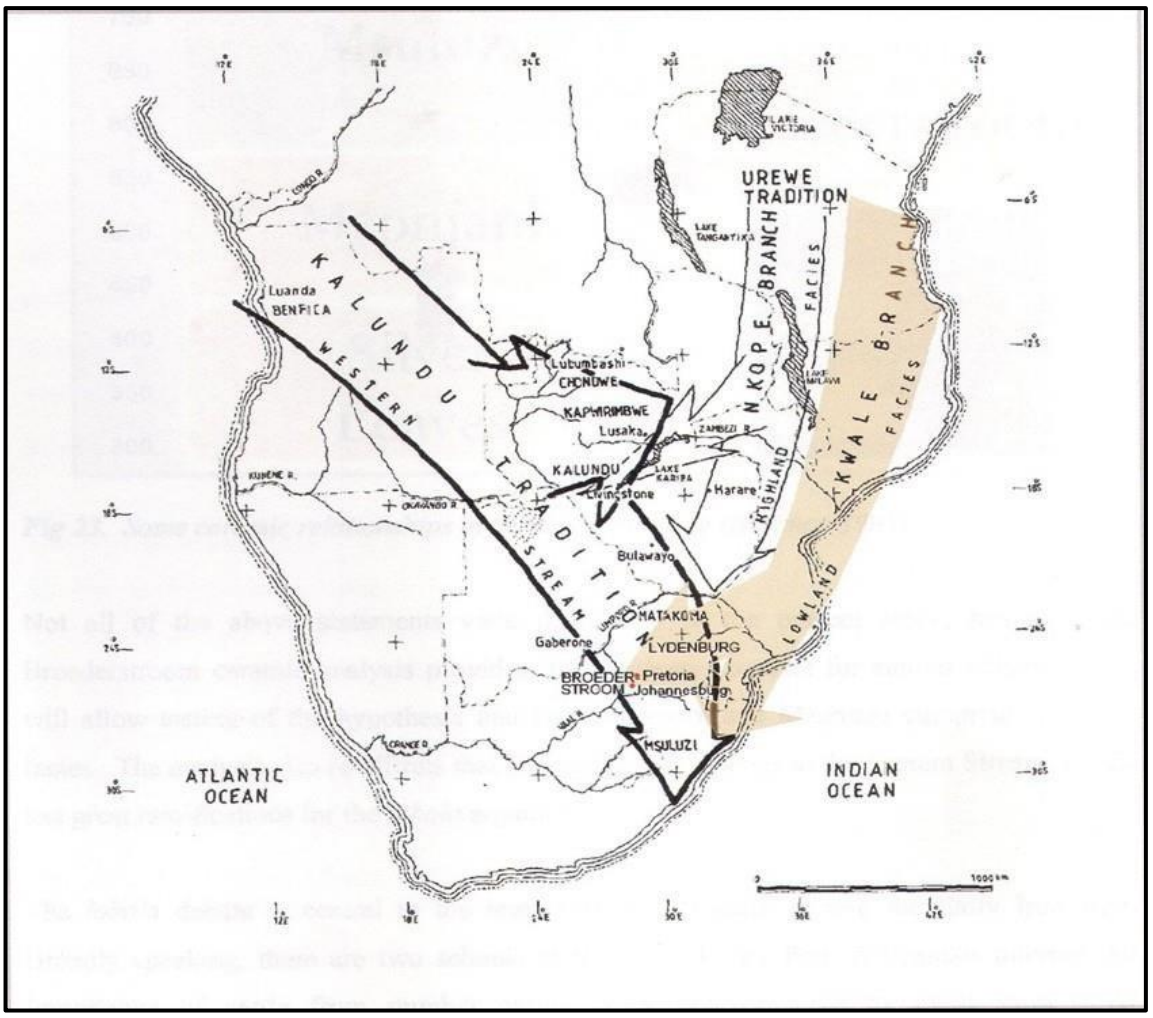


Figure 8 - Map of Western and Eastern Bantu movements from the Central Lakes area

Late Iron Age background

The second period of occupation in KwaZulu-Natal was during the **Early and Middle Iron Age**; an occupation of the KwaZulu-Natal region by the Bantu speakers who are thought to have migrated from as far as the Great Lakes regions of Congo and Cameroon. Existing evidence dates the Iron Age in southern Africa to the first millennium AD (Huffman, 2007). The site of Mzonjani, 15 km from Durban, is the oldest known Iron Age site in KwaZulu-Natal, dating to the 3rd Millennium AD (Huffman, 2007).

Archaeologically, the Natal area of current day KwaZulu-Natal was occupied by the Zulu people by AD 1050 (Huffman, 2007). These findings are backed by historical accounts, oral traditions, the

study of linguistics, as well as anthropological and archaeological data (as presented through material culture and artefacts). The archaeological evidence of the Iron Age people in the region is represented through distinct ceramic traditions, stone walls and other structural features such as grain bins and hut floor remains, kraal remains, vitrified cattle dung (sheep and goat), iron implements, slags, bellows and furnaces. The area that was occupied by the Nguni speaking group of the Eastern Bantu language stream is characterised by settlement patterns defined as the Central Cattle Pattern (CCP) (Huffman, 2007). The earliest known type of stonewalling that characterises this settlement pattern (CCP) in the region (KZN) is known as Moor Park, which dates from the 14th to 16th Centuries AD (Huffman, 2007). This type of stonewalling can be found in defensive positions on hilltops in the Midlands of KZN (Huffman, 2007) (***Figure 9***).

Archaeologists have concluded that the function of these structures was to serve mainly defensive purposes - the site of Moor Park is "*located on the spurs and ends of hills, stone walls cut the settlement off from remaining terrain, perimeter walls enclose about two thirds of the settlement, leaving the back free*" (Huffman, 2007).

However, it has to be noted that the CCP and other forms of Iron Age stonewalling features are not restricted and/or endemic to the Eastern Bantu language speaking group and/or the Nguni to whom the Zulu people belong. Huffman's (2007) statement validates this, "*Iron Age stonewalling occurs over much of Southern Africa*". He goes on to say, "*as the most visible sign of agro-pastoral settlement, there are several classifications, mostly for specific areas, and few for larger regions*". It has also to be noted that these stonewall structures were not the most dominant and/or preferred form of building for the KwaZulu-Natal Ngunis, even though some are dated to have been built during the times of war between the Colonial powers and the Zulus (for example, during the Anglo-Zulu War).

In KwaZulu-Natal, the most dominant and preferred form of Iron Age structures are the 'beehive huts'- documented in many historical records dating as far back as the colonial times (***Figure 10***).

This presents a challenge to the archaeological study of the Iron Age in the province. Huffman (2007) argues that the archaeology of KwaZulu-Natal is not as prominent as in other parts of the country because most of the structures were built of thatch material that do not preserve well. The same is true for their ceramics. The type site of Moor Park therefore presents a unique view of the Iron Age in KwaZulu-Natal.

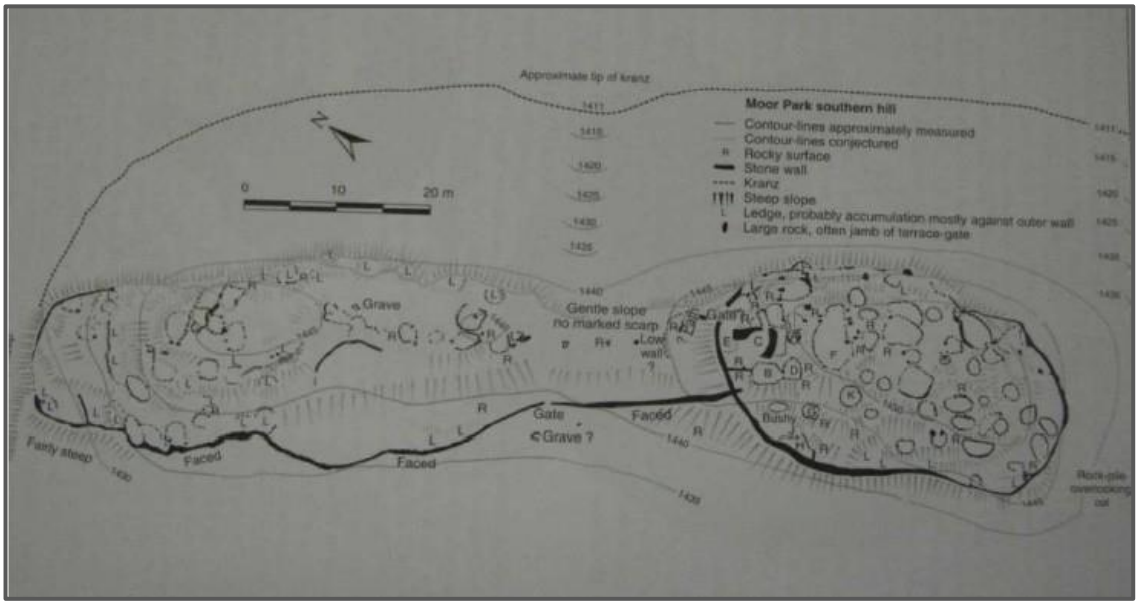


Figure 9- Site of Moor Park; picture ©T, N. Huffman (2007) to illustrate the CCP stonewalling (see also Davies 1974, from which the picture was initially taken).

The third phase of occupation in current day KZN was the **Late Iron Age** – a period just before the contact with the colonial settlers. In KwaZulu-Natal and other parts of southern Africa this period was characterised by a variety of expansionist battles fought by different chiefdoms, culminating in the pre-colonial southern African war called *Imfecane* (Ommer-Cooper, 1993). In the province of KwaZulu-Natal, this started during the early 1800's when the amaZulu were still under the 'static kingdom' of Senzangakona (Omer-Cooper, 1993). In KZN, the *Imfecane* brought about many battles between and within the different local Zulu chiefdoms.

In other parts of the country the *Imfecane* also affected the Koni (Limpopo Province), the Tswana by the Ndebele ka-Mzilikazi (interior regions of the country) and the amaMpondo, amaHlubi, abaThembu and amaXhosa in the Eastern Cape regions (Wright, 1991).

The *Imfecane* featured very prominently in KwaZulu-Natal during the reign of King Shaka KaSenzangakhona (Ommer-Cooper, 1993). Some of these battles and raids spread as far north as countries like Zimbabwe and Zambia.

In Zululand, one of the bigger local chiefdoms that Shakaconquered is the Ndwandwe chiefdom of Zwide kaLanga, which was situated north of Shaka's territory around the modern day kwaNongoma (Knight, 1998).

Shaka managed, to some degree, to achieve his ideal kingdom by strategically expanding/extending the traditional *amabutho* system. The *amabutho* were the brigades of young men of similar age gathered together for a period of national service (Wright, 1991). The *amabutho* were quartered at large royal homesteads, *amakhanda* (**Figure 11**) - which were sited strategically

above the surrounding country to guard against both outside attack and internal dissension, like the site of Moor Park discussed above. During the times of need, *amabutho* would be organised into *impi* to fight and protect the Zulu kingdom. The *amabutho,* organised into *impi,* would also be sent out to attack and take over rival chiefdoms that were opposed to King Shaka's rule and in the process, incorporate them under his monarchy.

As powerful as it may have been, King Shaka's reign as the Zulu King did not last long, as he was assassinated by his younger brothers in September 1828. One of them, Dingane KaSenzangakhona then became King. It is argued that by the time of his assassination, Shaka had not yet fully managed to assume and reconcile into his kingdom all the local Zulu chiefdoms: "*much chiefdom (sic)within the kingdom were still unreconciled to Zulu rule, while Zulu influence south of Thukela [was still] patchy*" (Knight, 1998).

The area south of the Thukela River (Natal) was to some degree devoid of King Shaka's hold. He did not manage to assimilate all the chiefdoms south of uThukela under his rule and this had negative ramifications to the Zulu kingdom for the years to come. King Shaka moved the royal homestead to KwaDukuza, Stanger, south of the upper Thukela River before his assassination by Dingane (and Mpande), who later relocated and rebuilt it at uMgungundlovu, '*The Place Surrounding the Elephant'* in the emaKhosini valley where King Shaka and King Dingane's forefathers are buried. The moving of the royal homestead by both Shaka and Dingane presents an interesting 'thesis' into the internal dynamics and politics of the Royal House and possibly 'one of the reasons' for the assassination of King Shaka by his brothers. One important reason for the relocation of the royal homestead back to uMgungundlovu- north of the upper Thukela River, was the growing influence of the white community at Port Natal (settlers) and the encroaching Trek Boers who crossed the Ukhahlamba Mountains into Natal in 1837 (Knight, 1998).

The period of encroachment of first Natal, then Zululand, represents a **fourth phase** of settlement or occupation of KwaZulu-Natal, before it became open to most people during the periods of the Union of South Africa (1910-1961), Nationalist rule (1947-1994), and democratic South Africa (1994-to date)



Figure 10- Pre-industrial Zulu village: beehive huts, note homestead built using thatch material (Colonial period picture) (Laband & Thompson, 2000)

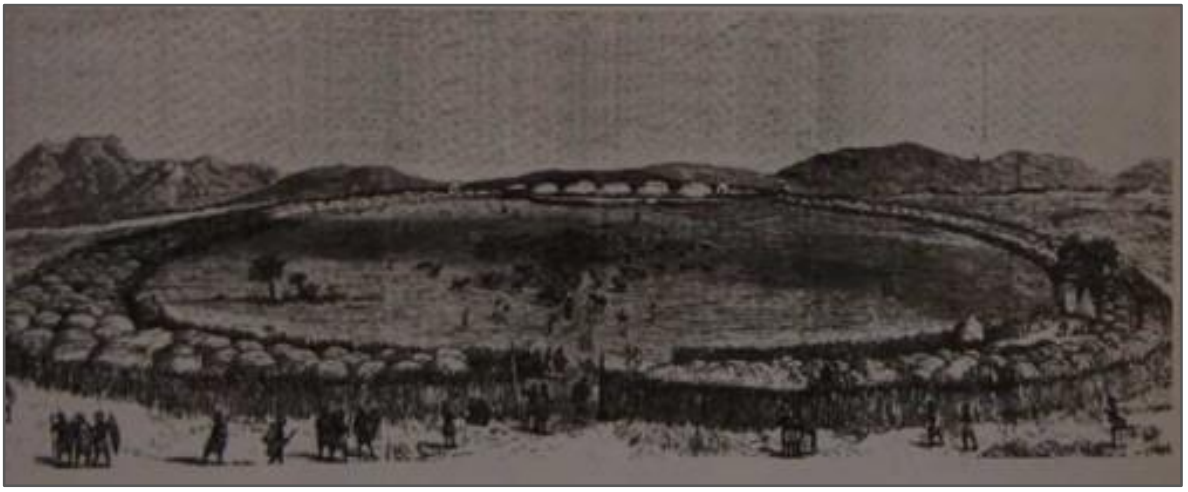


Figure 11 - An illustration of iKhanda or the royal homestead (Laband & Thompson, 2000)

4.1.2 *Natal and Zululand: A Colonial Time Account of KwaZulu-Natal*

The settler and Boer influence south of upper Thukela (uThukela) River and the strong Zulu influence north of the river during the late 1830s become important in understanding the development of the two territories divided by the river, which later became known as Natal and Zululand. This also marks the fourth phase in the development of what is today known as KwaZulu-Natal.

Since the 1830s, the KwaZulu-Natal landscape was divided into the north and the south; Natal in the south and Zululand in the north. Zululand can be broadly defined as the land between the uThukela River (some 100km north of present day Durban) and the Pongola River and Swaziland to the north, with Natal as the area south of the u-Thukela River. Initially this border was blurred and unmarked by any geographic or physical feature until colonial times:

"*Certainly, this was the extent of the Zulu kingdom during its most static phase, although at times the Zulu kings exercised authority over the country considerable further south, while their hold over the northern borders was always tenuous. In fact, the kings defined their boundaries in terms of people who gave them allegiance, rather than by geographical features, and the idea of a single Zulu identity is largely mythical*" (Knight, 1998).

Knight (1998) goes on to argue that "the history of the Zululand and its southern neighbour Natal has always been inextricably mixed, and the physical boundaries between them blurred". The political border that existed between Zululand and Natal was in prehistoric times not marked by any geographic features. Natal came to exist when, the Portuguese explorer, Vasco da Gama, noted the existence of the south-eastern seaboard in his log as he sailed around the Cape and up the east coast of Africa, searching for a route to the Indies. He christened it *Terra Natalis*, in honour of the birth of Christ, and for the [following] centuries Natal was used to describe the country south of uThukela (idem: 15).

Existing archival evidence for the formal proclamation of uThukela River as the political boundary dividing Zululand (in the north) and Natal (in the South) dates to the 1850's, during King Cetshwayo kaMpande's rule as the Zulu King (***Figure 12***).

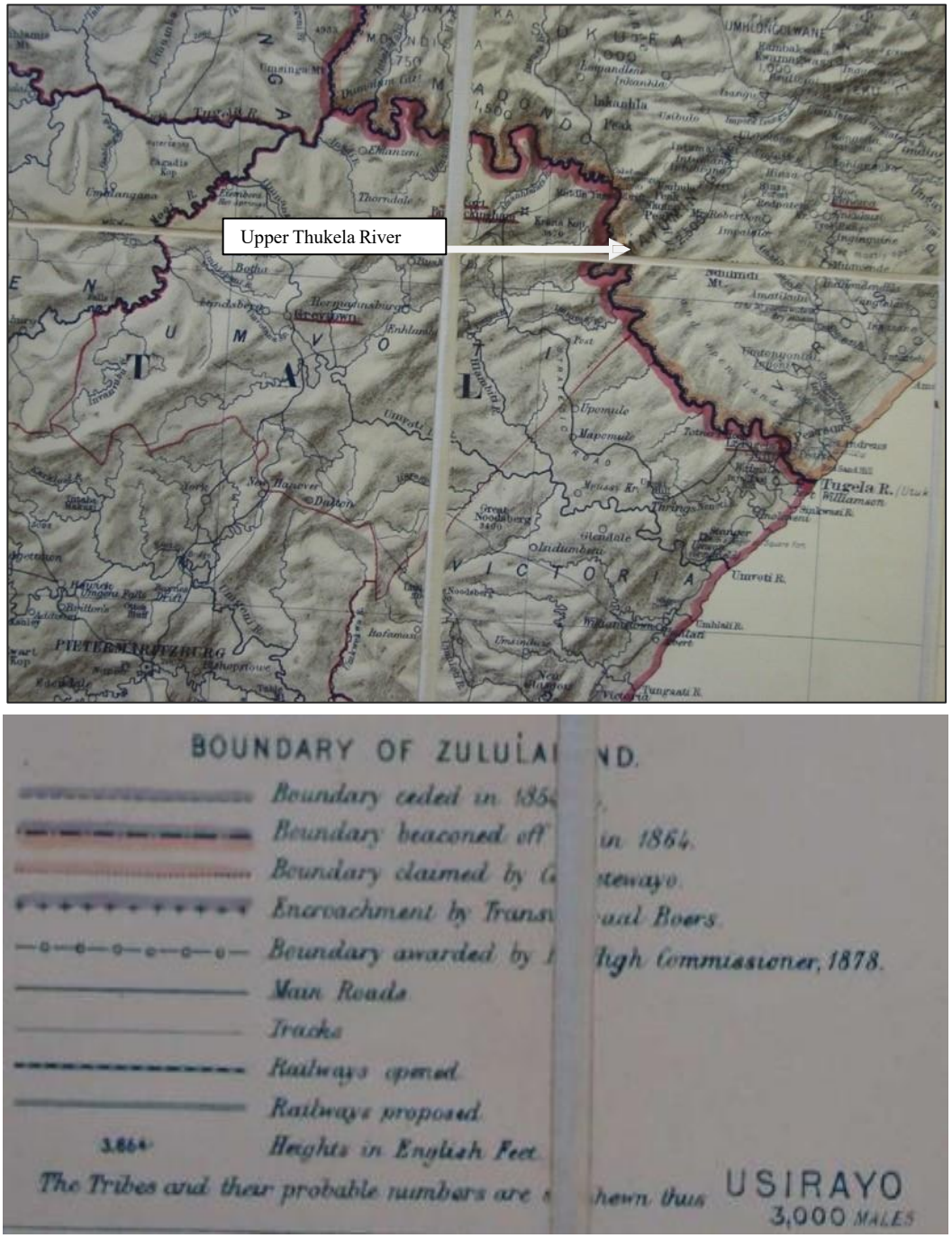


Figure 12- Map showing the Natal (south of Thukela River) and Zululand (north of Thukela River) Boundary, as well as the boundary proclaimed by King Cetshwayo in the 1870s when he became King. The first official proclamation of the boundary dividing Natal and Zululand took place in 1854 (note the map legends).

Stanford's Large Scale Map of Zulu Land with adjoining parts of Natal, Transvaal and Portuguese Africa, March 4th 1879 © Map Archives, Cullen Library, University of the Witwatersrand, Johannesburg, South Africa.

4.1.3 *Zulu Civil War and the Split in the Royal House*

Following the December 16, 1838 victory against Dingane, the Boers attempted to capture Dingane on numerous occasions, but their attempts were in vain on most of these occasions, in some cases with Dingane abandoning his royal homesteads and in some, with both sides failing to secure a clear and clean victory against one another until a ***Peace Accord*** was struck between the Zulu and the Boers, facilitated by the British in 1839 (Knight, 1998).

Some Zulu chiefs seem to no longer have had respect and trust for Dingane and his authority was questioned. This was followed by a split in the Royal House, with Prince Mpande KaSenzangakhona defecting to the south of uThukela River where his older brother, Shaka, had established the royal homestead previously. By now the battle for the soul of Zululand was within the Royal House until Mpande defeated Dingane in a civil war of 1840 in the Maqongqo Hills, assisted by Nongalaza kaNondela (a famous and brave Zulu warrior and chief) who had assisted Dingane on his Thukela River against the settlers and the Boers (Knight, 1998).

Following his defeat Dingane, fled to the northern borders on Zululand, in the Lebombo Mountains on the Swaziland border, where he tried to rebuild his kingdom with loyal followers who clung to him and where he later died. In the southern regions, the stronghold of the Zulu kingdom, Dingane was succeeded by his younger brother Mpande in February 1840.

Mpande had by now built relations with the Boers following his defeat of his older brother Dingane the year before. However, his assistance from the side of the Boers came at heavy price to him: *"In fact, the practical role played by the Trekkers in Dingane's final defeat had been limited, but the price they demanded for it was high, and Mpande knew he dared [not] provoke them. The Trekkers appropriated thousands of head of cattle, and grandly extended their claim to Zulu territory up to the Mfolozi River, annexing nearly half of the kingdom – far more land, in fact, than there were farmers to occupy it. In the event, the Boers also had little time to enjoy this victory. In 1842, disturbed by the unsettling effects the Trekker policies were having in the region as a whole, British troops returned to Port Natal. Pretorius refused to accept their authority and fighting broke out on the fringe of the great lagoon. More troops were rushed up from the Cape, and the Trekkers resistance collapsed. Natal became a British Colony, and many Boers, disgusted by the prospects of living under British rule once more, trekked back across the mountains into the interior regions of the country".* (Knight, 1998).

After two decades of struggle, Natal had passed from nominal control of the Zulu kings to that of the Boers, and finally to the British. According to Knight (1998), this could, in logic, only mean one thing for the future, to bring all the three groups into further conflict. In the meantime, King Mpande agreed to fix the southern boundaries of the kingdom for the first time, in an accord signed by him and the British administration in Natal (***Figure 12***). This Anglo-Zulu accord specified the Natal-Zulu

border as the line of the Mziyathi and Thukela rivers- an agreement which allowed Mpande quietly to recover all the territory the Boers had extracted from him.

His reign as the Zulu King continued for another 30 years until his death in 1872, leaving the kingdom to Cetshwayo KaMpande.

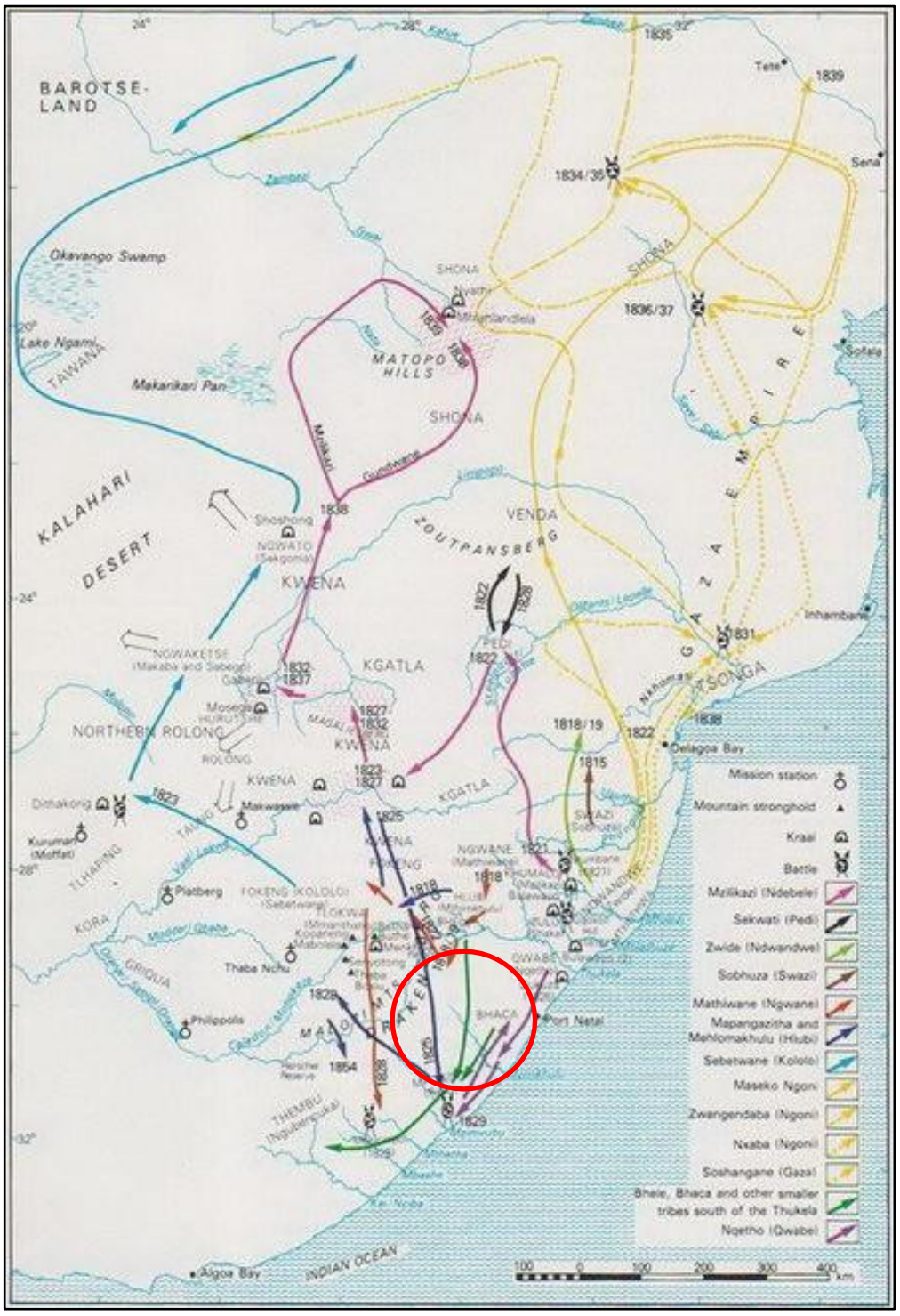


Figure 13 - Map indicating the movement of tribes between 1818 and 1835.

4.1.4 *Colonial Settlement*

Natal is named after the Portuguese word for Christmas which is Natal by Vasco da Gama who saw the coast in 1497. Since then it was occupied by Bantu-speakers until the arrival of the Trek Boers from the Cape Colony.

By 1832 the First Great Trek was under way. The Afrikaners were moving into the Orange Free State, the Transvaal, Mozambique and Natal. (Walker 1963). By 1824 the Trek Boers had were firmly entrenched in Natal where the British had set up a colony and had Anglican missionaries who were working with the ex-herders who had become mixed raiders such as Adam Kok, Andries Waterboer and Cornelius Kok to help set up mission stations and thus cement the presence of the British in their colonies (ibid.) .

However, by this point there began to be a dissatisfaction in the Boer ranks as people such as Piet Retief began to quarrel with other Trek Boers such as Potgieter and Piet Uys. Retief decided to go on his own with a few friends to Port Natal and see what opportunities there were to settle (ibid.). He befriended the Zulu chief Dingaan who promised to leave the Trekkers alone so long as they took back cattle which had been stolen by a rival chief. Retief promised to do so and returned to the Trekkers to give them the news that they could settled in Natal. However, he found that Uys and Potgieter had fought and beaten the Matabele who had retreated to southern Rhodesia as it was then known. This left the Highveld and the Orange Free State all the way to the Kalahari open for settlement (ibid.).

However, this frightened the Zulu king as the Matabele were Zulus like his own people. Dingaan. He pretended to befriend them by giving the Trekkers land between the Tugela and Umzimvubu Rivers, and then enticed the Trekkers unarmed into his presence and slaughtered them all.(ibid.)

4.1.5 *History of the study area*

This undulating hill and dale landscape would have, in precolonial times, comprised a KwaZulu-Natal Coastal Belt Complex of species-rich grasslands and sub-tropical forests and no doubt provided ideal *loci* for Iron Age settlement. Archaeologically (Muncina and Rutherford, 2006). The observed pattern of Late Iron Age settlement along the east coast littoral is one of hilltop settlements[1]; providing strategic surveillance, cooling breezes and underfoot drainage during the wet season. However, more than a century of ploughing and small-holder settlement on the prevailing shallow sandy-clay soils, has removed much of the observable archaeological footprint.

[1] KZN Museum Archaeological Data Base

According to the land register of parent farms, the farms immediately surrounding the Amaoti and Phoenix townships were allocated in the 1840's to Voortrekker settlers during the period of the Boer's short-lived Natal Republic. This is attested to by farm names such as Driefontein, Piezangsrivier, Rietrivier and Buffels Draai. After the British established the Natal Colony these parent farms were often subdivided at allocation with names such as Blackburn, Trenace Manor, Brookdale, Westham, Palmview, Caneside et.al. being registered. The greater part of the current Phoenix township area had been predominantly planted to sugarcane since the 1850's. Interspersed amongst these larger sugar cane plantations were smaller family farms occupied by Indian market gardeners and associated with the Phoenix Settlement, built by Mahatma Gandhiji in 1904. Phoenix Township was established in 1976 by the previous Nationalist Government in terms of the Group Areas Act.

Amaoti Community Farm, on the north bank of the Ohlanga River, was restitution land granted post 1994. It has now become a densely occupied peri-urban settlement housing immigrants seeking employment in the greater Durban / eThekweni metropolis. (

5 FIELDWORK AND FINDINGS

PGS staff conducted a site visit and walk over of the precinct of the proposed Amaoti School upgrade and associated infrastructure on 14 January 2021, completing a controlled-exclusive archaeological surface survey. The track logs (in yellow) for the survey are indicated in **Figure 14**.

Surface visibility was reasonable despite the summer growth of grass cover. Four, single, undecorated, thin-walled, possibly Late Iron Age (LIA) pottery fragments, were observed independently along four foot-paths traversing the precinct outside of the fenced school perimeter. Remnant ploughed contours indicate that the hill slope was also previously under sugar cane cultivation and later, settlement. Pottery shards were all < 25 mm in size and indicated intensive plough fracture and turbation. We consider these shards to be insignificant plough-disturbed finds that do not comprise an archaeological site or feature.

No heritage resources were identified during the field work.



Figure 14 - Fieldwork tracklogs

6 PALAEONTOLOGY

During the field work no geological outcrops were observed to determine the localized geology of the site.

A basic palaeontological sensitivity was determined using the palaeosensitivity map on the SAHRIS database (South African Heritage Resources Information System) (http://www.sahra.org.za/sahris/map/palaeo). Groenewald (2012) indicates that the area is underlain by Early Permian marine shales of the Pietermaritzburg Formation of the Ecca Group (Karoo Supergroup). As can be seen in **Figure 15,** the proposed area of the project footprint occurs in an area where the palaeontology is assessed as being entirely of moderate sensitivity indicating the need for a field assessment and finds protocol (Refer to **Appendix D** for the finds protocol).

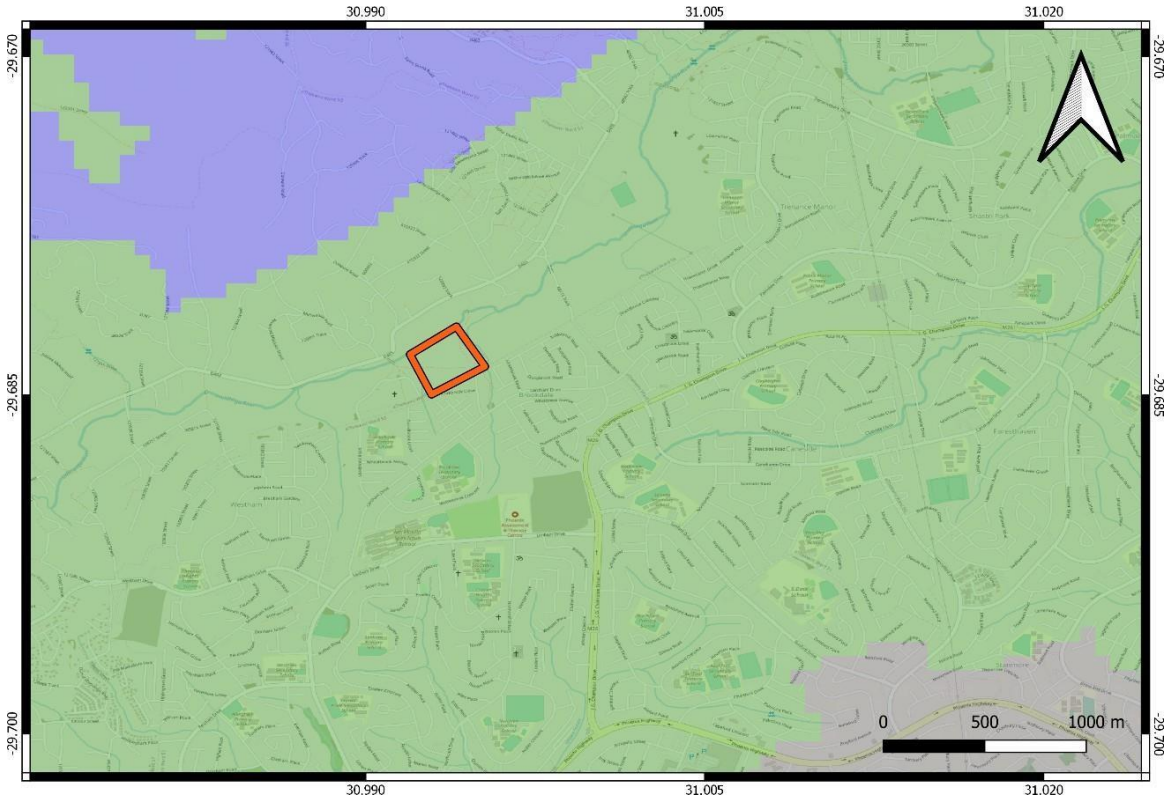


Figure 15 – Overlay of the Thembinkosi school on the palaeosensitivity map from the SAHRIS database. This shows that most of the area is coloured red indicating a very high sensitivity.

Table 2 - SAHRIS palaeosensitivity ratings table

Colour	Sensitivity	Required Action
RED	VERY HIGH	field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	desktop study is required and based on the outcome of the desktop study; a field assessment is likely
GREEN	MODERATE	desktop study is required
BLUE	LOW	no palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ ZERO	no palaeontological studies are required
WHITE/CLEAR	UNKNOWN	these areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

7 IMPACT ASSESSMENT

The following section provides the impact of the proposed development on identified heritage resources.

7.1 Methodology for determining the Significance of Environmental Impacts

This part of the document focuses on the identification of the major potential impacts the activities, processes and actions may have on the surrounding environment.

The impact significance rating process serves two purposes: firstly, it helps to highlight the critical impacts requiring consideration in the management and approval process; secondly, it shows the primary impact characteristics, as defined above, used to evaluate impact significance.

The impact significance rating system is presented in **Table 3** and involves three parts:

- **Part A**: Define impact consequence using the three primary impact characteristics of magnitude, spatial scale/ population and duration;
- **Part B**: Use the matrix to determine a rating for impact consequence based on the definitions identified in Part A; and
- **Part C**: Use the matrix to determine the impact significance rating, which is a function of the impact consequence rating (from **Part B**) and the probability of occurrence.

Table 3 - Impact significance rating system

PART A: DEFINING CONSEQUENCE IN TERMS OF MAGNITUDE, DURATION AND SPATIAL SCALE*Use these definitions to define the consequence in Part B*		
Impact characteristics	**Definition**	**Criteria**
MAGNITUDE	Major -	Substantial deterioration or harm to receptors; receiving environment has an inherent value to stakeholders; receptors of impact are of conservation importance; or identified threshold often exceeded
	Moderate -	Moderate/measurable deterioration or harm to receptors; receiving environment moderately sensitive; or identified threshold occasionally exceeded
	Minor -	Minor deterioration (nuisance or minor deterioration) or harm to receptors; change to receiving environment not measurable; or identified threshold never exceeded
	Minor +	Minor improvement; change not measurable; or threshold never exceeded
	Moderate +	Moderate improvement; within or better than the threshold; or no observed reaction
	Major +	Substantial improvement; within or better than the threshold; or favourable publicity
SPATIAL SCALE OR POPULATION	Site or local	Site specific or confined to the immediate project area
	Regional	May be defined in various ways, e.g. cadastral, catchment, topographic
	National/ International	Nationally or beyond
DURATION	Short term	Up to 18 months.
	Medium term	18 months to 5 years
	Long term	Longer than 5 years
PART B: DETERMINING CONSEQUENCE RATING ***Rate consequence based on definition of magnitude, spatial extent and duration***		

			SPATIAL SCALE/ POPULATION		
			Site or Local	Regional	National/ international
MAGNITUDE					
Minor	**DURATION**	**Long term**	Medium	Medium	High
		Medium term	Low	Low	Medium
		Short term	Low	Low	Medium
Moderate	**DURATION**	**Long term**	Medium	High	High
		Medium term	Medium	Medium	High
		Short term	Low	Medium	Medium
Major	**DURATION**	**Long term**	High	High	High
		Medium term	Medium	Medium	High
		Short term	Medium	Medium	High
PART C: DETERMINING SIGNIFICANCE RATING ***Rate significance based on consequence and probability***					
			CONSEQUENCE		
			Low	**Medium**	**High**
PROBABILITY (of exposure to impacts)		**Definite**	Medium	Medium	High
		Possible	Low	Medium	High
		Unlikely	Low	Low	Medium

7.2 Heritage Impacts

No heritage resources were identified during the field work and no impact is expected. Possible subsurface chance finds will have a post-mitigation impact rating of low negative.

7.3 Palaeontological Impacts

As noted in Section 5 above, the school occur in an area where the palaeontology is assessed as being almost entirely of moderate sensitivity. Deep excavations are not anticipated, and impacts will be managed through the chance finds protocol in **Appendix D** and having a post-mitigation impact rating of low negative.

7.4 Impact Assessment Table

Table 4 - Impact Assessment Table

No.	Affected Environment	Activity	Impact Description	BEFORE MITIGATION						Cumulative Impact	Mitigation measures / Recommendations	AFTER MITIGATION					
				Magnitude	Duration	Spatial Scale	Consequence	Probability	SIGNIFICANCE			Magnitude	Duration	Spatial Scale	Consequence	Probability	SIGNIFICANCE
	Construction																
1	Archaeological resources	Construction	Discovery of subsurface artefacts during trenching	*Moderate -*	*Long Term > 5 years*	*Site or Local*	Medium	*Unlikely*	Low	No	Implement CFP	Minor +	Short Term < 18 months	Site or Local	Low	Unlikely	Low
2	Palaeontological finds	Construction	Discovery of fossils during trenching	*Moderate -*	*Long Term > 5 years*	*Site or Local*	Medium	*Unlikely*	Low	No	Implement CFP	Minor +	Short Term < 18 months	Site or Local	Low	Unlikely	Low

7.5 Management recommendations and guidelines

7.5.1 *Construction phase*

The project will encompass a range of activities during the construction phase, including ground clearance, establishment of construction camp areas and small-scale infrastructure development associated with the project.

It is possible that cultural material will be exposed during construction and may be recoverable, keeping in mind delays can be costly during construction and as such must be minimised. Development surrounding infrastructure and construction of facilities results in significant disturbance, however foundation holes do offer a window into the past and it thus may be possible to rescue some of the data and materials. It is also possible that substantial alterations will be implemented during this phase of the project and these must be catered for. Temporary infrastructure developments, such as construction camps and laydown areas, are often changed or added to the project as required. In general, these are low impact developments as they are superficial, resulting in little alteration of the land surface, but still need to be catered for.

During the construction phase, it is important to recognize any significant material being unearthed, making the correct judgment on which actions should be taken. It is recommended that the following chance find procedure should be implemented.

7.5.2 *Chance find procedure*

- An appropriately qualified heritage practitioner / archaeologist must be identified to be called upon in the event that any possible heritage resources or artefacts are identified.
- Should an archaeological site or cultural material be discovered during construction (or operation), the area should be demarcated and construction activities halted.
- The qualified heritage practitioner / archaeologist will then need to come out to the site and evaluate the extent and importance of the heritage resources and make the necessary recommendations for mitigating the find and the impact on the heritage resource.
- The contractor therefore should have some sort of contingency plan so that operations could move elsewhere temporarily while the materials and data are recovered.
- Construction can commence as soon as the site has been cleared and signed off by the heritage practitioner / archaeologist.

7.5.3 *Possible finds during construction and operation (excavation activities)*

The study area occurs within a greater historical and archaeological site as identified during the desktop and fieldwork phase. Soil clearance for infrastructure as well as the proposed reclamation activities, could uncover the following:

- stone foundations;
- ash middens associated with the historical structures that can contain bone, glass and clay ceramics, ash, metal objects such as spoons, forks, and knives.
- unmarked graves
- Timeframes

It must be kept in mind that mitigation and monitoring of heritage resources discovered during construction activity will require permitting for collection or excavation of heritage resources and lead times must be worked into the construction time frames. **Table 5** gives guidelines for lead times on permitting.

Table 5 - Lead times for permitting and mobilisation

Action	Responsibility	Timeframe
Preparation for field monitoring and finalisation of contracts	The contractor and service provider	1 month
Application for permits to do necessary mitigation work	Service provider – Archaeologist and Amafa	3 month
Documentation, excavation and archaeological report on the relevant site	Service provider – Archaeologist	3 months
Handling of chance finds – Graves/Human Remains	Service provider – Archaeologist and Amafa	2 weeks
Relocation of burial grounds or graves in the way of construction	Service provider – Archaeologist, Amafa, local government and provincial government	6 months

8 CONCLUSIONS

During the field work no heritage resources were identified. The area is indicated to be underlain by Early Permian marine shales of the Pietermaritzburg Formation of the Ecca Group (Karoo Supergroup).

8.1 Heritage Impacts

No heritage resources were identified during the field work and no impact is expected. Possible subsurface chance finds will have a post-mitigation impact rating of low negative.

8.2 Palaeontological Impacts

As noted in Section 5 above, the school occur in an area where the palaeontology is assessed as being almost entirely of moderate sensitivity. Deep excavations are not anticipated, and impacts will be managed through the chance finds protocol in **Appendix D** and having a post-mitigation impact rating of low negative

8.3 General

It is the author's considered opinion that overall impact on heritage resources is Low. Provided that the recommended mitigation measures are implemented, the impact would be acceptably low or could be totally mitigated to the degree that the project could be approved from a heritage perspective. The management and mitigation measures as described in Section 6 of this report have been developed to minimise the project impact on heritage resources

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Appendix A

Heritage Assessment Methodology

The applicable maps, tables and figures, are included as stipulated in the NHRA (no 25 of 1999), the NEMA (no 107 of 1998). The HIA process consisted of three steps:

Step I – Literature Review: The background information to the field survey relies greatly on the Heritage Background Research.

Step II – Physical Survey: A physical survey was conducted by vehicle through the proposed project area by a qualified heritage specialist. The survey was conducted over one day (15 October 2019), aimed at locating and documenting sites falling within and adjacent to the proposed development footprint.

Step III – The final step involved the recording and documentation of relevant archaeological resources, the assessment of resources in terms of the HIA criteria and report writing, as well as mapping and constructive recommendations.

The significance of heritage sites was based on four main criteria:

- Site integrity (i.e. primary vs. secondary context),
- Amount of deposit, range of features (e.g., stonewalling, stone tools and enclosures),
- Density of scatter (dispersed scatter)
    - Low - <10/50m2
    - Medium - 10-50/50m2
    - High - >50/50m2
- Uniqueness; and
- Potential to answer present research questions.

Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be expressed as follows:

A - No further action necessary;
B - Mapping of the site and controlled sampling required;
C - No-go or relocate development activity position;
D - Preserve site, or extensive data collection and mapping of the site; and
E - Preserve site.

Impacts on these sites by the development will be evaluated as follows:

Site Significance

Site significance classification standards use is based on the heritage classification of s3 in the NHRA and developed for implementation keeping in mind the grading system approved by SAHRA for archaeological impact assessments. The update classification and rating system as developed by Heritage Western Cape (2016) is implemented in this report

Site significance classification standards prescribed by the Heritage Western Cape Guideline (2016), were used for the purpose of this report (Table A 1 and Table A 2**)**.

Table A 1: Rating system for archaeological resources

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
I	Heritage resources with qualities so exceptional that they are of special national significance. Current examples: Langebaanweg (West Coast Fossil Park), Cradle of Humankind	May be declared as a National Heritage Site managed by SAHRA. Specific mitigation and scientific investigation can be permitted in certain circumstances with sufficient motivation.	Highest Significance
II	Heritage resources with special qualities which make them significant, but do not fulfil the criteria for Grade I status. Current examples: Blombos, Paternoster Midden.	May be declared as a Provincial Heritage Site managed by Amafa. Specific mitigation and scientific investigation can be permitted in certain circumstances with sufficient motivation.	Exceptionally High Significance
III	Heritage resources that contribute to the environmental quality or cultural significance of a larger area and fulfils one of the criteria set out in section 3(3) of the Act but that does not fulfil the criteria for Grade II status. Grade III sites may be formally protected by placement on the Heritage Register.		
IIIA	Such a resource must be an excellent example of its kind or must be sufficiently rare. Current examples: Varschedrift; Peers Cave; Brobartia Road Midden at Bettys Bay	Resource must be retained. Specific mitigation and scientific investigation can be permitted in certain circumstances with sufficient motivation.	High Significance
IIIB	Such a resource might have similar significances to those of a Grade III A resource, but to a lesser degree.	Resource must be retained where possible where not possible it must be fully investigated and/or mitigated.	Medium Significance
IIIC	Such a resource is of contributing significance.	Resource must be satisfactorily studied before impact. If the recording already done (such as in an HIA or permit application) is not sufficient, further recording or even mitigation may be required.	Low Significance
NCW	A resource that, after appropriate investigation, has been determined to not have enough heritage significance to be retained as part of the National Estate.	No further actions under the NHRA are required. This must be motivated by the applicant or the consultant and approved by the authority.	No research potential or other cultural significance

Table A 2: Rating system for built environment resources

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
I	Heritage resources with qualities so exceptional that they are of special national significance. Current examples: Robben Island	May be declared as a National Heritage Site managed by SAHRA.	Highest Significance
II	Heritage resources with special qualities which make them significant in the context of a province or region, but do not fulfil the criteria for Grade I status. Current examples: St George's Cathedral, Community House	May be declared as a Provincial Heritage Site managed by Amafa.	Exceptionally High Significance
II	Such a resource contributes to the environmental quality or cultural significance of a larger area and fulfils one of the criteria set out in section 3(3) of the Act but that does not fulfil the criteria for Grade II status. Grade III sites may be formally protected by placement on the Heritage Register.		
IIIA	Such a resource must be an excellent example of its kind or must be sufficiently rare. These are heritage resources which are significant in the context of an area.	This grading is applied to buildings and sites that have sufficient intrinsic significance to be regarded as local heritage resources; and are significant enough to warrant that any alteration, both internal and external, is regulated. Such buildings and sites may be representative, being excellent examples of their kind, or may be rare. In either case, they should receive maximum protection at local level.	High Significance
IIIB	Such a resource might have similar significances to those of a Grade III A resource, but to a lesser degree. These are heritage resources which are significant in the context of a townscape, neighbourhood, settlement or community.	Like Grade IIIA buildings and sites, such buildings and sites may be representative, being excellent examples of their kind, or may be rare, but less so than Grade IIIA examples. They would receive less stringent protection than Grade IIIA buildings and sites at local level.	Medium Significance
IIIC	Such a resource is of contributing significance to the environs These are heritage resources which are significant in the context of a streetscape or direct neighborhood.	This grading is applied to buildings and/or sites whose significance is contextual, i.e. in large part due to its contribution to the character or significance of the environs. These buildings and sites should, as a consequence,	Low Significance

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
		only be regulated if the significance of the environs is sufficient to warrant protective measures, regardless of whether the site falls within a Conservation or Heritage Area. Internal alterations should not necessarily be regulated.	
NCW	A resource that, after appropriate investigation, has been determined to not have enough heritage significance to be retained as part of the National Estate.	No further actions under the NHRA are required. This must be motivated by the applicant and approved by the authority. Section 34 can even be lifted by Amafa for structures in this category if they are older than 60 years.	No research potential or other cultural significance

Appendix B

The Significance Rating Scales for the Proposed Prospecting Activities on Heritage Resources

The impact significance rating process serves two purposes: firstly, it helps to highlight the critical impacts requiring consideration in the management and approval process; secondly, it shows the primary impact characteristics, as defined above, used to evaluate impact significance.

The impacts will be ranked according to the methodology described below. Where possible, mitigation measures will be provided to manage impacts. In order to ensure uniformity, a standard impact assessment methodology will be utilised so that a wide range of impacts can be compared with each other. The impact assessment methodology makes provision for the assessment of impacts against the following criteria:

Significance;
Spatial scale;
Temporal scale;
Probability; and
Degree of certainty.

A combined quantitative and qualitative methodology was used to describe impacts for each of the aforementioned assessment criteria. A summary of each of the qualitative descriptors along with the equivalent quantitative rating scale for each of the aforementioned criteria is given in **(Table** A 3**)**

Part A: Define impact consequence using the three primary impact characteristics of magnitude, spatial scale/ population and duration;
Part B: Use the matrix to determine a rating for impact consequence based on the definitions identified in Part A; and
Part C: Use the matrix to determine the impact significance rating, which is a function of the impact consequence rating (from **Part B**) and the probability of occurrence.

Table A 3 - Significance Rating Methodology

PART A: DEFINING CONSEQUENCE IN TERMS OF MAGNITUDE, DURATION AND SPATIAL SCALE ***Use these definitions to define the consequence in Part B***		
Impact characteristics	**Definition**	**Criteria**
MAGNITUDE	Major -	Substantial deterioration or harm to receptors; receiving environment has an inherent value to stakeholders; receptors of impact are of conservation importance; or identified threshold often exceeded
	Moderate -	Moderate/measurable deterioration or harm to receptors; receiving environment moderately sensitive; or identified threshold occasionally exceeded
	Minor -	Minor deterioration (nuisance or minor deterioration) or harm to receptors; change to receiving environment not measurable; or identified threshold never exceeded
	Minor +	Minor improvement; change not measurable; or threshold never exceeded
	Moderate +	Moderate improvement; within or better than the threshold; or no observed reaction
	Major +	Substantial improvement; within or better than the threshold; or favourable publicity
SPATIAL SCALE OR POPULATION	Site or local	Site specific or confined to the immediate project area
	Regional	May be defined in various ways, e.g. cadastral, catchment, topographic
	National/ International	Nationally or beyond
DURATION	Short term	Up to 18 months.
	Medium term	18 months to 5 years
	Long term	Longer than 5 years

PART B: DETERMINING CONSEQUENCE RATING ***Rate consequence based on definition of magnitude, spatial extent and duration***					
			SPATIAL SCALE/ POPULATION		
			Site or Local	**Regional**	**National/ international**
MAGNITUDE					
Minor	**DURATION**	**Long term**	Medium	Medium	High
		Medium term	Low	Low	Medium
		Short term	Low	Low	Medium
Moderate	**DURATION**	**Long term**	Medium	High	High
		Medium term	Medium	Medium	High
		Short term	Low	Medium	Medium
Major	**DURATION**	**Long term**	High	High	High
		Medium term	Medium	Medium	High
		Short term	Medium	Medium	High

PART C: DETERMINING SIGNIFICANCE RATING ***Rate significance based on consequence and probability***				
		CONSEQUENCE		
		Low	**Medium**	**High**
PROBABILITY (of exposure to impacts)	**Definite**	Medium	Medium	High
	Possible	Low	Medium	High
	Unlikely	Low	Low	Medium

Appendix C

Project team CV's

WOUTER FOURIE

Professional Heritage Specialist and Professional Archaeologist and Director PGS Heritage

Summary of Experience

Specialised expertise in Archaeological Mitigation and excavations, Cultural Resource Management and Heritage Impact Assessment Management, Archaeology, Anthropology, Applicable survey methods, Fieldwork and project management, Geographic Information Systems, including *inter alia* -

Involvement in various grave relocation projects (some of which relocated up to 1000 graves) and grave "rescue" excavations in the various provinces of South Africa

Involvement with various Heritage Impact Assessments, within South Africa, including -

- Archaeological Walkdowns for various projects
- Phase 2 Heritage Impact Assessments and EMPs for various projects
- Heritage Impact Assessments for various projects
- Iron Age Mitigation Work for various projects, including archaeological excavations and monitoring
- Involvement with various Heritage Impact Assessments, outside South Africa, including -
- Archaeological Studies in Democratic Republic of Congo
- Heritage Impact Assessments in Mozambique, Botswana and DRC
- Grave Relocation project in DRC

Key Qualifications

BA [Hons] (Cum laude) - Archaeology and Geography - 1997

BA - Archaeology, Geography and Anthropology - 1996

Professional Archaeologist - Association of Southern African Professional Archaeologists (ASAPA) - Professional Member

Accredited Professional Heritage Specialist – Association of Professional Heritage Practitioners (APHP)

CRM Accreditation (ASAPA) -

- Principal Investigator - Grave Relocations
- Field Director – Iron Age
- Field Supervisor – Colonial Period and Stone Age
- Accredited with Amafa KZN

Key Work Experience

2003- current - Director – Professional Grave Solutions (Pty) Ltd

2007 – 2008 - Project Manager – Matakoma-ARM, Heritage Contracts Unit, University of the Witwatersrand

2005-2007 - Director – Matakoma Heritage Consultants (Pty) Ltd

2000-2004 - CEO– Matakoma Consultants

1998-2000 - Environmental Coordinator – Randfontein Estates Limited. Randfontein, Gauteng

1997-1998 - Environmental Officer – Department of Minerals and Energy. Johannesburg, Gauteng

Worked on various heritage projects in the SADC region including, Botswana, Mozambique, Malawi, Mauritius , Zimbabwe and the Democratic Republic of the Congo

Appendix D

Palaeontological Chance finds protocol

1 LEGISLATION

Cultural Heritage in South Africa (includes all heritage resources) is protected by the **National Heritage Resources Act (Act 25 of 1999) (NHRA).** According to Section 3 of the Act all Heritage resources include **"all objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens**".

Palaeontological heritage is unique and non-renewable and is protected by the NHRA and are the property of the State. It is thus the responsibility of the State to manage and conserve fossils on behalf of the citizens of South Africa. Palaeontological resources may not be excavated, broken, moved, or destroyed by any development without prior assessment and without a permit from the relevant heritage resources authority as per section 35 of the NHRA.

1.1 Background

A fossil is the naturally preserved remains (or traces) of plants or animals embedded in rock. These plants and animals lived in the geologic past millions of years ago. Fossils are extremely rare and irreplaceable. By studying fossils it is possible to determine the environmental conditions that existed in a specific geographical area millions of years ago.

1.2 Introduction

This informational document is intended for workmen and foremen on construction sites. It describes the actions to be taken when excavations or construction activities accidentally uncovers fossil material.

It is the responsibility of the Environmental Control Officer (ECO) of the project to train the workmen and foremen in the procedure to follow when a fossil is accidentally uncovered. In the absence of the ECO a member of the staff must be appointed to be responsible for the proper implementation of the chance find protocol as not to compromise the conservation of fossil material.

1.3 Chance Finds Procedure

- If a chance find is made the person responsible for the find must immediately **stop working** and all work must cease in the immediate vicinity of the find.
- The person who made the find must immediately **report** the find to his/her direct supervisor which in turn must report the find to his/her manager and the ECO or site manager. The ECO must report the find to the relevant Heritage Agency (Amafa). (Contact details: Amafa Pietermaritzburg Office. Tel; 0333 946543 or email: lindim@amafapmb.co.za). The information to the Heritage Agency must include photographs of the find, from various angles, as well as the GPS co-ordinates.

- A preliminary report must be submitted to the Heritage Agency within **24 hours** of the find and must include the following: 1) date of find; 2) a description of the discovery and a 3) description of the fossil and its context (depth and position of the fossil), GPS co-ordinates.
- Photographs (the more the better) of the discovery must be of high quality, in focus, accompanied by a scale. It is also important to have photographs of the vertical section (side) where the fossil was found.

Upon receipt of the preliminary report the Heritage Agency will inform the ECO (or site manager) whether a rescue excavation or rescue collection by a palaeontologist is necessary.

- The site must be secured to protect it from any further damage. **No attempt** should be made to remove material from their environment. The exposed finds must be stabilized and covered by a plastic sheet or sand bags. The Heritage agency will also be able to advice on the most suitable method of protection of the find.
- In the event that the fossil cannot be stabilized the fossil may be collected with extreme care by the ECO (or site manager). Fossils finds must be stored in tissue paper and in an appropriate box while due care must be taken to remove all fossil material from the rescue site.
- Once Heritage Agency have issued written authorization, the developer may continue with the development.

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03 October 2024
596402

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Lion Match Office Park
892 Umgeni Road
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4001

Attention: Fisiwe Sishi

Dear Fisiwe

Proposed Development of Amaoti Secondary School: Addendum to the Ohlanga River Floodine Report

1. Introduction

In April 2023, SRK Consulting (South Africa) (Pty) Ltd (SRK) determined the detailed floodlines along the Ohlanga River for the proposed development of Amaoti Secondary School in Durban, KwaZulu-Natal.

Iliso Consulting (Pty) Ltd t/a NAKO Iliso (Iliso), who are the engineers acting on behalf of Coega Development Corporation (CDC), requested SRK to determine the detailed 1:50- and 1:100-year floodlines for two tributaries adjacent the proposed development to be included as an addendum to the floodline assessment report issued in April 2023.

This addendum provides a brief description of the methodology used and summarises the results of the investigation. Figure 2-1 illustrates the extent of this investigation.

2. Data Collection

The following data were utilised to undertake the investigation:

- Site conditions based on a site investigation.
- Topographical site survey undertaken by Njiki Surveys (09/10/2020 Rev1).
- Topographical survey of cross sections across the tributaries undertaken by R.A. Logan & Associates (Sept 2024).
- Previous SRK floodline reports and hydraulic models.
- Aerial Imagery (Google Earth and Bing).
- 1:50 000 topographical maps.
- River centreline information obtained from Department of Water and Sanitation (DWS).

Partners R Armstrong, P Aucamp, JS Bartels, CM Bauman, LI Boshoff, N Brien, PL Burmeister, T Claassen, LSE Coetsee, CD Dalgliesh, IT Doku, M du Toit, BM Engelsman, R Gardiner, M Hinsch, SG Jones, W Jordaan, WC Joughin, DA Kilian, F Lake, JA Lake, LM Linzer, NG Macfarlane, V Maharaj, I Mahomed, JI Mainama, HAC Meintjes, DH Mossop, RD O'Brien, VS Reddy, AM Robertshaw, PJ Shepherd, T Shepherd, MJ Sim, JS Stiff, M van Huyssteen, AT van Zyl, MD Wanless, ML Wertz

Directors R Armstrong, JI Mainama, TJ McGurk, VS Reddy, T Shepherd, JS Stiff, AT van Zyl

Associate Partners BF Cock, SA de Villiers, K King, ML Maber, A Owens, N Rump, LC Shand, LH Spies, C Tuitz, JF van Graan, JM Walls

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srk consulting	**AMAOTI SECONDARY SCHOOL: FLOODLINE UPDATE** STUDY EXTENT	Project No. 596402

Figure 2-1: Study Extent

3. Hydrological Assessment

3.1. Catchment Characteristics

The characteristics of the Ohlanga Tributary catchment were determined to be similar to that of the Brookdale Tributary catchment.

3.2. Adopted Flood Peaks

Flood peak flows were previously determined for the Brookdale Tributary as part of the regional flood study undertaken in 1999. Remodelling of all the catchments was not included in this scope of works but a percentage increase was applied to the original peak flows using the Intergovernmental Panel on climate change 6th Assessment Report (IPCC). Looking at various scenarios over time the average percentage increase varied from 9% to 16% and the upper limit was used to account for potential climate change. The detailed climate change information can be supplied on request.

The flood peak flows for the Ohlanga Tributary were calculated based on that of the Brookdale Tributary catchment. A summary of the adopted flood peaks is shown in Table 3-1.

Table 3-1: Details

Catchment Name	Area (km^2)	Estimated Peak flow (m^3/s)	
		1:50	1:100
Brookdale Trib	0.51	26.23	32.63
Ohlanga Trib	0.23	11.92	14.83

4. Hydraulic Analysis

The cross-sectional data was captured into a computer backwater model, which was used to derive the flood levels. The HEC-RAS[1] (version 6.4.1) model employs standard backwater techniques to compute the High-Water Level (HWL) for various steady flow conditions, considering structures and controls across the watercourse.

Flood line analyses for both the 1:50-year and 1:100-year recurrence interval storms were carried out using the adopted peak flows. A combination of the recent surveys was used to determine the final flood levels.

4.1. Modelling configuration and assumptions

It was assumed that the watercourses were free flowing with no obstruction (silt and debris) at any of the controls.

The backwater model was run using future flows for the current site conditions including potential climate change.

5. Results

The estimated flood levels and hydraulic characteristics at the cross sections for current development conditions including typical long sections through the rivers are included in Appendix A.

The floodlines are delineated on Drawing 596402/001 (Rev B) in Appendix B for current development conditions.

6. Discussion

The calculated flood levels take preference over the mapped floodlines (i.e., plan position) due to limited survey between the cross sections.

A portion of the site is below the 1:50-year and 1:100-year floodlines with the majority of the development infrastructure falling outside of the floodlines. A portion of the proposed soccer field and embankments fall within the floodlines.

7. Conclusions and Recommendations

The following is to be considered:

- This report only addresses the 1:50 year and 1:100-year floodlines for current site conditions.
- The 1:50 and 1:100-year flood lines & flood levels as shown on Drawing 596402/001 (Rev B) in Appendix B are adopted.
- The floodlines & flood levels should be shown on all relevant drawings, and any drawings that are required for submission to the Municipality (flood levels taking preference over floodlines due to limited survey).
- All development to take place outside the 1:50 and 1:100-year floodlines. The watercourses must be re-analysed for any development encroachment, taking into consideration the proposed design dimensions and elevations of the encroachments.
- Erosion protection to be provided along river and fill embankments to protect platforms. It is estimated that berms of at least 0.8m in height are required adjacent the soccer field for the provided development layout. Alternatively, the layout should be amended to avoid any encroachment.

[1] "*HEC-RAS River Analysis System Version 6.4.1 June 2023, developed by the U.S. Army Corps of Engineers, Hydrologic Engineering Center*"

- Stakeholders of the proposed development must be informed of the associated risk of the 1:50yr and 1:100yr flood levels on their development.
- The watercourses must be re-analysed if any changes occur in the geometric configuration of the river or additional infrastructure or/and controls are introduced into the system.
- Property owner to be aware that an ongoing maintenance/management plan by the Municipality should be in place along the watercourses to ensure that the watercourses are kept free of silt and debris, so as not to increase the flood levels.
- Ensure all local stormwater systems draining into the river from/though the development is adequately designed and the flow from the outlets is dissipated to prevent potential erosion or localised flooding.
- Environmental, Municipal and Legal requirements must be adhered to.
- Final approval and requirements must be obtained from the Municipality and relevant authorities.

Yours faithfully,

SRK Consulting (South Africa) (Pty) Ltd



Vaseelan Moodley (B. Tech. Civil Eng.)
Civil Engineering Technologist



Murray Sim (Pr. Tech. Eng.)
Partner

Disclaimer

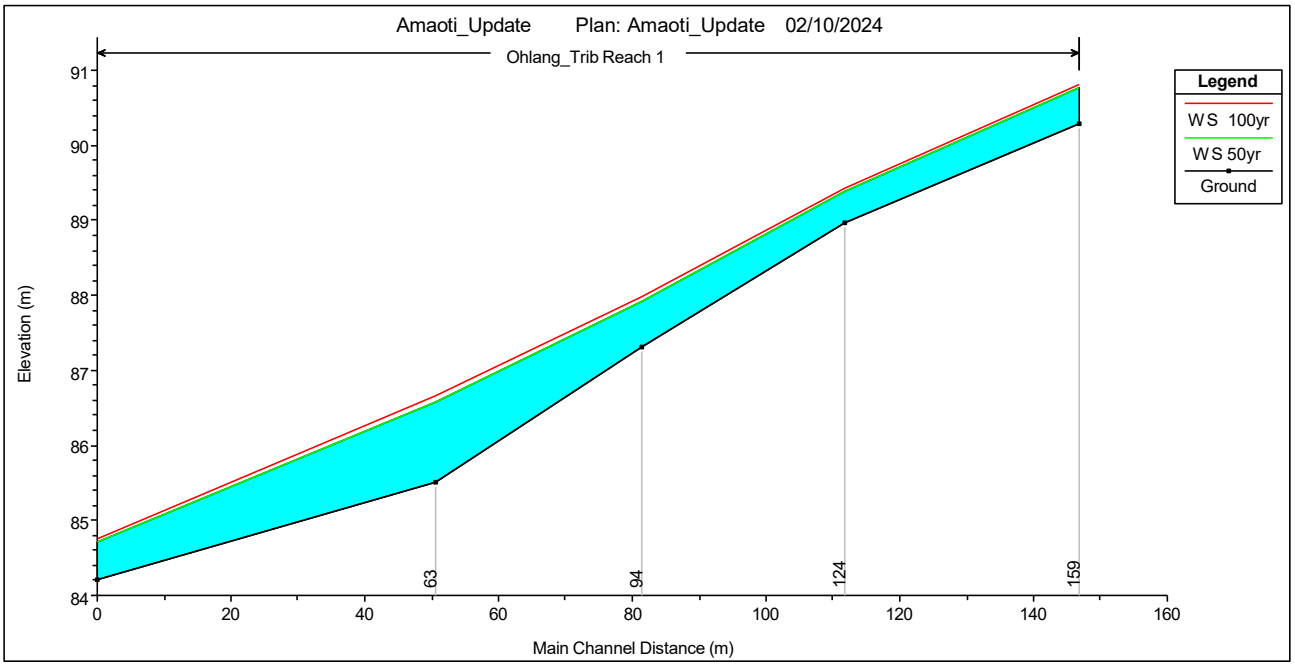
The opinions expressed in this Report have been based on the information supplied to SRK Consulting (South Africa) (Pty) Ltd (SRK). SRK has exercised all due care in reviewing the supplied information. Whilst SRK has compared key supplied data with expected values, the accuracy of the results and conclusions from the review are entirely reliant on the accuracy and completeness of the supplied data. SRK does not accept responsibility for any errors or omissions in the supplied information and does not accept any consequential liability arising from commercial decisions or actions resulting from them. Opinions presented in this report apply to the site conditions and features as they existed at the time of SRK's investigations, and those reasonably foreseeable. These opinions do not necessarily apply to conditions and features that may arise after the date of this Report, about which SRK had no prior knowledge nor had the opportunity to evaluate.

Appendices

Appendix A: HEC-RAS Results

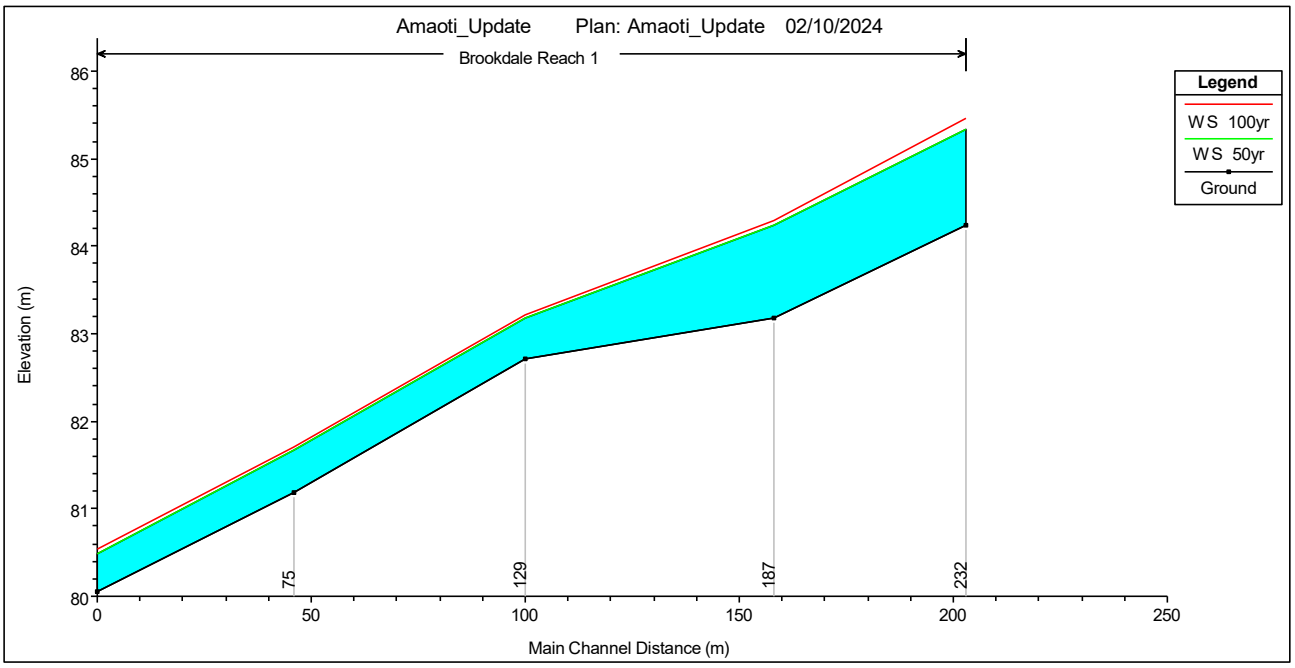
Ohlanga Tributary – 1:50- and 1:100-Year Hydraulic Results and Long Section

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Reach 1	159	50yr	11.92	90.30	90.77	90.75	90.88	0.034939	1.52	7.99	29.28	0.89
Reach 1	159	100yr	14.83	90.30	90.80	90.79	90.95	0.036765	1.68	9.05	30.23	0.93
Reach 1	124	50yr	11.92	88.97	89.38	89.38	89.50	0.044714	1.60	7.79	32.33	0.99
Reach 1	124	100yr	14.83	88.97	89.42	89.42	89.56	0.042630	1.71	9.11	33.65	0.99
Reach 1	94	50yr	11.92	87.31	87.93	87.94	88.11	0.046871	1.89	6.33	19.94	1.05
Reach 1	94	100yr	14.83	87.31	87.98	88.00	88.19	0.047654	2.05	7.31	21.13	1.07
Reach 1	63	50yr	11.92	85.51	86.57	86.64	86.88	0.034072	2.55	5.54	14.75	0.98
Reach 1	63	100yr	14.83	85.51	86.66	86.73	86.98	0.032548	2.69	6.85	17.08	0.98
Reach 1	12	50yr	11.92	84.21	84.71	84.68	84.80	0.040062	1.39	9.13	41.08	0.89
Reach 1	12	100yr	14.83	84.21	84.75	84.72	84.85	0.040024	1.51	10.78	45.22	0.90

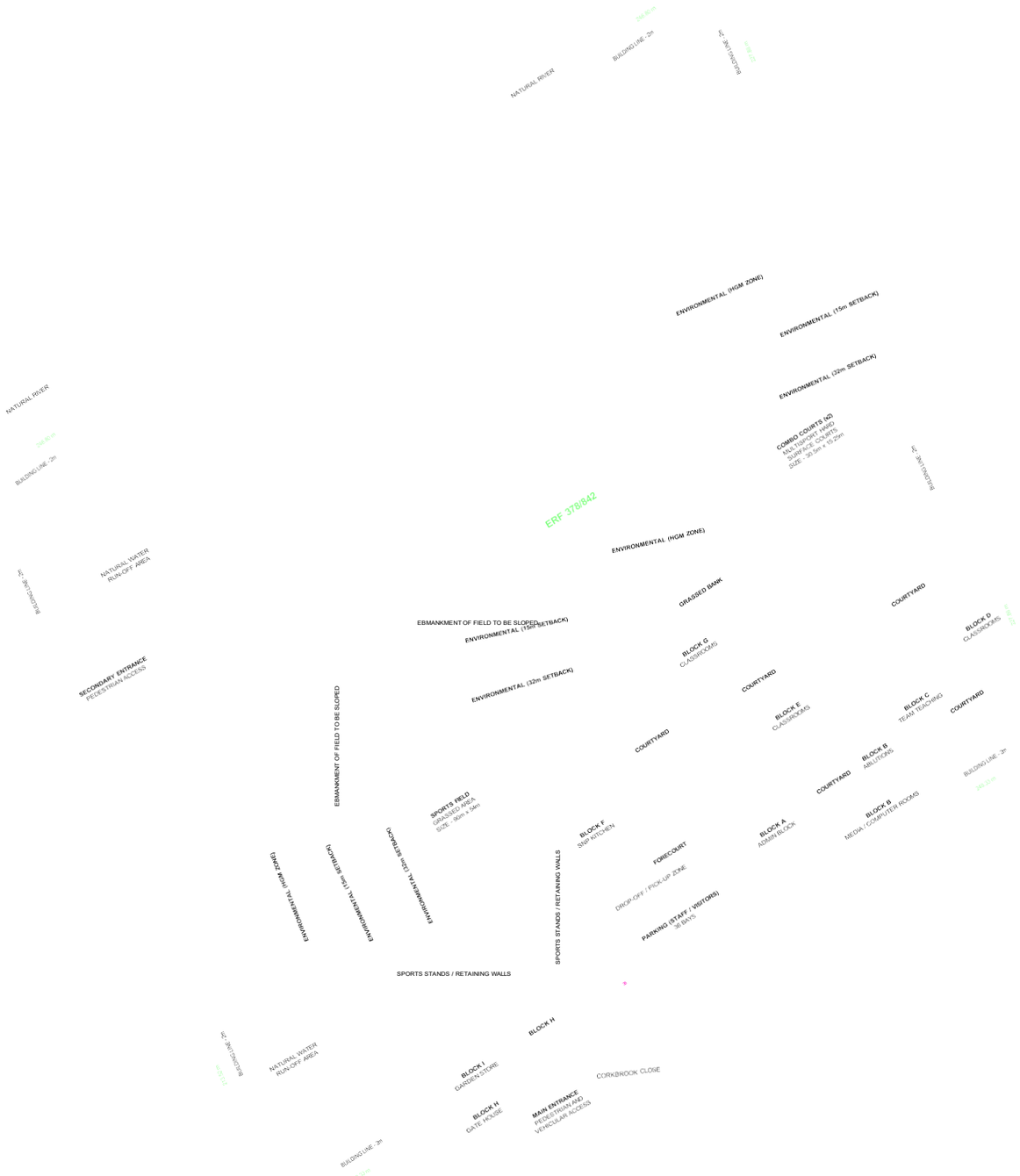


Brookdale Tributary – 1:50- and 1:100-Year Hydraulic Results and Long Section

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Reach 1	232	50yr	26.23	84.24	85.34	85.34	85.64	0.029449	2.51	11.54	21.44	0.94
Reach 1	232	100yr	32.63	84.24	85.45	85.45	85.77	0.026572	2.62	14.21	26.18	0.91
Reach 1	187	50yr	26.23	83.18	84.23	84.11	84.30	0.015605	1.43	22.90	58.24	0.62
Reach 1	187	100yr	32.63	83.18	84.29	84.16	84.37	0.015954	1.51	26.50	61.09	0.63
Reach 1	129	50yr	26.23	82.72	83.17		83.25	0.021523	0.96	23.40	94.37	0.61
Reach 1	129	100yr	32.63	82.72	83.22		83.30	0.021826	1.07	27.25	94.74	0.63
Reach 1	75	50yr	26.23	81.19	81.68		81.76	0.036213	1.51	20.92	87.70	0.87
Reach 1	75	100yr	32.63	81.19	81.71	81.68	81.81	0.035690	1.62	24.08	87.92	0.88
Reach 1	29	50yr	26.23	80.05	80.49	80.40	80.55	0.020008	0.77	25.55	90.09	0.52
Reach 1	29	100yr	32.63	80.05	80.53	80.44	80.60	0.020003	0.84	29.45	92.92	0.53



Appendix B: Drawing 596402/001 (Rev B)
(1:50 & 1:100-year Floodlines)



DO NOT SCALE

REV	DR	CH	DATE	REVISIONS
A	MOOV	SIMM	04_2023	

REFERENCE DRAWINGS

NOTES

Datum:
WGS84

Projection:
TM

Central Meridian / Zone:
LO.31

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ISSUED FOR REPORT PURPOSES

		DATE	CHECKED
DESIGNED	SIMM	10_2024	SIMM
DRAWN	MOOV	10_2024	SIMM

A3 SCALE: 1:1500
PROJECT No. DRG No. SHT OF REV

TITLE

1:50- and 1:100-YR FLOODLINES

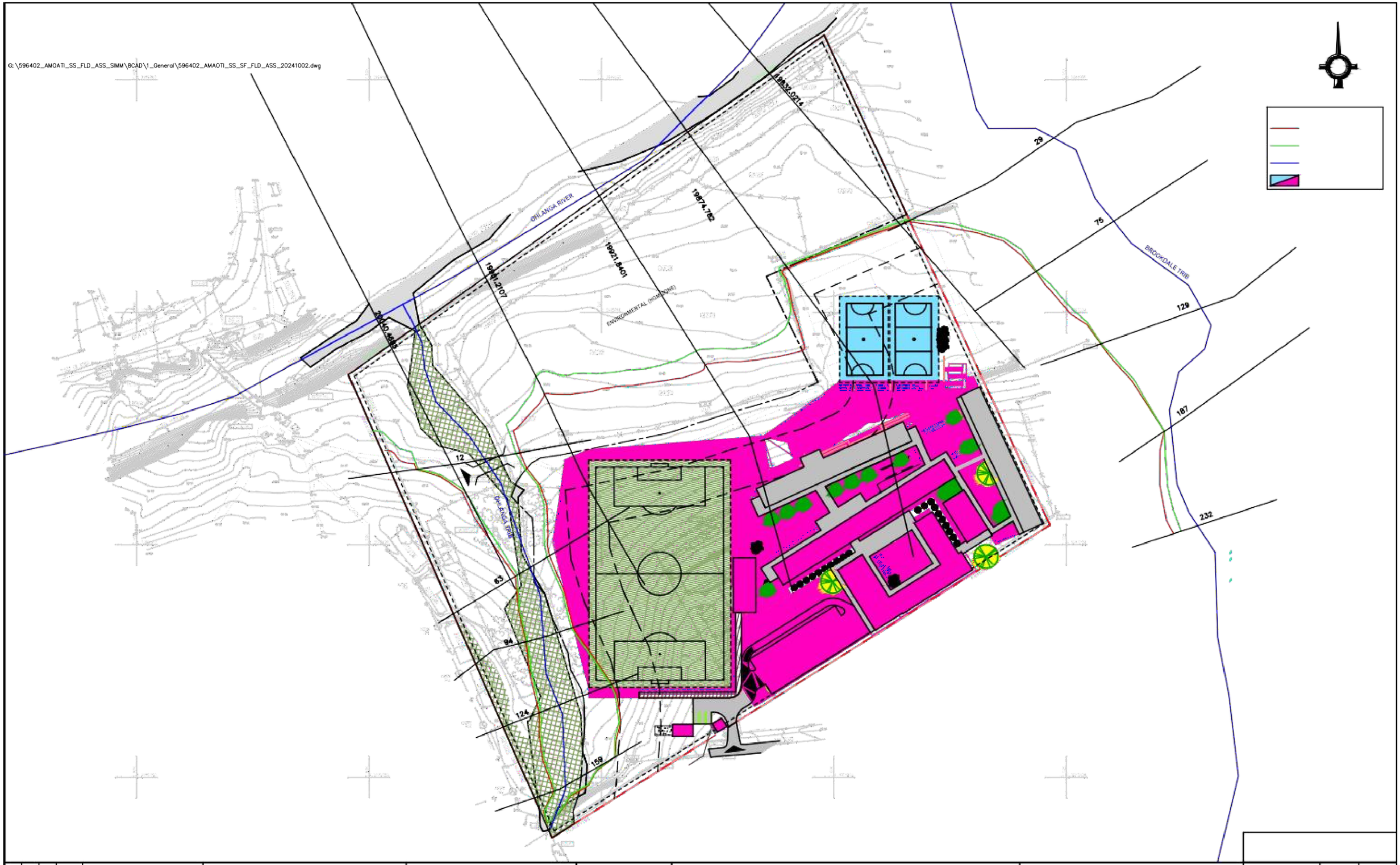
CESA
ConsultingEngineers South Africa

CLIENT

COEGA DEVELOPMENT CORPORATION

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srk consulting

PROPOSED DEVELOPMENT OF
AMAOTI SECONDARY SCHOOL
ALONG THE OHLANGA RIVER

3.4 BASELINE RISK ASSESSMENT

COEGA

Baseline Risk Assessment:

BASELINE RISK ASSESSMENT FOR THE AMAOTI SECONDARY SCHOOL

Risk Assessment №

CDC-SBU-BRA-128-26

Classification: Public

4 September 2026

DOCUMENT INFORMATION SHEET

Title of Document	:	*Safety, Health and Environment Management System*
Type of Document	:	*Baseline Risk Assessment*
Document Number	:	CDC-SBU-BRA-128-26
Prepared by	:	*Wesley Sullaphen*
Typed by	:	*Yaseen Francis*
Reviewed by	:	*Willem Liebenberg*
Business Unit	:	*KZN BU*
Prepared for	:	*Bidders/Service Providers*
Date of Issue	:	*4 September 2026*

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DOCUMENT CONTROL SHEET

The purpose of this form is to ensure that documents are reviewed and approved prior to issue. The form is to be bound into the front of all documents released by the Coega.

PROJECT NAME : *Amaoti Secondary School*

DOCUMENT TITLE : *Baseline Risk Assessment*

DOCUMENT No. : CDC-SBU-BRA-128-26

SIGNING OF THE ORIGINAL DOCUMENT

We, the undersigned, accept this document as a stable work product to be placed under formal change control as described by the Procedure for Control of Documented Information.

ORIGINAL	Prepared by	Reviewed by	Approved by
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Distribution:	***Coega***

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BASELINE HAZARD IDENTIFICATION AND RISK ASSESSMENT FOR THE CONSTRUCTION OF THE AMAOTI SECONDARY SCHOOL PROJECT

This Baseline Risk Assessment is based on the requirements of section 5(1)(a) of the Construction Regulations of 2014, and will be applicable as required in section 5(1)(b) of the Construction Regulations 2014. This Baseline Risk Assessment will be integrated into the project's Occupational Health and Safety Specification, and shall be taken into consideration by Designers in all their design work for the Amaoti Secondary School

WORK TASKS *Describe the tasks involved*	**HAZARDS IDENTIFIED*** *Include relevant details about the energy where applicable and leave blank if there are none*	**CONTROL MEASURES** *Detail controls or control guides to be implemented, based on the hierarchy of control options*	**RISK ANALYSIS** With Controls		
			L	I	R
General Baseline Risk Assessment					
Appointment of contractor to complete project as per design and contract	Misrepresentation of contractor capabilities at tender stage	• CDC to conduct an In depth vetting and verification system of qualifications of contractor staff • The Contractor must be appointed based on section 5(1) (h) of the Construction Regulations. • The Contractor's project management and site staff must be proven competent for their specific appointed role, and be in position of auditable and verifiable proof of competency.	2	5	H
	Employees medically unfit and incorrectly placed for job categories.	• All employees on the Amaoti Secondary School Project must have their medicals conducted and must be certified fit for their respective jobs prior to working on site, as per section 7(1)(g) of the Construction Regulations	3	4	M
	Employees and visitors haven't been trained of site specific SHE awareness	• All employees and site visitors to be inducted before work commences, or entering the construction site. • All employees to be trained on the relevant risk assessments and toolbox talks as per approved SHE Plan.	2	3	M

	Inadequate and absence of site supervision.	• A competent construction manager must be appointed specifically for the project and available on a full-time basis during all construction work, including that of sub-contractors. • A competent SHE Officer must be appointed and available on a full-timebasis during all construction work, including that of sub-contractors.	2	3	M
Site Establishment and Site Access	Unauthorized persons/drivers on Site	• Make design provision to fence off site with one point of entry and access control • Make design provision for construction signage to be conspicuously displayed • Develop a site access permit system to manage access	1	4	L
	Damages to services, leading to the disruption of local services, electrocution, fire, burns, flooding and environmental contamination	• Site plan must be located for all known services. • Contractor must obtain the relevant drawings and plans, and carryout a method to locate and identify and exposing all existing services (known and unknown). • Once services are expose, they should be safe guarded by means of barricade and demarcation • All excavations open overnight / non-working days to be barricaded or fenced	1	5	M
	Loss of habitat, vegetation and	• The approval for site clearance and topsoil stripping within the proposed boundary shall be issued by the Principal Agent.	2	3	M

	animal species due to site clearance	• Make design provision for stockpile stripped topsoil and vegetation undertaken as per Project's Environmental Specification.			
	Fires and explosions	• Combustible material must be stored separate from flammable material. Design provisions for storage facilities. • No open flames and fires, and a fire protection system but be in place and adopted. • Adequate fire equipment to be available at storage areas • Competent Fire Fighters and Fire Equipment Inspectors to be appointed for site. • Make design provisions to allocate a designated smoking area which must be equipped with fire equipment	3	4	M
	Risks relating to delivery of tools, plant, equipment and machinery.	• Ensure that those involved in this operation are trained, competent in using the plants, tools and machinery involved, and understand the risks and mitigation controls required to be implemented. • Ensure that the vehicles, equipment, material and tools are serviced, and certified for the relevant loads they will be used for • Ensure workers are provided with the appropriate personal protective equipment	2	4	M
Site Establishment and Site Access (cont.)	Surface, groundwater and air contamination and pollution	• Provide weatherproof bins for collecting and storage of debris and waste materials on site. • Designated water and weather resistant fuel and chemical storage containers must be used. Storage containers to be placed on a bounded platform. • Vehicles, equipment, material and tools must be checked and serviced. Leaking vehicles equipment, material and tools must be kept off site. • If vehicles, equipment, material and tools are to be stored on site, all potential for accidental spillage or leakage of fluids must be mitigated by placement of catchments devices or barriers	3	3	M

		• Make design provisions for a location and construction of an onsite Workshop for undertaking plant, tools and machinery mechanical work in emergency situations. • Spill kit must be provided on site in adequacy at all times. • Develop and implement Erosion and Sediment Control Plan for works. • Water cart onsite to ensure dust suppression is maintained			
	Encroachment to no-go areas	• "No-go" areas must be identified, demarcated and barricaded. • All personnel entering the site must receive a site induction that clearly outlines site boundary and designated areas zoned for different tasks. • All works will be executed within the fenced boundary. • The project notice board and signage must be in place, clear and visible.	1	5	M
Appointment and use of sub-contractors by Principal Contractor	Principal Contractor not ensuring sub-contractors meet legislative Requirements.	• Principal contractor to provide prospective sub-contractors with the Client's Project Specification pertaining to the construction work that must be performed. • Principal contractor to peruse and approve all sub-contractors' SHE Plans prior to commencement at work. • Principal contractor to ensure all sub-contractor are adhering to the legislative requirements. • Principal contractor to audit all sub-contractors on a regular basis and ensure compliance	3	3	M
Transporting of containers /equipment to site	Incident/accident involving people and/or vehicles mobile plant and machinery.	• Make design provisions for traffic movement and accommodation to be observed and manually controlled • Vehicle roadworthiness checking system must be in place for all construction vehicles on the project. • Driver competent checking system must be in place for all drivers and operators on the project	1	3	L

		• Speed limit of 30km/h must be communicated and adhered to.			
	Driving and storing of equipment in undesignated access areas and on incorrect routes, roads and spaces.	• Design and plan accordingly to prevent access disruptions, queuing in undesignated areas, and stacking and storage of equipment and material in incorrect areas. • Ensure that those involved in this operation are trained, competent in using the plants, tools and machinery involved, and understand the risks and mitigation controls required to be implemented • Principal Contractor to manage all their visitors, employees and service providers' driving behaviours and conduct on site and within the estate. • Traffic movement and accommodation to be observed and manually controlled • Stacking and storage area to be sign posted and managed	1	3	L
Selection of workers/ Staff/ management	Incompetent management employees appointed on the project	• Contractor's project management team to be competent for their specific appointed role and be in position of auditable and verifiable proof of competency. • Contractor to ensure competent staff are employed and appointed for the Amaoti Secondary School Project.	1	5	M
Work at height and elevated position	Falling accident and incidents resulting to fatalities, permanent disabilities and other injuries	• Only competent persons certificate medically fit to work at heights should conduct work at height • Contractors to work according to the Fall protection plan and Risk Assessment • Make design provisions for safe access to elevated working areas. This must be carefully planned in order to select the most appropriate method and equipment. Use of drums or similar equipment is strictly prohibited.	2	4	M
Working with portable tools and portable electrical equipment	Multiple injuries, electrocution, lacerations	• Ensure every person operating and portable tool/electrical equipment is trained and competent to use that tool • A portable tool and electrical equipment safety checking system must be in place for all portable tools and equipment used on site. • Ensure workers are provided with the appropriate personal protective equipment	1	4	L

Erection of Temporary Works/structures (incl. scaffold)	Incidents and accidents resulting to fatalities, permanent disabilities and other injuries	• Ensure that temporary work is designed, inspected, approved and supervised by a competent temporary works designer. • All temporary works to be erected, moved, dismantled and inspected by workers that are trained and competent to perform temporary works operations safely. • All equipment and tools used in temporary work structures must be checked and ensured that it is sound and suitable for use.	4	3	H
Provision/connection of electrical supply to site/facility	Unsafe electrical connection resulting into electrocution, fire and burns.	• Any electrical installation done on site is to be done by a registered and competent person. • Weekly inspections conducted for temporal electricity installation and connections	1	4	L
Building works	Multiple fatalities or permanent injuries; equipment failure; exposure to chemicals; electrical hazards etc.	• All work to carried out upon the instruction of the appointed and designated Designer, and according to the Design Specifications. • All work to be carried out under and supervised by competent persons(s) who have been appointed in writing and aware of all the dangers involved in the operation and conversant with the precautionary measures to be taken in the interest of health and safety • PPE to be provided for all persons those entering and working on site • Continuous risk assessment must be undertaken as an integral part of SHE Management	4	4	H
Building works (cont.)	Environmental negative impacts and pollution (dust, noise, odour, visual intrusion, waste management, emissions, pollution, contamination)	• All construction work and activities to comply with all requirements of the Environmental Specification, Environmental method statement and environmental management plan • Work to be designed and undertake in a manner that will reduce dust, noise, odour, waste and any pollutants arising from construction activities. • Ensure dust, noise, odour, waste and any pollutants arising from construction activities is manage and controlled effectively.	2	4	M

		• Building waste to be removed off site on a regular basis, and contractor to provide client with all waste disposal/ recycling slips. • Waste disposal slips to be kept for a minimum 3 years • The site must be kept tidy, and unused material to be stored safely or removed off site			
Excavation work	Multiple injuries, fatalities and property damages	• A permit system must be developed for all excavations to take place on the project • The excavation work is to be undertaken as per Design specification • A competent person to supervise work and inspect excavations • The entire site must be adequately fenced and barricaded to prevent access • All excavations to be backfilled or adequately barricaded and demarcated with visible marking and signage. • Unconsolidated excavations and embankments must be shored laterally/laterally and retained/supported to prevent collapse.	4	5	H
Housekeeping on site	Trips and falls resulting from equipment, material and waste material left lying around.	• The site must be kept tidy, and all unused material to be stored safely or removed off site • All building waste to be removed off site on a regular basis. • Recycling to be encouraged on site in line with the • environmental management plan	4	3	H
Construction vehicles, mobile plants and machinery	Incidents and accidents resulting in damages and injuries of property and persons	• Construction site must be organized in such a way that pedestrians and vehicles can move safely and without risk to health • All construction vehicles or mobile plant travelling, working or operating on public roads comply with the requirements of the National Road traffic Act, 1996. • All vehicles to be parked in such a way that they do not pose a risk to any other road users and they do not cause any nuisance to the neighbours • Traffic movement to be observed and manually controlled • Vehicle roadworthiness checking system must be in place for all construction vehicles on the project.	1	4	L

		• Driver competent checking system must be in place for all drivers and operators on the project • Speed limit of 30km/h must be communicated and adhered to.			
Provision of staff facilities	Unavailability of ablution facilities for construction employees on site	• Ablution facilities must be provided in terms of the OHS Act, the Environmental Regulations for Workplace and the project's SHE Specification	2	3	M
	Unavailability of sheltered eating facilities and portable water for employees on site	• Eating facilities must be provided in terms of the OHS Act, the Environmental Regulations for Workplace and the project's SHE Specification	2	3	M
	Unavailability of housing accommodation for eligible staff	• Housing accommodation must be provided by the Contractor for eligible employees. The use of site facilities shall not be used for this purpose	1	1	L
Asbestos	Occupational illness, disease, Asbestosis, lung cancer related to Asbestos, Mesothelioma, pleural thickening, fatality , public liability claims and civil lawsuits	• Asbestos inventory and risk assessment to be made available • Asbestos plan of work to be implemented and submitted to the Department of Employment and Labour	3	5	H
Electrical installation and tie into Eskom and local municipality infrastructure	Electrocution, Fatalities, injuries to people, disruption to services	• Detailed method statement to be developed • Lock out tag out procedure to be implemented	4	5	H
Demolition	Collapse, Fatalities, injuries to people	• Detailed structural engineering survey and method statement to be developed by a competent person • Utilities, services and risks of surrounding structures to be identified • Demolition must be carried out under the supervision of a competent person • Compile a detailed risk assessment derived from the method statement	3	5	H

SARS-CoV-2/HBA	Serious illness, fatalities, work stoppages and widespread infection and transmission	• SARS-CoV-2/HBA risk assessment available and implemented • SARS-CoV-2/HBA management plan to address infection and transmission in the workplace	2	3	M

RISK MATRIX

				Impact if Transpiring (I)				
				1	2	3	4	5
				Minor Injuries	Temporary Impairment	Hospitalisation	Permanent Impairment	Fatality
Likelihood	1	Could happen, but probably never will	Rare	Low	Low	Low	Low	Medium
	2	Not likely to occur in normal circumstances	Unlikely	Low	Low	Medium	Medium	High
	3	May occur at some time	Possible	Low	Medium	Medium	Medium	High
	4	Expected to occur at some point	Likely	Low	Medium	High	High	High

	5	Expected to occur regularly	Almost Certain	Medium	Medium	High	High	High

Risk Rating (R) (order of importance)	
L	Low risk
M	Medium risk
H	High risk

C3.5 CONTRACTOR'S REPORT

CONTRACTOR MONTHLY REPORT

Project No: CDC/441/26

Project Name:
NEW/REPLACEMENT SCHOOL AT AMAOTI NO.3 SECONDARY SCHOOL IN PINETOWN DISTRICT, KWAZULU-NATAL

Contract No: ……

Contractor's Name: ……

Claim No.: …….. **For Period Ending: ……**

Date of Report: ……

The Contractor's Monthly Report comprises an integral part of the Contractor's Payment Claim and processing of the payment claim is not permitted without this report also being submitted, i.e. "NO REPORT – NO PAYMENT"

Attachments:

Part 2	Overall Project Worker Schedule: Schedule of all local labourers employed since the start of the project
Part 3	Weekly Task Wage Register
Part 4	Local Labour Schedule

OVERALL PROJECT WORKER SCHEDULE (local labourers only) PART 2

Contract No: **CDC/441/26**
Project No. **PN/DoE-KZN/19/00045**
Project Name: **NEW/REPLACEMENT SCHOOL AT AMAOTI NO.3 SECONDARY SCHOOL IN PINETOWN DISTRICT, KWAZULU-NATAL**
Month of Report: … ……. Sheet: ……1 .....of …1….

Names of all **Local Workers** employed **at any time on the project** are to be entered in the table below irrespective of how long they worked on the project.

No.	Name of Local Labourer	Identity Number	Month Worker Started	Age	Tick if Yes									Place a tick in the box which corresponds to the Gender and Age of the Worker				
														Women		Men		
					Female Head of Household with Dependants	Disabled	Labourer	Semi-Skilled	Skilled	Supervisor	Clerical	Managerial	Professional	Over 35 yrs 2A	35 yrs & under 2B	Over 35 yrs 2C	35 yrs & under 2D	
																		Total No. of workers Employed on the Project
Totals for this sheet																		
Totals from previous sheet																		
Totals carried forward																		
					(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N) = (J+K+L+M)

Completed by: Name: …… Signature:…… Capacity …… Date:…..……..

WEEKLY TASK WAGE REGISTER (local labourers only) PART 3

Contract No: **CDC/441/26**

Project No. **PN/DoE-KZN/19/00045**

Project Name: **NEW/REPLACEMENT SCHOOL AT AMAOTI NO.3 SECONDARY SCHOOL IN PINETOWN DISTRICT, KWAZULU-NATAL**

Week Ending: ……

Sheet:…1.. of 1…..

Entries in this portion to be completed by Foreman									**Entries in this portion to be Completed by Contractor**				
No.	Name of local worker	Days Worked							Payment				
		Mon	Tue	Wed	Thu	Fri	Sat	Sun	Total DAY TASKS worked this week	Rate per DAY TASK	Total Payment due to Worker	Workers signature on receipt of Payment	Date Payment Received by Worker
Totals This Sheet													
Totals Brought Forward From previous Sheet													
Totals Carried Forward													
									(A)		(B)		

Completed by: Name: …… Signature: …… Capacity: ……. …… Date: ……

LOCAL LABOUR AND MATERIAL SCHEDULE PART 4

Contract No: CDC/441/26 **Date of Report: …….**

Project Name: NEW/REPLACEMENT SCHOOL AT AMAOTI NO.3 SECONDARY SCHOOL IN PINETOWN DISTRICT, KWA-ZULU NATAL
For Period Ending: …….
Contractor Name: ……. ……

1. Summary of Day Tasks worked and Amount Spent on Local Labour this month

Week No.	Week Ending		Total Day Tasks / Person Days Worked	Total Amount Paid	
			(Total of (A) from Form 4 for each week)	(Total of (B) from Form 4 for each week)	
1					
2					
3					
4					
5					
6					
7					
8					
9					
Total					

Transfer to 2 in table below

2. Summary of Amount Spent on Local Labour to date

1. Previous Amount Spent on Local Labour (From previous claim)	**R**
2. Amount Spent on Local Labour this month (From **Total** above)	**R**
3. Total Amount Spent on Local Labour to date (3) = (1+2)	**R**

3. Local Labour Schedule

Summary of Local Labour Employed **Columns refer to Columns in Part 2**	No. of local workers who worked on the project to date (From Part 2)	**% of Total**
1. Total No. of **individual local workers** who have worked on the Project (Column N)		100%
10. How many of the Total No. are **local youth** (35 yrs and under) (Column B & D)		
11. How many of the Total No. are **local women** (Column A + B)		

4. Summary of Amount Spent on Material to Date (Cumulative)

Item	**This Month**	**Total to date**

1. Material from Local Municipality		
2. Material from Local District Municipality		
3. Material from Outside the Kwa-Zulu Natal Province		
4. Material from other areas within the Kwa-Zulu Natal Province.		
Total Material		
Total material as percentage of contractor expenditure		
Total as percentage of contractor budget		

5. Training of Local Workers

Category of training	**Name of course**	**No. trained**	**Days trained**	**Comments on progress**
(a) Technical training for implementation	Bricklaying Carpentry			
	Plumbing			
	Fencing			
	Plastering			
	Painting			
	House Building			
	Handyman			
	Electrical			
(b) Institutional training for local management beyond construction				
(c) Technical training for OMM				
(d) Institutional training for implementation				
(e) HIV/ Aids etc.				
Other – Please specify				
Total				

Completed by: …….. **…….** **……..** **……**

Name Signature Capacity Date

C3.5.1 ANNEXURE B1 – JOB FORECAST SCHEDULE

ANNEXURE “B1”

JOB FORECAST SCHEDULE

CONTRACT No. CDC/441/26 – NEW/REPLACEMENT SCHOOL AT AMAOTI NO.3 SECONDARY SCHOOL IN PINETOWN DISTRICT, KWAZULU-NATAL

DATE: _____

Skill Level	Grade	Occupational Group	Job Title	Total Labour (Seconded and Local)
Unskilled	Task Grade A	General Worker	General Worker	
Semi-skilled	Task Grade B	Artisan Aid	Artisan Aid	
		Construction Hand Grade IV	Structures Construction Hand	
			Premix Paving Checker	
			Steel Bending Machine Operator	
			Civil Construction Bricklayer Grade II	
		Operator Grade V	Boom Scraper Operator	

			Pedestrian Roller Operator	
			Piling Auger Machine Operator	
		Checker	Checker	
		Chainman	Chainman	
Semi-skilled	Task Grade C	Construction Hand Grade III	Shutter hand Grade III	
			Concrete Hand Grade II	
		Operator Grade IV	Track Rig Operator (general)	
			Bore Pile Operator	
			Continuous Flight Auger Operator	
			Drilling Supervisor	
		Site Support	Junior Clerk	
Semi-skilled	Task Grade D	Construction Hand Grade II	Shutter hand Grade II	
			Reinforcing Hand Grade II	
			Concrete Hand Grade I	
			Fence Erector	
			Guard Rail Erector	
		Operator Grade III	Concrete Mixer Operator	

Semi-skilled	Task Grade D	Construction Hand Grade II	Shutter hand Grade II	
			Reinforcing Hand Grade II	
			Concrete Hand Grade I	
			Fence Erector	
			Guard Rail Erector	
		Operator Grade III	Concrete Mixer Operator	
			Batch Plant Operator	
			Concrete Dumper Operator	
			Concrete Pump Operator	
			Tower Crane Operator	
			General Premix Roller Operator	
			Milling Machine Operator	
			Paver Operator	
			Excavator Operator	
			Front End Loader Operator	
			TLB Operator	
			Dozer Operator	
			Grader Operator (general)	
			Gunite Nozzle person	
		Driver Grade II	Motorcycle Driver	
			Tractor Driver	

			Light Motor Vehicle Driver	
			Driver Operator	
			Heavy Duty Driver (rigid)	
			Extra Heavy Duty Driver (rigid)	
		Site Support	Material Tester	
		Building Skills	Semi-Skilled	
			Light Motor vehicle driver	
			Hoist Operator	
			Driver (Code 9)	
Skill Level	Grade	Occupational Group	Job Title	Total Labour (Seconded and Local
Semi-skilled	Other (specify)	Other (specify	Other (specify)	
Skilled	Task Grade E	Construction Hand Grade 1	Shutter hand Grade I	
			Reinforcing Hand Grade I	
			Pipe layer Grade I	
			Kerb layer Grade I	
			Civil Construction Bricklayer Grade I	
		Operator Grade II	Mobile Crane Operator	
			Screed Operator	

			Scraper Operator	
		Driver Grade I	Heavy Duty Driver (articulated)	
			Extra Heavy Duty Driver (articulated)	
		Site Support	Assistant surveyor	
		Building skills	Journeyman's assistant	
			Heavy Duty driver (Code 10)	
			Crane Operator	
			Machine Minder and Sawyer	
			Mechanical Handling Equipment Driver	

Skill Level	Grade	Occupational Group	Job Title	Total Labour (Seconded and Local
Semi-skilled	Other (specify)	Other (specify	Other (specify)	
Skilled	Task Grade E	Construction Hand Grade 1	Shutter hand Grade I	
			Reinforcing Hand Grade I	
			Pipe layer Grade I	
			Kerb layer Grade I	
			Civil Construction Bricklayer Grade I	
		Operator Grade II	Mobile Crane Operator	
			Screed Operator	
			Scraper Operator	
		Driver Grade I	Heavy Duty Driver (articulated)	
			Extra Heavy Duty Driver (articulated)	
		Site Support	Assistant surveyor	
		Building skills	Journeyman's assistant	
			Heavy Duty driver (Code 10)	
			Crane Operator	
			Machine Minder and Sawyer	
			Mechanical Handling Equipment Driver	

		Electrical Construction	Electrical Construction Operator	

Skilled	Task Grade F	Building Skills	Artisan/Journeyman	
		Electrical Construction	Electrical Tester for single phase	
			Artisan Unlicensed	
		Operator Grade I	Grader Operator (final level)	
Skilled	Task Grade G	Building Skills	Artisan journeyman with N2	
		Electrical Construction	Installation Electrician	
			Supervisor Grade II; Plant Serviceman	
Skilled	Task Grade H	Electrical Construction	Master Installation Electrician	
			Supervisor Grade I	
Skilled	Task Grade I	Artisan	Diesel Mechanic, Fitter & Turner, Auto Electrician, Boilermaker, Welder.	
Skilled	Other (specify)	Other (specify)	Other (specify)	

This schedule must include the estimated Jobs to be provided on the Project by all on-site Sub-contractors (inclusive of SMME's)

C3.5.2 ANNEXURE B2 – JOB WAGE SCHEDULE

ANNEXURE "B2"

NEW/REPLACEMENT SCHOOL AT AMAOTI NO.3 SECONDARY SCHOOL IN PINETOWN DISTRICT, KWAZULU-NATAL
Contract No. (CDC/441/26)

BUILDING INUDUSTRY JOB & WAGE SCHEDULE

Task Grade	Job Title	Minimum basic wage rate (per hour)
Construction Worker Grade E	General Worker	
Construction Worker Grade D	Semi-skilled Construction Worker Hoist Operator	
	Driver (code 8) Driver (code 9)	
Construction Worker Grade C	Artisan / Journeyman's Assistant Driver (code 10) Crane Operator Machine Minder and Sawyer Mechanical Handling Equipment Driver	
Construction Worker Grade B	Artisan / Journeyman	
Construction Worker Grade A	Artisan / Journeyman with minimum N2	

Whilst this schedule provides for minimum wage rates, the contractor should effect standard wage rates per job function wherever possible, across the entire project, sub-contractors inclusive.

The above wage rates to be increased annually, the timing and quantum shall be in accordance with the prevailing arrangement in the industry, yet may not be less than the latest available year-on-year CPI (inflation rate).

(Refer Socio-Economic specification L1.4)

C3.5.4 WAGE RATES

ANNEXURE “B3”

CONTRACT No. CDC/441/26 – NEW/REPLACEMENT SCHOOL AMAOTI NO.3 SECONDARY SCHOOL, PINETOWN DISTRICT, KWAZULU-NATAL

WAGE RATES: CIVIL ENGINEERING, BUILDING AND ELECTRICAL CONSTRUCTION INDUSTRY JOB CATEGORY STRUCTURE

Skill Level	Grade	Occupational Group	Job Title	Project Wage Rate (Hourly)
Unskilled	Task Grade A	General Worker	General Worker	
Semi-skilled	Task Grade B	Artisan Aid	Artisan Aid	
		Construction Hand Grade IV	Structures Construction Hand	
			Premix Paving Checker	
			Steel Bending Machine Operator	
			Civil Construction Bricklayer Grade II	
		Operator Grade V	Boom Scraper Operator	
			Pedestrian Roller Operator	
			Piling Auger Machine Operator	
		Checker	Checker	

		Chainman	Chainman	
Skill Level	**Grade**	**Occupational Group**	**Job Title**	**Project Wage Rate (Hourly)**
Semi-skilled	Task Grade C	Construction Hand Grade III	Shutter hand Grade III	
			Concrete Hand Grade II	
		Operator Grade IV	Track Rig Operator (general)	
			Bore Pile Operator	
			Continuous Flight Auger Operator	
			Drilling Supervisor	
		Site Support	Junior Clerk	
Semi-skilled	Task Grade D	Construction Hand Grade II	Shutter hand Grade II	
			Reinforcing Hand Grade II	
			Concrete Hand Grade I	
			Fence Erector	
			Guard Rail Erector	
		Operator Grade III	Concrete Mixer Operator	
			Batch Plant Operator	
			Concrete Dumper Operator	
			Concrete Pump Operator	
			Tower Crane Operator	
			General Premix Roller Operator	

			Milling Machine Operator	
			Paver Operator	
			Excavator Operator	
Skill Level	**Grade**	**Occupational Group**	**Job Title**	**Project Wage Rate (Hourly)**
			Front End Loader Operator	
			TLB Operator	
			Dozer Operator	
			Grader Operator (general)	
			Gunite Nozzle person	
		Driver Grade II	Motorcycle Driver	
			Tractor Driver	
			Light Motor Vehicle Driver	
			Driver Operator	
			Heavy Duty Driver (rigid)	
			Extra Heavy Duty Driver (rigid)	
		Site Support	Material Tester	
		Building Skills	Semi-Skilled	
			Light Motor vehicle driver	
			Hoist Operator	
			Driver (Code 9)	

Skill Level	Grade	Occupational Group	Job Title	Project Wage Rate (Hourly)
Semi-skilled	Other (specify)	Other (specify)	Other (specify)	
Skilled	Task Grade E	Construction Hand Grade 1	Shutter hand Grade I	
			Reinforcing Hand Grade I	
			Pipe layer Grade I	
			Kerb layer Grade I	
			Civil Construction Bricklayer Grade I	
		Operator Grade II	Mobile Crane Operator	
			Screed Operator	
			Scraper Operator	

Skill Level	Grade	Occupational Group	Job Title	Project Wage Rate (Hourly)
		Driver Grade I	Heavy Duty Driver (articulated)	
			Extra Heavy Duty Driver (articulated)	
		Site Support	Assistant surveyor	
		Building skills	Journeyman's assistant	
			Heavy Duty driver (Code 10)	
			Crane Operator	
			Machine Minder and Sawyer	
			Mechanical Handling Equipment Driver	
		Electrical Construction	Electrical Construction Operator	

Skill Level	Grade	Occupational Group	Job Title	Project Wage Rate (Hourly)
Skilled	Task Grade F	Building Skills	Artisan/Journeyman	
		Electrical Construction	Electrical Tester for single phase	
			Artisan Unlicensed	
		Operator Grade I	Grader Operator (final level)	
Skilled	Task Grade G	Building Skills	Artisan journeyman with N2	
		Electrical Construction	Installation Electrician	
			Supervisor Grade II; Plant Serviceman	
Skilled	Task Grade H	Electrical Construction	Master Installation Electrician	
			Supervisor Grade I	
Skilled	Task Grade I	Artisan	Diesel Mechanic, Fitter & Turner, Auto Electrician, Boilermaker, Welder.	
Skilled	Other (specify)	Other (specify)	Other (specify)	

The wage rates herein above shall be increased annually in accordance with the Socio-Economic specifications provision.

C3.6 SOCIAL AND ECONOMIC SPECIFICATION

C3.6 SOCIAL AND ECONOMIC DELIVERABLES

The Coega Development Corporation (CDC), referred to hereinafter as the Implementing Agent, has placed a number of contractual obligations on contractors in fulfilling the objectives for the socio-economic deliverables on the project.

It is the desire of the Implementing Agent and the Client that Employment Relations practices, procedures and processes that are implemented within the project are uniform and of the highest possible standard. The objective of this approach is to promote an environment that is healthy, safe, efficient, productive, harmonious, is free of disruption and localises opportunities for communities in close proximity to the project. Such an environment will assist Contractors in implementing their projects successfully. All contractors, sub-contractors (including SMMEs) and site service providers within the project have a role and responsibility in achieving this objective, and accordingly, the Main Contractor is wholly responsible in ensuring the provision, implementation and maintenance of the required socio-economic deliverables.

To this end, certain mechanisms and structures have been put in place to ensure all role-players in the project are aware of the socio-economic and labour requirements and obligations that are contractually binding on them, and that these are properly implemented and complied with.

The documentation included in specifications outlined below will provide detail to the prospective contractor in order to ensure a comprehensive understanding of the socio-economic specifications and Labour Management protocols in effect and allows for the prospective Contractor to tender accordingly.

C3.6.1 Specification Data

The Specification Data provided herein shall have precedence in the interpretation of any ambiguity or inconsistency between it and any other applicable contract instrument addressing the same or similar deliverable.

The Contractor shall ensure full achievement of the following deliverables through the period of this construction contract:

Deliverable L1: Employment of local resources - provide employment opportunities to targeted labour;

L1.1: Labour Risk Assessment
L1.2: Employment
L1.3: Recruitment
L1.4: Wages
L1.5: Inductions
L1.6: Employment Contracts
L1.7: Labour mobilisation and demobilisation

Deliverable L2: On-site Project Employment Relations Co-ordination;

Deliverable L3: Employment of the Community Liaison Officer;

Deliverable L4: Provide work opportunities for designated persons;
L4.1: Candidate Professionals

Deliverable L5: HIV/AIDS Awareness – the Contractor shall be responsible for promoting HIV/AIDS Awareness on site;

Deliverable L6: Health and Safety Awareness - the Contractor shall be responsible for promoting Health and Safety on site;

Deliverable L7: The Contractor shall ensure achievement of socio-economic deliverables and compliance to the established labour management protocols on the whole project (inclusive of all sub-contractors), for the full duration of the project;

Deliverable L8: Community participation;

Deliverable L9: On-site communication structures
The Contractor shall ensure the full application of this specification on all sub-contractors (incl. SMME's) and on-site service providers and accordingly must ensure the inclusion of this specification in all tender documents.

Deliverable L1: Employment of local resources - Provide employment opportunities to targeted labour.

L1.1 LABOUR RISK ASSESSMENT:

Prior to construction commencement, the Contractor is required to conduct a labour risk assessment to highlight the most significant labour risks associated with the project (at least 10 higher risks) and provide the mitigation to deal with each of these identified risks.

The template for undertaking the risk assessment will be provided by the Implementing Agent at tender award.

The risk assessment report is to be submitted by the Contractor to the Principal Agent for the Implementing Agent's review and endorsement, within 14 calendar days of the tender award.

L1.2 EMPLOYMENT:

The minimum number of construction personnel to be employed on the project is **100** (job opportunities). This number includes all seconded personnel. The minimum duration for individual employment recognition purposes shall be 6 weeks on-site continuous employment period.

The Contractor is required to provide the anticipated numbers of additional labour required per job title, to be utilised on the construction project. This submission, in the form of the Job Forecast Schedule (Refer Annexure "B1") as provided herewith is a returnable to be included in the tender response. This submission must be inclusive of the total projected additional labour requirements of all on-site sub-contractors and on-site service providers.

L1.3 RECRUITMENT:

The Contractor's deliverable is the minimum of **70% local labour** employed on the project to be residents of Target Areas 1 & 2 as specified below. The calculation of labour employment is based on man-days worked over the measured period and not headcount. Priority employment must be provided to residents from Target Area 1.

The Contractor is permitted to deploy a maximum of 30% non-local seconded labour (i.e. labour who usually residing outside Target Areas 1 & 2) on the Project.

The Contractor is required to report on the achievement of the local employment target at each project progress meeting.

In the event the 70% target is not being achieved at any point of the construction duration, and / or the required local skills are claimed by the Contractor not to be available in Target Areas 1 & 2, the Contractor must motivate its assertion, also describing its recruitment efforts, prior to identifying individual labour from Target Area 3 for placement on the Project.

Target Areas:

- **Target Area 1** shall be the eThekwini Metropolitan Municipality;
- **Target Area 2** shall be the eThekwini Metropolitan Municipality;
- **Target Area 3** shall be the geographic area excluding Target Area 2, which falls within the KwaZulu Natal.

Preference shall be granted to competent labour residing in Target Area 1 above labour residing in Target Area 2, and similarly preference shall be granted to competent labour residing in Target Area 2 above labour residing in Target Area 3.

L1.4 **WAGES:**

The Contractor shall, at the time of bidding for the contract, complete and return the Project Job & Wage schedule **(Refer Annexure B"2")** to confirm the minimum wage rates to be applied across the different grades/levels on the project as a whole, inclusive of all on site Sub-contractors' and Service Providers' labour. The intention is to promote the application of standard wage rates per job function, across the project.

The rate of pay for General Worker (Task Grade 1) should not be less than the market related rate paid in the area, yet may not be less than the prevailing general National Minimum Wage (i.e. not the expanded public works programme rate). The current National Minimum Wage is **R30.23** per ordinary hour worked.

Wages shall be paid in arrears into each employee's own bank account. The Contractor shall elect whether such wage payments are effected at monthly or fortnightly intervals, where after uniformity of application shall be effected by the Contractor across the project as a whole, including all sub-contractors and service providers.

The wage payment detail, including all deductions made, must be provided in acceptable pay-slip format on or immediately before the scheduled payday. No cash payments may be made for safety reasons, and as such a condition of employment for labour shall be the possession of an active personal bank account.

The timing and quantum of the wage increases shall be in accordance with the prevailing arrangement in the Industry, yet may not be less than the latest available year-on-year Consumer Price Index (CPI) as issued by Statistics South Africa at the time of the wage rate increase.

The annual wage rates increases will be affected on the same date, on the first normal payday after 12 months of construction on site, or earlier as required by the Main Contractor, for all hourly-paid construction workers. Such wage rates increases must also be applied at the same time throughout the construction project (i.e. all on-site sub-contractors inclusive).

The Contractor is required to introduce measures to effectively mitigate the risk of delayed / partial / non-payment of wages and statutory deductions by on-site sub-contractors and on-site service providers.

L1.5 **INDUCTIONS:**

All project personnel on site must attend a Site Induction presentation on a fully paid time basis, before commencing work on site. The Site Induction shall be provided by the Contractor and shall include the Project overview, performance expectations and key labour management aspects including the general health, safety and environmental practices to be employed on the Project.

The Site Induction shall be provided for all construction personnel by the Contractor, prior to each individual commencing employment on site.

All Contractors and Service Providers employing personnel on the construction site must ensure that all appropriate life skills and in particular Health, Safety & Environmental awareness training specific to their construction activities is conducted prior to individual’s work commencement, and during the course of employment on site.

Attendance registers of all personnel attending Site Induction and any subsequent awareness training must be retained on site for the duration of the construction project.

L1.6 **EMPLOYMENT CONTRACTS:**

All additional hourly-paid construction personnel on site must each sign an employment contract before commencing employment on site.

The standard form of the limited duration employment contract will be provided by the Implementing Agent, in consultation with the Contractor, as the standard limited duration employment contract for use on the project.

L1.7 **LABOUR MOBILISATION & DEMOBILISATION:**

The Contractors must make adequate provision for mobilizing and demobilizing all personnel employed on the Project.

Deliverable L2: On-site Project Employment Relations Co-ordination

L2.1 EMPLOYMENT RELATIONS CO-ORDINATION

The Contractor is required to confirm the identity of the site manager responsible for Employment Relations Co-ordination on site with the Principal Agent, prior to the manager fulfilling this responsibility.

This site manager must have sufficient labour management competency to ensure the establishment and retention of labour harmony on site.

Deliverable L3: Employment of the Community Liaison Officer

L3.1 Community Liaison Officer Appointment:

Immediately prior to site establishment, the Contractor must employ the services of a Community Liaison Officer (CLO).

The shortlisting of appropriate local CLO candidates should require guidance of the Project Social Facilitator, yet the Contractor shall make the final selection decision after receiving the prior written CLO appointment approval of the Implementing Agent. Note that the Social Facilitator is employed by the Implementing Agent.

The CLO shall receive a basic rate of pay not less than **R 8 500.00** per month. All statutory contributions such as UIF, Skills Development Levy, Workmen's Compensation etc. are excluded from this amount.

The contractor shall provide the necessary tools of the trade for the CLO to operate effectively. This will include office space and all reasonable furniture and equipment, including controlled access to an internet connected computer and a cellphone.

If, in the event that the contractor terminates the CLO's contract of employment (limited to proven misconduct / poor performance which would normally result in fair termination), the Contractor is required to urgently employ a suitably competent and experienced CLO, within a 2 week period on a full-time basis, for the remaining duration of the Project.

Deliverable L 4: Provide work opportunities for designated persons

L4.1 **CANDIDATE PROFESSIONAL:**

Within one month of contract award, the Contractor shall employ **two (02) student interns** for the construction period. The selection and placement of these appropriate candidates shall be in line with the Target Areas identified above.

The Candidate should be from any of the recommended groups detailed here below:

- Building Management;
- Quantity Surveyor;
- Health & Safety Officer;
- Civil/structural engineering

The objective is to assist the candidate technical professional to obtained professional registration with the appropriate body during the course of the construction project.

With the exception of the stipends cost, all costs associated with the internship, including the provision of work tools, facilities and professional registration is a priceable item for which the Contractor must tender.

The designated persons must be placed on site and will be paid a monthly stipend of **R8 500.00** per month by the Contractor. All statutory contributions such as UIF, Skills Development Levy, Workmen's Compensation etc. are excluded from this amount.

The stipend costs and other associated costs shall be for the Contractor's account and the Contractor must tender accordingly, and should be clearly stipulated in the tender submission.

Deliverable L5: Promote HIV/AIDS Awareness on site

L5.1 HIV/AIDS Awareness Training:

The Contractor shall be responsible for promoting HIV/AIDS Awareness on site. Every worker anticipated to be employed on the project must be trained in HIV/AIDS Awareness according to Industry norms and standards.

The Contractor shall submit monthly reports on HIV/AIDS Awareness training to the Implementing Agent's representative, accompanied by attendance registers in the format prescribed by the Implementing Agent.

All HIV/AIDS awareness training shall be recorded on the Ncedo Labour Management System by the Social Facilitator.

The Contractor must tender accordingly, the costs of which should be clearly stipulated in the tender submission.

Deliverable L6: Promote Health and Safety Awareness on site

L6.1 Health and Safety Awareness Training:

The Contractor shall be responsible for promoting health and safety on site. Prior to employment on the Project site, all labour must be inducted on pertinent aspects of the Occupational Health and Safety Act and the Construction Regulations including safe working practices, before they commence with work on site.

The Contractor shall submit monthly reports on Health & Safety Awareness training to the Implementing Agent's representative, accompanied by attendance registers in the format prescribed by the Implementing Agent.

The Contractor shall submit monthly reports via the Ncedo system on the Health and Safety inductions conducted on site.

All Health and Safety awareness training shall be recorded on the Ncedo Labour Management.

The Contractor must tender accordingly, the costs of which should be clearly stipulated in the tender submission.

Deliverable L7: The contractor shall ensure achievement of Socio-economic deliverables and compliance to the established labour management protocols on the whole project, for the full duration of the project;

The Contractor shall undergo a Socio-economic Specification detailed clarification meeting with the Implementing Agent, prior to site establishment. The Contractor's appointed Employment Relations Co-ordinator and the Contractor's most senior Site Manager are required to be present.

L7.1 **COMPLIANCE AUDITING AND NON-ACHIEVEMENT:**

The Implementing Agent appointed Social Facilitator shall monitor adherence to the labour protocols prescribed above.

In the event of the Contractor (inclusive of all sub-contractors) not complying with the socio-economic specifications after the 1-month period stated herein above, or failing to maintain the required labour management protocol thereafter, then a punitive penalty will be applied to the Contractor for each working day that the non-compliance is still in existence. This punitive penalty shall equate to 20% of the amount prescribed per day for late project completion.

Deliverable L8: Community participation

L8.1 **COMMUNITY ENGAGEMENT OBLIGATION**

The Contractor shall ensure labour and community harmony on the project site and in the surrounding community. The Contractor shall participate in all community engagement activities where appropriate to promote the successful early completion of the Project.

The Implementing Agent appointed Principal Agent shall establish the Project Support Committee (PSC) prior to construction commencement. The CLO and the Contractor's most senior site manager are required to participate in the regular scheduled PSC meetings. The Terms of Reference for the PSC will be established prior to electing community / stakeholder participants.

The Contractor shall tender accordingly.

Deliverable L9: On-Site communication structures

L9.1 ON-SITE COMMUNICATION

The Contractor shall be responsible for facilitating all on-site communication with role-players. A Labour Consultative Forum (LCF) will be established on site at which labour and work-place related issues will be addressed. The LCF will be attended by the Main contractor representatives, all sub-contractors and site service providers and elected representatives from labour on site. The LCF will be established within 1 month of project commencement and will meet monthly thereafter.

The Contractor shall tender accordingly.

C3.7 PERFORMANCE REPORT

SUPPLIERS PERFORMANCE EVALUATION FORM

PROJECT NUMBER	**PN/DoE-KZN/19/00045**	
CONTRACT NUMBER	**CDC/441/26**	
PROJECT NAME	**New/Replacement School at Amaoti No.33 Secondary School in Pinetown District, Kwazulu-Natal**	
SERVICE PROVIDER		
PROJECT MANAGER		
PROJECT VALUE		
PROJECT DURATION AND START DATE		
REVIEW PERIOD	**FROM:**	**TO:**
EVALUATION DATE		

EARNED VALUE MANAGEMENT	
COST VARIANCE (CV)	
SCHEDULE VARIANCE (SV)	
COST PERFORMANCE INDEX (CPI)	
SCHEDULE PERFORMANCE INDEX (SPI)	

Measures of Performance

Evaluation Indicators			**Final Score**	**EXCELLENT 5**	**VERY GOOD 4**	**GOOD 3**	**POOR 2**	**UNSATISFACTORY 1**
Quality Compliance				**SP delivered an excellent final product which exceeded the client's expectations, met with all contractual requirements without exceeding the project schedule or the project cost. SP provided value engineering capability during the project reducing or maintaining original cost estimates whilst still maintaining high standards of product quality**	**SP not only complied with all the client's requirements and specification as defined in the contract documentation and drawings, he/ she also added value by either reducing cost and not delaying schedule commitment whilst achieving quality requirements**	**SP complied with the client's requirements and met all specifications as indicated in the contract documents**	**SP failed to comply with at least 50% of quality requirements as set out in the contract documents and or drawings**	**SP did not deliver to the client's requirements. No attempt was made to meet the quality requirements.**
Cost	**TARGET**	**ACTUAL**		**SP managed to expedite expenditure and is 20% ahead of projected cashflow and not compromising quality criteria.**	**SP managed to expedite expenditure and is 10% ahead if projected cashflow whilst still maintaining client and project requirements.**	**SP expenditure is as per the agreed cashflow.**	**SP delayed execution of the contract and has spent 15% below the target cashflow**	**SP delayed execution of the contract and has spent 25% below the target cashflow**

Schedule Adherence	**TARGET**	**ACTUAL**		**SP delivered the project or work packages ahead of the scheduled delivery date by more than 15% of the planned project duration, delivering to the full scope of the project.**	**SP managed to complete the project or work packages ahead of the planned completion date by reducing project duration with 10% of planned time.**	**SP achieved original schedule date.**	**SP underestimated project activities and ultimately project duration resulting in a project delay by more than 15% of the project duration.**	**SP poor management of the project resulted in the project being delayed by a period longer than 20% of the project duration initially agreed at the conclusion of the contract.**
SME Participation	**TARGET**	**ACTUAL**		**SP made extensive use of SME in the course of the project exceeding project requirements achieving 40% SME participation.**	**SP made a significant contribution to the development of SMME's during the duration of the project with 38% SME participation.**	**SP achieved the 35% SME participation requirements as defined in the contract documentation.**	**SP who does not meet initial SMME contribution requirements as set out in the contract documentation achieved 30% SME participation.**	**Achieved 25% SME participation.**
No of Jobs created	**TARGET**	**ACTUAL**		**SP created more jobs than contracted by 15% or more**	**SP created more jobs than initially contracted by 10%.**	**SP created the number of jobs as defined in the contract document.**	**SP who does not meet the requirement for job in the contract, achieved 10% less.**	**Achieved 15% less.**
No of Interns	**TARGET**	**ACTUAL**		**SP employed an increased number of interns above what was agreed initially by 15% or greater**	**SP employed an increased number of interns above what was agreed initially by 10%**	**SP employed the agreed number of interns.**	**Achieved 10% less.**	**Achieved 15% less.**
S.H.E				**SP at all times during the project displayed a pro-active approach taking a leading role with regard to S.H.E requirements and maintains a one step ahead approach to ensure the project is managed in a manner that does not expose the project and client and cause delays.**	**SP not only met all the S.H.E requirements in the contract documents but ensured that any gaps encountered in S.H.E requirements were closed to reduce any negative exposure to the client.**	**SP was in full compliance with all the S.H.E requirements of the project.**	**SP sometimes complies with S.H.E requirements as defined in the contract documents and statutory and regulatory requirements. Exposing the project to undue risk and negatively affecting the project quality, cost and schedule.**	**SP scarcely achieve set S.H.E requirements.**
FINAL SCORE**				**SCORE > 35 EXCELLENT**	**SCORE > 28 VERY GOOD**	**SCORE > 20 GOOD**	**SCORE < 20 POOR**	

****These areas could be weighted and a final score achieved based on CDC priorities**

SP that obtains a score of less than 18 is regarded as a poor performer therefore not recommended for further appointment.

Project Manager's Comments: *(PM to define challenges experienced or positive comments)*	

Signatures: **Project Manager:**_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ **Date:**_ _ _ _ _ _ _ _

Contract No. CDC/441/26
Wage Rates

C3.8 PLANNING SPECIFICATIONS FOR CONTRACTORS -CIDB GRADE 1 – 9

COEGA
DEVELOPMENT CORPORATION

Planning Document:

Planning Specifications For Contractors.

Report Nº

CDC-CG-SPC-001-17

01 November 2017

DOCUMENT INFORMATION SHEET

Title of Document	:	*Planning Specifications for Contractors*
Type of Document	:	*Planning Document*
Report Number	:	*CDC-CG-SPC-001-17*
Prepared by	:	*Duaine Moroney*
Typed by	:	*Duaine Moroney*
Business Unit	:	*IDZ Infrastructure Programme (IIP)*
Prepared for	:	*CDC*
Date of Issue	:	*01 November 2017*

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DOCUMENT CONTROL SHEET

The purpose of this form is to ensure that documents are reviewed and approved prior to issue. The form is to be bound into the front of all documents released by the CDC.

PROJECT NAME : *CDC Planning Specifications*

DOCUMENT TITLE : *Planning Specifications for Contractors*

DOCUMENT No. : *CDC-CG-SPC-001-17*

SIGNING OF THE ORIGINAL DOCUMENT

We, the undersigned, accept this document as a stable work product to be placed under formal change control as described by the Change Control Procedure document.

ORIGINAL	Prepared by	Reviewed by	Approved by
Date: **13 October 2017**	Name: **Duaine Moroney**	Name: **Hennie van der Kolf**	Name: **Maria van Zyl**
	Signature:	Signature:	Signature:

Distribution:	***CDC***

REVISION CHART

REVISION 1	**Name:**	**Name:**	**Name:**
Date:	Signature:	Signature:	Signature:
Distribution:			

REVISION 2	**Name:**	**Name:**	**Name:**
Date:	Signature:	Signature:	Signature:

REVISION 3	**Name:**	**Name:**	**Name:**
Date:	Signature:	Signature:	Signature:

This document, and the information or advice which it contains, is provided by the Centre of Excellence Business Unit solely for the use by the Coega Development Corporation (Pty) Ltd and for reliance by its Executive Management and the Board in performance of that Business Unit's duties.

Basis Of Schedule

(Planning Document)

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1. CIDB Grading 1-3

1.1 Introduction

The Construction Programme and all associated documents as detailed in this Attachment, are an essential part of the Project control system used by the Employer's Representative in monitoring the progress of the work under the Contract. The information and data provided by the Contractor shall be reliable, accurate, timely in presentation, and in an agreed format and style that allows for ease of incorporation into the Employer's Representative's Project control system. If the contractor does not have a dedicated planner it is the responsibility of the contractor to then provide a selected individual from within their organisation which the Employer's Representative would help train in the planning field.

1.2 General

1.2.1 The Contractor shall comply with the requirements of this Attachment.

1.2.2 The following templates will be provided by the Employer and shall be used for the preparation of the construction Programme and reports:

1.2.2.1 Standard Schedule Layout

1.3 Planning and Construction Programme

1.3.1 Submission

1.3.1.1 The Construction Programme shall be a time scaled bar chart with fully continuous logic that clearly highlights the critical path(s) throughout the network.

1.3.1.2 Within the time specified in the Contract, the Contractor shall submit for the Employer's approval, a Construction Programme which represents the sequencing and methodology accepted by the Employer's Representative at the time of award and includes the milestones and key events detailed in the tender documents. The Construction Programme shall be generated using the Primavera Project Planner (P6) software package or an approved alternative and submitted in both hard copy and native (soft copy) file format.

1.3.2 Activities

1.3.2.1 The Construction Programme shall break up the work under the Contract into identifiable, structured items of work ("activities"). Each activity shall:

1.3.2.2 Be an activity of work, not a piece of equipment;

1.3.2.3 Be readily measurable for progress;

1.3.2.4 Express the logical progression of the work;

1.3.2.5 Be suitable for critical path and dependency networking;

1.3.2.6 Be continuous from start to finish;

1.3.2.7 Generally be of a single “trade” or work content;

1.3.2.8 The sum total of all activities shall equate the work under the Contract.

1.3.3 Logic and Sequencing

The Construction Programme shall clearly indicate the logic and sequence of activities necessary to complete the work under the Contract, including but not be limited to:

1.3.3.1 Duration of each activity;

1.3.3.2 Early start, early finish and total float of each activity;

1.3.3.3 Activities that lie on the critical path(s) as determined by the network;

1.3.3.4 Precedence relationships (logic) between activities;

1.3.3.5 Dates for submissions to the Employer of documents requiring review;

1.3.3.6 Subcontractor tendering, award and mobilisation processes;

1.3.3.7 Activities to be completed by others which may affect the timely completion of the Works including;

1.3.3.8 Issue of information, materials or equipment for use or incorporation in work;

1.3.3.9 Activities, dependent upon any other contractor engaged by the Employer; or

1.3.3.10 Review time for required documentation such as specifications, drawings, procedures and calculations.

1.3.3.11 Tie in activities to existing services and utilities;

1.3.3.12 Statutory approval dates;

1.3.3.13 Date for access to the Site;

1.3.3.14 Date for access to follow-on contractors;

1.3.3.15 Date for Key Events and Milestones;

1.3.3.16 Date for Practical Completion of the Works or each Separable Portion;

1.3.3.17 Manufacture and delivery durations for Contractor supplied equipment and materials, with ties to the respective installation activities, detailed into activities no longer than 2 weeks;

1.3.3.18 Delivery dates for Employer supplied equipment and materials, with ties to the respective installation activities, detailed into activities no longer than 2 weeks;

1.3.3.19 Activity durations shall be in working days, the programme calendar shall indicate public holidays, leisure days or other non-working days;

1.3.3.20 Off Site and on Site activities shall be clear and identifiable;

1.3.3.21 Calendar - the bar chart heading shall show the year, the month and the week. The bar chart shall commence on the date of Contract Award;

1.3.4 Equipment allocation

1.3.4.1 Special tools and mobile equipment shall be assigned to their respective activities

1.3.4.2 Shared equipment such as mobile equipment shall be allocated to level of effort activities within the Construction Programme.

1.3.5 Construction Programme Commodities

1.3.5.1 The Construction Programme site activities shall be loaded with applicable commodity quantities.

1.3.5.2 The Employer utilises the following commodities;

1.3.5.2.1 Concrete (m^3)

1.3.5.2.2 Mechanical Equipment (t)

1.3.5.2.3 Platework (t)

1.3.5.2.4 Structural Steel (t)

1.3.5.2.5 Pipework (m) & Diameter Inch's (Inch)

1.3.5.2.6 Electrical and Communication Cables (m)

1.3.5.2.7 Electrical & Instrumentation Terminations (Qty)

1.3.6 Approval of Construction Programme

1.3.6.1 The Contractor shall submit the proposed baseline Construction Programme including a native (soft copy) copy of the programme.

1.3.6.2 Provided the Construction Programme is in accordance with this addendum A, it will be approved as the revision '0' Baseline Construction Programme. Against which the Contractors progress will be measured.

1.3.7 Revisions to the Construction Programme

1.3.7.1 The Contractor shall review the Construction Programme when any one of the following events occurs:

1.3.7.2 Progress of the work under the Contract falls significantly behind or otherwise materially departs from that shown in the Construction Programme;

1.3.7.3 A variation is issued which affects the Construction Programme;

1.3.7.4 There is a change in method of working adopted by the Contractor which affects the Construction Programme; or

1.3.7.5 The Employer's Representative directs that the Construction Programme be revised because in the opinion of the Employer's Representative the current Construction Programme does not reflect the actual work patterns of the Contractor.

1.3.7.6 If any of the events listed above occurs, the Contractor shall submit for approval, within seven (7) days of the event occurring, the revised Construction Programme. Upon approval, the revised Construction Programme will become the approved baseline for all future progress updates.

1.3.7.7 The Contractor shall address identified deviations from the Construction Programme by either:

1.3.7.8 Demonstrating that the deviation does not constitute a delay; or

1.3.7.9 Providing a course of action to remedy the deviation.

1.3.7.10 The revised Construction Programme shall clearly indicate the following:

1.3.7.11 The differences between the revised Construction Programme and the previously approved Construction Programme; and

1.3.7.12 The revision number and date of issue of the revised Construction Programme.

1.3.7.13 At any time additional detail may be inserted into the Construction Programme at the request of either the Contractor or Employer's Representative. In such cases, the overall start and finish dates of the detail activities shall not vary from the original summary activity(s) which were replaced.

1.3.7.14 All revisions to the Construction Programme shall be prepared by, and at the cost of the Contractor.

1.3.7.15 Supplementary Schedules and Programmes

The Employer's Representative may at any time, and at the cost and expense of the Contractor, direct the Contractor to produce supplementary documents to highlight a particular aspect of the work under the Contract.

1.3.8 Cash Flow

The Contractor shall submit to the Employer detailed cash flow forecast charts based on the Construction Programme (and any revisions) showing the anticipated monthly cash flow as represented by expected payment claim submission, not by payments received.

1.4 Progress Reporting

The cut-off, and submission dates for monthly reports will be as required by the Employer to ensure appropriate and timely integration into the Employer's overall progress reporting systems. These dates are subject to change as per the status of the project or at the discretion of the employer.

1.4.1 Progress Reporting

1.4.1.1 To demonstrate the actual progress of the work under the Contract the Contractor shall, on a monthly basis, update and submit to the Employer;

1.4.1.2 The updated Construction Programme shall show two (2) separate bars for each activity:

1.4.1.2.1 The Construction Programme "baseline" activity bar.

1.4.1.2.2 The current schedule activity bar identifying the currently forecast start and finish dates of the activity.

1.4.1.3 Deviations from the 'baseline' Construction Programme will form the basis for assessing progress and performance. Where significant deviations from the scheduled progress are being tabled in the report, the Contractor shall provide sufficient detailed written analysis and data, to adequately demonstrate the primary areas of schedule concern with short term recovery plan.

1.4.1.4 Overall Schedule.

1.4.2 Progress Monitoring and Corrective Action

1.4.2.1 Monitoring and review of the progress of the work under the Contract shall consist of an assessment of all activities currently in progress. The following shall be determined:

1.4.2.1.1 Percentage complete;

1.4.2.1.2 Forecast completion date;

1.4.2.1.3 Deviations from the baseline programme; and

1.4.2.1.4 Actions required remedying any deviations.

1.4.2.2 Progress reviews may be conducted to assist control of the work under the Contract. The format, content, and structure of these reviews will be agreed between the Contractor and the Employer's Representative.

1.4.3 Monthly Status Report (Planning Aspects Only)

1.4.3.1 In addition to the formal monthly report, the Contractor shall provide the following.

1.4.3.2 The report shall include but not be limited too:

1.4.3.2.1 The report shall summarise progress and problems encountered during that month in respect of all parts of the work under the Contract.

1.4.3.2.2 Progress against the approved Construction Programme;

1.4.3.2.3 Deviations from the Construction Programme, and in particular, the forecast completion dates of activities which should have been completed;

1.4.3.2.4 Status of approvals;

1.4.3.2.5 Actual or anticipated problems with corresponding action plans to mitigate / minimise their risk or impact;

1.4.3.2.6 Summary of work activities planned for the following period;

1.4.3.2.7 Cash flow status versus the original forecast and;

1.4.3.3 The Progress Report shall be submitted for review prior to the monthly progress meetings.

2. CIDB Grading 4-6

2.1 Introduction

The Construction Programme and all associated documents as detailed in this Attachment, are an essential part of the Project control system used by the Employer's Representative in monitoring the progress of the work under the Contract. The information and data provided by the Contractor shall be reliable, accurate, timely in presentation, and in an agreed format and style that allows for ease of incorporation into the Employer's Representative's Project control system. If the contractor does not have a dedicated planner it is the responsibility of the contractor to then provide a selected individual from within their organisation which the Employer's Representative would help train in the planning field.

2.2 General

2.2.1 The Contractor shall comply with the requirements of this Attachment.

2.2.2 The following templates will be provided by the Employer and shall be used for the preparation of the construction Programme and reports:

2.2.2.1 Standard Schedule Layout

2.2.2.2 S-Curve

2.3 Planning and Construction Programme

2.3.1 Submission

2.3.1.1 The Construction Programme shall be a time scaled bar chart with fully continuous logic that clearly highlights the critical path(s) throughout the network.

2.3.1.2 Within the time specified in the Contract, the Contractor shall submit for the Employer's approval, a Construction Programme which represents the sequencing and methodology accepted by the Employer's Representative at the time of award and includes the milestones and key events detailed in the. The Construction Programme shall be generated using the Primavera Project Planner (P6) software package or an approved alternative and submitted in both hard copy and native file format.

2.3.1.3 Activities

The Construction Programme shall break up the work under the Contract into identifiable, structured items of work ("activities"). Each activity shall:

2.3.1.4 Be an activity of work, not a piece of equipment;

2.3.1.5 Be readily measurable for progress;

2.3.1.6 Express the logical progression of the work;

2.3.1.7 Be suitable for critical path and dependency networking;

2.3.1.8 Be continuous from start to finish;

2.3.1.9 Generally be of a single “trade” or work content;

2.3.1.10 Be fully resourced; and

2.3.1.11 The sum total of all activities shall equate the work under the Contract.

2.3.2 Logic and Sequencing

2.2.1 The Construction Programme shall clearly indicate the logic and sequence of activities necessary to complete the work under the Contract, including but not be limited to:

2.3.2.1 Duration of each activity;

2.3.2.2 Early start, early finish and total float of each activity;

2.3.2.3 Activities that lie on the critical path(s) as determined by the network;

2.3.2.4 Precedence relationships (logic) between activities;

2.3.2.5 Dates for submissions to the Employer of documents requiring review;

2.3.2.6 Subcontractor tendering, award and mobilisation processes;

2.3.2.7 Activities to be completed by others which may affect the timely completion of the Works including;

2.3.2.8 Issue of information, materials or equipment for use or incorporation in work;

2.3.2.9 Activities, dependent upon any other contractor engaged by the Employer; or

2.3.2.10 Review time for required documentation such as specifications, drawings, procedures and calculations.

2.3.2.11 Tie in activities to existing services and utilities;

2.3.2.12 Statutory approval dates;

2.3.2.13 Date for access to the Site;

2.3.2.14 Date for access to follow-on contractors;

2.3.2.15 Date for Key Events and Milestones;

2.3.2.16 Date for Practical Completion of the Works or each Separable Portion;

2.3.2.17 Manufacture and delivery durations for Contractor supplied equipment and materials, with ties to the respective installation activities

2.3.2.18 Delivery dates for Employer supplied equipment and materials, with ties to the respective installation activities

2.3.2.19 Activity durations shall be in working days, the programme calendar shall indicate public holidays, leisure days or other non-working days;

2.3.2.20 Off Site and on Site activities shall be clear and identifiable;

2.3.2.21 Calendar - the bar chart heading shall show the year, the month and the week. The bar chart shall commence on the date of Contract Award;

2.3.3 Man-hour allocation

2.3.3.1 Scheduled Direct Labour Hours – Per Activity.

For each appropriate activity in the Construction Programme, the Contractor shall allocate the associated direct labour hours.

2.3.3.2 Direct Labour Hours – Total.

The total of the direct labour hours per week shall be calculated after activities have been resource levelled.

2.3.3.3 Direct Labour Workforce Histogram

The site workforce (direct labour only) scheduled per week shall be calculated from the direct labour hours and a histogram plotted.

2.3.4 Equipment allocation

2.3.4.1 Special tools and mobile equipment shall be assigned to their respective activities

2.3.4.2 Shared equipment such as mobile equipment shall be allocated to level of effort activities within the Construction Programme.

2.3.5 Contractor ‘S-Curve’

2.3.5.1 The Contractor shall submit progress S-Curves for the overall Contract

2.3.5.2 The S-Curves shall be based upon the distribution of man-hours where attainable from within the approved Construction Programme.

2.3.5.3 The S-Curves shall be presented using the approved templates provided by the Employer.

2.3.5.4 To generate the overall Contract S-Curve each of the phases shall be weighted according to the monetary value of the phase.

2.3.5.5 The reporting of progress for each component shall be in the form of earned value (EV), which is the physical percent progress of the component of the work.

2.3.6 Construction Programme Commodities

The Construction Programme site activities shall be loaded with applicable commodity quantities. Offsite fabrication of structural steel, plate work and spooling of pipework shall also be reported.

2.3.6.1 The Employer utilises the following commodities;

2.3.6.1.1 Concrete (m^3)

2.3.6.1.2 Mechanical Equipment (t)

2.3.6.1.3 Plate work (t)

2.3.6.1.4 Structural Steel (t)

2.3.6.1.5 Pipework (m) & Diameter Inch's (Inch)

2.3.6.1.6 Electrical and Communication Cables (m)

2.3.6.1.7 Electrical & Instrumentation Terminations (Qty)

2.3.6.2 Commodity Curves shall be presented in the same format as the S-Curves.

2.3.7 Approval of Construction Programme

2.3.7.1 The Contractor shall submit the proposed baseline Construction Programme including a native copy of the programme.

2.3.7.2 Provided the Construction Programme is in accordance with this addendum A, it will be approved as the revision '0' Baseline Construction Programme. Against which the Contractors progress will be measured.

2.3.8 Revisions to the Construction Programme

2.3.8.1 The Contractor shall review the Construction Programme when any one of the following events occurs:

2.3.8.2 Progress of the work under the Contract falls significantly behind or otherwise materially departs from that shown in the Construction Programme;

2.3.8.3 A variation is issued which affects the Construction Programme;

2.3.8.4 There is a change in method of working adopted by the Contractor which affects the Construction Programme; or

2.3.8.5 The Employer's Representative directs that the Construction Programme be revised because in the opinion of the Employer's Representative the current Construction Programme does not reflect the actual work patterns of the Contractor.

2.3.8.6 If any of the events listed above occurs, the Contractor shall submit for approval, within seven (7) days of the event occurring, the revised Construction Programme. Upon approval, the revised Construction Programme will become the approved baseline for all future progress updates.

2.3.8.7 The Contractor shall address identified deviations from the Construction Programme by either:

2.3.8.8 Demonstrating that the deviation does not constitute a delay; or

2.3.8.9 Providing a course of action to remedy the deviation.

2.3.8.10 The revised Construction Programme shall clearly indicate the following:

2.3.8.10.1 The differences between the revised Construction Programme and the previously approved Construction Programme; and

2.3.8.10.2 The revision number and date of issue of the revised Construction Programme.

2.3.8.11 The revised Construction Programme shall be accompanied by a revised S-Curve

2.3.8.12 At any time additional detail may be inserted into the Construction Programme at the request of either the Contractor or Employer's Representative. In such cases, the overall start and finish dates of the detail activities shall not vary from the original summary activity(s) which were replaced.

2.3.8.13 All revisions to the Construction Programme shall be prepared by, and at the cost of the Contractor.

2.3.9 Supplementary Schedules and Programmes

The Employer's Representative may at any time, and at the cost and expense of the Contractor, direct the Contractor to produce supplementary documents to highlight a particular aspect of the work under the Contract.

2.3.10 Cash Flow

The Contractor shall submit to the Employer detailed cash flow forecast charts based on the Construction Programme (and any revisions) showing the anticipated monthly cash flow as represented by expected payment claim submission, not by payments received.

2.4 Progress Reporting

The cut-off, and submission dates for monthly reports will be as required by the Employer to ensure appropriate and timely integration into the Employer's overall progress reporting systems. These dates are subject to change as per the status of the project or at the discretion of the employer.

2.4.1 Progress Reporting

2.4.1.1 To demonstrate the actual progress of the work under the Contract the Contractor shall, on a monthly basis, update and submit to the Employer;

2.4.1.2 The updated Construction Programme shall show two (2) separate bars for each activity:

2.4.1.2.1 The Construction Programme “baseline” activity bar.

2.4.1.2.2 The current schedule activity bar identifying the currently forecast start and finish dates of the activity.

2.4.1.3 The progress ‘S-Curves’;

2.4.1.4 Deviations from the ‘baseline’ Construction Programme together with the ‘S-Curves’ will form the basis for assessing progress and performance. Where significant deviations from the scheduled progress are being tabled in the report, the Contractor shall provide sufficient detailed written analysis and data, to adequately demonstrate the primary areas of schedule concern with short term recovery plan.

2.4.1.5 Overall Schedule.

2.4.1.6 2 week look ahead Schedule.

2.4.2 Progress Monitoring and Corrective Action

2.4.2.1 Monitoring and review of the progress of the work under the Contract shall consist of an assessment of all activities currently in progress. The following shall be determined:

2.4.2.1.1 Percentage complete;

2.4.2.1.2 Forecast completion date;

2.4.2.1.3 Deviations from the baseline programme; and

2.4.2.1.4 Actions required remedying any deviations.

2.4.2.2 Weekly progress reviews may be conducted to assist control of the work under the Contract. The format, content, and structure of these reviews will be agreed between the Contractor and the Employer’s Representative. The Contractor’s Weekly Progress Report will be used as the discussion tool for the weekly progress meeting.

2.4.3 Monthly Status Report (Planning Aspects Only)

2.4.3.1 In addition to the formal monthly report, the Contractor shall provide the following.

2.4.3.2 The report shall include but not be limited too:

2.4.3.3 The report shall summarise progress and problems encountered during that month in respect of all parts of the work under the Contract.

2.4.3.4 Progress against the approved Construction Programme;

2.4.3.5 Summary of progress achieved during the period using progress 'S-Curves';

2.4.3.6 List of milestones achieved during the period;

2.4.3.7 Status of design, procurement, off-site works, and construction;

2.4.3.8 Deviations from the Construction Programme, and in particular, the forecast completion dates of activities which should have been completed;

2.4.3.9 Status of approvals;

2.4.3.10 Actual or anticipated problems with corresponding action plans to mitigate / minimise their risk or impact;

2.4.3.11 Summary of work activities planned for the following period;

2.4.3.12 Cash flow status versus the original forecast;

2.4.3.13 The Progress Report shall be submitted for review prior to the monthly progress meetings.

3. CIDB Grading 7-9

3.1 Introduction

The Construction Programme and all associated documents as detailed in this Attachment, are an essential part of the Project control system used by the Employer's Representative in monitoring the progress of the work under the Contract. The information and data provided by the Contractor shall be reliable, accurate, timely in presentation, and in an agreed format and style that allows for ease of incorporation into the Employer's Representative's Project control system.

3.2 General

3.2.1 The Contractor shall comply with the requirements of this Attachment.

3.2.2 The following templates will be provided by the Employer and shall be used for the preparation of the construction Programme and reports:

3.2.3 Standard Schedule Layout

3.2.4 S-Curve

3.3 Planning and Construction Programme

3.3.1 Submission

3.3.1.1 The Construction Programme shall be a time scaled bar chart with fully continuous logic that clearly highlights the critical path(s) throughout the network.

3.3.1.2 Within the time specified in the Contract, the Contractor shall submit for the Employer's approval, a Construction Programme which represents the sequencing and methodology accepted by the Employer's Representative at the time of award and includes the milestones and key events detailed in the. The Construction Programme shall be generated using the Primavera Project Planner (P6) software package or an approved alternative and submitted in both hard copy and native file format.

3.3.2 Activities

The Construction Programme shall break up the work under the Contract into identifiable, structured items of work ("activities"). Each activity shall:

3.3.2.1 Be at level 4;

3.3.2.2 Be an activity of work, not a piece of equipment;

3.3.2.3 Be readily measurable for progress;

3.3.2.4 Express the logical progression of the work;

3.3.2.5 Be suitable for critical path and dependency networking;

3.3.2.6 Be continuous from start to finish;

3.3.2.7 Be located in a single geographical area;

3.3.2.8 Generally be of a single “trade” or work content;

3.3.2.9 Be compatible with quality assurance plans;

3.3.2.10 Be fully resourced; and

3.3.2.11 Be capable of producing commodity based reports

3.3.2.12 The sum total of all activities shall equate the work under the Contract.

3.3.3 Logic and Sequencing

3.3.3.1 The Construction Programme shall clearly indicate the logic and sequence of activities necessary to complete the work under the Contract, including but not be limited to:

3.3.3.1.1 Duration of each activity;

3.3.3.1.2 Early start, early finish and total float of each activity;

3.3.3.1.3 Activities that lie on the critical path(s) as determined by the network;

3.3.3.1.4 Precedence relationships (logic) between activities;

3.3.3.1.5 Subcontractor tendering, award and mobilisation processes;

3.3.3.1.6 Activities to be completed by others which may affect the timely completion of the Works including;

3.3.3.1.7 Activities, dependent upon any other contractor engaged by the Employer; or

3.3.3.1.8 Review time for required documentation such as specifications, drawings, procedures and calculations.

3.3.3.2 Tie in activities to existing services and utilities;

3.3.3.3 Statutory approval dates;

3.3.3.4 Date for access to the Site;

3.3.3.5 Date for access to follow-on contractors;

3.3.3.6 Date for Key Events and Milestones;

3.3.3.7 Date for Practical Completion of the Works or each Separable Portion;

3.3.3.8 Manufacture and delivery durations for Contractor supplied equipment and materials, with ties to the respective installation activities;

3.3.3.9 Activity durations shall be in working days, the programme calendar shall indicate public holidays, leisure days or other non-working days;

3.3.3.10 Off Site and on Site activities shall be clear and identifiable;

3.3.3.11 Calendar - the bar chart heading shall show the year, the month and the week. The bar chart shall commence on the date of Contract Award;

3.3.4 Construction Programme Resources

3.3.4.1 The Contractor shall submit histograms showing the direct labour required to complete the work under the Contract based on the approved Construction Programme.

3.3.4.2 The histograms shall be prepared from the schedule.

3.3.4.3 Equipment requirements / utilisation bar charts shall be submitted to the Employer for all Site plant and mobile equipment required to complete the work under the Contract.

3.3.5 Man-hour allocation

3.3.5.1 Scheduled Direct Labour Hours – Per Activity.

3.3.5.2 For each appropriate activity in the Construction Programme, the Contractor shall allocate the associated direct labour hours.

3.3.5.3 Direct Labour Hours – Total.

3.3.5.4 The total of the direct labour hours per week shall be calculated after activities have been resource levelled.

3.3.5.5 Direct Labour Workforce Histogram

3.3.5.6 The site workforce (direct labour only) scheduled per week shall be calculated from the direct labour hours and a histogram plotted.

3.3.6 Equipment allocation

3.3.6.1 Special tools and mobile equipment shall be assigned to their respective activities

3.3.6.2 Shared equipment such as mobile equipment shall be allocated to level of effort activities within the Construction Programme.

3.3.7 Contractor ‘S-Curve’

3.3.7.1 The Contractor shall submit progress S-Curves for the overall Contract and each of the phases of the Contract.

3.3.7.2 The S-Curves shall be based upon the distribution of man-hours where attainable from within the approved Construction Programme.

3.3.7.3 The S-Curves shall be presented using the approved templates provided by the Employer.

3.3.7.4 To generate the overall Contract S-Curve each of the phases shall be weighted according to the dollar value of the phase.

3.3.7.5 All S-Curves shall be developed using the 'Earned Value Method'. This method applies a weighted value (WV) to all measurable components of the Works.

3.3.7.6 The reporting of progress for each component shall be in the form of earned value (EV), which is the physical percent progress of the component of the work.

3.3.8 Construction Programme Commodities

3.3.8.1 The Construction Programme site activities shall be loaded with applicable commodity quantities. Commodity curves shall be produced for forecast installation and actual installation quantities from this data. Offsite fabrication of structural steel, platework and spooling of pipework shall also be reported.

3.3.8.2 The Employer utilises the following commodities;

3.3.8.2.1 Concrete (m^3)

3.3.8.2.2 Mechanical Equipment (t)

3.3.8.2.3 Plate work (t)

3.3.8.2.4 Structural Steel (t)

3.3.8.2.5 Pipework (m) & Diameter Inch's (Inch)

3.3.8.2.6 Electrical and Communication Cables (m)

3.3.8.2.7 Electrical & Instrumentation Terminations (Qty)

3.3.8.3 Commodity Curves shall be presented in the same format as the S-Curves.

3.3.9 Approval of Construction Programme

3.3.9.1 The Contractor shall submit the proposed baseline Construction Programme including a native copy of the programme.

3.3.9.2 Provided the Construction Programme is in accordance with this Attachment 10, it will be approved as the revision '0' Baseline Construction Programme. Against which the Contractors progress will be measured.

3.3.10 Revisions to the Construction Programme

3.3.10.1 The Contractor shall review the Construction Programme when any one of the following events occurs:

3.3.10.2 Progress of the work under the Contract falls significantly behind or otherwise materially departs from that shown in the Construction Programme;

3.3.10.3 A variation is issued which affects the Construction Programme;

3.3.10.4 There is a change in method of working adopted by the Contractor which affects the Construction Programme; or

3.3.10.5 The Employer's Representative directs that the Construction Programme be revised because in the opinion of the Employer's Representative the current Construction Programme does not reflect the actual work patterns of the Contractor.

3.3.10.6 If any of the events listed above occurs, the Contractor shall submit for approval, within seven (7) days of the event occurring, the revised Construction Programme. Upon approval, the revised Construction Programme will become the approved baseline for all future progress updates.

3.3.10.7 The Contractor shall address identified deviations from the Construction Programme by either:

3.3.10.8 Demonstrating that the deviation does not constitute a delay; or

3.3.10.9 Providing a course of action to remedy the deviation.

3.3.10.10 The revised Construction Programme shall clearly indicate the following:

3.3.10.11 The differences between the revised Construction Programme and the previously approved Construction Programme; and

3.3.10.12 The revision number and date of issue of the revised Construction Programme.

3.3.10.13 The revised Construction Programme shall be accompanied by a revised manning histogram and S-Curve with an additional data line called 'reforecast planned progress'.

3.3.10.14 At any time additional detail may be inserted into the Construction Programme at the request of either the Contractor or Employer's Representative. In such cases, the overall start and finish dates of the detail activities shall not vary from the original summary activity(s) which were replaced.

3.3.10.15 All revisions to the Construction Programme shall be prepared by, and at the cost of the Contractor.

3.3.11 Supplementary Schedules and Programmes

The Employer's Representative may at any time, and at the cost and expense of the Contractor, direct the Contractor to produce supplementary documents to highlight a particular aspect of the work under the Contract.

3.3.12 Cash Flow

The Contractor shall submit to the Employer detailed cash flow forecast charts based on the Construction Programme (and any revisions) showing the anticipated monthly cash flow as represented by expected payment claim submission, not by payments received.

3.4 Progress Reporting

The cut-off, and submission dates for monthly reports will be as required by the Employer to ensure appropriate and timely integration into the Employer's overall progress reporting systems. These dates are subject to change as per the status of the project or at the discretion of the employer.

3.4.1 Progress Reporting

3.4.1.1 To demonstrate the actual progress of the work under the Contract the Contractor shall, on a monthly basis, update and submit to the Employer;

3.4.1.2 The updated Construction Programme shall show two (2) separate bars for each activity:

3.4.1.2.1 The Construction Programme "baseline" activity bar.

3.4.1.2.2 The current schedule activity bar identifying the currently forecast start and finish dates of the activity.

3.4.1.3 The progress 'S-Curves';

3.4.1.4 Direct Manning Histograms;

3.4.1.5 Deviations from the 'baseline' Construction Programme together with the 'S-Curves' will form the basis for assessing progress and performance. Where significant deviations from the scheduled progress are being tabled in the report, the Contractor shall provide sufficient detailed written analysis and data, to adequately demonstrate the primary areas of schedule concern with short term recovery plan.

3.4.1.6 Overall Schedule.

3.4.1.7 2 week look ahead Schedule.

3.4.2 Progress Monitoring and Corrective Action

3.4.2.1 Monitoring and review of the progress of the work under the Contract shall consist of an assessment of all activities currently in progress. The following shall be determined:

3.4.2.1.1 Percentage complete;

3.4.2.1.2 Forecast completion date;

3.4.2.1.3 Manning histograms showing actual and forecast versus baseline figures;

3.4.2.1.4 Deviations from the baseline programme; and

3.4.2.1.5 Actions required remedying any deviations.

3.4.2.2 Progress reviews shall be conducted to assist control of the work under the Contract. The format, content, and structure of these reviews will be agreed between the Contractor and the Employer's Representative. The Contractor's Progress Report will be used as the discussion tool for the progress meeting.

3.4.3 Monthly Status Report (Planning Aspects Only)

3.4.3.1 In addition to the formal monthly report, the Contractor shall provide the following.

3.4.3.2 The report shall include but not be limited too:

3.4.3.2.1 The report shall summarise progress and problems encountered during that month in respect of all parts of the work under the Contract.

3.4.3.2.2 Progress against the approved Construction Programme;

3.4.3.2.3 Summary of progress achieved during the period using progress 'S-Curves' for each of the PCS elements;

3.4.3.2.4 List of milestones achieved during the period;

3.4.3.2.5 Status of construction;

3.4.3.2.6 Deviations from the Construction Programme, and in particular, the forecast completion dates of activities which should have been completed;

3.4.3.2.7 Actual or anticipated problems with corresponding action plans to mitigate / minimise their risk or impact;

3.4.3.2.8 Summary of work activities planned for the following period;

3.4.3.2.9 Cash flow status versus the original forecast;

3.4.3.3 The Progress Report shall be submitted for review prior to the monthly progress meetings.

C3.9.1 CIDB'S STANDARD FOR DEVELOPING SKILLS THROUGH INFRASTRUCTURE CONTRACTS (APRIL 2023)

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1779	Construction Industry Development Board Act, 2000 (Act no. 38 of 2000) (the Act): Standard for Developing Skills through Infrastructure Contracts: 31 March 2023	48491	3

DEPARTMENT OF PUBLIC WORKS AND INFRASTRUCTURE

GENERAL NOTICE 1779 OF 2023

Construction Industry Development Board

Standard for Developing Skills through Infrastructure Contracts

31 MARCH 2023

In terms of sections 5(2) of the Construction Industry Development Board Act, 2000 (Act no. 38 of 2000) (the Act), the Construction Industry Development Board is empowered to promote best practice Standards. This best practice Standard for developing skills through infrastructure contracts, establishes the minimum contract skills development goals to be achieved in the performance of such contracts relating to the provision of workplace opportunities, linked to or leading to:

a) a part- or full occupational qualification registered on the National Qualification Framework;

b) a trade qualification leading to a listed trade (GG No. 35625, 31 August 2012);

c) a national diploma registered on the National Qualification Framework; and

d) registration in a professional category by one of the professional bodies listed in the standard.

Mr Khulile Nzo
Chairperson: Construction Industry Development Board

Construction Industry Development Board

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economic development
Economic Development Department
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Standard for developing skills through infrastructure contracts

(31 MARCH 2023)

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Introduction

Procurement may be defined as the process which creates, manages and fulfils contracts. Procurement accordingly commences once a need for goods, services or works has been identified and it ends when the goods are received, or the services or construction works are completed. Public procurement can have a significant impact on social and economic development, if it is used to leverage social and development objectives.

The South African government requires that its considerable expenditure on the delivery , maintenance and operation of infrastructure (fixed assets that are constructed or result from construction operations) contribute to an increase in the number of people who have part or full occupational qualifications registered on the NQF or professional designations awarded by professional bodies or statutory councils. This standard has been prepared to leverage contributions towards the increase of the pool of qualified skilled people, and where required professionally registered, through training on professional services, design and build or engineering and construction works contracts associated with such expenditure. This Standard for developing skills through infrastructure contracts, establishes the minimum contract skills development goals to be achieved in the performance of such contracts relating to the provision of workplace opportunities, linked to or leading to:

a) a part- or full occupational qualification registered on the National Qualification Framework.

b) a trade qualification leading to a listed trade (GG No. 35625, 31 August 2012);

c) a national diploma registered on the National Qualification Framework; and

d) registration in a professional category by one of the professional bodies listed in Table 1 of this standard.

Contractors are responsible for achieving the contract skills development goals and are provided with a number of methods for measuring their achievements. They may, if need be, devolve their obligations onto subcontractors.

This standard should be applied to;

A contract or an order issued in terms of a framework agreement that has a duration of 12 months or more, and:

a) a contract of R5 million or more, in the case of a professional service or service contract or an order issued in terms of such a contract; or

b) a cidb grading designation of grade 7 or higher, in case of an engineering and construction works, or design and build contract or an order issued in terms of such a contract.

This Standard will be subject to review every five years, or sooner if required.

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Standard for developing skills through infrastructure contracts

1 Scope

This standard establishes a key performance indicator;

a) in the form of a contract skills development goal (CSDG) relating to the structured workplace learning of occupational or professional learning, which enables learners to make measurable progress towards the attainment of:

   (i) a part- or full occupational qualification registered on the National Qualification Framework; or

   (ii) a trade qualification leading to a listed trade (GG No. 35625, 31 August 2012); or

   (iii) a national diploma registered on the National Qualification Framework; or

   (iv) registration in a professional category by a statutory council listed in Table 1.

b) in the delivery, maintenance and operation of infrastructure through the performance of professional service, engineering and construction works, or design and build contracts or an order associated with such a contract and

c) sets out the methods by which the key performance indicator is established, measured, quantified and verified in the performance of the contract or the execution of an order.

NOTE 1: Guidance on the manner in which this standard should be incorporated into procurement documents is provided in Annex A.

NOTE 2: This standard can be applied to contracts or to orders (call-offs) issued in terms of framework agreements. Framework agreements are well suited to situations in which long term relationships are entered into. They offer flexibility in attaining contract skills development goals as requirements can be adjusted from one order to another, thus allowing key performance indicators to be improved upon over time.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply:

allowance
amount provided for in the contract or an order by the employer relating to one or more of the following:

a) the performance by the contractor of work or services that are foreseen but cannot be accurately specified at the time that the contract was entered into or the order issued;

b) work or services to be performed, or goods provided, by a subcontractor who is either nominated by the employer or is selected by the employer in consultation with the contractor after the award of the contract or the issuing of an order;

c) provision for price adjustment for inflation; or

d) other budgetary provisions intended to cover the employer's contractual risks

artisan
a person who has been certified as competent to perform a listed trade in accordance with Section 26B of the Skills Development Act of 1998 (Act No. 97 of 1998)

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black people mean Africans, Coloureds and Indians, who - (a) are citizens of the Republic of South Africa by birth or descent; or (b) became citizens of the Republic of South Africa by naturalisation - (i) before 27 April 1994; or (ii) on or after 27 April 1994 and who would have been entitled to acquire citizenship by naturalisation prior to that date

candidate
a person who is registered in a category of registration which ultimately leads to registration in a professional category by one of the statutory councils listed in Table 1

cidb
Construction Industry Development Board, established in terms of the Construction Industry Development Board Act of 2000 (Act 38 of 2000)

class of construction works
the class of construction works referred to in Schedule 3 of the Construction Industry Development Regulations 2004, as amended from time to time

contract amount
financial value of the contract at the time of the award of the contract or an order at the time of issue, including value added tax but excluding all allowances and expenses

contract skills development credits
the number of learners employed by the contractor and placed for continuous training opportunities in a three-month period

contract skills development goal (CSDG)
the number of hours or head count of skills development opportunities that a contractor contracts to provide in relation to work directly related to the contract or order, up to:

a) completion, in the case of a professional service contract;
b) the end of the service period, in the case of a service contract; and
c) practical completion, in the case of an engineering and construction works contract

contractor
person or organization that contracts to provide professional services, goods and related services, or engineering and construction works

design and build contract
engineering and construction works contract where both the design and the construction are the responsibilities of the same contractor

employed learner
a learner who was in the employment of an employer prior to the commencement of the contract or execution of the order. Learners deployed from the public sector, other organisations, or other contractors for the purposes of gaining structured workplace learning shall also be considered to be an employed learner, albeit their employer remaining unchanged.

employer
person or organization entering into a contract with the contractor for the provision of professional services, goods and related services, engineering and construction works (commonly referred to as the client)

employer's representative
person authorized to represent the employer in terms of the contract

engineering and construction works contract
contract for the provision of a combination of goods and services arranged for the manufacture, development, extension, refurbishment, rehabilitation or demolition of a fixed asset, including building and engineering infrastructure

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expenses
costs incurred by the contractor in the performance of the contract or order, which are in terms of the contract recoverable from the employer

framework agreement
agreement between an employer and one or more contractors, the purpose of which is to establish the terms of the governing orders to be awarded during a given period, with regard to price and, where appropriate, the quantity envisaged

mentor
a qualified and experienced person, in the case of professionals, registered person, designated to guide a learner or candidate through a structured work experience learning component of a learning programme required for the acquisition of a part or full qualification or professional designation

occupational qualification
occupational qualification registered on the National Qualifications Framework Act (Act No. 67 of 2008)

order
the instruction to carry out construction works, services or professional services under a framework agreement

part qualification
an assessed unit of learning that is registered on the National Qualifications Framework as part of an occupational qualification

practical completion
the state of completion at the end of construction required in terms of an engineering and construction works contract

NOTE: Practical completion is commonly understood to be a state of readiness for occupation of the whole works although some minor work may be outstanding. Practical completion in an engineering and construction works contract occurs when:

a) FIDIC Short Form of Contract: the date when the Employer considers that the Works have been completed in accordance with the Contract, except for minor outstanding work and defects which will not substantially affect the use of the Works for their intended purpose.
b) FIDIC Red, Silver and Yellow Book: the date when the Engineer determines that the Works have been completed in accordance with the contract except for minor outstanding works and defects which will not substantially affect the use of the works for their intended purpose.
c) GCC 2010: the date when the Engineer certifies that the whole or portion of the Works has reached a state of readiness, fit for the intended purpose, and occupation without danger or undue inconvenience to the Employer, although some work may be outstanding.
d) JBCC 2000 Principal Building Agreement and JBCC Minor Works Agreement: the date when the principal agent decides that the completion of the works has substantially been reached and can be used for the purpose intended.
e) NEC3 Engineering and Construction Contract: the date when the Project Manager decides that the Contractor has reached Completion as defined in the contract.
f) NEC3 Engineering and Construction Short Contract: the date when the Employer decides that the Contractor has completed the works in accordance with the Works Information except for correcting notified Defects which do not prevent the Employer from using the works and others from doing their work.

professional category
a category of registration identified in Table 1 or such other category recognised by the Employer in the application of this standard

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Table 1: Categories of registration

Profession	Category of registration	Act
Architectural	Architect, Senior Architectural Technologist, Architectural Technologist or Architectural Draughtsperson	Architectural Profession Act of 2000 (Act No. 44 of 2000)
Construction Health and Safety	Construction Health and Safety Agent, Construction Health and Safety Manager or Construction Health and Safety Officer	Project and Construction Management Professions Act of 2000 (Act No. 48 of 2000)
Construction Project Management	Construction Project Manager	
Construction Management	Construction Manager	
Engineering	Engineer, Engineering Technologist, Engineering Technician or Certificated Engineer	Engineering Profession Act of 2000 (Act No. 46 of 2000)
Landscape Architectural	Landscape Architect, Landscape Technologist, Landscape Technician or Landscape Assistant	Landscape Architectural Profession Act of 2000 (Act No. 45 of 2000)
Planning	Planner or Technical planner	Planning Profession Act, 2002. (Act No. 36 of 2002)
Quantity Surveying	Quantity Surveyor	Quantity Surveying Profession Act of 2000 (Act No. 49 of 2000)
Scientists	Natural Scientists	Natural Scientific Professions Act (Act No. 27 of 2003)
Surveying	Land Surveyor, Engineering Surveyor or Technician Engineering Surveyor	Professional and Technical Surveyors' Act (Act No. 40 of 1984)
Valuers	Valuer or Associate Valuer	Property Valuers Profession Act (Act No. 47 of 2000)

professional fees
financial value of a professional service contract at the time of the award of the contract or an order at the time of issue, excluding value added tax (VAT), allowances and expenses

professional service contract
contract for the provision of services with the skill and care normally delivered by professionals

Sector Education and Training Authority (SETA)
an institution established under section 9 of the Skills Development Act, Act 97 of 1998 and which has the responsibility under this Act to register learners on learning programmes

service contract
contract for the provision of labour or work, including knowledge-based expertise, carried out by hand or with the assistance of equipment and plant

site
means the land or place made available by the employer, for the purposes of the contract or order, on, under, over, in or through which the works or services are to be executed

skills development agency (SDA)
an agency which performs some or all the functions set out in section 4.1.5.

statutory council
a council established as follows:

a) South African Council for the Architectural Profession, established by the Architectural Profession Act of 2000 (Act No. 44 of 2000);
b) South African Council for the Project and Construction Management Professions, established by the Project and Construction Management Professions Act of 2000 (Act No. 48 of 2000);

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c) Engineering Council of South Africa, established by the Engineering Profession Act of 2000 (Act No. 46 of 2000);
d) South African Council for the Landscape Architectural Profession, established by the Landscape Architectural Profession Act of 2000 (Act No. 45 of 2000);
e) South African Council for the Quantity Surveying Profession, established by the Quantity Surveying Profession Act of 2000 (Act No. 49 of 2000);
f) South African Council for Professional and Technical Surveyors, established by the Professional and Technical Surveyors' of 2000 (Act No. 40 of 1984);
g) South African Council for Planners, established by the Planning Professions Act of 2002 (Act No. 32 of 2002);
h) South African Council for Natural Scientific Professions, established by the Natural Scientific Professions Act (Act No. 27 of 2003); or
i) South African Council for the Property Valuers Profession, established by the Property Valuers Profession Act (Act No. 47 of 2000)

structured mentorship
mentorship provided by a person who is registered in a suitable category of professional registration by a professional body or statutory council who leads and directs a candidate towards professional registration

structured workplace learning
component of learning in an occupational qualification or work placement for a trade or professional designation whereby a learner is mentored by a suitably qualified, and where required, registered mentor in the application and integration of the knowledge and practical skills learnt, under supervision, in the actual context of a workplace in accordance with the prescripts set by the relevant qualifying authority, professional body or statutory council

Sub-total
financial value of the all the items in the Bills of Quantities or Schedule of Rates or Pricing Schedule, excluding value added tax, allowances and expenses

supervisor
a supervisor is a person in the particular workplace charged with the responsibility of allocating workplace tasks to a learner that are aligned to the prescriptions of their learning programme and of overseeing and reporting on that learning using a formally agreed record keeping system

Tender sum
the overall pricing figure proposed by a tendering contractor in accordance with the tender pricing document

unemployed learner
a learner who was not in the full-time employment of the contractor prior to the commencement of the contract or execution of the order and is appointed by the contractor or SDA on a limited duration employment contract linked to the prescriptions of a structured workplace learning programme. Their conditions of employment shall not be less favourable than those set out for such learners on learnerships set out in section 18 (3) of the Skills Development Act (Act 97 of 1998)

work integrated learning
the workplace learning component required by learners completing a national diploma or bachelor degree at a University of Technology or Comprehensive University

3 Requirements

3.1 Contract skills development goal (CSDG)

3.1.1 The contractor shall attain or exceed the contract skills development goal in the performance of the contract or the execution of an order.

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3.1.2 The contract skills development goal shall be expressed as in 3.1.2.1 for engineering and construction works, design and build and services contracts, and as in 3.1.2.2 for professional services contracts.

3.1.2.1 In the case of engineering and construction works contracts , design and build contracts and services contracts the contract skills participation goals, expressed in Rand, shall be no less than the sub-total multiplied by a percentage (%) factor given in Table 2 for the applicable class of construction works used in the application of the Construction Industry Development Regulations, issued in terms of the Construction Industry Development Board Act of 2000.

Table 2: Contract skills development goals for different classes of engineering and construction works contracts

Class of construction works as identified in terms of Regulation 25(3) of the Construction Industry Regulations 2004		**Construction skills development goal (CSDG) (%)**
Designation	**Description**	
CE	Civil engineering	0.25
CE or GB	Civil engineering or General Building	0.375
EE	Electrical Engineering works (buildings)	0.25
EP	Electrical Engineering works (Infrastructure)	0.25
GB	General Building	0.50
ME	Mechanical Engineering works	0.25
SB	Specialist	0.25

Example 1: The sub-total of the tender sum for an engineering and construction works contract in the GB class of construction works is R65,7m. The contract skills development goal in Rands is R65,7m x 0.5% = R328 500.

3.1.2.2 In the case of professional services contracts the contract skills development goals, expressed in hours, shall be not less than the professional fees in millions of Rand multiplied by 150.

Example 2: The contract amount for a professional services contract is R5.6 m. The contract skills development goal in hours is R5.6m x 150 = 840 hours.

3.1.2.3 The number of hours for the contract skills development goal shall be revised as the need arises and be published in a Gazette notice.

3.1.3 Where required in terms of the contract or order, a specified proportion of the learners and candidates shall be selected from persons in the employ of the state who meet the relevant eligibility criteria for the relevant programme.

3.2 Achieving the contract skills development goal (CSDG)

3.2.1 The contractor shall achieve the measurable contract skills development goal by providing opportunities to learners requiring structured workplace learning using one or a combination of any of the following in relation to work directly related to the contract or order:

Method 1: structured workplace learning opportunities for learners towards the attainment of a part or a full occupational qualification;

Method 2: structured workplace learning opportunities for apprentices or other artisan learners towards the attainment of a trade qualification leading to a listed trade (GG No. 35625, 31 August 2012) subject to at least 60% of the artisan learners being holders of public TVET college qualifications;

Method 3: work integrated learning opportunities for University of Technology or Comprehensive University students completing their national diplomas;

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Method 4: structured workplace learning opportunities for candidates towards registration in a professional category by a statutory council listed in Table 1 above.

3.2.2 Employed learners may not account for more than 33 percent of the contract skills development goal.

3.2.3 Not more than one method may be applied to any individual concurrently in the calculation of the contract skills development goal.

NOTE: The principle is that an individual can only be counted once towards the CSDG.

3.3 Contract skills development goal credits

3.3.1 Contract skills development credits will not be awarded for learners enrolled as beneficiaries of other funded or subsidised programmes.

3.3.2 In the case of engineering and construction works, design and build and services contracts:

a) The contract skills development goals shall be granted by multiplying the number of people employed by the contractors and placed for continuous training opportunities in a three-month period by the notional values contained in Table 3, or as revised in a Gazette notice.
b) The contractor may source beneficiaries of the contract skills development goal from the cidb Skills Development Agency (SDA).
c) All beneficiaries of the Standard must be registered with the cidb SDA.

NOTE: The role and function of a cidb SDA is outlined in Annex B

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Table 3: The notional cost of providing training opportunities per quarter

Type of Training Opportunity	Provision for stipends (Unemployed learners only)	Provisions for mentorship	Provisions for additional costs*	Total costs	
				Unemployed learners	Employed learners
Method 1					
Occupational qualification	R7 000	R0	R9 000	R16 000	R9 000
Method 2					
TVET College graduates	R14 000	R0	R9 000	R23 000	N/A
Apprenticeship	R14 000	R0	R12 000	R26 000	R12 000
Method 3					
P1 and P2 learners, or a 240 credits qualification	R24 000	R20 000	R4 500	R48 500	N/A
Method 4					
Candidates with a 360 credits qualification	R37 000	R20 000	R4 500	R61 500	R20 000
Candidates with 480 or more credits qualification	R47 000	R20 000	R4 500	R71 500	R20 000

*Additional provisions include provisions for personal protective equipment, insurance, medical assessments, course fees and trade tools (where applicable) assessment, moderation and monitoring of learners.

NOTE:
i) Where an unemployed learner is employed directly by the contractor, the contractor shall pay the stipend directly to the learner
ii) Where an unemployed learner is sourced through an SDA, training provider or skills development facilitator, the contractor may pay the stipend to the SDA, training provider or skills development facilitator who in turn will pay the learner
iii) The notional cost of providing training opportunities will be reviewed as and when required. The new, revised costs will be published as revised in a Gazette notice.

Example 3: Training Target Calculation for a R65,7m GB contract

Sub-total	R65 700 000
Contract duration	12 Months
CSDG	0,50%
Minimum CSDG target	0,5% x R65 700 000
	R328 500

Skills Types	Number of learners	Notional Cost / Learner / Quarter	Notional cost/learner/year	Total Notional Cost over 12 months Contract
Method 2: Workplace learning opportunities, with unemployed TVET graduates	1	R23 000	R92 000	R92 000
Method 4: Candidacy for an unemployed learner with a 3-year qualification	1	R61 500	R246 00	R246 00
Total	2			R338 000

3.3.3 Credits towards the contract skills development goal for professional services contracts shall be granted by summating the hours of structured workplace learning opportunities provided to P1 and P2 learners as well as professional candidates in accordance with this standard.

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3.3.3.1 No more than 45 hours may be claimed per week for any individual.

3.3.3.2 Contract skills development goal credits shall be reduced to the extent that they fail to comply with the requirements of this standard.

3.4 Denial of credits

Credits towards the contract skills development goal shall be denied, should:

a) the opportunities not be provided on site or the opportunities cannot be directly linked to the contract or order;

b) there be a failure to register all beneficiaries of the Standard with the cidb SDA;

c) there be a failure to submit a copy of the final contract compliance training report, within 30 days of practical completion;

d) the following not be provided:

1) the required contract compliance baseline plan, an interim contract compliance report or a final contract compliance report;

2) the required mentorship plan for a candidate;

3) the required training plan for learners;

4) the training reports covering a period;

5) the required records, specified documents and signatures;

6) the structured mentorship in accordance with the requirements of the applicable professional body, statutory council or qualifying authority;

7) the structured workplace learning, in accordance with the curriculum requirements of the part qualification or occupational qualification or prescription for professional registration for which the learner is registered;

e) conditions of employment and rates of allowances for learners not be in accordance with legislative provisions; and

f) the contractor not maintain the required training records, or an audit reveals that there is insufficient information to substantiate claims for credits .

g) the contractor claims credits for learners enrolled as beneficiaries on programme that is funded or subsidised from another source.

h) the contractor fails to provide sufficient evidence of disciplinary actions taken against a learner who fails to present their interim reports or credentials for assessment , when they have had sufficient structured work experience or structured mentorship to do so.

4 Compliance with requirements

4.1 General

4.1.1 The contractor shall:

a) within 30 days of the contract coming into effect or the issuing of an order, submit to the employer's representative a contract compliance baseline training plan, taking into account the skills mix and type of workers that are to be engaged;

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b) at intervals not exceeding three (3) months, submit to the employer's representative interim contract compliance training reports; and

c) shall within 30 days of reaching completion, end of the service, the delivery date for all work required or practical completion in the case of professional service, design and construct contracts, and engineering and construction works contracts, respectively, submit to the employer's representative a final contract compliance training report

4.1.2 The information contained in the final contract compliance training report shall include the contract skills development goal achieved (in Rands or in hours) in the performance of the contract and a breakdown of the goal achieved in respect of the following:

a) the name and contact details of the SDA, (where applicable)

b) the skills mix and skills types achieved on the contract; and

c) the names, Identity numbers and period of employment of each beneficiary.

4.1.3 The contractor shall keep records of the hours worked and registration particulars in compliance with this standard. The contractor shall allow the employer's representative to inspect or audit such training records at any time.

4.1.4 The employer's representative shall undertake suitable random audits on records to confirm compliance with requirements.

4.1.5 The learners shall be directly employed by the contractor or SDA and the contractor may enter into a contract agreement with the cidb SDAs, training provider or skills development facilitator of their choice, participating in the implementation of this standard, enabling such contractor to:

a) prepare training plans for registered learners, including details of the scope of experiential work to be covered and expected outcomes;

b) register learners with the appropriate Sector Education and Training Authority, established in terms of the Skills Development Act of 2008 (Act 37 of 2008);

c) manage learner registration with appropriate trade testing authorities as well as preparation for the trade test;

d) liaise with the supervisor to monitor onsite training progress of learners;

e) liaise with the supervisor to arrange for summative assessments at appropriate stages of the training; and

f) liaise with the supervisor to prepare reports for the employer or employer's representative.

4.2 Structured workplace learning opportunities for learners

4.2.1 Structured workplace learning opportunities shall be aligned to the curriculum requirements set for the part or full occupational qualification or professional designation for which the learner is registered.

4.2.2 A responsible supervisor will be appointed to allocate learning tasks, under the guidance of a competent person, to learners in line with their training plans.

4.2.3 Supervision associated with structured workplace learning for artisan learners shall be undertaken by an artisan in the applicable trade with a minimum of 3 years of trade specific experience.

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The number of artisan learners supervised by a single supervisor shall, unless otherwise permitted by the National Artisan Moderation Body, not exceed 4 at any one time.

4.2.4 Mentoring associated with structured workplace learning for learners leading to a part or full occupational qualification other than artisan learners shall be undertaken by a person qualified in the applicable discipline and having a minimum of 3 years of post-qualification experience.

4.2.5 The contractor shall, within one month of commencing work directly related to the contract or order and in respect of each learner, submit to the employer's representative,

a) a workplace training plan together with name of the learner's mentor and/or supervisor.

b) proof of registration as a learner with the relevant SETA where applicable;

c) a copy of the mentorship agreement entered into with the learner, or the company mentorship agreement entered into with the relevant qualified agency for method 3 and method 4; and

d) shall, within two weeks of updating and revising the workplace training plan, and at the end of the structured mentorship period, submit to the employer's representative;

(i) a quarterly progress report,

(ii) a final report (including a log of exposure and interactions with the mentor), signed off by the mentor, the supervisor and the learner, demonstrating compliance with requirements,

4.2.6 Learners shall, whenever a substantial activity or training period has been completed, be required by the supervisor to complete training reports required by the relevant qualifying authority.

4.2.7 The mentor and supervisor shall sign off all reports and logbooks to allow the learner to move to other projects or employment and continue the path towards qualification.

4.3 Structured workplace learning for candidates

4.3.1 Mentoring associated with structured workplace learning for candidates shall be in accordance with the prescripts of the relevant professional body or statutory council.

4.3.2 The contractor shall:

a) appoint a supervisor who is actively engaged in work directly associated with the contract to issue tasks, oversee their implementation and provide input to the candidate on an on-going basis;

b) identify a suitable mentor for the candidate. If the contractor does not have an in-house mentor, the contractor shall enter into a mentoring agreement with the candidate and with an external company as required by the professional body or statutory council; and

c) issue each candidate with a portfolio of evidence file which is to be kept up to date with all the documentation issued or prepared including the workplace training plan and all revisions thereof as well as copies of the logbook entries and training experience reports.

4.3.3 The mentor shall from time to time provide an updated workplace training plan for a candidate outlining the activities in which the candidate will be involved, including activities required by the relevant professional body or statutory council. The mentor shall require candidates to maintain a logbook issued by the relevant professional body or statutory council. The mentor shall sign off such logbook at quarterly presentations and progress review meetings.

NOTE: The mentor shall, where the duration of the contract or order exceeds the minimum time to register in a professional category of registration that candidates are exposed to the full range of activities and work towards

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assuming the full level of responsibility recommended by the relevant professional body or statutory council. This may require rotations and secondments.

4.3.4 The contractor shall, in respect of each candidate and within one month of commencing work directly related to the contract or order, submit to the employer's representative,:

a) a workplace training plan, together with name of the candidates' mentor and supervisor;

b) proof of registration, as a candidate, with the relevant professional body or statutory council;

c) a register of all beneficiaries of the Standard, enrolled with the cidb SDA;

d) a copy of the mentorship agreement entered into with the candidate, or the company mentorship agreement entered into with a professional body or statutory council and

e) shall, within two weeks of updating a workplace training plan and at the end of the structured mentorship period, submit to the employer's representative;

(i) quarterly progress reports,
(ii) a final report (including a log of exposure and interactions with the mentor), signed off by the mentor, the supervisor and the learner, demonstrating compliance with requirements,

4.3.5 Candidates shall be required by the mentor to complete training reports required by the relevant professional body or statutory council whenever a substantial activity or training period has been completed.

4.3.6 The mentor and supervisor shall, in the event of the contract ending, sign off all reports and logbooks to allow the candidate to move to other projects or employment .

5 Records

5.1 The contractor shall, in a timely manner and where a prescribed format is available, submit all the documentation required in terms of clause 4.

5.2 The employer's representative shall certify the value of the credits counted towards the contract skills development goal, if any, whenever a claim for payment is issued to the employer, and shall notify the contractor of this amount.

5.3 To satisfy the contract skills development goal, the contractor shall upon termination of the opportunities provided, certify the quantum and nature of the opportunity and shall submit the certificate, counter-certified, issued by the relevant individual to the employer's representative, for record-keeping purposes.

6 Sanctions

In the event that the contractor fails to provide a reasonable explanation to the employer for any failure to achieve the contract skills development goal, the sanctions as provided in the contract or order shall apply.

NOTE: The contract establishes the sanctions that apply. These are set out in a tender evaluation schedule, the scope of work or contract data. Sanctions where tender evaluation points are granted with respect to a tendered CSDG or where a minimum CSDG is specified are usually applied in the form of:

a) financial penalties (low performance damages), typically formulated on the difference between the contracted CSDG and the CSDG achieved in the performance of the contract; and

b) the issuing of completion certificates only after the certificates described in clause 5 are received.

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Annex A: Incorporating this standard in a procurement document

(Informative)

A1 General

A1.1 The following clause should be added to the scope of work of a contract or order to establish requirements:

Skills development requirements

The contractor shall achieve in the performance of the contract the contract skills development goal established in this Standard for developing skills through infrastructure contracts

NOTE: Depending on the context and the form of contract adopted , the term contractor may be changed to "consultant" or "prof essional service provider" or "supplier" and the term "perf ormance of the contract" may, where the scope of work forms part of an order, be replaced with "execution of an order",.

A1.2 Where an employer requires that employees of the state be seconded to the contractor in order to be provided with structured workplace learning opportunities, in accordance with the provisions of this standard, the following clause should be included in the scope of work:

> The specified number of employees of the state is..... The employer must provide a list of persons for selection by the contractor as prescribed in the implementation guidelines. Persons selected by the contractor shall be seconded to the contractor under the terms and conditions prescribed in the implementation guidelines.

A2 Sanctions

In the event that the contractor fails to provide reasonable explanation to the employer for any failure to achieve the contract participation goal , the sanctions as agreed in the contract shall apply.

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Annex B: Role and Function of Skills Development Agency

(Informative)

The Skills Development Agency (SDA) will provide career management and compliance reporting functions for all learners for CSDG compliance in terms of this Standard. Where the contractors provides direct employment to unemployed learners, or enrols their own employees for CSDG compliance, the contractor shall register them with the cidb SDA.

The roles and functions of the Skills Development Agency (SDA) are summarised below.

B1 Career Management and Compliance Reporting

The contractor may enter into a contract agreement with the cidb SDA, training provider or skills development facilitator to manage their learners according to the provisions given below:

a) preparing training plans for registered learners, including details of the scope of experiential work to be covered and expected outcomes;
b) registering learners with the appropriate Sector Educational and Training Authority established in terms of the Skills Development Act of 2008 (Act 37 of 2008);
c) liaising with the supervisor to monitor onsite training progress of learners;
d) liaising with the supervisor to arrange for summative assessments at appropriate stages of the training; and
e) liaising with the supervisor to prepare reports for the employer's representative and cidb at practical completion of the contract.

The relevant training provider or skills development facilitator shall invoice the contractors for the provision of these services as per cost schedule in Table 3.

B2 Employment Intermediary

The cidb SDA may act as an employment intermediary for unemployed learners and may provide contractors with learners qualifying for participation in the CSDG, as well as managing their employment functions such as payment of stipends, workman's compensation, etc.

In such cases, the contractor shall contract directly with an SDA, training provider or skills development facilitator of their choice for the recruitment, placement and management of learners. The contractor shall pay the SDA, training provider or skills development facilitator in accordance with the notional costs provided for in this standard, or as amended by a Gazette.

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C3.9.2 CIDB'S STANDARD FOR INDIRECT TARGETING FOR ENTERPRISE DEVELOPMENT THROUGH CONSTRUCTION WORKS CONTRACTS (FEBRUARY 2013)



Government Gazette
Staatskoerant

REPUBLIC OF SOUTH AFRICA
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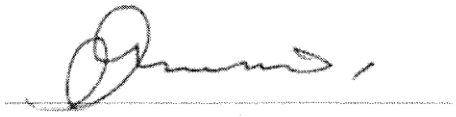
BOARD NOTICE 21 OF 2013

Construction Industry Development Board

Standard for Indirect Targeting for Enterprise Development through Construction Works Contracts

29 January 2013

In terms of sections 5(2) of the Construction Industry Development Board Act, 2000 (Act no. 38 of 2000) (the Act), the Construction Industry Development Board is empowered to promote best practice Standards. This best practice Standard for Indirect Targeting for Enterprises Development through Construction Works Contracts establishes a key performance indicator in the form of a contract participation goal (CPG) relating to the engagement of targeted enterprises on a contract for the provision of construction works coupled to the enterprise development.



Bafana Ndendwa
Chairperson: Construction Industry Development Board

Standard for Indirect Targeting for Enterprise Development through Construction Works Contracts

(29 January 2013)

cidb
development through partnership

Construction Industry Development Board
Pretoria
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Standard for Indirect Targeting for Enterprises Development through Construction Works Contracts

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Standard for Indirect Targeting for Enterprises Development through Construction Works Contracts

Foreword

The cidb Act (Act 38 of 2000) requires that the Board must establish a *Best Practice Project Assessment Scheme* based on the best practices identified by the Board. All construction contracts above a prescribed tender value will then be subject to an assessment of compliance with best practice standards and guidelines published by the Board.

The aim of this best practice *Standard for Indirect Targeting for Enterprise Development* is to promote enterprise development by providing for a minimum contract participation goal (CPG) of 5% of the total project value on selected contracts to be undertaken by joint-venture partners or to be sub-contracted to developing contractors that are also to be beneficiaries of enterprise development support from the main contractor.

Private and public sector employees are encouraged to adopt this Standard. However, notwithstanding this, it is the cidb's intent that in terms of the cidb Act and as prescribed by the Minister of Public Works, this Standard will become a mandatory requirement on public sector contracts.

Furthermore, it is the cidb's intent to increase the minimum CPG of 5% to at least 10% over a three year period. This incremental phasing-in of the CPG will provide clients and contractors the time required to gain experience with this Standard, and to introduce the necessary changes into the nature and structure of construction contracts to accommodate a CPG of 10% or higher.

This cidb *Standard for Indirect Targeting for Enterprise Development* is aligned to the enterprise development components within the construction sector Codes of Practice for Broad Based Black Economic Empowerment.

1 Scope

This standard establishes a key performance indicator in the form of a contract participation goal (CPG) relating to the engagement of targeted enterprises on a contract for the provision of construction works coupled to the enterprise development.

This standard sets out the methods by which the key performance indicator is measured, quantified and verified in the performance of the contract.

2 Terms and Definitions

For the purposes of this document, the following definitions apply:

black people: natural person who are African, Coloured, Indian or Chinese and who are a citizen of the Republic of South Africa:

a) by birth or decent; or
b) naturalisation occurring before the commencement date of the constitution of the Republic of South Africa Act of 1993 or occurring after the commencement date of such Act, but who, without the Apartheid policy would have qualified for naturalisation before then.

class of construction works: the class of construction works referred to in Schedule 3 of the Construction Industry Development Regulations 2004 as amended and published in terms of the Construction Industry Development Board Act of 2000 (Act 38 of 2000).

Construction Industry Development Board (CIDB): the board established in terms of the Construction Industry Development Board Act of 2000 (Act 38 of 2000).

construction works: the provision of a combination of goods and services arranged for the development, extension, installation, repair, maintenance, renewal, removal, renovation, alteration, dismantling or demolition of a fixed asset including building and engineering infrastructure.

contract amount: financial value of the contract at the time of the award of the contract, exclusive of all allowances and any value added tax or sales tax which the law requires the employer to pay to the contractor.

contract participation goal (CPG): the value of goods, services and works for which the contractor contracts targeted enterprises exclusive of all allowances and any value added tax or sales tax which the law requires the employer to pay to the contractor, expressed as a percentage of the contract amount.

contractor: person or organization that contracts to provide the goods, services or engineering and construction works covered by the contract.

developed enterprise: an enterprise which:

a) in the case of a single enterprise operating as the main contractor, must be registered in a CIDB Grade 7 or higher in the General Building (GB) or Civil Engineering (CE) Classes of Works, and must be accountable for providing the enterprise development support; or
b) in the case of a JV agreement, at least one JV partner must be registered in a CIDB Grade 7 or higher in the General Building (GB) or Civil Engineering (CE) Classes of Works, and must be accountable for providing the enterprise development support.

employer: person or organization entering into the contract with the contractor for the provision of goods, services, or engineering and construction works.

employer's representative: person authorized to represent the employer and named as such in the contract data.

fifty percent black owned: an enterprise in which black people:

c) hold more than 50% of the voting rights that are not subject to any limitation; and
d) hold more than 50% of the economic interest.

joint venture: grouping of two or more contractors acting as one legal entity, where each is liable for the actions of the other.

main contractor: contractor who contracts with the employer for the provision of construction works, and who may subcontract part of this contract.

practical completion: the state of completion at the end of construction required in terms of the contract.

NOTE Practical completion is commonly understood to be a state of readiness for occupation of the whole works although some minor work may be outstanding. Practical completion in a construction works contract occur when:

a) FIDIC Short Form of Contract: the date when the Employer considers that the Works have been completed in accordance with the Contract, except for minor outstanding work and defects which will not substantially affect the use of the Works for their intended purpose.
b) FIDIC Red, Silver and Yellow Book: the date when the Engineer determines that the Works has substantially been reached and can be used for the purpose intended.
c) GCC 2010: "Practical Completion" means the date when the Engineer certifies that the whole or portion of the Works has reached a state of readiness, fit for the intended purpose, and occupation without danger or undue inconvenience to the Employer, although some work may be outstanding
d) JBCC 2000 Principal Building Agreement and JBCC Minor Works Agreement: the date when the principal agent decides that the completion of the works has substantially been reached and can be used for the purpose intended
e) NEC3 Engineering and Construction Contract: the date when the Project Manager decides that the Contractor has reached Completion as defined in the contract
f) NEC3 Engineering and Construction Short Contract: the date when the Employer decides that the Contractor has completed the works in accordance with the Works Information except for correcting notified Defects which do not prevent the Employer from using the works and others from doing their work.

targeted enterprise: an enterprise which:

a) is a contractor registered with the Construction Industry Development Board acting in the capacity of a sub-contractor or JV partner; and
b) the contractor does not have an equity holding exceeding 20% in the enterprise, either directly or through a flow through calculation in accordance with the Construction Sector Code of Good Practice published in General Notice 862 of 2009 in Government Gazette No 32305 of 2009 in terms of the Board Based Black Economic Empowerment Act of 2003 (Act 53 of 2003); and
c) employs at least three permanent employees other than the owner; and
d) be registered in terms of the Company's Act of 2008 (Act No. 71 of 2008) or Close Corporation Act of 1984 (Act No. 69 of 1984);
e) is 50% or more black owned or 30% or more black women owned; and
f) has entered into a written relationship agreement of co-operation and assistance with the developed enterprise for the duration of the contract.

thirty percent black woman owned: an enterprise in which black people who are women:

a) hold more than 30% of the voting rights that are not subject to any limitation; and
b) hold more than 30% of the economic interest.

3 Requirements

3.1 Contract Participation Goal (CPG)

3.1.1 The requirements of a contract participation goal applies only to:

a) construction works contracts in the General Building (GB) and to Civil Engineering (CE) classes of construction works;
b) construction works contracts of an estimated minimum project duration of 6 months; and
c) construction works contracts in which at least 25% of the main contract could reasonably be expected to be sub-contracted out in one or more of the following CIDB classes of construction works:

    1) Civil Engineering (CE);
    2) Electrical Engineering Work (EB);
    3) General Building Works (GB); or
    4) Mechanical Engineering (ME).

3.1.2 The contractor shall engage targeted enterprises in the performance of the contract to the extent that at least a five percent (5%) contract participation goal is achieved.

3.1.3 Each targeted enterprise shall complete the targeted enterprise declaration affidavit contained in Annex A and attach to the applicable written relationship agreement of co-operation and assistance.

3.1.4 Credits towards the contract participation goal will be denied in respect of the participation of a targeted enterprise should any of the provisions relating to 3.2 not be satisfied.

3.2 Enterprise Development Support

3.2.1 The contractor shall perform a needs analysis on all targeted enterprises and provide internal mentorship which improves the targeted enterprise's performance in at least two developmental areas. Such developmental areas should be guided by the requirements of the cidb *Best Practice Contractor Recognition Scheme*[1,2] as well as the NCDP exit requirements for accreditation of contractors[3], and may include but are not limited to:

---

[1] cidb (2011). *cidb Best Practice Contractor Recognition Scheme; Requirements and Guidelines for Contractor Competence Assessment* (Draft). Construction Industry Development Board, http://www.cidb.org.za

a) management and labour skills transfer;
b) establishment of administrative systems;
c) establishment of cost control systems;
d) establishment of construction management systems and plans (health and safety, quality and environmental);
e) planning, tendering and programming skills transfer;
f) business skills transfer with emphasis on entrepreneurial and negotiation skills;
g) technical skills transfer with emphasis on innovation;
h) legal compliance;
i) procurement skills transfer;
j) establish credit rating/history;
k) establish financial loan capacity/history; and/or
l) contractual knowledge transfer.

3.2.2 The needs analysis shall be mutually agreed upon between the contractor and the targeted enterprise.

3.2.3 The contractor shall appoint an enterprise development co-ordinator. The enterprise development co-ordinator shall:

a) develop a project specific enterprise development plan to improve the targeted enterprise's performance in the identified developmental areas which allocate resources and monitors progress in relation to improved performance; and
b) submit to the employer's representative a monthly enterprise development report which documents all mentoring activities that have taken place during that month and the progress made in improving the targeted enterprise's performance in the development area, countersigned by the targeted enterprise.

3.3 Reports

3.3.1 Progress reports detailing interim values of the contract participation goal that was achieved together with an assessment of the enterprise development support provided should be tabled and discussed at least monthly at progress meetings between employer's representative and the contractor.

3.3.2 The contractor shall submit a report in an acceptable format to the employer's representative for acceptance within 15 days of achieving practical completion.

3.3.3 The information contained in the report shall include not only the value of the contract participation goal that was certified in accordance with this standard but also the CIDB registration numbers of each and every targeted enterprise, and the value of the subcontracted works or the participation parameter of the joint venture entered into.

4 Sanctions

In the event that the contractor fails to substantiate that any failure to achieve the contract participation goal was due to reason beyond the contractor's control which may be acceptable to the employer, the sanctions provided for in the contract shall apply.

NOTE: The contract establishes the sanctions that apply and are usually in the form of financial penalties, typically formulated on the difference between the contracted contract participation goal and the contract participation goal achieved in the performance of the contract; the rejection of claims for payments as being incomplete should the appropriate supporting documentation not be provided; and the issuing of completion certificates only after the reports described in 3.2 are received.

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[2] cidb (2011). *cidb Best Practice Contractor Recognition Scheme; Requirements and Guidelines for Construction Management Systems* (Draft). Construction Industry Development Board, http://www.cidb.org.za

[3] cidb (2011). Guidelines for Implementing Contractor Development Programmes. Construction Industry Development Board, http://www.cidb.org.za

Annex A: Targeted Enterprise Declaration Affidavits

TARGETED ENTERPRISE DECLARATION
To be completed for each targeted enterprise

Section A: Employer Information

cidb Employer Number | | | | | | | | |

Employer Name

Section B: Contract Data

cidb Contract Number | | | | | | | | |

Contract Title

Date of Practical Completion Y Y Y Y M M D D

Estimated final value of contract (including VAT, variations and any price adjustment)

R | | | | | | | | | 000.00

Section C: Main Contractor / JV Information

cidb Contractor Registration Number of main / lead contractor | | | | | | | | |

Name of contractor /Joint Venture

If the case of a JV;

Name of developed enterprise (i):

cidb Contractor Registration Number: | | | | | | | | |

Name of developed enterprise (ii):

cidb Contractor Registration Number: | | | | | | | | |

Continued Over

Section D: Targeted Enterprise Information

JV partner ☐ or sub-contractor ☐

cidb Contractor Registration ☐☐☐☐☐☐☐☐

Name of contractor

Contact Person Title ☐☐ Initials ☐☐ Surname

Designation

e-mail

Mobile 0☐☐ - ☐☐☐ - ☐☐☐☐

Office Telephone 0☐☐ - ☐☐☐ - ☐☐☐☐

Number of full time employees other than the owner ☐☐☐

Shareholding by cidb Registered Contractors

Name	cidb registration	Equity (%)

Ownership by Black Persons (Complete for each person)

Name Title ☐☐ Initials ☐☐ Surname

ID or Passport

e-mail

Citizenship

by birth ☐ or by decent ☐ or by naturalisation ☐

year of naturalisation YYYY

Name Title ☐☐ Initials ☐☐ Surname

ID or Passport

e-mail

Citizenship

by birth ☐ or by decent ☐ or by naturalisation ☐

year of naturalisation YYYY

Name Title ☐☐ Initials ☐☐ Surname

ID or Passport

e-mail

Citizenship

by birth ☐ or by decent ☐ or by naturalisation ☐

year of naturalisation YYYY

Name Title ☐☐ Initials ☐☐ Surname

ID or Passport

e-mail

Citizenship

by birth ☐ or by decent ☐ or by naturalisation ☐

year of naturalisation YYYY

Continued Over

Section E: Agreement of Co-Operation and Assistance

List the areas of development identified (at least two):

Section F: Contract Participation for Targeted Enterprise

a) Estimated final value of contract with targeted enterprise (excluding VAT, including variations and price adjustment)

R [ ][ ][ ] [ ][ ][ ] [ ][ ][ ] 000.00

b) Estimated final value of contract from Section B (excluding VAT, including variations and price adjustment)

R [ ][ ][ ] [ ][ ][ ] [ ][ ][ ] 000.00

[ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

Contract participation for targeted enterprise a/b (%) [ ][ ][ ]

Section G: Declaration; Enterprise Development Co-ordinator

Name of Co-ordinator Title [ ] Initials [ ][ ] Surname [ ]

Designation [ ]

ID / Passport [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

e-mail [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

[ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

Mobile 0[ ][ ] - [ ][ ][ ] - [ ][ ][ ][ ]

Office Telephone 0[ ][ ] - [ ][ ][ ] - [ ][ ][ ][ ]

I, the undersigned warrant that:

- I am duly authorised to submit this notice behalf of the Contractor / JV; and
- The contents of this notice are within my personal knowledge, and are to the best of my belief both true and correct.

Signature [ ]

Date completed [Y][Y][Y][Y] - [M][M] - [D][D]

Continued Over

Section H: Declaration; Targeted Enterprise Representative

Name of Representative Title Initials Surname

Designation

ID / Passport

e-mail

Mobile 0 - - -

Office Telephone 0 - - -

I / we agree ☐ disagree ☐ with the Enterprise Development Co-ordinator's asessment of compliance with the Enterprise Development support provided

I / we appeal the assessment by the Enterprise Development Co-ordinator Y N

I, the undersigned warrant that:

- I am duly authorised to submit this notice behalf of the Qualifying Developing Enterprise
- The contents of this notice are within my personal knowledge, and are to the best of my belief both true and correct .

Signature

Date completed Y Y Y Y - M M - D D

Section I: Declaration; Employer's Representative

Name of Representative Title Initials Surname

Designation

ID / Passport

e-mail

Mobile 0 - - -

Office Telephone 0 - - -

I / we agree ☐ disagree ☐ with the Enterprise Development Co-ordinator's asessment of compliance with the Enterprise Development support provided

I / we appeal the assessment by the Enterprise Development Co-ordinator Y N

I, the undersigned warrant that:

- I am duly authorised to submit this notice behalf of the Employer
- The contents of this notice are within my personal knowledge, and are to the best of my belief both true and correct.

Signature

Date completed Y Y Y Y - M M - D D

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Kaapstad-tak: Tel: (021) 465-7531

PART C4:

SITE INFORMATION

C4.1 SITE INFORMATION

C4.1 Site Information

The site locality

The contract name for the project is NEW/REPLACEMENT SCHOOL AT AMAOTI NO.3 SECONDARY SCHOOL IN PINETOWN DISTRICT, KWAZULU-NATAL

The defined working areas, entrances, site restrictions, etc. will be defined in detail at the Mandatory Briefing Session.

The site of the school is situated at **Amaoti No.3 Secondary School, Cardham Drive, Brookdale, Phoenix in KwaZulu-Natal (29°41'04"S; 33°59'37"E").**

Geotechnical Report

The Geotechnical Report is available on request.

Existing premises on site

Prospective Tenderers are to take cognizance of the fact that site will be vacant during the construction phase as the school will be decanted to Brookdale Secondary School.

The Site is close to the residential area and tenderers' must pay attention is drawn to the following specific conditions and requirements:

- Dust Control;
- Noise suppression;
- Hoarding off of work areas; and
- Health and Safety of all General Public during construction.