



DEPARTMENT
TECHNICAL SERVICES
DIRECTORATE
Engineering Services

DIVISION
Capital Projects (Urban Design and Landscape Architecture)

PROCUREMENT DOCUMENT : Infrastructure (JBCC PBA & MWA)

Documents can be obtained, free of charge, in electronic format, from the [National Treasury's eTenders website](#) or the [eThekweni Municipality website](#)

Contract No: 36685-2E

Contract Title: Framework contract for integrated public realm delivery, landscape infrastructure services and ancillary works for a period of three (3) years on an as-and-when-required basis (Ward 00)

Estimated CIDB: Grade: 2 or higher Class: SH

CLARIFICATION MEETING AND QUERIES

Clarification Meeting: Compulsory Clarification Meeting

Meeting Location: Compulsory Clarification briefing meeting session will be held on 07th of September 2026 at 11h00 with representatives of the Employer at the Moses Mabhida Stadium (44 Isaiah Ntshangase Road, Durban KwaZulu-Natal, 4001) Basement Parking Space.

Queries can be addressed to: Mandla Bhukwana

The Employer's Agent's: Tel: 031 311 7957

Representative: Email: mandla.bhukwana@durban.gov.za (questions and answers from the clarification meeting will be uploaded on the website on the 25th September 2026)

TENDER SUBMISSION

Tender Submission: The Tender Offer (hard copy) shall be delivered to:

Delivery location: The Tender Box in the foyer of the Municipal Building, 166 KE Masinga Road, Durban

Closing Date/ Time: Friday, 02 October 2026 at 11h00

JDE Submission: An **electronic submission** is also to be made via the eThekweni Municipality JDE System (ESP Module)

JDE Queries
Contact:

Lindo Dlamini: Tel: 031-322-7133 / 031-322-7153
Email: supplier.selfservice@durban.gov.za

Tender Offers submitted via any means other than that stated in the Tender Data will be deemed invalid

Issued by:

ETHEKWINI MUNICIPALITY

Deputy Head: Capital Projects (Urban Design and Landscape Architecture)

FOR OFFICIAL USE ONLY

Tenderer Name:			VAT Registered: Yes No
	Price (excl)	VAT	Price (incl)
Submitted:	R	R	R
Corrected:	R	R	R

FOR OFFICIAL USE ONLY

Tenderer Name:			VAT Registered: Yes No
	Price (excl)	VAT	Price (incl)
Submitted:	R	R	R
Corrected:	R	R	R

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PART T1: TENDERING PROCEDURES

T1.1.1: TENDER NOTICE AND INVITATION TO TENDER

Tenders are hereby invited from suitably qualified and experienced contractors for appointment to a multi-contractor, rates-based framework contract for integrated Public Realm Delivery, Landscape Construction, Horticultural Services, Irrigation Works, Public Realm Infrastructure and Ancillary Works for a period of three (3) years on an as-and-when-required basis across the eThekweni Municipal Area. The contract forms part of the Municipality's integrated public realm planning, design, implementation and maintenance programme.

Subject	Description	Tender Data
Employer	The Employer is the eThekweni Municipality as represented by: Deputy Head: Capital Projects (Urban Design and Landscape Architecture)	C.1.1.1
Tender Documents	Documentation is to be downloaded from the National Treasury's eTenders website or the eThekweni Municipality Website : • https://www.etenders.gov.za/ • https://www.durban.gov.za/pages/business/procurement	C.1.2
CIDB Eligibility	It is <u>estimated</u> that Tenderers should have a CIDB contractor grading designation of 2 or higher SH (or higher).	C.2.1.2
Meeting Type	Compulsory Clarification Meeting	C.2.7
Meeting Details	Compulsory Clarification briefing meeting session will be held on 07th of September 2026 at 11h00 with representatives of the Employer at the Moses Mabhida Stadium (44 Isaiah Ntshangase Road, Durban KwaZulu-Natal, 4001) Basement Parking Space.	C.2.7
Seek Clarification	Queries relating to these documents are to be addressed to the Employer's Agent's Representative whose contact details are: Mandla Bhukwana Tel: 031 311 7957 Email: mandla.bhukwana@durban.gov.za (questions and answers from the clarification meeting will be uploaded on the website on the 25th September 2026)	C.1.4
Submitting a Tender Offer	The Tender Offer (hard copy) shall be delivered to: The Tender Box in the foyer of the Municipal Building, 166 KE Masinga Road, Durban An electronic submission , via the eThekweni Municipality JDE System (ESP Module) , is also to be made. Refer to Part T1.1.3 and Tender Data: C.2.13. Notwithstanding the electronic submission , a tender offer will only be deemed valid if the "hard copy" submission has been made.	C.2.13
Closing Time	The Tender Offer (hard copy) shall be delivered, and the electronic submission completed, both on or before 02/10/2026 , at or before 11h00 .	C.2.15
Evaluation of Tender Offers	The 80/20 Price Preference Point System, as specified in the SCM Policy: Section 52: Preferential Procurement will be applied in the evaluation of tenders. Tender Data: C.3.11: Evaluation of Tender Offers details the awarding of Preference Points, and other related evaluation requirements.	C.3.11

Requirements for sealing, addressing, delivery, opening, and assessment of tenders are stated in the Tender Data

CIDB B.U.I.L.D. Programme Standards

Standard for Indirect Targeting for Enterprise Development through Construction Works Contracts	Applicable
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T1.1.2: NOTES TO TENDERERS

These “Notes to Tenderers” are intended to provide guidance regarding tendering obligations and requirements.

Compliance requirements are stated in the relevant parts of the Tender Data: T1.2.

GENERAL

- 1) The words BID, TENDER, QUOTATION, and REQUEST FOR QUOTATION (RFQ) are interchangeable throughout this procurement document.
- 2) **JDE-ESP Module** refers to the EtheKwini Supplier Portal module on the eThekwini Municipality JDE System. Refer to Part T1.1.3.

eThekwini Supply Chain Management Policy (SCMP)

The requirements as stated in the Employer's SCM Policy include, but are not limited to, the following:

1) Section 14(4): ETM Supplier Database

The eThekwini Supply Chain Management Policy requires suppliers/ service providers/ contractors to be registered on the **eThekwini Municipality's Supplier Portal**.

In the event of the Tenderer not being registered on the eThekwini Municipality's Supplier Portal, the Tenderer must register on the internet at www.durban.gov.za by following these links:

- Business
 - Supply Chain Management (SCM)
 - Accredited Supplier and Contractor Database.

The following is to be noted:

- The information for registration as in the possession of the eThekwini Municipality will apply.
- It is the Tenderer's responsibility to ensure that the details submitted to the Municipality are correct.
- Tenderers are to register prior to the submission of tenders.

2) Section 20(1)(d)(i): Audited Financial Statements

Audited Financial Statements are required to be submitted if the value of the tender offer exceeds R10 million (incl. VAT). See **Returnable Form: MBD 5** and **Returnable Form: Contracts awarded by Organs of State** in the past 5 years.

3) Section 20(1)(d)(iii): Contracts Awarded during the past 5 Years

Tenderers are to include with their submission a listing of any contracts awarded to the Tenderer during the past 5 years, including particulars of any material non-compliance or dispute concerning the execution of the contracts. Tenderers are referred to **Returnable Form: MBD 5**

4) Section 13.1(b)(vii), 20(1)(d)(ii), 28.2(d), 29.6(a), 38.1(d), and 29.14: Municipal Rates and Taxes (Fees)

Tenderers are to refer to **Returnable Form: Declaration of Municipal Fees** to certify that they have no undisputed commitments for municipal services towards any municipality. Prior to an award, a Tenderer's municipal rates and taxes cannot be in arrears. Should a Tenderer be in arrears with respect to municipal services and has formalised an agreement with the respective municipality to offset the

arrears, the agreement must be in place at time of tender closing.

5) Section 21.2: Tender Validity

Tenders are to remain valid for twelve (12) months after the expiry of the **original tender validity period** as stated in the **Tender Data**, unless the Municipality is notified, in writing, of anything to the contrary.

The eThekweni Municipality reserves the right to request confirmation from Tenderers of tender validity at any time during the twelve (12) month period.

6) Section 28(2)(d), Section 28(2)(h) and Section 29(12): Certifications and Registrations

CIDB Registration and Status, B-BBEE Certificates, and Tax Compliance Status PINs must be valid at the time of tender closing, and before final award.

The Tenderer's Tax Compliance Status, CIDB Registration and Status (if required), and B-BBEE Level Status (if required), will be verified using the National Treasury Central Supplier Database (CSD). Tenderers are referred to **Returnable Form: Compulsory Enterprise Questionnaire**.

It is the Tenderer's responsibility to ensure that their data on the CSD is kept updated and correctly reflects the status of the tendering entity.

7) Section 28(2)(f), and 52.5.13: Joint Ventures (JV)

Each party of a JV must submit separate Tax Compliance Status PINs. Unless otherwise stated, the requirements for a single entity submission in terms of documentation requirements, will apply to each member of a JV making a submission.

As proof that a JV has been formalised, or that the parties to the JV agree to formalise the JV should they be successful in being recommended for the award of this tender, Tenderers are referred to **Returnable Form: Joint Venture Agreements**.

8) Section 49.1.2: Complaints and Objections (Appeals)

A non-refundable tariff, as per the approved Council tariffs, is payable by the Complainant to the Municipality. Proof of the payment of the Fee must be attached to the complaint.

CIDB

Regulation 25(8)

- 9) It should be noted that this contract, unless otherwise stated, is not part of a **Targeted Development Programme (TDP)**. The CIDB provisions in relation to a Contractor's **Potentially Emerging (PE) status** do not apply.

Tenderers are referred to **CIDB Inform Practice Note #32: "Application of the Potentially Emerging (PE) Status"**.

B.U.I.L.D. Programme

- 10) A programme to accelerate transformation in the construction industry, increase the capacity of the construction industry to deliver infrastructure and support the growth of emerging contractors, was launched on 14 March 2024 by the Deputy Minister of Public Works and Infrastructure and the Construction Industry Development Board.

Details of the B.U.I.L.D. Programme were published in a Government Gazette in 2020 (GG 43726) and B.U.I.L.D. has gradually been phased in at various levels of government and the private sector. The CIDB, a public entity with the mandate to promote improved performance in construction, oversees the programme and manages the B.U.I.L.D. Fund. The B.U.I.L.D. programme determines that public sector entities which implement construction projects, that meet certain minimum requirements, must include developmental goals to the deliverables defined in the tenders. If applicable, Contractors are required to include these goals in the plans and pricing when they submit their tender bids.

T1.1.3: INFORMATION REGARDING THE ETHEKWINI JDE SYSTEM

This Part (T1.1.3) is for information purposes only.

Compliance requirements are stated in Part T1.2: Tender Data.

1) General

eThekwini Municipality Bids, Tenders and Quotations (hereafter referred to as Tenders) are going to be submitted using the JDE System.

This JDE System will be used for:

- Viewing of available (open) Tenders,
- Downloading procurement documentation for Tenders,
- Uploading completed and signed Tender documentation,
- Completion and submission of Tenders electronically,
- Viewing the Tender opening schedule.

2) Registrations

To be granted access to the **JDE System** prospective service providers must be registered on the **National Treasury's Central Supplier Database (CSD)**, the **eThekwini Municipality Supplier Portal**, and the **eThekwini Municipality JDE System**.

National Treasury: Central Supplier Database

- Registration can be made on <https://secure.csd.gov.za> .
- Service Providers will be issued a "MAAA" number when registered.

eThekwini Municipality Supplier Portal

- Registration can be made on <https://www.durban.gov.za> by following these links:
>Business >Supply Chain Management (SCM) >Accredited Supplier & Contractor Database.

eThekwini Municipality JDE System

- Service providers requiring access must send an email to supplier.selfservice@durban.gov.za
A copy of the **Director's ID** is required:
- On receipt of this email, the Procurement and Supply Chain Management (P&SCM) Directorate will respond with the login credentials and a link to the **JDE System**.

3) Assistance with using the JDE System

The following P&SCM Official(s) can be contacted in connection with the use of the **JDE System**:

General Queries:

- Lindo Dlamini Tel: 031 322 7153 or 031 322 7133
 Email: supplier.selfservice@durban.gov.za

Technical Queries:

- Kgopotso Maja Tel: 031 322 3808
 Email: kgopotso.maja@durban.gov.za

4) Viewing of available tenders

By following link <https://rfq.durban.gov.za/jde/E1Menu.maf> prospective Service Providers will be able to view available (open) Tender opportunities without signing into the system. However, Service Providers will not be able to respond to a Tender without being signed into the system using a JDE User ID and Password.

5) **Tender documentation**

By accessing the **JDE System** (using <https://rfq.durban.gov.za/>) and viewing any available Tenders, prospective Service Providers will be able to download the relevant Tender documentation.

The Tender documentation consists of the **TENDER** and **CONTRACT Parts**, as described in the INDEX, and will include any drawings and other information (if applicable). Referred to, or included in the documentation, are the **Standard Conditions of Tender (and associated Tender Data)**, and the **Conditions of Contract (and associated Contract Data)** which will govern the tendering and contract processes respectively.

6) **Submission of tender offers**

Reference is to be made to the **Tender Data: C.2.13** that specifies compliance requirements.

Should the **Tender Offer** be required in “**hard copy**” format, the submission is to be delivered to the Delivery Location as stated in the **Tender Data**.

In addition to the above, **Tender Offers are also to be SUBMITTED ELECTRONICALLY** (uploaded) on the eThekweni Municipality JDE System (Ethekeeni Supplier Portal (JDE-ESP) Module). Notwithstanding the **electronic submission**, a tender offer will only be deemed valid if the “hard copy” submission has been made. The “hard copy” submission will be deemed to be the ruling version.

Bidders are responsible for resolving all access rights and submission queries on the JDE System before the tender closing date/ time, as stated in the **Tender Data: C.2.15**.

7) **Viewing the Tender opening schedule**

Users on the **JDE System** will be able to view the **Tender Opening Schedule** for each closed Tender. The tender opening schedule will also be made available on the eThekweni Municipal website at URL: <https://www.durban.gov.za/pages/business/publication-of-received-bids>

PART T1: TENDERING PROCEDURES

T1.2: TENDER DATA

T1.2.1 STANDARD CONDITIONS OF TENDER

The conditions of tender are the **Standard Conditions of Tender** as contained in **Annex C** of the CIDB Standard for Uniformity in Construction Procurement as published in Government Gazette No 42622, Board Notice 423 of 8 August 2019, as duplicated below.

The Standard Conditions of Tender make several references to the **Tender Data** for details that apply specifically to this tender. The **Tender Data** (T1.2.2) shall have precedence in the interpretation of any ambiguity or inconsistency between it and the Standard Conditions of Tender.

Annex C

Standard Conditions of Tender

C.1	General	
C.1.1	Actions	
C.1.1.1	The employer and each tenderer submitting a tender offer shall comply with these conditions of tender. In their dealings with each other, they shall discharge their duties and obligations as set out in C.2 and C.3, timeously and with integrity, and behave equitably, honestly and transparently, comply with all legal obligations and not engage in anticompetitive practices.	2) <i>Conflicts of interest in respect of those engaged in the procurement process include direct, indirect or family interests in the tender or outcome of the procurement process and any personal bias, inclination, obligation, allegiance or loyalty which would in any way affect any decisions taken.</i>
C.1.1.2	The employer and the tenderer and all their agents and employees involved in the tender process shall avoid conflicts of interest and where a conflict of interest is perceived or known, declare any such conflict of interest, indicating the nature of such conflict. Tenderers shall declare any potential conflict of interest in their tender submissions. Employees, agents and advisors of the employer shall declare any conflict of interest to whoever is responsible for overseeing the procurement process at the start of any deliberations relating to the procurement process or as soon as they become aware of such conflict and abstain from any decisions where such conflict exists or recuse themselves from the procurement process, as appropriate.	C.1.1.3 The employer shall not seek, and a tenderer shall not submit a tender, without having a firm intention and the capacity to proceed with the contract.
		C.1.2 Tender Documents
		The documents issued by the employer for the purpose of a tender offer are listed in the Tender Data .
		C.1.3 Interpretation
		C.1.3.1 The Tender Data and additional requirements contained in the tender schedules that are included in the returnable documents are deemed to be part of these conditions of tender.
		C.1.3.2 These conditions of tender, the Tender Data and tender schedules which are required for tender evaluation purposes, shall form part of any contract arising from the invitation to tender.
	<i>Note:</i> 1) <i>A conflict of interest may arise due to a conflict of roles which might provide an incentive for improper acts in some circumstances. A conflict of interest can create an appearance of impropriety that can undermine confidence in the ability of that person to act properly in his or her position even if no improper acts result.</i>	

C.1.3.3 For the purposes of these conditions of tender, the following definitions apply:

- a) **conflict of interest** means any situation in which:
 - i) someone in a position of trust has competing professional or personal interests which make it difficult to fulfil his or her duties impartially;
 - ii) an individual or tenderer is in a position to exploit a professional or official capacity in some way for their personal or corporate benefit; or
 - iii) incompatibility or contradictory interests exist between an employee and the tenderer who employs that employee.
- b) **comparative offer** means the price after the factors of a non-firm price and all unconditional **discounts** it can be utilised to have been taken into consideration;
- c) **corrupt practice** means the offering, giving, receiving or soliciting of anything of value to influence the action of the employer or his staff or agents in the tender process;
- d) **fraudulent practice** means the misrepresentation of the facts in order to influence the tender process or the award of a contract arising from a tender offer to the detriment of the employer, including collusive practices intended to establish prices at artificial levels;

C.1.4 Communication and employer's agent

Each communication between the employer and a tenderer shall be to or from the employer's agent only, and in a form that can be readily read, copied and recorded. Communications shall be in the English language. The employer shall not take any responsibility for non-receipt of communications from or by a tenderer. The name and contact details of the employer's agent are stated in the **Tender Data**.

C.1.5 Cancellation and Re-Invitation of Tenders

C.1.5.1 An employer may, prior to the award of the tender, cancel a tender if-

- a) due to changed circumstances, there is no longer a need for the engineering and construction works specified in the invitation;
- b) funds are no longer available to cover the total envisaged expenditure;

- c) no acceptable tenders are received;
- d) there is a material irregularity in the tender process.

C.1.5.2 The decision to cancel a tender invitation must be published in the same manner in which the *original* tender invitation was advertised.

C.1.5.3 An employer may only with the prior approval of the relevant treasury cancel a tender invitation for the second time.

C.1.6 Procurement procedures

C.1.6.1 General

Unless otherwise stated in the **Tender Data**, a contract will, subject to C.3.13, be concluded with the tenderer who in terms of C.3.11 is the highest ranked or the tenderer scoring the highest number of tender evaluation points, as relevant, based on the tender submissions that are received at the closing time for tenders.

C.1.6.2 Competitive negotiation procedure

C.1.6.2.1 Where the **Tender Data** require that the competitive negotiation procedure is to be followed, tenderers shall submit tender offers in response to the proposed contract in the first round of submissions. Notwithstanding the requirements of C.3.4, the employer shall announce only the names of the tenderers who make a submission. The requirements of C.8 relating to the material deviations or qualifications which affect the competitive position of tenderers shall not apply.

C.1.6.2.2 All responsive tenderers or at least a minimum of not less than three responsive tenderers that are highest ranked in terms of the evaluation criteria stated in the **Tender Data** shall be invited to enter into competitive negotiations based on the principle of equal treatment, keeping confidential the proposed solutions and associated information.

Notwithstanding the provisions of C.2.17, the employer may request that tenders be clarified, specified and fine-tuned in order to improve a tenderer's competitive position provided that such clarification, specification, fine-tuning or additional information does not alter any fundamental aspects of the offers or impose substantial new requirements which restrict or

distort competition or have a discriminatory effect.	which formed part of the qualifying requirements used by the employer as the basis in a prior process to invite the tenderer to submit a tender offer and obtain the employer's written approval to do so prior to the closing time for tenders.
C.1.6.2.3 At the conclusion of each round of negotiations, tenderers shall be invited by the employer to revise their tender offer based on the same evaluation criteria, with or without adjusted weightings. Tenderers shall be advised when they are to submit their best and final offer.	C.2.2 Cost of tendering
C.1.6.2.4 The contract shall be awarded in accordance with the provisions of C.3.11 and C.3.13 after tenderers have been requested to submit their best and final offer.	C.2.2.1 Accept that, unless otherwise stated in the Tender Data, the employer will not compensate the tenderer for any costs incurred in the preparation and submission of a tender offer, including the costs of any testing necessary to demonstrate that aspects of the offer complies with requirements.
C.1.6.3 Proposal procedure using the two stage-system	C.2.2.2 The cost of the tender documents charged by the employer shall be limited to the actual cost incurred by the employer for printing the documents. Employers must attempt to make available the tender documents on its website so as not to incur any costs pertaining to the printing of the tender documents.
C.1.6.3.1 Option 1	C.2.3 Check documents
Tenderers shall in the first stage submit technical proposals and, if required, cost parameters around which a contract may be negotiated. The employer shall evaluate each responsive submission in terms of the method of evaluation stated in the Tender Data, and in the second stage negotiate a contract with the tenderer scoring the highest number of evaluation points and award the contract in terms of these conditions of tender.	Check the tender documents on receipt for completeness and notify the employer of any discrepancy or omission.
C.1.6.3.2 Option 2	C.2.4 Confidentiality and copyright of documents
C.1.6.3.2.1 Tenderers shall submit in the first stage only technical proposals. The employer shall invite all responsive tenderers to submit tender offers in the second stage, following the issuing of procurement documents.	Treat as confidential all matters arising in connection with the tender. Use and copy the documents issued by the employer only for the purpose of preparing and submitting a tender offer in response to the invitation.
C.1.6.3.2.2 The employer shall evaluate tenders received during the second stage, in terms of the method of evaluation stated in the Tender Data, and award the contract in terms of these conditions of tender.	C.2.5 Reference documents
C.2 Tenderer's obligations	Obtain, as necessary for submitting a tender offer, copies of the latest versions of standards, specifications, conditions of contract and other publications, which are not attached but which are incorporated into the tender documents by reference.
C.2.1 Eligibility	C.2.6 Acknowledge addenda
C.2.1.1 Submit a tender offer only if the tenderer satisfies the criteria stated in the Tender Data and the tenderer, or any of his principals, is not under any restriction to do business with employer.	Acknowledge receipt of addenda to the tender documents, which the employer may issue, and if necessary apply for an extension to the closing time stated in the Tender Data, in order to take the addenda into account.
C.2.1.2 Notify the employer of any proposed material change in the capabilities or formation of the tendering entity (or both) or any other criteria	

C.2.7	Clarification meeting	tenderer. All signatories to the tender offer shall initial all such alterations.
	Attend, where required, a clarification meeting at which tenderers may familiarize themselves with aspects of the proposed work, services or supply and raise questions. Details of the meeting(s) are stated in the Tender Data .	
C.2.8	Seek clarification	
	Request clarification of the tender documents, if necessary, by notifying the employer at least five (5) working days before the closing time stated in the Tender Data .	
C.2.9	Insurance	
	Be aware that the extent of insurance to be provided by the employer (if any) might not be for the full cover required in terms of the conditions of contract identified in the Contract Data . The tenderer is advised to seek qualified advice regarding insurance.	
C.2.10	Pricing the tender offer	
C.2.10.1	Include in the rates, prices, and the tendered total of the prices (if any) all duties, taxes except Value Added Tax (VAT), and other levies payable by the successful tenderer, such duties, taxes and levies being those applicable fourteen (14) days before the closing time stated in the Tender Data .	
C.2.10.2	Show VAT payable by the employer separately as an addition to the tendered total of the prices.	
C.2.10.3	Provide rates and prices that are fixed for the duration of the contract and not subject to adjustment except as provided for in the conditions of contract identified in the Contract Data .	
C.2.10.4	State the rates and prices in Rand unless instructed otherwise in the Tender Data . The conditions of contract identified in the Contract Data may provide for part payment in other currencies.	
C.2.11	Alterations to documents	
	Do not make any alterations or additions to the tender documents, except to comply with instructions issued by the employer, or necessary to correct errors made by the	
		C.2.12 Alternative tender offers
C.2.12.1		Unless otherwise stated in the Tender Data , submit alternative tender offers only if a main tender offer, strictly in accordance with all the requirements of the tender documents, is also submitted as well as a schedule that compares the requirements of the tender documents with the alternative requirements that are proposed.
C.2.12.2		Accept that an alternative tender offer must be based only on the criteria stated in the Tender Data or criteria otherwise acceptable to the employer.
C.2.12.3		An alternative tender offer must only be considered if the main tender offer is the winning tender.
		C.2.13 Submitting a tender offer
C.2.13.1		Submit one tender offer only, either as a single tendering entity or as a member in a joint venture to provide the whole of the works identified in the Contract Data and described in the scope of works, unless stated otherwise in the Tender Data .
C.2.13.2		Return all returnable documents to the employer after completing them in their entirety, either electronically (if they were issued in electronic format) or by writing legibly in non-erasable ink.
C.2.13.3		Submit the parts of the tender offer communicated on paper as an original plus the number of copies stated in the Tender Data , with an English translation of any documentation in a language other than English, and the parts communicated electronically in the same format as they were issued by the employer.
C.2.13.4		Sign the original and all copies of the tender offer where required in terms of the Tender Data . The employer will hold all authorized signatories liable on behalf of the tenderer. Signatories for tenderers proposing to contract as joint ventures shall state which of the signatories is the lead partner whom the employer shall hold liable for the purpose of the tender offer.

C.2.13.5 Seal the original and each copy of the tender offer as separate packages marking the packages as "ORIGINAL" and "COPY". Each package shall state on the outside the employer's address and identification details stated in the Tender Data , as well as the tenderer's name and contact address.	the requirements of these conditions of tender apply equally to the extended deadline.
C.2.13.6 Where a two-envelope system is required in terms of the Tender Data , place and seal the returnable documents listed in the Tender Data in an envelope marked "financial proposal" and place the remaining returnable documents in an envelope marked "technical proposal". Each envelope shall state on the outside the employer's address and identification details stated in the Tender Data , as well as the tenderer's name and contact address.	C.2.16 Tender offer validity
C.2.13.7 Seal the original tender offer and copy packages together in an outer package that states on the outside only the employer's address and identification details as stated in the Tender Data .	C.2.16.1 Hold the tender offer(s) valid for acceptance by the employer at any time during the validity period stated in the Tender Data after the closing time stated in the Tender Data .
C.2.13.8 Accept that the employer will not assume any responsibility for the misplacement or premature opening of the tender offer if the outer package is not sealed and marked as stated.	C.2.16.2 If requested by the employer, consider extending the validity period stated in the Tender Data for an agreed additional period with or without any conditions attached to such extension.
C.2.13.9 Accept that tender offers submitted by facsimile or e-mail will be rejected by the employer, unless stated otherwise in the Tender Data .	C.2.16.3 Accept that a tender submission that has been submitted to the employer may only be withdrawn or substituted by giving the employer's agent written notice before the closing time for tenders that a tender is to be withdrawn or substituted. If the validity period stated in C.2.16 lapses before the employer evaluating tender, the contractor reserves the right to review the price based on Consumer Price Index (CPI).
C.2.14 Information and data to be completed in all respects Accept that tender offers, which do not provide all the data or information requested completely and in the form required, may be regarded by the employer as non-responsive.	C.2.16.4 Where a tender submission is to be substituted, a tenderer must submit a substitute tender in accordance with the requirements of C.2.13 with the packages clearly marked as "SUBSTITUTE".
C.2.15 Closing time	C.2.17 Clarification of tender offer after submission
C.2.15.1 Ensure that the employer receives the tender offer at the address specified in the Tender Data not later than the closing time stated in the Tender Data . Accept that proof of posting shall not be accepted as proof of delivery.	Provide clarification of a tender offer in response to a request to do so from the employer during the evaluation of tender offers. This may include providing a breakdown of rates or prices and correction of arithmetical errors by the adjustment of certain rates or item prices (or both). No change in the competitive position of tenderers or substance of the tender offer is sought, offered, or permitted.
C.2.15.2 Accept that, if the employer extends the closing time stated in the Tender Data for any reason,	<i>Note: Sub-clause C.2.17 does not preclude the negotiation of the final terms of the contract with a preferred tenderer following a competitive selection process, should the Employer elect to do so.</i>
	C.2.18 Provide other material
	C.2.18.1 Provide, on request by the employer, any other material that has a bearing on the tender offer, the tenderer's commercial position (including

notarized joint venture agreements), preferencing arrangements, or samples of materials, considered necessary by the employer for the purpose of a full and fair risk assessment. Should the tenderer not provide the material, or a satisfactory reason as to why it cannot be provided, by the time for submission stated in the employer's request, the employer may regard the tender offer as non-responsive.	
C.2.18.2 Dispose of samples of materials provided for evaluation by the employer, where required.	
C.2.19 Inspections, tests and analysis Provide access during working hours to premises for inspections, tests and analysis as provided for in the <i>Tender Data</i>.	C.3.1.2 Consider any request to make a material change in the capabilities or formation of the tendering entity (or both) or any other criteria which formed part of the qualifying requirements used to prequalify a tenderer to submit a tender offer in terms of a previous procurement process and deny any such request if as a consequence: a) an individual firm, or a joint venture as a whole, or any individual member of the joint venture fails to meet any of the collective or individual qualifying requirements; b) the new partners to a joint venture were not prequalified in the first instance, either as individual firms or as another joint venture; or c) in the opinion of the Employer, acceptance of the material change would compromise the outcome of the prequalification process.
C.2.20 Submit securities, bonds and policies If requested, submit for the employer's acceptance before formation of the contract, all securities, bonds, guarantees, policies and certificates of insurance required in terms of the conditions of contract identified in the <i>Contract Data</i>.	C.3.2 Issue Addenda If necessary, issue addenda that may amend or amplify the tender documents to each tenderer during the period from the date that tender documents are available until three (3) working days before the tender closing time stated in the <i>Tender Data</i>. If, as a result a tenderer applies for an extension to the closing time stated in the <i>Tender Data</i>, the Employer may grant such extension and, shall then notify all tenderers who collected tender documents.
C.2.21 Check final draft Check the final draft of the contract provided by the employer within the time available for the employer to issue the contract.	C.3.3 Return late tender offers Return tender offers received after the closing time stated in the <i>Tender Data</i>, unopened, (unless it is necessary to open a tender submission to obtain a forwarding address), to the tenderer concerned.
C.2.22 Return of other tender documents If so instructed by the employer, return all retained tender documents within twenty-eight (28) days after the expiry of the validity period stated in the <i>Tender Data</i>.	C.3.4 Opening of tender submissions C.3.4.1 Unless the two-envelope system is to be followed, open valid tender submissions in the presence of tenderers' agents who choose to attend at the time and place stated in the <i>Tender Data</i>. Tender submissions for which acceptable reasons for withdrawal have been submitted will not be opened.
C.2.23 Certificates Include in the tender submission or provide the employer with any certificates as stated in the <i>Tender Data</i>.	C.3.4.2 Announce at the meeting held immediately after the opening of tender submissions, at a venue indicated in the <i>Tender Data</i>, the name
C.3 The employer's undertakings C.3.1 Respond to requests from the tenderer C.3.1.1 Unless otherwise stated in the <i>Tender Data</i>, respond to a request for clarification received up to five (5) working days before the tender closing time stated in the <i>Tender Data</i> and notify all tenderers who collected tender documents.	

	of each tenderer whose tender offer is opened and, where applicable, the total of his prices, number of points claimed for its BBBEE status level and time for completion for the main tender offer only.	C.3.8.1	Determine, after opening and before detailed evaluation, whether each tender offer properly received: a) complies with the requirements of these Conditions of Tender, b) has been properly and fully completed and signed, and c) is responsive to the other requirements of the tender documents.
C.3.4.3	Make available the record outlined in C.3.4.2 to all interested persons upon request.		
C.3.5	Two-envelope system		
C.3.5.1	Where stated in the Tender Data that a two-envelope system is to be followed, open only the technical proposal of valid tenders in the presence of tenderers' agents who choose to attend at the time and place stated in the Tender Data and announce the name of each tenderer whose technical proposal is opened.	C.3.8.2	A responsive tender is one that conforms to all the terms, conditions, and specifications of the tender documents without material deviation or qualification. A material deviation or qualification is one which, in the Employer's opinion, would: a) detrimentally affect the scope, quality, or performance of the works, services or supply identified in the Scope of Work, b) significantly change the Employer's or the tenderer's risks and responsibilities under the contract, or c) affect the competitive position of other tenderers presenting responsive tenders, if it were to be rectified.
C.3.5.2	Evaluate functionality of the technical proposals offered by tenderers, then advise tenderers who remain in contention for the award of the contract of the time and place when the financial proposals will be opened. Open only the financial proposals of tenderers, who score in the functionality evaluation more than the minimum number of points for functionality stated in the Tender Data , and announce the score obtained for the technical proposals and the total price and any points claimed on BBBEE status level. Return unopened financial proposals to tenderers whose technical proposals failed to achieve the minimum number of points for functionality.		Reject a non-responsive tender offer and not allow it to be subsequently made responsive by correction or withdrawal of the non-conforming deviation or reservation.
C.3.6	Non-disclosure	C.3.9	Arithmetical errors, omissions and discrepancies
	Not disclose to tenderers, or to any other person not officially concerned with such processes, information relating to the evaluation and comparison of tender offers, the final evaluation price and recommendations for the award of a contract, until after the award of the contract to the successful tenderer.	C.3.9.1	Check responsive tenders for discrepancies between amounts in words and amounts in figures. Where there is a discrepancy between the amounts in figures and the amount in words, the amount in words shall govern.
C.3.7	Grounds for rejection and disqualification	C.3.9.2	Check the highest ranked tender or tenderer with the highest number of tender evaluation points after the evaluation of tender offers in accordance with C.3.11 for: a) the gross misplacement of the decimal point in any unit rate; b) omissions made in completing the pricing schedule or bills of quantities; or c) arithmetic errors in: (i) line-item totals resulting from the product of a unit rate and a quantity in bills of quantities or schedules of prices; or (ii) the summation of the prices.
	Determine whether there has been any effort by a tenderer to influence the processing of tender offers and instantly disqualify a tenderer (and his tender offer) if it is established that he engaged in corrupt or fraudulent practices.		
C.3.8	Test for responsiveness	C.3.9.3	Notify the tenderer of all errors or omissions that are identified in the tender offer and either

confirm the tender offer as tendered or accept the corrected total of prices.

C.3.9.4 Where the tenderer elects to confirm the tender offer as tendered, correct the errors as follows:

- a) If bills of quantities or pricing schedules apply and there is an error in the line-item total resulting from the product of the unit rate and the quantity, the line-item total shall govern and the rate shall be corrected. Where there is an obviously gross misplacement of the decimal point in the unit rate, the line-item total as quoted shall govern, and the unit rate shall be corrected.
- b) Where there is an error in the total of the prices either as a result of other corrections required by this checking process or in the tenderer's addition of prices, the total of the prices shall govern and the tenderer will be asked to revise selected item prices (and their rates if bills of quantities apply) to achieve the tendered total of the prices.

C.3.10 Clarification of a tender offer

Obtain clarification from a tenderer on any matter that could give rise to ambiguity in a contract arising from the tender offer.

C.3.11 Evaluation of tender offers

The Standard Conditions of Tender standardize the procurement processes, methods and procedures from the time that tenders are invited to the time that a contract is awarded. They are generic in nature and are made project specific through choices that are made in developing the **Tender Data** associated with a specific project.

Conditions of tender are by definition the document that establishes a tenderer's obligations in submitting a tender and the employer's undertakings in soliciting and evaluating tender offers. Such conditions establish the rules from the time a tender is advertised to the time that a contract is awarded and require employers to conduct the process of offer and acceptance in terms of a set of standard procedures.

The CIDB Standard Conditions of Tender are based on a procurement system that satisfies the following system requirements:	
Requirement	Qualitative interpretation of goal
Fair	The process of offer and acceptance is conducted impartially without bias, providing simultaneous and timely access to participating parties to the same information.
Equitable	Terms and conditions for performing the work do not unfairly prejudice the interests of the parties.
Transparent	The only grounds for not awarding a contract to a tenderer who satisfies all requirements are restrictions from doing business with the employer, lack of capability or capacity, legal impediments and conflicts of interest.
Competitive	The system provides for appropriate levels of competition to ensure cost effective and best value outcomes.
Cost effective	The processes, procedures and methods are standardized with sufficient flexibility to attain best value outcomes in respect of quality, timing and price, and least resources to effectively manage and control procurement processes.

The activities associated with evaluating tender offers are as follows:

- a) Open and record tender offers received
- b) Determine whether or not tender offers are complete
- c) Determine whether or not tender offers are responsive
- d) Evaluate tender offers
- e) Determine if there are any grounds for disqualification
- f) Determine acceptability of preferred tenderer
- g) Prepare a tender evaluation report
- h) Confirm the recommendation contained in the tender evaluation report .

C.3.11.1 General

The employer must appoint an evaluation panel of not less than three persons conversant with the proposed scope of works to evaluate each responsive tender offer using the tender evaluation methods and associated evaluation criteria and weightings that are specified in the **Tender Data**.

C.3.12 Insurance provided by the employer

If requested by the proposed successful tenderer, submit for the tenderer's information the policies and / or certificates of insurance which the conditions of contract identified in the **Contract Data**, require the employer to provide.

C.3.13 Acceptance of tender offer

Accept the tender offer; if in the opinion of the employer, it does not present any risk and only if the tenderer:

- a) is not under restrictions, or has principals who are under restrictions, preventing participating in the employer's procurement;
- b) can, as necessary and in relation to the proposed contract, demonstrate that he or she possesses the professional and technical qualifications, professional and technical competence, financial resources, equipment and other physical facilities, managerial capability, reliability, experience and reputation, expertise and the personnel, to perform the contract;
- c) has the legal capacity to enter into the contract;
- d) is not; insolvent, in receivership, under Business Rescue as provided for in chapter 6 of the Companies Act No. 2008, bankrupt or being wound up, has his/her affairs administered by a court or a judicial officer, has suspended his/her business activities or is subject to legal proceedings in respect of any of the foregoing;
- e) complies with the legal requirements, if any, stated in the **Tender Data**; and
- f) is able, in the opinion of the employer, to perform the contract free of conflicts of interest.

C.3.14 Prepare contract documents

C.3.14.1 If necessary, revise documents that shall form part of the contract and that were issued by the employer as part of the tender documents to take account of:

- a) addenda issued during the tender period,
- b) inclusion of some of the returnable documents and
- c) other revisions agreed between the employer and the successful tenderer.

C.3.14.2 Complete the schedule of deviations attached to the form of offer and acceptance, if any.

C.3.15 Complete adjudicator's contract

Unless alternative arrangements have been agreed or otherwise provided for in the contract, arrange for both parties to complete formalities for appointing the selected adjudicator at the same time as the main contract is signed.

C.3.16 Registration of the award

An employer must, within twenty-one (21) working days from the date on which a contractor's offer to perform a construction works contract is accepted in writing by the employer, register and publish the award on the cidb Register of Projects.

C.3.17 Provide copies of the contracts

Provide to the successful tenderer the number of copies stated in the **Tender Data** of the signed copy of the contract as soon as possible after completion and signing of the form of offer and acceptance.

C.3.18 Provide written reasons for actions taken

Provide upon request written reasons to tenderers for any action that is taken in applying these conditions of tender but withhold information which is not in the public interest to be divulged, which is considered to prejudice the legitimate commercial interests of tenderers or might prejudice fair competition between tenderers.

T1.2.2 TENDER DATA

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

C.1: GENERAL

C.1.1 The employer:

The Employer for this Contract is the **eThekweni Municipality** as represented by:
Deputy Head: Capital Projects (Urban Design and Landscape Architecture)

C.1.2 Tender documents:

The Tender Documents issued by the Employer comprise:

- 1) The Procurement Document, comprising of the PARTS as listed in the "INDEX" on page 1.
- 2) EXCEL Bill of Quantities file issued separately.
- 3) **Drawings**, issued separately from this document, or bound in Section C3.4: "Particular Specifications".

Electronically downloaded documentation is obtainable from the National Treasury's **eTenders Website** and/ or the **eThekweni Municipality Website** at URL:

- <https://www.etenders.gov.za/>
- <https://www.durban.gov.za/pages/business/procurement>

Tenderers are to regularly check both web sites for the downloadable documentation.

C.1.4 Communication and employer's agent:

The Employer's Agent is:

Name: [Willie Mothowamodimo](#)
Tel: [031 311 7424](#)
eMail: willie.mothowamodimo@durban.gov.za

The Employer's Agent's Representative is:

[Mandla Bhukwana](#)
Tel: [031 311 7957](#)
Email: mandla.bhukwana@durban.gov.za
(questions and answers from the clarification meeting will be uploaded on the website on the 25th September 2026)

The Tenderer's contact details, as indicated on **Returnable Document "Compulsory Enterprise Questionnaire"**, shall be deemed as the only valid contact details for the Tenderer for use in communications between the Employer's Agent and the Tenderer during tender evaluation.

C.1.6 Procurement procedures:

The following Sections of the **Standard Conditions of Tender** are not applicable to this tender:

- **C.1.6.3: Proposal procedure using the two-stage system.**

C.2: TENDERER'S OBLIGATIONS

Should there be insufficient verified evidence for any specific submission that experience submission may be deemed invalid.

C.2.2.2 The cost of the tender documents:

Documents are to be downloaded, free of charge, from the **National Treasury's eTenders website** or the **eThekwini Municipality's Website**.

C.2.5 Reference documents:

Tenderers are to obtain their own copies of:

- 1) The **Conditions of Contract** identified in Section C1.2.1.1.
Tenderers/ Contractors are required to obtain their own copies.
- 2) The **Specifications** identified in Section C3.3.1.
Tenderers/ Contractors are required to obtain their own copies.
- 3) The following acts, regulations, policies, and standards referred to in this document, including but not limited to:
 - The Employer's Supply Chain Management Policy (as at advertising date).
 - The Occupational Health and Safety Act No 85 and Amendment Act No 181 of 1993, and the Construction Regulations (2014).
 - The Construction Industry Development Board Act No 38 of 2000 and the Regulations issued in terms of the Act (July 2013 as amended).
 - The Preferential Procurement Policy Framework Act (PPPFA), and the PPPFA Regulations (November 2022).
 - The Amended Construction Sector Code (Government Gazette No.41287) applicable to B-BBEE compliance measurement.
 - Any other eThekwini Policy documents referenced in the Tender Documents.

C.2.6 Acknowledge addenda:

Addenda will be published on the **eThekwini Municipality website** as stated in **Tender Data: C.1.2**. Tenderers are to ensure that this website is consulted for any published addenda pertaining to this tender up to three days before the tender closing time as stated in the **Tender Data**.

Acknowledgement of receipt of the addenda will be by the return of the relevant completed, dated, and signed portion of the addenda, to the physical or email address as specified on the addenda.

Failure of the Tenderer to comply with the requirements of the addenda will result in the tender submission being made non-responsive.

C.2.7 Clarification meeting:

Clarification Meeting Type: **Compulsory Clarification Meeting**

Compulsory Clarification briefing meeting session will be held on 07th of September 2026 at 11h00 with representatives of the Employer at the Moses Mabhida Stadium (44 Isaiah Ntshangase Road, Durban KwaZulu-Natal, 4001) Basement Parking Space.



Bidders are requested to submit emailed queries related to the bid. All emailed queries are to be submitted to the **Employer's Agent's Representative** (refer to C.1.4) by **2026/08/07**. Emailed questions and answers will be consolidated and posted on the eTenders/Municipal website for the

benefit of all tenderers by **2026/08/14**.

In the event of a Compulsory Clarification Meeting the Tenderer's representative(s) must be able to clearly convey the discussions at the meeting to the person(s) responsible for compiling the entity's tender offer.

If an attendance register is applicable, Tenderers must sign the attendance register and provide the name of the tendering entity.

Tenderers are referred to Clause C.2.1.1(a).

C.2.10.2 Pricing the tender offer:

The following is to be noted in terms of Tenderers being **VAT Registered**, or being a **Non-VAT Vendor** (ie. not VAT registered).

If the Tenderer is **VAT registered**, the Tenderer's Rates in the Bill of Quantities (BoQ) are to exclude VAT. VAT is to be shown separately on the BoQ summary page, and on the Form of Offer (Part C1.1.1).

If the Tenderer is a **Non-VAT Vendor**, the Tenderer's Rates in the Bill of Quantities are to include VAT. VAT is not to be shown separately on the BoQ summary page, or on the Form of Offer (Part C1.1.1). VAT will not be added to, or deducted from, rates or prices submitted from **Non-VAT Vendors**. The tendered price will be deemed to include all VAT, taxes, and any applicable excise duties.

Tenderers are to refer to Part C2.1: PRICING ASSUMPTIONS / INSTRUCTIONS prior to pricing the tender offer.

C.2.12 Alternative tender offers:

No alternative tender offers will be considered.

C.2.13 Submitting a tender offer:

The signed Tender Offer ("hard copy") is to be sealed in an envelope, addressed to the City Manager, marked with the **identification details** and be delivered to the **delivery address**, both as stated below.

The **Tender Offer** (hard copy) is to be delivered to the following **delivery address**:
the Tender Box in the foyer of the Municipal Building, 166 KE Masinga Road, Durban

Identification details to be shown on the hard copy package are:

- Contract No. : **36685-2E**
- Contract Title : Framework contract for integrated public realm delivery, landscape infrastructure services and ancillary works for a period of three (3) years on an as-and-when-required basis (Ward 00)

Tender Offers are also to be **SUBMITTED ELECTRONICALLY** (uploaded) on the eThekweni Municipality **JDE System** (EtheKweni Supplier Portal (ESP Module)). For information pertaining to the JDE System, Tenderers are referred to **Section T1.1.3**.

Notwithstanding the **electronic submission**, a tender offer will only be deemed valid if the "hard copy" submission has been made. The "hard copy" submission will be the governing submission.

The Tender documentation, issued by the eThekweni Municipality (refer to **Tender Data: C.1.2**), is to be printed in its entirety. Printing should be done on white A4 paper, with printing on only one side of the paper. (It is suggested that the Tender documentation is not stapled, or punched for filing, prior

to scanning, as this could affect the scanning process.)

After completion and signature (using **BLACK INK**), the entire Tender document is to be scanned to a single PDF (Portable Document Format) document, at a resolution of 300 DPI (dots per inch). The PDF document is to be uploaded via the (Tender specific) upload option on the JDE System (ESP Module). Tenderers are responsible for resolving all access rights and submission queries on the JDE System before the tender closing date/ time (**Tender Data: C.2.15**).

Tender Offer delivery, and the electronic submission on the JDE System, are both to be completed on or before the closing date/ time stated in the **Tender Data: C.2.15**.

The submission of Tender Offers via any means other than that stated above will not be accepted, and those that are will be deemed invalid.

C.2.15 Closing date and time:

The closing time is:

- **Date : Friday, 02 October 2026**
- **Time : 11h00**

The **delivery of the hard copy AND** the completion of the requirements on the **JDE System (ESP Module)** are to be completed prior to the Tender **closing date and time** as stated above. Any Tender Offer submitted thereafter will not be considered.

C.2.16 Tender offer validity:

The Tender Offer validity period is **120 Days** (original validity period) from the closing date for submission of tenders.

In terms of the SCM Policy (Cl.21.2) tenders must remain valid for acceptance for a period of twelve (12) months after the expiry of the original validity period, unless the Municipality is notified in writing of anything to the contrary by the tenderer.

The eThekweni Municipality reserves the right to request confirmation from Tenderers of tender validity at any time during the twelve (12) month period.

C.2.23 Certificates:

Refer to **T2.1: “List of Returnable Documents”** for a listing of certificates that must be provided with the tender. All certificates must be valid at the time of tender closing.

Tenderers are to include a printout of the required documents/ certificates at the back of their tender submission.

1) SARS Tax Compliance Status – PIN Issued

Reference is to be made to **Returnable Document “Compulsory Enterprise Questionnaire”** which requires the “SARS Tax Compliance Status – PIN Issued” to be included with this returnable document.

2) **Central Supplier Database (CSD)**

Reference is to be made to **Returnable Document “CSD Registration Report”**.

The entities **CSD Registration Report**, obtained from the National Treasury Central Supplier Database (CSD), is to be included in the tender submission (<https://secure.csd.gov.za>).

Separate **CSD Registration Reports** are required for each party to a Joint Venture.

3) **CIDB Registration** (if applicable)

Reference is to be made to **Returnable Document “Verification of CIDB Registration and Status”**.

Tenderers are to include with their submission a printout of their **CIDB Registration**, obtained from the CIDB website (<https://portal.cidb.org.za/RegisterOfContractors/>).

Separate **CIDB Registration printouts** are required for each party to a Joint Venture.

The **Joint Venture Grading Designation Calculator** printout should be included when making a submission as a Joint Venture:

(<https://registers.cidb.org.za/PublicContractors/JVGradingDesignationCalc>)

The date of obtaining the CIDB printout(s) is to be indicated on the printout and should be on or after the date of advertising of this tender. The Tenderer's registration with the CIDB must be reflected as “Active” as at the date of tender closing.

Failure to comply with 1), 2), and 3) above will result in the tender offer being deemed non-responsive.

4) **B-BBEE Status Level of Contribution Certificate**

Tenderers are referred to **Returnable Document “MBD 6.1: Preference Points Claim”** for the B-BBEE Certificate requirements. Notwithstanding the completion of **Returnable Document “MBD 6.1: Preference Points Claim”**, should a B-BBEE Status Level of Contribution Certificate not be returned no points for Preferential Procurement will be deemed to have been claimed.

The Amended Construction Sector Code (Government Gazette No.41287) is applicable to the B-BBEE compliance measurement of all entities that fall within the Construction Sector (Built Environment Professionals (BEP) and Contractors). The requirements for measurement and verification of entities are contained in the “Amended Code Series CSC000: Framework for Measuring Broad Based Black Economic Empowerment in the Construction Sector”, as published in Notice 931 of 2017, Government Gazette No.41287 of 01/12/2017.

An EME Contractor with a Total Annual Revenue of less than R3 million, or a BEP with a total annual revenue of less than R1.8 million, may present an affidavit OR a certificate issued by the CIPC, OR an authorised B-BBEE verification certificate by a SANAS accredited Verification Agency.

Any B-BBEE Certificate where the entity has been assessed using **Generic Codes** will not be accepted.

The Employer reserves the right to verify any B-BBEE documentation submitted by a Tenderer.

C.3: THE EMPLOYER'S UNDERTAKINGS

C.3.1.1 Respond to requests from the tenderer: within three working days.

C.3.2 Issue addenda:

Addenda will be published on the National Treasury's **eTenders-Website** and/ or the **eThekwini Municipality Website**. (Refer to **Tender Data: C.1.2**).

C.3.4 Opening of Tender Submissions:

Tenders will be opened immediately after the closing time for tenders. The public reading of tenders will take place in the P&SCM Boardroom, 6th Floor, (Municipal Building), 166 KE Masinga Road, Durban.

The tender opening schedule will also be made available on the eThekwini Municipal website at URL: <https://www.durban.gov.za/pages/business/publication-of-received-bids>

C.3.9 Arithmetical errors, omissions and discrepancies:

C.3.9.5 Reject a tender offer if the Tenderer does not accept the correction of the arithmetical error in the manner described in C.3.9.4."

Any interactions between the Tenderer and the Employer in terms of this clause will be conducted through the Employer's Agent (or Representative) as identified in **Tender Data C.1.4**.

C.3.11 Evaluation of Tender Offers:

Functionality

FUNCTIONALITY will be evaluated to determine the responsiveness of tenders received. The minimum score for FUNCTIONALITY is **60 points**. Those tenders not achieving the minimum score will be deemed non-responsive.

The functionality Criteria, Sub-Criteria, Points per Criteria/ Sub-Criteria, Returnable Documentation and Schedules, Method of Evaluation, and Prompts for Judgement are as specified in **Part T1.2.3: Additional Conditions of Tender**.

Preference Point System

The procedure for the evaluation of responsive tenders is **PRICE AND PREFERENCE**, in accordance with the Employer's **SCM Policy: Section 52: Preferential Procurement**.

The **80/20** preference points system, for requirements with a Rand value of up to R50,000,000 (all applicable taxes included), will be applied. The Formula used to calculate the **Price Points (max. 80)** will be according to that specified below.

Price Points

The financial offer will be reduced to a comparative basis using the **Tender Assessment Schedule**.

A maximum of 80 points is allocated for price on the following basis:

80/20 Procurement System or **90/10 Procurement System**

$$P_s = 80 \left(1 - \frac{P_t - P_{\min}}{P_{\min}} \right)$$

$$P_s = 90 \left(1 - \frac{P_t - P_{\min}}{P_{\min}} \right)$$

Where: Ps = Points scored for comparative price of bid under consideration
 Pt = Comparative price of bid under consideration
 Pmin = Comparative price of lowest acceptable bid

Preference Points

Reference is to be made to **Returnable Form: MBD 6.1: Preference Points Claim**.

The Basket of Preference Goals (SCM Policy Section 52.7)

The provisions of the SCM Policy: **Section 52.7: The Basket of Preference Goals** shall apply. Reference is to be made to **Returnable Form: MBD 6.1: Preference Points Claim**.

The Preference Points (either 20 or 10) will be derived from points claimed for **Specific Goals** as indicated in the table(s) below, according to the specified **Goal/ Category Weightings**.

- **Ownership Goal**

Goal Weighting: **50%**

The tendering entity's **Percentage Ownership**, in terms of the **Ownership Category(s)** listed below, is to be used in the determination of the Tenderer's claim for **Preference Points**.

Ownership Categories	Criteria	80/20
Race: Black (w1)	Equals 0%	0
	Between 0% and 51%	3
	Greater or equal to 51% and less than 100%	5.25
	Equals 100%	7.5
Gender: Female (w2)	Equals 0%	0
	Between 0% and 51%	1
	Greater or equal to 51% and less than 100%	1.75
	Equals 100%	2.5

Maximum Ownership Goal Points: 10

Proof of claim as declared on MBD 6.1 (1 or more of the following will be used in verifying the Tenderer's status)

- Companies and Intellectual Property Commission registration document (CIPC)
- CSD report.
- B-BBEE Certificate of the tendering entity.
- Consolidated BBBEE Certificate if the tendering entity is a Consortium, Joint Venture, or Trust (Issued by verification agency accredited by the South African Accreditation System).
- Agreement for a Consortium, Joint Venture, or Trust.
- w1 + w2 = 100% where w1=75% and w2=25%

• **RDP Goal: The promotion of South African owned enterprises**

Goal Weighting: **50%**

The tendering entity's **Address** (as stated on the National Treasury Central Supplier Database (CSD) or on the eThekweni Municipality Vendor Portal) is to be used in the determination of the Tenderer's claim for **Preference Points** for this Specific Goal.

Location	80/20
Not in South Africa	0
South Africa	4
Kwa Zulu Natal	7
eThekweni Municipality	10
Maximum Goal Points:	10
Proof of claim as declared on MBD 6.1 (1 or more of the following will be used in verifying the Tenderer's status)	
CSD report	

C.3.13 Acceptance of tender offer:

In addition to the requirements of **Tender Data: C.3.13** of the **Standard Conditions of Tender**, tender offers will only be accepted if:

- The Tenderer's municipal rates and taxes are not in arrears, or they have made arrangements to meet outstanding municipal fee obligations.
- The Tenderer's tax compliance status has been verified, or they have made arrangements to meet outstanding tax obligations.
- If applicable, the Tenderer is **registered**, and "**Active**", with the **Construction Industry Development Board** in an appropriate contractor grading designation.
- The Tenderer or any of its directors/ shareholders are **not listed on the Register of Tender Defaulters**, in terms of the Prevention and Combating of Corrupt Activities Act of 2004, as a person prohibited from doing business with the public sector.
- The Tenderer has not:
 - Abused the Employer's Supply Chain Management System; or
 - Failed to perform on any previous contract and has been given a written notice to this effect.
- The Employer is reasonably satisfied that the Tenderer has in terms of the Construction Regulations (2014), issued in terms of the Occupational Health and Safety Act (1993), the **necessary competencies and resources to carry out the work safely**.

The Municipality does not bind itself to accept the lowest or any tender. It reserves the right to accept the whole or any part of a tender to place orders. Bidders shall not bind the Municipality to any minimum quantity per order. The successful Tenderer(s) shall be bound to provide any quantities stipulated in the specification.

The municipality has a firm intention to proceed with the work, subject to funding being identified. Notwithstanding the **Standard Conditions of Tender: C.1.1.3** of, the municipality reserves the right to award or not award the tender based on the municipalities available budget.

C.3.15 Complete adjudicator's contract:

Refer to the **Conditions of Contract** and the **Contract Data**.

C.3.17 Copies of contract:

The number of paper copies of the signed contract to be provided by the Employer is **ONE (1)**. Tenderers are referred to the requirements as stated in the **Tender Data: C.2.13**.

T1.2.3 ADDITIONAL CONDITIONS OF TENDER

T1.2.3.1 Complaints and Objections (Appeals)

Reference is to be made to Clause 49 of the eThekweni Supply Chain Management Policy.

In terms of Section 49 of the EtheKwini SCM Policy any person aggrieved by decisions taken in the implementation of the SCM System may lodge, within 14 days of notification thereof, a written objection against the decision. The objection with regard to the decision is to be directed to:

The City Manager
Attention Ms S. Pillay eMail: Simone.Pillay@durban.gov.za
P O Box 1394
DURBAN
4000

Any objection will only be processed upon receipt of a non-refundable administration fee of **R6,131.00** (including VAT), as stipulated in the Municipality's current SCM Policy. An objection will only be considered upon receipt of proof of payment of this fee which must be paid into the following bank account as a real-time payment:

EThekweni Metropolitan Municipality
First National Bank (FNB)
Account Number: 631-6574-6331
Reference Number: **36685-2E**

T1.2.3.2 Prohibition on awards to persons in the service of the state

Clause 44 of the Supply Chain Management Regulations states that the Municipality or Municipal Entity may not make any award to a person:

- (a) Who is in the service of the State;
- (b) If that person is not a natural person, of which a director, manager, principal shareholder or stakeholder is a person in the service of the state; or
- (c) Who is an advisor or consultant contracted with the municipality or a municipal entity.

Should a contract be awarded, and it is subsequently established that Clause 44 has been breached, the Employer shall have the right to terminate the contract with immediate effect.

T1.2.3.3 Code of Conduct and Local Labour

The Tenderers shall make themselves familiar with the requirements of the following policies:

- Code of Conduct;
- The Use of CLOs and Local Labour.

T1.2.3.4 Functionality Specification

Functionality Evaluation

The value of W_2 is 100. The Functionality criteria (and sub criteria if applicable) and maximum score in respect of each of the criteria are as follows:

Functionality Criteria / Sub Criteria		Maximum Points Score
Experience of Tenderer's past projects: Bidders are required to submit a detailed scope of work under each project of a similar nature (each with a project description and pictures of works completed). Each project scope should cover at-least three (3) of the following categories: 1) Environmental rehabilitation, ecological restoration and erosion control systems 2) Landscape Construction (Hard & Soft landscaping) 3) Irrigation & Water Management Systems (incl. water features, sustainable drainage and water harvesting) 4) Recreational facilities, Play areas and Public Amenities (Trim and Outdoor-Gym equipment and rubberising) 5) Public realm Fencing 6) Specialised Turf and sport fields installation and management 7) Public realm infrastructure and streetscape works incl. furniture, wayfinding and place making elements 8) Public open space and park upgrades 9) Greening and tree planting programmes 10) Urban Design implementation and public realm enhancement projects (including streetscape upgrades, pedestrian environments, civic spaces, plazas, walkability improvements, place making interventions, urban furniture and associated public realm works).		60
Project Organogram and Experience of Key Staff	Contracts Manager: Professional Landscape Architect/ Manager/ Senior Technologist/ Technologist registered with SACLAP	15
	Site agent: Candidate OR Professional Landscape Manager/ Senior Technologist/ Technologist/ Technician registered with SACLAP	10
	Foremen: Grade 12 Matric	5
	Pest Control Operator (PCO) registered with DALRRD in either Industrial Vegetation Control or Turf and Ornamental Pest Control.	5
	Irrigation Specialist	5
Maximum possible score for Functionality (M_s)		100

The minimum number of evaluation points for Functionality is **60**. Only those Tenderers who achieve the minimum number of Functionality evaluation points (or greater) will be eligible to have their tenders further evaluated.

Functionality shall be scored by not less than three evaluators and the scores of each of the evaluators will be averaged, weighted and then totalled to obtain the final score for Functionality. Each evaluation criteria will be assessed in terms of six indicators and scores allocated according to the following table:

Level 0	Level 1	Level 2	Level 3	Level 4	Level 5
0	20	40	60	80	100

Evaluation criteria will be adjudicated according to submissions made in accordance with the following schedules, which are found in T2.2: Returnable Schedules:

Functionality Criteria	Returnable Schedules
Experience of Tenderer's Past Projects	• Experience of Tenderer
Proposed Organisation and Experience of Key Staff	• Proposed Organisation and Staffing • Key Personnel • CV's with Experience of Key Personnel

Unless otherwise stated, evaluation criteria will be adjudicated with respect to the contract specific Scope of Work, as specified in C.3. In this regard the following definitions apply to the evaluation criteria prompts for judgement:

- **“successfully completed”** implies a project has been completed on time and to specification;
- **“similar nature”** implies projects that had a comparable Scope of Work in terms of technical requirements and operations;
- **“experience”** implies experience on projects of a similar nature;
- **“accredited degree / diploma”** implies a minimum 3-year qualification from a registered University or Institute of Technology accredited by SACLAP.

Criterion: Tenderer’s Experience Notes: Projects of a “Similar Nature” are defined as a project with comparable scope of work in terms of technical requirements and operations “Successfully completed” implies a project that has been completed on time and to specification Note: Projects which are submitted without Completion Certificates, at Tender, will not be considered	
Level 0	No information provided; OR submission of no substance / irrelevant information provided
Level 1	To have successfully completed <u>1 project</u> of a similar nature within the past 10 years.
Level 2	To have successfully completed <u>2 projects</u> of a similar nature within the past 10 years.
Level 3	To have successfully completed (ie. on time and to specification) <u>3 projects</u> of a similar nature within the past 10 years.
Level 4	To have successfully completed (ie on time and to specification) <u>4 projects</u> of a similar nature within the past 10 years.
Level 5	To have successfully completed (ie on time and to specification) <u>5+ projects</u> of a similar nature within the past 10 years.

For this specific contract, projects of a similar nature are as follows:

Each project covers at-least three (3) of the following categories:

- 1) Environmental rehabilitation, ecological restoration and erosion control systems
- 2) Landscape Construction (Hard & Soft landscaping)
- 3) Irrigation & Water Management Systems (incl. water features, sustainable drainage and water harvesting)
- 4) Recreational facilities, Play areas and Public Amenities (Trim and Outdoor-Gym equipment and rubberising)
- 5) Public realm Fencing
- 6) Specialised Turf and sport fields installation and management
- 7) Public realm infrastructure and streetscape works incl. furniture, wayfinding and place making elements
- 8) Public open space and park upgrades
- 9) Greening and tree planting programmes
- 10) Urban Design implementation and public realm enhancement projects (including streetscape upgrades, pedestrian environments, civic spaces, plazas, walkability improvements, place making interventions, urban furniture and associated public realm works).

Criterion: Project Organogram and Experience of Key Staff					
Note: Projects of a similar nature are as above.					
	CONTRACTS MANAGER	SITE AGENT	FOREMAN	PEST CONTROL OPERATOR	IRRIGATION SPECIALIST
Minimum qualification	- relevant accredited diploma/degree - registered with SACLAP as a Professional	- relevant accredited diploma/degree - registered with SACLAP as a Candidate OR Professional	Grade 12 Matric	Registered with DALRRD in: Industrial Vegetation Control; OR Turf and Ornamental Pest Control.	- relevant accredited diploma/degree - Agriculture, Horticulture, Landscape Technology, Landscape Architecture
Level 0	No information provided OR submission of no substance / irrelevant information provided	No information provided OR submission of no substance / irrelevant information provided	No information provided OR submission of no substance / irrelevant information provided	No information provided OR submission of no substance / irrelevant information OR Less than 2 year's experience as a PCO..	No information provided OR submission of no substance / irrelevant information OR Less than 2 year's experience as an Irrigation Specialist
Level 1	Contracts Manager: relevant accredited diploma/degree and 1 year relevant experience on a project of a similar nature.	Site Agent: relevant accredited diploma/degree and 1 year relevant experience on a project of a similar nature.	Foreman: minimum 1 year relevant experience on projects of a similar nature.	Minimum 1 year's experience as a PCO.	Minimum 1 year experience as an Irrigation Specialist
Level 2	Contracts Manager: a relevant accredited diploma/degree and 2 years relevant experience on projects of a similar nature.	Site Agent: a relevant accredited diploma/degree and 2 year's relevant experience on projects of a similar nature.	Foreman: minimum 2 years relevant experience on projects of a similar nature.	Minimum 2 years year's experience as a PCO..	Minimum 2 year's experience as an Irrigation Specialist
Level 3	Contracts Manager: a relevant accredited diploma/degree and 3 to 4 years relevant experience on projects of a similar nature.	Site Agent: a relevant accredited diploma/degree and 3 to 4 year's relevant experience on projects of a similar nature.	Foreman: minimum 3 years relevant experience on projects of a similar nature.	Minimum 3 year's experience as a PCO..	Minimum 3 year's experience as an Irrigation Specialist
Level 4	Contracts Manager: a relevant accredited diploma/degree and minimum 5 to 7 years relevant experience on projects of a similar nature.	Site Agent : a relevant accredited diploma/degree and minimum 5 to 7 year's relevant experience on projects of a similar nature.	Foreman: minimum 5 years relevant experience on projects of a similar nature and value.	Minimum 5 year's experience as a PCO..	Minimum 5 year's experience as an Irrigation Specialist
Level 5	Contracts Manager: a relevant accredited diploma/degree and minimum 8 years relevant experience on projects of a similar nature.	Site Agent: a relevant accredited diploma/degree and minimum 8 years relevant experience on projects of a similar nature.	Foreman: minimum 8 years relevant experience on projects of a similar nature and value.	Minimum 8 year's experience as a PCO.	Minimum 8 year's experience as an Irrigation Specialist

PART T2: RETURNABLE DOCUMENTS

T2.1 LIST OF RETURNABLE DOCUMENTS

T2.1.1 General

The Tender Submission Documentation must be submitted in its entirety. All forms must be properly completed and signed as required.

The Tenderer is required to complete and sign each and every Schedule and Form listed below to the best of their ability as the evaluation of tenders and the eventual contract will be based on the information provided by the Tenderer.

Failure of a Tenderer to complete the Schedules and Forms to the satisfaction of the Employer will inevitably prejudice the tender and may lead to rejection on the grounds that the tender is non-responsive.

T2.1.2 Returnable Schedules, Forms and Certificates

Entity Specific

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Technical or Functionality Evaluation

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Contract Part: The Tenderer is required to complete following forms:

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T2.2.1 COMPULSORY ENTERPRISE QUESTIONNAIRE

Ref	Description	Tenderer to Complete	
1.1	Name of enterprise		
1.2	Name of enterprise's representative		
1.3	Email address of representative		
1.4	Contact numbers of representative	Tel:	Cell:
1.5	National Treasury Central Supplier Database Registration number	MAAA	
1.6	VAT registration number, if any:		
1.7	CIDB registration number, if any:		
1.8	Department of Labour: Registration number		
1.9	Department of Labour: Letter of Good Standing Certificate number		

2.0 Particulars of sole proprietors and partners in partnerships (attach separate pages if more than 4 partners)			
	Full Name	Identity No.	Personal income tax No. *
2.1			
2.2			
2.3			

3.0 Particulars of companies and close corporations	
3.1	Company registration number, if applicable:
3.2	Close corporation number, if applicable:
3.3	Tax Reference number, if any:
3.4	* South African Revenue Service: Tax Compliance Status PIN:

4.0	MBD 4, MBD 6, MBD 8, and MBD9 issued by National Treasury <u>must be completed for each tender and be included as a tender requirement.</u>
-----	--

*** Tenderers are to include, at the back of their tender submission, a printout of their SARS "Tax Compliance Status – PIN Issued" certificate, failing which the tender submission will be deemed non-responsive.**

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the enterprise:

- i) authorizes the Employer to verify the Tenderer's tax clearance status from the South African Revenue Services that it is in order.
- ii) confirms that neither the name of the enterprise or the name of any partner, manager, director or other person, who wholly or partly exercises or may exercise, control over the enterprise appears on the Register of Tender Defaulters established in terms of the Prevention and Combating of Corrupt Activities Act of 2004.
- iii) confirms that no partner, member, director or other person, who wholly or partly exercises, or may exercise, control over the enterprise appears, has within the last five years been convicted of fraud or corruption.
- iv) confirms that I / we are not associated, linked or involved with any other tendering entities submitting tender offers and have no other relationship with any of the Tenderers or those responsible for compiling the scope of work that could cause or be interpreted as a conflict of interest.
- v) confirms that the contents of this questionnaire are within my personal knowledge and are to the best of my belief both true and correct.

NAME (Block Capitals):

Date

SIGNATURE:

T2.2.2 CERTIFICATE OF ATTENDANCE AT CLARIFICATION MEETING / SITE INSPECTION

Reference is to be made to the **Tender Data: C.2.1.1(a) and C.2.7.**

This is to certify that:

(entity name):

of (address):

was represented by the person(s) named below at the Clarification Meeting for Contract **36685-2E** held for all Tenderers, the details of which are stated in the **Tender Data: C.2.7.**

I / We acknowledge that the purpose of the meeting was to acquaint myself / ourselves with the site of the works and / or matters incidental to doing the work specified in the tender documents in order for me / us to take account of everything necessary when compiling our rates and prices included in the tender.

Particulars of person(s) attending the meeting:

Name:

Name:

Signature:

Signature:

Capacity:

Capacity:

Attendance of the above person(s) at the meeting is confirmed by the Employer's Agent's Representative, namely:

Name:

Signature:

Date:

T2.2.3 MBD 4: DECLARATION OF INTEREST

MSCM Regulations: “**in the service of the state**” means to be:

- (a) a member of:
 - (i) any municipal council.
 - (ii) any provincial legislature.
 - (iii) the national Assembly or the national Council of provinces.
- (b) a member of the board of directors of any municipal enterprise.
- (c) an official of any municipality or municipal enterprise.
- (d) an employee of any national or provincial department, national or provincial public enterprise or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No.1 of 1999).
- (e) a member of the accounting authority of any national or provincial public enterprise.
- (f) an employee of Parliament or a provincial legislature.

“**Shareholder**” means a person who owns shares in the company and is actively involved in the management of the company or business and exercises control over the company.

- 1 No bid will be accepted from persons **in the service of the state**¹.
- 2 Any person, having a kinship with persons **in the service of the state**, including a blood relationship, may make an offer or offers in terms of this invitation to bid. In view of possible allegations of favouritism, should the resulting bid, or part thereof, be awarded to persons connected with or related to **persons in service of the state**, it is required that the bidder or their authorised representative declare their position in relation to the evaluating/adjudicating authority and/or take an oath declaring his/her interest.
- 3 In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.

3.1 Name of enterprise	
Name of enterprise’s representative	
3.2 ID Number of enterprise’s representative	
3.3 Position enterprise’s representative occupies in the enterprise	
3.4 Company Registration number	
3.5 Tax Reference number	
3.6 VAT registration number	

- 3.7 The names of all directors / trustees / shareholders / members / sole proprietors / partners in partnerships, their individual identity numbers and state employee numbers must be indicated in paragraph 4 below. In the case of a joint venture, information in respect of each partnering enterprise must be completed and submitted.

- 3.8 Are you presently in the service of the state?

Circle Applicable	
YES	NO

If yes, furnish particulars:

.....

3.9 Have you been in the service of the state for the past twelve months?

YES

NO

If yes, furnish particulars:

3.10 Do you have any relationship (family, friend, other) with persons in the service of the state and who may be involved with the evaluation and or adjudication of this bid?

YES

NO

If yes, furnish particulars:

3.11 Are you, aware of any relationship (family, friend, other) between any other bidder and any persons in the service of the state who may be involved with the evaluation and or adjudication of this bid?

YES

NO

If yes, furnish particulars:

3.12 Are any of the company's directors, trustees, managers, principle shareholders or stakeholders in service of the state?

YES

NO

If yes, furnish particulars:

3.13 Are any spouse, child or parent of the company's directors, trustees, managers, principle shareholders or stakeholders in service of the state?

YES

NO

If yes, furnish particulars:

3.14 Do you or any of the directors, trustees, managers, principle shareholders, or stakeholders of this company have any interest in any other related companies or business whether or not they are bidding for this contract?

YES

NO

If yes, furnish particulars:

4 The names of all directors / trustees / shareholders / members / sole proprietors / partners in partnerships, their individual identity numbers and state employee numbers must be indicated below. In the case of a joint venture, information in respect of each partnering enterprise must be completed and submitted

Full Name	Identity No.	State Employee No.	Personal income tax No.
Use additional pages if necessary			

Failure to complete this form in full, sign, and return with the tender submission will result in the tender offer being deemed non-responsive.

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct.

NAME (Block Capitals):

Date

.....

SIGNATURE:

.....
.....

**T2.2.4 MBD 5: DECLARATION FOR PROCUREMENT ABOVE R10 MILLION
(ALL APPLICABLE TAXES INCLUDED)**

For all procurement expected to exceed R10 million (all applicable taxes included), bidders must complete the following questionnaire.

		Circle Applicable	
		YES	NO
1.0	Are you by law required to prepare annual financial statements for auditing?		
1.1	If YES, submit audited annual financial statements for the past three years or since the date of establishment if established during the past three years. The audited annual financial statements are to be included at the back of the tender submission.		
2.0	Do you have any outstanding undisputed commitments for municipal services towards any municipality for more than three months or any other service provider in respect of which payment is overdue for more than 30 days?	YES	NO
2.1	If NO, this serves to certify that the bidder has no undisputed commitments for municipal services towards any municipality for more than three months or other service provider in respect of which payment is overdue for more than 30 days.		
2.2	If YES, provide particulars.		
..... 			
3.0	Has any contract been awarded to you by an organ of state during the past five years, including particulars of any material non-compliance or dispute concerning the execution of such contract?	YES	NO
3.1	If YES, provide particulars.		
SEE Returnable Document "Contracts Awarded by Organs of State in the Past 5 Years"			
4.0	Will any portion of goods or services be sourced from outside the Republic, and, if so, what portion and whether any portion of payment from the municipality / municipal entity is expected to be transferred out of the Republic?	YES	NO
4.1	If YES, provide particulars.		
..... 			

Failure to complete this form in full, sign, and return with the tender submission will result in the tender offer being deemed non-responsive.

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct, and, if required, that the requested documentation has been included in the tender submission.

NAME (Block Capitals):

Date

SIGNATURE:

T2.2.5 CONTRACTS AWARDED BY ORGANS OF STATE IN THE PAST 5 YEARS

In terms of SCM Policy Section 20(1)(d)(iii), Tenderers are to provide details of Works undertaken for the Government or Public Sector entities/ Organs of State in the past 5 Years, including particulars of any material non-compliance or dispute concerning the execution of such contract.

Material non-compliance or dispute (Yes or No)													
Date Completed													
Value of Work													
Consulting Engineer/ Engineers representative													
Employer													
Contract Number													

I, the undersigned, who warrants that they are authorised to sign on behalf of the entity, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct.

NAME (Block Capitals):

Date

SIGNATURE:

T2.2.6 MBD 6.1: PREFERENCE POINTS CLAIM)

(SCMP 52.5: Broad-Based Black Economic Empowerment)

This form serves as a claim form for preference points for **Broad-Based Black Economic Empowerment (B-BBEE) Status Level of Contribution**. **Reference is to be made to the Tender Data: C.3.11.**

1.0 GENERAL CONDITIONS

1.1 The relevant **Preference Points System (80/20 or 90/10)** applicable to this bid is stated in the **Tender Data: C.3.11.**

1.2 Failure on the part of a bidder to fill in and/ or sign this form, and submit a B-BBEE Verification Certificate from a Verification Agency accredited by the South African Accreditation System (SANAS), or a Registered Auditor approved by the Independent Regulatory Board of Auditors (IRBA), or sworn affidavits in the case of Exempted Micro Enterprises or Qualifying Small Enterprises, together with the bid, will be interpreted to mean that preference points for **B-BBEE Status Level Of Contribution** are not claimed.

1.3 The purchaser reserves the right to require of a bidder, either before a bid is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the purchaser.

2.0 ADJUDICATION USING A POINT SYSTEM

2.1 The bidder obtaining the highest number of total points will be recommended for the award of the contract.

2.2 Preference points shall be calculated after prices have been brought to a comparative basis taking into account all factors of non-firm prices and all unconditional discounts.

2.3 Points scored will be rounded off to the nearest 2 decimal places.

2.4 In the event that two or more bids have scored equal total points, the successful bid must be the one scoring the highest number of preference points for B-BBEE.

2.5 However, when functionality is part of the evaluation process and two or more bids have scored equal points including equal preference points for B-BBEE, the successful bid must be the one scoring the highest score for functionality.

2.6 Should two or more bids be equal in all respects the award shall be decided by the drawing of lots.

3.0 POINTS AWARDED FOR PRICE

A maximum of 80 or 90 points is allocated for price on the following basis:

80/20 Procurement System

or

90/10 Procurement System

$$P_s = 80 \left(1 - \frac{P_t - P_{\min}}{P_{\min}} \right)$$

$$P_s = 90 \left(1 - \frac{P_t - P_{\min}}{P_{\min}} \right)$$

Where:

P_s	=	Points scored for comparative price of bid under consideration
P_t	=	Comparative price of bid under consideration
$P_{\min}$	=	Comparative price of lowest acceptable bid

4.0 POINTS ALLOCATED FOR B-BBEE STATUS LEVEL OF CONTRIBUTION

- 4.1 Preference points must be claimed by a bidder for attaining the **B-BBEE Status Level of Contribution** in accordance with the applicable table below:

80/20 Preference Points System	
B-BBEE Level Contributor	Preference Points
1	20
2	18
3	14
4	12
5	8
6	6
7	4
8	2
Non-Compliant	0

90/10 Preference Points System	
B-BBEE Level Contributor	Preference Points
1	10
2	9
3	7
4	6
5	4
6	3
7	2
8	1
Non-Compliant	0

- 4.2 All bidders must submit B-BBEE Status Level of Contribution Certificates, issued by either verification agencies accredited by the South African Accreditation System (SANAS), or by registered auditors approved by the Independent Regulatory Board for Auditors (IRBA), **or sworn affidavits** in a case of an Exempted Micro Enterprise (EME) or a Qualifying Small Enterprise (QSE).
- 4.3 Any enterprise with an annual Total Revenue of R 10 million or less qualifies as an Exempted Micro-Enterprise.
- 4.4 Exempted Micro-Enterprises are deemed to have B-BBEE Status of "Level Four Contributor" having a B-BBEE procurement recognition of 100% in terms of the Codes of Good Practice.
- 4.5 An Exempted Micro Enterprise (EME) with at least 51% black ownership qualifies as a Level 2 contributor with BBBEE level of 125% in terms of the Codes of Good Practice.
- 4.6 An Exempted Micro Enterprise with 100% black ownership qualifies as a Level 1 contributor with BBBEE level of 135% in terms of the Codes of Good Practice.
- 4.7 An Exempted Micro Enterprise that is regarded as a specialized enterprise with at least 75% black beneficiaries qualifies as a Level 1 contributor with BBBEE level of 135% in terms of the Codes of Good Practice.
- 4.8 An Exempted Micro Enterprise that is regarded as a specialized enterprise with at least 51% black beneficiaries qualifies as a Level 2 contributor with BBBEE level of 125% in terms of the Codes of Good Practice.
- 4.9 A Qualifying Small Enterprise (QSE) with at least 51% black ownership qualifies as a Level 2 contributor.
- 4.10 A QSE with 100% black ownership qualifies as a Level 1 contributor.
- 4.11 A QSE that is regarded as a specialized enterprise with at least 51% black beneficiaries qualifies as a Level 2 contributor with BBBEE level of 125% in terms of the Codes of Good Practice.
- 4.12 A QSE with less than 51% black ownership is required to submit a BBBEE level verification certificate issued by a BBBEE verification professional.
- 4.13 A Trust, consortium or joint venture:
- must submit a B-BBEE status level certificate in order to qualify for points;
 - may qualify for points as an unincorporated entity provided, that they submit their consolidated scorecard is prepared for separate tender; and
 - where no consolidated scorecard exists, the weighted average (in accordance with participation percentages) must be used and rounded off to the nearest status level.

4.14 Gazetted Sector Codes supersede Generic Codes.

5.0 SUB-CONTRACTING

- 5.1 B-BBEE points must not be awarded to a tenderer who intends sub-contracting more than 25% of the value of the contract to an enterprise that does not qualify for at least the points that such contractor qualifies for, unless the intended sub-contractor is an EME who has the ability and capability to execute the contract.
- 5.2 A person awarded a contract may not sub-contract more than 25% of the value of the contract to an enterprise that does not have an equal or higher B-BBEE status level, unless the intended sub-contractor is an EME who has the ability and capability to execute the contract.
- 5.3 A person awarded a contract in relation to a designated sector may not sub-contract in such a manner that the **Local Production and Content** of the overall value of the contract is reduced to below the prescribed minimum threshold.

6.0 BID DECLARATION

- 6.1 Bidders who wish to claim points in respect of **B-BBEE Status Level of Contribution** must complete the following:

B-BBEE Status Level of Contribution	Tenderer's Preference Points Claim (maximum of 10 or 20 points)

Points claimed must be in accordance with the relevant table reflected in paragraph 4.1 and must be substantiated by means of a B-BBEE Status Level of Contribution Certificate issued by a verification agency accredited by the South African Accreditation System (SANAS), or by registered auditors approved by the Independent Regulatory Board for Auditors (IRBA), or sworn affidavits in a case of an Exempted Micro Enterprise (EME) or a Qualifying Small Enterprise (QSE).

Tenderers are to include, at the back of their tender submission, their B-BBEE Status Level of Contribution Certificate, or sworn affidavits, failing which no Preference Points will be deemed to have been claimed.

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct, and, if required, that the requested documentation has been included in the tender submission.

NAME (Block Capitals):

Date

SIGNATURE:

T2.2.6 MBD 6.1: PREFERENCE POINTS CLAIM

(SCMP 52.7: Basket of Preference Goals)

This form serves as a claim form for preference points according to **The Basket of Preference Goals**. **Reference is to be made to the Tender Data: C.3.11.**

1.0 GENERAL CONDITIONS

- 1.1 The relevant **Preference Points System (80/20 or 90/10)** applicable to this bid is stated in the **Tender Data: C.3.11**.
- 1.2 Failure on the part of the Tenderer to submit the required proof or documentation, in terms of the requirements in the Tender Data for claiming specific goal preference points, will be interpreted that **Preference Points for Specific Goals** are not claimed.
- 1.3 The purchaser reserves the right to require of a bidder, either before a bid is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the purchaser.

2.0 ADJUDICATION USING A POINT SYSTEM

- 2.1 The bidder obtaining the highest number of total points will be recommended for the award of the contract.
- 2.2 Preference points shall be calculated after prices have been brought to a comparative basis taking into account all factors of non-firm prices and all unconditional discounts.
- 2.3 Points scored will be rounded off to the nearest 2 decimal places.
- 2.4 In the event that two or more bids have scored equal total points, the successful bid must be the one scoring the highest number of preference points for B-BBEE.
- 2.5 However, when functionality is part of the evaluation process and two or more bids have scored equal points including equal preference points for B-BBEE, the successful bid must be the one scoring the highest score for functionality.
- 2.6 Should two or more bids be equal in all respects the award shall be decided by the drawing of lots.

3.0 POINTS AWARDED FOR PRICE

A maximum of 80 or 90 points is allocated for price on the following basis:

80/20 Procurement System

or

90/10 Procurement System

$$P_s = 80 \left(1 - \frac{P_t - P_{\min}}{P_{\min}} \right)$$

$$P_s = 90 \left(1 - \frac{P_t - P_{\min}}{P_{\min}} \right)$$

Where:

P_s	=	Points scored for comparative price of bid under consideration
P_t	=	Comparative price of bid under consideration
$P_{\min}$	=	Comparative price of lowest acceptable bid

4.0 POINTS ALLOCATED FOR THE BASKET OF PREFERENCE GOALS

4.1 Preference points may be claimed for the **Specific Goals** stated in the **Tender Data: C.3.11**.

For the purposes of this tender, the Tenderer may claim points based on the goal(s) stated in the table below, as supported by proof/ documentation specified in the Tender Data.

80/20 Preference Points System The Specific Goals to be allocated points in terms of this tender:	Maximum Number of points ALLOCATED	Tenderer's Number of points CLAIMED
Ownership Goal: Race (black)	7.5	
Ownership Goal: Gender (female)	2.5	
Ownership Goal: Disabilities	0	
RDP Goal: The promotion of South African owned enterprises.	10	
Total CLAIMED Points (maximum 20)	20	

5.0 REMEDIES FOR THE SUBMISSION OF FALSE INFORMATION

5.1 The remedies for the submission of false information regarding claims for specific goals are stated in the **SCM Policy: Section 52.9**.

Tenderers are to include, at the back of their tender submission, the required proof/ documentation in support of their Preference Goal claims (reference is to be made to the Specific Goals stated in the Tender Data: C.3.11).

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct, and, if required, that the requested documentation has been included in the tender submission.

NAME (Block Capitals):

Date

SIGNATURE:

T2.2.7 MBD 8: DECLARATION OF BIDDER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES

- 1.0 This Municipal Bidding Document must form part of all bids invited.
- 2.0 It serves as a declaration to be used by municipalities and municipal entities in ensuring that when goods and services are being procured, all reasonable steps are taken to combat the abuse of the supply chain management system.
- 3.0 The bid of any bidder may be rejected if that bidder, or any of its directors have:
- a) abused the municipal entity's supply chain management system or committed any improper conduct in relation to such system.
 - b) been convicted for fraud or corruption during the past five years.
 - c) wilfully neglected, reneged on or failed to comply with any government, municipal or other public sector contract during the past five years.
 - d) been listed in the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004).
- 4.0 In order to give effect to the above, the following questions must be completed and submitted with the bid.

- 4.1 Is the bidder or any of its directors listed on the National Treasury's Database of Restricted Suppliers as companies or persons prohibited from doing business with the public sector?

(Companies or persons who are listed on this Database were informed in writing of this restriction by the Accounting Officer / Authority of the institution that imposed the restriction after the audi alteram partem rule was applied.)

The Database of Restricted Suppliers now resides on the National Treasury's website (www.treasury.gov.za) and can be accessed by clicking on its link at the bottom of the home page.

Circle Applicable	
YES	NO

- 4.1.1 If YES, provide particulars.

.....

.....

- 4.2 Is the bidder or any of its directors listed on the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004)?

The Register for Tender Defaulters can be accessed on the National Treasury's website (www.treasury.gov.za) by clicking on its link at the bottom of the home page.

YES	NO
-----	----

- 4.2.1 If YES, provide particulars.

.....

.....

- 4.3 Was the bidder or any of its directors convicted by a court of law (including a court of law outside the Republic of South Africa) for fraud or corruption during the past five years?

YES	NO
-----	----

- 4.3.1 If YES, provide particulars.

.....

.....

Circle Applicable	
YES	NO
4.4 Does the bidder or any of its directors owe any municipal rates and taxes or municipal charges to the municipality / municipal entity, or to any other municipality / municipal entity, that is in arrears for more than three months? 4.4.1 If YES, provide particulars. 	
4.5 Was any contract between the bidder and the municipality / municipal entity or any other organ of state terminated during the past five years on account of failure to perform on or comply with the contract? 4.5.1 If YES, provide particulars. 	

Failure to complete this form in full, sign, and return with the tender submission will result in the tender offer being deemed non-responsive.

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct.

I accept that, in addition to cancellation of a contract, action may be taken against me should this declaration prove to be false.

NAME (Block Capitals): _____ **Date** _____

SIGNATURE: _____

T2.2.8 **MBD 9: CERTIFICATE OF INDEPENDENT BID DETERMINATION**

NOTES

- ¹ Includes price quotations, advertised competitive bids, limited bids and proposals.
- ² Bid rigging (or collusive bidding) occurs when businesses, that would otherwise be expected to compete, secretly conspire to raise prices or lower the quality of goods and / or services for purchasers who wish to acquire goods and / or services through a bidding process. Bid rigging is, therefore, an agreement between competitors not to compete.
- ³ Joint venture or Consortium means an association of persons for the purpose of combining their expertise, property, capital, efforts, skill and knowledge in an activity for the execution of a contract.

- 1.0 This Municipal Bidding Document (MBD) must form part of all **bids**¹ invited.
- 2.0 Section 4 (1) (b) (iii) of the Competition Act No. 89 of 1998, as amended, prohibits an agreement between, or concerted practice by, firms, or a decision by an association of firms, if it is between parties in a horizontal relationship and if it involves collusive bidding (or **bid rigging**).² Collusive bidding is a *pe se* prohibition meaning that it cannot be justified under any grounds.
- 3.0 Municipal Supply Regulation 38 (1) prescribes that a supply chain management policy must provide measures for the combating of abuse of the supply chain management system, and must enable the accounting officer, among others, to:
- take all reasonable steps to prevent such abuse;
 - reject the bid of any bidder if that bidder or any of its directors has abused the supply chain management system of the municipality or municipal entity or has committed any improper conduct in relation to such system; and
 - cancel a contract awarded to a person if the person committed any corrupt or fraudulent act during the bidding process or the execution of the contract.
- 4.0 This MBD serves as a certificate of declaration that would be used by institutions to ensure that, when bids are considered, reasonable steps are taken to prevent any form of bid rigging.
- 5.0 In order to give effect to the above, the below **Certificate of Independent Bid Determination** must be completed and submitted with the bid.

CERTIFICATE OF INDEPENDENT BID DETERMINATION

I, the undersigned, in submitting the accompanying bid for: Contract **Sdf1223**

Enter the Contract Title: multiple lines allowable

in response to the invitation for the bid made by: **ETHEKWINI MUNICIPALITY**

do hereby make the following statements that I certify to be true and complete in every respect.

I certify, on behalf of:

that:

(continued on next page)

1. I have read and I understand the contents of this Certificate.
2. I understand that the accompanying bid will be disqualified if this Certificate is found not to be true and complete in every respect.
3. I am authorized by the bidder to sign this Certificate, and to submit the accompanying bid, on behalf of the bidder;
4. Each person whose signature appears on the accompanying bid has been authorized by the bidder to determine the terms of, and to sign, the bid, on behalf of the bidder;
5. For the purposes of this Certificate and the accompanying bid, I understand that the word "competitor" shall include any individual or organization, other than the bidder, whether or not affiliated with the bidder, who:
 - (a) has been requested to submit a bid in response to this bid invitation.
 - (b) could potentially submit a bid in response to this bid invitation, based on their qualifications, abilities or experience.
 - (c) provides the same goods and services as the bidder and/or is in the same line of business as the bidder.
6. The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement, or arrangement with any competitor. However, communication between partners in a joint venture or consortium³ will not be construed as collusive bidding.
7. In particular, without limiting the generality of paragraphs 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
 - (a) prices.
 - (b) geographical area where product or service will be rendered (market allocation).
 - (c) methods, factors or formulas used to calculate prices.
 - (d) the intention or decision to submit or not to submit, a bid.
 - (e) the submission of a bid which does not meet the specifications and conditions of the bid.
 - (f) bidding with the intention not to win the bid.
8. In addition, there have been no consultations, communications, agreements, or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this bid invitation relates.
9. The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.
10. I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to bids and contracts, bids that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No 12 of 2004 or any other applicable legislation.

Failure to complete this form in full, sign, and return with the tender submission will result in the tender offer being deemed non-responsive.

NAME (Block Capitals):

Date

SIGNATURE:

T2.2.9 DECLARATION OF MUNICIPAL FEES

Reference is to be made to the **Tender Data: C.2.23 and C.3.13(a)**.

I, the undersigned, do hereby declare that the Municipal fees of:

.....
(full name of Company / Close Corporation / partnership / sole proprietary/Joint Venture)

(hereinafter referred to as the TENDERER) are, as at the date hereunder, fully paid or an Acknowledgement of Debt has been concluded with the Municipality to pay the said charges in instalments.

The following account details relate to property of the said TENDERER:

<u>Account</u>	<u>Account Number: to be completed by Tenderer</u>											
Consolidated Account												
Electricity												
Water												
Rates												
JSB Levies												
Other												

- If applicable, a copy of a recent (within the past 3 months) Metro Bill is to be provided.

I acknowledge that should the aforesaid Municipal charges fall into arrears, the Municipality may take such remedial action as is required, including termination of any contract, and any payments due to the Contractor by the Municipality shall be first set off against such arrears.

- Where the Tenderer's place of business or business interests are outside the jurisdiction of eThekweni municipality, a copy of the accounts/ agreements from the relevant municipality are to be provided.
- Where the Tenderer's Municipal Accounts are part of their lease agreement, then a copy of the agreement, or an official letter to that effect, is to be provided.
- Where a Tenderer's place of business or business interests are carried out from premises as part of any other agreement, then a copy of the agreement, or an official letter to that effect, is to be provided.

Tenderers are to include, at the back of their tender submission, copies of the above-mentioned account's, agreements signed with the municipality, lease agreements, or official letters.

Failure to complete this form in full, sign, and return the required documents with the tender submission will result in the tender offer being deemed non-responsive.

*I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct, **and that the requested documentation has been included in the tender submission.***

NAME (Block Capitals):

Date

SIGNATURE:

T2.2.10 CONTRACTOR'S HEALTH AND SAFETY DECLARATION

Reference is to be made to Clauses C.2.1(e) and C.2.23 of the Tender Data.

In terms of Clause 5(1)(h) of the OHSA 1993 Construction Regulations 2014 (referred to as "the Regulations" hereafter), a Principal Contractor may only be appointed to perform construction work if the Client is satisfied that the Principal Contractor has the necessary competencies and resources to carry out the work safely in accordance with the Occupational Health and Safety Act No 85 of 1993 and the OHSA 1993 Construction Regulations 2014.

To that effect, a person duly authorised by the Tenderer, must complete and sign the declaration hereafter in detail.

Declaration by Tenderer

- 1 I, the undersigned, hereby declare and confirm that I am fully conversant with the Occupational Health and Safety Act No 85 of 1993 (as amended by the Occupational Health and Safety Amendment Act No 181 of 1993), and the OHSA 1993 Construction Regulations 2014.
- 2 I hereby declare that my company has the competence and the necessary resources to safely carry out the construction work under this contract in compliance with the Construction Regulations and the Employer's Health and Safety Specifications.
- 3 I propose to achieve compliance with the Regulations by one of the following **(Tenderers are to Circle Applicable - Yes or No)**:

(a) From my own competent resources as detailed in 4(a) hereafter.

(b) From my own resources still to be appointed or trained until competency is achieved, as detailed in 4(b) hereafter:

(c) From outside sources by appointment of competent specialist Subcontractors as detailed in 4(c) hereafter:

Circle Applicable	
Yes	No
Yes	No
Yes	No

- 4 Details of resources I propose:

(Note: Competent resources shall include safety personnel such as a construction supervisor and construction safety officer as defined in Regulation 8, and competent persons as defined in Regulations 9, 10, 11, 12, 13, 14, 16, 17, 20, 21, 22, 23(1), 24, 25, 26, 27, 28 and 29, as applicable).

- (a) Details of the competent and qualified key persons from my company's own resources, who will form part of the contract team:

NAMES OF COMPETENT PERSONS	POSITIONS TO BE FILLED BY COMPETENT PERSONS

(b) Details of training of persons from my company's own resources (or to be hired) who still have to be trained to achieve the necessary competency:

(i) By whom will training be provided?

(ii) When will training be undertaken?

(iii) Positions to be filled by persons to be trained or hired:

(c) Details of competent resources to be appointed as subcontractors if competent persons cannot be supplied from own company:

Name of proposed subcontractor:

Qualifications or details of competency of the subcontractor:

- 5 I, the undersigned, hereby undertake, if this tender is accepted, to provide, before commencement of the works under the contract, a suitable and sufficiently documented Health and Safety Plan in accordance with Regulation 7(1) of the Construction Regulations, which plan shall be subject to approval by the Client.
- 6 I, the undersigned, confirm that copies of this company's approved Health and Safety Plan, the Client's Safety Specifications as well as the OHSA 1993 Construction Regulations 2014 will be provided on site and will at all times be available for inspection by the Principal Contractor's personnel, the Client's personnel, the Employer's Agent, visitors, and officials and inspectors of the Department of Labour.
- 7 I, the undersigned, hereby confirm that adequate provision has been made in the tendered rates and prices in the Bill of Quantities to cover the cost of all resources, actions, training and all health and safety measures envisaged in the OHSA 1993 Construction Regulations 2014, and that I will be liable for any penalties that may be applied by the Client in terms of the said Regulations (Regulation 33) for failure on the Principal Contractor's part to comply with the provisions of the Act and the Regulations.
- 8 I, the undersigned, agree that failure to complete and execute this declaration to the satisfaction of the Client will mean that this company is unable to comply with the requirements of the OHSA 1993 Construction Regulations (2014) and accept that this tender will be prejudiced and may be rejected at the discretion of the Client.

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct.

NAME (Block Capitals):

Date

SIGNATURE:

T2.2.11 CSD REGISTRATION REPORT

Reference is to be made to **Tender Data: C.2.1.1(b) and C.2.23.**

CSD Registration Reports can be obtained from the National Treasury's CSD website at <https://secure.csd.gov.za/Account/Login>.

The following is an example of the printout obtained from the above website.

Note: the printout will contain more than one page.

 CENTRAL SUPPLIER DATABASE FOR GOVERNMENT	Report Date:	
	Report Ran By:	
CSD REGISTRATION REPORT		
SUPPLIER IDENTIFICATION		
Supplier number		Have Bank Account
Is supplier active?		Total annual turnover
Supplier type		Financial year start date
Supplier sub-type		Registration date
Legal name		Created by
Trading name		Created date
Identification type		Edit by
Government breakdown		Edit date
Business status		Restricted Supplier
Country of origin		Restriction Last Verification Date
South African company/CC registration number		

Tenderers are to include, at the back of their tender submission, a printout of their CSD Registration Report.

Failure to comply will result in the tender offer being deemed non-responsive.

*I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct, **and that the requested documentation has been included in the tender submission.***

NAME (Block Capitals):

Date

SIGNATURE:

T2.2.12 CIDB REGISTRATION AND STATUS

Reference is to be made to the **Tender Data: C.2.1.2, C.2.23, and C.3.13(c)**.

The **Tender Data: C.2.1.1: Eligibility**, requires a Tenderer to be registered, as “Active”, with the CIDB (at time of tender closing), in a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations.

The required class of construction work is specified in the **Tender Data: C.2.1.2**.

CIDB Registrations can be obtained from the CIDB website at:

<https://portal.cidb.org.za/RegisterOfContractors/>

The following is an example of the printout obtained from the above website using the provided “Print” button.

Note: the printout may contain more than one page.

The screenshot shows the CIDB (Construction Industry Development Board) logo at the top left, with the tagline 'DEVELOPMENT THROUGH PARTNERSHIP'. Below the logo is a header section with the text 'construction industry development board'. The main form area is titled 'Contractor Details' and contains several input fields: 'CRS Number', 'Contractor Name *', 'Trading Name', 'Current Contractor Grading Designation', 'Enterprise Status', 'Type of Enterprise', 'Expiry Date', 'Contractor Grades', 'Approved Grade', 'Class of Work Type', and 'Active From'. A 'Print' button is located at the bottom left of the form.

Tenderers are to include, at the back of their tender submission, a printout of their CIDB Registration and Status. The date of obtaining the CIDB Registration and Status printout is to be indicated on the printout and should be on or after the date of advertising of this tender.

Failure to comply will result in the tender offer being deemed non-responsive.

*I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct, **and that the requested documentation has been included in the tender submission.***

NAME (Block Capitals):

Date

SIGNATURE:

T2.2.13 JOINT VENTURES AGREEMENTS

If this tender submission is to be made by an established Joint Venture, the Joint Venture Agreements and Power of Attorney Agreements are to be attached here.

Should the Joint Venture, at the time of submission, not yet be formalised, this form is to be completed in full and signed by all parties to the proposed Joint Venture.

The Lead Partner of the Joint Venture is to sign the **Form of Offer** in Section **C1.1.1**.

INTENT TO FORM A JOINT VENTURE

Should our submission for CONTRACT: **36685-2E** be successful, a Joint Venture will be established by the parties as listed below, as an unincorporated association, with the purposes of securing and executing the Contract, for the benefit of the Members.

Proposed Joint Venture

Joint Venture Title (name):

Represented by (name): Tel:

Lead Partner/ Member 1

Entity Name:

Ownership Interest in JV %: CSD Registration:

CIDB #:

Represented by (name): Signature:

Partner/ Member 2

Entity Name:

Ownership Interest in JV %: CSD Registration:

CIDB #:

Represented by (name): Signature:

Partner/ Member 3

Entity Name:

Ownership Interest in JV %: CSD Registration:

CIDB #:

Represented by (name): Signature:

Note: All requirements for Joint Ventures, as stated elsewhere in this procurement document, must be complied with in full.

T2.2.14 RECORD OF ADDENDA TO TENDER DOCUMENTS

Reference is to be made to the **Tender Data: C.2.6**.

I / We confirm that the following communications received from the Employer or his representative before the date of submission of this tender offer, amending the tender documents, have been taken into account in this tender offer.

ADD.No	DATE	TITLE OR DETAILS
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct.

It is also confirmed that the requirements, as stated on the Addenda, have been complied with.

NAME (Block Capitals):

Date

SIGNATURE:

Refer to Additional Conditions of Tender: T1.2.3.4 for Functionality Points evaluation prompts (if applicable).

Tenderers are to submit copies of signed completion certificates for all projects submitted.

[illegible]

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct.

SIGNATURE:

T2.2.17 PROPOSED ORGANISATION and STAFFING

Refer to Additional Conditions of Tender: T1.2.3.4 for Functionality Points evaluation prompts (if applicable).

The Tenderer should propose the structure and composition of their team i.e. the main disciplines involved, the key staff member / expert responsible for each discipline, and the proposed technical and support staff and site staff.

The roles and responsibilities of each key staff member / expert should be set out as job descriptions. In the case of an association / joint venture / consortium, it should, indicate how the duties and responsibilities are to be shared.

The Tenderer must attach their organization and staffing proposals to this page. (this is to include both the on-site and off-site staffing resources used for this project)

In addition to any lists, this information should also be shown in an organogram format (flow chart) clearly indicating the staff hierarchy and reporting lines, again for on- and off-site resources.

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct.

NAME (Block Capitals):

Date

SIGNATURE:

T2.2.18 KEY PERSONNEL

Refer to Additional Conditions of Tender: T1.2.3.4 for Functionality Points evaluation prompts (if applicable).

The Tenderer shall list below the personnel which he intends to utilize on the Works, including key personnel (Contract's Manager, Site Agent, and Foremen) which may have to be brought in from outside if not available locally.

CATEGORY OF EMPLOYEE	NUMBER OF PERSONS	
	KEY PERSONNEL, PART OF THE CONTRACTOR'S ORGANISATION	KEY PERSONNEL TO BE IMPORTED IF NOT AVAILABLE LOCALLY
Project Managers		
Site Agent,		
Foremen, Quality Control and Safety Personnel		
Technicians, Surveyors, etc		
Artisans and other Skilled workers		
Plant Operators		
Unskilled Workers		
Others:		
..... ...		

Note: CVs of key personnel may be requested during the contract period.

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct.

NAME (Block Capitals): _____

Date

SIGNATURE: _____

T2.2.19 EXPERIENCE OF KEY PERSONNEL

Refer to Additional Conditions of Tender: T1.2.3.4 for Functionality Points evaluation prompts (if applicable).

The experience of assigned staff member in relation to the Scope of Work will be evaluated from three different points of view:

- 1) General experience (total duration of professional activity), level of education and training and positions held of each discipline specific team leader.
- 2) The education, training, skills and experience of the Assigned Staff in the specific sector, field, subject, etc which is directly linked to the scope of work.
- 3) The key staff members' / experts' knowledge of issues which the Tenderer considers pertinent to the project e.g. local conditions, affected communities, legislation, techniques etc.

A CV of the contract manager, site agent(s) and general foreman of not more than 2 pages should be attached to this schedule:

Each CV should be structured under the following headings:

- a) Personal particulars
 - name
 - date and place of birth
 - place (s) of tertiary education and dates associated therewith
 - professional awards
- b) Qualifications (degrees, diplomas, grades of membership of professional societies and professional registrations)
- c) Skills
- d) Name of current employer and position in enterprise
- e) Overview of post-graduate / diploma experience (year, organization and position)
- f) Outline of recent assignments / experience that has a bearing on the scope of work

I, the undersigned, who warrants that they are authorised to sign on behalf of the Tenderer, confirms that the information contained in this form is within my personal knowledge and is to the best of my belief both true and correct.

NAME (Block Capitals):

Date

SIGNATURE:



PART C1: AGREEMENT AND CONTRACT DATA

C1.1: FORM OF OFFER AND ACCEPTANCE

C1.1.1: OFFER

Form of Tender

submitted in terms of the enquiry
by the Principal Agent or Agent

Principal Contract

X

Client ETHEKWINI MUNICIPALITY

Contract No. _____

Description _____

Name of Tenderer _____

Postal Address _____

Tel. _____

Fax. _____

E-Mail _____

VAT Registration No. _____

THE TENDER SUM

1.0 Tenderer's Work (Amount to be inserted by the Tenderer)

2.0 Provisional Sums

3.0 SUB-TOTAL

4.0 Add: V.A.T. (15%) on 3.0

5.0 TOTAL TENDER SUM INCLUSIVE OF V.A.T.

Tender Sum in Words: _____

The Tenderer selects:

Preliminaries
Payment:

Alternative A

☐

Adjustment:

Alternative A

☐

Security: Fixed Construction Guarantee

☐

Alternative B

☐

Alternative B

☐

10% Retention

☐

Not Applicable

☐

Not Applicable

☐

Thus done and signed at _____

on _____

for and on behalf of the Tenderer who by signature hereof warrants authorisation hereto

**FAILURE OF A TENDERER TO SIGN AND FULLY COMPLETE THIS FORM OF TENDER WILL RENDER
THIS TENDER UNRESPONSIVE AND THE TENDERER WILL THEREFORE BE DISQUALIFIED**

C1.1: FORM OF OFFER AND ACCEPTANCE

C1.1.2: FORM OF ACCEPTANCE

This Form will be completed by the Employer

By signing this part of the Form of Offer and Acceptance, the Employer identified below accepts the Tenderer's Offer. In consideration thereof, the Employer shall pay the Contractor the amount due in accordance with the Conditions of Contract identified in the Contract Data. Acceptance of the Tenderer's Offer shall form an agreement between the Employer and the Tenderer upon the terms and conditions contained in this Agreement and in the Contract that is the subject of this Agreement.

The terms of the contract are contained in:

- Part C1 : Agreement and Contract Data, (which includes this Agreement)
- Part C2 : Pricing Data, including the Bill of Quantities
- Part C3 : Scope of Work
- Part C4 : Site Information

and the schedules, forms, drawings and documents or parts thereof, which may be incorporated by reference into Parts C1 to C4 above.

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Tender Schedules as well as any changes to the terms of the Offer agreed by the Tenderer and the Employer during this process of offer and acceptance, are contained in the Schedule of Deviations attached to and forming part of this Agreement. No amendments to or deviations from said documents are valid unless contained in this Schedule, which must be duly signed by the authorised representatives of both parties.

The Tenderer shall within two weeks after receiving a completed copy of this Agreement, including the Schedule of Deviations (if any), contact the Employer's agent (whose details are given in the Contract Data) to arrange the delivery of any bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the Conditions of Contract identified in the Contract Data at, or just after, the date this Agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this Agreement.

Notwithstanding anything contained herein, this Agreement comes into effect on the date when the Tenderer receives one fully completed original copy of this document, including the Schedule of Deviations (if any). Unless the Tenderer (now Contractor) within five days of the date of such receipt notifies the Employer in writing of any reason why he cannot accept the contents of this Agreement, this Agreement shall constitute a binding contract between the parties.

Signature (*person authorized to sign the acceptance*) :

Name (*of signatory in capitals*) :

Capacity (*of Signatory*) :

Name of Employer (*organisation*) :

Address :

:

Witness:

Signature : **Date** :

Name(*in capitals*) : :

C1.1: FORM OF OFFER AND ACCEPTANCE
C1.1.3: SCHEDULE OF DEVIATIONS

This form will be completed by THE EMPLOYER and ONLY THE SUCCESSFUL TENDERER

1. **Subject** :
- Details** :
- :
2. **Subject** :
- Details** :
- :
3. **Subject** :
- Details** :
- :

By the duly authorised representatives signing this Schedule of Deviations, the Employer and the Tenderer agree to and accept the foregoing Schedule of Deviations as the only deviations from and amendments to the documents listed in the Tender Data and addenda thereto as listed in the Tender Schedules, as well as any confirmation, clarification or change to the terms of the offer agreed by the Tenderer and the Employer during this process of offer and acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the tender documents and the receipt by the Tenderer of a completed signed copy of this Agreement shall have any meaning or effect in the contract between the parties arising from this Agreement.

FOR THE TENDERER

FOR THE EMPLOYER

.....	Signature	
.....	Name (<i>in capitals</i>)	
.....	Capacity	
.....	Name and Address of	
.....	Organisation	
.....		
.....		
.....	Witness Signature	
.....	Witness Name	
.....	Date	

C1.2: CONTRACT DATA

C1.2.1 CONDITIONS OF CONTRACT

JBCC PRINCIPAL BUILDING AGREEMENT (EDITION 6.2 OF MAY 2018)

This Contract will be based on the “JBCC Principal Building Agreement (May 2018 edition 6.2)” prepared by the Joint Building Contracts Committee.

Copies may be obtained from the Association of South African Quantity Surveyors (011 315 4140, 021 462 6431), Master Builders Association (011 205 9000; 021 685 2625) South African Association of Consulting Engineers (011 463 2022) or South African Institute of Architects (011 486 0684; 021 424 7128)

The Contract Data is the JBCC Principal Building Agreement - Contract Data for Organs of State and other Public Sector Bodies, Edition 6.2 May 2018. This document is obtainable separately from the JBCC and Tenderers shall obtain their own copies.

The Errata listed under the Table of Contents on page 3 of the JBCC Principal Building Agreement are deemed to be included in the agreement.

The JBCC Principal Building Agreement makes several references to the Contract Data for specific data, which together with these conditions collectively describe the risks, liabilities and obligations of the contracting parties and the procedures for the administration of the Contract. The Contract Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the JBCC Principal Building Agreement.

The JBCC Principal Building Agreement contract data form an integral part of this agreement.

DATA PROVIDED BY THE EMPLOYER

The Contract Data hereafter are the requirements applicable to the project and the variables referred to in the Principal Building Agreement provided for tender purposes.

The Contract Data, Preliminaries and related Notes, contained hereunder, (including variations and additions) shall amplify, modify or supersede, as the case may be, the JBCC 2000, to the extent specified below, and shall take precedence and shall govern.

C1.2.2 CONTRACT DATA

C1.2.2.1 DATA TO BE PROVIDED BY THE EMPLOYER

A PROJECT INFORMATION

A 1.0 Works [1.1]

Project name	To be made available as and when required.
Reference number	
Works description	To be made available as and when required.

A 2.0 Site [1.1]

Erf / stand number	
Township / Suburb	
Site address	
Local authority	eThekweni Metropolitan Municipality

A 3.0 Employer [1.1]

Official Name of Organ of State / Public Sector Body	eThekweni Metropolitan Municipality		
Business registration number	N/A		
VAT/GST number	N/A		
Country	South Africa		
Employer's representative: Name	Willie Mothowamodimo		
E-mail	Willie.mothowamodimo@durban.gov.za	Telephone number	031 311 7424
Mobile number			
Postal address	P.O. Box 1548, Durban		
		Postal code	
Physical address	166 KE Masinga Road, Durban, 4001		
		Postal code	4000

A 4.0 Principal agent [1.1]

Name			
Legal entity of above		Contact person	
Practice number		Telephone number	
		Mobile number	
Country		E-mail	
Postal address			
		Postal code	
Physical address			
		Postal code	

A 5.0 Agent [1.1; 6.2]

URBAN DESIGN

Name			
Legal entity of above		Contact person	
Practice number		Telephone number	
		Mobile number	
Country		E-mail	
Postal address			
		Postal code	
Physical address			
		Postal code	

A 6.0 Agent [1.1; 6.2]

LANDSCAPE ARCHITECTURE

Name			
Legal entity of above		Contact person	
Practice number		Telephone number	
		Mobile number	
Country		E-mail	
Postal address			
		Postal code	
Physical address			
		Postal code	

A 7.0 Agent [1.1; 6.2]

TOWN PLANNING

Name			
Legal entity of above		Contact person	
Practice number		Telephone number	
		Mobile number	
Country		E-mail	
Postal address			
		Postal code	
Physical address			
		Postal code	

A 8.0 Agent [1.1; 6.2] ARCHITECTURE

Name			
Legal entity of above		Contact person	
Practice number		Telephone number	
		Mobile number	
Country		E-mail	
Postal address			
		Postal code	
Physical address			
		Postal code	

A 9.0 Agent [1.1; 6.2] QUANTITY SURVEYOR

Name			
Legal entity of above		Contact person	
Practice number		Telephone number	
		Mobile number	
Country		E-mail	
Postal address			
		Postal code	
Physical address			
		Postal code	

A 10.0 Agent [1.1; 6.2] CIVIL & STRUCTURAL ENGINEERING

Name			
Legal entity of above		Contact person	
Practice number		Telephone number	
		Mobile number	
Country		E-mail	
Postal address			
		Postal code	
Physical address			
		Postal code	

A 11.0 Agent [1.1; 6.2] ELECTRICAL ENGINEERING

Name			
Legal entity of above		Contact person	
Practice number		Telephone number	
		Mobile number	
Country		E-mail	
Postal address			
		Postal code	
Physical address			
		Postal code	

A 12.0 Agent [1.1; 6.2]

MECHANICAL ENGINEERING

Name			
Legal entity of above		Contact person	
Practice number		Telephone number	
		Mobile number	
Country		E-mail	
Postal address			
		Postal code	
Physical address			
		Postal code	

B CONTRACT INFORMATION

B 1.0 Definitions [1.1]

Bills of quantities: System/Method of measurement	Seventh Edition 2015 of the Standard System of Measuring Builder's Work
---	---

B 2.0 Law, regulations and notices [2.0]

Law applicable to the works, state country [2.1]	South Africa
--	--------------

B 3.0 Offer and acceptance [3.0]

Currency applicable to this agreement [3.2]	ZAR
---	-----

B 4.0 Documents [5.0]

The original signed agreement is to be held by the principal agent [5.2], if not, indicate by whom	Employer
Number of copies of construction information issued to the contractor at no cost [5.6]	

Documents comprising the agreement	Page numbers
The JBCC® Principal Building Agreement, Edition 6.2 May 2018	1 to 30
The JBCC® Principal Building Agreement - Contract Data for Organs of State and other Public Sector Bodies, Edition 6.2 May 2018	1 to 14
The JBCC® General Preliminaries for use with the JBCC® Principal Building Agreement, Edition 6.2 May 2018	1 to 7
Bills of Quantities	

Contract drawings – description	Number	Revision	Date

B 5.0 Employer's agents [6.0]

Authority is delegated to the following agents to issue contract instructions and perform duties for specific aspects of the works [6.2]

Principal Agent [6.1, 6.2]

Delegations to other agents will be confirmed in writing during contract execution [6.2]

Principal agent's and agents' interest or involvement in the works other than a professional interest [6.3]

B 6.0 Insurances [10.0]

Insurances by contractor			Amount including tax	Deductible amount including tax
Yes/no?	YES			
	New works [10.1.1] (contract sum or amount)		Contract sum+30%	With a deductible to be determined by the insurance company issuing the policy
or	Works with practical completion in sections [10.2] (contract sum or amount)		Contract sum+30%	With a deductible to be determined by the insurance company issuing the policy
or	Works with alterations and additions [10.3] (reinstatement value of existing structures with or including new works)			
	Direct contractors [10.1.1; 10.2] where applicable, to be included in the contract works insurance			
	Free issue [10.1.1; 10.2] where applicable, to be included in the contract works insurance			
	Escalation, professional fees and reinstatement costs if not included above			
Total of the above contract works insurance amount				
Supplementary insurance [10.1.2]			Contract sum+30%	With a deductible to be determined by the insurance company issuing the policy
Public liability insurance [10.1.3]			R10 million	With a deductible to be determined by the insurance company issuing the policy
Removal of lateral support insurance [10.1.4]				
Other insurances [10.1.5]: Refer B17.0				
Yes/no?	Yes	If yes, description 1		
Hi Risk Insurance [10.1.5.1]				

Yes/no?		If yes, description 2		

B 7.0 Obligations of the employer [12.1]

Existing premises will be in use and occupied [12.1.2]	Yes/no?	
If yes, description		
Restriction of working hours [12.1.2]	Yes/no?	
If yes, description		
Natural features and known services to be preserved by the contractor [12.1.3]	Yes/no?	
If yes, description		
Restrictions to the site or areas that the contractor may not occupy [12.1.4]	Yes/no?	
If yes, description		
Supply of free issue [12.1.10]	Yes/no?	
If yes, description		

B 8.0 Nominated subcontractors [14.0]

Yes/no?		If yes, description of specialisation
Specialisation 1		
Specialisation 2		
Specialisation 3		
Specialisation 4		
Specialisation 5		

B 9.0 Selected subcontractors [15.0]

Yes/no?		If yes, description of specialisation
Specialisation 1		
Specialisation 2		
Specialisation 3		
Specialisation 4		
Specialisation 5		

B 10.0 Direct contractors [16.0]

Yes/no?		If yes, description of extent of work

B 11.0 Description of sections [20.1]

Section 1	
Section 2	
Section 3	
Section 4	
Section 5	
Section 6	
Section	Remainder of the works

B 12.0 Possession of site [12.1.5], practical completion [19.0; 20.0] and penalty [24.0]

Practical completion for the works as a whole	Intended date of possession of the site Refer B17.0 [12.1.5; 12.2.22]	Period for inspection by the principal agent [19.3]	The date for practical completion shall be the period as indicated below from the date of possession of the site by the contractor [12.2.7; 24.1]	Penalty for late completion [24.1]
		working days	Period in months	Penalty amount per calendar day

or where **sections** are applicable

Practical completion of a section of the works	Intended date of possession of a section Refer B17.0 [12.1.5; 12.2.22]	Period for inspection by the principal agent [19.3]	The date for practical completion shall be the period as indicated below from the date of possession of the site by the contractor [12.2.7; 24.1]	Penalty for late completion [24.1]
		working days	Period in months	Penalty amount per calendar day
Section 1				
Section 2				
Section 3				
Section 4				
Section 5				
Section 6				
Section 7				
Section 8				
Remainder of the works				

Criteria to achieve practical completion not covered in the definition of practical completion

B 13.0 Defects liability period [21.0]

Extended defects liability period: Refer B17.0 [21.13]	Yes/no?	
If yes, description of applicable elements	eg: Electrical reticulation / Air conditioning system / Landscaping 13.1 13.2 13.3 13.4 13.5 13.6	

B 14.0 Payment [25.0]

Date of month for issue of regular payment certificates [25.2]	TBC		
Contract price adjustment / Cost fluctuations [25.3.4; 26.9.5]	Yes/no?	YES	
If yes, method to calculate	CPAP		
Employer shall pay the contractor within: [25.10]	Fourteen (14) calendar days		

B 15.0 Dispute resolution [30.0]

Adjudication [30.6.1; 30.10]			
Name of nominating body			
Applicable rules for adjudication [30.6.2]			
Arbitration [30.7.4; 30.10]	Yes/no? *	YES	
If Yes, name of nominating body	Association of Arbitrators (South Africa)		
* If No, then dispute will be referred to litigation			
Applicable rules for arbitration [30.7.5]			

B 16.0 JBCC® General Preliminaries - selections

Provisional bills of quantities [P2.2]		Yes/no?		
Availability of construction information [P2.3]		Yes/no?		
Previous work - dimensional accuracy - details of previous contract(s) [P3.1]				
Previous work - defects - details of previous contract(s) [P3.2]				
Inspection of adjoining properties - details [P3.3]				
Handover of site in stages - specific requirements [P4.1]				
Enclosure of the works - specific requirements [P4.2]				
Geotechnical and other investigations - specific requirements [P4.3]				
Existing premises occupied - details [P4.5]				
Services - known - specific requirements [P4.6]				
Water [P8.1]	By contractor	Yes/no?	Yes	
	By employer	Yes/no?	No	
	By employer – metered	Yes/no?		
Electricity [P8.2]	By contractor	Yes/no?	Yes	
	By employer	Yes/no?	No	
	By employer – metered	Yes/no?		
Ablution and welfare facilities [P8.3]	By contractor	Yes/no?	Yes	
	By employer	Yes/no?	No	
Communication facilities - specific requirements [P8.4]				
Protection of the works - specific requirements [P11.1]				
Protection / isolation of existing works and works occupied in sections - specific requirements [P11.2]				
Disturbance - specific requirements [P11.5]				
Environmental disturbance - specific requirements [P11.6]				

B 17.0 Changes made to JBCC® documentation

1.1 Definitions

AGREEMENT: The completed Form of Offer and Acceptance, the completed **JBCC®** Principal Building Agreement and **JBCC® contract data for organs of state and other public sector bodies**, the **contract drawings**, the **priced document** and any other documents reduced to writing and signed by the authorized representatives of the **parties**

CONSTRUCTION PERIOD: The period commencing on the date of possession of the **site** by the **contractor** and ending on the date of **practical completion**

CONTRACT DATA FOR ORGANS OF STATE AND OTHER PUBLIC SECTOR BODIES: The document listing the Organs of State and other Public Sector Bodies' requirements and the project specific information

INTEREST: The interest rates applicable on this contract, whether specifically indicated in the relevant clauses or not, will be the rate as determined by the Minister of Finance from time to time, in terms of section 80(1)(b) of the Public Finance Management Act, 1999 (Act No 1 of 1999), calculated as simple interest, in respect of debts owing to the State, and will be the rate as determined by the Minister of Justice and Constitutional Development from time to time, in terms of section 1(2) of the Prescribed Rate of Interest Act, 1975 (Act No 55 of 1975), calculated as simple interest, in respect of debts owing by the State

PRINCIPAL AGENT: The person or entity appointed by the **employer** and named in the **contract data for organs of state and other public sector bodies**. In the event of a **principal agent** not being appointed, then all the duties and obligations of a **principal agent** as detailed in the **agreement** shall be fulfilled by the employer's representative as named in the **contract data for organs of state and other public sector bodies**

3.0 OFFER AND ACCEPTANCE

Amend 3.3 to read as follows:

This **agreement** shall come into force on the date as stated on the Form of Offer and Acceptance and continue to be of force and effect until the end of the **latent defects'** liability period [22.0] notwithstanding termination [29.0] or the certification of **final completion** [21.0] and final payment [25.0]

6.0 EMPLOYER'S AGENTS

Add the following as 6.7:

In terms of the clauses listed hereunder, the **employer** has retained its authority and has not given a mandate to the **principal agent**. The **employer** shall sign all documents in relation to clauses 4.2, 14.1.2, 14.1.4, 14.4.1, 14.6, 23.1, 23.2, 23.3, 23.7, 23.8, 26.1, 26.7, 26.12 and 28.4

9.0 INDEMNITIES

9.2.7: Add the following to the end of the first sentence: "... due to no fault of the **contractor**"

10.0 INSURANCES

Add the following as 10.1.5.1:

Hi RISK INSURANCE

In the event of the project being executed in a geological area classified as a "High Risk Area", that is an area which is subject to highly unstable sub-surface conditions that might result in catastrophic ground movement evident by sinkhole or doline formation the following will apply:

10.1.5.1.1 DAMAGE TO THE WORKS

The contractor shall, from the date of possession of the **site** until the date of the **certificate of practical completion**, bear the full risk of and hereby indemnifies and holds harmless the **employer** against any damage to and/or destruction of the **works** consequent upon a catastrophic ground movement as mentioned above. The **contractor** shall take such precautions and security measures and other steps for the protection of the **works** as he may deem necessary

When so instructed to do so by the **principal agent**, the **contractor** shall proceed immediately to remove and/or dispose of any debris arising from damage to or destruction of the **works** and to rebuild, restore, replace and/or repair the **works**, at the **contractor's** own costs

10.1.5.1.2 INJURY TO PERSONS OR LOSS OF OR DAMAGE TO PROPERTY

The **contractor** shall be liable for and hereby indemnifies and holds harmless the **employer** against any liability, loss, claim or proceeding arising at any time during the period of the contract whether arising in common law or by statute, consequent upon personal injuries to or the death of any person whomsoever resulting from, arising out of or caused by a catastrophic ground movement as mentioned above

The **contractor** shall be liable for and hereby indemnifies the **employer** against any and all liability, loss, claim or proceeding consequent upon loss of or damage to any moveable, or immovable property, or personal property, or property contiguous to the **site**, whether belonging to or under the control of the **employer** or any other body or person whomsoever arising out of or caused by a catastrophic ground movement, as mentioned above, which occurred during the period of the contract

10.1.5.1.3

It is the responsibility of the **contractor** to ensure that he has adequate insurance to cover his risk and liability as mentioned in 10.1.5.1.1 and 10.1.5.1.2. Without limiting the **contractor's** obligations in terms of the contract, the **contractor** shall, within twenty-one (21) **calendar days** of the date of possession of the site, but before commencement of the **works**, submit to the **employer** proof of such insurance policy, if requested to do so

10.1.5.1.4

The **employer** shall be entitled to recover any and all losses and/or damages of whatever nature suffered or incurred consequent upon the **contractor's** default of his obligations as set out in 10.1.5.1.1;

10.1.5.1.2 and 10.1.5.1.3. Such losses or damages may be recovered from the **contractor** or by deducting the same from any amounts still due under this contract or under any other contract presently or hereafter existing between the **employer** and the **contractor** and for this purpose all these contracts shall be considered one indivisible whole

11.0 SECURITIES

Amend 11.10 to read as follows:

There shall be no lien or right of retention held by any **contractor** in respect of the **works** executed on **site**

12.0 Obligations of the Parties

Amend 12.1.5 to read as follows:

Give possession of the **site** to the **contractor** within ten (10) **working days** of the **contractor** complying with the terms of 12.2.22

12.2.2: Not applicable

Add the following as 12.2.22:

Within fifteen (15) **working days** of the date of the **agreement** submit to the **principal agent** an acceptable health and safety plan, required in terms of the Occupational Health and Safety Act, 1993 (Act No 85 of 1993)

19.0 PRACTICAL COMPLETION

19.5: Delete the words "subject to the **contractor's** lien or right of continuing possession of the **works**

where this has not been waived"

21.0 DEFECTS LIABILITY PERIOD AND FINAL COMPLETION

Add the following as 21.13:

The ninety (90) **working days** defects liability period for the **works** [21.1] is replaced with a period of three hundred and sixty-five (365) **calendar days** in respect of the listed applicable elements

25.0 PAYMENT

25.7.5: Not applicable

25.10: Delete the words "and/or **compensatory interest**"

25.14: Change the **notice** period from five (5) **working days** to ten (10) **working days** in order to lineup with the **notice** period in 28.1

25.14.2: Not applicable

27.0 RECOVERY OF EXPENSE AND/OR LOSS

27.1.5: Not applicable

29.0 TERMINATION

Add the following after 29.1.3:

or where ...

29.1.4 : The **contractor's** estate has been sequestrated, liquidated or surrendered in terms of the insolvency laws in force within the Republic of South Africa

29.1.5 : The **contractor** has engaged in corrupt or fraudulent practices in competing for or in executing the contract

C TENDERER'S SELECTIONS

C 1.0 Securities [11.0]

Guarantee for construction: Select Option B or C

☐

Option A	Guarantee for construction (variable) by contractor [11.1.1] (Not Applicable- SCM Policy clause 20.3)
Option B	Guarantee for construction (fixed) by contractor [11.1.2]
Option C	Retention
Guarantee for payment by employer [11.5.1; 11.10]	Not applicable
Advance payment, subject to a guarantee for advance payment [11.2.2; 11.3]	Not applicable

C 2.0 Contractor's annual holiday periods during the construction period

Year 1 contractor's annual holiday period	start date		end date	
Year 2 contractor's annual holiday period	start date		end date	
Year 3 contractor's annual holiday period	start date	TBC	end date	

C 3.0 Payment of preliminaries [25.0]

Contractor's selection

Select Option A or B ☐ B

Where the **contractor** does not select an option, Option A shall apply

Payment methods

Option A	The preliminaries shall be paid in accordance with an amount prorated to the value of the work executed in the same ratio as the amount of the preliminaries to the contract sum , which contract sum shall exclude the amount of preliminaries . Contingency sum(s) and any provision for cost fluctuations shall be excluded for the calculation of the aforesaid ratio
Option B	The preliminaries shall be paid in accordance with an amount agreed by the principal agent and the contractor in terms of the priced document to identify an initial establishment charge, a time-related charge and a final dis-establishment charge. Payment of the time-related charges shall be assessed by the principal agent and adjusted from time to time as may be necessary. to take into account the rate of progress of the works

Lump sum contract

Where the amount of **preliminaries** is not provided it shall be taken as 7.5% (seven and a half per cent) of the

contract sum, excluding contingency sum(s) and any provision for cost fluctuations

C 4.0 Adjustment of preliminaries [26.9.4]

Contractor's selection

Select Option A or B ☐

Where the **contractor** does not select an option, Option A shall apply

Provision of particulars

The **contractor** shall provide the particulars for the purpose of the adjustment of **preliminaries** in terms of his selection. Where completion in **sections** is required, the **contractor** shall provide an apportionment of **preliminaries** per **section**

Option A	An allocation of the preliminaries amounts into Fixed, Value-related and Time-related amounts as defined for adjustment method Option A below, within fifteen (15) working days of the date of acceptance of the tender
Option B	A detailed breakdown of the preliminaries amounts within fifteen (15) working days of possession of the site . Such breakdown shall include, inter alia, the administrative and supervisory staff, the use of construction equipment , establishment and dis-establishment charges, insurances and guarantees, all in terms of the programme

Adjustment methods

The amount of **preliminaries** shall be adjusted to take account of the effect which changes in time and/or value have on **preliminaries**. Such adjustment shall be based on the particulars provided by the **contractor** for this purpose in terms of Options A or B, shall preclude any further adjustment of the amount of **preliminaries** and shall apply notwithstanding the actual employment of resources by the **contractor** in the execution of the **works**

Option A	The preliminaries shall be adjusted in accordance with the allocation of preliminaries amounts provided by the contractor, apportioned to sections where completion in sections is required. Fixed - An amount which shall not be varied. Value-related - An amount varied in proportion to the contract value as compared to the contract sum. Both the contract sum, and the contract value shall exclude the amount of preliminaries, contingency sum(s) and any provision for cost fluctuations Time-related - An amount varied in proportion to the number of calendar days extension to the date of practical completion to which the contractor is entitled with an adjustment of the contract value [23.2; 23.3] as compared to the number of calendar days in the initial construction period [26.9.4]
Option B	The adjustment of preliminaries shall be based on the number of calendar days extension to the date of practical completion to which the contractor is entitled with an adjustment of the contract value [23.2; 23.3] as compared to the number of calendar days in the initial construction period [26.9.4]

The adjustment shall take into account the resources as set out in the detailed breakdown of the **preliminaries** for the period of construction during which the delay occurred

Failure to provide particulars within the period stated

Option A	Where the allocation of preliminaries amounts for Option A is not provided, the following allocation of preliminaries amounts shall apply: Fixed - Ten per cent (10%) Value-related - Fifteen per cent (15%) Time-related - Seventy-five per cent (75%) Where the apportionment of the preliminaries per section is not provided, the categorized amounts shall be prorated to the cost of each section within the contract sum as determined by the principal agent
Option B	Where the detailed breakdown of preliminaries amounts for Option B is not provided, Option A shall apply

Lump sum contract

Where the amount of **preliminaries** is not provided it shall be taken as 7.5% (seven and a half per cent) of the **contract**.

C1.2.3 ADDITIONAL CONDITIONS OF CONTRACT

C1.2.3.1 COMMUNITY LIAISON OFFICER

The Ward Councillor(s) in whose ward(s) work is to be done will, collectively, identify a community liaison officer (CLO) for the project and make the person known to the Contractor within two days of being requested to do so. The selected CLO shall be accountable to the Contractor. The Contractor will be required to enter a written contract with the CLO that specifies:

- The hours of work and the wage rate of the CLO (200% of the Civil Engineering Industry minimum wage). **The maximum hours of work per day is eight hours. No payment will be made for public holidays and weekends.**
- The duration of the appointment.
- The duties to be undertaken by the CLO which could include:
 - Assisting in all respects relating to the recruitment of local labour.
 - Acting as a source of information for the community and councillors on issues related to the contract.
 - Keeping the Contractor advised on community issues and issues pertaining to local security.
 - Assisting in setting up any meetings or negotiations with affected parties.
 - Keeping a written record of any labour or community issue that may arise.
 - Any other duties that may be required by the Contractor.

Responsibility for the identification of a pool of suitable labour shall rest with the CLO, although the Contractor shall have the right to choose from that pool. The Contractor shall have the right to determine the total number labourers required at any one time and this may vary during the contract. The Contractor shall have the right to replace labour that is not performing adequately. Should such occasion arise, it must be done in conjunction with the CLO.

The primary role of the CLOs shall be liaison and facilitation of communication. This could include inter alia:

- assisting in all aspects related to the recruitment of local labour, and advise them of their rights
 - acting as a source of information for the community and Councillors on issues related to the contract
 - keeping the contractor advised on community issues
 - keeping the contractor advised on any issues pertaining to local security
 - assisting in setting up any meetings/ negotiations with affected parties
 - keeping a site diary and recording details of any labour/community issues that may arise
 - monitoring and reporting on general Health & Safety issues on site
 - assisting in HIV/AIDS awareness programmes
- it must be noted that the CLO has no authority to issue any instructions to the Contractor

The CLO needs to be seen as neutral by all parties and should therefore endeavour not to take sides should a conflict arise. Should the CLO function not involve a full day's work, the CLO will be expected to undertake other work allocated by the Contractor for the balance of each day.

The minimum skills for a CLO shall include:

- An ability to work with others
- An ability to communicate in Zulu and English
- An ability to communicate in writing
- Sound Interpersonal skills

Previous experience in community facilitation, and knowledge of construction work and relevant labour legislation would be an advantage.

Payment: The CLO will be reimbursed from the Budgetary Allowance Section of the Bill of Quantities. A budgetary allowance has been made for the CLO in this Bills of

Quantities/Specification under the Section – Budgetary Allowances.

C1.2.3.2 EMPLOYMENT OF LOCAL LABOUR

It is a condition of contract that the contractor will be required to employ local labour as specified in eThekweni Council Policy “The use of CLOs and Local Labour”. The contractor will be required to ensure that a minimum of 50% of the labour force is made up of local labour. For the purposes of this contract, “Local labour” will be deemed to be any persons who reside within the Ward in which the contract is being undertaken. The Contractor will be required to provide proof of authenticity of local labour. Signed confirmation by the appointed CLO (or Ward Councillor/s) will suffice for this.

No additional costs will be entertained due to this Particular Specification. The contractor will remain responsible for providing proper supervision of all labour and will be responsible for the quality of work produced.

Local labour shall be paid in accordance with the Civil Engineering Industry minimum wage rate. (See www.labour.gov.za or www.safcec.co.za), and all statutory conditions of employment shall be met.

C1.2.3.3 SUBCONTRACTING ECONOMIC TRANSFORMATION SPECIFICATION AS PER SPECIFICS OF TASK ORDERS:

It is a Condition of Contract that the Contractor shall achieve the subcontracting through the engagement of targeted enterprises in accordance with the CIDB Standard for Indirect Targeting for Enterprise Development through Construction Works Contracts, published in Gazette Notice No. 36190 of 25 February 2013. For each Task Order with a value exceeding R2 million (excluding Provisional Sum Items and Fixed Cost Allowances), the Contractor shall subcontract a minimum of twenty percent (20%) of the value of the Task Order to Exempted Micro Enterprises (EMEs) and/or Qualifying Small Enterprises (QSEs) which are at least one hundred percent (100%) black owned. For each Task Order with a value exceeding R6 million (excluding Provisional Sum Items and Fixed Cost Allowances), the Contractor shall achieve a minimum overall subcontracting contribution of thirty percent (30%) of the value of the Task Order through the engagement of qualifying targeted enterprises.

Subcontractors utilised to meet the Contract Participation Goal requirements shall comply with the subcontractor eligibility and selection requirements contained elsewhere in this Contract and shall possess a CIDB grading designation appropriate to the nature, complexity and value of the subcontracted works. The Contractor shall conclude all subcontract agreements and submit copies thereof to the Employer prior to Site Handover and commencement of the Works. The Contractor shall maintain complete records of all subcontracting arrangements and payments made to targeted enterprises and shall provide such records to the Employer upon request. Proof of payment to subcontractors shall be submitted as evidence of compliance with the Contract Participation Goal requirements.

Subcontractors shall, in the first instance, be sourced from qualifying enterprises residing, operating or based within the ward or wards in which the services associated with the relevant Task Order are to be rendered, in accordance with the Municipality's Contractor Participation Goal strategy. Where suitable subcontractors are not available within the affected ward or wards, the Contractor may, subject to the prior written approval of the Employer, source subcontractors from adjacent wards and thereafter from other wards within the eThekweni Municipal Area. The Employer may require the submission of supporting documentation, including but not limited to: Subcontract agreements; Invoices; Proof of payment; CSD registration details; CIDB registration details; B-BBEE affidavits or certificates; and Any other documentation reasonably required to verify compliance.

For guidance, 1SH subcontractors may be utilized for planting works, horticultural maintenance, environmental rehabilitation and labor-intensive landscape works, whilst 2SH or higher subcontractors shall be utilized for irrigation installations, landscape construction, public realm infrastructure and other specialized implementation works.

SUBCONTRACTING PENALTY:

Subcontracting compliance shall be evaluated on a quarterly basis, on All Task Orders issued. Failure to achieve the required subcontracting shall constitute non-compliance with the Conditions of Contract and may result in the withholding of certification, withholding of payment, suspension of further Task Order allocations, or the application of any other contractual remedy available to the Employer including a subcontracting penalty. The penalty for not achieving the specified subcontracting, over the quarter, will be 0.5% of the cumulative Task Order values (excluding Provisional Sum items and Fixed Cost allowances) for every 1% of subcontracting not achieved – and levied against future Task Order Payments.

C1.2.3.4 FTE (Full Time Equivalent) EMPLOYMENT INFORMATION

It is a condition of contract that the Contractor supplies the Employer's Agent's Representative with information in respect of the employment of all foremen, artisans and Labour (skilled and unskilled) employed to work on this contract. The information required is:

- Initials (per ID doc)
- Last Name (per ID doc)
- ID Number
- Disability (y / n)
- Education Level

Level 1 Unknown	Level 2 No Schooling	Level 3 Grade 1-3	Level 4 Grade 4	Level 5 Grade 5-6
Level 6 Grade 7-8	Level 7 Grade 9	Level 8 Grade 10-11	Level 9 Grade 12	Level 10 Post Matric
Category A: Employed as Local Labour for this contract only Category B: Temporarily employed by the Contractor Category C: Permanently employed by the Contractor				

- Category of Employment

In addition, the following information is required in respect of each person listed above, on a monthly basis:

- Number of days worked during the month;
- Daily wage rate;
- Number of training days during the month.

The information is to be forwarded in a format acceptable to the Employer's Agent's Representative, but preferably in the form of an emailed EXCEL file (an original file, to be used as a template, will be issued to the Contractor). Contractors without computer facilities will be required to submit a hard copy of the information in a format as agreed to between the Contractor and the Employer's Agent's Representative.

In addition to the tax invoice, to be submitted by the Contractor with his monthly statement, mentioned in Clause 25 of JBCC Principal Building Agreement May 2018 Edition, the Employer reserves the right to withhold payment until the monthly FTE information has been forwarded to the Employer's Agent's Representative. No additional payment for complying with the above will be made and the Contractor is to make allowance for complying through the time related P & G items (sum) under Part AA: Preliminaries, of the Bill of Quantities.

C1.2.3.5 PERFORMANCE MONITORING OF SERVICE PROVIDERS

[For contract awards over R10m] The Contractor shall be subjected to “Performance Monitoring” assessments in terms of the applicable Section (S.53) of the Employer’s Supply Chain Management Policy.

Key Performance Indicators (KPIs) are specified in the C3: Scope of Works, or will be discussed and agreed with the Contractor before commencement of the contract.

C1.2.3.6 SYSTEM OF MEASUREMENT

These Bills of Quantities, unless otherwise stated, shall be deemed to have been prepared in accordance with the SEVENTH EDITION of the Standard System of Measuring Builders’ Work issued by the Association of South African Quantity Surveyors.

C1.2.3.7 CONTRACT PRICE ADJUSTMENT PROVISIONS

The Schedule of Rates shall remain fixed for the first twelve (12) months of the Contract. Thereafter, the Schedule of Rates shall be adjusted annually based on the percentage change in the CPAP Work Group 180 Index, or any successor index approved by the Employer. The adjusted rates shall apply only to Task Orders issued after the effective date of the adjustment.

C1.2.3.8 APPLICATIONS FOR SERVICE CONNECTIONS

The Contractor is to be responsible for all timeous applications for service connections, including electricity, water, sewerage, etc. The Department is responsible for payment of these connection fees, where Departmental Sums have been included in the Tender Summary.

C1.2.3.9 MARKET RELATED WAGE RATES

When pricing this document, Tenderers are to allow for wages which are not less than the BCCEI recommended minimum rates applicable at any time during the duration of the contract.

C1.2.3.10 TENDER PRICES AND CONTINGENCY SUM:

All Tenders are to be firmly priced in South African currency.

C1.2.3.11 VALUE-ADDED TAX (VAT):

All prices and or rates tendered shall be deemed to be EXCLUSIVE of Value-Added Tax. Value-Added Tax shall be added as a lump sum where provided on the SUMMARY/ FINAL SUMMARY page and as shown in the Tender Form.

Tenderers shall state, where provided on the Tender Form, their VAT Registration Number.

C1.2.3.12 OCCUPATIONAL HEALTH AND SAFETY ACT:

The Contractor’s particular attention is drawn to the Occupational Health & Safety Specification which is an Annexure of this document. The Contractor will be required to submit with his tender an Occupational Health & Safety Plan for this project indicating what steps he is going to take to comply with this Occupational Health & Safety Specification and indeed that he has made allowance for compliance with this document within his Tender Price. Failure to do so will render his Tender liable for disqualification.

The principal health and safety risks involved may include:

- Cutting of paving bricks using a grinder

- Excavation works – Deep excavations
- Working with heights
- Use of hazardous or chemical material in the garden
- Lifting and carrying of heavy material or objects
- Moving of plant or machinery

C1.2.3.13 CONTRACTOR'S DOMESTIC SUBCONTRACTORS FOR PLUMBING INSTALLATION AND ELECTRICAL INSTALLATION

The tenderers attention is drawn to the requirement that the appointment of any sub-contractor to carry out electrical or plumbing installation under this contract, is subject to such sub-contractor being registered on the databases of eThekwini Electricity and Water Services respectively, as an accredited contractor.

C1.2.3.14 CONTRACTOR'S DOMESTIC SUBCONTRACTORS FOR WATER CONNECTION AND ELECTRICAL CONNECTION

The Contractor shall appoint a domestic subcontractor for the water connection who is on the eThekwini Water Services database.

The Contractor shall appoint a domestic subcontractor for the electrical connection who is on the eThekwini Electricity database.

C1.2.3.15 USE OF PROPRIETARY PRODUCTS

The tenderers attention is drawn to the fact that where in this document a proprietary product is specified, he may use a similar or equal approved product to the Principal Agent's satisfaction.

C1.2.3.16 SCHEDULE OF DRAWINGS

Not applicable at this stage.

C1.2.3.17 CONTRACT PERIOD

The Contract Period for this tender is 36-months.

C1.2.3.18 DAMAGE TO PERSONS OR PROPERTY

The successful Contractor shall indemnify and keep indemnified Council against any claim for death, injury, damage, or loss to any person or property whatsoever in respect thereof or in relation thereto.

The successful Contractor enters into this contract as an independent Contractor and shall be solely liable in respect of any claim for death, injury, damage, or loss to any person or property whatsoever in respect thereof or in relation thereto.

C1.2.3.19 SECURITY (RETENTION OR JBCC FIXED CONSTRUCTION GUARANTEE)

The Contractor shall either choose Retention or provide a JBCC Fixed Construction Guarantee to the Employer.

Where Security as Retention has been selected, the amount deducted shall be 10% of such value to the date of practical completion up to a limit of 10% of the contract sum.

Upon Practical Completion, the amount deducted shall be 2,5% of such value.

The 2,5% retention will be released with the Final Payment Certificate.

Interest will not be paid on retention or on the payment reduction amount by the Employer.

C1.2.3.20 APPOINTMENT OF TEN (10) MOST RESPONSIVE TENDERS CONTRACTORS

The Employer intends to appoint up to ten (10) responsive tenderers to the Framework Contract.

Appointments shall be made from contractors registered in the CIDB Specialist Works Landscaping and Horticulture (SH) class of construction works, comprising:

- Up to four (3) contractors with a minimum CIDB grading designation of 2SH;
- Up to four (3) contractors with a minimum CIDB grading designation of 3SH;
- Up to three (3) contractors with a minimum CIDB grading designation of 5SH;
- Up to three (1) contractors with a minimum CIDB grading designation of 7SH or higher.

The Employer reserves the right to appoint fewer than ten (10) contractors should an insufficient number of responsive tenders be received or should the available responsive tenders not satisfy the Employer's requirements. The appointment of contractors to the Framework Contract does not guarantee any minimum value or quantity of work. Task Orders shall be allocated according to the CIDB grading capability required for the estimated value and complexity of the works.

C1.2.3.21 MARKET ANALYSIS AND DETERMINATION OF TENDER RATES

The Employer reserves the right to conduct a market analysis of submitted tender rates to ensure value for money and alignment with prevailing industry pricing. The Employer intends to appoint the most responsive tenderers in accordance with Clause C1.2.3.20 and to establish pre-approved, standardised rates per item in the Bill of Quantities. Accordingly:

- Tenderers shall submit market-related and competitive unit rates for all BOQ items.
- The Employer may, during evaluation:
 - Analyse rates submitted across tenderers;
 - Exclude abnormal or non-comparable rates;
 - Rationalise and determine average market-related rates per item.

The resultant rates:

- Shall be negotiated and agreed with the successful tenderers;
- Shall be standardised across all appointed contractors;
- Shall form the fixed Schedule of Rates applicable for the duration of the contract.

Rates that are deemed to be: Commercially unrealistic; Market/industry unrelated; or Manipulated or unbalanced may be subjected to risk analysis and may result in the tender being deemed non-responsive, or may be adjusted through the rate rationalisation process. Each successful tenderer shall, within ten (10) working days from notification of award, confirm in writing their acceptance of the standardised rates. Failure to accept the agreed rates within the stipulated period may result in:

- Withdrawal of the award; and
- Consideration of the next ranked responsive tenderer.

The agreed standardised rates shall apply to all Task Orders issued under the contract, and payments shall be made based on measured quantities executed in accordance with the contract.

C1.2.3.22 PUBLIC REALM TASK ALLOCATION COMMITTEE (PRTAC)

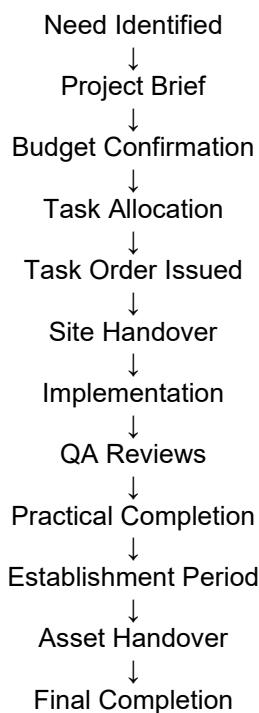
The Employer may establish a Public Realm Task Allocation Committee (PRTAC) to oversee the governance, allocation and monitoring of Task Orders issued under this Framework Contract.

The Committee may comprise representatives from Urban Design and Landscape Architecture, Supply Chain Management and Client Departments, as determined by the Employer.

The Committee shall act in an advisory and governance capacity only. The final authority for Task Order allocation shall remain with the Employer.

C1.2.3.23 TASK ORDER GOVERNANCE AND ALLOCATION

Task Order Governance:



The Framework Contract:

- Does not constitute a commitment to execute any specific works
- Operates on a non-exclusive basis and the Employer reserves the right to utilise alternative procurement mechanisms where deemed necessary.
- Enables the Employer to issue Task Orders from time to time during the Contract Period.
- Provides a mechanism for programme-based implementation

All work under this framework contract shall be instructed through written task orders issued by the Employer's Representative. Each Task Order shall be managed as an individual project under the overall Framework Contract and shall not require the execution of a separate JBCC Principal Building Agreement unless specifically instructed by the Employer. Task orders may only be issued during the contract period. Task orders issued prior to expiry of the framework contract may continue beyond the expiry date until completion. Each task order shall define:

- Scope of Works;
- Project location;
- Programme;
- Budget allocation;
- Establishment and maintenance requirements;
- Quality requirements;
- Project-specific performance indicators;
- Reporting requirements;
- Handover requirements.

The Contractor shall not commence work without a formally issued Task Order and written

instruction to proceed. Appointment under the framework contract shall not create entitlement to work allocation, geographic exclusivity or preferential allocation rights.

C1.2.3.24 CONTRACTORS' ROTATION

The Municipality reserves the right to allocate work in accordance with operational, programme, governance and service delivery requirements. Task Orders may be allocated using one or more of the following methods: Rotational allocation; Capacity-based allocation; Specialist capability allocation; Geographic allocation; Performance-based allocation; Emergency allocation; or Any other method approved by the Employer.

When allocating Task Orders, the Employer may consider: Current workload; Contractor availability; Previous performance; Relevant experience; Resource capacity; Public realm specialisation; Geographic location; Community considerations; Health and safety performance; and Environmental compliance history. The Employer's allocation decision shall be final.

This will be necessary in order to comply with liabilities, ensure efficiency and compliance with any applicable regulatory regulation (SANS, SABS and OHS Act) and landscape construction and maintenance management.

Contractors shall not be eligible for additional task-order allocations where the value of outstanding work already issued exceeds two hundred percent (200%) of the upper tender value limit associated with the contractor's CIDB grading designation unless otherwise approved by the Employer.

A Contractor shall acknowledge receipt of a Task Order within two (2) Working Days. The Contractor shall confirm acceptance within five (5) Working Days. Failure to respond may be deemed a refusal. Repeated refusals without reasonable cause may be considered during future allocations and performance assessments. The Employer may consider exceptional circumstances including emergency works, specialist capability requirements, programme-critical works or operational priorities when applying this provision.

C1.2.3.25 EMERGENCY TASK ORDERS

The Employer may issue Emergency Task Orders to address: Public safety risks; Storm damage; Flood damage; Infrastructure failures; Environmental incidents; Vandalism; Hazardous conditions; or Any urgent public realm intervention. The Contractor shall mobilise within the period stated in the Emergency Task Order. Emergency instructions may be issued verbally, provided written confirmation follows within forty-eight (48) hours.

C1.2.3.26 PERFORMANCE MONITORING & MANAGEMENT

The Employer shall continuously monitor Contractor performance.

Performance evaluations may be undertaken following completion of each Task Order and at regular intervals throughout the Contract Period.

Performance criteria may include: Quality of workmanship; Compliance with specifications; Programme performance; Cost management; Health and safety performance; Environmental compliance; Community and stakeholder relations; Responsiveness; Reporting compliance;

Maintenance performance; Asset handover quality; and Overall contribution to public realm outcomes.

Contractors may be graded as follows:

- Grade A – Excellent Performance
- Grade B – Satisfactory Performance
- Grade C – Improvement Required
- Grade D – Unsatisfactory Performance

The Employer may consider performance grading when allocating future Task Orders.

Where performance deficiencies are identified, the Employer may require: Corrective action plans; Additional supervision; Additional quality inspections; Additional reporting requirements; Targeted improvement measures. Failure to implement corrective actions may constitute a breach of contract.

The Employer may suspend a Contractor from receiving further Task Orders where: Serious quality deficiencies occur; Repeated programme failures occur; Health and safety breaches occur; Environmental non-compliance occurs; Contractual obligations are repeatedly not met; or Material misrepresentation is identified. Suspension shall not relieve the Contractor from obligations relating to ongoing Task Orders.

The Employer may remove a Contractor from the Framework Panel where: Persistent poor performance occurs; Serious contractual breaches occur; Fraudulent conduct is identified; Corrupt practices are identified; CIDB status becomes invalid; Statutory compliance requirements are not maintained; or The Contractor becomes insolvent. Removal shall be undertaken in accordance with applicable legislation and municipal policies.

C1.2.3.27 PUBLIC REALM STEWARDSHIP

All Contractors appointed to the Framework Panel shall recognise that the primary objective of the Contract is the protection, enhancement and long-term stewardship of the municipal public realm. Contractors shall execute all works in a manner that promotes: Public safety; Accessibility; Universal access; Environmental sustainability; Asset longevity; Landscape quality; Urban design quality; and Public realm value. The Employer may require corrective measures where workmanship, materials, maintenance practices or construction methods are inconsistent with the Employer's objectives.

C1.2.3.28 CIDB B.U.I.L.D. PROGRAMME

a) CIDB Skills Standard

It will be a condition of contract that the Contractor shall, in the performance of the contract, achieve the Contract Skills Development Goal (CSDG) established in the below referenced standard:

- CIDB Standard for Developing Skills Through Infrastructure Contracts, published in Gazette Notice No. 48491 of 28 April 2023.

Where instructed by the Employer, the Contractor shall provide structured workplace integrated learning opportunities for learners, interns, candidate professionals, artisans, graduates, municipal officials and other persons identified by the Employer. Such opportunities may include Candidate Landscape Architects; Urban Design Interns; Community-based Horticultural Trainees; Candidate Construction Project Managers; Engineering Students; Artisan Learners; Municipal Officials requiring workplace exposure. The Contractor shall maintain records of all workplace learning opportunities and submit such records to the Employer upon request.

b) CIDB Indirect Targeting Standard

It will be a condition of contract that the Contractor shall, in the performance of the contract, achieve the subcontracting relating to the engagement of targeted enterprises as established in the below referenced standard:

- CIDB Standard for Indirect Targeting for Enterprise Development through Construction Works Contracts, published in Gazette Notice No. 36190 of 25 February 2013.

c) Associated and Specialist Works:

The Framework Contract is primarily for the delivery of landscape infrastructure and integrated public realm works. Where the execution of a Task Order requires associated CIDB classes including civil engineering (CE), general building (GB), specialist works (SQ), mechanical engineering (ME), electrical engineering (EE) or other ancillary works, such works may be undertaken through suitably qualified and, where applicable, appropriately CIDB-registered subcontractors. Such associated works shall be incidental or complementary to the primary landscape and public realm purpose of the Task Order and shall not constitute the predominant scope of the works. Standalone projects whose primary purpose falls outside landscape infrastructure and integrated public realm delivery shall therefore not be procured through this Framework.

C2.1 PRICING ASSUMPTIONS / INSTRUCTIONS

C2.1.1 GENERAL

- C2.1.1.1 A word or phrase in bold type in the Pricing Data shall have the meaning assigned to it in the definitions listed in the Conditions of Contract, Contract Data, and the JBCC Principal Building Agreement Edition **6.2 May 2018**, JBCC Series 2000 **May 2018** Preliminaries and the Model Preambles for Trades **2017** as issued by the Association of South African Quantity Surveyors. A word or phrase not in bold type shall be interpreted in the context of its usage.
- C2.1.1.2 Tenderers are to allow for wages which are not less than the Bargaining Council for the Civil Engineering Industry (BCCEI) agreed wage rates.
- C2.1.1.3 The agreement is based on the Conditions of Contract as specified in Part C1.2.1. Additions, deletions and alterations to the Conditions of Contract, as well as the contract specific variables, are as stated in the Contract Data as specified in Part C1.2.2 and Additional Conditions of Contract as specified in Part C1.2.3
- C2.1.1.4 Bills of Quantities: Except where indicated otherwise, the quantities of and classes and kinds of works set out in these Bills of Quantities are provisional and do not purport to represent the final quantities of and classes and kinds of work eventually required to be done. The quantities of and classes and kinds of work contained herein have been set down solely in order to form a basis for obtaining competitive tenders.

The Bills of Quantities are not to be used for ordering materials under any circumstances whether this be with regard to description or specification of materials or goods required, or with regard to quantities. Failure to comply with this condition is entirely at the Contractor's own risk. The Contractor shall be obliged upon instruction of the Principal Agent to execute such quantities of and classes and kinds of work as the Principal Agent in his sole discretion may deem necessary or which, in the Principal Agent's opinion, become expedient from time to time or which may be required to meet the Employer's requirements, whether or not such quantities of and classes or kinds of work may appear in these Bills of Quantities or the contract drawings.

The consideration payable to the Contractor in respect of the works shall be determined by the Agent by the application of the rates contained in the priced Bill of Quantities to the quantities of and classes and kinds of work executed, which quantities of and classes and kinds of work shall be determined by the Agent. The rates contained in the priced Bills of Quantities shall apply irrespective of the final quantities of the different classes and kinds of work executed. No claims for extras, loss of profit, variation of rates or other similar claims will be entertained as a result of any variations whatsoever between the quantities of work set out in these Bills of Quantities and the quantities of work actually executed, nor as a result of any variation whatsoever between the contract sum and the final value of works.

- C2.1.1.5 Budgetary Allowances and Provisional Sums: All items described as "Budgetary Allowance" shall be used as directed by the Employer and measured and valued and paid for.

No work for which "Budgetary Allowance" items are allowed shall be commenced without written instructions from the Principal Agent. The contractor is duly informed in this document that the Budgetary Allowance Items are completely subject to the discretion of the employer and will only form part of the contract value once duly authorised by the employer and executed by the contractor to the full satisfaction of the principal agent, irrespective of the fact that the Budgetary Allowance formed part of the contract sum.

- C2.1.1.6 Prime Cost Amounts: Prime cost amounts are a net allowance (excluding VAT), for materials only, and the tenderer should allow for the necessary labour, wastage, profit, etc in pricing these items.
- C2.1.1.7 Value Added Tax: The tendered price must include for Value Added Tax (VAT). All rates, provisional sums, etc in these Bills of Quantities must however be net with VAT calculated and added to the total value thereof as provided for in the Final Summary.
- C2.1.1.8 For the purpose of this document the following terms shall be interpreted as follows:
- **Unit** will mean the unit of measurement for each item of work as defined in the Bill of Quantities.
 - **Quantity** refers to the number of units of work for each item.
 - **Rate** will mean the payment per unit of work at which the Contractor tenders to do the work. Rates shall be fully inclusive of: Labour, materials, plant, equipment, tools; Transport, delivery, offloading, storage; Setting out, waste, off cuts, making good; Protection of works, temporary works; Compliance with all statutory requirements; Supervision and quality control; and Overheads and profit. Personnel items shall include: All labour costs; PPE; Tools of trade; Supervision; Transport to and from site; and All statutory benefits and allowances. Where materials are supplied under BoQ items, rates shall include supply, delivery, handling, storage, and protection. Materials shall comply with SANS standards and be approved by the Employer's Agent. Where plant is required: Rates shall include operator, fuel, maintenance, and mobilisation.
 - **Price** denotes the product of the quantity and the rate tendered for an item.
 - **Lump sum** refers to a price tendered for an item, usually custom or specialised, of which the extent is described in the tender documentation, but the quantity of work is not measured in any units.
- C2.1.1.9 Tenderers shall submit a unit rate for each item in the Bill of Quantities. The scope and the extent of work shall be specified for each project by the Principal Agent at pre-approved and fixed average rates determined during the appointment of the contractors. This is to save the time and cost of a sourcing process, avoid the need to renegotiate standard terms and conditions, and enable the Department to correctly estimate and forecast projects costs during budgeting processes.
- C2.1.1.10 The BOQ shall be treated as a Schedule of Rates for a framework contract, to be used for pricing multiple future work packages. Tenderers shall submit unit rates which will be subject to evaluation, rationalisation, and agreement to establish pre-approved and standardised contract rates. All rates shall be fully inclusive of labour, plant, materials, transport, overheads, profit, and compliance with all contractual and statutory requirements. No additional payment will be made unless explicitly provided for. Labour, plant and specialist rates shall be used only for instructed variations or work not covered in the BOQ and shall not duplicate costs included in unit rates. The agreed and standardised rates shall apply irrespective of final quantities, and no claims shall arise from variations in quantities or project scale.
- C2.1.1.11 The Employer intends to establish pre-approved, standardised rates for the framework contract. Tenderers shall submit competitive unit rates, which will be: Analysed during evaluation; and Rationalised and agreed based on market-related pricing. The resulting agreed rates shall: Be standardised across appointed contractors; and Form the fixed Schedule of Rates for all task orders. No claims shall arise from the application of such agreed rates once incorporated into the contract.

C2.2: BILL OF QUANTITIES

The Bill of Quantities / Schedule of Rates is issued as a separate attachment to this tender document and comprises 23 pages, being Construction pages 1 to 21 and Maintenance pages 1 to 2. The attached Bill of Quantities / Schedule of Rates forms an integral part of the tender document.

NOTE: TENDERERS ARE REQUIRED TO PRICE ALL ITEMS IN THE ATTACHED BILL OF QUANTITIES / SCHEDULE OF RATES.

PART C3: SCOPE OF WORK

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C3.1: PROJECT DESCRIPTION AND SCOPE OF CONTRACT

C3.1.1 Client's / employer's objectives

The Municipality is responsible for the planning, implementation, enhancement, rehabilitation, maintenance and management of public realm infrastructure, landscape systems, horticultural assets, irrigation systems, environmental assets and associated public amenities throughout the municipal area. The Municipality is committed to creating, enhancing, rehabilitating, regenerating, maintaining and protecting safe, inclusive, resilient and high-quality public environments that contribute to social, economic, environmental and spatial development outcomes. All works executed under this Framework Contract shall contribute to the creation, enhancement, protection and long-term sustainability of the public realm. This includes Streetscapes, Parks, Public Open Space, Civic Space, Urban Greening, Irrigation, Public Furniture, Public Art Foundations, Environmental Rehabilitation, Wayfinding, and Public Realm Maintenance.

The objective of this Framework Contract is to establish a responsive, flexible and efficient implementation mechanism through which the Municipality may procure Public Realm Delivery, Landscaping, Horticulture, Irrigation Services, Environmental Rehabilitation and Ancillary Works over a period of three (3) years. The framework contract is intended to support planned capital projects, maintenance programmes, operational interventions, emergency response requirements and public realm enhancement initiatives throughout the municipal area.

Public Realm means publicly accessible streets, parks, squares, civic spaces, transport interchanges, promenades, waterfronts, public open spaces, landscape infrastructure and associated public environment assets owned, managed or controlled by the Municipality.

C3.1.2 Description of Works

The scope described herein represents the typical range of activities that may be instructed through task orders during the contract period. The actual scope, quantities, locations and programme requirements shall be defined within individual task orders issued by the Employer's Representative.

The works may include Public Realm Delivery, Landscaping, Horticulture, Irrigation Services, Environmental Rehabilitation and Ancillary Works including site preparation, earthworks, topsoil placement, composting, landscape construction, streetscape implementation, public square upgrades, promenade improvements, park developments, urban regeneration projects, tree planting, shrub planting, lawn establishment, irrigation installation, irrigation rehabilitation, irrigation maintenance, river rehabilitation, wetland rehabilitation, dune rehabilitation, ecological restoration, paving, kerbing, retaining structures, boardwalks, public realm furniture, play equipment, outdoor gym equipment, fencing, signage, shade structures, public art interfaces, public realm structures, maintenance works, emergency response works and associated public realm infrastructure.

The framework contract may also include associated civil engineering, building and specialist works which are incidental to and necessary for the successful implementation of public realm projects. Such works may include sidewalks, minor retaining structures, boardwalk foundations, public realm shelters, pergolas, viewing decks, park ablutions, irrigation automation systems and specialist environmental rehabilitation systems.

Post-Construction Maintenance

Unless otherwise specified within the task order, all implemented projects shall be subject to a post-construction establishment and maintenance period. The maintenance period may include plant establishment maintenance, replacement planting, irrigation repairs, landscape maintenance, defect rectification, structural repairs, cleaning and upkeep of completed works and any other maintenance activities specified within the task order. The duration of the maintenance period shall be specified within the relevant task order and shall commence upon certification of Practical Completion. Any dead, damaged or defective material shall be replaced by the Contractor at no additional cost to the Employer.

As-Built Information Standards

The Contractor shall maintain accurate records of all completed works. Upon completion, the Contractor shall submit marked-up construction drawings; Final as-built drawings;

- Irrigation layouts and zoning diagrams;
- Final planting schedules;
- Installed quantities;
- Asset location data, including GPS coordinates where required;
- Photographic records.

All as-built information shall be submitted in PDF format; and editable digital formats compatible with the Employer's systems. The Employer reserves the right to withhold final payment until compliant as-built information has been submitted and accepted.

Emergency Response Requirements

The Contractor shall maintain the capability to respond to emergency situations affecting public realm infrastructure, landscape assets, irrigation systems, environmental resources and public safety throughout the duration of the framework contract. Emergency works may be instructed at any time, including after normal working hours, weekends and public holidays. Emergency situations may include, but are not limited to:

- Storm damage;
- Fallen or hazardous trees;
- Irrigation system failures;
- Flood damage;
- Erosion and wash-aways;
- Damage to public realm infrastructure;
- Vandalism affecting public amenities;
- Damage to public furniture, play equipment or outdoor structures;
- Environmental incidents requiring urgent intervention; and
- Any condition posing a risk to public safety, municipal assets or service delivery.

The Contractor shall maintain an emergency contact person who shall be available on a twenty-four (24) hour basis for the receipt of emergency instructions. The Contractor shall provide and maintain:

- An emergency contact list;
- Suitable emergency response personnel;
- Access to plant and equipment necessary for emergency interventions; and

- The ability to mobilise resources within the response periods specified by the Employer's Representative.

Where instructed by the Employer's Representative, emergency works shall take precedence over routine works. Response requirements shall be:

- Priority 1 (Critical): Within 2 hours
- Priority 2 (Urgent): Within 24 hours
- Priority 3 (Routine): Within 3 working days

The Contractor shall make safe any hazardous condition immediately upon arrival on site and shall take all reasonable measures to protect public safety, municipal assets and the environment. Emergency works shall be recorded and reported in accordance with the reporting requirements of the contract and shall be measured and paid in accordance with the Schedule of Rates and applicable task-order provisions.

The Municipality reserves the right to utilise any contractor appointed under the framework contract for emergency response purposes based on availability, proximity, capability and operational requirements.

C3.1.3 Description of Site and Access

The works will be implemented at various sites across the Municipality.

C3.1.4 Nature of Ground and Subsoil Conditions

The nature of the ground and subsoil conditions to be confirmed as per the Task Order.

C3.1.5 Programming of Works

The Contractor shall programme the identified works so as to ensure that the full scope of the works are undertaken within the provided financial year timeframe.

The Employer has already appointed a Design Consultant Team, (comprising of Urban Designers, Landscape Architects, Engineers, Architects and Quantity Surveyors), to provide professional services associated with the above works.

C3.1.6 Key Personnel

Due to the nature of the programme, key personnel allocated must have sufficient skill and competency to implement the work; personnel must further be able to project manage and being able to deal with socio-economic and related conditions arising from such works. Allocated site personnel must have the necessary experience to ensure collaborative solutions are determined and implemented by the Contractor in consultation with the Client. Some key personnel may be required as part of the special mandatory/ disqualification criteria.

C3.1.7 Co-operation with other services providers / Stakeholders

In undertaking the works, the appointed Contractor will be required to work closely with, but not limited to:

- Consultant team (if consulted is appointed on the project)
- Municipality's Departmental representative, (such being determined based on the scope of works and responsible department);
- Ward Councillor/s and/or representative, as may be allocated to the ward/s in which work is being undertaken, the CLO and the Social Facilitator
- Local ward-based Contractors / subcontracting targeted Contractors/ Project steering committee
- Ward specific Business Interest Groups
- Materials and equipment suppliers
- Any other affected parties as identified over the duration of this Contract.

C3.1.8 Quality Management

The Contractor shall:

- protect design intent;
- comply with approved landscape drawings;
- comply with urban design drawings;
- maintain public realm quality standards;
- participate in snagging and defects inspections;
- provide as-built information.

The Employer's Agent may undertake Quality Assurance Inspections at any stage of implementation. The Contractor shall:

- Provide full and unrestricted access to all works;
- Give prior notice of inspection stages where required by the Employer's Agent;
- Rectify any identified defects within timeframes instructed by the Employer's Agent.

Failure to comply may result in withholding of interim payments and/or certification delays.

The Contractor shall be fully responsible for the management of all sub-Contractors appointed. The Contractor shall therefore ensure that a suitable quality monitoring process is in place for each element of the works and that the appointed sub-Contractors is conversant on the requirements thereof.

The Contractor shall keep relevant records of all tests and inspections undertaken and will be responsible for submission of all test results as may be required in terms of the Project Specification. The Contractor must adhere to all drawings and specification compliance in order to ensure that the work they deliver conforms in quality and accuracy of detail per the specification. The Contractor shall, at his own expense, institute a quality-control system and provide experienced contract managers, foremen, materials technicians, other technicians, and technical staff, together with all transport, instruments and equipment to ensure adequate supervision and positive control of the Works at all times. The cost of supervision and process control, including testing carded out by the Contractor, will be deemed to be included in the rates tendered for the related items of work.

During progress and completion of the works, the site where works are occurring shall be kept and left in a clean and orderly condition. The Contractor shall store materials and equipment for which he is responsible in an orderly and safe manner and shall keep the site free from debris and obstructions inter alia in compliance with Construction Regulations in the OHS Act. All

redundant materials, rubble, rubbish and waste arising from the Contractor's work must be regularly removed from the site at the Contractor's cost and the site left clean and tidy.

Should the Contractor move the existing equipment, park furniture, items etc. in order to make way for a working space, he will therefore be responsible for any damage to the equipment or park furniture etc. The moving of existing equipment and items should be kept to a minimum.

C3.1.9 Limitation on Designs

It must be noted that detailed scope and associated designs for works required may not be available at time of award of task order. The contractor must therefore have sufficient competency to determine and implement site-based solutions using best practice principles and accepted norms and standards.

The Employer's Agent shall remain the Design Authority for all Task Orders issued under this Framework Contract. No substitutions, design modifications, material changes, planting substitutions, dimensional alterations or value-engineering proposals shall be implemented without prior written approval from the Employer's Agent. Approval of shop drawings, samples or construction methodologies shall not relieve the Contractor of responsibility for compliance with approved design documentation. Where conflicts arise between cost, constructability and approved design intent, the decision of the Employer's Agent shall prevail.

C3.1.10 Management Meetings

Requirements for management meetings will be specified upon commencement of the project; monthly management meetings will be held with the Employer, Programme Manager, Consultant and Contractor. Such will be held at venues provided by the Employer or Programme Manager.

The Contractor shall report on the over-all progress of the contract to date and task order specific issues requiring further Client engagement will be addressed at the above meeting.

Site meetings, as and where necessary, will be held specific to each task order awarded. So far as reasonably possible, site and task order specific issues are to be resolved at site meetings. Items/issues that cannot be resolved by the parties at these meetings may be escalated to the management meeting.

C3.1.11 Payment Certificates

According to the JBCC contract, a payment certificate certifies an amount of money that is due and payable by the employer to the Contractor or vice versa is 'certified' issued by the Principal Agent. The Principal Agent will assess and certify the work done and issue a payment certificate. The wording on the payment certificate must be correct – specifying the employer, Principal Agent and the Contractor and the payment amount that is due to the Contractor.

The Contractor must ensure full reporting (i.t.o subcontracting beneficiaries, etc) accompanies the consolidated payment certificate. The responsibility of correlating the required information and submitting to the Client representative lies with the Contractor.

Monthly payments are to include 100% of the value of materials for permanent work delivered onto the site but not incorporated in the works. The materials must be adequately stored and

protected to the satisfaction of the Principal Agent and proof of payment needs to be provided to the Principal Agent and that the materials and goods are the Contractor's bona fide property BEFORE payment can be made for them. A cession of rights in favour of eThekweni Municipality in respect of unfixed materials on site shall be filled in and signed by the Contractor whenever a claim for materials on site is made. A copy of the materials on site cession form will be made available if needed.

C3.1.12 Proof of compliance with the law

The Contractor shall comply with all applicable laws, regulations, and gazetted labour rates for the duration of the Contract. This requirement shall extend to all sub-contractors. All references to South African Bureau of Standards (SABS), South African National Standards (SANS), and the National Building Regulations shall be deemed to refer to the latest applicable editions. All works shall be executed in accordance with applicable Local, Provincial, and National standards, regulations, and environmental requirements.

The Contractor shall:

- Prevent pollution and environmental degradation;
- Protect existing vegetation and ecological systems;
- Undertake rehabilitation in accordance with approved specifications; and
- Comply with all environmental authorisations, where applicable.

Any environmental damage caused by the Contractor shall be rectified at the Contractor's cost.

C3.1.13 Contract management

The JBCC contract documents will be used to manage the approved contractors throughout the duration of the contract.

Contractors will be allowed to progress within the contract, for an example, from CIDB Grading 2-9 meaning that Contractors will be allowed to grow within the contract as it progresses into its 2nd and 3rd year.

C3.1.14 Utilization of contractors & bids evaluation

eThekweni Municipality will impose compliance with the Preferential Procurement Policy Framework Act 5 of 2000 as well as applicable regulations to allocate/appoint Contractors to various projects. Works will be determined by user departments.

The technical, experience, accreditation, financial and competency will be evaluated via the functionality screening process to ensure that Contractors that can render a quality service within time and budget are appointed. The mandatory returnable documents are as per the tender advert and failure to submit the mandatory returnable documents will result in disqualification.

The municipality will appoint the up to ten (10) most responsive tenderers on market related pre-approved and fixed average tender rates per item on the BoQ. The agreed average tender rates will then be applicable to the successful responsive tenderers, and they will be paid accordingly as per Task Orders completed in accordance to the contract.

C3.1.15 Special mandatory/ disqualification criteria

Due to the technical nature of the project, it is pertinent that an evaluation of the technical ability and capacity of the bidding entity is followed. The criteria below indicates and describes what components will be evaluated on and how points will be allocated. Only responsive bids will be considered including compliance to tendering rules and submission of returnable documents is still a mandatory requirement.

Special mandatory/ disqualification criteria for this contract which is required for responsiveness and therefore appointment consideration will include non-submission of the following proof of registration/membership with professional body/institute:

- Company information as per the functionality sheet.
- Construction Industry Development Board (CIDB) grading required: CIDB:2SH (Landscaping, irrigation and horticultural works) and higher as the case may be.
- Key Personal qualifications which will be cross referenced when Task Orders are issued:
 - Attach detailed CV and certified (not older than 3 months by the closing date of the tender advert) Registration certificate for suitably qualified and experienced PROJECT/ CONTRACT MANAGER: Professional Landscape Architect/ Manager/ Senior Technologist/ Technologist registered with the South African Council for the Landscape Architectural Profession (SACLAP)

If there are any updates from submission after appointment, it will have to be communicated to the eThekweni Municipality and the SAQA verification letter should be attached.

This mandatory/ disqualification criterion is done in order to determine the ability of each bidder to successfully execute the contract according to the Scope of Works.

Even if the bidders meet all criteria for qualification, they are liable to be disqualified if they have:

- a) Made untrue or false representations in the returnable forms, statements and enclosures submitted in proof of qualification requirements, and/or,
- b) Any record of poor performance such as bad workmanship, abandoning the work, not properly completing the work, inordinate delays in completion, or financial failure, non-fulfilment of warranties and guarantees etc.

C3.1.16 Materials

Should the work require any additional material that are not specified in the schedule bill of quantities, the approval for such materials to be done by the Principal Agent. The Contractor shall attach to his accounts original supplier's tax invoices for new parts, components and materials to be used or that were used for repair work requiring non-scheduled items, the full description similar to that required to order an item from a supplier, i.e. Make: model, serial number, size, capacity, etc. shall be listed on the account.

The Principal Agent reserves the right to supply to the Contractor new parts, components and materials required to undertake repairs. However, if the price submitted by the Contractor is unreasonably high, quotations from independent alternative suppliers for new material must be obtained, and after making reasonable allowance for Contractor's mark-up, adjust the Contractor's price accordingly. Where no rate is tendered in the schedule/ bill of quantities for

new items, the prices for new items must be provided by the Contractor and shall be in line with prices of similar items in the schedule of quantities or reasonable prices in the industry. Unless stated otherwise in writing by the Principal Agent, all proprietary materials are to be used, mixed, applied, fixed, etc., strictly in accordance with the manufacturer's recommendations.

C3.1.17 Procurement Assistance

It must be noted that, due to the nature of the works and the targeted enterprises, the Contractor may be required to assist ward-based Contractors with procurement of materials, equipment hire, cash flow planning and other related matters etc.

C3.1.18 Selection of Ward Based Contractors

The Contractor may elect, or be instructed by the Employer, to invite quotations or tenders for portions of Task Order Works from a pool of qualifying local, ward-based, emerging or specialist contractors. In such instances, the Contractor shall undertake a fair, transparent and auditable mini-tender process to ensure equitable opportunity is provided to all qualifying entities. In allocating works for sub-contracting, the following will be eligible to be considered for works:

- Companies on the Municipality's subcontracting database;
- Companies on the Municipality's CIP database;
- Companies on any other developmental database held by the Municipality;
- Qualifying companies identified via the Central Supplier Database;

Entities that would like to be eligible for work opportunities must be registered, or register, with the City's Supplier database and on CSD in order to be considered.

Subcontractors undertaking portions of the Works shall possess a CIDB grading designation appropriate to the nature, complexity and value of the subcontracted works. As a guideline:

- 1SH subcontractors may be utilised for labour-intensive landscape works, planting works, horticultural maintenance, environmental rehabilitation, EPWP-related activities and other low-risk public realm works.
- 2SH or higher subcontractors shall be utilised for irrigation installations, landscape construction works, public realm infrastructure works and other specialised implementation activities.

The Employer or Employer's Agent may require a higher CIDB grading designation where warranted by the scope, complexity or value of the subcontracted works.

C3.1.19 Non-Exclusive Appointment

The Contractor must note that, whilst this contract is intended to execute community public realm infrastructure projects within the identified wards, there is no guarantee of works being allocated via this appointment.

The Employer may elect, at any time, to implement projects using other available procurement mechanisms in place to as to ensure necessary expenditure and service delivery timeframes are met.

C3.1.20 Mentorship and development

In executing the project, the Contractor will be required to provide necessary “on the job” training and supervision, to ensure the Ward Based Contractors are able to execute the necessary works and benefit through exposure to best principles in areas including, but not limited to:

- Technical implementation
- Works programming and scheduling
- Estimates, tendering and pricing

The cost of the above training shall be included in the P&G costs tendered.

C3.1.21 Inception programming and reports

It is understood there will be an “inception period” of which the Main Contractor once appointed will during this period need to establish on site and provide the Client Principal Agent with an inception report based on their own inspections and subsequent determination of work packages in relation to the scope of work read in conjunction with the drawings and specifications. The report will be tabled within 30 days of physical site establishment and then is considered a “Live” Document to be updated monthly based thereof historical experience gained during the contract. The Contractor must therefore have sufficient competency to determine and implement site-based solutions using best practice principles and accepted norms and standards.

The Contractor shall maintain photographic records of all Task Orders. Photographic records shall include: Before commencement; During construction; Practical completion; and Final completion.

Photographs shall be date stamped and submitted with payment claims where requested by the Employer’s Agent. Failure to provide photographic records may result in payment being withheld until the required records are submitted.—

C3.1.22 Small or Large Variations to Scope

Where the items specified in the bill of quantities do not reasonably satisfy the requirements in the scope of works, in the opinion of the Principal Agent, and the decision is taken to undertake the works via the Managing Contractor Contract, the scope of works and related items will be handled as a variation or site instruction under the Contract, with rates to be reviewed by the Client Principal Agent and approved accordingly

C3.1.23 SANS specifications and codes of practice

All reference in this document to abide and in line with South African Bureau of Standards specifications and codes of practice, or any other standard specifications or codes of practice, including National Building Regulations, shall be deemed to be references to the latest issues of such specifications and codes.

For the purpose of this Contract the following standardized specifications shall apply:

SANS 1200 A	1986	GENERAL (AS APPLICABLE)
SANS 1200 AA	1986	GENERAL SMALL WORKS
SANS 1200 AB	1980	SITE OFFICE
SANS 1200 C	1980	SITE CLEARANCE
SANS 1200 D	1988	SMALL WORKS

SANS 1200 DB	1989	EARTHWORKS
SANS 1200 DK	1984	PIPE TRENCHES
		GABIONS AND PITCHING
SANS 1200 DM	1981	EARTHWORKS (ROADS,
SANS 1200 GA	1982	SUBGRADE)
		CONCRETE (SMALL WORKS)
SANS 1200 LE	1982	STORMWATER DRAINAGE
SANS 1200 M	1981	ROADS (GENERAL)
SANS 1200 ME	1981	SUBBASE
SANS 1200 MF	1981	BASE
SANS 1200 MK	1983	KERBING AND CHANNELING
SANS 1200 MM	1984	ANCILLARY ROAD WORKS

C3.2: PROJECT SPECIFICATION

PREAMBLE

In the event of any discrepancy between a part or parts of the Standard or Particular Specifications and the Project Specification, the Project Specification shall take precedence. In the event of a discrepancy between the Specifications, (including the Project Specifications) and the drawings and / or the Bill of Quantities, the discrepancy shall be resolved by the Employer's Agent before the execution of the work under the relevant item.

C3.2.1 ORDER OF PRECEDENCE

In the event of any discrepancy between the Standard Specifications, Particular Specifications, Scope of Work, Employer's Requirements, Drawings, Bills of Quantities, Task Orders, Work Package Orders or any other Contract Documents, the order of precedence shall be as follows: Contract Data; JBCC Principal Building Agreement and associated Contract Documents; Scope of Work; Task Order or Work Package Order; Employer's Requirements; Project Specifications; Approved Drawings; Bills of Quantities; eThekweni Metropolitan Municipality Standards, Policies, Guidelines, Frameworks and Technical Manuals; SALI Standard Specifications; SACLAP Guidelines; SANS and CIDB Standards; Manufacturers' Specifications.

Any ambiguity, discrepancy, omission or conflict identified by the Contractor shall immediately be referred to the Employer's Agent for clarification before the affected work is commenced.

No claim arising from an unresolved discrepancy shall be considered where the Contractor has proceeded with the work without obtaining written clarification from the Employer's Agent.

C3.2.2 GENERAL

Project-specific specifications, drawings, schedules, Employer's Requirements, Bills of Quantities, Task Orders and Work Package Orders may be issued by the Employer from time to time under this Framework Contract. The Contractor shall execute the Works strictly in accordance with: the approved construction drawings; project-specific specifications; Task Orders; Work Package Orders; Employer's Requirements; applicable municipal standards; applicable national standards and codes of practice; and any written instructions issued by the Employer's Agent in accordance with the Contract.

The Employer may issue Task Orders and Work Package Orders of varying scope, complexity, value, location and technical requirements during the Contract Period. Such Task Orders and Work Package Orders may include, but shall not be limited to: public realm infrastructure works; landscaping works; irrigation works; paving and hard landscaping works; fencing and access control works; public furniture installations; lighting installations; playground and recreation facilities; environmental rehabilitation works; streetscape improvements; coastal public realm works; maintenance, repair and replacement works; emergency response works; and any other works falling within the Scope of this Framework Contract.

The Contractor shall be deemed to have allowed in the Contract Rates for compliance with the requirements of individual Task Orders and Work Package Orders.

No additional payment shall be made for compliance with project-specific specifications, drawings, standards or procedures unless expressly provided for in the relevant Task Order, Work Package Order or Pricing Schedule.

C3.3: STANDARDS, SPECIFICATIONS AND TECHNICAL REQUIREMENTS

C3.3.1 The standards, specifications and technical requirements on which this contract is based on are the:

- C3.3.1.1** Model Preambles to Trades 2017 issued by the Association of South African Quantity Surveyors. This document is obtainable separately, and Tenderers shall obtain their own copies at their own cost.
- C3.3.1.2** South African Council for the Landscape Architectural Profession (SACLAP) Identification of Work and Professional Practice Guidelines , including future revisions and updates adopted during the Contract Period.
- C3.3.1.3** eThekweni Metropolitan Municipality Public Realm Standard Specification (PRSS) For Public Realm Delivery, Landscape Infrastructure and Ancillary Works, including future revisions and updates adopted during the Contract Period. The above PRSS hardcopy document is attached as Annexure 2.
- C3.3.1.4** eThekweni Metropolitan Municipality Standard Specifications, Policies, Guidelines, Frameworks and Technical Manuals applicable to the Works, including future revisions and updates adopted during the Contract Period.
- C3.3.1.5** South African National Standards (SANS), South African Bureau of Standards (SABS) Specifications, Construction Industry Development Board (CIDB) Standards and all applicable national codes of practice relevant to the Works, including future revisions adopted during the Contract Period.
- C3.3.1.6** Manufacturers' specifications and installation requirements for proprietary products, equipment, street furniture, play equipment, irrigation systems, lighting systems, fencing systems and associated infrastructure.
- C3.3.1.7** These standards, specifications and technical requirements equally apply to the sub-contractors and consultants. The management and control of sub-Contractors on the site is the full responsibility of the lead implementer.

C3.3.2 AMENDMENTS TO THE STANDARD SPECIFICATIONS

In certain clauses the standard, standardized and particular specifications allow a choice to be specified in the project specifications between alternative materials or methods of construction and for additional requirements to be specified to suit a particular contract. Details of such alternative or additional requirements applicable to this contract are contained in this part of the project specifications. It also contains additional specifications required for this particular contract.

C3.4: PARTICULAR SPECIFICATIONS

In addition to the Standardized and Project Specifications the following Particular Specifications / Policies shall apply to this contract and are available on web address:

<ftp://ftp.durban.gov.za/cesu/StdContractDocs/>:

- C3.4.1 Part AH - OHSA 1993 Safety Specification – Baseline Risk Assessment
(27 Pages)

- C3.4.2 OHSA Site Specific Health and Safety Specifications in terms of 2014 Construction
Regulations 5.1(b)
(27 Pages)

C3.5: CONTRACT AND STANDARD DRAWINGS

C3.5.1 CONTRACT DRAWINGS / DETAILS

Drawings, details and specifications where required, will be made available as and when the projects are allocated per the site-specific task order.

C3.5.2 STANDARD DRAWINGS

The Standard Drawings to which these Standard Specifications refer are listed below:

- None/NIL

C3.6: ANNEXURES

C3.6.1 Annexure 1: Bill of Quantities (BoQ)

Annexure 2: Public Realm Standard Specification (PRSS) For Public Realm Delivery, Landscape Infrastructure and Ancillary Works

Annexure 1: 37.2 Agreement in terms of Occupational Health and Safety Act No. 85 of 1993

PART C4: SITE INFORMATION

C4.1 LOCALITY PLAN

Not Applicable at this stage. AS PER SPECIFICS OF TASK ORDER AT A LATER STAGE.

C4.2 CONDITIONS ON SITE

Not applicable at this stage. NON-SPECIFIC AND AS PER SPECIFICS OF TASK ORDER

Tenderers are to make their own arrangements to visit the site (the region) in order to determine the conditions on site.

C4.3 TEST RESULTS

Not applicable at this stage. AS PER SPECIFICS OF TASK ORDER AT A LATER STAGE.

Annexure:

Bill of Quantities (BoQ)

SUMMARY OF SCHEDULE OF RATES

1	CONSTRUCTION	R	-
2	MAINTENANCE	R	-
SUB-TOTAL		excl. VAT	R -
TOTAL		excl. VAT	R -

SCHEDULE OF RATES: Public Realm Delivery, Landscape Infrastructure and Ancillary Works

(TO BE READ WITH CLAUSE C3.3: STANDARDS, SPECIFICATIONS AND TECHNICAL REQUIREMENTS) All rates in the Bill of Quantities shall be deemed to include full compensation for compliance with the Contract, including but not limited to: Environmental Management Plan implementation, Community liaison and local labour obligations, Site establishment and consultant facilities, Protection of existing services and infrastructure, Monitoring, reporting and documentation requirements, No separate claims shall be entertained for these obligations. All work shall: Be executed in a professional and workmanlike manner, Meet SALI accepted industry practices, Be subject to inspection and rejection if non-compliant The Contractor shall be responsible for: Reinstatement of defective work, Replacement of failed planting, Compliance with environmental and safety requirements

ITEM NO:	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE (in Rands)	AMOUNT (in Rands)
1	MISCELLANEOUS				
1.1	Preliminaries and General (The Contractor shall be deemed to have included full compensation for all obligations described in this section within the tendered rates unless otherwise provided.)				
1.1.1	Site establishment (Establishment of site camp and facilities, Provision of secure storage, fencing and access control, Setting out and protection of benchmarks and pegs, Site reinstatement upon completion, Compliance with Scope, Specifications, Drawings and BOQ, Contractor's pricing of all obligations under Preliminaries)	1.00	sum		R -
1.1.2	Initial Health & safety training	1.00			R -
1.1.3	Provision of Personal Protective Clothing & Equipment	1.00	p/p		R -
1.1.4	Provision of a Health and Safety Plan	1.00	each		R -
1.1.5	Provision of a Occupational Health and Safety File	1.00	each		R -
1.1.6	Provision of an Environmental File	1.00	each		R -
1.1.7	Compliance with Environmental Management Plan (EMP)	1.00	sum		R -
1.1.8	Dust suppression and pollution control measures	1.00	month		R -
1.1.9	Waste management and disposal	1.00	sum		R -
1.1.10	Protection of vegetation and sensitive areas	1.00	sum		R -
1.1.11	Stormwater and erosion control measures	1.00	sum		R -
1.1.12	Compaction density tests in layers not exceeding 150mm thick	1.00	per test		R -
1.1.13	Concrete material strength test (per Pr Eng/ or Pr L Arch request)	1.00	per test		R -
1.1.14	Construction signage Notice Board	1.00	each		R -
1.1.15	Provision for site's security personnel	1.00	month		R -
1.1.16	Site office for Employer's Representative (fully furnished)	1.00	sum		R -
1.1.17	Provision of meeting facilities (minimum 10 persons)	1.00	sum		R -
1.1.18	Provision of power, water and communication services	1.00	sum		R -
1.1.19	Provision of survey assistance and site support staff	1.00	sum		R -
	PLANT & EQUIPMENT CHARGES - items are for variation purposes only and shall not be included within unit rates where separately measured.				
1.2	Machinery/ Plant/ Equipment				R -
1.2.1	TLB/ Excavator machine	1.00	day		R -
1.2.2	Skid steer loader	1.00	day		R -
1.2.3	Rammer	1.00	day		R -
1.2.4	Plate Compactor	1.00	day		R -
1.2.5	Motorised grader	1.00	day		R -
1.2.6	Plant Hire: Tipper trucks - Capacity	1.00	day		R -
1.2.7	Walk behind vibrating rollers- Model - Bomag 60 or similar (small)	1.00	day		R -
1.2.8	Concrete mixers - volume 100 litre wet (Small, towable)	1.00	hour		R -
1.2.9	Diesel compressors including hoses and tools Capacity smaller than 200 cfm (small)	1.00	hour		R -
1.2.10	Water pump Capacity bigger than 200 but smaller than 400 litre/min (medium)	1.00	hour		R -
1.2.11	5.5 KVA grinder generator	1.00	hour		R -
1.2.12	15KVA Welder generator	1.00	hour		R -
1.2.13	Bobcat type excavator	1.00	hour		R -
1.2.14	Water tankers Capacity 500 litre (small,towable)	1.00	hour		R -
1.2.15	Water tankers Capacity 8 000 litre (medium)	1.00	hour		R -
1.2.16	Supply plant (equipment/ tool) fuel, operator and operate	1.00	litre		R -
1.3	Project Team - items are for variation purposes only and shall not be included within unit rates where separately measured.				
1.3.1	CONTRACTS MANAGER	1.00	hour		R -
1.3.2	SITE AGENT	1.00	hour		R -
1.3.3	FOREMEN	1.00	hour		R -

1.3.4	Health and Safety Officer	1.00	hour		R	-
1.3.5	Environmental Control Officer	1.00	hour		R	-
1.3.6	Professional Land Surveyor (for setting-out)	1.00	hour		R	-
1.3.7	Irrigation Specialist	1.00	hour		R	-
1.3.8	Professional Landscape Architect/ Manager	1.00	hour		R	-
1.3.9	Professional Senior Landscape (/Architectural) Technologist	1.00	hour		R	-
1.3.10	Professional Landscape (/Architectural) Technologist	1.00	hour		R	-
1.3.11	Professional (/Architectural)Technician	1.00	hour		R	-
	LABOUR CHARGES					
1.4	- items are for variation purposes only and shall not be included within unit rates where separately measured.					
1.4.1	Skilled labour	1.00	daily		R	-
1.4.2	Un-skilled labourer	1.00	daily		R	-
1.4.3	Allow the provisional Amount for: Community Liaison Officer Salary	1.00	daily		R	-
	ALL items from here onwards are to include ALL costs in each unit rate: Labour, Plant, Materials, Overheads, and Profit					
2	EARTHWORKS & TOPSOIL PREPARATION (Rates shall include: Disposal to approved sites, Protection of services, Erosion control, Stormwater management, Compliance with environmental requirements)					
	CONSTRUCTION NOTICE BOARD					
2.1.1	Supply and install construction notice boards to detail in the construction details	1.00	item		R	-
	CLEARING OF VEGETATION					
2.1.2	Clearing of vegetation - protection of all areas not affected by the works in this contract including all trees to be retained	1.00	m ²		R	-
2.1.3	Removal of organic plant material to a suitable landfill or compost facility after verification of quantities by the Landscape Architect. Cost to include dumping cost and transport.	1.00	m ³		R	-
2.1.4	Transport spoil material to unspecified sites and dump (provisional)	1.00	km		R	-
2.1.5	Site scarifying (to a depth of 75mm), clearing, grubbing, debushing and removal off site to a nearest licensed landfill facility	1.00	m ²		R	-
2.1.6	Excavate by hand (using garden tools where possible) to locate and expose existing services (known and unknown)	1.00	m ²		R	-
2.1.7	Removal of rubble (rock, waste, debris etc.) and disposal to the nearest appropriate registered landfill facility	1.00	m ³		R	-
2.1.8	Demolition of an existing foundation/ wall. Reuse the demolished material as infilling material or dispose off to a licensed facility	1.00	m ³		R	-
2.1.9	Ex-situ soil provided by the contractor from other sources (including hauling)	1.00	m ³		R	-
2.1.10	Excavate and prepare tree holes: Each tree hole should be a minimum of 1,5 times the size of the root ball and deep enough to match the interface level between the trunk and the roots as evident on the tree.	1.00	m ³		R	-
2.1.11	Soil preparation for seeding: Cultivate to a depth of 150-200mm by removing waste, rubble etc and rake to achieve a desired level and smooth surface	1.00	m ²		R	-
2.1.12	Final Shaping: Preparation, leveling & contouring of in-situ soil. To be shaped to the correct contours to within a tolerance of plus or minus 150mm	1.00	m ²		R	-
2.1.13	Stormwater control and erosion protection	1.00	sum		R	-
	GRADING AND SHAPING					
2.1.14	Grade and shape the areas demarcated for new walkway paving, children play area, outdoor gym area, multi-courts and node areas to a depth of 300mm, allowing for stormwater run-off from paved areas and smoothing out sharp level changes.	1.00	m ²		R	-
2.1.15	Grading and shaping of excavated spoil to create berms on site as agreed with the Landscape Architect	1.00	m ²		R	-
2.1.16	Berm in situ fill compacted in layers of 250mm to 90% Mod Aashto density. Total 5 layers	1.00	m ²		R	-
2.2	Fertilizers & Soil Improvements					
2.2.1	Supply, deliver and apply as per supplier specifications: Slow release planting hydrogel					
2.2.2	Organic slow release tree tablet	1.00	each		R	-
	Fertilizers: import and spread					

2.2.3	Fertilizers to all planting areas - 2:3:2 or alternative as specified by Landscape Architect	1.00	kg		R	-
2.2.4	Fertilizers to all lawn areas - 5:1:5 or alternative as specified by Landscape Architect	1.00	kg		R	-
2.2.5	Bone Meal for Trees and Plants: 50 g/tree hole and 30 g/ plant hole. To be applied to soil with a pH of less than 7 on instruction by the Landscape Architect pending the soil test results.	1.00	kg		R	-
	Organic compost: import and spread					
2.2.6	Organic compost for planting areas. Compost must be made of pure plant based organics and be free of weed, seeds, harmful salts, soil, sand, animal by-products and pathogens.	1.00	m³		R	-
	Top soil: import and spread					
2.2.7	Screened Ex-situ Topsoil: Must be composed of 15 – 25 % clay, 10% silt and 65 – 75% sand with a minimum of 2% organic material. The soil should be free from harmful salts, weed seeds and rubble of any kind. Sample to be approved by a Landscape Architect prior to importing	1.00	m³		R	-
	Potting soil: import and fill					
2.2.8	Landscape mix for potted plants & planters certified by industry associations - 70 % well draining loamy plant medium and 30 % compost (WEED FREE) - Sample to be approved by a Landscape Architect prior to importing	1.00	m³		R	-
	Lawn dressing: import and spread					
2.2.9	Top dressing of sodded lawn in layers with a maximum thickness of 10 mm, roll and neatly finish	1.00	m²		R	-
	Mulch: import and spread					
2.2.10	Bark/ Organic Mulch varying in size from 25-50mm in size placed to a depth of 50-70mm in all planted areas	1.00	m³		R	-
2.2.11	Soil analysis tests: to establish fertility, water holding capacity and suitability of the soil on site	1.00	per test		R	-
	Tree protection and support: supply and installation					
2.2.12	Tree stakes: driven at least 300mm deep into soil and must be CCA treated and be appropriate size in height and not be less than 35mm in diameter. Must be tied to a tree with a tree tier or strips.	1.00	each		R	-
					R	-

3	SOFTSCAPING. Supply, delivery and planting including: Approved plant quality and size, Correct planting procedures, Staking and protection. Watering and establishment care				R	-
3.1	Trees (200L) - Supply and Plant				R	-
3.1.1	Acokanthera oblongifolia	1.00	each		R	-
3.1.2	Afrocarpus falcatus	1.00	each		R	-
3.1.3	Albizia adianthifolia	1.00	each		R	-
3.1.4	Allophylus natalensis	1.00	each		R	-
3.1.5	Aloidendron barberae	1.00	each		R	-
3.1.6	Antidesma venosum	1.00	each		R	-
3.1.7	Apodytes dimidiata subsp. dimidiata	1.00	each		R	-
3.1.8	Baphia racemosa	1.00	each		R	-
3.1.9	Barringtonia racemose	1.00	each		R	-
3.1.10	Bersama lucens	1.00	each		R	-
3.1.11	Bolusanthus speciosus	1.00	each		R	-
3.1.12	Brachylaena discolor	1.00	each		R	-
3.1.13	Bridelia micrantha	1.00	each		R	-
3.1.14	Buddleja saligna	1.00	each		R	-
3.1.15	Burchellia bubalina	1.00	each		R	-
3.1.16	Calodendrum capensis	1.00	each		R	-
3.1.17	Calpurnia aurea	1.00	each		R	-
3.1.18	Canthium spinosum	1.00	each		R	-
3.1.19	Capparis tomentosa	1.00	each		R	-
3.1.20	Cassine aethiopica	1.00	each		R	-
3.1.21	Cassine papillosa	1.00	each		R	-
3.1.22	Cavacoa aurea	1.00	each		R	-
3.1.23	Celtis africana	1.00	each		R	-
3.1.24	Chaetacme aristata	1.00	each		R	-
3.1.25	Chionanthus peglerae	1.00	each		R	-
3.1.27	Chrysophyllum viridifolium	1.00	each		R	-
3.1.28	Cladostemon kirkii	1.00	each		R	-
3.1.29	Cleistanthus foveolatus	1.00	each		R	-
3.1.30	Cleistanthus schlechteri	1.00	each		R	-
3.1.31	Cola natalensis	1.00	each		R	-
3.1.32	Combretum erythrophyllum	1.00	each		R	-
3.1.33	Combretum kraussii	1.00	each		R	-
3.1.34	Combretum molle	1.00	each		R	-
3.1.35	Commiphora harveyi	1.00	each		R	-
3.1.36	Commiphora neglecta	1.00	each		R	-
3.1.37	Commiphora schimperi	1.00	each		R	-
3.1.38	Commiphora woodii	1.00	each		R	-
3.1.39	Cordia africana	1.00	each		R	-
3.1.40	Cordia caffra	1.00	each		R	-
3.1.41	Craibia zimmermannii	1.00	each		R	-
3.1.42	Croton gratissimus	1.00	each		R	-
3.1.43	Croton sylvaticus	1.00	each		R	-
3.1.44	Cryptocarya latifolia	1.00	each		R	-
3.1.45	Cryptocarya myrtifolia	1.00	each		R	-
3.1.46	Cryptocarya woodii	1.00	each		R	-
3.1.47	Cryptocarya wyliei	1.00	each		R	-
3.1.48	Cunonia capensis	1.00	each		R	-
3.1.49	Curtisia dentata	1.00	each		R	-
3.1.50	Cussonia nicholsonii	1.00	each		R	-
3.1.51	Cussonia sphaerocephala	1.00	each		R	-
3.1.52	Cussonia spicata	1.00	each		R	-
3.1.53	Cussonia zuluensis	1.00	each		R	-
3.1.54	Dais cotinifolia	1.00	each		R	-
3.1.55	Deinbollia oblongifolia	1.00	each		R	-
3.1.56	Diospyros inhacaensis	1.00	each		R	-
3.1.57	Diospyros natalensis	1.00	each		R	-
3.1.58	Dombeya cymose	1.00	each		R	-
3.1.59	Dombeya rotundifolia	1.00	each		R	-
3.1.60	Dombeya tiliacea	1.00	each		R	-
3.1.61	Dovyalis caffra	1.00	each		R	-
3.1.62	Ekebergia capensis	1.00	each		R	-
3.1.63	Erythrina crista-galli	1.00	each		R	-
3.1.64	Erythrophleum lasianthum	1.00	each		R	-
3.1.65	Erythrina latissima	1.00	each		R	-
3.1.66	Erythrina lysistemon	1.00	each		R	-
3.1.67	Euphorbia evansii	1.00	each		R	-
3.1.68	Euphorbia ingens	1.00	each		R	-
3.1.69	Euphorbia turicalli	1.00	each		R	-

3.1.70	Euclea natalensis	1.00	each		R	-
3.1.71	Faidherbia albida	1.00	each		R	-
3.1.72	Ficus bubu	1.00	each		R	-
3.1.73	Ficus ingens	1.00	each		R	-
3.1.74	Ficus lutea	1.00	each		R	-
3.1.75	Ficus polita	1.00	each		R	-
3.1.76	Ficus sur	1.00	each		R	-
3.1.77	Ficus tremula	1.00	each		R	-
3.1.78	Galpinia transvaalica	1.00	each		R	-
3.1.79	Garcinia livingstonei	1.00	each		R	-
3.1.80	Gardenia cornuta	1.00	each		R	-
3.1.81	Gonioma kamassi	1.00	each		R	-
3.1.82	Halleria lucida	1.00	each		R	-
3.1.83	Harpephyllum caffrum	1.00	each		R	-
3.1.84	Heteropyxis natalensis	1.00	each		R	-
3.1.85	Hibiscus tiliaceus	1.00	each		R	-
3.1.86	Hymenocardia ulmoides	1.00	each		R	-
3.1.87	Ilex mitis	1.00	each		R	-
3.1.88	Indigofera jucunda	1.00	each		R	-
3.1.89	Loxostylis alata	1.00	each		R	-
3.1.90	Maerua rosmarinoides	1.00	each		R	-
3.1.91	Manilkara discolor	1.00	each		R	-
3.1.92	Margaritaria discoidea	1.00	each		R	-
3.1.93	Maytenus heterophylla	1.00	each		R	-
3.1.94	Maytenus nemorosa	1.00	each		R	-
3.1.95	Maytenus peduncularis	1.00	each		R	-
3.1.96	Maytenus procumbens	1.00	each		R	-
3.1.97	Maytenus undata	1.00	each		R	-
3.1.98	Metarungia pubinervia	1.00	each		R	-
3.1.99	Millettia grandis	1.00	each		R	-
3.1.100	Mimusops obovata	1.00	each		R	-
3.1.101	Mundulea sericea	1.00	each		R	-
3.1.102	Nuxia congesta	1.00	each		R	-
3.1.103	Nuxia floribunda	1.00	each		R	-
3.1.104	Ochna natalitia	1.00	each		R	-
3.1.105	Olea europea subsp.africana	1.00	each		R	-
3.1.106	Olea woodiana	1.00	each		R	-
3.1.107	Oncoba spinosa	1.00	each		R	-
3.1.108	Oxyanthus pyriformis	1.00	each		R	-
3.1.109	Peltophorum africanum	1.00	each		R	-
3.1.110	Pittosporum viridiflorum	1.00	each		R	-
3.1.111	Plumeria rubra (Frangipani)	1.00	each		R	-
3.1.112	Podocarpus facicatus	1.00	each		R	-
3.1.113	Polygala myrtifolia	1.00	each		R	-
3.1.114	Protorhus longifolia	1.00	each		R	-
3.1.115	Ptaeroxylon obliquum	1.00	each		R	-
3.1.116	Rauvolfia caffra	1.00	each		R	-
3.1.117	Rothmania capensis	1.00	each		R	-
3.1.118	Rothmania globosa	1.00	each		R	-
3.1.119	Schotia brachypetala	1.00	each		R	-
3.1.120	Schrebera alata	1.00	each		R	-
3.1.121	Sclerocarya birrea	1.00	each		R	-
3.1.122	Searsia chirindensis	1.00	each		R	-
3.1.123	Searsia lucida	1.00	each		R	-
3.1.124	Searsia tomentosa	1.00	each		R	-
3.1.125	Senegalia burkei	1.00	each		R	-
3.1.126	Senegalia nigrescens	1.00	each		R	-
3.1.127	Sideroxylon inerme	1.00	each		R	-
3.1.128	Spirostachys africana	1.00	each		R	-
3.1.129	Strelitzia nicolai	1.00	each		R	-
3.1.130	Strychnos decussata	1.00	each		R	-
3.1.131	Syzygium cordatum	1.00	each		R	-
3.1.132	Syzygium guineense	1.00	each		R	-
3.1.133	Tabernaemontana ventricosa	1.00	each		R	-
3.1.134	Terminalia catappa	1.00	each		R	-
3.1.135	Terminalia phanerophlebia	1.00	each		R	-
3.1.136	Trema orientalis	1.00	each		R	-
3.1.137	Trichellia dregeana	1.00	each		R	-
3.1.138	Trichellia emetica	1.00	each		R	-
3.1.139	Trichocladus grandiflorus	1.00	each		R	-
3.1.140	Turraea floribunda	1.00	each		R	-
3.1.141	Vachellia gerrardii	1.00	each		R	-

3.1.142	Vachellia natalitia	1.00	each		R	-
3.1.143	Vachellia robusta subsp. Robusta	1.00	each		R	-
3.1.144	Vachellia sieberiana var. woodii	1.00	each		R	-
3.1.145	Vepris lanceolata	1.00	each		R	-
3.1.146	Volkameria glabra	1.00	each		R	-
3.1.147	Warburgia salutaris	1.00	each		R	-
3.1.148	Xylothea kraussiana	1.00	each		R	-
3.1.149	Ziziphus mucronata	1.00	each		R	-
3.2	Palm Trees (200L) - Supply and Plant					
3.2.1	Cocos nucifera	1.00	each		R	-
3.2.2	Hyphaene coriacea	1.00	each		R	-
3.2.3	Phoenix reclinata	1.00	each		R	-
3.2.4	Roystonea regia	1.00	each		R	-
3.3	Fruits and Edible Trees (50L) - Supply and Plant					
3.3.1	Avocado tree	1.00	each		R	-
3.3.2	Citrus Lemon	1.00	each		R	-
3.3.3	Citrus Orange	1.00	each		R	-
3.3.4	Pecan Nut (Ukulinga)	1.00	each		R	-
3.3.5	Mango tree	1.00	each		R	-
3.3.6	Apple tree	1.00	each		R	-
3.3.7	Peach tree	1.00	each		R	-
3.3.8	Pawpaw tree	1.00	each		R	-
3.3.9	Litchi tree	1.00	each		R	-
3.3.10	Banana tree	1.00	each		R	-

3.4	Shrubs - Supply and Plant				
3.4.1	Acokanthera oppositifolia - 10L	1.00	each	R	-
3.4.2	Acokanthera oppositifolia - 50L	1.00	each	R	-
3.4.3	Aloe arborescens - 10L	1.00	each	R	-
3.4.4	Aloe arborescens - 50L	1.00	each	R	-
3.4.5	Aloe chabaudii - 5L	1.00	each	R	-
3.4.6	Aloe chabaudii - 50L	1.00	each	R	-
3.4.7	Aloe cooperi - 5L	1.00	each	R	-
3.4.8	Aloe cooperi - 10L	1.00	each	R	-
3.4.9	Aloe ferox - 20L	1.00	each	R	-
3.4.10	Aloe ferox - 10L	1.00	each	R	-
3.4.11	Aloe maculata - 5L	1.00	each	R	-
3.4.12	Aloe maculata - 50L	1.00	each	R	-
3.4.13	Aloe marlothii - 10L	1.00	each	R	-
3.4.14	Aloe marlothii - 50L	1.00	each	R	-
3.4.15	Aloe pluridens - 5L	1.00	each	R	-
3.4.16	Aloe pluridens - 20L	1.00	each	R	-
3.4.17	Aloe rupestris - 5L	1.00	each	R	-
3.4.18	Aloe rupestris - 20L	1.00	each	R	-
3.4.19	Aloe thraskii - 5L	1.00	each	R	-
3.4.20	Aloe thraskii - 20L	1.00	each	R	-
3.4.21	Alsophila dregei - 5L	1.00	each	R	-
3.4.22	Alsophila dregei - 20L	1.00	each	R	-
3.4.23	Aristea ecklonii - 3L	1.00	each	R	-
3.4.24	Aristea ecklonii - 4L	1.00	each	R	-
3.4.25	Asparagus plumosus - 3L	1.00	each	R	-
3.4.26	Asparagus plumosus - 5L	1.00	each	R	-
3.4.27	Barleria obtusa - 4L	1.00	each	R	-
3.4.28	Barleria obtusa - 10L	1.00	each	R	-
3.4.29	Barleria repens - 4L	1.00	each	R	-
3.4.30	Barleria repens - 10L	1.00	each	R	-
3.4.31	Bauhinia tomentosa - 10L	1.00	each	R	-
3.4.32	Bauhinia tomentosa - 50L	1.00	each	R	-
3.4.33	Carissa macrocarpa "Green Carpet" - 3L	1.00	each	R	-
3.4.34	Carissa macrocarpa "Green Carpet" - 5L	1.00	each	R	-
3.4.35	Carissa macrocarpa - 3L	1.00	each	R	-
3.4.36	Carissa macrocarpa - 5L	1.00	each	R	-
3.4.37	Chrysanthemoides monilifera - 4L	1.00	each	R	-
3.4.38	Chrysanthemoides monilifera - 10L	1.00	each	R	-
3.4.39	Combretum bracteosum - 4L	1.00	each	R	-
3.4.40	Combretum bracteosum - 50L	1.00	each	R	-
3.4.41	Combretum microphyllum - 4L	1.00	each	R	-
3.4.42	Combretum microphyllum - 10L	1.00	each	R	-
3.4.43	Cussonia nicholsonii - 10L	1.00	each	R	-
3.4.44	Cussonia nicholsonii - 20L	1.00	each	R	-
3.4.45	Cussonia sphaerocephala - 10L	1.00	each	R	-
3.4.46	Cussonia sphaerocephala - 20L	1.00	each	R	-
3.4.47	Deinblia oblongifolia - 10L	1.00	each	R	-
3.4.48	Deinblia oblongifolia - 20L	1.00	each	R	-
3.4.49	Dicliptera cernua - 4L	1.00	each	R	-
3.4.50	Dicliptera cernua - 10L	1.00	each	R	-
3.4.51	Diospyros lycioides - 10L	1.00	each	R	-
3.4.52	Diospyros lycioides - 20L	1.00	each	R	-
3.4.53	Dissotis princeps - 5L	1.00	each	R	-
3.4.54	Dissotis princeps - 20L	1.00	each	R	-
3.4.55	Distephanus angulifolius - 5L	1.00	each	R	-
3.4.56	Distephanus angulifolius - 10L	1.00	each	R	-
3.4.57	Dodonaea angustifolia - 10L	1.00	each	R	-
3.4.58	Dodonaea angustifolia - 20L	1.00	each	R	-
3.4.59	Dombeya tiliacea - 20L	1.00	each	R	-
3.4.60	Dombeya tiliacea - 50L	1.00	each	R	-
3.4.61	Dovyalis caffra - 10L	1.00	each	R	-
3.4.62	Dovyalis caffra - 20L	1.00	each	R	-
3.4.63	Dovyalis rhamnoides - 10L	1.00	each	R	-
3.4.64	Dovyalis rhamnoides - 20L	1.00	each	R	-
3.4.65	Dracaena alectriformis - 5L	1.00	each	R	-
3.4.66	Dracaena alectriformis - 10L	1.00	each	R	-
3.4.67	Ehretia rigida - 5L	1.00	each	R	-
3.4.68	Ehretia rigida - 20L	1.00	each	R	-
3.4.69	Encephalartos ferox (Cycad) - Cone Diameter 20cm	1.00	each	R	-
3.4.70	Encephalartos ferox (Cycad) - Cone Diameter 40cm	1.00	each	R	-
3.4.71	Encephalartos natalensis (Cycad) - Cone diameter 20cm	1.00	each	R	-
3.4.72	Encephalartos natalensis (Cycad) - Cone diameter 40cm	1.00	each	R	-

3.4.73	Encephalartos villosus (Cycad) - Cone diameter 20cm	1.00	each	R	-
3.4.74	Encephalartos villosus (Cycad) - Cone diameter 40cm	1.00	each	R	-
3.4.75	Euphorbia tirucalli 'Sticks on fire' - 5L	1.00	each	R	-
3.4.76	Euphorbia tirucalli 'Sticks on fire' - 10L	1.00	each	R	-
3.4.77	Euphorbia tirucalli 'Sticks on fire' - 50L	1.00	each	R	-
3.4.78	Ficus burtt-davyi - 20L	1.00	each	R	-
3.4.79	Ficus burtt-davyi - 50L	1.00	each	R	-
3.4.80	Ficus capreifolia - 20L	1.00	each	R	-
3.4.81	Ficus capreifolia - 50L	1.00	each	R	-
3.4.82	Gomphocarpus physocarpus - 4L	1.00	each	R	-
3.4.83	Gomphocarpus physocarpus - 10L	1.00	each	R	-
3.4.84	Grewia flava- 5L	1.00	each	R	-
3.4.85	Grewia flava- 10L	1.00	each	R	-
3.4.86	Grewia occidentalis - 5L	1.00	each	R	-
3.4.87	Grewia occidentalis - 10L	1.00	each	R	-
3.4.88	Hibiscus calyphyllus - 4L	1.00	each	R	-
3.4.89	Hibiscus calyphyllus - 10L	1.00	each	R	-
3.4.90	Hypoestes aristata - 4L	1.00	each	R	-
3.4.91	Hypoestes aristata - 10L	1.00	each	R	-
3.4.92	Isoglossa woodii - 4L	1.00	each	R	-
3.4.93	Isoglossa woodii - 10L	1.00	each	R	-
3.4.94	Isoglossa cooperi - 4L	1.00	each	R	-
3.4.95	Isoglossa cooperi - 10L	1.00	each	R	-
3.4.96	Justicia capensis - 4L	1.00	each	R	-
3.4.97	Justicia capensis - 10L	1.00	each	R	-
3.4.98	Leonotis leonurus - 4L	1.00	each	R	-
3.4.99	Leonotis leonurus - 10L	1.00	each	R	-
3.4.100	Mackaya bella - 5L	1.00	each	R	-
3.4.101	Mackaya bella - 20L	1.00	each	R	-
3.4.102	Maerua rosmarinoides - 4L	1.00	each	R	-
3.4.103	Maerua rosmarinoides - 10L	1.00	each	R	-
3.4.104	Monanthotaxis caffra - 3L	1.00	each	R	-
3.4.105	Monanthotaxis caffra - 5L	1.00	each	R	-
3.4.106	Ochna serrulata - 4L	1.00	each	R	-
3.4.107	Ochna serrulata - 10L	1.00	each	R	-
3.4.108	Ocimum labiatum - 4L	1.00	each	R	-
3.4.109	Ocimum labiatum - 10L	1.00	each	R	-
3.4.110	Osteospermum moniliferum - 5L	1.00	each	R	-
3.4.111	Osteospermum moniliferum - 50L	1.00	each	R	-
3.4.112	Pavetta lanceolata - 3L	1.00	each	R	-
3.4.113	Pavetta lanceolata - 5L	1.00	each	R	-
3.4.114	Pavetta revoluta - 4L	1.00	each	R	-
3.4.115	Pavetta revoluta - 10L	1.00	each	R	-
3.4.116	Pelargonium capitatum - 4L	1.00	each	R	-
3.4.117	Pelargonium capitatum - 10L	1.00	each	R	-
3.4.118	Plectranthus ciliatus - 4L	1.00	each	R	-
3.4.119	Plectranthus ciliatus - 10L	1.00	each	R	-
3.4.120	Plectranthus saccatus - 4L	1.00	each	R	-
3.4.121	Plectranthus saccatus - 10L	1.00	each	R	-
3.4.122	Plectranthus spicatus - 4L	1.00	each	R	-
3.4.123	Plectranthus spicatus - 10L	1.00	each	R	-
3.4.124	Plectranthus ecklonii - 5L	1.00	each	R	-
3.4.125	Plectranthus ecklonii - 10L	1.00	each	R	-
3.4.126	Plectranthus fruticosus - 5L	1.00	each	R	-
3.4.127	Plectranthus fruticosus - 10L	1.00	each	R	-
3.4.128	Plumbago auriculata 'Royal Cape' - 5L	1.00	each	R	-
3.4.129	Plumbago auriculata 'Royal Cape' - 10L	1.00	each	R	-
3.4.130	Plumbago auriculata 'Royal Cape' - 20L	1.00	each	R	-
3.4.131	Plumbago auriculata f. alba (White Cape Leadwort) - 5L	1.00	each	R	-
3.4.132	Plumbago auriculata f. alba (White Cape Leadwort) - 10L	1.00	each	R	-
3.4.133	Plumbago auriculata f. alba (White Cape Leadwort) - 20L	1.00	each	R	-
3.4.134	Polygala myrtifolia - 3L	1.00	each	R	-
3.4.135	Polygala myrtifolia - 10L	1.00	each	R	-
3.4.136	Polygala virgata - 3L	1.00	each	R	-
3.4.137	Polygala virgata - 10L	1.00	each	R	-
3.4.138	Portulacaria afra - 4L	1.00	each	R	-
3.4.139	Portulacaria afra - 10L	1.00	each	R	-
3.4.141	Portulacaria afra - 20L	1.00	each	R	-
3.4.142	Psychotria capensis - 5L	1.00	each	R	-
3.4.143	Psychotria capensis - 20L	1.00	each	R	-
3.4.144	Roses - 4L	1.00	each	R	-
3.4.145	Roses - 10L	1.00	each	R	-
3.4.146	Ruellia cordata - 4L	1.00	each	R	-

3.4.147	Ruellia cordata - 10L	1.00	each		R	-
3.4.148	Searsia dentata - 3L	1.00	each		R	-
3.4.149	Searsia dentata - 10L	1.00	each		R	-
3.4.150	Searsia natalensis - 3L	1.00	each		R	-
3.4.151	Searsia natalensis - 10L	1.00	each		R	-
3.4.152	Searsia nebulosa - 3L	1.00	each		R	-
3.4.153	Searsia nebulosa - 10L	1.00	each		R	-
3.4.154	Senecio barbetonicus- 5L	1.00	each		R	-
3.4.155	Senecio barbetonicus- 10L	1.00	each		R	-

3.4.156	Senecio oxyodontus - 4L	1.00	each		R	-
3.4.157	Senecio oxyodontus - 10L	1.00	each		R	-
3.4.158	Strelitzia nicolai - 5L	1.00	each		R	-
3.4.159	Strelitzia nicolai - 20L	1.00	each		R	-
3.4.160	Strelitzia nicolai - 50L	1.00	each		R	-
3.4.161	Strelitzia nicolai - 100L	1.00	each		R	-
3.4.162	Strelitzia reginae - 5L	1.00	each		R	-
3.4.163	Strelitzia reginae - 10L	1.00	each		R	-
3.4.164	Strelitzia reginae - 20L	1.00	each		R	-
3.4.165	Tecomaria capensis - 5L	1.00	each		R	-
3.4.166	Tecomaria capensis - 10L	1.00	each		R	-
3.4.167	Tecomaria capensis - 20L	1.00	each		R	-
3.4.168	Tephrosia grandiflora - 5L	1.00	each		R	-
3.4.169	Tephrosia grandiflora - 10L	1.00	each		R	-
3.4.170	Tetradenia riparia - 4L	1.00	each		R	-
3.4.171	Tetradenia riparia - 10L	1.00	each		R	-
3.4.172	Thunbergia natalensis - 5L	1.00	each		R	-
3.4.173	Thunbergia natalensis - 10L	1.00	each		R	-
3.4.174	Turraea obtusifolia - 5L	1.00	each		R	-
3.4.175	Turraea obtusifolia - 20L	1.00	each		R	-
3.5	Groundcovers - Supply and Plant					
3.5.1	Agapanthus africanus 'blue' - 2L	1.00	each		R	-
3.5.2	Agapanthus africanus 'blue' - 4L	1.00	each		R	-
3.5.3	Agapanthus orientalis - 2L	1.00	each		R	-
3.5.4	Agapanthus orientalis - 4L	1.00	each		R	-
3.5.5	Agapanthus praecox - 2L	1.00	each		R	-
3.5.6	Agapanthus praecox - 4L	1.00	each		R	-
3.5.7	Aloe greatheadii - 2L	1.00	each		R	-
3.5.8	Aloe greatheadii - 4L	1.00	each		R	-
3.5.9	Aptenia cordifolia - 2L	1.00	each		R	-
3.5.10	Aristida junciformis - 2L	1.00	each		R	-
3.5.11	Aristida junciformis - 4L	1.00	each		R	-
3.5.12	Asparagus densiflorus - 2L	1.00	each		R	-
3.5.13	Asparagus macowanii - 2L	1.00	each		R	-
3.5.14	Asystasia gangetica - 2L	1.00	each		R	-
3.5.15	Asystasia gangetica - 4L	1.00	each		R	-
3.5.16	Bulbine abyssinica - 2L	1.00	each		R	-
3.5.17	Bulbine frutescens - 2L	1.00	each		R	-
3.5.18	Bulbine frutescens - 4L	1.00	each		R	-
3.5.19	Bulbine latifolia - 2L	1.00	each		R	-
3.5.20	Bulbine latifolia - 4L	1.00	each		R	-
3.5.21	Canevalia rosea - 2L	1.00	each		R	-
3.5.22	Carex flagellifera - 2L	1.00	each		R	-
3.5.23	Carex flagellifera - 4L	1.00	each		R	-
3.5.24	Carpobrotus edulis cuttings	1.00	each		R	-
3.5.25	Carpobrotus edulis - 2L	1.00	each		R	-
3.5.26	Carpobrotus edulis - 4L	1.00	each		R	-
3.5.27	Chlorophytum comosum - 2L	1.00	each		R	-
3.5.28	Chlorophytum comosum - 4L	1.00	each		R	-
3.5.29	Chlorophytum comosum 'variegatum' - 2L	1.00	each		R	-
3.5.30	Chlorophytum comosum 'variegatum' - 4L	1.00	each		R	-
3.5.31	Chlorophytum saundersii - 2L	1.00	each		R	-
3.5.32	Chlorophytum saundersii - 4L	1.00	each		R	-
3.5.33	Clivia miniata - 2L	1.00	each		R	-
3.5.34	Clivia miniata - 4L	1.00	each		R	-
3.5.35	Cotyledon orbiculata - 3L	1.00	each		R	-
3.5.36	Crassula capitella - 2L	1.00	each		R	-
3.5.37	Crassula erosula 'campfire' - 1L	1.00	each		R	-
3.5.38	Crassula erosula 'campfire' - 2L	1.00	each		R	-
3.5.39	Crassula multicava, 1L	1.00	each		R	-
3.5.40	Crassula multicava, 2L	1.00	each		R	-
3.5.41	Crassula ovata - 3L	1.00	each		R	-
3.5.42	Crinum macowanii - 2L	1.00	each		R	-
3.5.43	Crinum macowanii - 4L	1.00	each		R	-
3.5.44	Crocasmia aurea - 2L	1.00	each		R	-
3.5.45	Crocasmia aurea - 4L	1.00	each		R	-
3.5.46	Cyperus prolifer - 2L	1.00	each		R	-
3.5.47	Cyperus prolifer - 5L	1.00	each		R	-
3.5.48	Cyrtanthus mackenii - 2L	1.00	each		R	-
3.5.49	Cyrtanthus mackenii - 4L	1.00	each		R	-
3.5.50	Cyrtanthus sanguineus - 2L	1.00	each		R	-

3.5.51	Cyrtanthus sanguineus - 4L	1.00	each	R	-
3.5.52	Delosperma lineare - Plugs	1.00	each	R	-
3.5.53	Delosperma lineare - 4L	1.00	each	R	-
3.5.54	Dietes bicolor - 2L	1.00	each	R	-
3.5.55	Dietes bicolor - 4L	1.00	each	R	-
3.5.56	Dietes grandiflora - 2L	1.00	each	R	-
3.5.57	Dietes grandiflora - 4L	1.00	each	R	-
3.5.58	Dietes iridioides - 2L	1.00	each	R	-
3.5.59	Dietes iridioides - 4L	1.00	each	R	-
3.5.60	Elegia tectorum - 2L	1.00	each	R	-
3.5.61	Elegia tectorum - 4L	1.00	each	R	-
3.5.62	Gazania rigens plug	1.00	each	R	-
3.5.63	Gazania rigens - 2L	1.00	each	R	-
3.5.64	Gazania rigens - 4L	1.00	each	R	-
3.5.65	Gazania splendens plug	1.00	each	R	-
3.5.66	Gazania splendens - 2L	1.00	each	R	-
3.5.67	Gazania splendens - 4L	1.00	each	R	-
3.5.68	Haemanthus albiflos - 2L	1.00	each	R	-
3.5.69	Haemanthus albiflos - 4L	1.00	each	R	-
3.5.70	Helichrysum cymosum - 2L	1.00	each	R	-
3.5.71	Helichrysum cymosum - 4L	1.00	each	R	-
3.5.72	Hypoestes forskalii - 2L	1.00	each	R	-
3.5.73	Hypoestes forskalii - 4L	1.00	each	R	-
3.5.74	Justicia betonica - 2L	1.00	each	R	-
3.5.75	Justicia betonica - 4L	1.00	each	R	-
3.5.76	Kalanchoe sexangularis- 3L	1.00	each	R	-
3.5.77	Kalanchoe thyrsiflora- 3L	1.00	each	R	-
3.5.78	Kniphofia tysonii - 2L	1.00	each	R	-
3.5.79	Kniphofia tysonii - 4L	1.00	each	R	-
3.5.80	Ledebouria petiolata - 2L	1.00	each	R	-
3.5.81	Ledebouria petiolata -4L	1.00	each	R	-
3.5.82	Merwillia plumbea - 2L	1.00	each	R	-
3.5.83	Merwillia plumbea - 4L	1.00	each	R	-
3.5.84	Nemesia denticulata - 2L	1.00	each	R	-
3.5.85	Nemesia denticulata - 4L	1.00	each	R	-
3.5.86	Nymphaea nouchali - 2L	1.00	each	R	-
3.5.87	Nymphaea nouchali - 4L	1.00	each	R	-
3.5.88	Ophiopogon japonicus 'kyoto' - 2L	1.00	each	R	-
3.5.89	Ophiopogon japonicus 'kyoto' - 4L	1.00	each	R	-
3.5.90	Oplismenus hirtellus - 2L	1.00	each	R	-
3.5.91	Oplismenus hirtellus - 4L	1.00	each	R	-
3.5.92	Osteospermum fruticosum - 2L	1.00	each	R	-
3.5.93	Osteospermum fruticosum - 4L	1.00	each	R	-
3.5.94	Plectranthus verticillatus - 2L	1.00	each	R	-
3.5.95	Plectranthus verticillatus - 4L	1.00	each	R	-
3.5.96	Sansevieria hyacinthoides - 2L	1.00	each	R	-
3.5.97	Sansevieria hyacinthoides - 4L	1.00	each	R	-
3.5.98	Scadoxus puniceus - 2L	1.00	each	R	-
3.5.99	Scadoxus puniceus - 4L	1.00	each	R	-
3.5.100	Setaria megaphylla - 2L	1.00	each	R	-
3.5.101	Setaria megaphylla - 4L	1.00	each	R	-
3.5.102	Tulbaghia violacea 2L	1.00	each	R	-
3.5.103	Tulbaghia violacea 4L	1.00	each	R	-
3.5.104	Tulbaghia violacea "Silver Lace" 2L	1.00	each	R	-
3.5.105	Tulbaghia violacea "Silver Lace" 4L	1.00	each	R	-
3.5.106	Zantedeschia aethiopica 2L	1.00	each	R	-
3.5.107	Zantedeschia aethiopica 4L	1.00	each	R	-
3.6	Creepers - Supply and Plant				
3.6.1	Asparagus falcatus - 2L	1.00	each	R	-
3.6.2	Asparagus falcatus - 4L	1.00	each	R	-
3.6.3	Grewia occidentalis - 20L	1.00	each	R	-
3.6.4	Grewia occidentalis - 50L	1.00	each	R	-
3.6.5	Ficus Pumila - 2L	1.00	each	R	-
3.6.6	Ipomoea ficifolia - 2L	1.00	each	R	-
3.6.7	Ipomoea ficifolia - 4L	1.00	each	R	-
3.6.8	Jasminum multipartitum - 2L	1.00	each	R	-
3.6.9	Jasminum multipartitum - 4L	1.00	each	R	-
3.6.10	Momordica balsamina - 2L	1.00	each	R	-
3.6.11	Momordica balsamina - 4L	1.00	each	R	-
3.6.12	Rhoicissus digitata - 2L	1.00	each	R	-
3.6.13	Rhoicissus digitata - 4L	1.00	each	R	-

3.6.14	Rhoicissus rhomboidea - 2L	1.00	each		R	-
3.6.15	Rhoicissus rhomboidea - 4L	1.00	each		R	-
3.6.16	Rhoicissus tomentosa - 2L	1.00	each		R	-
3.6.17	Rhoicissus tomentosa - 4L	1.00	each		R	-
3.6.18	Senecio deltoieus - 2L	1.00	each		R	-
3.6.19	Senecio deltoieus - 4L	1.00	each		R	-
3.6.20	Senecio macroglossus - 2L	1.00	each		R	-
3.6.21	Senecio macroglossus - 4L	1.00	each		R	-
3.6.22	Senecio tamoides - 2L	1.00	each		R	-
3.6.23	Senecio tamoides - 4L	1.00	each		R	-
3.6.24	Thunbergia alata - 2L	1.00	each		R	-
3.6.25	Thunbergia alata - 4L	1.00	each		R	-

3.7	Lawn & Grasses- Lawn installation including: Soil preparation, Turf/seed installation, Initial watering and protection, Establishment maintenance				
	Grasses - Supply and Plant				
3.7.1	Anthericum saunderssiae - 2L	1.00	each	R	-
3.7.2	Chondropetalum tectorum - 2L	1.00	each	R	-
3.7.3	Chondropetalum tectorum - 4L	1.00	each	R	-
3.7.4	Cynodon dactylon instant sods.	1.00	m ²	R	-
3.7.5	Cynodon dactylon sprigging	1.00	m ²	R	-
3.7.6	Dactyloctenium australe - Berea LM instant sods	1.00	m ²	R	-
3.7.7	Dactyloctenium australe - Berea LM Sprigging	1.00	m ²	R	-
3.7.8	Elegia tectorum - 5L	1.00	each	R	-
	Instant Lawn - Supply and Plant				
3.7.9	Pennisetum clandestinum instant sods	1.00	m ²	R	-
3.7.10	Pennisetum clandestinum Sprigging	1.00	m ²	R	-
3.7.11	Stenotaphrum secundatum instant sods	1.00	m ²	R	-
3.7.12	Stenotaphrum secundatum Sprigging	1.00	m ²	R	-
	Veld grass - Hydroseeding				
3.7.13	Hydroseeding: Sour Bushveld veldgrass mix	1.00	m ²	R	-
3.7.14	Hand seeding (Manual): Sour Bushveld veldgrass mix	1.00	m ²	R	-
4	HARDSCAPING (Rates shall include: Subgrade preparation, Compliance with SANS standards, Shop drawings, Testing and certification, Protection of adjacent structures)				
4.1	Paving Base & Subbase				
4.1.1	G4 graded crushed stone imported material compacted in 150mm layer to specified density compaction	1.00	m ³	R	-
4.1.2	G5 imported material compacted in 150mm layer to specified density compaction	1.00	m ³	R	-
4.1.3	G5 imported material stabilised with cement at a rate of 1 pocket cement per 5m ² - premixed and compacted slightly wet in 150mm layer	1.00	m ³	R	-
4.1.4	G6 imported material compacted in 150mm layer to specified density compaction	1.00	m ³	R	-
4.1.5	G7 imported gravel material compacted in 150mm layer to specified density compaction	1.00	m ³	R	-
4.1.6	Rip and re-compact 150mm layer insitu material compact insitu material to minimum 93% MOD AASHTO density compaction	1.00	m ³	R	-
4.1.7	Subgrade Compaction to 90% MOD AASHTO density and stabilize with 5% cement prior to compaction if necessary, in layers of 150mm layers	1.00	m ²	R	-
4.1.8	Subgrade Compaction to 93% MOD AASHTO density in 150mm layers	1.00	m ²	R	-
4.1.9	Subgrade Compaction to 95% MOD AASHTO density in 150mm layers	1.00	m ²	R	-
4.1.10	Subgrade Compaction to 98% MOD AASHTO density in 150mm layers	1.00	m ²	R	-
4.1.11	Bidim geotextile membrane or similar approved	1.00	m ²	R	-
4.1.12	30mm thick River Sand Bedding - under paving	1.00	m ³	R	-
4.1.13	250 micron SABS plastic USB sheeting membrane (to be used under the riversand)	1.00	m ²	R	-
4.1.14	Approved herbicide and ant poison prior laying paving	1.00	m ²	R	-
4.1.15	Ref 100 steel mesh (or according to PrEng specification) to be laid during insitu cast concrete	1.00	m ²	R	-
4.1.16	15Mpa Concrete footing/ foundation	1.00	m ³	R	-
4.1.17	20Mpa Concrete footing/ foundation	1.00	m ³	R	-
4.1.18	25Mpa Concrete footing/ foundation	1.00	m ³	R	-
				R	-
4.2	Paving materials - Supply and install			R	-
	Concrete brick pavers				
4.2.1	1000x500x50mm thick concrete paver flagtone (pattern and colour varies), wood floated or brush finish surface. Including saw cuttings	1.00	m ²	R	-
4.2.2	1000x500x50mm thick concrete paver flagtone (pattern and colour varies colour varies), exposed aggregate finish surface. Including saw cuttings	1.00	m ²	R	-
4.2.3	600x400x100mm Concrete Grass block permeable paver. Including saw cuttings	1.00	m ²	R	-
4.2.4	628x228x50mm light duty concrete edge beam (for edging). Including saw cuttings	1.00	m ²	R	-
4.2.5	500x500x50mm thick concrete paver blocks, wood floated brush finish (pattern and colour varies). Including saw cuttings	1.00	m ²	R	-

4.2.6	500x500x50mm thick concrete paver blocks, exposed aggregate finish (pattern and colour varies). Including saw cuttings	1.00	m ²		R	-
4.2.7	500 x 500 x50mm thick amalgamated concrete product, standard, purpose made or special, product to be tested and test certification for skid or non-slip, and concrete strength (no less than 25mpa) will be requested during the duration of the project to maintain quality of product. Including saw cuttings	1.00	m ²		R	-
4.2.8	400x300x60mm thick concrete paver block, wood floated brush finish (pattern and colour varies). Including saw cuttings	1.00	m ²		R	-
4.2.9	400x400x50mm Tactile or Similar approved: with a warning, directional, pedestrian or cycle signage engraved in the tile.	1.00	m ²		R	-
4.2.10	300x300x50mm Tactile or Similar approved: with a warning, directional, pedestrian or cycle signage engraved in the tile	1.00	m ²		R	-
4.2.11	220x220x50mm concrete brick paver (pattern and colour varies). Include saw cuttings	1.00	m ²		R	-
4.2.12	200x150x75mm bevelled edge concrete brick paver (pattern and colour varies). Include saw cuttings	1.00	m ²		R	-
4.2.13	200x150x50mm thick concrete paver block (pattern and colour varies). Include saw cuttings	1.00	m ²		R	-
4.2.14	200x100x80mm thick interlocking concrete brick paver, in herringbone pattern (colour varies). Include saw cuttings	1.00	m ²		R	-
4.2.15	200x100x60mm thick interlocking concrete brick paver, in herringbone pattern (colour varies). Include saw cuttings	1.00	m ²		R	-
4.2.16	200x100x50mm Double Cobble concrete pavers (pattern and colour varies). Include saw cuttings	1.00	m ²		R	-
4.2.17	105x105x75mm grey concrete cobble pavers (pattern and colour varies). Include saw cuttings	1.00	m ²		R	-
4.2.18	100x100x50mm grey concrete cobble pavers (pattern and colour varies). Include saw cuttings	1.00	m ²		R	-
	Clay brick pavers					
4.2.19	220x108.5x73mm thick Clay Paving Brick (pattern and colour varies). Include saw cuttings	1.00	m ²		R	-
4.2.20	220x108.5x50mm thick Clay Paving Brick (colour and pattern varies). Include saw cuttings	1.00	m ²		R	-
4.2.21	220x110x50mm clay brick (pattern and colour varies). Include saw cuttings	1.00	m ²		R	-
4.2.22	220x52x50mm thick Clay Paving Brick (pattern and colour varies). Include saw cuttings	1.00	m ²		R	-
4.2.23	222x106x73mm thick Clay Paving Brick (pattern and colour varies). Include saw cuttings	2.00	m ¹³¹		R	-
	Cobble brick pavers:					
4.2.24	108.5x108.5x50mm clay cobble pavers (pattern and colour varies). Include saw cuttings	1.00	m ²		R	-
	Flagstone brick pavers:					
4.2.25	300x300x40mm thick Flagstone Paving Material on a concrete base/ screed. Colour and pattern varies	1.00	m ²		R	-
4.2.26	300x600x40mm thick Flagstone Paving Material on a concrete base/ screed. Colour and pattern varies	1.00	m ²		R	-
4.2.27	450x450x40mm thick Flagstone Paving Material on a concrete base/ screed. Colour and pattern varies	1.00	m ²		R	-
4.2.28	600x600x40mm thick Flagstone Paving Material on a concrete base/ screed. Colour and pattern varies	1.00	m ²		R	-
	Washed riversand:					
4.2.29	Riversand and filling of paving joints. Sweep riversand into paving joint	1.00	m ²		R	-
	Mortar joint:					
4.2.30	Mortar joint/ grouting (5-10mm spacing) with a mixture of sand, water and cement grout (2:1) including preparation of ground or filling	1.00	m ²		R	-
	Rubber Surface:					
4.2.31	25mm thick (for 800mm free fall height) Rubberizing: to comprise of recycled EPDM rubber granulate with polyurethane binding agent that will be applied on a concrete base. Rubberising to be installed in accordance with The South African Determination of Critical Fall Height Standard (SANS 51177:2010) and SANS1176-1	1.00	m ²		R	-
4.2.32	30mm thick (for 1000mm free fall height) Rubberizing: to comprise of recycled EPDM rubber granulate with polyurethane binding agent that will be applied on a concrete base. Rubberising to be installed in accordance with The South African Determination of Critical Fall Height Standard (SANS 51177:2010) and SANS1176-1	1.00	m ³		R	-

4.2.33	40mm thick (for 1200mm free fall height) Rubberizing: to comprise of recycled EPDM rubber granulate with polyurethane binding agent that will be applied on a concrete base. Rubberising to be installed in accordance with The South African Determination of Critical Fall Height Standard (SANS 51177:2010) and SANS1176-1	1.00	m³		R	-
4.2.34	50mm thick (for 1500mm free fall height) Rubberizing: to comprise of recycled EPDM rubber granulate with polyurethane binding agent that will be applied on a concrete base. Rubberising to be installed in accordance with The South African Determination of Critical Fall Height Standard (SANS 51177:2010) and SANS1176-1	1.00	m³		R	-
4.2.35	80mm thick (for 2300mm free fall height) Rubberizing: to comprise of recycled EPDM rubber granulate with polyurethane binding agent that will be applied on a concrete base. Rubberising to be installed in accordance with The South African Determination of Critical Fall Height Standard (SANS 51177:2010) and SANS1176-1	1.00	m³		R	-
In-situ concrete paving /slab:						
4.2.36	125mm thick exposed aggregate concrete smooth and polished finish (20 mPA)	1.00	m³		R	-
4.2.37	125mm thick insitu cast Concrete, exposed aggregate finish (20 mPA)	1.00	m³		R	-
4.2.38	125mm thick insitu cast Concrete, broom brushed finish (20 mPA)	1.00	m³		R	-
4.2.39	100mm thick insitu cast Concrete, broom brushed finish (20 mPA)	1.00	m³		R	-
Decking:						
4.2.40	Treated CCA H4 pine Timber decking: Includes Timber posts on a 20Mpa concrete footing, Slats (70x20mm thick), joist, and beams	1.00	m²		R	-
4.2.41	Treated and sealed with a high-quality water-resistant coating Balau Timber decking: Includes Timber posts on a 20Mpa concrete footing, Slats (70x20mm thick), joist, and beams	1.00	m²		R	-
4.2.42	Polywood/ Composite decking or similar approved: Includes posts on a 20Mpa concrete footing, Slats, joists, and beams	1.00	m³		R	-
4.2.43	Dumprock: 75-200mm diameter Dumprock Material in layers of 200mm thick (colour varies). Uniformly spread and packed to the satisfaction of the Landscape Architect.	1.00	m³		R	-
Gravel:						
4.2.44	Gravel stones material: 15-25mm diameter in size, laid in 40mm thick layer (colour varies). Uniformly spread to the satisfaction of the landscape architect.	1.00	m³		R	-
4.2.45	Gravel stones material: 5-13mm diameter in size - laid in 40mm thick layer (colour varies). Uniformly spread to the satisfaction of the landscape architect.	1.00	m³		R	-
Mosaic tile artwork:						
4.2.46	Mosaic tiles material flooring or on walls - to be cement grouted	1.00	m²		R	-
Artificial lawn/ grass:						
4.2.47	Synthetic/ artificial lawn glued on concrete with an approved polyurethane binding agent	1.00	m²		R	-
Asphalt surface:						
4.2.48	50mm thick layer of hot (or warm) mix Asphalt. The asphalt wearing course mix shall be sand skeleton mix NMPS of 10mm (eThekweni type Sa-S10). Must be installed on a specified compacted sub-surface layer/s.	1.00	m³		R	-
4.2.49	35mm thick layer of hot (or warm) mix Asphalt. The asphalt wearing course mix shall be sand skeleton mix NMPS of 10mm (eThekweni type Sa-S10). Must be installed on a specified compacted sub-surface layer/s.	1.00	m³		R	-
4.2.50	25mm thick layer of hot (or warm) mix Asphalt. The asphalt wearing course mix shall be sand skeleton mix NMPS of 10mm (eThekweni type Sa-S10). Must be installed on a specified compacted sub-surface layer/s.	1.00	m³		R	-
4.2.51	Sawcut asphalt edge to a maximum depth of 50mm thick	1.00	Lm		R	-
Edging:						
4.2.52	1000x300x150mm thick Figure-1 Concrete Kerb to be laid on a cgrade 20/19 concrete foundation/ haunch	1.00	Lm		R	-
4.2.53	1000x230x125mm thick Figure-6 Concrete Kerb to be laid on 425x80mm thick grade 20/19 concrete foundation	1.00	Lm		R	-
4.2.54	1000x150x75mm thick Figure-12 Garden Kerb to be laid on a grade 20/19 concrete foundation/ haunch	1.00	Lm		R	-
					R	-
4.3	Masonry/ Concrete work – for public realm walls, retaining walls and built furniture				R	-
Retaining wall:						

4.3.1	440mm thick, 500mm high Clay brick (brick size 222x106x73mm) insitu WALL with metal ties, recessed joints and bullnosed header course coping. RETAINING WALL must have waterproofing material and weepholes at 3m intervals. Compacted rubble between the walls to toppe with 200mm thick concrete layer	1.00	Lm		R	-
	Planter box:					
4.3.2	230mm thick, 500mm high Clay brick (brick size 222x106x73mm) insitu WALL with metal ties and recessed joints. SEAT/ PLANTERS WALL with waterproofing material, weepholes at 3m intervals also in accordance with the Engineer's specifications. Brick colour varies	1.00	Lm		R	-
	Brick wall:					
4.3.3	(222x106x73mm) Clay brick (on edge) bullnosed header course. Brick colour varies	1.00	m ²		R	-
	Plaster:					
4.3.4	Cement Plaster and paint to walls	1.00	m ²		R	-
	Wall cladding:					
4.3.5	150x150mm Stone Cladding Material applied on sand cement mix with a 10mm grouting spaces. Colour of cladding stone varies	1.00	m ²		R	-
4.3.6	150x300mm Stone Cladding Material applied on sand cement mix with a 10mm grouting spaces. Colour of cladding stone varies	1.00	m ²		R	-
4.3.7	300x300mm Stone Cladding Material applied on sand cement mix with a 10mm grouting spaces. Colour of cladding stone varies	1.00	m ²		R	-
4.3.8	300x450mm Stone Cladding Material applied on sand cement mix with a 10mm grouting spaces. Colour of cladding stone varies	1.00	m ²		R	-
4.3.9	450x450mm Stone Cladding Material applied on sand cement mix with a 10mm grouting spaces. Colour of cladding stone varies	1.00	m ²		R	-
	Gabbion wall:					
4.3.10	2000x1000x500mm PVC coated mesh gabion basket. Colour varies	1.00	each		R	-
4.3.11	2000x1000x500mm hot dipped galvanised steel mesh gabion basket	1.00	each		R	-
4.3.12	2000x1000x500mm hot deep galvanised welded mesh steel (3mm thick) gabion basket	1.00	each		R	-
4.3.13	2000x1000x1000mm PVC coated steel mesh gabion basket. PVC colour varies	1.00	each		R	-
4.3.14	2000x1000x1000mm hot dipped galvanised steel mesh gabion basket	1.00	each		R	-
4.3.15	2000x1000x1000mm hot dipped galvanised welded mesh steel (3-5mm thick) gabion basket	1.00	each		R	-
4.3.16	2000x1000x300mm hot dipped galvanised welded mesh steel (3-5mm thick) gabion basket	1.00	each		R	-
4.3.17	2000x1000x300mm PVC coated steel mesh reno mattress basket. PVC colour varies	1.00	each		R	-
4.3.18	2000x1000x300mm hot dipped galvanised steel reno mattress basket	1.00	each		R	-
4.3.19	2000x1000x300mm hot dipped galvanised welded mesh steel (3-5mm thick) reno mattress basket	1.00	each		R	-
4.3.20	3000x1000x300mm PVC coated steel mesh reno mattress basket. PVC colour varies	1.00	each		R	-
4.3.21	3000x1000x300mm hot dipped galvanised steel reno mattress basket	1.00	each		R	-
4.3.22	3000x1000x300mm hot dipped galvanised welded mesh steel (3-5mm thick) reno mattress basket	1.00	each		R	-
4.3.23	6000x2000x170mm PVC coated steel mesh reno mattress basket. PVC colour varies	1.00	each		R	-
4.3.24	6000x2000x170mm hot dipped galvanised steel reno mattress basket	1.00	each		R	-
4.3.25	6000x2000x170mm hot dipped galvanised welded mesh steel (3-5mm thick) reno mattress basket	1.00	each		R	-
4.3.26	6000x2000x300mm PVC coated steel mesh reno mattress basket. PVC colour varies	1.00	each		R	-
4.3.27	6000x2000x300mm hot dipped galvanised steel reno mattress basket	1.00	each		R	-
4.3.28	6000x2000x300mm hot dipped galvanised welded mesh steel (3-5mm thick) reno mattress basket	1.00	each		R	-
	In-situ concrete wall:					
4.3.29	450x450mm high insitu cast off shutter reinforced concrete (25MPa) seating/ retaining wall, smooth finish and 45° chamfer. Footing to be as per the Engineer's Spec.	1.00			R	-
	Stone Wall:					

4.3.30	Stone wall: Concrete 25/19 (25 mPA) to be used for foundations and variation of various types of rock types, sizes and texture, rocks to have a nominal size of 150 mm – 500 mm. All to approval of the Landscape architect. Foundations to be 400 mm deep x 1100 mm wide, or according to PrEng's specifications. Length will vary. Wall to be 500 mm double sleeve rock wall with concrete infill between to required height. Heights and lengths will vary. Rock masonry to be of good quality and workmanship to be consistent throughout.	1.00	Lm		R	-
	Terrace Block wall:					
4.3.31	Terrace Block Walls: precast concrete block retaining wall (Loffelstein or similar). Sample to be approved by a landscape architect. Height not to exceed 1.2m. Construct as per manufacturer's recommendation. Excludes bulk earthworks, backfilling, topsoil, base preparation and compaction, foundation and planting. This is measured elsewhere.	1.00	Lm		R	-
	Coping:					
4.3.32	222x106x73mm Clay brick bullnosed header course coping	1.00	each		R	-
4.3.33	1000x300x85mm thick standard precast concrete coping (pyramid shaped). Coping is recessed on both bottom ends	1.00	each		R	-
4.3.34	1000x470x75mm thick standard precast concrete coping (pyramid shaped). Coping is recessed on both bottom ends	1.00	each		R	-
4.3.35	1000x300x100mm thick standard precast concrete coping. Pitched to fall on one side. Coping is recessed on one bottom end	1.00	each		R	-
5	PUBLIC REALM FURNITURE AND EQUIPMENT - Rates shall include: Supply and delivery; Offloading and storage; Foundations; Anchoring systems; Fixing and installation; Concrete bases; Reinforcement where required; Protective coatings; Surface preparation; Manufacturer warranties; Compliance testing; Safety certification; All labour, plant, materials and incidentals necessary for complete installation. All furniture and equipment shall comply with applicable SANS standards, manufacturer specifications and the requirements of the Employer's Agent.					
5.1	Furniture)					
	Bollards:					
5.1.1	500mmØ x 500mm high Precast Half Penny Concrete Bollard, smooth finish	1.00	each		R	-
5.1.2	500mmØ x 500mm high Precast Half Penny Concrete Bollard, vertical surface to be exposed aggregate finish. The top surface of the bollard to be wood floated smooth finish.	1.00	each		R	-
5.1.3	450x450x450mm high precast concrete bollard seat (square bollard), smooth finish	1.00	each		R	-
5.1.4	500mmØ precast concrete Ball bollard, wood floated smooth finis. To be pegged with steel rods into a 500 x 500 x 250mm deep base	1.00	each		R	-
5.1.5	500mmØ precast concrete Ball bollard, exposed aggregate finish. To be pegged with steel rods into a 500 x 500 x 250mm deep base	1.00	each		R	-
5.1.6	250mmØ x 1200mm high standard precast concrete bollard, smooth finish	1.00	each		R	-
5.1.7	250mmØ x 1200mm high standard precast concrete bollard, exposed aggregate finish	1.00	each		R	-
5.1.8	250x250x810mm high standard metro precast concrete bollard	1.00	each		R	-
5.1.9	100mmØ x 1200mm high hot dipped galvanised steel removable bollard, powder coated finish	1.00	each		R	-
5.1.10	100mmØ x 1200mm high stainless steel removable bollard	1.00	each		R	-
5.1.11	1200mm high and 900mm high above ground level x 300mm Diameter Precast Concrete Water Fountain, exposed aggregate finish with hot dipped galvanized steel tap. Foundations and installation according to spec by PrEng and in compliance with SANS 1808-16.	1.00	each		R	-
5.1.12	1200mm high and 900mm high above ground level x 300mm Diameter Precast Concrete Water Fountain, wood floated finish with hot dipped galvanized steel tap. Foundations and installation according to spec by PrEng and in compliance with SANS 1808-16.	1.00	each		R	-
	Benches:					

5.1.13	Steel bench with backrest 1800x500x500mm high Long Hot Dipped Galvanized steel bench with backrest, manufactured according to SABS regulations. - Composed of 3mm thick punched galvanized steel panel sheeting. Legs: Two x 400mm high and 50mm diam. galvanized steel profiles: a. Standard leg height is to be extended by an extra 300mm in order for it to be planted. b. The total leg length should therefore be 700mm high in total in order to accommodate for the installation specifications as set out below. - Finish: galvanised steel with polyurethane paint coat; colour as specified and approved by Landscape Architect.	1.00	each		R	-
5.1.14	1500mm wide x 450mm high x 100mm thick precast wood floated smooth finish rectangular standard concrete bench. Concrete 30MPa steel reinforced (SANS 920) precast bench, manufactured according to SABS regulations. Top edge to be chamfered by 20 x 20mm all around	1.00	each		R	-
5.1.15	1800mm wide x 450mm high x 100mm thick precast wood floated smooth finish rectangular standard concrete bench. Concrete 30MPa steel reinforced (SANS 920) precast bench, manufactured according to SABS regulations. Top edge to be chamfered by 20 x 20mm all around	1.00	each		R	-
5.1.16	1500mm wide x 450mm high x 100mm thick exposed aggregate sawcut stone smooth and polished finish precast rectangular standard concrete bench. Concrete 30MPa steel reinforced (SANS 920) precast bench, manufactured according to SABS regulations. Top edge to be chamfered by 20 x 20mm all around	1.00	each		R	-
5.1.17	1800mm wide x 450mm high x 100mm thick exposed aggregate sawcut stone smooth and polished finish precast rectangular standard concrete bench. Concrete 30MPa steel reinforced (SANS 920) precast bench, manufactured according to SABS regulations. Top edge to be chamfered by 20 x 20mm all around	1.00	each		R	-
Picnic/ Rest Set:						
5.1.18	1500mm wide precast wood floated smooth rectangular concrete Picnic/ Rest set table and benches (x2 Benches X1 table). The table should be in 1 piece and have a centralised hole for umbrella placing.	1.00	each		R	-
5.1.19	1800mm wide precast smooth rectangular concrete Picnic/ Rest set table and benches (x2 Benches X1 table). The table should be in 1 piece and have a centralised hole for umbrella placing.	1.00	each		R	-
5.1.20	1500mm wide precast polished concrete Picnic Set (table with umbrella hole - game board tables could be included Chess & Morabaraba). Picnic/ Rest set to have x2 Benches X1 table per set. The table should be in 1 piece and have a centralised hole for umbrella placing.	1.00	each		R	-
5.1.21	1800mm wide precast polished concrete Picnic Set (table with umbrella hole - game board tables could be included Chess & Morabaraba). Picnic/ Rest set to have x2 Benches X1 table per set. The table should be in 1 piece and have a centralised hole for umbrella placing.	1.00	each		R	-
5.1.22	1000mm dia. Smooth round concrete Picnic/ Rest set with 5 seats approved by the Landscape Architect. The table should be in 1 piece.	1.00	each		R	-
5.1.23	6-Seater Picnic Set (benches without backrest): All material is 100% plastic recycled picnic set, assembled using stainless steel fixtures	1.00	each		R	-
5.1.24	8-Seater Picnic Set (benches without backrest) : All material is 100% plastic recycled picnic set, assembled using stainless steel fixtures	1.00	each		R	-
5.1.25	6-Seater Picnic Set (benches with backrest) : All material is 100% plastic recycled picnic set, assembled using stainless steel fixtures	1.00	each		R	-
5.1.26	8-Seater Picnic Set (benches with backrest): All material is 100% plastic recycled picnic set, assembled using stainless steel fixtures	1.00	each		R	-
Braai Facility:						
5.1.27	Braai Stand: 950mm high x 500mm Diameter precast concrete braai stand, 750mm height above ground Exposed Aggregate concrete finish with hot dipped galvanized steel grid finish. Foundation / fixing: To manufacturer's specification.	1.00	each		R	-
5.1.28	Braai Stand: 950mm high x 500mm Diameter precast concrete braai stand, 750mm height above ground wood floated concrete finish with hot dipped galvanized steel grid finish. Foundation / fixing: To manufacturer's specification.	1.00	each		R	-
Litter bin:						

5.1.29	700x700x1150mm high (110L) concrete litterbin, wood floated smooth finish with a drainage hole in the bottom. Must be fixed on a concrete footing	1.00	each		R	-
5.1.30	700x700x1150mm high (110L) concrete litterbin, exposed aggregate finish with a drainage hole in the bottom. Must be fixed on a concrete footing	1.00	each		R	-
5.1.31	550x550x1000mm high (165L) concrete litterbin, wood floated smooth finish with a drainage hole in the bottom. Must be fixed on a concrete footing	1.00	each		R	-
5.1.32	550x550x1000mm high (165L) concrete litterbin, exposed aggregate finish with a drainage hole in the bottom. Must be fixed on a concrete footing	1.00	each		R	-
Drinking fountain:						
5.1.33	200x400x1180mm high Concrete drinking fountain, Polished concrete & smooth grey finish	1.00	each		R	-
5.1.34	201x400x1180mm high Concrete drinking fountain, exposed aggregate concrete finish	1.00	each		R	-
Outdoor Chess:						
5.1.35	5000x5000mm large Chess with 600x600x20mm tiles set on 125mm thick in-situ concrete slab (20MPa). Rate to include base and layerworks.	1.00	sum		R	-
Precast concrete planter box:						
5.1.36	1200x1200x1200mm high precast concrete planter box, smooth finish	1.00	each		R	-
5.1.37	1200x1200x1200mm high precast concrete planter box, exposed aggregate finish with a central hole at the bottom for drainage	1.00	each		R	-
5.1.38	700x700x700mm high precast concrete planter box, wood floated smooth finish with a central hole at the bottom for drainage	1.00	each		R	-
5.1.39	700x700x700mm high precast concrete planter box, exposed aggregate finish with a central hole at the bottom for drainage	1.00	each		R	-
5.1.40	450x450x770mm high precast concrete planter box, wood floated smooth finish with a central hole at the bottom for drainage	1.00	each		R	-
5.1.41	450x450x770mm high precast concrete planter box, exposed aggregate finish with a central hole at the bottom for drainage	1.00	each		R	-
Game board:						
5.1.42	CUSTOM MADE CONCRETE BOARD GAMES PANEL (+/-1000/600x600x50mm) fixed with 100mm thick 20MPa in-situ concrete and surrounded by paving on the 14x brick benches. Games: Chess, Diketo & Morabaraba/ Mhele	1.00	each		R	-
Rail and Bicycle rack:						
5.1.43	57-100mm dia. Single round Galvanised Mild Steel tube custom Handrail spray-painted yellow. Handrail must meet SANS standards and installed as per Manufacturer's specifications	1.00	Lm		R	-
5.1.44	1800x1000mm high x 50mm diameter 304 brushed stainless steel 5-Hoop Bicycle Rack, Legs are to be extended by 300mm into the ground. 10mm round galvanised steel anchor to be welded horizontally onto the bottom of each leg to secure into foundation. Stainless steel base plate cover to be provided for on each leg. To be set 300mm of the bicycle rack profiles into 250 x 250 x 330mm deep 15MPa concrete foundations on prepared and compacted subgrade	1.00	each		R	-
Tree rings:						
5.1.45	1000mm Diameter Concrete Barrier Kerb Tree Ring. Kerb to be laid on a 100mm thick concrete 25Mpa concrete footing/ haunch	1.00	each		R	-
5.1.46	1500mm Diameter Concrete Barrier Kerb Tree Ring. Kerb to be laid on a 100mm thick concrete 25Mpa concrete footing/ haunch	1.00	each		R	-
5.1.47	1200x1200x60mm thick exposed aggregate concrete finish. 420mm diameter overall central opening.	1.00	each		R	-
5.1.48	1200x1200mm premanufactured hot dipped galvanised tree grid, . Polyurathane paint finish as per the supplier's spec	1.00	each		R	-
5.1.49	1060x920x640 high (760L) Standard Precast Single wash concrete trough	1.00	each		R	-
5.1.50	2120x920x640 high (1520L) Standard Precast Double wash concrete trough	1.00	each		R	-
5.1.51	1000x600mm half round pipe precast concrete channel	1.00	each		R	-
5.1.52	1220x610x480mm high precast concrete stormwater channel	1.00	each		R	-
5.1.53	1000x460x170mm high precast concrete stormwater channel	1.00	each		R	-
5.1.54	500x650x220mm high precast concrete stormwater channel	1.00	each		R	-
5.1.55	1000x340x280mm high precast concrete stormwater channel with rebate for galvanised steel grate	1.00	each		R	-
5.1.56	1200x400x150mm high precast concrete embankment chute to be laid on a 60mm thick concrete base	1.00	each		R	-

5.2	Heavy Duty Play equipment & structures to comply with SANS 51176:2010 and all other applicable SABS standards (All apparatus to be Galvanised prior to Powder Coating) to be Flexitop spray painted - Supply and installation including Foundations and anchoring. Manufacturer compliance				
5.2.1	4000x12000mm 4-Seater swing	1.00	each		R -
5.2.2	4000x12000mm 3-Seater swing for the disable	1.00	each		R -
5.2.3	1500x5000mm Arching heart shaped seater see-saw	1.00	each		R -
5.2.4	600x2400mm Senior Joywheel roundabout	1.00	each		R -
5.2.5	2100x3750mm Executive Jungle Gym	1.00	each		R -
5.2.6	3000x7500mmx3000mm high Slide	1.00	each		R -
5.2.7	500x4000mm 4-seater Sea-saw Junior	1.00	each		R -
5.2.8	1000x2500mm 4-Seater wheelchair roundabout	1.00	each		R -
5.2.9	1500x1500mm Toddler combination Jungle Gym with Slide and Swing	1.00	each		R -
5.2.10	10500 x 5700mm CCA H4 Treated Wooden Jungle Gym to include Platform x 2, Roof, Swing, Slide, Ladder, Pull-U-Ladder, Combo Net, Bridge, Gladiator Bars, Rope Ladder, Tyre Tower, Fireman's Pole, and Tyre Ladder as per supplier's specification.	1.00	each		R -
5.2.11	1800x6300mm CCA H4 treated Wooden Jungle Gym to include a Platform, Swing, Roof, Slide, and a Ladder as per supplier's	1.00	each		R -
5.3	Heavy Duty Outdoor gym equipment to comply with SANS 51176:2010 and all other applicable SABS standards (All apparatus to be hot dipped Galvanised prior to Powder Coating) - Supply and Install				
5.3.1	Surf Board	1.00	each		R -
5.3.2	Space/Air Walker	1.00	each		R -
5.3.3	Elliptical Cross trainer	1.00	each		R -
5.3.4	Chest and back Massager	1.00	each		R -
5.3.5	4 person Leg press trainer	1.00	each		R -
5.3.6	Bicycle/Spinning bike	1.00	each		R -
5.3.7	Rowing Machine	1.00	each		R -
5.3.8	Pendulum equipment/ waist trainer	1.00	each		R -
5.3.9	Butterfly - for the disabled	1.00	each		R -
5.3.10	Leg Press Trainer - for the disabled	1.00	each		R -
5.3.11	Stepper machine	1.00	each		R -
5.3.12	Dip bars	1.00	each		R -
5.3.13	Double Parallel Bars	1.00	each		R -
5.3.14	Scaling ladder	1.00	each		R -
5.3.15	Wab board	1.00	each		R -
5.3.16	Push-up bars	1.00	each		R -
6	FENCING & SECURITY - TO COMPLY WITH APPLICABLE SABS STANDARDS - Installation of fencing including: Setting out Foundations and posts, Alignment and stability, Protection of adjacent areas				
	Clear Fence, Gate and Trellis:				
6.1	3048x2400mm high Hot Dipped Galvanised and Powder Coated Invisible Fence Panel with serrated spike top rail or Similar approved installed to Manufacturer's specifications inclusive of all material required to complete the work. Fence to include 3.2m high hollow "H" profiled posts & sundries, Dimensions – 84x62x2mm, All holes to be pre-drilled before hot dip galvanising. Finish – hot dip galvanised and then pvc coated (min. 200 microns) – Green and is to set them in concrete foundations at the appropriate centres to accommodate the fixing of the fence panels and level difference in ground level. Post Foundations: Posts located in open ground are to have 400x400x800 deep 20mPa/19mm stone concrete bases per post. Contractor to check distance and make allowances for additional poles for change in topography and direction	1.00	Lm		R -
6.2	1250 x 2100mm high Hot Dipped Galvanised and Powder Coated Standard Pesiatrician Gate (1350mm Post To Post) with invisible fence material. The Gate frame is to be manufactured using square hollow section 38x38x2mm frame with a 38x38x2mm equal angle to be welded to the inside of the square hollow tube gate frame to allow for the fixing of the invisible fence panel. To be installed to Manufacturer's specifications inclusive of all material required to complete the work. Contractor to check distance and make allowances for additional poles for change in topography and direction	1.00	each		R -

6.3	4000 x 2100mm high Hot Dipped Galvanised and Powder Coated Standard Pesriatran Gate (1350mm Post To Post) with invisible fence material. The Gate frame is to be manufactured using square hollow section 38x38x2mm frame with a 38x38x2mm equal angle to be welded to the inside of the square hollow tube gate frame to allow for the fixing of the invisible fence panel. To be installed to Manufacturer's specifications inclusive of all material required to complete the work. Contractor to check distance and make allowances for additional poles for change in topography and direction	1.00	each		R	-
6.4	2100mm high Hot Dipped Galvanised Invisible Fence and powder coated or Similar approved installed to Manufacturer's specifications inclusive of all material required to complete the work. Contractor to check distance and make allowances for additional poles for change in topography and direction	1.00	Lm		R	-
6.5	1200mm high Hot Dipped Galvanised and Powder coated Invisible Fence installed to Manufacturer's specifications inclusive of all material required to complete the work. Contractor to check distance and make allowances for additional poles for change in topography and direction	1.00	Lm		R	-
6.6	1800mm high Hot Dipped Galvanised and Powder coated Steel Palisade fence installed to Manufacturer's specifications inclusive of all material required to complete the work. Contractor to check distance and make allowances for additional poles for change in topography and direction	1.00	Lm		R	-
6.7	2100mm high Hot Dipped Galvanised and Powder coated Steel Palisade fence installed to Manufacturer's specifications inclusive of all material required to complete the work. Contractor to check distance and make allowances for additional poles for change in topography and direction	1.00	Lm		R	-
6.8	2400mm high Concrete Palisade fence installed to Manufacturer's specifications inclusive of all material required to complete the work. Contractor to check distance and make allowances for additional poles for change in topography and direction	1.00	Lm		R	-
6.9	3000mm high Concrete Palisade fence installed to Manufacturer's specifications inclusive of all material required to complete the work. Contractor to check distance and make allowances for additional poles for change in topography and direction	1.00	Lm		R	-
6.10	Hot Dipped Galvanised & powder coated Steel Post & Rail fence - 3 rails, 1000mm high installed to Manufacturer's specifications inclusive of all material required to complete the work. Contractor to check distance and make allowances for additional poles for change in topography and direction	1.00	Lm		R	-
6.11	3000mm High Roll Size of sport & playground fence, Hot Dipped Galvanized: Posts@ 3m spacing, 3-4mm wire mesh diameter, mesh size 50 x 50mm; Frame Size 50mm diameter.	1.00	Lm		R	-
6.12	6000mm High Roll Size of sport & playground fence, plastic coated diamond wire mesh fence: Posts@ 3000mm spacing, 3-4mm wire mesh diameter, mesh size 50X50mm; Frame Size 50mm diameter	1.00	Lm		R	-
6.13	6000mm High Roll Size of sport & playground fence, Hot Dipped Galvanized: Posts@ 3m spacing, 3-4mm wire mesh diameter, mesh size 50X50mm; Frame Size 50mm diameter	1.00	Lm		R	-
6.14	Mesh: All steel materials shall be of good quality, hot dipped galvanized steel. Panel width 3297mm. Wire with aperture size (centres) @ 76.2mm x 25mm. Height 1.2m, with a wire diameter of 3mm (length of entire fence 50m). All pipes shall be hot dipped galvanized (one piece without joints). Furnish moisture proof caps for all posts. Zinc coating shall be smooth and essentially free from lumps, globs or points. Miscellaneous material shall be galvanized.	1.00	Lm		R	-
6.15	1800mm high PVC coated diamond mesh fencing (75x75mm Diamond mesh size and 1.8mm steel thickness) with hot dipped galvanised mild steel fence posts with razor wire flat wrap security head. Posts at 3000mm centres and are to be set in 300x300x500 concrete bases – ensure that the post protrudes out of the concrete base, to allow for water drainage.	1.00	Lm		R	-
6.16	2100mm high PVC coated diamond mesh fencing (75x75mm Diamond mesh size and 1.8mm steel thickness) with hot dipped galvanised mild steel fence posts with razor wire flat wrap security head. Posts at 3000mm centres and are to be set in 300x300x500 concrete bases – ensure that the post protrudes out of the concrete base, to allow for water drainage.	1.00	Lm		R	-
6.17	1510 x 905mm CCA H4 treated wooden Trellis Panel.	1.00	each		R	-

6.18	1140 x 1530mm Steel Creeper/ Trellis Panel, Hot dipped galvanised and powder coated with 9 bars for enhanced stability and support, Green (or Black) colour finish.	1.00	each		R	-
6.19	800mm high 150mm diameter dome top CCA H4 treated wooden gumpole post set at 1800mm centres with 2x90mm horizontal top and bottom rails set at 500mm apart. Faced with 38mm plastic coated diamond mesh fence and covered with 80% shade cloth Contractor to check distance and make allowances for additional poles for change in topography and direction	1.00	Lm		R	-
6.20	1250mm high x150mm diameter dome top CCA H4 treated wooden gumpole post set in concrete footing (set in 500x500x600mm 20Mpa concrete footing) at 1800mm centres with 2x90mm horizontal top and bottom rails set at 500mm apart. Contractor to check distance and make allowances for additional poles for change in topography and direction	1.00	Lm		R	-
6.21	2500x1250mm Chromadek Signage board (Hot dipped galvanised) on a 18mm shutter board backing fixed to cabstrut horizontal support clamped to 100 - 125mm diameter CCA H4 treated gum pole post set in 500x500x600mm 20Mpa concrete footing	1.00	sum		R	-
6.22	2500x1250mmx3mm thick ABS Plastic material Signage board on a shutter board backing set in 500x500x600mm 20Mpa concrete footing. Signage to be on a UV stable 7 year vinyl material.	1.00	sum		R	-
6.23	Hot Dipped Galvanised & powder coated Steel Post & Rail fence - 3 rails, 1m high installed to Manufacturer's specifications inclusive of all material required to complete the work. Contractor to check distance and make allowances for additional poles for	1.00	sum		R	-
6.24	50x50x1250mm high hot deep galvanised steel weld mesh fencing (2.5mm diameter thick)	1.00	each		R	-
6.25	50x50x1500mm high hot deep galvanised steel weld mesh fencing (2.5mm diameter thick)	1.00	each		R	-
6.26	50x50x1800mm high hot deep galvanised steel weld mesh fencing (2.5mm diameter thick)	1.00	each		R	-
6.27	1800mm high hot dipped galvanised pedestrian gate with diamond mesh fence	1.00	Lm		R	-
7	SPORTS & BALL COURTS - in accordance with relevant SANS standardised specifications and SASR Norms & Standards. All warranty information must be included in the quotation. Final design and drawings to be approved by the Landscape Architect before ordering and/or implementation					
7.1	5-A-Side Soccer Court:					
7.1.1	222 x 106 x 73mm Clay face brick walls	1.00	Lm		R	-
7.1.2	7320mm wide and 2440 mm high with 3mm mild steel, hot dip galvanized Standard White Powder coated with different colour options set on a 25Mpa concrete footing	1.00	each		R	-
7.1.3	3000m high 100x100x4.5mm nylon soccer netting material	1.00	Lm		R	-
7.1.4	40mm thick 20mPA/ 19mm Fibre reinforced concrete with steel trowel finish	1.00	Lm		R	-
7.1.5	Fibregrass 173 with two part poly-urethane adhesive to a 5-A-Side rubberising	1.00	m ²		R	-
7.3	3650x21250mm Multi-Court on hard surface with an artificial synthetic surface installed as per SASR Netball court requirements including marking. Includes prefabricated; - Netball goal post per set of 2 including nylon netting. - Futsal (Soccer) goal post per set of 2 including goal nets. - Volleybal goal post per set. - Basketball goal post per set of 2 including nets.	1.00	sum		R	-
7.4	3000mm high, 3mm Galvanised Chain link fencing to Multi-Court fully installed to Manufacturer's specifications inclusive of all material required to complete the work. Fence must be SABS approved.	1.00	Lm		R	-
7.5	100mm thick Coarse River Sand Layer to leveled sand-based soccer field on top of 150mm in-situ sub-base material compacted to 98% MOD-AASHTO. Rate to include 1x (1000m high, 3000m dia) round concrete mounds/domes to play area.	1.00	m ²		R	-
7.6	76mmØ x 3mm thick Football goal post and nylon netting material. Goal Posts are 7320mm apart	1.00	sum		R	-
7.7	100x100x3mm thich hot dipped galvanised and powder coated Basket/ nteball post and nylon netting material	1.00	sum		R	-

7.8	20X10m Standard Padel Court: Perimeter ring beam construction Subbase Construction with Drainage, Laser cut powder coated steel structure, 400 Wattled LED flood lights, Padel Federation approved synthetic turf, Net and Electrical installation (All spec to be as per the supplier)	1.00	sum		R	-
8	IRRIGATION - in accordance with relevant SANS standardised specifications and LIA standards. Rates shall include: Testing and commissioning, As-built drawings, Operating manuals, Warranty					
8.1	Turf Valve Irrigation System					
8.1.1	Pump station					
8.1.1.1	DAB CENT TWIN IMP K70/300T PUMP 380V	1.00	each		R	-
8.1.1.2	ELECTRICAL PANEL	1.00	each		R	-
8.1.1.3	SUCTION & DEL FITTINGS	1.00	each		R	-
8.1.1.4	WATER TANK 10 000LT VERTICAL	1.00	each		R	-
8.1.1.5	PUMPROOM (1x1m premanufactured fibre glass material)	1.00	each		R	-
8.1.1.6	CONCRETE FOUNDATION	1.00	each		R	-
8.1.1.7	FILTERBANK	1.00	each		R	-
8.1.1.8	500L PRESSURE VESSEL	1.00	each		R	-
8.1.2	Pipes and Turf Valve Fittings				R	-
8.1.2.1	Mainline connection (or similar)	1.00	each		R	-
8.1.2.2	SABS 40mm CL10 HDPE POLY.PIPE	1.00	each		R	-
8.1.2.3	SABS 63mm CL10 HDPE POLY.PIPE	1.00	each		R	-
8.1.2.4	SABS 75mm CL10 HDPE POLY.PIPE 50m	1.00	each		R	-
8.1.2.5	75mm EQUAL COUPLING	1.00	each		R	-
8.1.2.6	40mm EQUAL COUPLING	1.00	each		R	-
8.1.2.7	63mm EQUAL COUPLING	1.00	each		R	-
8.1.2.8	75mm EQUAL 90deg ELBOW	1.00	each		R	-
8.1.2.9	75mm END CAP	1.00	each		R	-
8.1.2.10	75mm x 3" MALE ADAPTOR	1.00	each		R	-
8.1.2.11	75mm x 11/2" 4 BOLTS SADDLE	1.00	each		R	-
8.1.2.12	40mm x 11/2" MALE ADAPTOR	1.00	each		R	-
8.1.2.13	75mm x 63mm REDUCER TEE-PIECE	1.00	each		R	-
8.1.2.14	63mm END PLUG	1.00	each		R	-
8.1.2.15	63mm x 11/2" MALE ADAPTOR	1.00	each		R	-
8.1.2.16	75mm x 20MM 4 BOLTS SADDLE	1.00	each		R	-
8.1.2.17	63mm x 20MM 4 BOLTS SADDLE	1.00	Lm		R	-
8.1.2.18	40mm x 20MM TAPPING SADDLE	1.00	each		R	-
8.1.2.19	40mm END PLUG	1.00	each		R	-
8.1.2.20	40mm EQUAL 90deg ELBOW	1.00	each		R	-
8.1.2.21	40mm EQUAL TEE-PIECE	1.00	each		R	-
8.1.2.22	PTFE THREAD SEALING TAPE	1.00	each		R	-
8.1.2.23	20MM TURF-VALVE	1.00	each		R	-
8.1.2.24	20mm EQUAL PLASTIC SOCKET	1.00	each		R	-
8.1.2.25	ROUND VALVE BOX 150mm (610)	1.00	each		R	-
8.1.2.26	20mm SWING JOINT RISER	1.00	each		R	-
8.1.2.27	20mm 772 DRAGLINE HOSE	1.00	each		R	-
8.1.2.28	GALV. 20mm X 600mm TUBULAR TRIPOD	1.00	each		R	-
8.1.2.29	20mm HOSE NIPPLE CONNECTOR	1.00	each		R	-
8.1.2.30	GALV. 20mm M&F ELBOW	1.00	each		R	-
8.1.2.31	TURF VALVE KEY	1.00	each		R	-
8.1.2.32	20mm FEMALE CONNECTION	1.00	each		R	-
8.1.2.33	COMPOSITE CLAMP GS12	1.00	each		R	-
8.1.2.34	BRASS SPRINKLER	1.00	each		R	-
8.1.2.35	110mm Sleeve (SABS). To be installed before hardscaping.	1.00	Lm		R	-
8.2	Automatic Irrigation System					
8.2.1	MAINLINE & FITTINGS					
8.2.1.1	MAINLINE CONNECTION FITTINGS	1.00	each		R	-
8.2.1.2	40MM BRASS GATE VALVE	1.00	each		R	-
8.2.1.3	GALV. 40mm BARREL NIPPLE	1.00	each		R	-
8.2.1.4	40mm x 40 FEMALE TEE	1.00	each		R	-
8.2.1.5	JUMBO RECTANGULAR VALVE BOX 500mm DEEP	1.00	each		R	-
8.2.1.6	40mm EQUAL 90deg ELBOW	1.00	each		R	-
8.2.1.7	40MM END CAP	1.00	each		R	-
8.2.1.8	40 MM TEE	1.00	each		R	-
8.2.1.9	SABS 40mm CL10 HDPE POLY.PIPE 100m	1.00	each		R	-
8.2.1.10	40mm EQUAL COUPLING	1.00	each		R	-
8.2.2	TURF-VALVES				R	-

8.2.2.1	40mm x 3/4" 4 BOLTS SADDLE	1.00	each		R	-
8.2.2.2	ROUND VALVE BOX 150mm (610)	1.00	each		R	-
8.2.2.3	20mm EQUAL SOCKET	1.00	each		R	-
8.2.2.4	20MM SWING JOINT	1.00	each		R	-
8.2.2.5	20MM PLASTIC RISER VALVE	1.00	each		R	-
8.2.2.6	VALVE CLUSTERS	2.00	each		R	-
8.2.2.7	25mm F/C GLOBE VALVE	1.00	each		R	-
8.2.2.8	ECONO 25mm PVC BALL VALVE (601/1000)	1.00	each		R	-
8.2.2.9	25MM MFE POLY ELBOW	1.00	each		R	-
8.2.2.10	ROUND VALVE BOX 250mm (910)	1.00	each		R	-
8.2.2.11	25 X25 MALE ELBOW FF	1.00	each		R	-
8.2.2.12	25mm BARREL NIPPLE	1.00	each		R	-
8.2.2.13	40mm x 25MM TAPPING SADDLE	1.00	each		R	-
8.2.3	SPRINKLERS				R	-
8.2.3.1	PRO-SPRAY, 4"POP-UP BODY	1.00	each		R	-
8.2.3.2	STAND PIPE 15mm x 600mm	1.00	each		R	-
8.2.3.3	SHRUB ADAPTOR	1.00	each		R	-
8.2.3.4	MP1 ROTATOR	1.00	each		R	-
8.2.3.5	MP2 ROTATOR	1.00	each		R	-
8.2.3.6	MP3 ROTATOR	1.00	each		R	-
8.2.3.7	MP LEFT CORNER	1.00	each		R	-
8.2.3.8	MP SIDE STRIP	1.00	each		R	-
8.2.3.9	MP RIGHT CORNER	1.00	each		R	-
8.2.3.10	MSB 10F	1.00	each		R	-
8.2.3.11	MP CORNER STRIP	1.00	each		R	-
8.2.4	SPRAYLINES & FITTINGS				R	-
8.2.4.1	100mt x 25mm CL3 LDPE PIPE	1.00	each		R	-
8.2.4.2	FULLFLOW 25 x 1/2" FEM ELBOW	1.00	each		R	-
8.2.4.3	FULLFLOW 25mm x 1/2" FEM TEE	1.00	each		R	-
8.2.4.4	FULLFLOW 25mm TEE	1.00	each		R	-
8.2.4.5	FULLFLOW 25mm ELBOW	1.00	each		R	-
8.2.4.6	PTFE TYPE	1.00	each		R	-
8.2.4.7	FLEXIBLE SWING PIPE	1.00	each		R	-
8.2.4.8	15mm SPIRAL BARB. MALE ELBOW	1.00	each		R	-
8.2.5	CONTROL SYSTEM				R	-
8.2.5.1	PRO-C OUTDOOR CONTROLLER	1.00	each		R	-
8.2.5.2	PRM3	1.00	each		R	-
8.2.5.3	HUNTER SOLAR SYNC	1.00	each		R	-
8.2.5.4	CONTROL CABLE 1,5 sq mm	1.00	each		R	-
8.2.5.5	314 SCOTCHLOK W/RESISTANT CONNECTOR	1.00	each		R	-
8.2.6	CABLE JUNCTION BOXES				R	-
8.2.6.1	Cable junction box 150mm -- [<10 connections]	1.00	no.		R	-
8.2.6.2	Cable junction box 250mm -- [>10 connections]	1.00	no.		R	-
8.2.6.3	FLUSH AND PRESSURE TEST	1.00	sum		R	-
8.2.7	TRENCH/BACKFILL/PROOF/BEDDING				R	-
8.2.7.1	Excavation and backfill - parent material	1.00	Lm		R	-
8.2.7.2	Excavation and backfill - in compacted road /paving layers	1.00	Lm		R	-
9	ESTABLISHMENT MAINTENANCE DURING CONSTRUCTION					
9.1	Maintenance for all landscaping items during construction until final completion.	1	mths		R	-
9.2	Provide the following items upon Practical completion of all works for use throughout maintenance period. (This equipment remains the property of the client and is to be properly maintained throughout the maintenance period)				R	-
9.2.1	1000L water tank & trailer (if no running water onsite) for establishment irrigation to areas which are not reached by garden taps	1	each		R	-
9.2.2	30m long heavy duty hose pipes @ all associated fittings incl. hose extension connectors	1	each		R	-
9.2.3	50m long heavy duty hose pipes @ all associated fittings incl. hose extension connectors	1	each		R	-
9.2.4	Hot dipped galvinised tripod sprinkler	1	each		R	-
					R	-
	SUB-TOTAL (excl. 15% VAT)			excl. VAT	R	-
	TOTAL (excl. 15% VAT)			incl. VAT	R	-

--	--	--	--	--	--

SCHEDULE OF RATES: Public Realm Maintenance and Establishment

(TO BE READ WITH CLAUSE C3.3: STANDARDS, SPECIFICATIONS AND TECHNICAL REQUIREMENTS). Maintenance shall

Include reporting and meet performance standards. All rates in the Bill of Quantities shall be deemed to include full compensation for compliance with the Contract, including but not limited to: Environmental Management Plan implementation, Community liaison and local labour obligations, Site establishment and consultant facilities, Protection of existing services and infrastructure, Monitoring, reporting and documentation requirements, No separate claims shall be entertained for these obligations.

All work shall: Be executed in a professional and workmanlike manner, Meet SALI accepted industry practices, Be subject to inspection and rejection if non-compliant The Contractor shall be responsible for: Reinstatement of defective work, Replacement of failed planting, Compliance with environmental and safety requirements

ITEM NO:	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE (in Rands)	AMOUNT (in Rands)
1	Key personnel for maintenance works. Provide rates for labour required on an 'as and when required basis'. Rates are to include transport and management.				
1.1	CONTRACTS MANAGER	1	hr		R -
1.2	SITE AGENT	1	hr		R -
1.3	FOREMEN	1	hr		R -
1.4	Irrigation Specialist	1	hr		R -
1.5	Brush Cutter	1	hr		R -
1.6	Blower operator	1	hr		R -
1.7	Pest Control Operator	1	hr		R -
1.8	Other skilled labourers	1	hr		R -
	ALL items from here onwards are to include ALL costs in each unit rate: Labour, Plant, Materials, Overheads, and Profit				
2	Site clearance				
2.1	Unwanted vegetation, stones rubble, and Litter	1	m ³		R -
3	Trees, Shrus and Groundcovers				
3.1	Tree staking (2x tree stakes & ties per tree)	1	each		R -
3.2	Irrigation per tree (5-10 Litres per day)	1	each		R -
3.3	Replacing of a tree - 200L	1	each		R -
3.4	<i>Pruning:</i>				
3.4.1	Groundcovers	1	each		R -
3.4.2	Shrubs	1	each		R -
3.4.3	Small tree (1-20cm stem diameter)	1	each		R -
3.4.4	Medium tree (21-30cm stem diameter)	1	each		R -
3.4.5	Large tree (31-50cm stem diameter)	1	each		R -
3.4.6	Extra Large tree (More than 50cm stem diameter)	1	each		R -
3.5	<i>Taking out and removing, grubbing up roots and filling in holes</i>				
3.5.1	Small tree (1-20cm stem diameter)	1	each		R -
3.5.2	Medium tree (21-30cm stem diameter)	1	each		R -
3.5.3	Large tree (31-50cm stem diameter)	1	each		R -
3.5.4	Extra Large tree (More than 50cm stem diameter)	1	each		R -
3.6	<i>Eradication & Control of Invasive Plant Species</i>				
3.6.1	Mature trees; Densely Populated; Mixed species	1	ha		R -
3.6.2	Mature trees; Sparsely Populated; Mixed species	1	ha		R -
3.6.3	Immature trees; Densely Populated; Mixed species	1	ha		R -
3.6.4	Immature trees; Sparsely Populated; Mixed species	1	ha		R -
4	Mowing of turf/ lawns				
4.1	Mowing of Lawn & Edging Mower blades have to be sharpened regularly and may not be raised more than 20mm. Topdressing on grass must be done	1	m ²		R -
5	Replacement of dead Lawn				
5.1	Sprigging of grass per/m ²	1	m ²		R -
5.2	Sowing per/m ²	1	m ²		R -
6	Veldgrass areas (Natural areas)				
6.1	Mowing/ Cutting of veldgrass and Weeding	1	m ²		R -
7	Pest and Disease Control				
7.1	Pest and Disease Control on all the the sites of works	1	m ²		R -
8	Weeding				

Annexure 2:

Specifications



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Public Realm Standard Specifications (PRSS)

For Public Realm Delivery, Landscape Infrastructure
and Ancillary Works

27 August 2026

Prepared by the Urban Design and Landscape Architecture (UD&LA)

Capital Projects Division | Engineering Services Directorate | Technical Services Department
eThekweni Metropolitan Municipality | 166 KE Masinga Road, Durban 4001

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ABBREVIATIONS / ACRONYMS

AIS	Alien and Invasive Species (NEM:BA Regulations, 2016)
CARA	Conservation of Agricultural Resources Act (Act No. 43 of 1983)
CLO	Community Liaison Officer
CMP	eThekweni Coastal Management Programme
D'MOSS	Durban Metropolitan Open Space System
DWS	Department of Water and Sanitation
EDTEA	KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs
EM	Environmental Manager
EMM	eThekweni Metropolitan Municipality
EPCPD	eThekweni Environmental Planning and Climate Protection Department
EPWP	Expanded Public Works Programme
EA	Environmental Authorisation
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMPr	Environmental Management Programme
GCC	General Conditions of Contract
IAP	Invasive Alien Plant
IDP	Integrated Development Plan
JBCC	Joint Building Contracts Committee
LDP	Landscape Development Plan
NEMA	National Environmental Management Act (Act No. 107 of 1998)
NEM:BA	National Environmental Management: Biodiversity Act (Act No. 10 of 2004)
NMT	Non-Motorised Transport
OH&S	Occupational Health and Safety Act
POS	Public Open Space
PRDGS	Public Realm Delivery and Greening System
PrENG	Professional Engineer
PRSS	Public Realm Standard Specification (this document)
SABI	South African Irrigation Institute
SABS	South African Bureau of Standards
SACAP	South African Council for the Architectural Profession
SACLAP	South African Council for the Landscape Architectural Profession
SAHRA	South African Heritage Resources Agency
SAICE	South African Institution of Civil Engineering
SALI	South African Landscapers Institute
SANBI	South African National Biodiversity Institute
SANS	South African National Standard
SDF	Spatial Development Framework
SDP	Site Development Plan
SLA	Service Level Agreement
SPLUMA	Spatial Land Use Management Act (Act No. 16 of 2013)
SRF	Spatial Restructuring Framework
SuDS	Sustainable Drainage System
UD&LA	Urban Design and Landscape Architecture Unit (eThekweni)

PART A: INTRODUCTION

CHAPTER 1 — POLICY MANDATE AND PURPOSE

1.0.1 STRATEGIC INTENT

The eThekweni Metropolitan Municipality (EMM) is committed to the delivery of high-quality, resilient and inclusive public realm infrastructure across its municipal area. This Public Realm Standard Specification (PRSS) is the primary technical instrument through which that commitment is given contractual force.

This document is produced under the mandate of the Urban Design and Landscape Architecture (UD&LA) function within the Technical Services Department, Engineering Services Directorate and is aligned with the following strategic frameworks:

- i. The eThekweni Spatial Development Framework (SDF) and Spatial Restructuring Framework (SRF), which identify the public realm as a critical driver of spatial transformation, urban safety and economic activation;
- ii. The D'MOSS (Durban Metropolitan Open Space System), which establishes the city's biodiversity network and requires that public realm works protect, restore and extend ecological connectivity;
- iii. The EMM Integrated Development Plan (IDP), under which investment in parks, green infrastructure and public spaces is a stated priority for inclusive service delivery and quality of life;
- iv. The eThekweni Public Realm Delivery and Governance System (PRDGS), which sets out the programmatic, spatial and operational framework for the delivery, activation and long-term management of public spaces throughout the municipality.

1.0.2. PURPOSE OF THIS SPECIFICATION

This PRSS establishes minimum technical standards for the design, construction, supply, installation and maintenance of all public realm, landscape infrastructure and ancillary works undertaken by or on behalf of the eThekweni Metropolitan Municipality. It applies to:

- i. Municipal parks, recreational open spaces and urban greening projects;
- ii. Streetscapes, road reserves, traffic islands, public plazas and pedestrian precincts;
- iii. Waterfront and coastal public spaces, promenades and beachfront infrastructure;
- iv. Stormwater management, bioretention and green infrastructure interventions in the public realm;
- v. Sports and recreational facilities associated with public open space;
- vi. Heritage sites, cemeteries and cultural landscapes under municipal management; and
- vii. Any other publicly accessible landscape works funded through municipal capital or operational budgets.

1.0.3. SCOPE OF APPLICATION

This specification governs all phases of a public realm project, including:

- i. Pre-construction: planning, design approvals, contractor procurement and mobilisation;
- ii. Construction: site establishment, civil, hard landscaping, irrigation and soft landscaping works;
- iii. Practical completion and handover: inspection, certification and defects management; and
- iv. Post-construction: the maintenance and establishment period, and handover to the responsible operational unit.

It is a mandatory component of all tender and contract documents for public realm works within the eThekweni municipal area. Where this specification conflicts with a project-specific specification, the more stringent requirement shall apply unless a written dispensation is granted by the EMM UD&LA Unit.

1.0.4. RELATIONSHIP TO OTHER STANDARDS

This PRSS does not supersede national legislation, South African National Standards (SANS) or other statutory instruments. All works shall comply with applicable national and provincial legislation, and with eThekweni Municipality By-Laws, development guidelines and approval conditions, as listed in Chapter 2.

1.0.5. RELATIONSHIP TO THE SALI LANDSCAPER'S HANDBOOK

The South African Landscapers Institute (SALI) Landscaper's Handbook: Standard Specifications (June 2024 edition) is the primary industry technical standard for landscaping work in South Africa and is referenced at

Clause C3.3.1.3 of Framework Contract 30773-1B. The PRSS supplements, adapts and, where stated, supersedes the SALI Handbook requirements for the specific municipal, climatic, ecological and institutional context of eThekweni Municipality. Where this PRSS is silent on a technical matter within the SALI Handbook's scope, the SALI Handbook requirements shall apply. Where the two documents conflict, the more stringent requirement shall govern, unless the task order's Particular Specifications direct otherwise.

1.0.6. DOCUMENT MANAGEMENT AND VERSION CONTROL

This PRSS is a controlled document maintained by UD&LA, Capital Projects, Engineering Services Directorate. It is subject to periodic review as standards, legislation, professional practice and eThekweni's delivery context evolve. The version current at the date of tender advertisement shall govern the contract. Minor technical updates may be approved at the level of the Senior Manager: UD&LA. Substantive revisions affecting scope, governance structure or regulatory alignment shall be approved by the Director: Engineering Services Directorate. The current document reference and version shall be recorded on the cover page.

CHAPTER 2 — REGULATORY FRAMEWORK AND APPLICABLE STANDARDS

SECTION 2.1 ETHEKWINI MUNICIPAL POLICY AND STRATEGY INSTRUMENTS

All public realm works shall be consistent with and shall actively advance the following eThekweni municipal policy instruments:

- i. eThekweni Integrated Development Plan (IDP) – current cycle;
- ii. eThekweni Spatial Development Framework (SDF);
- iii. eThekweni Spatial Restructuring Framework (SRF);
- iv. D'MOSS (Durban Metropolitan Open Space System) – biodiversity network and open space planning framework;
- v. eThekweni Public Realm Delivery and Governance System (PRDGS);
- vi. eThekweni Environmental Management Framework (EMF);
- vii. eThekweni Coastal Management Programme (CMP) – for all projects within the coastal zone as defined by the Integrated Coastal Management Act;
- viii. eThekweni Urban Agriculture Policy – where applicable;
- ix. eThekweni Biodiversity Strategy and Action Plan.

SECTION 2.2 NATIONAL LEGISLATION AND STANDARDS

The following national legislation and standards are applicable. This is not an exhaustive list; the Contractor and Landscape Architect shall identify and comply with all legislation relevant to the specific project and site:

- i. The National Building Regulations
- ii. South African National Specifications
- iii. eThekweni Metropolitan Municipality Standard Specifications for Electrical Engineering Works
- iv. eThekweni Metropolitan Municipality Standard Specifications for Civil Engineering Works
- v. Durban Metropolitan Open Space System (D'MOSS) (2005)
- vi. National Environmental Management Act (NEMA) (Act No. 107 of 1998)
- vii. NEMA: Air Quality Act (Act No. 39 of 2004)
- viii. eThekweni Metropolitan Bioregional Plan
- ix. KwaZulu-Natal Biodiversity Spatial Plan (Ezemvelo KZN Wildlife)
- x. KwaZulu-Natal Provincial Environmental Management Framework
- xi. eThekweni Municipality Green Building By-Law
- xii. eThekweni Municipality Land Use Management By-Law
- xiii. eThekweni Municipality Land Use Scheme
- xiv. Spatial Land Use Management Act (SPLUMA) Act (Act No. 16 of 2013)
- xv. eThekweni Coastal and Hillside Development
- xvi. eThekweni Municipality Parks, Recreation and Culture Unit Signage Manual

SECTION 2.3 EXISTING NATIONAL REGULATIONS AND SPECIFICATION

2.3.1. NATIONAL BUILDING REGULATIONS

The National Building Regulations (NBR) made under the National Building Regulations and Building Standards Act, 1977 (Act No. 103 of 1977), and promulgated by Government Notice No. R. 2378 of 30 July 1990, as amended by Government Notices No's R. 432 of 8 March 1991, R. 919 of 30 July 1999 and R. 547 of 30 May 2008.

South Africa's NBR are a set of functional guidelines for anybody building any type of structure. All work is to be done strictly in accordance with the NBR.

2.3.2. SOUTH AFRICAN NATIONAL STANDARDS

The South African National Standards Specifications (SANS) refers to a standard that specifies the performance requirements of a specific product as prepared by Standards South Africa (a division of SANS). For the purpose of this document, the standardized specification shall apply but not be limited to the following:

- i. SANS 10098-1 The lighting of public thoroughfares
- ii. SANS 10109-1:2012 Bases to concrete floors
- iii. SANS 10389-2 Exterior security lighting
- iv. SANS 10400 Code of Practice
- v. SANS 10400-S Facilities for persons with disabilities
- vi. SANS 1058:2012 Concrete paving blocks
- vii. SANS 1186-1 Standard signs & general requirements
- viii. SANS 1200 A General
- ix. SANS 1200 MJ Segmented paving
- x. SANS 1200 MK Kerbing & channelling
- xi. SANS 1575:2007 Clay paving units
- xii. SANS 1808-16 Drinking fountain taps
- xiii. SANS 475 Luminaires for interior lighting, streetlighting and floodlighting
- xiv. SANS 51176 Playground safety standards
- xv. SANS 51177 Impact attenuating playground surfacing
- xvi. SANS 51177:2010 Playground equipment & surfacing
- xvii. SANS 54960 Inflatable play equipment
- xviii. SANS 60968 Self-ballasted lamps for general lighting services
- xix. SANS 62031 LED modules for general lighting
- xx. SANS 920 Steel bars for concrete reinforcement
- xxi. SANS 927:2013 Precast concrete kerbs, edgings and channels

The quality of materials and workmanship is to comply with the latest relevant codes and specifications SANS as well as this specifications document.

2.3.3. NEMBA REGULATIONS

The Contractor should also familiarize themselves with the National Environmental Management: Biodiversity Act (No. 10 of 2004) (NEMBA), as managed by the Department of Environmental Affairs. This act aims to provide the framework, norms, and standards for the conservation, sustainable use, and equitable benefit-sharing of South Africa's biological resources. Particular attention should be given to the Monitoring, Control and Eradication of Listed Invasive Species as per the latest NEMBA Invasive Species List.

2.3.4. NEMA REGULATIONS

The National Environmental Management Act (NEMA) of 1998 provides for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote cooperative governance and procedures for co-ordinating environmental functions exercised by organs of state; to provide for certain aspects of the administration and enforcement of other environmental management laws; and to provide for matters connected therewith.

A key requirement of the National Environmental Management Act (NEMA) of 1998 is compliance with the principles of Integrated Environmental Management (IEM). Chapter Five of NEMA deals with IEM and its objective is to promote the application of appropriate environmental management tools to ensure the integrated environmental management of activities.

Among these tools are Environmental Impact Assessments (EIAs) and Environmental Management Programmes (EMPr's). Certain projects/sites may require and have in place an Environmental Management

Programmes (EMPr), an Environmental authorization or a Water use license. In these instances, it is critical that the Contractor obtain copies of the requirements (sometimes very stringent) up front to ensure that all work on site is undertaken in accordance with these requirements. At times an external Environmental Control Officer (ECO) may visit projects to ensure compliance and audit the site according to the authorization, license or EMPr.

2.3.5. ENVIRONMENTAL MANAGEMENT PROGRAMME

The EMPr typically becomes part of the Environmental Authorization (EA) prepared by the relevant environmental authority and becomes the basis for monitoring compliance with the recommendations of the EIA, both during the Construction and Operational Phases.

The Environmental Management Programme (EMPr) addresses the construction and operational phases of the project. It serves as a stand-alone document to be disseminated to and used by the contractor and others involved in the construction and/or operational phases of the development.

The Environmental Management Programme will ensure that the environmental commitments sketched as mitigation measures in the EIA process are adhered to. In addition, the EMPr can be used to evaluate the effectiveness of mitigation measures.

Should an EMPr be in place then the Contractor will be subject to monitoring and auditing by an external auditor. Environmental monitoring is the continuous evaluation of the status and condition of environmental elements, whereas environmental auditing is the process of comparing the impacts predicted with those which have occurred during implementation. The Employer will be responsible for the appointment of an independent Environmental Control Officer (ECO) during both Construction and Operation Phases.

The role of the ECO will be as follows:

- i. Understand, interpret, monitor, audit and implement the EMPr from the “cradle to grave” stage.
- ii. Retain independence and report on environmental compliance in an objective manner.
- iii. Explain the contents of the EMPr to the Contractor, the site staff, supervisors and any other relevant personnel or members of the public as required.
- iv. Undertake environmental audits for the duration of the construction and operational phases as required.
- v. Act as quality controller regarding all environmental concerns by conducting periodic site inspections, attending regular site meetings, pre-empting problems, suggesting mitigation and being available to advice on incidental issues that arise.
- vi. Submit audit reports to the Employer, Contractor and the Environmental Authority, including performance rating, recommendations and reports of non-compliance.

To ensure that the objectives of the EMPr are met, the following monitoring methods will be employed by the ECO:

- i. Aspect monitoring (such as water quality)
- ii. Incident reporting
- iii. Site inspections
- iv. Site monitoring and reporting
- v. Independent external auditing

SECTION 2.4 EXISTING EMM STANDARD SPECIFICATIONS

2.4.1. STANDARD SPECIFICATIONS FOR MUNICIPAL ELECTRICAL ENGINEERING 2005

The Contractor is to familiarise themselves with the Standard Specifications for Municipal Electrical Engineering Works.

2.4.2. STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING 2005

The Contractor is to familiarise themselves with the Standard Specifications for Municipal Civil Engineering Works.

CHAPTER 3 — LANDSCAPE CONSTRUCTION CONTRACT

SECTION 3.1 CONTRACTING PROCESSES

3.1.0 GOVERNANCE DECISION GATES

3.1.0.1 General

All public realm projects shall progress through the Public Realm Delivery and Governance System (PRDGS) in accordance with the Governance Decision Gate process established in this Section.

Governance Decision Gates provide the formal mechanism by which the Employer confirms that the objectives, deliverables, quality requirements and governance obligations applicable to each project stage have been satisfactorily achieved before progression to the subsequent stage.

No project shall proceed beyond a Governance Decision Gate without written approval from the Employer.

Progression to a subsequent stage without approval shall constitute non-compliance with this Specification.

Formal Design Assurance Reviews shall be undertaken at the completion of every PRDGS Stage.

The purpose of Design Assurance is to confirm that the proposed design satisfies the objectives of the Project Brief, this Specification and the Municipality's strategic objectives before progression to the next project stage.

Approved public realm designs shall not be altered without formal Design Change Approval.

Design changes shall be managed in a controlled manner to ensure that approved project objectives, design quality and public value are maintained throughout procurement and implementation.

The Consultant shall establish and maintain Design Governance Records throughout the project lifecycle.

The records shall provide a complete audit trail of project governance and decision-making.

Public realm infrastructure shall be planned, designed, procured and implemented on a whole-life asset management basis.

Design decisions shall support the Municipality's long-term operational, maintenance and asset management objectives.

Lowest capital cost shall not be the sole determinant of design selection.

3.1.0.2 Purpose

The Governance Decision Gate process shall:

- i. ensure appropriate governance oversight throughout the project lifecycle;
- ii. verify that project objectives continue to align with municipal priorities;
- iii. ensure compliance with statutory and institutional requirements;
- iv. confirm that technical deliverables satisfy the requirements of this Specification;
- v. minimise design and construction risk;
- vi. improve multidisciplinary coordination;
- vii. support transparent decision-making; and
- viii. establish clear accountability for project progression.

The Design Change Request shall include:

- i. description of the proposed change;
- ii. reason for the change;
- iii. alternatives considered;
- iv. technical justification;
- v. cost implications;
- vi. programme implications;
- vii. operational implications;
- viii. maintenance implications;
- ix. lifecycle implications;
- x. environmental implications;
- xi. accessibility implications;
- xii. risk assessment; and
- xiii. recommendation of the Consultant.

Design Assurance Reviews shall evaluate:

- i. compliance with the Project Brief;
- ii. compliance with this Specification;
- iii. spatial quality;
- iv. public value;
- v. functionality;
- vi. accessibility;
- vii. safety;
- viii. environmental performance;
- ix. climate resilience;
- x. constructability;
- xi. maintainability;
- xii. lifecycle costs;
- xiii. operational readiness;
- xiv. multidisciplinary coordination;
- xv. statutory compliance; and
- xvi. stakeholder requirements.

Every proposed design change shall be documented.

Design Governance Records shall include:

- i. Project Charter;
- ii. Stakeholder Register;
- iii. Governance Register;
- iv. Design Decision Register;
- v. Governance Decision Register;
- vi. Design Risk Register;
- vii. Design Change Register;
- viii. Design Assurance Reports;
- ix. Coordination Meeting Minutes;
- x. Design Compliance Reports;
- xi. Stage Approval Certificates;
- xii. Lessons Learned Register.

The Design Team shall consider:

- i. expected service life;
- ii. lifecycle costs;
- iii. maintenance frequency;
- iv. maintenance accessibility;
- v. replacement requirements;
- vi. operational costs;
- vii. spare part availability;
- viii. standardisation;
- ix. resilience;
- x. durability;
- xi. adaptability;
- xii. future upgrading requirements;
- xiii. asset renewal planning; and
- xiv. decommissioning requirements.

3.1.0.3 Governance Decisions

Where required by the Employer, Design Assurance Reviews may include representatives from:

- i. Urban Design and Landscape Architecture;
- ii. Architecture;
- iii. Civil Engineering;
- iv. Transportation Engineering;
- v. Environmental Planning;
- vi. Parks and Recreation;
- vii. Asset Management;
- viii. Project Management;

- ix. Quantity Surveying;
- x. Operations; and
- xi. other specialist disciplines relevant to the project.

At the completion of each PRDGS Stage the Employer shall issue one of the following governance decisions:

- i. Approved
The project may proceed to the subsequent PRDGS Stage.
- ii. Approved Subject to Conditions
The project may proceed subject to completion of specified actions within the timeframe determined by the Employer.
- iii. Returned for Revision
The project documentation shall be revised and resubmitted for further review.
- iv. Deferred
Additional investigations, stakeholder consultation, technical studies or statutory approvals shall be completed before further consideration.
- v. Rejected
The project or submission does not satisfy the objectives or requirements of the Municipality and shall not proceed until an alternative proposal has been approved.

No Design Change shall be implemented until written approval has been granted by the Employer.

Verbal instructions shall not constitute approval.

Governance Records shall be retained as part of the permanent project record and shall be handed over to the Employer upon project completion.

Public realm assets shall be designed to:

- i. maximise service life;
- ii. minimise lifecycle costs;
- iii. reduce maintenance burdens;
- iv. improve operational efficiency;
- v. enhance user safety;
- vi. improve environmental performance;
- vii. support climate resilience; and
- viii. provide long-term public value.

3.1.0.4 Approval Authority

The findings of every Design Assurance Review shall:

- i. identify areas of compliance;
- ii. identify deficiencies;
- iii. recommend corrective actions;
- iv. identify project risks;
- v. recommend progression through the Governance Decision Gate; and
- vi. be recorded in the Design Assurance Report.

Governance approvals shall be granted only by the Employer or by a person formally authorised by the Employer.

Technical acceptance by a Consultant shall not constitute governance approval.

No Contractor, Supplier, Subcontractor or Implementing Agent shall alter:

- i. approved layouts;
- ii. spatial relationships;
- iii. levels;
- iv. public spaces;
- v. streetscape elements;
- vi. planting compositions;
- vii. materials;
- viii. finishes;
- ix. accessibility features;
- x. public art;
- xi. lighting;
- xii. street furniture; or

- xiii. place-making elements

without written approval through the Design Change Management process.

The Employer may require lifecycle cost assessments, maintenance assessments or operational assessments to support design decision-making for projects of significant value, complexity or strategic importance.

3.1.0.5 Governance Records

The outcome of every Governance Decision Gate shall be recorded in the project Governance Register together with:

- i. date of review;
- ii. attendees;
- iii. matters considered;
- iv. conditions imposed;
- v. outstanding actions;
- vi. approval decision; and
- vii. authorised signatories.

These records shall form part of the permanent project record.

The Consultant shall maintain a Design Change Register throughout the project.

The Register shall record:

- i. change reference number;
- ii. description;
- iii. reason;
- iv. approvals;
- v. implementation status;
- vi. revised drawings;
- vii. revised specifications; and
- viii. associated project risks.

SECTION 3.1A. PRDGS LIFECYCLE GOVERNANCE AND CIDMS ALIGNMENT

3.1.3. URBAN DESIGN WORK STAGES (0–6)

All public realm projects governed by this PRSS shall be implemented in accordance with the Urban Design Work Stages (0–6) established by the PRDGS. These stages are mandatory governance checkpoints and are not discretionary:

- i. Stage 0: Strategic Project Framing — initiation, procurement support, SDF and PRSL alignment and PRDGS governance pathway determination. No project may proceed to Stage 1 without confirmed Stage 0 alignment endorsed by UD&LA;
- ii. Stage 1: Project Initiation — scope confirmation, governance framework and stakeholder engagement strategy;
- iii. Stage 2: Contextual and Conceptual Analysis — site analysis, concept development and co-design approach;
- iv. Stage 3: Design Development — landscape development plan, urban design framework, multidisciplinary coordination;
- v. Stage 4: Technical Documentation — construction documentation, statutory submissions, specification and pricing finalization;
- vi. Stage 5: Implementation — construction administration, design intent protection, site monitoring, quality assurance and compliance with this PRSS; and
- vii. Stage 6: Post-Implementation Review and Close-Out — post-occupancy assessment, as-built documentation, handover, stewardship alignment and CIDMS close-out.

3.1.4. CIDMS INTEGRATION

This PRSS governs technical standards during CIDMS stages corresponding to PRDGS Stages 3–5 (design through construction). Stage 6 close-out documentation requirements are set out in Chapter 24 (Site Handover and Post-Construction Maintenance) of this PRSS.

3.1.4. FRAMEWORK CONTRACT REFERENCE

Works instructed through task orders under the Framework Contract shall comply with this PRSS in addition to any task order-specific Particular Specifications under Part C3.4.

SECTION 3.2 SERVICE LEVEL AGREEMENT (SLA)

The service-level agreement (SLA) serves as a commitment between a service provider and the eThekweni Municipality. Particular aspects of the service – quality, availability, responsibilities – are agreed between the service provider and the EMM. This ensures that the services are provided to the EMM as agreed upon in the contract.

PART B: PRELIMINARIES & GENERALS

CHAPTER 4 — PROCEDURES, FUNCTIONS, DUTIES & RESPONSIBILITIES

SECTION 4.1 LAND DEVELOPMENT APPLICATION REQUIREMENTS AND THE DEVELOPMENT OF THE PUBLIC REALM

Within the eThekweni Municipal Area, land development applications are assessed by the Development Planning Department and the Environmental Planning and Climate Protection Department (EPCPD). Depending on the nature and location of the proposed development, applications may also be referred to other municipal departments and statutory authorities for review and comment.

Applications involving public realm improvements, urban design interventions, landscape architecture works, open space planning, streetscape enhancements, public open space, pedestrian environments or associated infrastructure must be referred to the Urban Design and Landscape Architecture (UD&LA) Unit for review and comment. Applications affecting biodiversity, ecological corridors, D'MOSS areas or environmental resources may require input from EPCPD and Ezemvelo KZN Wildlife, the statutory conservation authority for KwaZulu-Natal.

Where heritage resources, cultural landscapes, historic structures, archaeological resources or heritage-sensitive sites are affected, consultation with Amafa aKwaZulu-Natali may be required in terms of applicable heritage legislation.

Applications involving outdoor advertising, signage, wayfinding structures or advertising displays must comply with the Municipality's Outdoor Advertising Signage By-laws, policies and approval requirements and may require review by the relevant municipal authority responsible for signage management.

In addition, applicants may be required to obtain comments, approvals or permits from other municipal departments and external authorities, including transportation, engineering services, stormwater management, real estate, environmental management, heritage authorities, utility providers and other organs of state, as applicable to the proposed development.

Applications shall demonstrate compliance with all applicable legislation, municipal by-laws, policies, strategies, frameworks, precinct plans, environmental requirements, heritage requirements, engineering standards, public realm standards and statutory approval processes. Supporting documentation may include, but is not limited to, Spatial Development Frameworks, Local Area Plans, Urban Design Frameworks, Landscape Development Plans, Site Development Plans, Environmental Assessments, Heritage Impact Assessments, Traffic Impact Assessments, Stormwater Management Plans, Outdoor Advertising Signage approvals and any other documents required by the Municipality or relevant statutory authority.

SECTION 4.2 ROLE PLAYERS

Efficient implementation of any landscape construction project requires that various role-players be defined. Depending on the nature and scale of a project, the implementing teams could be composed of any number of role-players, each with their own specified responsibilities.

For the purpose of this document, the following role-players are defined, based purely on responsibility and accountability allocation. The actual designation of role-players may vary from project to project, but the responsibilities will largely remain as stated.

4.2.1. PRINCIPAL AGENT

The Principal Agent (PA) represents the Employer (eThekweni Municipality) interests, and co-ordinates all aspects of the project, streamlining planning and implementation. All members of the implementing team as described hereunder report to the PA, who in turn reports to the Employer.

The Landscape Architect may only take instruction from the PA, and all decisions regarding landscape construction are to be approved by the PA, who has the power to stop any construction activity in contravention of this specification document. This is unless the LAP is appointed as the PA. Depending on the nature and scale of a project the LAP may act as the PA. The PA is typically assigned, but not limited to, one of the following individuals:

- i. the Engineer,
- ii. the Architect,
- iii. the Landscape Architect,

- iv. Project Managers,
- v. Quantity Surveyors, etc.

The PA shall act as the Employers Agent, and in the first instance shall be the interpreter of the Contract and the judge of its performance. Under the terms of the Contract the PA shall use his powers to ensure the faithful performance of the Contract, by both parties thereto. In case of termination of the employment of the PA, the Employer shall appoint a PA whose status shall be that of the former PA.

4.2.2. LANDSCAPE ARCHITECTURAL PROFESSIONAL

A Landscape Architecture will be appointed on a professional basis as a consultant or as part of a planning team. The LAP must be registered with the South African Council for the Landscape Architectural Profession (SACLAP), as contemplated by the Landscape Architectural Professions Act, Act No 45 of 2000. Depending on the nature and scale of the project the LAP may act as the PA.

To assist him in executing his duties, the Landscape Architect may use, amongst others, the specialised services of ecologists, geologists, hydrologists, surveyors, pedologists, botanists, sociologists, as well as architects, engineers, town planners and quantity surveyors.

The Landscape Architect shall be responsible for the following:

- i. To study the requirements of the Employer, the site, any legislative procedures and to advise upon a program of development for the project.
- ii. Submission of Proposal and/or Contract: The Landscape Architect will set forth in writing the services to be rendered, the fee to be charged, and the method of payment. This statement will also describe all information to be furnished by, and at the expenses of others. Upon approval in writing by the Employer, the Landscape Architect is ready to proceed.
- iii. To advise on the need for consultants or other specialists services in respect of landscape work.
- iv. To prepare drawings and documents.
- v. To prepare a contract for the actual execution of the work on the site.
- vi. To act on behalf of the Employer in the direction and supervision/monitoring of the work. It should be noted that constant supervision (monitoring) does not form part of the normal service.
- vii. To nominate or approve the appointment of a Clerk of Works if necessary, and to direct him accordingly. Such a person to be appointed and paid by the Employer, unless it is agreed to reimburse the Landscape Architect for such services.
- viii. To advise on specialist suppliers of goods or services if necessary and to incorporate their work in a contract or contracts to be directed and supervised (monitored) on site.
- ix. To issue instructions on behalf of the Employer for the project, and with the approval of the Employer, to make any such variations to the documents as may be found during the work to be necessary or desirable in order to achieve the planned result.
- x. To inform the Employer as to their financial obligations towards the Contractor by examining the work executed by the Contractor and to verify the valuation of the work done for the purpose of issuing progress payment certificates. While the Landscape Architect shall exercise due care in examining the work and the accounts prior to certifying, he or she shall in no case be liable for work by the Contractor which may either be improperly executed or in breach of the terms of the contract; such liability in every case to remain with the Contractor. The Landscape Architect will be impartial in dealing with such matters between the Employer and the Contractor.
- xi. To act as arbitrator, if necessary, in any area of dispute between Employer and Contractor
- xii. The Landscape Architect shall make no material deviation from the Employer's instructions, and the Employer's written authority must be obtained before undertaking any new work or proceeding to
- xiii. another stage of the work. The Employer's written authority must also be obtained before issuing a variation/change order instruction which will have a cost implication
- xiv. The Landscape Architect shall not sub-commission work for which he or she has been engaged either in whole or in part without the prior agreement of the Employer as to the division of responsibilities that shall apply.

The Landscape Architect will be expected to work according to the six (6) stages, as set out by SACLAP.

4.2.2.1. STAGE 1: INCEPTION

Establish the Employers requirements and preferences, assess user needs and options, appointment of necessary consultants, establish the project brief including project objectives, priorities, constraints, assumptions, aspirations and strategies. Stage 1 roles and responsibilities of the Landscape Architect include:

- i. Assist in developing a clear project brief.
- i. Attend project initiation meetings.

- ii. Advise on the procurement policy for the project.
- iii. Advise on rights, constraints, consents and approvals.
- iv. Advise on the other consultants and services required.
- v. Define the consultant's scope of work and services.
- vi. Determine availability of data, drawings and plans relating to the project.
- vii. Advise on the necessary surveys, analyses, tests and or other investigations where such information will be required.
- viii. Advise on appropriate financial design criteria.
- ix. Provide necessary information within the agreed scope of the project to the other consultants.

4.2.2.2. STAGE 2: CONCEPT AND VIABILITY

Prepare and finalise the project concept in accordance with the brief including the scope, scale, character, form, function and viability of the project. Stage 2 roles and responsibilities of the Landscape Architect include:

- i. Agree the documentation programme with the principal consultant and the other consultants.
- ii. Attend design and consultants' meetings.
- iii. Prepare concept design based on the Employer's brief.
- iv. Consult with the other consultants and incorporate their input.
- v. Discuss design concept with local and other authorities as required.
- vi. Advise the Employer regarding further surveys, analysis, tests and investigations which may be required.
- vii. Refine and assess concept design to ensure conformity with statutory requirements and consents.
- viii. Co-ordinate design interfaces with the other consultants.
- ix. Select hard and soft landscape construction materials.
- x. Prepare cost estimates as required.
- xi. Submit presentation of the design concept to the Employer for approval.
- xii. Prepare and submit the landscape development plan to the local authority for approval where applicable.
- xiii. Liaise, co-operate and provide necessary information to the Employer, principal consultant and other consultants.

4.2.2.3. STAGE 3: DESIGN DEVELOPMENT

Develop the approved concept to finalise the design, outline specifications, cost plan, financial viability and program for the project. Stage 3 roles and responsibilities of the Landscape Architect include:

- i. Review the documentation programme with the principal consultant and the other consultants.
- ii. Attend design and consultants' meetings.
- iii. Incorporate the Employer's detailed requirements into the landscape design.
- iv. Give due consideration to incorporate and co-ordinate the other consultants' designs into the landscape design where necessary.
- v. Prepare design development drawings including draft technical details and outline specifications.
- vi. Review and evaluate design and outline specifications and exercise cost control.
- vii. Prepare detailed estimates of construction costs.
- viii. Liaise, co-operate and provide necessary information to the Employer, principal consultant and other consultants.
- ix. Obtain project specific requirements from the local and or other authorities in order to ensure conformity with requirements.

4.2.2.4. STAGE 4: DOCUMENTATION AND PROCUREMENT

Prepare the construction and procurement documentation, confirm and implement the procurement strategies and procedures for effective and timeous procurement of necessary resources for the execution of the project. Stage 4 roles and responsibilities of the Landscape Architect include:

- i. Assist with local and or other authority submission(s).
- ii. Attend design and consultants' meetings.
- iii. Prepare specifications for the works and agree preambles.
- iv. Co-ordinate services and prepare necessary services co-ordination drawings.
- v. Check cost estimate and adjust documents if necessary to remain within budget.
- vi. Assist the principal consultant in formulation of procurement strategy for contractors.
- vii. Review working drawings for compliance with the approved budget.
- viii. Prepare documentation for contractor procurement.
- ix. Assist the principal consultant with calling for tenders and/or negotiation of prices.

- x. Liaise, co-operate and provide necessary information to the principal consultant and the other consultants.
- xi. Assist with evaluation of tenders.
- xii. Assist with the preparation of contract documentation for signature.
- xiii. Assess samples and products for compliance and design intent.

4.2.2.5. STAGE 5: CONSTRUCTION

Manage, administer and monitor the contracts and processes, including the preparation and coordination of the procedures and documentation to facilitate practical completion of the works. Stage 5 roles and responsibilities of the Landscape Architect include:

- i. Attend the site handover.
- ii. Issue construction documentation in accordance with the documentation programme.
- iii. Carry out contract administration procedures delegated by the principal agent in terms of the contract.
- iv. Prepare schedules of predicted cash flow.
- v. Prepare pro-active estimates for proposed variations for the Employers decision making.
- vi. Attend regular site, technical and progress meetings.
- vii. Inspect the works for conformity to contract documentation.
- viii. Adjudicate and resolve financial claims by contractor(s).
- ix. Assist in the resolution of contractual claims by the contractor.
- x. Establish and maintain financial control system.
- xi. Clarify details and descriptions during construction as required.
- xii. Prepare valuations for payment certificates.
- xiii. Approve valuations for payment.
- xiv. Witness and review all tests and mock-ups carried out both on and off site.
- xv. Check and approve subcontract shop drawings for design intent.
- xvi. Update and issue the drawings register.
- xvii. Issue contract instructions as and when required.
- xviii. Review and comment on operations and maintenance manuals, guarantees, certificates and warranties.
- xix. Inspect the works and issue practical completion and defects lists.
- xx. Assist in obtaining statutory approvals where required.

4.2.2.6. STAGE 6: CLOSE-OUT

Fulfil and complete the project close-out including the preparation of the necessary documentation to facilitate effective completion, handover and operation of the project. Stage 6 roles and responsibilities of the Landscape Architect include:

- i. Inspect and verify rectification of defects.
- ii. Prepare valuation for payment.
- iii. Approve relevant payment valuations and completion certificates.
- iv. Advise on soft landscape maintenance.
- v. Prepare and/or procure operations and maintenance manuals, guarantees and warranties.
- vi. Prepare and/or procure as-built drawings and documentation.

4.2.3. LANDSCAPE CONTRACTOR

The Landscape Contractor, hereby referred to as the Contractor, is the successful tenderer, appointed by EMM to undertake the Works as specified in the Contract. The landscape contractor must be registered with the Construction Industry Development Board (CIDB) and with a proven record of similar work experience. The qualifications and experience of proposed supervising personnel must be submitted with the tender.

It is the responsibility of the Contractor to undertake the following:

- i. Do whatever is necessary from their side to ensure that they or an appointed advisor is well versed in landscape construction so that he may accurately and efficiently carry out the requirements of the project.
- ii. Clearly state the scope of works to the Employer by way of a detailed specification and quotation. Quotations concerning replacement of plant losses and liability for defects must be made clear to Employers at the time of quoting/tendering.
- iii. Ensure that sufficiently trained staff, adequately supervised, shall be employed to ensure that contracts are carried out in accordance with the specifications.

- iv. Ensure that all statutory responsibilities PAYE, Skills Development Levies, UIF, Workmen's Compensation, Regional Services Levies and/or any other Public Liability and statutory insurance is maintained.
- v. Shall take full responsibility for the quality of work and conduct of any sub-contractor engaged by them. All work shall be executed by experienced personnel under the direction of a Landscape Technician/Technologists or skilled foreman.
- vi. The Contractor is liable for any and all construction works required in terms of the Landscape Specification, resulting from his negligence, mismanagement and / or non-compliance.
- vii. Until the Landscape Contract Works are taken over by the Employer, the Landscape Contractor shall be fully responsible for the proper care and protection of the Landscape Contract Works and shall bear all risks of damage to or destruction of the Contract Works.
- viii. Maintain the newly installed landscape until it is "practically complete" and ready to hand over to the Employer.

Until the Landscape Contract Works are taken over by EMM, the Landscape Contractor shall be fully responsible for the proper care and protection of the Landscape Contract Works and shall bear all risks of damage to or destruction of the Contract Works. In the event that loss or damage to the Works, from any cause whatsoever, shall at their expense repair or reinstate the same at the time of taking over by the EMM. The Contract Works shall be in good order and condition and conform in every respect to the requirements of the Contract; provided that the Landscape Contractor shall not be liable for the cost of repair to or reinstatement of the Contract Works where such loss or damage is caused by the improper use of the Contract Works by EMM or the negligent act of EMM.

The Contractor shall keep a competent supervisor on the work during its progress, and any necessary assistance, to the satisfaction of the Landscape Architect and the Employer. Such personnel shall not be changed without first receiving the written consents of the Landscape Architect and the Employer, unless they prove to be unsatisfactory to the Contractor and cease to be in his employment. The Contractor agrees to replace any such personnel upon receiving written notice from the Landscape Architect that they or their work is unsatisfactory.

The supervisor shall represent the Contractor in his absence and directions on minor matters given to him shall be held as given to the Contractor. All directions shall be given or, in the case of verbal directions, confirmed in writing, to the Contractor. The Contractor shall give efficient supervision of the work, using his best skill and attention.

CHAPTER 5 — GENERAL REQUIREMENTS

SECTION 5.1 CONTRACT MANAGEMENT

5.1.1. PROJECT TEAM

The Contractor shall submit a list of his proposed project team, with a brief CV of each candidate. The Landscape Architect shall have the right to instruct the Contractor to change the team after negotiation with the Contractor.

5.1.2. SUBCONTRACTORS

The Contractor shall submit a list of proposed subcontractors for approval to the Landscape Architect. Any changes to the list of subcontractors shall be approved by the Landscape Architect. Subcontractors may not subcontract work further without permission of the Landscape Architect. The Landscape Architect may at any time ask for a subcontractor to be changed.

5.1.3. PRICING

All prices must be tendered in South African Currency and must include Value Added Tax (VAT). Any form of levy or charge as customs duty, excise duty and import surcharge must be included in the price(s). All price(s) must be nett with all discounts already deducted. Price(s) must include the cost of supply, delivery, stacking and storage, installation etc. as specified.

Should there be any difference, or discrepancy between the prices or particulars stated and those contained in a covering letter or other document submitted to the Employer, the former shall prevail.

5.1.4. PREPARATION OF BILL OF QUANTITY

The bill of quantities includes, as far as possible, each item of work to be carried out as the Contract requires, with regards to construction, labour, materials, planting, cultivation, irrigation and maintenance of works during construction.

Each item of work with the relevant unit price shall be considered inclusive of any additionally required work for that specific component and no extra payment over and above the tendered amount will be approved for labour, materials, or any additional works. Where an item is not priced in the quantity list, it shall be accepted that provision has been made under a separate item for this particular entry. Rates and lump sum prices tendered in the Bill of Quantities shall be inclusive of overheads, profits, incidentals, etc. and shall include full compensation for the items of work as specified. Full compensation for completing, and maintaining during the maintenance period, unless this is itemised separately in the Bill of Quantities, all the Work shown in the drawings and specified in the specifications and for all the risks, obligations and responsibilities specified shall be considered as provided for collectively in the items of payment given in the Bill of Quantities, except insofar as the quantities given therein are only approximate.

Where any uncertainty exists about the true intent and meaning of an item, the Contractor must request the Landscape Architect to provide a written explanation, clarification or definition of the works in question. No claims resulting from any misunderstanding will be considered after the tender has been awarded. Where provisional amounts are provided for any item of work which must be carried out, it must be accepted that the eventual amounts or quantities may differ from the amounts provided provisionally.

All quantities in this contract are provisional and shall be re-measured and adjusted on completion of the works. The quantities set out in the Bill of Quantities are approximate only and are subject to re-measurement. Only the quantities of work finally accepted and certified for payment, not the quantities given in the Bill of quantities, shall be used for determining payments to the Contractor. The validity of the contract shall in no way be affected by differences between the quantities in the Bill of Quantities and the quantities finally certified for payment. Work shall be valued at the rates or lump sum prices tendered, subject only to the provisions of this contract.

All the items in the Bill shall be priced in Rands and Cents to two decimal places. Any items not priced shall be deemed to be included elsewhere in the prices. Any variations will be priced based on the rates given. The Contractor shall fill in a rate opposite all items where the words "rate only" appear in the quantity column. The intention is that although no work is foreseen under such an item, and no quantities are accordingly given in the quantity column, the tendered rates shall apply in the event of work under this item actually being required. Items against which no rate or lump sum is entered in the tender will not be paid for when executed, but payment for such work will be regarded as covered by other rates or lump sums in the Bill of Quantities.

The Work as executed will be measured for payment in accordance with the methods described in the contract under the various pay items notwithstanding any custom to the contrary. Except where otherwise specified, the net measurements of the finished work in place shall be taken for payment but excluding any work in excess of that ordered, specified or shown in the drawings.

The quantities of work or material stated in the Bill of Quantities shall not be considered as binding or extending the amount of work to be done or quantity of material to be supplied by the Contractor.

The quantities of work or material stated in the Bill of Quantities shall not be regarded as constituting authorisation for the Contractor to obtain material or execute work. The Contractor shall obtain the Consultant's detailed instructions for all work before ordering any materials for the contract or executing work or making arrangements therefore.

The short descriptions for pay items given in the Bill of Quantities are only for the purpose of identifying the items and providing specific details. Reference shall be made inter alia to the drawings, specifications and General Conditions of Contract for more detailed information regarding the extent of work entailed under each item.

The prices must include for all the requirements of the Model Preambles for Trades, SANS requirements and manufacturer's recommendations.

The following abbreviations have been used throughout the Bill of Quantities:

- a. m:metre
- b. m²:square metre
- c. m³:cubic metre
- d. No: number
- e. Month: per calendar month
- f. Unit: The unit of measurement for each item of work as defined.
- g. Quantity: The number of units of work for each item.

- h. Rate: The payment per unit of work at which the Contractor tenders to do the Work.
- i. Price: The product of the quantity and the rate tendered for an item.
- j. Sum: A price tendered for an item of which the extent is described in the Bill of quantities, the specifications or elsewhere, but the quantity of work is not measured in any units.

5.1.5. DOCUMENTS

The Contract Document shall be signed by the Employer (or his agent) and the Contractor. The original signed Contract Document is to be kept by the Employer. Copies are to be circulated to others.

The Contract Documents are complementary, and what is called for by any one, shall be as binding as if called for by all. The intention of the Contract Documents is to include all labour and materials, equipment, services and incidentals necessary for the proper execution of the work to be performed by the Contractor. It is not intended, however, that materials or work not covered by or properly inferable from any heading, section or trade in the specifications shall be supplied unless shown on the drawings. Descriptions of materials, labour or processes in words, which have well known technical or trade meanings, shall be held to refer to such recognized standards.

All parts of this agreement, including drawings and specifications, shall be interpreted in conformity with the Contract and the general and special conditions, which shall govern in all cases. In the case of discrepancies between drawings, those of larger scale, or if the scales are the same, those of later date shall govern. In case of conflict between the drawings and the specifications the specifications shall govern.

The Contractor shall carefully study all drawings, specifications and instructions and shall at once report to the Landscape Architect any errors, inconsistencies or omissions, which the Contractor may discover. In case the drawings and specifications should be at variance with each other, or should any error or inconsistency exist or develop between the drawings or specifications or between any portions thereof or should any work be not sufficiently detailed or explained on the drawings or in the specifications, the Contractor shall immediately notify the Landscape Architect; the Contractor shall not proceed with that part of the work in uncertainty without the Landscape Architect's approval. Should the Contractor proceed without the Landscape Architect's clarification or approval, he shall rectify or cause to be rectified any error in the work at no additional cost to the Employer.

The Contractor shall keep one copy of all drawings, specifications and approved shop drawings on the site, in good order, available to the Landscape Architect and his representative, at all times.

5.1.6. OWNERSHIP OF DOCUMENTS

All drawings, specifications and copies thereof and all models furnished by the Landscape Architect, are his property. They are not to be used on other work and are to be returned to the Landscape Architect on request upon the completion of the work. Any models furnished by the Contractor are the property of the Employer.

5.1.7. DETAIL DRAWINGS AND INSTRUCTIONS

All drawings and details shall be provided for by the Landscape Architect, unless otherwise agreed upon. All layout, construction, planting and detail drawings shall be to scale and fully detailed. All drawings to be supplied shall be approved and signed before use by the Contractor.

To ensure the proper execution of the work, the Landscape Architect shall furnish, where necessary additional instructions by means of drawings or otherwise. All such additional instructions shall be consistent with the Contract Documents and become part of the Contract. The work shall be executed in conformity therewith, but the Contractor shall do no work without such additional instructions where such are required. In giving such additional instructions, the Landscape Architect shall have authority to make minor changes in the work of the Contractor, not inconsistent with the Contract Documents.

Location of items shown or specified, but not dimensioned, shall be considered approximate. The actual location shall be as directed to suit site conditions and / or underground services.

5.1.8. COPIES FURNISHED

In addition to one signed copy of the Contract Documents, the Employer, via the Landscape Architect, shall furnish to the Contractor, without charge, as many copies of the drawings and specifications as are reasonably necessary for the proper execution of the work by the Contractor.

5.1.9. SHOP DRAWINGS

The Contractor shall furnish to the Landscape Architect, at proper times, all shop and setting-out drawings or diagrams which the Landscape Architect may deem necessary in order to clarify work details, or to show its

relation to adjacent work of other trades. The Contractor shall make any changes in such drawings or diagrams which the Landscape Architect may require, provided they are consistent with the Contract Documents and shall submit sufficient copies of the revised drawings or diagrams to the Landscape Architect for approval.

Any changes made by the Contractor in variance with the Contract Drawings, or Specifications shall be brought to the Landscape Architect's attention in writing. The Landscape Architect, after approving same, shall return three (3) copies thereof to the Contractor who shall do the work in accordance with the approved drawings.

The Landscape Architect's approval of such drawings shall not relieve the Contractor from any responsibility with respect to errors made thereon by the Contractor or to changes made from the Contract Drawings or Specifications and not covered by the Contractor's written notifications.

The Contractor shall keep one copy of all drawings, specifications and approved shop drawings on the site, in good order, available to the Landscape Architect and his representative, at all times.

5.1.10. 'AS BUILT' DRAWINGS

The Contractor shall record all approved changes made during construction. Upon completion of the work the Contractor shall furnish the Landscape Architect with 'as built' drawings indicating all approved changes implemented during the execution of the work. A full set of "as-built" drawings shall be supplied by the Contractor to the Landscape Architect before final take over. These drawings must be to the satisfaction of the Landscape Architect.

Together with the 'as built' drawings filled out and valid original guarantee / warrantee documentation for all installed equipment must be submitted. 5.1.11. STARTING DATE OF CONTRACT

The starting date of the Contract is given as the date upon which the Contractor will be given access to the full or specified parts of the site for the implementation of the Works. The starting date of the Contract is to be supplied by the Landscape Architect upon the appointment of the Contractor.

5.1.12. COMPLETION DATE OF CONTRACT

The completion date of the Contract is given as the date upon which the Contractor attains Practical Completion of the Works. The expected completion date of the Contract is to be supplied by the Landscape Architect upon the appointment of the Contractor.

5.1.13. PENALTIES FOR LATE COMPLETION

The penalty for failure by the Contractor to complete the works by the projects stipulated completion date will result in daily fines being issued. The fine amount is to be stipulated by the Landscape Architect in the Contract. Delays may be claimed according to provisions of the contract.

Any claim by the Employer for damages for breach of contract by the Contractor is separate from Penalties claimed and shall not be affected by such.

5.1.14. INSPECTION

EMM, and the Landscape Architect on EMM's behalf, and their respective representatives, shall at all times have access to the work wherever it is in preparation or progress and the Contractor shall provide proper and safe facilities for such access and for inspection. The Contractor will ensure that no person has access to the work except for persons actually engaged upon the site under his supervision or under the supervision of any of his subcontractors.

5.1.15. REJECTED WORK

The Contractor shall promptly remove from the site all materials condemned by the Landscape Architect as failing to conform to the Contract Documents, whether incorporated in the work or not, and the Contractor shall promptly replace and re execute or cause to be replaced and re executed all faulty work not in accordance with the Contract Documents, without expense to the Employer. The Contractor shall bear the expense of making good all work destroyed or damaged by such removal or replacement.

The Employer shall not be required to accept work or make final payment until the Contractor has at his own expense corrected by repair or removal and replacement all parts of the work or materials found to be defective or otherwise not strictly in accordance with the provisions of the Contract Documents.

Failure by the Contractor to remove the condemned materials or replace and re execute faulty work within the time fixed by written notice, shall entitle the Employer to remove and store such materials at the expense of the Contractor. The Employer may, at his option, upon ten (10) days' written notice sell such materials at auctions or at private sale and shall account for the net proceeds thereof, after deducting all the costs and

expenses that should have been borne by the Contractor. The Contractor shall forthwith pay to the Employer the amount of any deficiency.

5.1.16. REDUCTIONS FOR UNCORRECTED WORK

Where the Landscape Architect considers it inexpedient to correct defective work or work not done in accordance with the Contract Documents, the Employer may deduct from the Contract price the difference in value between the work as carried out and that as called for in the Contract Documents. The Landscape Architect shall determine the value.

5.1.17. VARIATION ORDERS

Without invalidating the Contract, the Employer or the Landscape Architect may make changes to the work by alteration, addition, or deduction, with the Contract Sum being adjusted accordingly. All such changes, when approved shall be executed, under the terms of the Contract, except that any claim for extent or reduction of time resulting from such changes shall be adjusted at the time of ordering the change.

All such changes shall be executed only upon receipt of a written order from the Landscape Architect and approved by the Employer, except in the case of emergencies.

The Contractor shall be responsible for passing such written orders to his sub-contractors where they affect the subcontractors' work and the sub-contractors shall be bound thereby to the same extent as the Contractor.

Any claim for an addition to or deduction from the Contract Sum shall be valid if so, ordered in writing and valued or agreed to be valued at the same time.

5.1.18. VALUATION OF VARIATIONS

The value of any change shall be determined in one or more of the following ways:

- i. By estimate and acceptance in a lump sum;
- ii. By unit prices agreed upon;
- iii. By cost and percentage or by cost and a fixed fee;

In case of additional work to be paid, the Contractor shall keep and present a correct account of the net cost of labour and materials, together with vouchers, in a form as directed by the Landscape Architect. In any case, the Landscape Architect shall certify the account, including a reasonable profit for the Contractor.

5.1.19. WORK SCHEDULING

Within 1 week of written notification of appointment, the Contractor shall arrange a project initiation meeting with the Landscape Architect and / or project team at which open points will be discussed and milestone dates established.

Within 3 weeks of appointment the Contractor shall submit a detailed work schedule covering all important activities such as the commencement date, duration, completion date and detail cash flow of each activity concerning the works. The Landscape Architect, together with the Contractor, shall define a suitable number of milestones in order to ensure that the project is kept on schedule and that sufficient resources are employed. If necessary, the schedule needs to consider the overall project programme of other contractors.

The submitted works schedule will only be deemed accepted once the Landscape Architect has signed off on it. This schedule will be saved as the base case and may not be changed. The milestones so generated will become the contractual dates for payments.

The execution of the work set out may require completion in sections in order to accommodate other construction work and the provision of various works facilities should be sequenced according to a system.

The Landscape Architect shall inform the Contractor of the particular succession of activities, and the Contractor will not be able to accept such programming as ground for claims for additional remuneration.

5.1.20. PROGRESS AND SITE MEETINGS

Regular progress and site meetings shall be held, at which reports shall be submitted to the Landscape Architect indicating progress and adherence to the work program. Meetings will be held at the Contractor's facilities on site (site office), unless otherwise agreed upon.

Minutes of meetings shall be kept by the contractor and shall be made available to all participants, and others to be decided by the Landscape Architect, within 3 working days. All matters pertaining to the work and which are critical to the work schedule shall be recorded and all verbal decisions confirmed in writing and approval by all parties concerned.

The Contractor shall submit an updated work schedule to the Landscape Architect at each site meeting.

The agenda shall be circulated to all participants by email at least one week before each meeting..

5.1.21. PROGRESS REPORTS

Monthly progress reports reflecting the status at the end of each calendar month shall be made available to the Landscape Architect before the 5th working day of the following month and shall include, but not be limited to, updated versions of the following:

- i. Cover sheet for monthly report
- ii. Minutes of the previous meeting
- iii. Cash flow statements showing actual expended amounts and forecast amounts to the end of the project on a monthly basis.
- iv. Work schedule showing the sequence and duration of work, as well as actual progress achieved and expected completion time. The base information as tendered for shall be shown and shall remain unchanged for the duration of the project.
- v. Attendance list
- vi. List of site instructions to date
- vii. List of variation orders to date
- viii. List of drawings on the project
- ix. List of rainfall days
- x. Schedule of plant and personnel on site
- xi. List of subcontractors on site

Furthermore, all variations to the contract, extras, omissions, etc., shall be processed and presented in the form to be directed by the Landscape Architect.

5.1.22. ASSIGNMENT

The Contract is personal to the Contractor who shall not sub-let, assign or makeover the Contract or any part thereof, or any share of interest therein, to any other person without the written consent of the Employer and on such conditions as it may approve.

This clause shall not apply to sub-contracts given to regular suppliers of the Contractor for materials and minor components relating to the goods to be supplied. The Employer reserves the right to require the Contractor to submit the names of such sub-Contractors for its approval.

5.1.23. PAYMENT

Up to and including Practical Completion of the Works, payment for work executed will be issued according to the agreed upon milestones as generated in the works schedule as well as according to Payment Certificates issued by the Landscape Architect, unless otherwise agreed upon. The Contractor must submit their claim to the Landscape Architect before or on the agreed upon milestone date, should the Contractor intend to claim.

All payments whether full or partial will only be made upon a valid Payment Certificate being issued by the Landscape Architect.

No payment will be made for materials delivered to site. Payment will only be made for material incorporated in the Work as per drawings and specifications.

During the Maintenance Period, which is defined as the stipulated period following Practical Completion, payment for the works executed will be issued monthly according to the amount tendered.

5.1.24. RETENTION

A retention amount of 10% of the contract value will be held as security until the amount withheld is equal to the value of works completed. This amount will then be reduced to 2% upon the achievement of practical completion and then further reduced to 0% upon final payment advice.

5.1.25. TAXES

Unless specifically stated otherwise the Contractor shall pay all government sales and/or excise taxes in force at the date of the Agreement. Any increase or decrease of such taxes shall increase or decrease the Contract Sum accordingly.

5.1.26. CONTRACTOR'S WORKS AND LIABILITY INSURANCE

The works and all unfixed materials delivered to and placed on or adjacent to the works and intended for incorporation into the works shall be insured from the commencement date and endure until practical completion (or as may be extended, if required) by the Contractor against risk of physical destruction or damage under an insurance policy suitably endorsed to include the risks known as 'special perils,' 'riot and strike,' 'earthquake,' 'fire and shock' and 'explosion' insofar as the said risks are insurable.

Equipment and everything else necessary for the Contractor to execute the works are at the sole risk of the Contractor. The Contractor shall, to the extent he / she deems it appropriate, insure any existing or other structure on the site other than the works.

The Contractor shall protect himself and indemnify and safeguard the Employer from any and all claims which may arise from the Contractor or his sub-contractor's operations under the Contract with respect to bodily injury, death or property damage. Without in any way limiting the liability of the Contractor, it shall be the Contractor's responsibility to maintain and keep in force and endure until practical completion (or as may be extended, if required), comprehensive public liability insurance.

The works and the materials and goods intended for incorporation in the works placed on or adjacent to the site shall be at the risk of the Contractor until practical completion.

Prior to the commencement of any work, the Contractor shall furnish the Employer with a copy of each insurance policy and certificate to the approval of the Employer.

5.1.27. PERMITS, APPROVALS / FINAL INSPECTIONS, REGULATIONS AND PATENT FEES

The Contractor shall obtain and pay for all the necessary permits and licenses required for the execution of the work. The Contractor shall give all necessary notices and pay and apply for all inspection services, approvals/final inspections and fees required by law and he shall comply with all ordinances, rules and regulations relating to the work and to the preservation of the public health and safety in accordance with all municipal, provincial or state laws and regulations. The Contractor shall obtain all relevant authority approvals if such is required.

The Contractor shall pay all royalties and license fees and shall be responsible for any suits or claims which may arise by reason of the work being an infringement of patents in force at the time of signing of the Contract Documents.

The Contractor shall also ensure that all work is inspected by the Landscape Architect prior to covering up. The fact that the work will be inspected from time to time in no way absolves the Contractor from his responsibility for the quality of his workmanship and for compliance with the specification and drawings.

Without in any way limiting the liability of the Contractor under this Contract, it shall be the responsibility of the Contractor to be in good standing, to comply with the provisions of the Workmen's Compensation Act and to ensure that all his employees and all those of the sub-contractor, performing work under this Contract, are provided for thereunder.

5.1.28. CONTRACTOR'S EMPLOYEES

The Contractor shall make his own arrangements to recruit labour for the execution of work as stipulated in the contract. The registration and payment of any fees and insurance with regard to labour shall be the responsibility of the Contractor.

The Contractor must be registered with the workmen's compensation and if required to do so, he must provide the Employer with his registration number.

The Contractors' employees should comply to but not be limited by the following:

- i. All staff should be legally registered to work in the country in which the work is being executed.
- ii. All staff should be competent to do what is required of them.
- iii. All staff, permanent or casual, should be in the uniform of the contractor, preferably with a visible name tag, and wearing the correct personal protective equipment.
- iv. Staff numbers should be kept to a minimum so as not to have loitering staff on site.
- v. All staff should be appropriately managed and fully aware of the work programme and deadline.

All labour and sub-contractors utilised on this contract shall be drawn from the communities of the EMM where large unemployment prevails and the need for a better quality of life exists.

If the contractor intends to utilise certain categories of employees (generally considered as being key personnel of the contractor), or certain sub-contractors (generally specialist sub-contractors) in the Works, full details in this regard must be provided.

The Contractor shall employ experienced personnel on the site and skilled in the work assigned to them. He shall, at all times, enforce strict discipline and good order on the site.

Should any disorderly, incompetent or objectionable person be hired or employed by the Contractor, upon or about the premises of the Employer for any purpose or in any capacity, he shall, upon the request of the Landscape Architect or the Employer, be discharged and not again employed without the permission of the Landscape Architect and the Employer. The Contractor shall be responsible for familiarising himself with respect to labour relations on the site and he shall avoid any work stoppages or hindrances resulting from labour disputes.

All labour to be adequately attired and appropriate protective clothing to be provided wherever necessary.

5.1.29. OCCUPATIONAL HEALTH AND SAFETY

The site and its operation should conform to the general Health and Safety requirements i.e. compliance with OH&S Act No 85 of 1993: Occupational Health and Safety Act as amended by OH&S Amendment Act, no 181. It will be the responsibility of the Contractor to comply with all the latest amended provisions of the Occupational Health and Safety Act.

The Landscape Architect and the Employer have the authority to stop the progress of the work whenever in their opinion such stoppage may be necessary to ensure its safe execution. In an emergency affecting or threatening the safety of life, or of structures, or of adjoining property, the Landscape Architect and the Employer have the authority to make such changes in the work as are necessary to ensure its safe execution.

5.1.30. CERTIFICATION

Practical completion works completion and final completion deal exclusively with the construction period. Once the contractor has achieved final completion, he still retains certain obligations in relation to the latent defects' liability period.

5.1.30.1. PRACTICAL COMPLETION

This is defined as the stage when the works, as certified by the principal agent, are substantially complete and can be used for the purposes intended.

At the appropriate time the contractor must notify the Landscape Architect of the approach of the agreed upon practical completion date. In order to meet such date, the Landscape Architect must establish the number of days that they will need in order to carry out their inspection and communicate this to the Contractor. The Landscape Architect must then allow sufficient time for this to be done prior to the stated practical completion date and for any remedial work that may be required. The Contractor should make provision for this in the work schedule and include a period for rectification of the works, if any, in order to achieve practical completion.

Upon such inspection should the Landscape Architect be satisfied that practical completion has been reached, they shall then issue the practical completion certificate. A practical completion certificate may not be issued prior to the date stated in the contract data unless otherwise agreed upon.

Where the Landscape Architect is not satisfied, they will instead issue a list of defective and incomplete items to be attended to as required for practical completion. There after the process is to be repeated until the Landscape Architect is satisfied.

The implication of practical completion are as follows: -

- i. The contractor is no longer obliged to carry out a contract instruction in relation to additional work;
- ii. The employer takes possession of the works subject to any right of retention (lien); and
- iii. Risk passes to the employer and the contractor's insurance obligations are terminated.

5.1.30.2. WORKS COMPLETION

Works completion follows practical completion. The Landscape Architect will issue the Contractor with a works completion list detailing the defective and incomplete work present at practical completion. The items on this list are not required to achieve practical completion. The contractor must remedy the defects on this list in order to achieve works completion.

Once the contractor has addressed all incomplete and defective items on the 'works completion list' they must notify the Landscape Architect to inspect these items and if satisfied the Landscape Architect will issue a certificate of works completion. If the Landscape Architect remains unsatisfied then they are required to identify and communicate which items have not been completed or rectified to their satisfaction to the Contractor. The Contractor must then carry out the rectification and completion procedure again. This procedure may be repeated several times until the Landscape Architect is satisfied that all the items on the work completion list have been appropriately addressed.

Alternatively, should the Landscape Architect not issue a works completion list within 5 working days of the date of practical completion the contractor is obliged to notify both the employer and Landscape Architect in this regard. The Landscape Architect is then required to submit a works completion list within 5 working days of receipt of the Contractor's notice. Should the Landscape Architect fail to submit the works completion list, thereafter, works completion shall be deemed to have been achieved on the expiry of the initial 5 working day period after the issue of the certificate of practical completion.

The issuing of the works completion certificate marks the commencement of the 90-day (3 month) minimum required maintenance period.

5.1.30.3. FINAL COMPLETION

At the end of the maintenance period, the Contractor must submit a notice to the Landscape Architect who is obliged to inspect the works within the period specified in order to determine whether any defects are present. Should any defects be identified, the Landscape Architect is obliged to provide the contractor with a defects list, which have arisen during the maintenance period and which the contractor must rectify in order to achieve final completion of the works.

Similarly, as provided for under works completion, if the Landscape Architect does not issue a defects list within the period prescribed of 5 working days from the end of the maintenance period, the contractor is obliged to notify both

the employer and Landscape Architect in this regard and the Landscape Architect is required to submit the defects list within 5 working days of receipt of the Contractor's notice. Should the Landscape Architect fail to submit the works completion list thereafter, final completion shall be deemed to have been achieved on the expiry of the initial 5 working day period after the end of the maintenance period.

The achievement of final completion by the Contractor has the following implications:

- i. All the Contractor's liabilities and obligations in relation to a subcontractor's defects comes to an end and any remaining portion of the subcontractor's defects period is agreed and assumed by the employer.
- ii. All guarantees, warranties and indemnities provided by the Contractor, subcontractors and suppliers are ceded to the employer on the date which the certificate of final completion is issued ; and
- iii. The certificate of final completion constitutes conclusive evidence as to the sufficiency of the works and that the contractors obligations have been fulfilled other than latent defects.

5.1.31. WARRANTIES

The Contractor shall provide the Landscape Architect with all operations and maintenance manuals, guarantees, certificates and warranties provided by the manufacturer for all materials and equipment installed. In accordance with PRDGS Stage 6 (Post-Implementation Review and Close-Out) and CIDMS close-out requirements, the following documentation package shall be submitted at Final Completion:

- i. Marked-up and finalised as-built drawings (CAD format and PDF);
- ii. Final planting schedule confirming all installed species, sizes and locations;
- iii. Irrigation as-built documentation including zone layouts, controller programming, valve positions and GPS coordinates of key components;
- iv. Asset location data (GPS coordinates or GIS-compatible format) for all installed street furniture, lighting fixtures, signage, play and gym equipment and major hard landscaping elements;
- v. All manufacturer warranties, installation certificates and test results (electrical, hydraulic, structural);
- vi. Maintenance manual for all planted areas, irrigation systems and hard landscaping elements; and
- vii. Full photographic record of all completed works from site establishment through to final completion.

Documentation shall be submitted in formats compatible with the Municipality's CIDMS and asset management systems, as directed by the EMM UD&LA Unit.

SECTION 5.2 SITE ESTABLISHMENT

As far as possible all site establishment should be undertaken in one designated area. The extent of the site establishment will be decided upon at the beginning of the project e.g. fencing, yard, parking, ablutions, site office etc. As far as possible all contractors should share the same site establishment.

The Contractor shall confine his equipment, tools, storage of materials and the operations of his employees to the limits indicated by laws, ordinances, permits, or by direction of the Landscape Architect. He shall not

unreasonably encumber the site with his materials and equipment and make such provisions and carry out his operations in such a manner as will permit a continuous, safe traffic and pedestrian circulation and he shall provide and maintain access to all buildings and properties within the work boundaries.

All temporary buildings including sanitary facilities required in connection with the work and employees shall be provided and maintained by the Contractor and shall be removed upon completion of the work. The Contractor shall be responsible for providing all temporary utilities, such as telephone, water by water cart, electricity, etc. where required for these works. The Contractor shall enforce the Landscape Architect's instructions with respect to fires, smoking and littering.

5.2.1. CONTRACTOR'S FACILITIES, OFFICE AND LAYDOWN CAMP

The Landscape Architect will allocate to the Contractor an area for the purpose of stacking or storing materials and the erection of site offices. The Contractor must establish a permanent on-site organisation for the proper control, management and execution of the works. The Contractor will be allowed to have an office and a storage area to store plant material and a regularly serviced chemical toilet etc. The storage area must be securely fenced off, have a lockable gate as access and be kept neat throughout the contract period.

The Contractor must ensure that his workers use the toilet facility. The Contractor shall, at the end of the Contract, remove all fencing, toilets etc. at his own expense and leave the site neat and to the satisfaction of the Landscape Architect.

5.2.2. FOOD, ACCOMMODATION AND TRANSPORT

Permanent sleeping facilities will not be allowed on site. Suitable provision must be made for the supply of drinking water and food under sanitary conditions acceptable to the health inspectors of the EMM.

The safe transport of plant, tools, materials and staff to and from the working sites is the responsibility of the Contractor.

5.2.3. SITE FENCING

The Contractor shall fence all those areas in which movement of his construction equipment and personnel will take place during, and for the purpose of construction. The purpose of placing marker fencing around these areas is to limit the movement of equipment and personnel, as well as prevent damage to the site by the public before the site has been established. The marker fences shall be erected prior to the commencement of any construction activity planned to take place within the limits of the particular area.

All activities by the Contractor shall be contained within the fenced areas. The Contractor shall be liable for any damages which may result from trespassing outside these areas.

5.2.4. SAFE GUARDING OF WORKS, PROPERTY AND SITE

The Contractor shall be fully responsible, at all times, for the duration of his contract, for the adequate protection of the work, the site, the Employer's property, the property of others and the public, against any damage and injury, including theft, resulting from Contractor's operations and those of his sub-contractors.

The Contractor will be responsible for all security until hand over of the site. This shall include all temporary security site lighting. The Contractor shall make good any such damage or injury to the satisfaction of the Landscape Architect, and at his own expense, where such damages or injuries are a result from his neglect in providing reasonable protective precautions.

The Contractor must safeguard his works from any damage and maintain them at his own expense until they are handed over to the Employer at Practical Completion. Any defects or damage which may occur during this period must be rectified by the Contractor immediately and at his own expense, whether caused by construction machinery, normal traffic, rain, wind damage, faulty materials, other contractors working on the site or for whatever reason.

After Practical Completion, the Contractor must undertake reasonable steps to assist with the protection of landscape works from damage caused by others. The Contractor must immediately inform the Landscape Architect of any damage.

5.2.5. SIGNAGE

All projects should have an appropriate sign to identify all the projects stake holders. The eThekweni Municipality logo shall appear in conjunction with the Contractor's logo. This should be prominently displayed and kept neat and tidy throughout the contract period.

SECTION 5.2A. COMMUNITY LIAISON, LOCAL LABOUR AND EPWP OBLIGATIONS

5.2A.1. EXPANDED PUBLIC WORKS PROGRAMME (EPWP)

All public realm contracts let by the eThekweni Metropolitan Municipality that meet the applicable thresholds shall be implemented in accordance with the Expanded Public Works Programme (EPWP) guidelines issued by the Department of Public Works and Infrastructure. Contractors shall:

- i. Submit an EPWP implementation plan as part of the Contract documentation, indicating how local employment, community participation and skills development will be achieved;
- ii. Employ the minimum percentage of local labour (from the immediate project community) as specified in the Conditions of Contract and the EPWP target set for the specific project;
- iii. Submit monthly EPWP reporting data using the EPWP reporting system as required by the EMM;
- iv. Ensure that all EPWP workers are enrolled under the EMM's Compensation for Occupational Injuries and Diseases (COID) cover or equivalent;
- v. Identify and resource at least one recognised skills development opportunity (e.g. SALI, SABI or SACLAP-aligned learnership or skills programme) within the contract duration.

5.2A.2. COMMUNITY LIAISON OFFICER (CLO)

The Contractor shall appoint a dedicated Community Liaison Officer (CLO) for the full duration of the contract. The CLO shall:

- i. Be a resident of or be drawn from the community directly adjacent to the project site;
- ii. Act as the primary point of contact between the Contractor, the EMM Project Manager and the affected community;
- iii. Conduct and document regular community briefings on construction progress, disruptions and safety matters;
- iv. Maintain a community complaints register and report monthly to the Landscape Architect;
- v. Attend all site meetings.

The CLO is a Preliminary and General item and shall be priced separately in the Bill of Quantities.

5.2A.3. LOCAL PROCUREMENT

The Contractor shall use reasonable endeavours to source materials, plant nursery stock and consumables from suppliers based within the eThekweni municipal area or the KwaZulu-Natal province, where these meet the specification requirements and are competitively priced.

SECTION 5.2B. DESIGN INTENT PROTECTION — PRDGS STAGE 5

5.2B.1. MANDATORY COMPLIANCE

During the construction phase (PRDGS Stage 5), the Contractor shall implement all works in strict accordance with approved drawings and specifications. No substitutions of specified materials, finishes, plant species, dimensions or design elements shall be made without the prior written approval of the Landscape Architect and, where design integrity is at stake, the EMM UD&LA Unit. Unapproved substitutions shall be removed and replaced at the Contractor's cost.

5.2B.2. SHOP DRAWINGS AND SAMPLES

The Contractor shall submit shop drawings, product data sheets and physical samples for approval before ordering or installing all major elements including paving and hard materials, street furniture, signage, play and gym equipment, lighting fixtures, irrigation components and fencing systems.

5.2B.3. VALUE ENGINEERING

Value engineering proposals that would alter the design intent, spatial outcome, material quality or long-term performance of the approved design shall not be submitted without the prior written approval of the EMM UD&LA Unit. Any approved value engineering changes shall be documented as a formal Variation Order before implementation.

5.2B.4. B.U.I.L.D. PROGRAMME REPORTING

Where the B.U.I.L.D. Programme Standards are contractually applicable, the Contractor shall submit monthly B.U.I.L.D. compliance reports to the Employer's Representative, in the format specified by the CIDB.

SECTION 5.3 SITE MANAGEMENT

The Contractor shall at all times keep the site free from waste material or rubbish caused by his employees or work. The site in general will be kept neat and tidy always, within reason. At the end of each day's work, care should be taken to leave both the site establishment area and the site in general in a tidy manner, particularly at the end of each week. All taps and ablutions should be checked to ensure that they are closed/sealed without leaks.

In case of dispute, the Employer may remove any waste material and charge the cost to the Contractor as the Landscape Architect shall determine to be just.

Upon completion of the work and before acceptance and final payment, the Contractor shall remove at his own expense all temporary structures and all surplus material and rubbish which may have accumulated during the execution of the work, and shall leave the site "broom clean", or its equivalent unless more exactly specified.

In case of annulment of this contract before its completion from any cause whatsoever, the Contractor, if notified to do so by the Employer, shall promptly remove any part or all of his equipment and supplies from the property of the Employer, failing which the Employer shall have the right to remove such equipment and supplies at the expense of the Contractor.

The Contractor will also be expected to remove from his particular site any unserviceable machinery, implements and vehicles. The overnight storage of material and equipment on the working area remains the responsibility of the Contractor. It shall be expected of the contractor as a normal part of his duties, to clear and tidy the site totally over

weekends, to such an extent that no disruption or discomfort is experienced and that the area may be considered safe.

5.3.1. SITE RECORDS

The Contractor will be expected to keep comprehensive site records on site preferably in a site book. These records are to document daily activities on site. Items to be recorded are amongst others; weather, work completed for the day, delays, site instructions, staff numbers, start / end water meter readings, etc. The more comprehensive these records are the easier it is to resolve any issues that may arise.

5.3.2. ENVIRONMENTAL MANAGEMENT

Should an EMPr be in effect this plan is to be adhered to by the Contractors for the life of construction operations; this includes rehabilitation of areas as and when required. The Contractors shall ensure that all construction staff, sub- contractors, suppliers, etc. are familiar with, understand and adhere to the provisions of the EMPr. In addition, during construction the Contractors must ensure that all personnel are fully aware of any environmental issues relating to the construction activities that are being undertaken on site and the related environmental precautions that need to be taken. Construction supervisors and staff will be trained to recognize 'chance finds' during construction, and such finds will not be disturbed, damaged or removed and will be brought to the immediate attention of the relevant authority.

The Landscape Architect and ECO reserve the right to order the Contractors to suspend part or all the works if the Contractors and/or any sub-contractors, suppliers, etc. fail to comply with the EMPr. Alternatively, penalties may be instituted.

The following environmental management actions and provisions are expected to be adhered to at all times by the Contractor:

- i. Prior to construction the Contractors shall provide layout designs of the site indicating the position of all of the following: offices, ablution facilities, storage areas, workshops, batching plant, stockpile areas (i.e. soil/granular chemicals/cement fines, etc.), waste disposal facilities, hazardous substance storage area, access route, etc. This layout plan is to be submitted to the Landscape Architect and ECO for acceptance prior to site establishment.
- ii. Adequate ablutions must be erected on site for construction staff. It is critical that the services (water and sewerage) be properly monitored to ensure that these services are not overused or overloaded. Adequate provision for water shall be made for construction, drinking and washing.
- iii. Dry chemical toilets must be made available on site.
- iv. Chemical toilets shall be cleaned and serviced regularly.
- v. A designated place for food preparation and eating must be established.
- vi. An adequate number of refuse bins shall be provided.
- vii. No pets allowed on site.
- viii. All staff to be identifiable through identity badges.
- ix. No explosives (with the exception of blasting requirements) or fire-arms to be permitted on site.

- x. No open fires will be allowed.
- xi. An "Environmental Site Book" should be supplied and kept on site. This book will reflect all issues, and proposed actions as noted during site visits. This site book should be in the form of a file wherein all Environmental Audit Reports are kept. In addition, a separate file containing the EMPr and EA should also be kept on site. A copy of the Scoping Report, the EMPr report and construction layout plan are to be available on site
- xii. To reduce the effect of habitat loss, construction activities must be planned and implemented in a way that facilitates the restoration of plant communities. Specifications for soil preparation, endemic plant/seed mixes, fertilizer, and mulching should be provided for all areas disturbed by construction activities
- xiii. Restoration activities should be accomplished (established) within a year after construction is completed. The minimum vegetation disturbance must be permitted and the removal of vegetation must be managed and monitored to ensure a minimum exposed period. Monitoring must occur to ensure that revegetation was successful, plantings were maintained, and unsuccessful plant materials replaced.

5.3.3. SETTING OUT OF WORKS

The Landscape Architect shall provide drawings with dimensions and levels for the execution of the works. However, the Contractor shall be responsible for the correct pegging out of the works, and must, if necessary and at his own cost, make use of a surveyor to determine any positions, pegs or beacons.

The Landscape Contractor shall be responsible for the correctness of the positions, levels and dimensions of the Contract Works according to the Contract and any written instructions of the Landscape Architect or other Contractors in setting out such positions, levels and dimensions. If at any time during the progress of the Contract Works any errors shall appear or arise therein, the Landscape Contractor shall, on being required to do so by the Landscape Architect, remove and modify such works at his own expense to the reasonable satisfaction of the Landscape Architect, and shall be responsible for the consequences of any such error.

If the Landscape Architect checks the pegging out done by the contractor in order to ensure that the work is carried out strictly according to the instructions and / or diagrams and specifications, the Contractor is not absolved of any part of his responsibility.

The Contractor must supply the necessary measuring equipment for use by the Landscape Architect, as well as sufficient assistants for the plotting, the surveying and the checking of heights which may be required as the contracted work progresses.

The Contractor shall take care not to disturb any of the site boundary beacons installed by others.

5.3.4. VEGETATION CLEARING

The following environmental management actions and provisions are expected to be adhered to at all times by the Contractor with regards to vegetation clearing:

- i. While vegetation clearing will have to be undertaken in some areas, the areas needing to be cleared and the degree of clearing required will be determined and demarcated prior to construction. Ancillary activities, such as stockpiles, and storage yards, will be demarcated to areas already disturbed or where they will cause minimal disturbance.
- ii. Identify areas to be affected by construction and secure plant species/habitat in these areas. Prevent unnecessary harvesting, destruction and removal of plant material.
- iii. No large trees (with trunk diameter exceeding 200mm) are to be removed without prior consent of the Landscape Architect.
- iv. Consider the selective trimming of branches to allow for free vehicle movement before opting to remove any trees.
- v. Remove alien/exotic vegetation and monitor regularly.
- vi. Ensure no exotic vegetation is introduced into the surrounding natural habitat.
- vii. All sites disturbed by construction activities shall be monitored for colonization by invasive alien plant species.
- viii. The collection of firewood for cooking and other uses is strictly prohibited.
- ix. The Contractors may not deface, paint or otherwise mark and/or damage natural feature/vegetation on the site. Any features/vegetation defaced by the Contractors shall be restored.
- x.

5.3.5. TOOLS AND EQUIPMENT

There should be appropriate and sufficient tools and equipment on site for the efficient implementation of the work. All tools and equipment should be in good working order i.e. all machines should start and operate properly, no broken rakes, spades, forks, etc.

5.3.6. ELECTRICITY

Electricity may not always be available on site for construction purposes. Should electricity be available on site, the Contractor must communicate timeously where and when a connection will be needed. The Contractor will not be required to pay for any electricity used for the execution of the works, however, they are cautioned to use electricity sparingly.

Should electricity not be available for whatever reason, the Contractor must make use of his own supply, in the form of a generator, at the Contractors own cost. All generators are to be placed on drip trays throughout the duration of use in order to contain and prevent any fuel spills or leaks.

5.3.7. WATER

A water connection may not always be available on site for construction purposes. Should a water connection be available on site, the Contractor must communicate timeously where and when a connection will be needed. The Contractor will not be required to pay for any water used for the execution of the works; however, they are cautioned that South Africa is a water scarce country and consideration to the responsible use of water before embarking on a project is to be prioritized. The Contractor should familiarize themselves with the National Water Act, 1998 (Act No. 36 of 1998), as amended.

Should a water connection not be available on site for whatever reason, the Contractor must make use of his own supply, in the form of a water tanker, at the Contractors own cost.

5.3.8. UNDERGROUND SERVICES

The Contractor is responsible for obtaining any information (drawings etc.) regarding sewers, water mains, storm water drains, electric and telephone cables and any other public services and existing works which may be affected by the Works.

On request, the Contractor can be supplied with services drawings, explanations or can view for himself the evidence of services which is clearly visible on the site, bearing in mind that the location of such utilities on the drawings is approximate only.

The Contractor and his sub-contractors shall study all drawings / plans to thoroughly familiarise themselves with all underground services, including electrical, domestic water, drainage (sewer), telecommunications and storm water drainage on site. The documentation and drawings / plans are to remain on site and are to be made readily available at all times.

The Contractor must allocate enough liaison time for meetings with the relevant engineers, contractors, Town Council and Telkom officials concerned with underground services, should this be required.

The Contractor shall be responsible for damage and subsequent repairs to existing underground utilities, irrespective of the information supplied. The Contractor shall rectify such damage to the Employer's satisfaction at his own cost. The Contractor shall be responsible for any damage to such services and existing works in the execution of this Contract and shall reimburse the Employer for any repairs required or compensation for any damages awarded.

The Contractor shall be responsible for immediately notifying the Landscape Architects regarding any damage caused to services and existing works.

5.3.9. EXISTING STRUCTURES AND VEGETATION

The Landscape Architects will notify the Contractor of the existence of any vegetation or structures earmarked for retention and supply a drawing indicating such areas. The Contractor and his sub-contractors shall study such drawings to thoroughly familiarise themselves with vegetation earmarked for retention on site. The documentation and drawings are to remain on site and are to be made readily available at all times.

The Contractor shall be responsible for any damage to existing structures and to vegetation earmarked for retention. The Contractor shall be responsible for immediately notifying the Landscape Architects regarding any damage caused to existing structures or vegetation earmarked for retention.

The Contractor shall rectify such damage to the Employers satisfaction at his own cost. The Contractor shall be responsible for any damage to existing structures and vegetation in the execution of this Contract and shall reimburse the Employer for any repairs required or compensation for any damages awarded.

5.3.10. GEOTECHNICAL, SOIL AND DENSITY TESTS

The Contractor shall furnish for the Landscape Architect's / Engineer's approval such soil tests, density tests, material tests and mix designs as specified or as may be reasonably required. These tests and mix designs shall be undertaken by persons, firms or corporations approved by the Landscape Architect.

The cost of providing such tests and mix designs, beyond the extent called for in the specifications, shall be charged to the specific cash allowance where included in the Contract Sum or to the Employer when such cash allowance is either expended or not included in the Contract Sum. The work shall be performed in accordance with approved material tests and mix designs.

5.3.11. STORM WATER AND RUNOFF

The Contractor shall ensure that his works are protected from any storm water runoff from the site or from elsewhere onto the site. The Contractor shall provide suitable drainage and / or deflection of storm water as appropriate. Any damage to the works caused by storm water shall be made good by the Contractor at his own expense.

The Contractor shall take all reasonable steps to ensure that surface runoff is drained from the works area without damage to the adjacent property or retarding the progress of other contractors on the site.

The Contractor shall ensure that that all storm water and irrigation water is drained away from all buildings, paving and other structures. The ponding of water may only take place where this has been specified or specifically required.

5.3.12. SOLID WASTE MANAGEMENT

The following environmental management actions and provisions are expected to be adhered to at all times by the Contractor with regards to solid waste management:

- i. If construction workers are to eat on site other than at the construction camp, the Contractors shall designate specific areas for eating and shall provide adequate steel refuse bins at all places. The refuse bins shall be cleaned on a daily basis.
- ii. The bins shall be provided with lids and an external closing mechanism to prevent their contents blowing out and shall be scavenger-proof.
- iii. The Contractors shall supply steel waste bins/skips throughout the site at locations where construction personnel are working
- iv. The Contractors shall not dispose of any waste and/or construction debris by burning, or by burying.
- v. The Contractors shall ensure that all personnel immediately deposit of waste in waste bins for removal by the Contractors.
- vi. All waste shall be disposed of off-site at an approved landfill site.
- vii. Remove loose building materials and waste from the site and dispose of them at an appropriate waste disposal site.
- viii. Old cement mixing bags shall be placed in wind and spill proof containers as soon as they are empty. The Contractors shall not allow closed, open or empty bags to lie around the site.
- ix. All waste, which includes cigarette butts, cable ties, paper, plastic, tin, glass, organic waste like fruit pips and peels, planks, wire, tins of grease, etc. must be transported in an appropriate manner (e.g. plastic rubbish bags) to an appropriate waste site.

5.3.13. LIQUID WASTE MANAGEMENT

The following environmental management actions and provisions are expected to be adhered to at all times by the Contractor with regards to liquid waste management:

- i. Construction water refers to all water affected by construction activities.
- ii. The Contractors may discharge 'clean' silt laden water overland and allow this water to filter into the ground. However, they shall ensure that they do not cause erosion as a result of any overland discharge.
- iii. All washing of plant/equipment/concreting equipment etc. shall take place within the construction camp.
- iv. Water from washing operations shall be collected in a conservancy tank removed from site and disposed of in the agreed manner.

- v. The Contractors are encouraged to recycle dirty wash water to minimise the amount to be removed off-site.
- vi. Trucks delivering concrete shall not be washed on site.
- vii. All washing operations shall take place off-site at a location where wastewater can be disposed of in an acceptable manner.
- viii. Adequate ablution facilities to be provided on site, conveniently located near to work areas to avoid localised water pollution from sewerage.
- ix. Neither a river nor any other natural watercourse is to be used for cleaning of tools or any other apparatus. This includes for purposes of bathing, or washing of clothes etc.
- x. No spills may be hosed down into a storm water drain or sewer, or into the surrounding natural environment.
- xi. Discard construction waste at a registered waste management facility/landfill site, particularly those wastes or products that could impact on surface or groundwater quality by leaching into or coming into contact with water.
- xii. All soil contaminated, for example by leaking machines, refuelling spills, etc., is to be excavated to the depth of contaminant penetration, placed in 200 litre drums and removed to an appropriate landfill site.
- xiii. The Contractors shall contain wash water from cement mixing operations, by directing the water into a sump for collection. The material contained in the sump shall be removed to an appropriate landfill site.
- xiv. Water and slurry from concrete mixing operations shall be contained to prevent pollution of the ground surrounding the mixing points.
- xv. All visible remains of excess concrete shall be physically removed immediately and disposed as waste. Washing the visible signs into the ground is not acceptable. All excess aggregate shall also be removed.
- xvi. Where, due to construction requirements, pollution of a water body may potentially occur, the Contractors are to ensure adequate measures (e.g. attenuation/settlement dams/oil absorbent products) are in place to prevent pollution. A method statement is to be provided to this effect.
- xvii. Exercise extreme care with the handling of diesel and other toxic solvents so that spillage is minimised.
- xviii. The Contractors shall take reasonable precautions to prevent the pollution of the ground and /or water resources on and adjacent to the site as a result of his activities.
- xix. Such pollution could result from the release, accidental or otherwise, of chemicals, oils, fuels, sewage and waste products, etc.
- xx. The Contractors shall ensure that no oil, petrol, diesel, etc. is discharged onto the ground.

5.3.14. SERVICING AND REFUELING OF CONSTRUCTION EQUIPMENT

The following environmental management actions and provisions are expected to be adhered to at all times by the Contractor with regards to servicing and refuelling of construction equipment:

- i. The Contractors shall ensure that no servicing and/or refuelling of vehicles and equipment takes place within the site.
- ii. All equipment that leaks shall be repaired immediately or shall be removed from site.
- iii. The Contractors shall only change oil or lubricant at agreed and designated locations, except if there is a breakdown or emergency repair, and then any accidental spillages must be cleaned up/removed immediately.
- iv. In such instances the Contractors shall ensure that he has Drizit pads or similar, and/or drip trays available to collect any oil or fluid.
- v. The only permitted method of refuelling and refilling lubricants is by means of a pump.

5.3.15. FIRE

The following environmental management actions and provisions are expected to be adhered to at all times by the Contractor with regards to fire:

- i. The Contractors shall take all the necessary precautions to ensure that fires are not started as a result of activities on site.
- ii. No open fires for heating or cooking shall be permitted on site.
- iii. Closed fires or stoves shall only be permitted at agreed designated safe sites in the construction camp.
- iv. Adequate suitable firefighting equipment shall be provided on site.
- v. The Contractors shall be responsible for providing the necessary basic fire-fighting equipment.

- vi. All equipment shall be maintained in good operating order.
- vii. The Contractors shall supply all site offices, kitchen areas, workshop areas, material stores and other areas identified with suitable, tested and approved firefighting equipment.
- viii. Workers are to be provided with gas for cooking and shall be prevented from burning fires.
- ix. No open fires shall be allowed anywhere on site.

5.3.16. DUST

The following environmental management actions and provisions are expected to be adhered to at all times by the Contractor with regards to dust:

- i. At all times the Contractors shall control dust on site.
- ii. Dust control shall be sufficient so as not to have significant impacts in terms of the biophysical and social environments. These impacts include visual pollution on gravel and earth roads.
- iii. A dust abatement programme shall be used. Standard dust abatement measures include watering or otherwise stabilising soils, covering haul trucks, employing speed limits on unpaved roads, minimising vegetation clearing, and promptly revegetating after construction is completed.
- iv. Efforts to reduce dust and soil loss are to be undertaken, as appropriate, for all excavation, grading, construction, and other dust-generating and soil-disturbing activities.

5.3.17. NOISE

The following environmental management actions and provisions are expected to be adhered to at all times by the Contractor with regards to noise:

- i. Machinery and vehicle silencer units are to be maintained in good working order. Offending machinery and/or vehicles shall be banned from use on site until they have been repaired.
- ii. Noise levels shall be kept within acceptable limits for a protected area and shall not be of such nature as to detract from the natural experience of other visitors to the protected area.
- iii. Music and other social noise to be controlled on site so as to not impose on others.
- iv. The Contractors shall at all times use equipment that is appropriate to the task in order to minimise the extent of damage to the environment and minimise noise levels.
- v. Construction work will take place during the day as far as possible.
- vi. Work will only be undertaken at night in the case of emergencies.
- vii. Work hours will be from approximately 07:00 to 17:00, unless otherwise agreed upon with the Landscape Architect.

PART C: HARD LANDSCAPING

CHAPTER 6 — STANDARD CONSTRUCTION SPECIFICATION

The Construction Phase refers to the period of the project during which the actual Works are carried out. The below specifications are supplementary to the issued drawings. Where discrepancies exist between the specification and the drawings, the specification is to generally take preference, but the Landscape Architect is to be informed immediately to clarify the position.

SECTION 6.0 COASTAL AND MARINE ENVIRONMENT REQUIREMENTS

6.0.1. SCOPE

These requirements apply to all public realm works located within 1 km of the high-water mark of the sea, and to any project the Landscape Architect determines to be subject to significant coastal exposure (salt spray, high humidity, UV, wind).

6.0.2. MATERIAL REQUIREMENTS FOR COASTAL ENVIRONMENTS

All materials specified for coastal public realm works shall:

- i. Be resistant to salt spray corrosion; all metalwork shall be hot-dip galvanised and powder coated, or manufactured from 316-grade stainless steel or marine-grade aluminium;
- ii. Be resistant to UV degradation; plastics, sealants and coatings shall carry a minimum UV rating appropriate for subtropical coastal conditions;
- iii. Where timber is used, it shall be from a certified sustainable source (FSC or PEFC) and shall be either indigenous hardwood or a synthetic composite timber product appropriate for coastal exposure;
- iv. Concrete shall incorporate a chloride-resistant mix design where in direct contact with salt water or sea spray;
- v. Paving materials shall be tested for slip resistance in wet conditions (R11 or better) where pedestrian traffic is expected.

6.0.3. COASTAL SETBACK AND PLANNING REQUIREMENTS

All works within the defined coastal zone shall comply with the Integrated Coastal Management Act (Act No. 24 of 2008), the eThekweni Coastal Management Programme and any applicable coastal setback line. The Contractor shall obtain all necessary coastal authorisations before commencing work.

SECTION 6.1 MATERIALS

The use of any commercial name, trademark, manufacturer, or similar identification shall be to establish a standard of quality and shall imply 'or approved equal', unless expressly specified otherwise. Substitution of any specified material will be permitted only with the written approval of the Landscape Architect. Where the Contractor applies for substitution of any material, whether under the 'or approved equal' clause or otherwise, he shall make such application in writing and supply such samples or other evidence of its quality as the Landscape Architect requires.

The Contractor must ensure that all materials necessary to the contract be delivered to site, on time, in good condition and should then ensure the protection of such materials. The Contract Manager should ensure that no delay to the work is caused by late delivery to site of materials or delay in placing of orders within their control.

All materials shall be installed in accordance with drawings, specifications, shop drawings and the Landscape Architect's, instructions, using the Contractor's best skills and workmanship of the highest quality. Manufactured materials shall be handled and installed in accordance with the manufacturer's instructions and industry standards unless otherwise specified. The Model Preamble for Trade does apply.

The Contractor shall furnish to the Landscape Architect for approval all material samples as called for in the Specifications or as may be reasonably required and shall do the work in accordance with approved samples.

6.1.1. QUALITY OF MATERIALS AND WORKMANSHIP

All materials used and workmanship employed in connection with the Contract Works shall be in accordance with the Contract and of the best quality and shall at all times be subject to the approval of the Landscape Architect, who may inspect and test the materials and the workmanship at any stage of the work. If during the progress of the Contract Works the Landscape Architect shall be dissatisfied with any part of the Contract Works, the Contractor shall immediately remove such items from site and re-construct such part / parts of the Contract Works of a quality to the satisfaction of the Landscape Architect. Such removal and re-construction of the contract works or any part / s thereof shall be executed at the cost of the contractor and no extension of the date of completion shall be granted by reason of such re-construction.

6.1.2. MEASUREMENTS

Before ordering any materials or doing any work, the Contractor shall be responsible for the correctness of the same. No extra charge or compensation will be allowed on account of difference between actual dimensions and the dimensions indicated on the drawings. Any differences which may be found shall be submitted to the Landscape Architect for consideration before proceeding with the work.

6.1.3. MATERIALS HANDLING AND STORAGE

The following environmental management actions and provisions are expected to be adhered to at all times by the Contractor with regards to the storage of building materials:

- i. Limit to demarcated sites only.
- ii. Single sites should be a priority. This may not always be possible for example heaps of topsoil but should definitely be the case for activities such as the mixing of cement.
- iii. Stockpiles of expensive materials such as bags of cement should be such that they can easily be removed from the site over weekends or during rainy weather.
- iv. Specific sites should be allocated for waste e.g. empty cement bags, discarded planks, etc. A low temporary fence should possibly be erected around such a site in order to contain the waste and assist the effective removal thereof from the site.
- v. A specific site should be allocated for the storage and handling of diesel, grease, oils, solvents and soap, which create cleaning and disposal issues. This area should be bunded and thus should take place in the area allocated for permanent storage of such materials.
- vi. Fuels required during construction shall be stored in a central depot at the construction camp. This storage area must be bunded.
- vii. Rehabilitate the sites as required.
- viii. Tanks containing fuel shall have lids, which are to remain firmly shut.
- ix. Fuel stores shall be placed on a concrete, or similar, base surrounded by a brick bund.
- x. The bund shall have a volume of 30% of the volume of the largest tank in the storage area plus 10% of the volume of all other tanks.
- xi. The slab shall be sloped towards a sump to enable any spilled fuel and water to be removed.
- xii. Any wastewater collected at the sump shall be disposed of as hazardous waste.
- xiii. Gas and liquid fuel shall not be stored in the same storage area.
- xiv. No smoking shall be allowed inside the stores or within 3m of a bund.
- xv. The Contractors shall ensure that there is adequate fire-fighting equipment at the fuel stores.
- xvi. Do not store fuels and chemicals under trees.
- xvii. Exercise extreme care with the handling of diesel and other toxic solvents so that spillage is minimised.
- xviii. Excess concrete from mixing shall be deposited in a designated area awaiting removal to an appropriate landfill site. Liquid wastes to be treated at an approved facility.
- xix. The Contractors shall ensure that all operations that involve the use of cement and concrete are carefully controlled.
- xx. Concrete mixing shall only take place in the construction camp or in agreed specific areas on site.
- xxi. Concrete shall not be mixed directly on the ground. No mixed concrete shall be deposited directly onto the ground prior to placing. A board or other suitable platform/surface is to be provided onto which the mixed concrete can be deposited whilst it waits placing.
- xxii. All visible remains of excess concrete shall be physically removed immediately and disposed of as waste.
- xxiii. Timber products should be treated off-site prior to use in construction.
- xxiv. Periodic on-site application of timber treatment products (for maintenance purposes) should take place with due care for the nature of the product (toxicity) and for potential spillages that may occur. Areas where timber is to be treated should have secondary containment measures

instituted, such as the placement of plastic layer (some form of covering) over soils, beneath the timber structures to prevent contamination of the soil surface.

6.1.4. HAZARDOUS MATERIALS

The following environmental management actions and provisions are expected to be adhered to at all times by the Contractor with regards to the handling and storage of hazardous materials:

- i. The Contractors shall comply with all national, regional and local legislation with regard to storage, transport, use and disposal of petroleum, chemical, harmful and hazardous substances and materials.
- ii. The Contractors shall obtain the advice of the manufacturer with regard to the safe handling of such substances and materials.
- iii. The Contractors shall provide a list of all petroleum, chemical, harmful and hazardous substances and materials on site, together with storage, handling and disposal procedures for these materials.
- iv. The Contractors shall furthermore be responsible for the training and education of all personnel on site who will be handling the material about its proper use, handling and disposal.
- v. Storage of all hazardous material is to be safe, tamper proof and under strict control.
- vi. Petroleum, chemical, harmful and hazardous waste throughout the site shall be stored in enclosed bunded areas. The bunded areas shall be clearly marked. Such waste shall be disposed of off-site at a hazardous waste disposal site.
- vii. The bunded area is to be sufficiently large to contain a spillage equivalent to the volume of one container of the substances stored.
- viii. Temporary fuel storage tanks and transfer areas also need to be located on an impervious surface adequately bunded to contain accidental spills. Appropriate run-off containment measures must be in place.
- ix. All products to be dispensed from 200 litre drums shall be done with appropriate equipment and not dispensed by tipping of the drum.
- x. Any accidental chemical/fuel spills to be corrected immediately.
- xi. Fuels, solvents and other wastes will be stored in vessels equipped with secondary containment structures and will be removed from the concession area and the park being disposed of in compliance with national and local requirements
- xii. The containers in which the products are kept should, in compliance with hazardous material management procedures, be removed from the site once empty. Hazardous products should otherwise be stored on adequately bunded surfaces in the designated hazardous material storage areas.

SECTION 6.2 EARTHWORKS

This section covers all areas of earthworks for the loading, hauling / delivery, placing and shaping of earth material by means of machinery and manual equipment, until the required profiles have been obtained, as indicated on the plans outlining the final placing of earth for the creation of the desired profiles, on site, e.g. mounds, etc.

6.2.1. SITE CLEARING AND PREPARATION

Any rubbish, concrete slabs, old foundations, unused grass sods and cuttings, steel remnants, etc. shall be removed before ripping, shaping and trimming takes place.

If these unwanted items are not removed immediately, the Contractor shall store them in heaps in an area approved by the Landscape Architect until such time as they can be removed. The Contractor shall be held responsible for keeping these heaps in a condition to the satisfaction of the Landscape Architect.

Remove all rubble, rocks, trees, vegetation, undesirable material etc. which will hamper the preparation of the area for landscaping. To protect soil resources, wherever possible the Contractor should retain insitu topsoil and store on site until required.

6.2.2. DEMOLITION AND RUBBLE REMOVAL

Undesirable material is defined as material that could appear in areas where foundations for structures or hard surfaces occurred or areas where dumping has taken place, which would normally be classified as material not being suitable to attain densities specified, or material totally unsuitable for use as a growing medium for plants.

The Landscape Architect must be advised should such material be encountered so that an instruction can be issued for the removal thereof and for the obtaining of further suitable replacement material, preferable from site.

The onus is on the Contractor to ascertain whether material is suitable or otherwise for the purpose which it is intended. Should the Contractor nevertheless elect to erect structures or do hard or soft landscaping on unsuitable material and subsidence or other damage occurs, the Contractor will be held responsible to make good all damages at his cost.

6.2.3. SHAPING AND TRIMMING

Areas requiring shaping involving bulk earthworks shall be excavated, filled, compacted, as required and indicated on the approved plan. These areas are to be shaped to the correct contours to within a tolerance of plus or minus 150 mm. Shaping will be undertaken in order to round off cuts and fills and any other earthworks to stable forms, sympathetic to the natural surrounding landscape.

Trimming shall consist of bringing the existing or previously shaped ground to an even surface with the final levels generally following the original surface. Where machine operations are not practicable trimming shall be done using hand tools. Trimming shall be done where instructed by the Landscape Architect but trimming of rock outcrops and 'koppies' will not be required. Areas previously shaped shall be trimmed to within a tolerance of plus or minus 100 mm with all undulations following a smooth curve. This tolerance shall apply only to areas where the final contours are shown on the drawings.

Trimmed surfaces shall be left slightly rough to facilitate binding with topsoil or the natural establishment of vegetation. During trimming all stones with any dimension in excess of 30 mm in areas to be mowed by machine, all stones with dimensions in excess of 150 mm in other areas and all other excess material shall be removed to selected dumping sites. Trimming of any areas requiring grassing shall be done in such a way that, after application of any

topsoil and cultivation, the finished surface of the area shall be approximately 30 mm below the top of adjacent kerbing, channelling or pavement.

SECTION 6.3 EXCAVATIONS

The Contractor shall at all times be responsible for maintaining safety on site and safeguard all his excavations, should this be required.

Unless otherwise specified all excavations will be to net depths as indicated on the plans. The tolerance for excavated areas should not vary by more than 50 mm from the levels shown on the plans. All spoil, temporary or permanent, may only be spoiled in areas as indicated by the Landscape Architect and maintained to the satisfaction of the Landscape Architect.

The following environmental management actions and provisions are expected to be adhered to at all times by the Contractor with regards to excavations:

- i. Excavation of sand to solid ground to be done carefully and appropriate drainage incorporated i.e. sand and debris need to be removed and solid rock preferably exposed to ensure proper binding with concrete material.
- ii. Construction must preferably be extended over rocky substrate to give maximum anchoring opportunity.
- iii. Blasting operations, if required, to be planned by competent specialists, with due regard to adjacent land users. Blasting to be programmed in cooperation with adjacent land owners to result in the most impact limiting operation.
- iv. Record to be kept of infrastructure and facility conditions prior to and after the blasting operations.
- v. Consider using any excess rocks or boulders that were excavated from the construction site for any erosion protection work which is required on site. Consider removing the rocks for the packing of gabions at other soil erosion sites.
- vi. Excess sand as a result of excavation activities is not to be dumped along the roadsides.
- vii. Removed soil is to be used to backfill areas where required and excess is to be landscaped into natural looking banks that fit the surrounding topography.
- viii. During excavation, topsoil is to be conserved.
- ix. Excavated material is to be stockpiled along the excavated area, unless otherwise authorised.
- x. Contract personnel at all levels to be made aware of potential archaeological and/or palaeontological artefacts/occurrences.

- xi. Any discovery of artefacts to be reported immediately to South African Heritage Resource Agency (SAHRA).
- xii. Works in areas where artefacts are discovered are to cease immediately until the area has been investigated and a go-ahead has been obtained from SAHRA.

6.3.1. EXCESSIVE EXCAVATIONS

If the Contractor has excavated certain areas too deep, he must at his own expense fill up the excavation with approved filler material until the desired height has been obtained and compact this material to at least the density of the surrounding area in order to prevent subsidence.

SECTION 6.4 BACK FILL

Fill to consist of good quality material, no organic material, foreign material or building rubble. Last layer to have no boulder / rock material larger than 80mm. Final surface must be shaped to desired profiles and tie in with existing levels.

All earth fill and fill for berms is to be spread in layers to a maximum depth of 300 mm and compacted by means of earthmoving machinery there over. Soil filling in planting areas to be sufficiently compacted in 300 mm layers so as to avoid subsidence (90% Mod AASHTO density).

Should filling material vary in type and texture, thorough mixing must be done as the work progresses. Earth fill is to be inclusive of profiling to drainage points or general site drainage to tie in with existing levels.

Fill on existing in situ material must only be done after the base material has been ripped to break the existing crust.

The Contractor is to ensure that water penetration into the soil is not impeded and that all surface water drains away freely, prior to establishing final levels.

The finished surface of the fill must be within a tolerance of 50 mm when measured with a 3000 mm straight edge. No undulations other than to attain the smooth flow of the contours will be acceptable.

The Contractor shall work closely with the Landscape Architect to obtain final desired profiles on site. The Landscape Architect will supervise or liaise with the Contractor prior to obtaining the desired profiles on site.

The following environmental management actions and provisions are expected to be adhered to at all times by the Contractor with regards to backfilling:

- i. Deficiency of backfill material shall not be made up by excavation in surrounding areas. Where backfill material is deficient, it should ideally be made up by importation of approved fill material.
- ii. The Contractors shall backfill in accordance with the requirements of progressive reinstatement. 'Progressive reinstatement' is defined as: reinstatement of disturbed areas to topsoil profile on an ongoing basis, immediately after selected construction activities (e.g. backfilling of trench) are completed. This allows for passive rehabilitation (i.e. natural re-colonisation by vegetation) to commence.

6.4.1. IMPORTED FILL

Should fill material not be available on the working site, the Contractor will out-source suitable filling material and submit a sample to the Landscape Architect for his approval prior to importing the fill. Fill to consist of good quality material, no organic material, foreign material or building rubble.

6.4.2. EXCESSIVE FILL

If the Contractor has filled beyond the required height, he must at his own expense remove excess material from the area.

6.4.3. EXCESSIVE MATERIAL

The Contractor will remove any excess material not being used in his work area, after quantification by the Landscape Architect.

6.4.4. SUBSIDENCE

The Contractor shall take the necessary steps to avoid, and where necessary rectify all subsidence, including irrigation trench subsidence, and resulting damage which occurs in his area of operation for work which is under his control during the execution phase, to the satisfaction of the Landscape Architect.

The Contractor shall be held responsible for any claims arising from subsidence that may occur.

SECTION 6.5 EROSION

The Contractor shall take the necessary steps to avoid, and where necessary rectify all erosion and resulting damage which occurs in his area of operation for work which is under his control during the execution phase, to the satisfaction of the Landscape Architect.

The Contractor will at his own expense repair on a weekly basis any erosion whether resulting from rain, wind or irrigation damage. All areas to be repaired will be to original specifications.

Should any damage be caused on sites or adjoining properties as a result of wash-aways caused by the Contractor on the site, the Contractor will be held responsible for the making good thereof.

The following environmental management actions and provisions are expected to be adhered to at all times by the Contractor with regards to erosion:

- i. Correct any cause of erosion at the onset thereof through the most appropriate mechanism.
- ii. Soils should not be stripped when they are wet. This can lead to compaction and loss of soil structure.
- iii. During construction the Contractors shall protect all areas susceptible to erosion by installing all the necessary temporary and permanent drainage works as soon as possible and by taking such other measures as may be necessary to prevent surface water being concentrated in water sources and from scouring the slopes, banks or other areas.
- iv. In essence soil erosion protection is about reducing the velocity of water run-off in the disturbed areas. There are many appropriate methods, depending largely upon the size and topography of the area to be protected against erosion.
- v. Surface erosion protection measures shall be required to prevent erosion where slopes are steeper than 1:8 on all soil types.
- vi. Erosion protection measures required should include all or some of the below, as specified by the Landscape Architect:
 - a. Use of groundcover or grass, retention of as much of the indigenous vegetation as possible;
 - b. Construction of cut off berms (earth and/or rock pack) – these are to be angled across the contour and normally would approximate an angle of 30° from the bisector of the contour;
 - c. Placing of brush wood on bare surface;
 - d. Hard landscaping, e.g. gabions etc.
- vii. Storm water drainage measures shall be required on site to control runoff and prevent erosion.

SECTION 6.6 TOPSOIL

Topsoil is defined as sandy material, with the exception of imported topsoil, found existing on site, and previously overgrown with veld grass or other vegetation. Topsoil comprises the top most 300 mm of soil existing on site.

Wherever possible the contractor should strip and retain insitu topsoil for re-use on site. This is done by removing the top 300 mm layer of topsoil before commencing with hard landscape works, building, excavation or filling in any area. Topsoil is to be stockpiled for reapplication during the planting phase.

Samples of topsoil – on site as well as imported – must be provided to the landscape architect for approval. Topsoil will only be considered for approval after an authorised institution has carried out a soil analysis test.

The following environmental management actions and provisions are expected to be adhered to at all times by the Contractor with regards to the conservation of topsoil:

- i. The Contractor is required to strip topsoil (as defined in this specification) together with grass/groundcover from all areas where permanent or temporary structures are located, construction related activities occur, and access roads are to be constructed, etc.
- ii. Topsoil is to be handled twice only – once to strip and stockpile, and secondly to replace, level, shape and scarify.
- iii. Topsoil is to be replaced along the contour.
- iv. Topsoil is to be replaced by direct return where feasible (i.e. replaced immediately on the area where construction is complete), rather than stockpiling it for extended periods.
- v. Topsoil stockpiles are not to exceed 1,5m in height and should be protected by a mulch cover. This mulch cover must not contain alien vegetation/seeds.
- vi. Topsoil stockpiles are to be maintained in a weed free condition.

- vii. Topsoil should not be compacted in any way, nor should any object be placed or stockpiled upon it.
- viii. Topsoil, which is to be stockpiled for periods exceeding 4 months, is to be vegetated. A groundcover or grass seeding may be specified.

6.6.1. SPREADING OF TOPSOIL

Topsoil to be used must be soil obtained from the original surface layer and not soil excavated from below 1000 mm in depth.

Rip the base soil layer before the spreading of topsoil. Topsoil is to be spread to a depth of 100 mm or as will be determined on site for different areas (groundcover, sodded and seeded lawn or as will be required). Work to be inclusive of all spreading, shaping and levelling to desired profiles and to tie in with existing levels. Final profiling must ensure proper drainage and prevent erosion.

Do not spread topsoil in muddy conditions.

6.6.2. IMPORTED TOPSOIL

Imported topsoil shall be topsoil brought in from an off-site source, if so required.

Imported topsoil, when required, is to be obtained from within the local area. The imported topsoil is to be as similar to the existing material as possible and capable of sustaining vigorous plant growth. Acceptable imported topsoil should be sandy loam to sand clay loam with the ideal ratio being 15 – 25% clay, 10% silt and 75 – 66% sand. The minimum organic material should be 2% by volume. The soil should be free from harmful salts, weeds and weed seeds, sub-soil contamination, roots and stones over 30 mm in diameter. It should also have a pH ranging from 6,0 to 7,0.

The Contractor is required to submit the imported topsoil for soils analysis and to obtain recommendations for correction. Obtain approval from the Landscape Architect before ordering.

CHAPTER 7 — STANDARD HARD LANDSCAPING SPECIFICATIONS

The hard material elements which make up the bulk of the “bones” of landscape materials; such as the paving, rock, stone, masonry and street furniture are typically referred to as the hardscape materials.

The hard-landscaping materials specified in this document have been specifically chosen to be as robust, vandal-proof and as modular as possible for practical maintenance purposes.

SECTION 7.1 LANDSCAPE BUILDING WORKS

The work shall include all landscape building work, inclusive of ancillary equipment such as ropes, struts, shuttering etc., required for the erection of any structures.

Construction work is to be undertaken as per specification and detailed drawings, or as indicated elsewhere. Industry norms and standards (Model Preamble of Trades, manufacturer's guidelines, etc) shall be applicable, unless otherwise stated. Only work performed by bona fide artisans and which is of high quality and to the satisfaction of the Landscape Architect will be accepted.

Samples of construction work may be requested by the landscape architect. The cost of providing samples must be carried by the contractor.

The Contractor shall ensure that all material which is needed for the execution of the works will be delivered in time and in good condition to the site. The Contractor will employ suitable security measures to protect the material. Material which has become defective or unusable after delivery to site needs to be replaced at the contractor's own cost, irrespective if payment for delivery has been made.

All construction work shall be protected from exposure to the elements until it has been treated according to specifications. Any construction work which is exposed to moisture or other hazard or potential damage before treatment will not be accepted.

SECTION 7.2 SAND

7.2.1. BEDDING SAND

The base course layer shall be constructed from graded crushed stone, complying with the requirements of SANS 1 200 MF (3.2) and be Class G1 in terms of TRH 14.

River sand shall be clean and sifted through a 2 mm-mesh sieve and must not contain any organic material.

The sand-bedding course shall be spread evenly over the area to a level that will produce the required 50 mm thickness (or otherwise specified by Landscape Architect) when the paving stones have been placed and vibrated.

Once levelled, this sand-bedding course shall not be disturbed in any way.

Refer to SANS 1200MF for more detail specifications.

7.2.2. CONSTRUCTION SAND

All sand for mortar must be of SANS 718 quality. Samples of the sand must be submitted to the Landscape Architect timeously for approval.

7.2.3. PLAY SAND

Silica sand for play areas is prohibited due to maintenance and hygiene concerns.

SECTION 7.3 CEMENT

Normal or rapid hardening Portland cement, of a quality commensurate with SANS 50197-1 must be used. Cement must be fresh when used, and cement older than six months or which has become caked, must be removed from the building site. Cement must be stored in a dry waterproof hut which has a floor at least 100 mm above the ground.

All cement must comply with SANS ENV 197-1, strength class 32, 5 or higher as instructed by the Landscape Architect. Type, composition and strength of cement must be shown on the bag or delivery slips of bulk cement. Bags must bear the SABS mark.

Bagged cement must be stored in a dry place. Oldest cement must be used first and bagged cement with lumps that cannot be crumpled by hand is not to be used.

SECTION 7.4 CONCRETE

It is the contractor's exclusive responsibility to ensure that the concreting he does, is of the required quality as specified. In order to achieve this, the Contractor must refer to the relevant SANS section and the concrete used must meet the prescribed requirements for strength and may not be porous or contain any holes or grit nests. Quality and execution must comply with CMA's standards.

During casting, sufficient vibratory or other mechanical effort shall be applied to thoroughly compact the concrete.

The surfaces of fresh concrete shall be kept continuously moist for a period of at least seven days and shall be protected against the harmful effects of sunshine, drying winds, cold running water, surface water, and mechanical shock.

7.4.1. CEMENT

Concrete shall be made with Ordinary Portland Cement complying with SANS 50197-1. All cement must comply with SANS ENV 197-1, strength class 32, 5 or higher as instructed by the Landscape Architect. Type, composition and strength of cement must be shown on the bag or delivery slips of bulk cement. Bags must bear the SANS mark.

Bagged cement must be stored in a dry place. Oldest cement must be used first and bagged cement with lumps that cannot be crumpled by hand is not to be used.

7.4.2. AGGREGATE

Natural or crushed sand and stone for use in concrete must comply with SANS 1083.

Aggregate test results are to be supplied if required by the Landscape Architect.

7.4.3. WATER

Water to be used for concrete must be clean and free from injurious amounts of acids, alkalis, organic matter and other substances that could impair the strength and durability of concrete.

Water test results are to be supplied if required by the Landscape Architect.

The water from any watercourse shall not be used in the manufacture of concrete or cement mortar.

7.4.4. CONCRETE MIX

Mix cement, sand and stone by volume or by mass to produce the compressive strength required at 28 days.

A process of mix design may arrive at mix proportions, by the use of recognized tables of trial mixes with South African aggregates, or according to the cement manufacturer's instructions.

Mixing of concrete may be done by hand or machine.

Water added must be sufficient to produce a workable consistency. Consistency is to be measured with the standard slump test as described in the SANS method 862-1:1994 and as directed by the Landscape Architect.

7.4.5. TESTING

If the Landscape Architect requires concrete testing for compressive strength, the size, quantity and intervals of test cubes must be in accordance with the SANS test methods 862-2 and 861-3. Test cubes are to be tested for compressive strength by an approved laboratory according to the SANS method 863.

7.4.6. NOTICE

Timely notice is to be given to the Landscape Architect before casting of concrete is to commence.

7.4.7. CURING

Concrete is to be cured by means of a liquid membrane-forming curing compound at an approved rate, by bonding with water, or by covering with polyethylene or similar vapour proof material in large sheets. Curing is to be undertaken for a minimum of 7 days or longer if ambient temperature falls below 10°C.

7.4.8. JOINTS

Expansion joints must be provided where pre-cast paving blocks abut any fixed structure such as walls, columns, sumps or inspection chambers and where specified on the drawings. Expansion joints are to be filled with 10mm bitumen impregnated soft board, according to the manufacturer's instructions.

7.4.9. CONCRETE PAVING

Refer to section 7.7.3: In-situ Cast Concrete Paving for further detail.

SECTION 7.5 MASONRY

7.5.1. MORTAR

Cement mortar for brickwork and jointing shall consist of 1 part cement and 3 parts sand (SANS 718). Cement mortar must be mixed as the work progresses and as it is required. Mortar must be applied in liquid form.

7.5.1.1. CEMENT

All cement used must comply with the SANS ENV197-1, strength class 32,5, or higher as instructed by the Landscape Architect. Type, composition and strength of cement must be shown on the bag or delivery slips of bulk cement. Bags must bear the SANS mark.

Bagged cement must be stored in a dry place. Oldest cement must be used first and bagged cement with lumps that cannot be crumbled by hand is not to be used.

7.5.1.2. SAND

Natural or crushed sand for use in mortar is to comply with SANS 1090. Grading test results are to be supplied if required by the Landscape Architect.

Sand must be obtained from one source throughout the duration of works.

Store sand in such a way as to avoid contamination by foreign matter.

7.5.1.3. STRENGTH OF MORTAR

Class 11 of mortar with a minimum compressive strength of 5 MPa is to be used for normal load bearing work, parapets, balustrades, retaining structures, free-standing walls, and walls exposed to dampness.

Supply test results if required by the Landscape Architect.

7.5.1.4. MIXING

Ingredients are to be mixed on a clean surface or by means of a mechanical mixer. Mix thoroughly until colour is uniform. Add water to give the desired plasticity. Use within 2 hours.

7.5.2. BRICKWORK

7.5.2.1. BOND

Use full bricks or blocks wherever possible. Use stretcher bond for common brickwork, unless otherwise specified.

7.5.2.2. LAYING BRICKS

- i. Lay bricks on a full bed of mortar
- ii. Fill all vertical joints solid.
- iii. Construct corners of walls accurately. Check height of courses with a gauge rod.
- iv. Joints must be 10-12mm thick.
- v. Carry up work evenly. Keep perpend and angles plumb.
- vi. Wet clay bricks before laying only if they are highly porous.
- vii. Flush off joints in common brickwork.

Rake out joints to 10mm deep where a mechanical key is required for plastering.

SECTION 7.6 WALLS

7.6.1. RETAINING WALLS

Submit concept drawings for approval.

Ensure a Professional Engineer stamps all drawings of retaining walls that exceed 1.0 m in height.

The Developer is to ensure that the proposed structure retaining wall conforms to all applicable eThekweni Municipality By-Laws and provincial Building Codes.

7.6.2. ROCK WALLS

Concrete 25/19 (25 mPA) to be used for foundations and variation of various types of rock types, sizes and texture, rocks to have a nominal size of 150 mm – 500 mm. All to approval of the Landscape architect.

Foundations to be 400 mm deep x 1100 mm wide, or according to PrEng's specifications. Length will vary.

Wall to be 500 mm double sleeve rock wall with concrete infill between to required height. Heights and lengths will vary. Rock masonry to be of good quality and workmanship to be consistent throughout.

7.6.3. GABION WALLS

Gabion mattresses to be 2 m x 1 m x 1 m. Installation of gabions include provision of rock and other materials, unfolding, placing, filling, lacing and bracing.

Gabion mesh to be mesh type 80 with 2.7 mm Class A Galvanized wire.

Fill gabion mattresses with rock material. Rock material to be tightly packed to create an even edge and take care to pack selective stones for exposed face. Quality and workmanship to be consistent throughout.

Further details of gabion materials, installation and construction are described in section 8.1: Gabions and Reno Mattresses.

Furthermore, refer to the EMM Civil Specification Document of 2005, Section 505: Erosion Protection: Subsection 05 Construction of Gabions for further detail on preparation of the gabion foundation and surface, assembly, and rock filling.

7.6.4. TERRACE BLOCK WALLS

Supply, deliver and construct concrete block retaining wall (Loffelstein or similar) as per detail and specification.

Sample to be approved by landscape architect. Height not to exceed 1.2m. Construct as per manufacturer's recommendation. Excludes bulk earthworks, backfilling, topsoil, base preparation and compaction, foundation and planting. This is measured elsewhere.

7.6.5. MASONRY WALLS

Supply, deliver and construct free standing masonry walls and retaining walls as per detail and specification. To include strip foundations, reinforcing and plaster and paint as required.

Foundations to be specified by a Professional Engineer.

Refer to Section 8.4: Masonry Walls for more.

7.6.6. SEATING WALLS

Seatwalls to be integrated into the design. 400 to 450mm wide and between 350 to 450mm in height.

Damp proof masonry block walls if containing irrigated planting areas. Provide weep holes or back drains in poorly drained soils at specified distances apart.

Surfaces should be smooth to avoid abrasions and snagging of clothing.

Rates to be all inclusive.

7.6.6.1. FACEBRICK SEATING WALLS

- i. Facebrick standard walls are to be constructed of clay bricks in stretcher bond with raked mortar joints.
- ii. Size: 480mm (h) x 520mm (w). from finished floor level
- iii. Coping: Claybrick soldier course to detail.
- iv. Fill: Compacted rubble filled with 200mm layer of concrete topping.
- v. Footing: To PrEng specification

7.6.6.2. CONCRETE SEATING WALLS

- i. Concrete seating walls to be constructed of in-situ cast off shutter 25MPa reinforced concrete
- ii. Size: 450mm (h) 450 (w) from finished floor level
- iii. Finish: smooth finish and 45° chamfer.
- iv. Footing: To PrEng specification

Supplies of sand and stone for concrete are to be uniform throughout the contract. Shuttering shall be of wooden planks 150mm wide and erected vertically along the wall.

The type of formwork, the fixing of reinforcement and selection of spacer blocks, and the detailing of joints and tie- bars is to be discussed with the Landscape Architect and the Engineer before any shuttering is ordered or brought to site.

Formwork must be grout- tight, properly supported, and coated with a suitable release agent. Formwork ties permanently cast-in are subject to approval. Tie wires are not permitted.

SECTION 7.7 PAVING

The choice of surface to be installed in Public Open Space (POS) and specifically playgrounds is dependant primarily on the function that the surface must perform and the intensity of use that it will receive during its lifetime. In addition, international best practice will be taken into account as well as environmental considerations such as encouraging rain water infiltration into the ground water system.

The work shall include all landscape paving, inclusive of ancillary equipment required for the erection of any structures.

Paving is to be undertaken as per specification and detailed drawings. Industry norms and standards (Model Preamble of Trades, manufacturer's guidelines, etc.) shall be applicable, unless otherwise stated. Only work performed by bona fide artisans and which is of high quality and to the satisfaction of the Landscape Architect will be accepted.

Scope includes herbicide and ant poison application to Landscape Architect's specification.

7.7.1. HEADER COURSE / MOWING EDGE

Header course to be installed as per material and colour specified. Header course includes base preparation, compaction and concrete foundation as well as paving blocks. Inclusive of all cutting and joining to tie in with existing paving and other structures.

Excavate, level and compact base to 93% MOD AASHTO. Remove excess material. Level, gradient and deviation according to specification.

All edging to be on a 100mm thick 25MPa concrete footing, manufactured in accordance with SANS 1058:2012. Dimensions of the foundations to be 220 mm wide and 100 mm deep with a 30 mm lip as haunching on both sides.

Lay pavers on concrete 25/19 foundation with a minimum longitudinal fall of 1% on a transverse fall of at least 2% on 25mm thick compacted river sand bed with fine jointing sand swept and vibrated into joints, all laid on subgrade conforming to SANS 1200 MJ.

Where relevant, paving blocks are to be laid with bevel facing up. Paving to be butt jointed and cleaned. Mortar joints to be used only where curves create angled joints.

Paving to be inspected and re-sanded after three months.

7.7.2. BRICK / BLOCK PAVING

Concrete block pavers to be manufactured in accordance with SANS 1058:2012. Clay pavers to be manufactured in accordance with SANS 1575:2007.

Lay paving in sand or mortar, according to the pattern, slopes and dimensions, joints requirements, as indicated on detailed diagrams or elsewhere. Remove 200mm layer of material below final paving levels and compact base to 93% MOD AASHTO density.

Level, gradient and deviation must be according to landscape architects satisfaction. Contractor must allow for 250mm levelling, cutting and/or filling, where required. Paving to be laid in specified pattern with a minimum longitudinal fall of 1% on a transverse fall of at least 2% to ensure proper drainage. Stormwater is to be directed into adjacent lawn areas or plant beds wherever possible.

Paving may only be laid on suitably selected compacted and stabilised material. The dry density of each completed layer may not be less than 92% on pedestrian paving and 95% on parking area paving and paved vehicle roads of the

maximum revised AASHTO dry density. Compacting must occur when moisture content is between 0 and 1,5% drier than the optimum.

Paving must be cut by means of an electric cutting device where necessary in order to maintain the pattern. Where faces are cut, the edges must be chamfered to resemble the normal edge of the paver.

Paving edges may not be broken and no pavers with chipped edges are allowed to be used. No tiles with cracks, hollows or broken corners may be used. The surface of the paving must not contain any irregularities, bulges or hollows of more than 7mm when it is tested with a straight edge of three (3) metres in length.

Unless otherwise specified, the joints must be filled with 1:3 cement mortar and smoothed over. Care must be taken that the paving contains no cement residue or any other foreign material.

The concrete pavers shall be laid in such a manner that the desired pattern can be maintained and the joints between the stones do not exceed 3 mm.

When the paving has been completed, it must be inspected for accuracy of height, evenness of slope and elevation. The Landscape Architect retains the right to test the paving being done at any time and when it is finally handed over to the Employer. The sections which do not meet the requirements must be repaired at the Contractor's expense within the period of time allocated for that specific job and to the satisfaction of the Landscape Architect.

Deviations from the specified gradients shall not exceed 0.3% over 2 metres, 0.24% over 8 metres or 0.16% over 30 meters. Where no gradients are specified, this must be interpreted to mean that the minimum slopes on paved areas may not be less than 2% in the direction of the general slope.

The Contractor must ensure that all storm water is able to drain away without any damming up or causing erosion elsewhere.

Refer to Appendix 2: Typical Paving Details – Typical Paving Detail with Header Course for more information.

7.7.3. IN-SITU CAST CONCRETE PAVING

Prior to commencing any works, the contractor shall be responsible to obtain all relevant information concerning the location of any existing overhead or underground services which may be affected by the works.

All excavation shall be thoroughly consolidated with a vibrating plate compactor or similar after evenly moistening with water (not saturated) immediately prior to the inspection, approval and immediate subsequent placing of concrete.

Concrete shall be evenly placed to a minimum depth of 100mm and shovelled into position continuously and spaded especially at all edges to give maximum density. No break in operations shall be permitted from time of placing concrete to finishing unless authorised.

Concrete paving to be cast in-situ laid on a minimum of 50mm depth of clean sand .with mix 25/19 at a minimum 100 mm thickness and maximum of 120mm thickness over ref 100 steel mesh (or according to PrEng specification). Wood float finish on surface and bull-nose edge next to brick header course. After the concrete has hardened sufficiently, it shall be floated to a uniform surface free of trowel marks.

The Contractor must ensure that all storm water is able to drain away without any damming up or causing erosion elsewhere. Paving to be laid with 2% cross fall to ensure proper drainage. Cross fall shall be directed towards lawn areas or plant beds wherever possible.

Deviations from the specified gradients shall not exceed 0.3% over 2 metres, 0.24% over 8 metres or 0.16% over 30 meters. Where no gradients are specified, this must be interpreted to mean that the minimum slopes on paved areas may not be less than 2% in the direction of the general slope.

Curing of concrete shall be carried out strictly in accordance with SANS 1200G. Control of the curing of the concrete shall be carried out in a manner to ensure that shrinkage cracking does not occur. This may require the use of waterproof paper, polythene sheeting or a liquid membrane compound, which complies with SANS 10109-1:2012.

Quality and workmanship to be consistent throughout.

Please refer to the EMM Civil Specification Document of 2005: Series 6; Roads and Parking Areas; 610; Concrete Pavements for further detail specifications.

7.7.3.1. MATERIALS

7.7.3.1.a. CEMENT

Concrete shall be made with Ordinary Portland Cement complying with SANS 471.

7.7.3.1.b. WATER

The water from any watercourse shall not be used in the manufacture of concrete or cement mortar.

7.7.3.1.c. AGGREGATE

The final surface finish type shall be washed exposed aggregate, with a 9-13mm stone aggregate finish. The Landscape Architect shall reserve the right to require the removal of, or the correction of any surface deficiencies or finish.

Where dolomitic aggregate is specified both coarse and fine aggregate from an approved commercial source, complying with the relevant SANS specifications.

7.7.4. JOINTS

Joint spacing influences internal slab stresses, which determine how and where a slab cracks, as well as how much a slab will shrink or expand with temperature changes. Joints are to be applied after the concrete has hardened sufficiently, but before it starts to shrink due to drying (typically within less than 48 hours). All joints are to comply with SANS 10109-1:2012.

Recommended spacing between joints area maximum 3m for slabs of 100mm thickness, while the resultant panel shall be kept as square as possible. Certain designs may call for even closer joint spacing due to load transfer considerations.

7.7.4.1. CONTRACTION JOINTS

Are to be sawn with a 6mm thick blade at approximately 5m spacing in two directions to a depth of $\frac{1}{4}$ of the slab thickness (i.e. 25mm for a 100mm slab).

It is important to allow efficient load transfer due to the unevenness of the induced crack below the saw cut. Contraction joints may be sealed with neoprene gaskets or alternatively left open.

7.7.4.2. EXPANSION JOINTS

An expansion joint should be placed every 50m in a straight, unhindered path or at the start of a deviation or a side entry pit in the pathway. Construction of full depth of the concrete with a 12mm thick approved proprietary expansion material is required.

7.7.4.3. CONSTRUCTION JOINTS / SAWCUT JOINTS / DAY JOINTS

Are to be constructed according to expansion joint specifications, when casting stops for more than 45 minutes. Contraction joints must be keyed or doweled for load transfer.

7.7.4.4. ISOLATION JOINTS

Isolation joints are to be constructed to expansion joint specifications. Isolation joints are to be placed around all pre-existing structures including crossovers, sewer, manholes, pillars, columns, lamp poles, bollards, walls and any other obstacles that may be in the way or need to be adjusted in the future.

Isolation joints are to be constructed from polystyrene or softboard, in compliance with SANS 10109-1:2012, and sealed with an appropriate sealant.

Power and light poles etc. are to have a square section of expansion at 500mm radius from the object to allow for removal if required.

7.7.5. PERMEABLE PAVING

In the management of stormwater, the eThekweni Municipality is encouraging the use of alternative methods from the current construction standards in that permeable surfaces are created to absorb storm runoff to mitigate damages from flooding.

This Specification shall indicate the manufacturer, delivering, and placing of permeable pavers of various types. The Contractor must have experience at performing this type and scale of work and must be willing to provide proof of this experience.

When researching possible permeable surface products it is recommended that one looks towards an alternative that includes grass or a suitable hardy groundcover.

Any permeable surface must allow for the percolation of stormwater and ultimately prevent direct runoff in the form of sheeting. Alternative materials will be reviewed prior to acceptance by the Landscape Architect.

At the preliminary drawing phase of application to development landscape drawings submitted for review shall include:

- i. The product name/brand; and
- ii. An applicable brochure/pamphlet detailing the product specifications, installation, and maintenance requirements of the product to be installed.

If permeable paving is to be used in a parking lot or other setting that involves vehicles, the pavement surface must be able to support the maximum anticipated traffic load.

7.7.6. CUT STONE

All stone is to be obtained from an approved South African Quarry and of colour, size, surface finish and edge finish as specified.

Samples are to be kept on site showing a range of colours and texture agreed upon for reference purposes.

Samples of the sand must be submitted to the Landscape Architect timeously for approval with written proof of grading. Sand used for bedding and jointing of the cut stone paving must be free of soluble salts or contaminants likely to cause efflorescence or staining, and have a moisture content of 5-8%.

Excavate to achieve finished levels and falls as indicated on drawings; thereafter remove soft spots and biodegradable material and replace with approved filling material. Complete installation of all sub-soil drainage pipes, if any.

Compact to 90% MOD AASHTO and stabilize with 5% cement prior to compaction if necessary. Sub-base material and construction to be as specified by the engineer.

Form paving surface profile on the finished surface of sub-base. Do not make up irregularities on the surface with bedding sand.

7.7.7. GRASS BLOCKS

Grass Blocks are concrete modules comprised of honeycomb cavities which have been designed to facilitate the growth of grass within a supporting concrete matrix, allowing grass to be mowed in the conventional manner.

Because of their design, grass blocks are not recommended for heavy duty industrial applications.

Excavate 240mm deep. This will allow for a 100mm thick sub base, the 40mm of bedding material and the 100mm thick Grass Block modules.

The 100mm base-course is the foundation for the Grass Blocks and is to be constructed with G5 material and compacted with a roller or heavy plate compactor. The compacted surface should be tight or close knit to prevent downward migration of bedding courses material.

The un-compacted 40mm bedding course is the layer that the Grass Blocks rest on. Well-graded, washed river sand is recommended as a bedding course material for Grass Blocks. It is essential for bedding sand to be graded to the specifications as per SANS 1200MJ and it may contain no foreign objects. Do not use topsoil or compost as bedding course even if grass will be planted in the blocks. Bedding sand must be moist when the grass blocks are packed.

A well prepared, moist bedding course is a critical aspect of the installation of Grass Blocks. Apart from determining the accuracy of the installation, Grass Blocks will eventually fail if the bedding course was not sufficiently prepared.

Restrain the perimeter of the laid Grass Blocks to prevent the washing out of the bedding sand and grout (this will cause subsidence of Grass Blocks on the edge and could result in movement of the blocks). Precast concrete edgings Figure 12 kerb and Figure 7 kerb are to be used as indicated on plan.

It is recommended that newly laid Grass Blocks be compacted by a plate compactor with rubber mallet. Ensure bedding sand is moist yet not saturated with water when compacting at this stage.

Riversand is used as jointing and filler material in the installation of Grass Blocks. Sweep the river sand over the paved area in order to fill the voids and gaps between Grass Blocks. Grass seeds and fertiliser could be mixed with riversand.

Compact the paved area again after filling the joints and voids and sweep additional sand onto the area if required. Compost and lawn dressing are not recommended as joint filling but could be used to fill the upper part of the voids.

Creeping grasses such as *Cynodon dactylon* and LM lawn are recommended to plant in Grass Blocks.

7.7.8. PERMEABLE PAVERS

Permeable paving blocks shall be manufactured in compliance with the latest version of SANS 1058 under ISO 9002 quality assurance and bear the SABS mark permit. Unless otherwise indicated, blocks shall be class 1, complying with the tensile splitting strength, dimensional tolerances and abrasion resistance requirements. Water absorption testing is not compulsory for Southern Africa.

Sand for bedding and jointing shall be approved by the Engineer before use and shall be free from substances that may be deleterious to blocks. The bedding and jointing sand is the same product. It shall be open-graded washed sand without any fines smaller than 1.18mm. The grading of the bedding/jointing sand shall be strictly controlled and at all times.

SECTION 7.8 OTHER

7.8.1. PACKED ROCK

Crusher stone / packed / dumper rock are to have a nominal size of 100 mm – 300 mm, all to the approval of the Landscape architect. After approval of packed rock material, supply, deliver and stockpile crusher stone at the identified area on site.

Include levelling of ground to create even surface 50 mm below final paving level.

Spread uniformly to cover area and pack neatly and evenly to form a flat and uniform surface.

Include supply and installation of Bidim geotextile in order to prevent weed germination – Grade 4 f. Crusher stone to be laid on Bidim geotextile, no ground or geotextile may be visible after completion. Provisions must be made for any overlapping, if required. Blanket must not be visible and be built under the mowing or paving edge foundation (as described and measured elsewhere).

Inclusive of preparing and levelling of ground. Inclusive of laying rocks on top of and supplying and installing approved weed blanket. Inclusive of all relevant work.

7.8.2. GRAVEL

Gravel to have a nominal size of 15 mm – 25 mm. Spread gravel uniformly around the crusher stone to create an even walking area. Quality and workmanship to be consistent throughout. After approval of pea gravel material, supply, deliver and stockpile gravel at identified area on site.

Include preparing and levelling of ground, levelling to create even surface 50 mm below final paving level.

Include supply and installation of Bidim geotextile – Grade 4 f. Provisions must be made for any overlapping, if necessary. Gravel to be laid on Bidim geotextile, no ground or geotextile may be visible after completion. Blanket must not be visible and be built under the mowing or paving edge foundation (as described and measured elsewhere).

SECTION 7.9 RUBBERISING

Rubberizing to be comprised of a recycled EPDM rubber granulate with polyurethane binding agent.

In addition to other identified requirements, rubberizing is one of the attenuating surfaces suitable to be placed beneath playground equipment with a free height of fall of more than 600mm and/or equipment causing a forced movement on the body of the user (e.g.: slides, rocking equipment, etc.). This attenuating surface needs to be installed over the entire impact area according to SANS 51176-1.

Ripping and preparation of all rubberised areas shall include ripping to 150mm depth, stabilize with 5% cement and re-compact to 93% mod AASHTO. Import and spread of selected G5, compacted to 93% of modified AASHTO density in 150mm layers.

Concrete surface bed over sub layers to be laid on 250-micron DPM layer on 50mm clean sand layer.

Concrete bed to be 100mm thick at 20 MPa and reinforced with mesh Ref 193 with 50mm minimum cover. Thickening at ends to Landscape Architect's detail. Method of curing the concrete subject to the Engineers approval. Curing to be completed before the application of rubber surfacing. Saw-cut and expansion joints as required are to be included.

Supply and install rubberizing as per manufacturer's specifications.

7.9.1. THICKNESS IN RELATION TO CRITICAL FALL HEIGHT

The critical fall height of the playground equipment and the type of equipment used will determine the thickness of playground safety flooring required, as well as the placement of the safety flooring. The South African Determination of Critical Fall Height Standard (SANS 51177:2010) must be referred to for more specific guidelines and specifications.

In general, the thickness of the rubberizing in relation to the potential fall height is as follows:

- i. For a free fall height of 800mm, the rubberized surface should be 25mm thick
- ii. For a free fall height of 1m, the rubberized surface should be 30mm thick
- iii. For a free fall height of 1.2m, the rubberized surface should be 40mm thick
- iv. For a free fall height of 1.5m, the rubberized surface should be 50mm thick
- v. For a free fall height of 1.7m, the rubberized surface should be 60mm thick
- vi. For a free fall height of 2.10m, the rubberized surface should be 70mm thick
- vii. For a free fall height of 2.30m, the rubberized surface should be 80mm thick
- viii. For a free fall height of 2.6m, the rubberized surface should be 80mm thick; with a 60mm Impact Protection slab and base layer of 20mm
- ix. For a free fall height of 3m, the rubberized surface should be 90mm thick; with a 60mm Impact Protection slab and base layer of 20mm

The protective surfacing should be extended to at least 2m from the equipment in all directions and should extend in front of and behind a single axis swing, to the distance that is equal to the height of the top bar from which the swing is suspended. Furthermore, the playground surfacing should cover a radius that is equal to the height of the suspending chain or rope plus 2m in all directions, for round or multi-axis swings.

Earth mounding to be approved well graded selected fill material, constructed in 150mm deep layers, each layer compacted to 98% MOD AASHTO density to PrEng specification.

Refer to the South African National Standard SANS 51177 for more detail.

SECTION 7.10 WATERPROOFING

Apply waterproofing according to SANS 021 and the minimum performance characteristics set by the African Waterproofing Institute.

A meeting is to be organized with the manufacturer of waterproofing material, the Landscape Architect and the waterproofing contractor well in advance to review products, procedures and guarantees, so that clarity may be reached as to construction details. If required, the waterproofing contractor must present a Quality Assurance program setting out the quality control procedures of all parties involved.

Waterproofing must be applied by an appropriately qualified contractor and trained artisans.

During the course of the works, the manufacturer of the waterproofing material must inspect regularly and upon completion must certify in writing that the application has been done according to the manufacturer's instructions.

Provide slip layers, binding layers, metal lathe, ventilators, movement joints, etc. as necessary according to manufacturer's instructions.

7.10.1. INSTALLATION OF POLY OLEFIN SHEETING

Poly olefin sheet waterproofing must comply with SANS 952 type C of thickness 100 microns. Apply sheeting in one layer. Make joints and laps waterproof with compatible solvent welds, strictly according to the manufacturer's specifications. Waterproofing is carried out in the tanking method.

Lay a 30mm sand bed and compact to at least 90% MOD AASTHO. Sand beds must be laid to a minimum fall of 1:70. Fillets, covers and chamfers must be provided where horizontal and vertical surfaces meet. All irregularly shaped and protruding objects which have the potential to tear and / or damage the waterproofing membrane must be removed.

Apply membrane in a single layer of at least 1000 micron and overlap by 300mm. Seal laps. Cover the membrane with concrete as specified in the drawings or as indicated by the Landscape Architect on site. Waterproofing must be applied to a level of 150mm above the water surface.

7.10.2. GUARANTEE

Provide an insurance backed guarantee from the manufacturer for the waterproofed area including flashing, skirting, outlets, expansion joints and other details for a minimum period of 5 years.

If any finish installed over the waterproofing is to be removed due to leaks it shall be replaced by the guarantor at no charge.

Provide full maintenance particulars.

SECTION 7.11 PLASTERING

All cement used must comply with SANS 50197-1, strength class 32.5 or higher as instructed by the Landscape Architect. Type, composition and strength of cement must be shown on the bag of delivery slips of bulk cement. Bags must bear the SANS – mark. Bagged cement must be stored in a dry place. Oldest cement is to be used first, and bagged cement with lumps that cannot be crumpled by hand is not to be used.

Natural or crushed sand for use in mortar is to comply with SANS 1083. Grading test results are to be supplied if required by the Landscape Architect.

Lime must be hydrated to comply with SANS 523, putty plaster type for finish coats.

7.11.1. MIX PROPORTIONS

Mix cement and sand to the following proportions:

Class Application Cement: Sand

Cement: Sand (Common cement) (Masonry cement)

- i. Foundation walls, 1:4 1:3 Constantly damp conditions Or 50 kg to 130 litres Or 50 kg to 100 litres
- ii. External and internal 1:6 1:3 Plaster above dpc level Or 50 kg to 200 litres Or 50 kg to 170 litres
- iii. Weak substructures, e.g. 1:9 1:6 Unburnt clay brick Or 50 kg to 300 litres Or 50 kg to 200 litres

7.11.2. PREPARATION AND APPLICATION

Complete all chased pipe work and service outlets before plastering are commenced. Ensure that surfaces to be plastered do not deviate from the required plane by more than about 10mm. Remove high areas by hacking or cutting.

Fill low areas by applying undercoats of plaster not exceeding 15mm in thickness and score with approximately parallel lines about 20mm apart and 55mm deep to provide a key.

Apply one coat of plaster to surface, leave to stiffen, stroke off with a striker board, and wood float to an even surface and to a thickness of 10 – 15mm.

If plaster is to be applied in two coats, or is to be tiled, the first coat must be scored as described in the preparation. Painting

Permissible deviation of plasterwork is 6mm under a 2m straight edge in any direction.

SECTION 7.12 PAINTING

This section covers the preparation of surfaces, painting, and painting materials for the decoration and protection of metal, concrete, wood and other surfaces which are exposed to non-corrosive or mildly corrosive conditions only.

Where surfaces which are exposed to severe conditions are to be protected, the painting systems, the factory's quality-control measures, any supervisory measures, and other appropriate information will be specified in by the Landscape Architect.

For additional detail other than the basics described below refer to the EMM Civil Specification Document of 2005, Section 806: Painting for further detail.

7.12.1. MATERIALS

All paint materials and colours to be used will be specified by the Landscape Architect. Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids, shall adhere to the following:

- i. Paint materials for each coating formula to be products of a single manufacturer.
- ii. Low odour products to be selected whenever possible. If two products are otherwise equivalent, select the product with the lowest odour.
- iii. Where possible, all products must be water-based, water soluble, water clean-up.
- iv. They must be non-flammable.
- v. Environmentally friendly.
- vi. All paints are to be certified and approved for exterior use.
- vii. Must not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments.

The Contractor shall furnish the Landscape Architect with the following information and details regarding the paints and decorative materials for the painting system he proposes to use, for written approval:

- i. The name of the manufacturer and trade name.
- ii. The brand, type or grade of paint and the appropriate SANS specification.
- iii. Manufacturer's data sheets, colour references, instructions for use, including surface preparation, sealers, primers, undercoats, finishing coats, coat thicknesses and curing periods, which shall all be considered as being part of these Specifications if approved by the Landscape Architect.
- iv. Safeguards to protect the applied paint from damage until the work is accepted by the Landscape Architect.
- v. The shelf or pot life of materials, if applicable.
- vi. An undertaking by the manufacturer or supplier that the proposed paint system is suitable for its intended use and that the various coats of paint are compatible with one another.
- vii. Proof that the paint is suitable and certified for exterior use.

Where proprietary brands are used, the manufacturer's priming and all subsequent coats of paint suitable for that particular brand shall be employed in accordance with the manufacturer's instructions.

No other materials of a similar nature and quality or from another manufacturer may be used instead of those approved unless permission to do so has been obtained from the Landscape Architect, in writing.

All materials shall be brought onto the Site in containers sealed by the manufacturer. Paints shall not be mixed with another paint of a different quality, type, brand or colour, or thinned or adulterated in any way, but shall be used as supplied by the manufacturer. Any mixing or tinting required shall be carried out by the manufacturer.

Tinting of paint on the Site by the Contractor will only be allowed with the written permission of the manufacturer and the Landscape Architect.

7.12.2. GENERAL PREPARATION AND WORKMANSHIP

Before commencing with painting the following must be undertaken:

- i. The Contractor shall carefully inspect the surfaces to be painted to satisfy himself that the surfaces are in a satisfactory or acceptable condition to receive the paint system specified.

- ii. All metal fittings and fastenings shall be removed where applicable before the preparatory processes are commenced. On completion, the metal fittings and fastenings shall be cleaned and refitted in position.
- iii. Paint may be applied by spray, brush or roller depending on the materials used, the surface to be painted, and the manufacturer's instructions.
- iv. Every coat of paint, irrespective of the method of application, shall be adequately and permanently keyed or bonded to the base material or previously applied coat, and shall be evenly distributed, continuous, free from sags, runs, brush marks, pin holes or other imperfections, and shall dry to a smooth finish.
- v. An approved water trap and air-regulating valve shall be furnished and installed on all equipment used in spray painting.
- vi. The Contractor shall protect all nearby surfaces against disfigurement by spatters, splashes and smirches of paint or paint materials. The Contractor shall be responsible for any damage by paint or dirt caused by his operations to vehicles or property or injury to persons and he will be required to provide protective measures to prevent any such damage or injury and make good, where required, at his own expense.
- vii. If passing traffic creates dust which may harm or spoil the appearance of external painted surfaces, the Contractor shall sprinkle the adjacent areas with water, at his own cost, for a sufficient distance on each side of the location where painting is being done.
- viii. Undercoats shall be tinted by the manufacturer to distinguish between successive coats.
- ix. The final coats or finishing coats of paint shall be applied after all the other work in the vicinity has been completed.
- x. The painter shall keep some of the final paint in reserve in the event of his having to make good any patching which may be required as a result of damage or unforeseen circumstances.
- xi. All inflammable materials, comprising solvents, thinners, wiping cloths, etc., shall be placed in tightly closed containers and properly disposed of.

7.12.3. PAINTING OF PLASTER, CONCRETE OR BRICK SURFACES

7.12.3.1. SURFACE PREPARATION

Surfaces for painting shall be prepared by sand- papering, scraping or wire-brushing to remove loose material, dust, laitance, scum or other deleterious materials or high spots. Defective areas shall be cut out where necessary and made good with an approved non-shrink filler. Cracks shall be cut out, suitably keyed, and given a coat of an approved bonding agent before the filler is applied. All patches shall be rubbed down to an even surface. Surfaces shall be washed and allowed to dry.

Surfaces shall be treated with neutralizing liquid for walls, and if the surface is coarse or textured, either one full coat of pigmented wall sealer or one full filler coat shall be applied in addition to the neutralizing liquid.

7.12.3.2. PAINT APPLICATION

Prior to the emulsion paint being applied, the surface shall be sealed with an approved clear sealer and primed with an undercoat diluted to 50%. Emulsion paint (PVA or acrylic) shall then be applied in two finishing coats.

Egg-shell finish (alkyd oil based), oil gloss paint or enamel gloss paint shall be applied as follows: one coat of universal undercoat shall be applied and it shall be followed by one coat of a mixture comprising 50% of the undercoat and 50% of the paint to be used for the finishing coat. A finishing coat of semi-gloss eggshell, or oil gloss paint or enamel gloss paint shall then be applied.

7.12.4. PAINTING OF METAL SURFACES

Wherever possible, all painting shall be done at the fabricator's works, but where this is not feasible, the Landscape Architect may permit the application of the undercoat and finishing coats to be carried out on the Site, in which case a prime coat shall be applied at the fabricator's works prior to the members being dispatched to the Works.

7.12.4.1. SURFACE PREPARATION

The preparation of metal surfaces shall comply with SANS Code of Practice 10064 and shall receive the greatest care to ensure rust-free conditions prior to the paint system being applied.

All surfaces shall be prepared by loose paint, rust, plaster, scale, dust, dirt, grease, etc., being removed and by the defective paint surfaces being repaired or patched before painting or repainting. Damaged shop-primed surfaces shall be thoroughly cleaned of rust and patched with a prime coat.

7.12.4.2. IRON AND STEEL WORK PAINT APPLICATION

All iron and steel work shall be properly primed with a red-lead-based primer where steel work is likely to be exposed to the elements for longer than 30 days. Zinc-chromate primer may be used where overpainting will be completed within 30 days of priming. Metal-etch wash primers may be used under dry conditions where overpainting will be completed within 24 hours of priming. The dry-film thickness of the prime coat shall not be less than 0,300 mm.

After priming, one coat of universal undercoat shall be applied. If necessary, the undercoat shall be tinted to a shade just lighter than the desired finish with approved liquid stainers. The dry-film thickness shall not be less than 0,250 mm.

The two finishing coats shall either be of alkyd resin-based synthetic enamel, gloss or matt oil paint, or as specified elsewhere. The dry-film thickness shall not be less than 0,250 mm per coat.

7.12.4.3. GALVANIZED IRON AND STEEL PAINT APPLICATION

All traces of protective coating shall be removed with galvanized iron cleaner, and two coats of calcium plumbate primer shall be applied. One coat of tinted universal undercoat and two finishing coats of alkyd resin-based synthetic enamel gloss paint shall be applied.

7.12.4.4. NON-FERROUS METALS PAINT APPLICATION

Surfaces of aluminium, copper, etc., shall be prepared and cleaned, and one coat of self-etch zinc-chromate wash primer shall be applied. One coat of universal tinted undercoat and two finishing coats of enamel gloss paint shall then be applied. Where non-ferrous metals are not to be painted, the surfaces shall be cleaned, polished and two coats of lacquer applied.

7.12.5. PAINTING OF WOOD

7.12.5.1. SURFACE PREPARATION

The surfaces shall be cleaned, sandpapered and rubbed down to a smooth, even face before painting. The moisture content of the timber shall not be more than 20% at the time when the first coat is applied. All cracks, shakes or scars shall be filled flush with a filler approved by the Landscape Architect before painting. The surface shall then be washed with cleaner and allowed to dry.

7.12.5.2. PRIMER APPLICATION

One coat of an approved wood primer shall be applied. After open-grained timber has been prepared and primed, the grain shall be stopped and filled with synthetic filler and rubbed down with water paper.

All new woodwork shall be properly primed on all surfaces and edges before being fixed in position. All woodwork not previously painted shall be given a prime coat, well brushed in.

7.12.5.3. PAINT APPLICATION

One coat of universal undercoat shall be applied followed by one coat of mixture comprising 50% of the undercoat and 50% of the paint to be used for the finishing coat. A finishing coat of oil gloss paint or enamel gloss paint or semi- gloss egg-shell (alkyd oil based) paint shall then be applied.

7.12.5.4. VARNISH FINISH

Prepare, stop and apply two coats of gloss varnish or egg-shell varnish.

CHAPTER 8 — DRAINAGE, EROSION PROTECTION AND GREEN INFRASTRUCTURE

SECTION 8.0A. INTEGRATED STORMWATER MANAGEMENT AND GREEN INFRASTRUCTURE

8.0.1. POLICY REQUIREMENT

In accordance with the eThekweni Integrated Water Resources Management approach, and consistent with the D'MOSS aquatic network objectives, all public realm projects shall, where feasible, incorporate Sustainable Drainage Systems (SuDS) and green infrastructure approaches to stormwater management. These may include but are not limited to: bioretention cells and rain gardens, permeable paving, swales and vegetated filter strips, infiltration trenches, and tree pit systems with structural soil cells.

8.0.2. DESIGN INTENT

Green infrastructure stormwater measures shall be designed to manage the first 20mm of rainfall runoff from impervious surfaces on the project site. Design shall be in accordance with SANRAL guidelines, the eThekweni Stormwater Management Policy, and guidance from the EMM Water and Sanitation Department. The Landscape Architect shall coordinate with the civil engineer on the integration of SuDS into the public realm

design from the concept stage. This chapter covers the construction of gabions, masonry walls and various protective coverings for the protection of earthworks and open drains against erosion by stormwater.

For additional detail other than the basics described below; refer to SANS 1200DK: gabions and pitching for more, as well as the EMM Civil Specification Document of 2005, Section 505: Erosion Protection: Subsection 05 Construction of Gabions for further detail on preparation of the gabion foundation and surface, assembly, and rock filling.

SECTION 8.1 GABIONS AND RENO MATTRESSES

Gabions and reno mattresses are defined as flexible, wire-mesh cages packed with rock and in the form of a box or a mattress, depending on its dimensions.

8.1.1. MATERIAL

8.1.1.1. STONE

Stone used as filling for cages shall be clean, hard, unweathered boulders or rock fragments. No rock particles shall exceed the maximum size given below, and at least 85% of the stones shall have a size equal to or exceeding the minimum size given in the table below.

Stone size according to largest dimension of the stone Depth of cage (m) Minimum (mm) Maximum (mm) 0.2 75* 125 95** 0.3 100 200 0.5 100 250 1.0 100 250 * With a 60 x 80 mm mesh ** With an 80 x 100mm mesh.

8.1.1.2. WIRE

All wire used shall be mild steel wire, complying with SANS 675 and shall be Class A zinc coated in accordance with SANS 935.

8.1.2. CAGES

Gabion and reno mat cages shall be fabricated from wire mesh with the size and selvedge and of the type as specified below. The cages shall be subdivided into cells by wire-mesh diaphragms and shall be of two types:

- i. Boxes which are generally used for the construction of gabion walls. They are subdivided into cells by diaphragms spaced at 1,0 m intervals.
- ii. Mattresses which are generally only used as single- layer aprons in revetments, channel linings, etc, the maximum width of which shall be 2,0 m and the maximum depth 0,5 m. Mattresses shall be subdivided by diaphragms into cells with a width of 600 mm or 1,0 m, as specified in the Project Specifications.

8.1.2.1. STANDARD SIZES OF BOXES

- i. Length: 1 m, 2 m, 3 m and 4 m
- ii. Width: 1 m
- iii. Depth: 0,3 m, 0,5 m and 1,0 m
- iv. Diaphragm spacing: 1,0 m.

8.1.2.2. STANDARD SIZES OF MATTRESSES

- i. Length: 6m
- ii. Width: 2m
- iii. Depth: 0,2 m, 0,3 m and 0,5 m
- iv. Diaphragm spacing: 600 mm or 1,0 m, as specified.

Other gabions may be supplied, provided that the prior permission of the Engineer has been obtained.

When gabions made from PVC-coated wire are specified, the wire used for the gabion mesh and for wiring the gabions during construction shall be a galvanized wire as specified above onto which a polyvinyl-chloride (PVC) coating has been extruded.

The wire mesh shall be hexagonally woven mesh the joints of which are formed by each pair of wires being twisted through three half-turns.

8.1.3. INSTALLATION

8.1.3.1. PREPARATION OF THE FOUNDATION AND SURFACE

The surface on which the gabion cages are to be laid prior to filling shall be levelled to a depth as shown on the Drawings or as directed by the Engineer so as to present an even surface.

Where required, a foundation trench along the toe of the revetment or wall shall be excavated to the dimensions shown on the Drawings or as indicated by the Engineer.

8.1.3.2. INSTALLATION OF GEOTEXTILE

All soil faces at gabions or mattresses shall be protected with geotextile, grade as show on the drawings.

Synthetic-fibre filter fabric shall be of the grade and type specified in the Schedule of Quantities or the Project Specifications.

All geotextile joints shall be a minimum of 300mm if lapped, at 150mm if lapped and fixed with a double row of wire staples at 300 mm %. Staples shall be of 1mm galvanised wire minimum 75mm long with equal legs 15mm apart. Legs shall be twisted together to lock the staples in place.

8.1.3.3. ASSEMBLY

The methods of erection, stretching, aligning, wiring and filling the gabions shall generally be in accordance with the manufacturer's instructions as approved by the Engineer, but nevertheless a sufficient number of connecting wire braces shall be provided and tensioned between the vertical sides of each of the outer visible cells to prevent the deformation of the boxes as they are being filled with stone.

It is essential for the corners of gabion cages to be securely wired together to provide a uniform surface and to make sure that the structure will not appear as a series of blocks or panels. Consecutive courses of boxes should preferably be "bonded" as in brickwork in order to avoid vertical joints coinciding.

8.1.3.4. ROCKFILLING BOXES IN RETAINING WALLS

Particular care shall be exercised during the filling of the visible faces of gabion boxes, for which only selected stone of adequate size shall be used, which shall be so prepacked as to obtain a fair-faced finish. Boxes shall be filled in stages to prevent deformation and bulging. Boxes shall be filled to just below the level of the wire braces, after which the braces shall be twisted to provide tension. Care shall be taken to ensure that consecutive layers of cages which are filled, are filled evenly to a level surface ready to receive the next course.

8.1.3.5. MATTRESSES USED FOR REVETMENTS AND APRONS

The filling of the 0,3 m and 0,5 m gabions for the forming of aprons and revetments shall be carried out by random stones being spread on the first layer and selected stones being used for the top layer so as to present a dry-stone- pitched surface.

SECTION 8.2 PITCHING

Pitching is defined as the covering of stone, concrete or concrete blocks placed on a prepared surface to protect it against erosion. The surface may be horizontal or sloping.

8.2.1. MATERIALS

8.2.1.1. STONE

Stone for pitching shall be sound, tough and durable, with no stones with a minimum dimension of less than 200 mm, apart from smaller pieces or spalls which may be used for filling the spaces between the larger stones. Rocks or stones shall be of a shape which will form a stable protection structure of the required thickness. Rounded boulders or cobbles shall not be used on slopes steeper than 2:1 unless grouted.

All stone intended for use on any particular pitching job shall be subject to the prior approval of the Engineer.

8.2.1.2. CEMENT

Cement shall be ordinary cement which complies with the requirements of SANS 50197-1.

8.2.1.3. SAND

Sand for the cement mortar shall comply with the requirements of SANS 1083.

Sand for concrete block pitching shall comply with the requirements of concrete sand and shall not contain more than 3% silt and clay by mass.

8.2.1.4. PRECAST CONCRETE BLOCKS

Interlocking concrete blocks shall be factory-produced precast concrete blocks manufactured from concrete with a 28- day compressive strength of not less than 30 MPa. The design shall be subject to the Engineer's approval and shall ensure a sound interlock between adjacent blocks. The thickness shall be as indicated on the Drawings and the blocks shall be manufactured to a tolerance of plus or minus 3 mm in any dimension.

Square precast concrete blocks shall, unless otherwise specified, be of size 450 mm x 450 mm x 50 mm and shall be manufactured from class 30/19 concrete. The appearance requirements shall be as specified in clause 3.3 of SANS 927.

Concrete grass-blocks shall consist of concrete slabs with the dimensions shown on the Drawings, with openings through the slab totalling at least 20% of the surface area.

Other types of concrete blocks as well as prefabricated concrete block mats may be specified in the Project Specifications.

8.2.1.5. CONCRETE

Concrete work shall be carried out in accordance with the provisions of Section 7.4: Concrete.

8.2.2. INSTALLATION

8.2.2.1. PLAIN STONE PITCHING

The area shall be prepared by excavating, shaping and trimming to accommodate the stonework and shall be thoroughly compacted by hand-ramming to minimize subsequent settlement. A trench shall be excavated, as directed by the Engineer, along the toe of a slope to be pitched or along the unprotected edge of the pitching in the beds of streams. Two methods for the laying of stone are set out below, and the method to be adopted shall be decided on by the Engineer.

8.2.2.1.a. METHOD 1:

The laying of the stones shall be commenced at the bottom of the trench, where they shall be firmly bedded into the slope and against adjoining stones. They shall be laid with their longitudinal axes at right angles to the slope and with their surfaces in contact with each other so as to stagger the joints. The stones shall be rammed well into the bank or surface to be protected and the spaces between the larger stones shall be filled with fragments of approved pitching stone securely rammed into place. Placing of rock by dumping will not be allowed.

8.2.2.1.b. METHOD 2:

The technique and requirements laid down in method 1 shall apply to method 2, except for the following aspects:

- i. No small stones or spalls shall be used to fill in spaces between larger stones.
- ii. Simultaneously with the placing of stones, topsoil shall be introduced between individual stones, which shall be adequately rammed so as to provide a firm bonded construction. The topsoil shall be applied to the full depth of the stone pitching at any point.
- iii. Rooted grass, grass tufts or ground covers of the types specified in the Project Specifications shall then be planted in the topsoil between the stones and be given copious initial watering. Watering shall then be carried out at regular intervals until the plants have been established.

Whichever of the above two methods is adopted, the finished surface of the pitching shall present an even, tight and neat appearance. The thickness of the pitching, measured at right angles to the surface, shall not be less than 200mm.

8.2.2.2. GROUTED STONE PITCHING

This work shall be done in accordance with all the requirements specified for plain pitching as described above, except that the spaces between the stones shall be filled with cement mortar composed of one part of cement to three parts of sand. Before the mortar is applied, the surfaces of the stones shall be thoroughly cleaned of adhering dirt and clay and then moistened. The mortar shall be placed in a continuous operation for any one day's run at any one location.

The mortar shall be worked into the pitching so as to ensure that all spaces or voids between the stones are completely filled with mortar to the depth of the stone pitching.

After the grout has been placed, the stones shall be thoroughly brushed so as to expose their top surfaces. The grouted pitching shall be cured with wet sacking or some other approved wet cover for a period of not less than four days after grouting and shall not be subjected to loading until adequate strength has developed. Where required, weep holes shall be formed in the pitching.

8.2.2.3. WIRED AND GROUTED STONE PITCHING

The pitching shall be held in position below and above with wire nets with a 150mm square mesh. The lower net, with wire ties fastened to it at 600mm centres which project outwards, shall first be placed over the surface to be pitched. The stone shall then be laid onto this net in accordance with the requirements specified for plain stone pitching above.

After the stone has been laid, the upper wire net shall be drawn tightly over the stone course and securely tied down by the wire ties being passed from the lower net through the pitching. After tying, these ties shall be turned down into the pitching. The whole area of wired pitching shall then be grouted and finished off with

cement mortar in accordance with all the requirements specified for grouted pitching above. Where required, weep holes shall be formed in the pitching.

8.2.2.4. CONCRETE BLOCK PITCHING

All loose material on areas where concrete block pitching is to be constructed shall be compacted by hand or by mechanical means to at least 90% of modified AASHTO density, and the surface shall be trimmed to ensure that the surface of the pitching will conform to the required lines, levels and grades.

For the purpose of this section, concrete block pitching is not regarded as paving for pedestrian and vehicular traffic.

8.2.2.4.a. INTERLOCKING-TYPE CONCRETE BLOCKS

A layer of sand of 25 mm compacted thickness shall first be spread and levelled, where necessary, on the surfaces to be paved. When required, the prepared surfaces shall be treated with a vegetation destroyer and/or an ant poison of the type specified in the Project Specifications. The concrete blocks shall then be laid hard up against each other with each block interlocking with the previously laid blocks. Joints shall be filled with sand which is brushed in.

At edges special edge blocks shall be placed, or the edges shall be finished by means of concrete edge beams to the dimensions shown on the Drawings. Concrete shall be class 1:3:6/19 concrete. Earth cuts, if suitable, may be used as forms for the vertical surfaces of edge beams. Where formed vertical faces are used, they shall be of a class F2 finish. The upper surface shall be of a class U2 surface finish.

The finished surface of the pitching shall present an even and neat appearance with no concrete blocks projecting above the surface.

8.2.2.4.b. CONCRETE GRASS-BLOCKS

Concrete grass-blocks of the size specified or shown on the Drawings shall be placed on areas prepared for grassing as specified. The holes in the blocks shall be filled with topsoil and be grassed by grass cuttings or hydroseeding.

8.2.2.4.c. PRECAST CONCRETE BLOCKS

The areas shall be prepared as specified for the interlocking type of concrete blocks and shall include a sand bed of 25 mm compacted thickness.

The concrete blocks shall then be placed on the prepared areas. Where required, the joints shall be grouted with a 3:1 sand: cement mortar.

8.2.2.5. CAST-IN SITU CONCRETE PITCHING

The areas where cast in situ concrete pitching is to be constructed shall be compacted, trimmed and prepared as described above for concrete block pitching. The areas shall also be treated with vegetation destroyer and/or ant poison if required.

Prior to the placing of the concrete, the surface shall be covered with polythene sheeting, or it shall be watered and kept damp until the concrete is placed. The type of concrete used shall, unless otherwise specified, be class 20/19 and it shall be accurately laid in alternate panels to the lines and levels indicated. Accurate guides shall be set to achieve the required line and slope. The concrete shall be thoroughly compacted and finished to a class U2 surface finish.

Where indicated, the concrete pitching shall be contained by concrete edge beams for the interlocking type of concrete blocks.

The concrete pitching shall be cured for at least seven days.

SECTION 8.3 RIP RAP

Riprap is defined as one or more layers of large rock dumped or packed on embankment slopes and toes, river and stream beds and other localities where such protection is required.

8.3.1. MATERIALS

8.3.1.1. STONE FOR RIPRAP

Stone for riprap shall be hard field or quarry stone not susceptible to disintegration or excessive weathering upon being exposed to the atmosphere or water. It shall be free from soft material such as sand, clay, shale or organic material and shall not contain an excessive number of elongated stones.

The required size of the stones will be determined by the "critical mass" specified. At least 50% by mass of the material comprising the riprap shall consist of stones with a mass exceeding the critical mass, and not more

than 10% by mass of the material shall consist of stone with a mass of less than 10% of the critical mass or more than 5 times the critical mass.

Two types of riprap are specified, one type where the rocks are individually packed, which is designated as packed riprap, and another type where the stone is dumped and then spread by machines, which is designated as dumped riprap.

8.3.2. INSTALLATION

8.3.2.1. GENERAL

The surfaces of the areas to receive riprap shall be neatly trimmed to line and level and all loose material shall be compacted. The perimeters of riprap shall be protected by the construction of either rock-filled trenches, walls or other structures, as may be required. Perimeter trenches shall normally be backfilled with rock of the same size and quality as that which has been used in the construction of the adjoining riprap, but any cavities shall be filled with smaller material, and the entire backfill shall be well consolidated.

8.3.2.2. FILTER BACKING

Filter backing (as specified by PrEng) shall consist of a layer or layers of permeable material placed on the prepared surface to the required thickness and finished to an even surface and thickness after the placement of each layer. Compaction of pervious material will not be required. Care shall be taken not to mix various grades of filter material nor to disturb material already placed when subsequent layers or riprap are constructed.

When the use of synthetic-fibre filter fabric is required, the material shall be placed on the prepared surface or on the filter backing, as may be required. The overlap between adjacent sheets shall be 150 mm, unless otherwise specified. Care shall be taken not to damage the filter fabric when subsequent layers are placed, nor to expose the filter fabric to the sun for periods in excess of one day before it is covered up.

8.3.2.3. PACKED RIPRAP

Packed riprap shall be constructed from rocks individually placed with staggered joints and shall be firmly bedded on the prepared surface. The spaces between larger stones shall be filled with spalls, and smaller stones shall be securely rammed into place. On inclined surfaces the rock shall be laid in long horizontal lengths starting from the bottom, and not in strips up the slope.

The completed riprap shall present an even, tight surface.

8.3.2.4. DUMPED RIPRAP

Dumped riprap shall be constructed by stone being dumped onto the prepared surfaces and spread by bulldozers or other suitable earth-moving equipment and trimmed to the required lines and levels. The material shall be placed so as to prevent the segregation of the smaller and larger stone, and the final layer shall be tight with a minimum of voids.

SECTION 8.4 MASONRY WALLS

In the context of this specific chapter concerning drainage and erosion protection; masonry walls are defined as walls constructed of natural stone with or without cement mortar having been used.

8.4.1. MATERIALS

8.4.1.1. STONE

The minimum mass of each stone shall be 10 kg and the minimum dimension 75 mm.

8.4.1.2. CEMENT

Cement shall be ordinary cement which complies with the requirements of SANS 50197-1.

8.4.1.3. SAND

Sand for the cement mortar shall comply with the requirements of SANS 1083.

Sand for concrete block pitching shall comply with the requirements of concrete sand and shall not contain more than 3% silt and clay by mass.

8.4.1.4. PRECAST CONCRETE BLOCKS

Interlocking concrete blocks shall be factory-produced precast concrete blocks manufactured from concrete with a 28-day compressive strength of not less than 30 MPa. The design shall be subject to the Engineer's approval and shall ensure a sound interlock between adjacent blocks. The thickness shall be as indicated on the Drawings and the blocks shall be manufactured to a tolerance of plus or minus 3 mm in any dimension.

Square precast concrete blocks shall, unless otherwise specified, be of size 450 mm x 450 mm x 50 mm and shall be manufactured from class 30/19 concrete. The appearance requirements shall be as specified in clause 3.3 of SANS 927.

Concrete grass-blocks shall consist of concrete slabs with the dimensions shown on the Drawings, with openings through the slab totalling at least 20% of the surface area.

Other types of concrete blocks as well as prefabricated concrete block mats may be specified in the Project Specifications.

8.4.1.5. CONCRETE

Concrete work shall be carried out in accordance with the provisions of Section 7.4: Concrete.

8.4.2. INSTALLATION

Masonry walls may be plain with dry joints or may be constructed with stones set in cement mortar, as indicated on the Drawings or as specified.

8.4.2.1. PLAIN MASONRY WALLS

A foundation trench shall be excavated down to the rock or to material with an adequate bearing capacity, and the minimum depth shall be 300 mm below ground level. Selected large stones shall be used in the foundation layer. Flat and stratified stones shall be laid with their flat surfaces in the horizontal plane. Stones shall be individually placed with staggered joints and to leave a minimum of voids, and shall be firmly bedded against adjoining stones. The spaces between the larger stones shall be filled with spalls securely rammed into place. The larger stones shall not bear on the spalls used for filling the voids. The top and ends of the wall shall be neatly finished with selected coping stones.

The wall surface shall present an even, tight appearance.

8.4.2.2. CEMENT-MORTARED MASONRY WALLS

The walling shall be constructed as specified in above, except that the stones shall be wetted and set in a 3:1 sand: cement mortar. Exposed stones on the wall faces shall be cleaned of mortar by washing or wire-brushing. The mortar shall be flush pointed to the approval of the Engineer, who may require a capping and end treatment in the same mortar.

Weep holes shall be provided as ordered and shall be cleaned of mortar and any other clogging material that may have entered during construction.

The walling shall be protected from the elements and shall be kept moist for a minimum period of four days after completion.

CHAPTER 9 — LANDSCAPE ELEMENTS

This section covers all phases of the manufacturing and installation of street furniture.

All construction work is to be done with materials specified and in accordance with detailed drawings, or as indicated elsewhere.

The work is to be done by properly qualified artisans, and only work that is of a high quality will be accepted.

All shop drawings are to be prepared and submitted to the Landscape Architect for approval before any work is put in hand. Allow for the Landscape Architect to inspect the steelwork at the steel fabricator's works.

SECTION 9.1 GENERAL

9.1.1. DAMAGE AND REPLACEMENTS

All construction work is to be protected from exposure to the elements to avoid damage until it has been treated according to specification.

9.1.2. ANCILLARY EQUIPMENT

Work will include all ancillary equipment required for the erection of street furniture on site, such as ropes, struts, etc. The Contractor is to make adequate provision for the required equipment in quantity lists.

9.1.3. MATERIAL

All site furnishings design and specifications must be reviewed and approved by the Landscape Architect prior to installation.

Due to maintenance hassles, the use of timber for street furniture is prohibited. Galvanized, stainless steel and precast concrete elements, manufactured according to SANS regulations are allowed.

9.1.3.1. STAINLESS STEEL

Stainless steel equal angle profiles for furniture must comply with SANS regulations, coating, grade and thickness as specified.

Present the Landscape Architect with the supplier's test certificates if required.

PRE-PAINTING, GALVANIZING

The pre-galvanizing treatment, the hot process galvanizing and the testing shall be carried out in accordance with SANS 763.

A minimum thickness of 0.063mm of zinc is to be achieved during the galvanizing process.

The preparation and the galvanizing shall not adversely affect the function or the properties of the galvanized equipment.

The material shall be completely shaped, cut, drilled, countersunk, welded, etc., before galvanizing. Surfaces, which are in contact with oil while in service, shall not be galvanized.

Alternative processes shall not be used unless approved in writing by the Engineer.

The galvanizing of bolts shall be carried out after all mechanical operations have been completed, but the associated nuts may be threaded after galvanizing. The galvanized threads of bolts shall be cleaned of spatter by spinning or brushing.

PAINTING The material shall be completely shaped, cut, drilled, countersunk, welded, etc. before any paintwork commences.

BOLTS AND NUTS

Bolts and nuts shall comply in all respects with the current edition of SANS 135. The bolts, nuts and washers used on outdoor galvanized steel work shall be hot dip galvanized in accordance with Clause 1.4.

For electrical connections, no brass bolt or stud shall be less than M6 size.

9.1.4. ELECTRICAL AND LIGHTING

All cables must be terminated with an armored cable gland, securely attached and earthed to inside of the furniture item.

All cable core endings are to be terminated with lugs of the correct size.

Light fittings and transformer gear must be SANS approved and bear the SANS mark as proof and must comply with electrical engineer's specifications.

9.1.5. GENERAL INSTALLATION OF LANDSCAPE ELEMENTS

All construction work is to be done with materials specified and in accordance with detailed drawings, or as indicated elsewhere.

Work will include all ancillary equipment required for the erection of landscaped elements such as street furniture on site, such as ropes, struts, etc. The Contractor is to make adequate provision for the required equipment in quantity lists.

All construction work is to be protected from exposure to the elements to avoid damage until it has been treated according to specification.

The work is to be done by properly qualified artisans and only work that is of a high quality will be accepted.

All shop drawings are to be prepared and submitted to the Landscape Architect for approval before any work initiated. Allow for the Landscape Architect to inspect the steelwork at the steel fabricator's works.

SECTION 9.2 BENCHES

For ease of maintenance, durability and robustness; precast concrete benches are prescribed. Furthermore, the weight of concrete benches makes them less likely to be stolen, while logo in-printing is also possible.

A standard specification has been supplied below. However, if alternative designs, materials or specifications are to be used; the following protocol / procedure must be followed:

- i. Alternative material / designs will be reviewed prior to acceptance by the Landscape Architect.
- ii. If the element is to be custom-made; the Contractor / manufacturer must have experience at performing the proposed type and scale of work and must be willing to provide proof of this experience.
- iii. At the preliminary drawing phase of application to development drawings submitted for review shall include:
 - a. The product name/brand; and
 - b. An applicable brochure/pamphlet detailing the product specifications, installation, and maintenance requirements of the product to be installed.

9.2.1. STANDARD SPECIFICATIONS

9.2.1.1. CONCRETE BENCH WITHOUT BACKREST

- i. Concrete 30MPa steel reinforced (SANS 920) precast bench, manufactured according to SANS regulations
- ii. Length: 1500- 1800mm
- iii. Height above finished floor level: 450- 500mm
- iv. Width: 450 -500 mm
- v. Bench thickness: 100mm
- vi. Finish: wood floated smooth, natural grey concrete (except undersides)
- vii. Top edge to be chamfered by 20 x 20mm all around
- viii. Standard leg reinforcing to be extended my 300mm (to be cast into foundation underground)

9.2.1.2. GALVANIZED STEEL BENCH WITH BACKREST

- i. Galvanized steel bench with backrest, manufactured according to SANS regulations.
- ii. Seating & backrest composed of 3mm thick punched galvanized steel panel sheeting.
- iii. Length: 1500- 1800mm
- iv. Width: 450 -500 mm
- v. Overall Height above finished floor level: 450- 500mm.
- vi. Legs: Two x 400mm high and 50mm diam. galvanized steel profiles:
 - a. Standard leg height is to be extended by an extra 300mm in order for it to be planted.
 - b. The total leg length should therefore be 700mm high in total in order to accommodate for the installation specifications as set out below.
- vii. Finish: galvanised steel with polyurethane paint coat; colour as specified and approved by Landscape Architect.

9.2.1.3. INSTALLATION OF CONCRETE BENCH WITHOUT BACKREST

- i. All concrete benches are to have the standard leg reinforcing extended / lengthened by 300mm.
- ii. Secure extended reinforcing into 300 x 650 x 400mm deep 15MPa concrete foundations on prepared and compacted subgrade, as drawn.
- iii. Paving and layer works (refer to Section 7.7: Paving) as specified by Landscape Architect are to surround each bench installed; pavers are to be neatly cut to shape and flush against each leg of the bench in specified paving pattern.
- iv. Paving to extend by a minimum of 2 x 1m beneath each individual bench (or as otherwise specified by Landscape Architect), with appropriate edging to specification.

9.2.1.4. INSTALLATION STEEL BENCH WITH BACKREST

- i. The standard bench leg must be lengthened by 300mm.
- ii. Set bench leg profiles into 250 x 250 x 330mm deep 15MPa concrete foundations on prepared and compacted subgrade, as drawn.
- iii. Paving and layer works (refer to Section 7.7: Paving) as specified by Landscape Architect are to be neatly cut and situated surround each bench leg.
- iv. Paving to extend by a minimum of 2 x 1m beneath each individual bench (or as otherwise specified by Landscape Architect), with appropriate edging to specification.

SECTION 9.3 LITTERBINS AND RECYCLING BINS

For ease of maintenance, durability and robustness; precast concrete litter bins and recycling bins are prescribed. Furthermore, the weight of concrete bins make them less likely to be stolen, while logo in-printing possible.

Standard specifications have been supplied below. However, if alternative designs, materials or specifications are to be used; the following protocol / procedures are to be followed:

- i. Alternative material / designs will be reviewed prior to acceptance by the Landscape Architect.
- ii. If the element is to be custom-made; the Contractor / manufacturer must have experience at performing the proposed type and scale of work and must be willing to provide proof of this experience.
- iii. At the preliminary drawing phase of application to development drawings submitted for review shall include:
- iv. The product name/brand; and
- v. An applicable brochure/pamphlet detailing the product specifications, installation, and maintenance requirements of the product to be installed.

9.3.1. STANDARD SPECIFICATIONS

Bins are to be suitable for large standard size plastic refuse bags that fold over the top for good hygiene and easy service.

Bins are to have an exposed aggregate external finish. Exposed aggregate does not stain easily and is difficult to stick posters and advertisements to.

Bins are to be reinforced with non-corrosive glass fibre reinforcing that is alkali resistant and will not corrode when exposed through the pores of the concrete to the elements.

9.3.1.1. LARGE PRECAST SQUARE LITTER BIN WITH EXPOSED AGGREGATE EXTERNAL FINISH

- i. External size: 550mm x 550mm x 1000mm high
- ii. Internal size: 460mm x 460mm x 870mm deep
- iii. Capacity: 165 litres
- iv. Mass: 310kg
- v. Finish: Exposed aggregate
- vi. Standard refuse bag size 1.5m x 1.0m
- vii. Drainage hole in bottom

9.3.1.2. LARGE ROUND PRECAST REFUSE BIN WITH EXPOSED AGGREGATE EXTERNAL FINISH

- i. External size: 625mm diameter x 880mm high
- ii. Internal size: 490mm diameter x 800mm deep
- iii. Capacity: 150 litres
- iv. Mass: 236kg
- v. Finish: Exposed aggregate
- vi. Drainage hole in bottom

9.3.1.3. RECYCLING BINS

The standard 'advertising bin' specifications shall stand for individually labelled recycling bins as follows:

9.3.1.3.a. BIN

- i. Height: 1150mm
- ii. Width: 700 x 700mm
- iii. Capacity: 110 litres
- iv. Finish: Exposed aggregate
- v. Advertising space: 800x600mm
- vi. Drainage hole in bottom

9.3.1.3.b. BRANDING / LABELLING

Each bin shall be branded / labelled / colour-coded on all four sides of the bin of the 'advertising space' with the appropriate eThekweni branding; according to the Landscape Architect's design and as approved by eThekweni's Waste Management Division.

9.3.1.3.c. RECYCLING TYPE

Recycling bins are to be labelled as above according to the following divisions and are always to be grouped together in the following 'clan of four' as situated by the Landscape Architect accordingly:

- i. Paper

- ii. Glass
- iii. Plastic
- iv. Cans

9.3.2. INSTALLATION

All litterbins are to be installed as free-standing items on paved areas as specified and positioned by Landscape Architect.

SECTION 9.4 BOLLARDS

Bollards may be used to control or prevent vehicle access to public places or to provide visual enhancement to a space.

Bollards must be visible to motorists, cyclists and pedestrians. Bollards should not be a hazard to people with disabilities. They should not be located in the natural desired pedestrian path.

For ease of maintenance, durability and robustness; precast concrete bollards are prescribed.

A standard specification has been supplied below. However, if alternative designs, materials or specifications are to be used; the following protocol / procedure shall be followed:

- i. If the element is to be custom-made; the contractor / manufacturer must have experience at performing the proposed type and scale of work and must be willing to provide proof of this experience.
- ii. At the preliminary drawing phase of application to development drawings submitted for review shall include:
 - a. The product name/brand; and
 - b. An applicable brochure/pamphlet detailing the product specifications, installation, and maintenance requirements of the product to be installed.

Alternative material / designs will be reviewed prior to acceptance by the Landscape Architect.

9.4.1. GENERAL BOLLARD SPECIFICATIONS

- i. Bollards that form the sole means of preventing vehicular access should be spaced at 1.2 - 1.6 metre centres.
- ii. Bollards should be approximately 1 metre in height.
- iii. Bollards should include a reflective panel if sited in a vehicle domain such as a car park.
- iv. The space between a bollard and a gutter or kerb should allow for pedestrian movement (including people with disabilities) and for vehicle overhangs and door openings.
- v. Ensure that concrete footings or connections to the ground are flush with ground level to avoid becoming a tripping hazard.
- vi. The concrete foundation minimum requirements for the bollards must be 400 x 400mm square and 900mm deep, consideration should be given at the survey and installation stage as to the quality and density of the ground where the above dimensions must be increased.

9.4.2. STANDARD BOLLARD SPECIFICATIONS

9.4.2.1. CONCRETE BALL BOLLARDS

Solid concrete ball bollards are specified as follows:

- i. Height: 620mm
- ii. Diameter: 450 - 600mm
- iii. Weight: 205kg- 271kg
- iv. Concrete ball bollards are to be included and pegged with steel rods into a 500 x 500 x 250mm deep base
- v. Finish: Grey or ferro exposed aggregate

9.4.2.2. STANDARD 250 BOLLARD

Sturdy bollard used for barricading vehicular traffic

- i. Length: 1200mm
- ii. Height above ground: 900mm
- iii. Diameter: 250mm
- iv. Reinforcing: 4 x Y10
- v. Finish: exposed aggregate

9.4.2.3. STANDARD 150 BOLLARD

Slender bollard used for general barricading:

- i. Length: 1200mm
- ii. Height above ground: 900mm
- iii. Diameter: 150mm
- iv. Reinforcing: 4 x Y10
- v. Finish: exposed aggregate

9.4.3. INSTALLATION**9.4.3.1. INSTALLATION OF CONCRETE BALL BOLLARDS:**

- i. Cast base into the ground onto compacted subgrade 250mm deep at 1.2m spacing between ball centres. Two options with regards to the finished paving level are drawn.
- ii. Paving and layer works (refer to Section 7.7: Paving) as specified by Landscape Architect are to be neatly cut and situated surround each bench leg.

Refer to Appendix 2: Typical Installation of Concrete Ball Bollard Detail for more information.

9.4.3.2. INSTALLATION OF STANDARD 150 AND 250 BOLLARDS:

- i. Standard 150 Bollard: Cast 300 mm of the bollard into a 450 x 450 x 400mm deep 15MPa concrete foundation onto compacted subgrade at 1.2m spacing between bollard centres.
- ii. Standard 250 Bollard: Cast 400 mm of the bollard into a 650 x 650 x 500mm deep 15MPa concrete foundation onto compacted subgrade at 1.2m spacing between bollard centres.
- iii. Total height of both the 150 and 250 bollards above Finished Floor Level should be 900mm.
- iv. Paving and layer works (refer to Section 7.7: Paving) as specified by Landscape Architect are to be neatly cut and situated surround each bollard base.

SECTION 9.5 DRINKING FOUNTAINS

All drinking fountains are to be situated close to the front / front gate of the given public open space for passive surveillance measures unless otherwise specified by the Landscape Architect.

For ease of maintenance, durability and robustness; precast drinking fountains are prescribed.

A standard specification has been supplied below. However, if alternative designs, materials or specifications are to be used; the following protocol / procedure is to be followed:

- i. Alternative material / designs will be reviewed prior to acceptance by the Landscape Architect.
- ii. If the element is to be custom-made; the Contractor / manufacturer must have experience at performing the proposed type and scale of work and must be willing to provide proof of this experience.
- iii. At the preliminary drawing phase of application to development drawings submitted for review shall include:
 - a. The product name/brand; and
 - b. An applicable brochure/pamphlet detailing the product specifications, installation, and maintenance requirements of the product to be installed.

9.5.1. GENERAL DRINKING FOUNTAIN SPECIFICATIONS

- i. Ensure that the drinking fountains are securely mounted and installed level and upright.
- ii. Ensure that drinking fountains and showers are durable and resistant to vandalism, damage and theft, e.g. by using enclosed and reinforced fittings.
- iii. Ensure that hygienic materials such as stainless steel are used in the construction of the drinking bowl, drink tap and mouth guard of drinking fountains.
- iv. Ensure that all drinking fountains installed in parks have components, materials and finishes that can be serviced and maintained by locally based contractors.
- v. Fountain shall include pushbutton on the front. Shall include contoured-formed basin to eliminate splashing and standing water and shall have rounded corners and edges.
- vi. Drinking fountains are to connect to potable water supply.

9.5.2. STANDARD DRINKING FOUNTAIN SPECIFICATIONS**9.5.2.1. STANDARD PRECAST CONCRETE WATER FOUNTAIN**

- i. Height: 1200mm
- ii. Height above ground: 900mm
- iii. Diameter: 300mm
- iv. Finish: exposed aggregate with galvanized steel tap
- v. Foundations and installation according to spec by PrEng and in compliance with SANS 1808-16.

9.5.3. INSTALLATION OF DRINKING FOUNTAINS

- i. Cast 300 mm of the drinking fountain into a 600 x 600 x 400mm foundation atop a 150mm thick layer of course aggregate onto compacted subgrade.
- ii. Total height of the drinking fountain should be 900mm above Finished Floor Level.
- iii. Paving and layer works (refer to Section 7.7: Paving) as specified by Landscape Architect are to be neatly cut and situated surround each drinking fountain.
- iv. Paving to extend by a minimum of 1 x 1m beneath each individual drinking fountain (or as otherwise specified by Landscape Architect), with appropriate edging to specification.

SECTION 9.6 WATER FEATURES

This Specification shall indicate the manufacturer, delivering, and installation of water features of various types. The Contractor must have experience at performing this type and scale of work and must be willing to provide proof of this experience. Concept designs and final detail designs must be reviewed prior to acceptance by the Landscape Architect.

At the preliminary drawing phase of application to development landscape drawings submitted for review shall include:

- i. The product name/brand (if applicable); and
- ii. An applicable brochure/pamphlet detailing the product specifications, installation, and maintenance requirements of the product to be installed.
- iii. Technical details and drawings of the water feature to be executed.

9.6.1. STANDARD SPECIFICATIONS

Standard specifications for water features are not provided as this is site and concept-specific. However, in general the following general specifications to be maintained are as follows:

- i. Feature to be composed of vandal-proof, durable material
- ii. Designs are to avoid loose parts that may be removed / stolen
- iii. Feature to use a minimal amount of water
- iv. Feature to have easy maintenance requirements
- v. Water features should be designed to minimize misting (minimize droplets < 10 µm), overspray and splash.
- vi. Fountains should be designed with the ability to be fully drained to onsite irrigation or sewer.
- vii. There should be provision for periodic cleaning, disinfection and maintenance. In addition to routine maintenance, fountains should be drained and disinfected (minimum 5 ppm of chlorine) when left non- operational for three or more days and whenever the water appears cloudy or has an odor.
- viii. Operational records should be maintained of temperature, chlorine residual, pH, filter media maintenance and visual inspections.

9.6.2. INSTALLATION OF WATER FEATURES

Foundations and installation according to manufacturer's / designers approved specification.

SECTION 9.7 BICYCLE RACKS

Providing ample bicycle parking can help lower car dependence and reduce the need to provide car parking spaces, which has the potential to introduce a significant cost saving to the project.

Cycling also offers health benefits to occupants and helps reduce traffic congestion. Catering to these types of benefits can add value to a project.

A standard specification has been supplied below. However, if alternative designs, materials or specifications are to be used; the following protocol / procedure is to be followed:

- i. Alternative material / designs will be reviewed prior to acceptance by the Landscape Architect.
- ii. If the element is to be custom-made; the Contractor / manufacturer must have experience at performing the proposed type and scale of work and must be willing to provide proof of this experience.
- iii. At the preliminary drawing phase of application to development drawings submitted for review shall include:
 - a. The product name/brand; and
 - b. An applicable brochure/pamphlet detailing the product specifications, installation, and maintenance requirements of the product to be installed.

9.7.1. STANDARD SPECIFICATIONS

9.7.1.1. 5 HOOP BICYCLE RACK

- i. 50mm diameter 304 brushed stainless steel
- ii. Height: 1000mm
- iii. Length: 1800mm
- iv. Legs are to be extended by 300mm into the ground
- v. 10mm round galvanised steel anchor to be welded horizontally onto the bottom of each leg to secure into foundation.
- vi. Stainless steel base plate cover to be provided for on each leg.

9.7.2. INSTALLATION

- i. The legs are to be extended by 300mm into the ground.
- ii. Stainless steel base plate cover to be placed before welding of the steel anchor onto the legs and to be installed to sit on the finished floor level, resting on the paving.
- iii. 10mm round galvanised steel anchor to be welded horizontally onto the bottom of each leg to secure into foundation.
- iv. Set 300mm of the bicycle rack profiles into 250 x 250 x 330mm deep 15MPa concrete foundations on prepared and compacted subgrade, as drawn.
- v. Paving and layer works (refer to Section 7.7: Paving) as specified by Landscape Architect are to be neatly cut and situated around each bench leg.
- vi. Fixing of the base plate to be undertaken.
- vii. Paving to extend by a minimum of 2 metres by 1 metre beneath each individual bicycle rack (or as otherwise specified by Landscape Architect), with appropriate edging to specification.

SECTION 9.8 TREE RINGS

Large tree rings are to be used where applicable for large trees and protection against traffic and parking lots. Tree rings must be generously sized to allow for growth.

Due to vandalism and theft; tree grates are not recommended.

9.8.1. STANDARD SPECIFICATIONS

- i. 1000mm to 1500mm diameter barrier kerbed tree rings to be used
- ii. Fig. 5, Fig.6 and Fig.10 Kerbs may also be used for custom-designed shapes and dimensions.

9.8.2. INSTALLATION

Supply, deliver and install approved concrete tree kerb with 50mm openings for drainage. Rate to be all inclusive. Manufactured in accordance with SANS 927:2013 and SANS 1200MK. Kerb to be laid on a 100mm thick 25MPa concrete footing/haunch. A bedding material of at least 50mm thick should be used that consists of crushed stone, cement, and sand with a maximum particle size of 13.2mm.

SECTION 9.9 BRAAI UNITS

A standard specification has been supplied below. However, if alternative designs, materials or specifications are to be used; the following protocol / procedure shall be followed:

- i. Alternative material / designs will be reviewed prior to acceptance by the Landscape Architect.

- ii. If the element is to be custom-made; the Contractor / manufacturer must have experience at performing the proposed type and scale of work and must be willing to provide proof of this experience.
- iii. At the preliminary drawing phase of application to development drawings submitted for review shall include:
 - a. The product name/brand; and
 - b. An applicable brochure/pamphlet detailing the product specifications, installation, and maintenance requirements of the product to be installed.

9.9.1. GENERAL BRAAI UNIT SPECIFICATIONS

- i. Apply graffiti guard protection and standardised components to reduce maintenance costs.
- ii. Use enclosed or reinforced fittings to mitigate theft where necessary.
- iii. Ensure that braai grids have an easily maintained fat collection tray.
- iv. Ensure that the use materials, colours, and form of the barbecue compliment to the setting and function of the park as a whole.

9.9.2. STANDARD SPECIFICATIONS

9.9.2.1. EXPOSED AGGREGATE BRAAI

- i. Height Overall: 950mm
- ii. Height Above Ground: 750mm
- iii. Diameter: 500mm
- iv. Finish: Exposed Aggregate with galvanized steel grid
- v. Foundation / fixing: To manufacturer's specification

9.9.3. INSTALLATION OF BRAAI UNITS

- i. Set 300mm of the bicycle rack profiles into 500 x 500 x 500mm deep 15 MPa concrete foundations on prepared and compacted subgrade, as drawn.
- ii. Paving and layer works (refer to Section 7.7: Paving) -if specified by Landscape Architect- is to be neatly cut and situated around the braai footing should the braai not be installed in grass.

SECTION 9.10 PICNIC TABLES / REST SETS

A standard specification has been supplied below. However, if alternative designs, materials or specifications are to be used; the following protocol / procedure must be followed:

- i. Alternative material / designs will be reviewed prior to acceptance by the Landscape Architect.
- ii. If the element is to be custom-made; the Contractor / manufacturer must have experience at performing the proposed type and scale of work and must be willing to provide proof of this experience.
- iii. At the preliminary drawing phase of application to development drawings submitted for review shall include:
 - a. The product name/brand; and
 - b. An applicable brochure/pamphlet detailing the product specifications, installation, and maintenance requirements of the product to be installed.

9.10.1. STANDARD PICNIC TABLE SPECIFICATIONS

- i. Table Length: 1500mm / 1800mm
- ii. Table Height: 650mm (leg) + 100mm (top)
- iii. Table Leg Width: 100mm
- iv. Bench Length: 1500mm / 1800mm
- v. Bench Height: 450mm
- vi. Bench Leg Width: 100mm
- vii. Leg reinforcing of both the benches and table are to be extended by 300mm for them to be cast into a foundation underground, as drawn
- viii. Finish: Reconstituted Sandstone / Grey Cement

9.10.2. INSTALLATION:

- i. Secure extended reinforcing of the benches into 300 x 500 x 350mm deep 15MPa concrete foundations on prepared and compacted subgrade, as drawn.
- ii. Secure extended reinforcing of the table into 300 x 1500/1800 x 350mm deep 15MPa concrete foundations on prepared and compacted subgrade, as drawn.
- iii. Paving and layer works (refer to Section 7.7: Paving) -if specified by Landscape Architect- are to surround each bench and table installed; pavers are to be neatly cut to shape and flush against each leg of the bench and table in specified paving pattern.

SECTION 9.11 PUBLIC ART AND SCULPTURES

Art in parks can include everything from the traditional to the highly inventive, and from the intimately scaled to the landmark. Populated with works created by artists from both near and far, art will give visual form to eThekweni's highest aspirations, evoke the City's stories and embed deep meaning into its built and natural landscape.

In order to ensure the successful installation of public art into open space, the Department of Arts and Culture must be engaged whenever the creation of a new permanent work of art is proposed. The Department of Arts and Culture must also be engaged whenever management, such as relocation or repair of an existing work of art is required.

9.11.1. GENERAL SPECIFICATIONS

- i. Artwork in parks can sometimes perform a dual function, such as a seat, fence or bridges, and this should be explored as a way to minimise clutter.
- ii. Full consideration of the context is essential. Art works in park must meet the needs of the park environment, such as: its safety requirements and anticipated levels of use.
- iii. Project development and artist selection can happen in many ways but must begin with full commitment to an excellent art work that is worthy of entering the council's art collection. With this shared objective, a collaborative approach that responds to the community and invites their involvement, will lead to a successful outcome.
- iv. Officers from the Department of Arts and Culture will work with relevant council teams to tailor project planning and implementation for a range of situations and stakeholders, whether Local Boards, private trusts, or government entities.
- v. Respond to the surrounding context by:
 - a. understanding local heritage
 - b. understanding local biodiversity values
 - c. respecting the artist's intentions and wishes
 - d. identifying any relationships between a proposed art work and the wider art collection.

9.11.2. MANAGEMENT AND MAINTENANCE OF PUBLIC ART AND SCULPTURES

- i. Ensure that all aspects of permanent public art are durable, robust and can be maintained.
- ii. Issues such as materials selection, graffiti and vandalism resistance, and fabrication methods should be agreed by the Department of Arts and Culture.
- iii. A thorough maintenance record is a requirement for all new artwork.
- iv. Consider the cost implications of ongoing maintenance and restoration at the planning stage, by identifying the resources that will be required for this.
- v. Consider the safety of proposed public art pieces, in particular their ability to be climbed on, or used as an entrapment spot.
- vi. Assess the need for lighting of individual pieces, and whether this would provide enjoyment for both day and night park users.

SECTION 9.12 PLANTERS BOXES

For ease of maintenance, durability and robustness; pre-cast concrete planter boxes are prescribed. Furthermore, the weight of concrete planter boxes make them less likely to be stolen, while logo in-printing possible.

Type of pre-cast concrete planter box to be used will be as instructed by the Landscape Architect. However, if not specified and alternative designs, materials or specifications are to be used; the following protocol / procedures are to be followed:

- i. Alternative material / designs will be reviewed prior to acceptance by the Landscape Architect.

- ii. If the element is to be custom-made; the Contractor / manufacturer must have experience at performing the proposed type and scale of work and must be willing to provide proof of this experience.
- iii. At the preliminary drawing phase of application to development drawings submitted for review shall include:
 - a. The product name/brand; and
 - b. An applicable brochure/pamphlet detailing the product specifications, installation, and maintenance requirements of the product to be installed.
 - c. Technical details and drawings of the planter box to be utilised.

9.12.1. STANDARD SPECIFICATIONS

Standard specifications for planter boxes are not provided as this is site and concept specific. However, in general the following general specifications to be maintained are as follows:

- i. Planter box to be composed of vandal-proof, durable material - precast concrete
- ii. Designs are to avoid loose parts that may be removed / stolen
- iii. Planter to contain pre-drilled drainage holes
- iv. Must have easy maintenance requirements

9.12.2. INSTALLATION

To be installed as per manufactures specifications.

CHAPTER 10 — OUTDOOR GYM EQUIPMENT

By enabling people to be physically active throughout their lives, we can contribute to a greater sense of wellbeing and better health outcomes for the community. Incorporating fitness activities into eThekweni's parks helps to ensure that communities have free exercise opportunities in a safe, supportive environment.

It is important to gain input from surrounding sporting and recreational groups who may wish to incorporate complementary exercise equipment, such as outdoor rowing machines.

SECTION 10.1 OUTDOOR GYM SPECIFICATIONS

10.1.1. GENERAL

- i. Incorporate signage that provides information prepared by exercise or fitness professionals, or website material that explains how the park and the fitness equipment can be used for exercise.
- ii. Consider the installation of areas of rubberising for non-structured forms of exercise, such as prone holds, sit ups, stretching and yoga.
- iii. It is essential that the specialist refers to Chapter 11: Information to be provided by the Manufacturer for more about instructions and certificates to be issued and approved prior to installation.

10.1.2. INSTALLATION OF INDIVIDUAL GYM ITEMS

Installation varies according to each individual gym item and it is imperative that manufacturer's specifications are adhered to.

10.1.3. INSTALLATION OF CONCRETE APRONS TO BE ERECTED AROUND GYM EQUIPMENT

In order to prevent unsightly traffic-induced erosion; concrete aprons are to be erected around the gym equipment. Alternatively, rubberizing (refer to Section 7.9: Rubberising) may also be installed.

- i. Precautions shall be taken to prevent the concrete becoming a medium for graffiti.
- ii. Ready mix 25 MPA concrete shall be used, with 19 mm diameter stone.
- iii. Equivalent mixture may be used and shall be mixed to the ratio of 1 part cement : 2 part sand : 3 part stone (stone to be 35% of 13 mm stone, and 65% of 19mm stone).
- iv. Good quality formwork shall be used (this must be steel or board screeds) to ensure square concrete slabs with neat, straight edges. This will ensure that the product is of high quality once the grouting is completed.
- v. Reinforcing wire netting – Ref 100 is to be used.
- vi. Concrete shall have a brush finish.

- vii. Edging if specified by Landscape Architect (refer to Section 7.7: Paving).

CHAPTER 11 — INFORMATION TO BE PROVIDED BY THE MANUFACTURER

All customized street furniture, gym equipment and play equipment must be approved through the supply of the following information for by the Landscape Architect, as well as the eThekweni Municipality.

SECTION 11.1 GENERAL PRODUCT INFORMATION

The instructions shall conform to the following:

- i. Instructions shall be printed legibly and in a simple form.
- ii. Illustrations shall be used wherever possible; and
- iii. Instructions shall include at least the following information:
 - a. Details of the installation, operation, inspection and maintenance of the equipment;
 - b. Clause or note drawing the operator's attention to the need to increase inspection/maintenance if the equipment is subject to heavy use and /or the stability of the equipment relies on one post;
- iv. The manufacturer/supplier should supply copies of test reports to purchasers upon request.

11.1.1. PRE-INFORMATION

The manufacturer/supplier shall provide information concerning the safety of the installation prior to the acceptance of the order, e.g. a catalogue data sheet.

This information shall include at least the following, where relevant:

- i. Minimum space;
- ii. Surfacing requirements
- iii. Overall dimensions of the largest part(s);
- iv. Mass of the heaviest part/section in kilograms;
- v. Guidance regarding the target user group for the equipment;
- vi. Availability of spare parts; and
- vii. Certification of conformity with this European standard.

11.1.2. INSTALLATION INFORMATION

The manufacturer / supplier shall supply an equipment delivery parts list with the equipment. This must include installation instructions for the correct assembly, erection and placing of the equipment. This information shall include at least the following:

- i. Minimum space requirements and safety clearances;
- ii. Equipment and parts identification;
- iii. Erection sequence (assembly instruction and installation details);
- iv. Matching aids where necessary, e.g. signs on parts accompanied by appropriate instructions;
- v. Need for any special tools, lifting devices, templates or other assembly aids to be used and any precautionary measures to be taken. Where necessary, torque values should be given;
- vi. Constructional space required to install the item of equipment;
- vii. Details of the required foundation, under normal conditions, anchorage in the ground and the design and location of the foundation (with a note that care should be taken concerning abnormal conditions);
- viii. Need for and details of the application of any painting or treatment; and
- ix. Removal of assembly aids before the equipment is used.
- x. Drawings and diagrams shall clearly specify the principal dimensions of the equipment and the relevant space,
- xi. Heights and areas required for installation.
- xii. The manufacturer/supplier shall supply the details necessary for inspection of the outdoor gym equipment prior to its first use.

11.1.3. INSPECTION OF EQUIPMENT

The manufacturer/supplier shall provide instructions for maintenance, which shall include a statement that the frequency of inspection will vary with the type of equipment, e.g. equipment where the stability relies on one

post, or materials used and other factors, e.g. heavy use, levels of vandalism, coastal location, air pollution, age of equipment.

The manufacturer/supplier shall also provide drawings and diagrams necessary for maintenance, inspection and checking of correct operation and, when appropriate, repair of the equipment.

The instructions shall specify the frequency with which the equipment or its components should be inspected or maintained.

The Municipality shall retain the right to inspect the equipment at any time during its manufacture and to reject any item which is not to specification, regardless of the stage reached on the construction of the equipment.

CHAPTER 12 — SIGNAGE

Regulatory signage is essential in assisting with the enforcement of by-laws and must therefore be erected in prominent locations in all POS. The signage must be clear, concise and displayed in a manner which can be understood by all e.g. using pictorial decals, logos or in the necessary official languages.

All projects in the construction phase should have an appropriate sign to identify all the stakeholders. This should be prominently displayed and kept neat and tidy throughout the contract period.

Trees must be planted and signage located such that clear sightlines are ensured.

Trees must be maintained and pruned regularly to minimize low branches that impede desired sightlines.

12.1.1. GENERAL SPECIFICATIONS

All signage must comply with the Outdoor Advertising and Signage Policy, Parks By-laws and policies and regulations of other Departments.

- i. All symbolic safety signs must comply with SANS 1186-1, 2, 3, 4, 5 or must be SAB and SANS approved.
- ii. All signage for disabled persons must comply with SANS 10400-S.

12.1.2. STANDARD SPECIFICATIONS

12.1.2.1. MATERIALS

Materials and finishes must be durable and of high quality. For aesthetic reasons, hollow section structural members such as tubing are preferred to solid section members such as angle sections for all visible metal elements of the signage structure.

12.1.2.2. PAINT

- i. The sandblast process shall be applied for paint preparation, while Carboline 193 / Epoxy Polyimide are to be applied as primers. This shall be applied to a minimum of 75 microns thick.
- ii. Colour of paint to be two coats of 'Atlas Paints' in colour 'Windsor Green.'

12.1.3. STANDARD PROJECT SIGNS

A project sign shall display only:

- i. A description of the POS being constructed;
- ii. The names and the company symbols or logos of the contractors or consultants;
- iii. The branches of their industry or profession;
- iv. Where relevant, details of the type of POS being provided, the square metres / hectares of the project and the name, address and telephone number of the developer / Landscape Architect or the agent of the developer.
- v. A project sign requires the specific consent of the Strategic Executive Director.
- vi. Only one project sign shall be allowed per street front of a site.
- vii. A project sign shall not exceed a total sign area of 18 m² except with the specific consent of the Strategic Executive Director.
- viii. A project sign may be erected with the consent of the Strategic Executive Director indemnifying the Municipality from any claims and damages within a road reserve in front of the relevant site, with the exception of a freeway reserve, only if there is insufficient space on the development site, but a project board concerning road construction may be positioned in a road reserve.
- ix. A project sign shall not be illuminated or animated.
- x. A project sign shall be displayed only for the duration of the relevant works on the site.

12.1.4. STANDARD PARK SIGNS

Park signs shall be of the standard design as set out by the eThekweni Municipality Parks, Recreation and Culture Unit Signage Manual stipulated in the Land Use Scheme

12.1.5. INSTALLATION

- i. Installation and detailing to be reviewed prior to acceptance by the Landscape Architect.
- ii. Foundations according to spec by the standard design as set out by the eThekweni Municipality Signage Manual: Parks and Horticulture.

CHAPTER 13 — PLAY EQUIPMENT

In consultation with communities, standard children's play equipment may be provided to playgrounds on public open space and the recommended construction material is galvanised steel. This has always been robustly designed to a high specification for safety and durability. A regular maintenance and monitoring programme is recommended for all equipment to ensure that vandalism or overuse is kept to a minimum and that damage to equipment does not cause danger to the Public.

Alternative playground typologies such as 'Natural Playgrounds,' which are comprised of carefully chosen natural materials such as timber logs, tree stumps, boulders and berms may be considered, as well as alternative construction materials such as concrete may be provided, as long as these alternatives are in a controlled environment with supervision of play and a community participation agreement in place.

All play equipment must be designed appropriately for heavy usage, taking into consideration the safe use and ease of maintenance of each item. Wherever possible, international best practice in terms of design and installation will apply.

All custom-designed playground equipment must be in compliance with SAB-approved standards. It is imperative that all the guidelines and regulations of the South African National Standard SANS 51176 parts 1, 2, 3, 4, 5, 6, 7, 10 and 11 are adhered to. Also refer to 'Surfacing requirements underneath playground equipment and South African National Standard' SANS 54960 for more detail.

SECTION 13.1 STRUCTURAL INTEGRITY

Structural integrity, including stability of the equipment shall be assessed by one of the following:

- i. Calculation, in accordance with SANS 51176;
- ii. Physical testing, in accordance with SANS 51176; or
- iii. A combination of the above

Refer to the 2005 EMM Civil Specification Document; Series 8: Specific works; Section 809: Structural Steelwork for more detail relating to materials, codes of practise, shop details, fabrication and assembly, erection, testing, tolerances as well as measurement and payment.

Each structure shall resist both the permanent and variable loads acting on equipment and parts of equipment. Structural parts shall resist the worst-case loading condition.

SECTION 13.2 SPACING

13.2.1. SAFETY SURFACING FOR FALL ZONES

The 'fall zone' is the area that is calculated both around and under a piece of playground equipment as to where a child may fall, and current standards set it at 2 metres. This means that the Safety Surfacing should always cover an area at least 2 metres away from the equipment's edge.

13.2.2. SPACING BETWEEN EQUIPMENT

The fall zones for individual pieces of equipment cannot overlap; therefore, there must be a minimum of 2 metres between each component of equipment. As well as preventing children falling from one structure to another, this enables them space to move freely and safely in between. Playgroup equipment components must also be spaced at least 2 metres from other boundary structures such as walls and fences.

13.2.3. DETERMINATION OF FREE HEIGHT OF FALL

Unless stated otherwise, the free height of fall shall be as given in the table and Figure 1 below. In determining the free height of fall, the possible movements of the equipment and of the user shall be taken into account. In general, this means that the maximum movement of the equipment shall be taken.

It must be noted that it is not necessary to test the critical fall height of a surface beneath playground equipment having a free fall height of less than 600 mm and which does not cause forced movement on the body of the user.

In general, the free height of fall (h) shall not exceed 3 m. More detailed information is provided in SANS 51176.

Type of use Vertical distance Standing From foot support to surface below Sitting From seat to surface below Hanging From hand support height to surface below (When full body support is provided by the hands only and the whole body can be lifted up to the hand support) Climbing * Maximum foot support: 3m to the surface below. (When body support is a combination of feet / legs and Maximum hand support: 4m to the surface below hands i.e. climbing ropes or sliding poles) (Free height of fall measured from maximum hand support minus 1m to the surface below). * Such equipment constructed for use as 'Climbing' shall not allow access to positions with a free height of fall of more than 3m.

13.2.4. DETERMINATION OF SPACES AND AREAS

In general, the requirements for falling space and impact area within this standard are intended to offer some protection to users during the first impact of a potential fall. These spaces and areas will also afford some protection to other users who may be circulating around the equipment items, but these requirements should be considered in addition to this standard as they are likely to be site specific and may be subject to national control.

Care should be taken when seated dynamic equipment with significant motion, e.g. swings and certain types of rocking equipment, to discourage users of the surrounding play area from unintentionally coming into contact with the equipment. This can be achieved, for example, by placing the equipment at the perimeter of the play area.

For more specific requirements with regards to minimum space and extent of the impact area, and extent of the falling space, and height of falling space, refer to SANS 51176-1; EN 1176-1.

SECTION 13.3 MATERIALS

Materials shall be selected and protected such that the structural integrity of the equipment manufactured from them is not affected before the next relevant maintenance inspection.

The selection of materials and their use should be in accordance with appropriate European Standards.

Due to past experience; the use of timber, plastic and composite plastic will no longer be allowed.

13.3.1. STEELWORK

- i. Metal parts should be protected against atmospheric conditions and cathodic corrosion.
- ii. Metals that produce toxic oxides that scale or flake shall be protected by a non-toxic coating.
- iii. All the circular hollow sections shall comply with SANS 657 as shown under the specific item descriptions.
- iv. Remainder of steelwork and all workmanship shall be in accordance with SANS 0162.
- v. All bolts shall be in accordance with SANS 094-1982.
- vi. All welding shall be 6mm continuous fillet and shall comply with SANS 044.
- vii. Drain holes shall be provided in all closed sections in accordance with normal hot dip galvanising practice. Hole diameters to be 25 - 30% of tubing outside diameters. All vertical legs shall have these holes so placed as to be not more than one hole diameter from the base, to allow water to drain from legs once erected. Centre holes in base plates may not replace water draining holes at the bottom of legs.

13.3.2. FASTENERS AND BOLTS

- i. All bolts, nuts, screws, anchor bolts and washers used in the construction or erection of any item of equipment shall be galvanised steel.
- ii. The manufacturer of the equipment must supply templates / instruction manuals to the firm carrying out the assembly and installation.

- iii. It shall be the responsibility of the manufacturer to ensure that the bolts installed with the templates match the holes in the base plates of the equipment.

13.3.3. FINISH AND GALVANIZING

Metal parts should be protected against atmospheric conditions and cathodic corrosion. Metals that produce toxic oxides that scale or flake shall be protected by a non-toxic coating. Special attention should be given to surface coatings to avoid potential toxic hazards.

- i. Before assembly, all components must be hot dipped galvanised in accordance with SANS 763/1967 covering all areas (inside and outside) of any component.
- ii. Manufacturer must ensure that all surfaces are smooth, neat and clean to ensure a high quality cover in galvanising process in accordance with SANS 0214/1987.
- iii. The manufacturer must obtain a letter of compliance from the galvanising firm which states that all criteria in the specification that pertains to the galvanising process has been met.
- iv. All open ends shall be fully closed (except for galvanising drain holes) by capping or sealed by crimping and shall be ground smooth.
- v. All welds shall be fillet type, continuous, unless otherwise directed, ground smooth and free of blow holes.

13.3.4. SYNTHETICS

If, during maintenance, it is difficult to determine at what point material becomes brittle, manufacturers shall give an indication of the time period after which the part or equipment should be replaced.

It should be possible for the operator of the playground to visually identify excessive wear of the gelcoat of GRP (glass- reinforced plastics) products intended for sliding before the user becomes exposed to the glass fibres. This can be achieved for example by the use of different coloured layers in the sliding surface.

Consideration should also be given to degradation of structural components through ultraviolet influences.

SECTION 13.4 PROTECTION AGAINST INJURIES FROM THE SURFACE OF THE IMPACT

13.4.1 AREA

A projected 70% of all playground accidents are due to falling, therefore correct surfacing under playground items is a priority. Ideally any structure with a highest standing or sitting point of over 50cm should be installed with impact absorbing surfacing to a minimum depth of 300mm.

All installers of safety or impact surfaces must provide a certificate of compliance with the SANS 51177. Any playground equipment higher than 600 mm from the ground surface should have an impact or safety surface.

Playground equipment with an approved safety or impact surface should not be higher than 1.5m high, in an early childhood development environment. Paved bricks, black pitch surfaces (tar), grass, concrete and compacted sand or other hard surfaces are not acceptable.

The surface of the impact area shall be free from sharp edged parts or projections and shall be installed without creating any entrapment situation.

Beneath all playground equipment with a free height of fall of more than 600 mm and / or equipment causing a forced movement on the body of the user (e.g. slides, rocking equipment, etc.), there shall be impact attenuating surfacing over the entire impact area.

The critical fall height of the surfacing shall be equal to, or greater than, the free height of fall of the equipment.

For maintenance and durability purposes, the eThekweni Municipality recommends that rubberizing (comprised of a: recycled EPDM rubber granulate with polyurethane binding agent).is utilized as the impact attenuating surface for all of its playgrounds. Refer to Section 7.9: Rubberising for more details about this material.

Any other impact attenuating material that is proposed must be approved and authorized by the eThekweni Municipality's residence Landscape Architect and must comply with the specifications set out in SANS 54960.

CHAPTER 14 — LIGHTING

Supply, deliver and install specified light standards to manufacturer's specifications. Inclusive of foundations and all electrical work, waterproofing, time switch, solar power system etc.

eThekweni Municipality acknowledges that safety and security of the Public, especially commuting pedestrians and non- motorised transport (NMT) users moving across land zoned POS, is of the utmost priority. In parks where routes are used as short cuts, access ways or 'desire lines', these facilities should receive the highest priority for lighting installations providing the local community have been consulted and are all in favour of the proposal.

SECTION 14.1 LIGHTING GUIDELINES

14.1.1. GENERAL

Lighting will be permitted on POS provided:

- i. It is identified by the eThekweni Municipality as part of the transportation system; or
- ii. It is used as security purposes;
- iii. Lighting of parks will be at the discretion of Parks Department.

Ensure that SANS 475, SANS 60968, SANS 10389-2, SANS 10098-1, SANS 62031, and SANS 62560 are all adhered to. Please ensure that all the standards set out in the EMM Standard Specifications for Municipal Electrical Engineering Works (First Edition, 2010) are strictly followed.

For materials and specifications of proposed custom lighting designs, the following protocol / procedure is to be followed:

- i. Designs will be reviewed prior to acceptance by the Landscape Architect.
- ii. If the element is to be custom-made; the Contractor / manufacturer must have experience at performing the proposed type and scale of work and must be willing to provide proof of this experience.
- iii. At the preliminary drawing phase of application to development drawings submitted for review shall include:
 - a. The product name/brand; and
 - b. An applicable brochure/pamphlet detailing the product specifications, installation, and maintenance requirements of the product to be installed.

14.1.2. STANDARD LIGHTING SPECIFICATIONS

- i. Shall be 6 Lux minimum
- ii. LED Street Lighting will be required
- iii. "Dark sky" lighting will be required (minimized glare which reduces light trespass and skyglow; achieved through shielding and downlighting)
- iv. Solar Lighting is encouraged

14.1.3. POST TOP LAMP STANDARD SPECIFICATION

Post top lamps are typically utilized for general area lighting purposes. General applications are applied to Class B Road Lighting, Parking Areas, General Area Lighting, Parks and Gardens. Specifications are set out as follows:

- i. Fabrication and installation in compliance with SANS 60598-2-3
- ii. Optical compartment tightness level: IP 65 according to SANS 60598-2-3
- iii. Control gear tightness level: IP 65 according to SANS 60598-2-3
- iv. Impact resistance (acrylic): IK 07 according to SANS 62262
- v. Nominal voltage: 230V – 50 Hz
- vi. Electrical class: I
- vii. Weight (total): 8.7kg
- viii. Colour: Standard grey (RAL 7045), textured finish
- ix. Standard CCT: Neutral white (4000K)
- x. Current (mA): 350
- xi. LED light source:
 - a. Correlated colour temperature (CCT): Neutral white (4000K, CRI 70)
 - b. Wattage: 43 W
 - c. Flux: 4608lm

- d. LEDs: 36
- xii. Materials:
 - a. Spigot base, top cover, glare shield: High-pressure die-cast aluminium (EN 1706 AC44300)
 - b. Diffuser: High-impact acrylic

14.1.4. SOLAR LAMP STANDARD SPECIFICATION

Solar lamps are recommended for safety and street lighting. Specifications are as follows:

14.1.4.1. LED:

- i. Designed to operate LED light sources of up to 80W in an ambient temperature (Tq) environment of up to 25°C, without reducing the useful lifetime of 100 000 hours, at a lumen depreciation of not more than 30% (L70)
- ii. Effective high-power LED at a colour rendering index ≥ 70

14.1.4.2. MATERIAL:

- i. The mast and luminaire bracket are manufactured from hot-dipped galvanized, mild steel.
- ii. The battery housing is manufactured from powder-coated mild steel and linear low-density polyethylene (LLDPE).

14.1.4.3. BATTERY:

- i. Deep discharge maintenance-free battery with an expected lifetime of 5-7 years.
- ii. Sufficient capacity to cater for up to two overcast or rainy days.
- iii. Autonomy days: 2 or 3 days, depending on the battery capacity selected.

14.1.4.4. SOLAR MODULE:

- i. Polycrystalline module with an expected minimum lifetime of up to 20 years.
- ii. Rated output: 180-260W depending on the system load and geographical location.

14.1.5. INSTALLATION

14.1.5.1. GENERAL

All current engineering specifications must be adhered to. Supply, deliver and install specified light standards to manufacturer's specifications. Inclusive of foundations and all electrical work, waterproofing, time switch, solar power system etc.

All cables must be terminated with an armoured cable gland, securely attached and earthed to inside of the furniture item.

All cable core endings are to be terminated with lugs of the correct size.

Light fittings and transformer gear must be SANS approved and bear the SABS mark as proof, and must comply with electrical engineer's specifications.

14.1.5.2. INSTALLATION OF POST TOP LAMPS

Installation according to manufacturer's specification.

Lamps are to be installed into a 400 x 400 x 400mm deep concrete footing on a 150 deep course aggregate on compacted subgrade.

Paving and layer works (refer to Section 7.7: Paving) -if specified by Landscape Architect- are to surround each bench and table installed; pavers are to be neatly cut to shape and flush against each leg of the bench and table in specified paving pattern.

14.1.5.3. INSTALLATION OF SOLAR LAMPS

- i. 6m high solar lamps are to be buried 1650mm deep into the ground so that the pole height is 5900mm above Finished Floor Level.
 - a. Pole foundation is to consist of a 1000 x 1000 x 1650mm 1:10 soilcrete (or according to specialist specification), placed on compacted subgrade.
- ii. 8m high solar lamps are to be buried 2000mm deep into the ground so that the pole height is 7900mm above Finished Floor Level.
 - a. Pole foundation is to consist of a 1000 x 1000 x 2000mm 1:10 soilcrete (or according to specialist specification), placed on compacted subgrade.

Vandal-proof installation options installed according to manufacturer's specification may include:

- i. Buried battery box
- ii. Stubby (instead of concrete foundation)

- iii. Bolt cage

14.1.6. HEALTH AND SAFETY PLAN

According to the EMM Standard Specifications for Municipal Electrical Engineering Works (First Edition, 2010); where poor or lack of illumination is identified as a hazard; the lighting regulations must be complied with. The following must be consequently included in the H&S Plan:

- i. How lighting will be ensured/ provided where daylight is not sufficient and /or after hours are worked.
- ii. Planned maintenance programme for replacing luminaries.
- iii. Proof of illumination levels of artificial illumination equipment.

CHAPTER 15 — FENCING

This section covers the erection of new fences. For specifications for the removal of existing fences, the erection and later removal of temporary fences, the dismantling of existing fences, and finally the stacking of the fencing material; refer to the EMM Civil Specification Document, 2005: Section 105: Fencing

Any fenced area will require a vehicular access gate or boom so that maintenance and emergency vehicles can access the grounds but other unauthorised vehicles are excluded.

SECTION 15.1 GENERAL

The following types of fences shall be erected:

- i. Ordinary fences with diamond mesh, or tension fencing to the full height of the fence.
- ii. Security fences, either the veranda type with diamond mesh or tension fencing on the vertical portion and barbed wire on the overhang, or the vertical type with full height diamond mesh, barbed wire or tension fencing, with or without rolls of barbed-tape concertinas fitted. Veranda-type fences can also be fitted with barbed-tape concertinas.
- iii. Steel palisade fencing
- iv. Mesh fencing

15.1.1. MATERIALS

15.1.1.1. POSTS, STAYS, STANDARDS AND DROPPERS

Posts, stays, standards and droppers shall be of the type and size indicated in point 03.01 of the EMM Civil Specification Document, 2005: Section 105: Fencing. Posts shall include gate posts, straining posts and corner posts.

Metal posts, stays, standards and droppers shall comply with the requirements of CKS 82 and SANS 280. "Acceptable" in CKS 82 means "acceptable to the Engineer."

Tubular posts shall be sealed at the top with caps and shall be fitted with base plates as shown on the Drawings. Tubular posts, standards and stays shall be galvanised in accordance with SANS 32 quality B1 or SANS 121 Table 2 or 3, as applicable. All rail sections, Y-sections and metal droppers shall be provided with a protective coating of tar or other approved material.

15.1.1.2. BOLTS FOR STAYS

Bolts shall be of mild steel and galvanized in accordance with SANS 121 Table 2 or 3, as applicable. The length and diameter of the bolts shall be as shown on the Drawings. All the necessary bolts, together with nuts and washers, shall be supplied with each post.

15.1.1.3. WIRE

All wire shall conform to the requirements of SANS 675 and shall be zinc coated. Refer to point 03.03 of the EMM Civil Specification Document, 2005: Section 105: Fencing for more.

15.1.1.4. DIAMOND MESH

Diamond mesh (chain-link fencing) shall comply with the requirements of SANS 1373.

15.1.1.5. PALISADES

All steel works must be commercial quality mild steel. Construct of single pronged, hot rolled steel angle palisades.

15.1.1.6. MESH

All steel materials shall be of good quality, galvanized steel.

Panel width 3,297m. Wire with aperture size (centres) @ 76.2mm x 25mm. Height 1.2m, with a wire diameter of 3mm (length of entire fence 50m).

All pipes shall be galvanized (one piece without joints). Furnish moisture proof caps for all posts. Zinc coating shall be smooth and essentially free from lumps, globs or points. Miscellaneous material shall be galvanized.

15.1.1.7. TENSION FENCING

Pre-assembled tension fencing shall be manufactured from wires complying with the requirements of SANS 675. Edge wires and intermediate wires shall be of a high-tensile strength grade, and all wires shall be galvanized as per SANS 935. Refer to point 03.05 of the EMM Civil Specification Document, 2005: Section 105: Fencing for more.

15.1.2. CLEARING OF FENCE LINE

Strip clearing for the fence shall be carried out and paid for in accordance with Section 5.3.4: Vegetation Clearing of these Specifications.

SECTION 15.2 INSTALLATION OF DIFFERENT TYPES OF FENCING

15.2.1. INSTALLING POSTS AND STANDARDS

Straining posts shall be erected at all ends, corners and bends in the line of fencing and at all junctions with other fences. Posts shall be accurately set in holes and, where indicated, shall be provided with concrete bases to the dimensions shown on the Drawings.

Corner, gate, end and straining posts shall be braced by means of stays or anchors. Pipe stays shall be bolted to the posts.

The spacing of standards between any two straining posts shall be uniform, be accurately aligned and set plumb. In rock or hard material non-tubular standards shall either be driven or set in holes drilled into the rock.

After posts and standards have been firmly set in accordance with the foregoing requirements, the fencing wire / mesh / palisades shall be attached thereto as described below.

15.2.2. INSTALLING WIRE AND TENSION FENCING

All fencing wire shall be carefully stretched and hung without sag and with true alignment, and care shall be taken not to stretch the wire so tightly as to cause breaking, to pull up straining posts.

Each strand of fencing wire shall be securely fastened in the correct position to each standard with galvanized binding wire. The binding wire for each horizontal fence wire shall pass through a hole or notch in the standard, and the ends of the wire shall be wound at least four times around the fencing wire.

At the end, corner, straining and gate posts the fencing wire shall be securely wrapped twice around the post and secured against slipping by tying the end tightly around the wire by means of at least six snug, tight twists. In the case of high-tensile wire, two long windings must first be made before the six tight twists to prevent the wire from breaking at the first twist. Where smooth wire is used, the loose end shall be bent back and hooked into the opening between the fencing wire and the first winding.

Splices in the fencing wire will be permitted if made in the following manner with the use of a splice tool. The end of each wire at the splice shall be carried at least 75 mm past the splice tool and wrapped snugly around the other wire for not less than six complete turns, after which the two separate wire ends shall be wound in opposite directions.

After the splice tool has been removed, the space left by it in the splice wire shall be closed by pulling together the wire ends. The unused ends of wire shall be cut close so as to leave a neat splice.

The gaps between gate posts and the adjacent straining posts shall be fenced off with short fencing wires.

Tension fencing shall be installed according to the methods and with the special tools recommended by the manufacturer.

15.2.3. INSTALLING DROPPERS

Droppers shall be tied to each fence wire with binding wire in the required position to prevent vertical slipping. The spacing of droppers between any two standards shall be uniform. Droppers shall be suspended clear of the ground at a distance as shown on the Drawings.

15.2.4. INSTALLING DIAMOND MESH

Where indicated on the Drawings, diamond mesh shall be stretched against the fence and properly tied to the fencing wire. The diamond mesh shall be secured by means of binding wire at 1,2 m centres along the top and bottom wires and at 3 m centres along each of the other fencing wires, unless shown otherwise on the Drawings.

15.2.5. INSTALLATION OF STEEL PALISADE FENCING

Contractor to supply or subcontract the manufacture and installation of the steel fence. Steel fence to be painted with two coats of red oxide primer and two coats of green, red, grey, or black high gloss enamel.

Supply and install a 4000mm x 4000mm x 3mm steel palisade fence. The maximum gap between the fence and ground to be 100mm. Where the fence follows a fall or rise it must be installed evenly with a uniform fall or rise. Set steel support columns in 27MPa concrete foundations of 400 x 400 x 600mm (or according to Pr Eng's specification).

Install palisades by punching a suitable wedge-shaped cavity.

Supply, deliver and install 85-45mm, depth: 85mm galvanised taper locking post. Post height 1,8m. Posts to be sealed with a UV stabilized polymer cap. Posts to be long enough to have 600mm embedded in concrete. All concrete foundations for steel posts to be 450mm x 450mm wide with concrete of 20MPa strength.

Protect all plant material and structures from damage. Make good all damage at no extra cost.

15.2.6. INSTALLATION OF MESH FENCING

Supply, deliver and install mesh galvanised fence panels according to manufacturer's specifications.

Foundations according to PrEng / manufacturer's specification.

Protect all plant material and structures from damage. Make good all damage at no extra cost.

15.2.7. INSTALLATION OF GATES

3000mm-wide sliding vehicle gates to be installed. All material to match fencing material. Allow for locking (bolt and latch) mechanism on sliding gate. Concrete for runner to be included.

1200mm- wide pedestrian swing gates to be installed as instructed, with supporting posts. All material to match fencing material. Allow for locking (bolt and latch) mechanism on swing gate.

Gates shall comply with the requirements of CKS 146 and shall be manufactured to the dimensions shown on the Drawings.

Gates shall be complete in every respect, and shall include hinges, washers, bolts and locking mechanism.

15.2.8. SUBMITTALS

- i. Certificate of compliance for materials and coatings
- ii. Shop drawing for gates
- iii. Quality control program shall be submitted to the Engineer for review prior to the commencement of any work.

CHAPTER 16 — ELECTRICAL

General electrical specifications are provided below. For more detail, it is advised that the EMM Standard Specifications for Municipal Electrical Engineering Works (First Edition, 2010) is consulted.

16.1.1. ELECTRICAL INSTALLATION

Must comply with all requirements of the local authority and with SANS 10142– Wiring of Premises. All work must be done under supervision of a registered electrician.

Chasing must be neatly done. Chase solid walls not deeper than one third of a wall thickness vertically and not more than one sixth horizontally. Ensure that chases, holes and recesses are so made as not to impair the strength ability of the wall or reduce the fire resistance properties of the wall. Fill chases with class 1 or 2 mortar once the conduits are in position.

16.1.2. GUARANTEE

Guarantee the efficient and safe working of the whole installation for 12 months after completion. Lighting bulbs and tubes are excluded from this guarantee.

16.1.3. MATERIALS

16.1.3.1. WIRING

Wiring shall be carried out strictly in accordance with the requirements of the appropriate NRS, SANS, IEC or BS Standards.

16.1.3.2. CONDUITS

Conduits must be uPVC conduits to comply with SANS 550/60614/61386(Wegelin 2007:91).

Fix conduits as follows:

- i. Build in conduits in wall chases with cement mortar and clamps.
- ii. Fix conduits on wall surfaces and in roof spaces with clamps.
- iii. Cast conduits in concrete surface beds.
- iv. Do surface fixing level, plumb, neatly and in straight lines.

16.1.3.3. CONDUCTORS AND CABLES

Copper conductors must be PVC isolate conductors to comply with SANS 150.

Electrical cables must be PVC armoured copper cable complying with SANS 1574/1411.

Lay all electric cables in uPVC conduits and as follows:

- i. Excavate for cable 600 mm below finished ground level
- ii. Encase the cable in river sand. Backfill and compact in layers not exceeding 300mm.
- iii. Protect the cable with precast concrete cable protection slabs where necessary
- iv. Mark the cable route with approved markers.

Notify the local authority for connection and give assistance where necessary.

16.1.3.4. CABLE GLANDS PVC SWA

PVC cables shall be terminated using patent adjustable cable glands.

Where cable glands are installed outdoors, they shall be provided with a suitable shroud or boot to prevent the ingress of moisture between the wire armouring and outer sheath of the cable where it enters the gland.

16.1.3.5. CABLE CLEATS

Cleats may be defined as single way or multi-way clamping type units for the purpose of securing cables at a series of points on a vertical surface, typically structural steelwork or masonry.

For the purposes of securing cables to structural steel-work, the use of patent adjustable metal cleats which do not require special holes to be drilled in the steel work and which allow a vertical cable to be secured to a diagonal steel work member, are preferred. However, the use of suitable alternatives will be considered by the Engineer.

The use of steel or plastic banding or strapping as a means of fixing cables to structural steel work will only be considered where the use of a cleat is precluded.

Steel components of cleats shall be galvanised.

Where cables are to be fixed to concrete or masonry surfaces (either vertical or horizontal) the use of galvanised trays or stainless steel saddles are preferred. Saddles shall be secured to the concrete or masonry by means of expanding bolts.

The intervals at which cables are secured to vertical and horizontal surfaces shall not exceed 500mm.

The cost of supplying and erecting cable or cable cores, cleats and accessories shall be included in the rates for the installation of cables in the appropriate price schedules.

16.1.3.6. TRUNKING AND WIRING CHANNELS

The connecting-up of cables shall include the whipping, strapping, lacing and harnessing of cable tails, the identification of the tails by means of ferrules or markers, the termination of each core by means of crimped lugs and the connection of cores to equipment terminals or terminal blocks (maximum of two lugs per terminal).

All wiring shall be taken to terminals and wires shall not be jointed or teed between terminal points.

After glanding the cable cores of each individual cable shall be unwound, straightened and strapped together to form a neatly bound group.

Grouped cable routes between the glands and the trunking shall be parallel to the front, back and sides of the cubicle. All bends along the grouped routes shall be at right angles. Direct routes between the glands and the trunking will not be accepted.

In cubicles the control wiring between devices and terminals shall be run in plastic, non-flammable trunking with snap-on covers. To enable additional wires to be added in future, the channels shall not be more than 60% full at time of delivery.

Control and instrumentation / signal wires shall be run in trunking as far separated from each other and from power supply leads as possible to eliminate influence on each other.

16.1.3.7. DISTRIBUTION BOARD AND METER CABINETS

Electrical distribution boards must be of pre-painted (to approved colour) pressed steel with door and latch to comply with SANS 1765, and with isolator, earth leakage protection unit and circuit breakers.

Meter cabinets must comply with SANS 60439, of finish, and with locking device as specified.

Label all functions in distribution board and provide a legend card.

16.1.4. INSPECTION & CERTIFICATES

Inform the local authority at completion of the electrical installation for inspection.

Provide the Landscape Architect with a copy of the electrical test certificate before handing over.

PART D: LANDSCAPE IRRIGATION

CHAPTER 17 — IRRIGATION DESIGN

This chapter deals with a range of irrigation system types. When developing a new system or upgrading an existing system, the basis of an efficient and cost-effective irrigation system is the design. All landscape irrigation systems will be designed and drawn up by a SABI accredited Irrigation Consultant. Should the Contractor not have someone with these accreditations on their team, they are to sub-contract the part of the project out to an accredited Consultant.

SECTION 17.1 SYSTEM PLANNING

17.1.1. PLANS AND DRAWINGS

The first step for the Irrigation Consultant in developing a new irrigation system, or upgrading an existing system, is to prepare a comprehensive irrigation plan / drawing. An irrigation plan ensures that all issues are considered before money and resources are committed. This plan is to be signed off by the Landscape Architect prior to implementation.

Enough detail should be included to provide accurate information to the Irrigation Consultant so that a water efficient and economically feasible design can be prepared that is suitable for the plants to be irrigated in the planned location. The plan should cover economic and financial, legal and regulatory, environmental, property, water, agronomic and human resource issues. The Irrigation Consultant will use the following information to determine the capacity of the system:

- i. maximum plant water demand
- ii. water holding capacity of the soil
- iii. maximum available annual and extractive water supply, whether from a stream, a storage, a supply channel or a bore
- iv. leaching fraction required
- v. coastal salt-air and UV exposure (where applicable)
- vi. summer storm surge and high-rainfall events (design for 1:10 year recurrence)

The Irrigation Consultant should specify the following information on the plans:

- i. physical layout: supply, application, drainage, and stormwater control infrastructure and reuse structures
- ii. specification of components and their installation
- iii. operating schedule of the system and any constraints
- iv. degree of automation
- v. energy requirements and energy source
- vi. fertigation and filtration requirements
- vii. system application rate and uniformity of application
- viii. estimated life of the system (according to manufacturer's specifications)
- ix. detailed costings of components and labour required to install, operate and maintain the system
- x. methodology to monitor the system and its environment
- xi. potential for staged development and order of construction
- xii. commissioning procedures

17.1.2. CONSTRAINTS TO BE CONSIDERED

The design and choice of irrigation system will take into account constraints including:

- i. topography of property
- ii. human resources to operate the system efficiently and correctly
- iii. water supply characteristics: quality, quantity, frequency and security
- iv. occupational health and safety issues
- v. legal and regulatory requirements of the irrigation system including stormwater retention system, capacity and management
- vi. expansion strategy
- vii. system flexibility

- viii. automation
- ix. money required to build, operate and maintain the system selected and cost comparison with other systems

17.1.3. DETERMINING TYPE OF IRRIGATION SYSTEM

When selecting the type of irrigation system to be used in a specific situation, there are several factors that have to be taken into consideration. Although it is not possible to set fixed norms for the selection of irrigation systems, it is recommended that information regarding the following five aspects of the situation that the system is being designed for, should be collected and assessed:

- i. Plant type
- ii. Soil type
- iii. Water quantity and quality
- iv. Climate
- v. Site size, shape and slope

The type of system to be implemented will be determined in consultation with the Contractor, Irrigation Consultant and the Landscape Architect.

17.1.4. IRRIGATION HOURS PER WEEK

The Irrigation Consultant is to determine the required number of hours a week the system will have to run. It is also highly recommended that the ESKOM tariff structure applicable to the irrigation system is taken into account when determining the number of hours available for irrigation per week.

CHAPTER 18 — IRRIGATION SYSTEMS

SECTION 18.1 MICRO SPRINKLER IRRIGATION SYSTEM

18.1.1. MINIMUM GROSS APPLICATION RATE

The application rate should be equal to or greater than 3 mm/h on the wetted area. Distribution tests can be done with the selected micro sprinkler on soils with poor water distribution ability, to ensure that dry patches will not occur in the wetting area of the sprayer.

18.1.2. DISTRIBUTION UNIFORMITY

18.1.2.1. EMITTER UNIFORMITY APPROACH

The following minimum emitter uniformity (EU) values are proposed:

- i. Level terrain where slope < 2%: EU = 95%
- ii. Undulating terrain or slopes > 2%: EU = 90%

18.1.2.2. CONSERVATIVE APPROACH

The percentage emitter discharge variation should not exceed 10% of the design emitter discharge. In the case of emitters with a discharge exponent of 0.5, this will result in a maximum allowable pressure variation of 20% of the design pressure.

18.1.3. FLOW VELOCITY IN LATERALS

A minimum flow velocity of 0,4 m/s at the lateral end point is required.

SECTION 18.2 DRIP IRRIGATION SYSTEM

18.2.1. DISTRIBUTION UNIFORMITY

18.2.1.1. EMITTER UNIFORMITY APPROACH

The following emitter uniformity (EU) values are recommended for pressure sensitive drip emitters:

Table 5: Recommended EU values of pressure sensitive drip irrigation systems (SABI, 2017).

If the EU value of 90% cannot be obtained with pressure sensitive emitters, it is strongly recommended that pressure compensating emitters should be used.

18.2.1.2. CONSERVATIVE APPROACH

The percentage emitter discharge variation should not exceed 10% of the design emitter discharge. In the case of pressure sensitive emitters with a discharge exponent of 0.5, this will result in a maximum allowable pressure variation of 20% of the design pressure.

18.2.1.3. PRESSURE COMPENSATING EMITTERS

It is recommended that maximum allowable pressure variation (in m) will be within the following safety limits:

- i. Minimum design pressure = the minimum working pressure at which compensation takes place as per the manufacturer + 3m
- ii. Maximum design pressure = the maximum working pressure at which compensation takes place as per the manufacturer – 5m.

Should the safety limits provided here result in a very narrow pressure band (for example in the case of thin-walled drip laterals with a relatively low maximum working pressure), the limits can be reduced after consulting with the manufacturer of the drippers.

18.2.2. FLOW VELOCITY IN LATERALS

The following minimum flow velocity at the lateral end point is required:

- i. Good quality water: 0.4 m/s
- ii. Average quality water: 0.5 m/s
- iii. Poor quality water: 0.6 m/s

18.2.3. FLUSHING OF LATERALS

If flushing manifolds are used, the pipe diameter of the laterals must be chosen correctly so that the friction losses do not exceed 0.5m over the length of the manifold.

18.2.4. FLOW VELOCITY IN MANIFOLDS

The maximum allowable flow velocity in any section of the manifold should be 2 m/s.

SECTION 18.3 SPRINKLER IRRIGATION SYSTEM

18.3.1. SPRINKLERS SELECTION

The operating pressure, sprinkler application, wetted diameter and spacing of the sprinklers all influence the performance of the specific sprinkler and nozzle combination. The Christiansen's uniformity coefficient (CU) is used to determine the water application in a laboratory. The sprinkler with the best CU value must be selected.

18.3.2. SPRINKLERS SPACING

The maximum sprinkler/lateral spacing is calculated as a percentage of the wetted diameter of the chosen sprinkler for the average wind speed as displayed below:

Average Wind Speed (km/h) Maximum spacing between sprinkler / lateral in wind conditions displayed as a percentage of the wetted diameter of the chosen sprinkler

Average Wind Speed (km/h)	Between sprinklers (%)	Between Laterals (%)
10	< 10	< 10
15	10 - 15	10 - 15
20	15 - 20	15 - 20
25	20 - 25	20 - 25
30	25 - 30	25 - 30
35	30 - 35	30 - 35
40	35 - 40	35 - 40
45	40 - 45	40 - 45
50	45 - 50	45 - 50

If the chosen sprinkler spacing surpasses the maximum allowable spacing for wind still conditions, then the spacing must be calculated according to the CU standards for wind still situations.

18.3.3. MINIMUM GROSS APPLICATION RATE

The following minimum gross application rates are recommended:

- i. Moveable systems ≥ 5 mm/h
- ii. Permanent systems ≥ 4 mm/h

18.3.4. MAXIMUM PRESSURE VARIATION

The diameter of a lateral should be designed so that the pressure variation between different sprinklers irrigating simultaneously is not more than 20% of the design pressure.

18.3.5. SPRINKLERS AND SPRAYERS

The Contractor shall specify the make and model of all sprinklers and sprayers that he proposes to use in the Contract by submitting descriptive literature together with his tender. Such descriptive literature shall also include performance tables of the sprinklers or sprayers covering their discharge rates and wetted radii.

It shall be the expressed responsibility of the contractor to ensure that the delivery rates and wetted radius of sprinklers offered for use in the Contract conform to those shown in the General Layout Drawings and Detailed Specifications, at the operating pressures specified therein, subject to a tolerance of up to plus or minus 5.0%.

All sprinklers and sprayers are to be provided and installed with nozzles for matched precipitation.

The positions of sprinklers which do not adjoin an identifiable feature such as a kerb or mowing edge are to be pinpointed in the following manner:

- i. Scaling off the drawing and using a measuring tape to establish a preliminary position on the ground.
- ii. Evening up the interval between the sprinklers in all directions so that they are approximately equidistant.
- iii. Installation of sprinklers in close proximity to obstacles which may interfere with the intended pattern of coverage must be avoided. In such cases, the Contractor must seek the guidance of the Consultant in repositioning the sprinklers.
- iv. Where the layout of the landscape work on the ground does not conform to that shown in the drawings, the Contractor must seek the guidance of the Consultant who may instruct the Contractor to modify the positions of the sprinklers in order to obtain the best possible pattern of coverage under the circumstances.

18.3.6. SPRINKLER INSTALLATION

For Pop-up Sprinklers covering adjacent areas which are higher than the sprinkler body, the Contractor must tilt the sprinklers in order to obtain the best coverage possible of these areas. Otherwise, pop-up sprinklers must be installed with the top horizontal to the finished surface.

For sprinklers on riser pipes, during backfilling, the soil around the riser pipe shall be tamped down so that the riser pipe is held firmly upright.

All sprinkler riser pipes shall, before or after installation, be painted in an approved shade of green with a grade of waterproof paint suitable for outdoors.

All sprinklers, sprayers or turf valves shall be fitted to the sprinkler pipe by means of a flexible swing arm as shown in the detail drawings so that they can be raised or lowered in relation to finished level.

CHAPTER 19 — WATER SUPPLY SYSTEMS

SECTION 19.1 PIPES AND FITTINGS

19.1.1. PIPE FRICTION IN MAIN AND SUB-MAIN LINES

The designer must take into account the possible effect of water quality on pipes as well as the deterioration of pipes with age during the pipe's lifetime. The following values for allowable pipe friction in mainlines are accepted as norms:

- i. Rising pipeline: Maximum friction loss = 1% (m/100m pipe length) Recommended friction loss = 0.6% (m/100m pipe length) Maximum velocity = 1.3 m/s Recommended velocity = 1 m/s
- ii. Gravity pipeline: Maximum allowable flow velocity of 3.0 m/s

Note that the above applies for pipelines with a diameter of 200 mm or smaller.

If the above figures are exceeded, then the designer must show that the chosen pipe diameter's total cost (capital and annual running cost) have been optimized and is the best of the available options.

For pipes with larger diameters, a full life cycle cost analysis (capital and annual running cost) is recommended to find the most economical pipe sizes.

For all pipes, and especially in the case of diameters larger than 200 mm, the effect of water hammer is critical and must be investigated and optimized. An adequate number of air valves must be included in the design.

19.1.2. PIPES

Pipes shall be laid in the positions indicated in the General Layout Drawings or as directed by the Consultant.

HDPE and LDPE pipes shall be laid in the bottom of the trench with sufficient "snaking" to accommodate normal expansion and contraction. Where solvent weld fittings are used with uPVC pipes, provision must be made for expansion joints at intervals as recommended by the pipe manufacturers.

Pipe sizes, classes and quality shall correspond with those shown in the General Layout Drawings and given in the Detailed Specifications. The substitution of larger pipes or pipes of a higher-pressure rating or quality to that specified may be accepted (at the rates tendered for this item) at the sole discretion of the Consultant.

Low density polyethylene pipe Type I which is offered as a substitute to that specified shall be from an approved source and of an approved quality which, if it does not comply with the raw material specification of SANS 533 pipe, shall at least comply with the dimensional tolerances thereof.

Changes in pipe diameter and/or class must only be made in the positions shown in the drawings.

Notwithstanding the class of pipe which may be shown on the drawings, any piping to be buried directly under paving, tarmac or constructed areas shall be of a class as directed by the Consultant.

Before laying, pipes shall be carefully examined to see that they are not cracked or otherwise damaged, especially at the spigot end, and that they are not obstructed on the inside.

Defective or damaged pipes, fittings or other material shall be laid aside for the Consultant to inspect and to decide if these materials must be rejected or can be repaired.

19.1.3. FITTINGS

Pipe fittings shall be installed in strict accordance with manufacturer's recommendations using approved lubricant in the case of fittings for UPVC pipes, and any special tools which may be necessary. All threads shall be properly waterproofed using Teflon tape or other proprietary sealant.

No reductions in pipe diameter shall be made upstream of the positions specified but may be made downstream of such positions.

Holes drilled in pipes for saddles must be of an equal size to that the saddle outlet, and unless the holes are drilled with the saddle bolted in its final position, a mandrel (the drill bit) must be used to ensure that the positions of the holes fully coincide before the saddle is bolted up.

All fittings shall be installed in the positions shown in the general Layout Drawings. Composite assemblies of fittings comprise of the components shown in the Detail Drawings and shall be assembled and installed in the manner shown therein.

19.1.4. PIPE SUPPORT AND THRUST BLOCKS

For polyethylene pipes of 63mm diameter or less no thrust blocks or support blocks are required.

Otherwise, thrust blocks and support blocks shall be constructed in class 15/19 concrete at all points where the flow in the pipes changes direction through a fitting in accordance with the respective manufacturer's detail.

SECTION 19.2 VALVES

19.2.1. VALVE SIZING

The size of the valves at the inlet of the irrigation system must be chosen according to the manufacturer's recommendations for the specific application. In the absence of any recommendations, the valve must be chosen so that the pressure loss through the valve under normal operating conditions is less than 20 kPa.

19.2.2. QUICK COUPLING VALVES

Quick coupling valves shall preferably be installed in lawn areas, or if in bed areas must be installed within 500mm of a hard surface next to the bed for accessibility

19.2.3. CONTROL VALVES

Control valves must be installed either in lawn areas or within 500mm of a hard surface if in beds. All underground valves must be installed in valve boxes, and the valve must be installed upright and square in the box, with not less than 50mm clearance between the top of the valve and the underside of the lid. For solenoid valves, a half metre length of control wire must be coiled inside the valve box to permit maintenance. Threaded connections and the whole assembly shall be totally watertight.

19.2.4. BRASS GATE VALVES

Brass gate valves shall be of the female threaded type with non-rising spindle, rated for 1000 kPa pressure and manufactured to SANS 776.

19.2.5. VALVE BOXES

Valve boxes shall be of an approved type manufactured in green plastic of sufficient strength to withstand normal pedestrian traffic.

SECTION 19.3 FILTERS

The specification of filters is subject to any requirements stated by the manufacturer, for example the minimum pressure or flow rate required for the backwash of filters.

19.3.1. DISC AND MESH FILTERS

Disc / mesh filter openings must be $\leq 1/5$ that of the emitter orifice diameter. The appropriate micro emitter manufacturer's recommendations must be used for flow path openings of ≤ 1 mm.

19.3.2. SAND FILTERS

When using a sand filter, a 200 μ m control mesh or disc filter must be placed on the downstream side of the sand filter to catch the impurities in case of damage to the sand filter. The drip manufacturer's recommendations must be followed when using a disc / mesh filter. The following norms are accepted.

19.3.2.1. FLOW RATE

The maximum allowable flow rate through a clean sand filter: Flow rate ≤ 50 m³/h per m² of sand surface area with an allowable pressure difference over the clean sand filter of ≤ 10 kPa. A minimum of 50% of the maximum filtration rate (50 m³/h per m² sand surface area) is required to backwash the filters. The maximum backwash rate must not exceed 1.2 times the filtration rate.

19.3.2.2. PRESSURE DIFFERENCE

The allowable pressure difference over a sand filter with disc-/ mesh filters: Allowable pressure difference over a clean filter bank (including sand and disc filter) ≤ 40 kPa and over the filter bank before backwashing should be ≤ 60 kPa. When using a disc / mesh filter, the allowable pressure difference norms as described in Section 17.3.1: Disc and Mesh Filters must be complied with.

19.3.2.3. OUTLET PRESSURE DURING BACKWASH

Minimum pressure during backwash of a sand filter: ≥ 200 kPa.

19.3.2.4. SAND SPECIFICATIONS USED IN SAND FILTERS

Silica sand with a particle size that varies from 0.6 to 1.4mm, with an acceptable sand grading, is recommended for sand filters. The recommended particle size grading must be 80 microns. A filtration performance of $\geq 90\%$ must be achieved under laboratory conditions.

SECTION 19.4 PUMPS

19.4.1. DESIGN PUMP CAPACITY (SAFETY FACTOR FOR WEAR AND TEAR)

These values are added to the calculated system capacity and are used to determine the duty point (pressure and flow) when selecting a pump. The present norms are accepted:

- i. Discharge 10%
- ii. Pressure head 5%

If fertilizers are pumped through the irrigation system, then an additional 20% flow capacity can be designed for in the system.

19.4.2. ALLOWABLE VELOCITY IN THE SUCTION PIPE

The standard for the maximum velocity in a suction pipe is 1.5 m/s, but the ideal velocity is between 0.75 m/s and 1 m/s. Turbulence will take place if the velocity is too high, which will ultimately cause cavitation in the system.

19.4.3. PUMP EFFICIENCY

Although a fixed minimum value for efficiency of a pump cannot be given, the designer must always strive to choose the most efficient pump for the system.

It is recommended that a pump is selected for which the manufacturer can supply a test certificate, tested according to ISO 1940-1 Class 1 by the manufacturer.

It is furthermore recommended that the pump specified by the designer should meet the requirements of ISO 9906 Class A, which means that it should perform in practice within $\pm 5\%$ of the published pump curve (applicable to both centrifugal end-suction and borehole pumps).

19.4.4. MAXIMUM MOTOR POWER OUTPUT

The correct selection of an electric motor will ensure that the motor is never overloaded. It is therefore necessary to either select a motor with a power rating that is large enough for the selected pump and impeller, or to make provision against overload by means of protection devices. The table below indicates norms for minimum power rating of an electric motor for specific output power if the motor is selected according to the normal duty point (output power required).

Output Power (kW) ≤ 7.5 kW ≥ 7.5 kW Power requirement of the pump at the highest design duty point + 20%. Overload Minimum power OR protection essential. rating of motor Maximum input power requirement of the pump as per the pump curve (overload point).

Table 9: Minimum power rating of electric motors for certain output powers (SABI, 2017).

The reduction in the power rating of the motor, as set out in Table 17.4 and 17.5 of the Irrigation Design Manual of the ARC-IAE (2003 edition), must also be applied where necessary.

19.4.5. MOTOR EFFICIENCY

It is recommended that electric motors with an efficiency rating of at least "IE2" (or "EFF1") are used to drive the pump.

19.4.6. VARIABLE SPEED DRIVES

The Variable Speed Drives (VSD's) main function is the ability to vary the speed of the motor it is connected to. In the case of a centrifugal pump, it is therefore possible with the VSD to use the same pump and impeller combination to supply water at various flow rates and pressure heads (duty points) without changing the impeller of the pump.

Greatest benefits of VSDs were shown for systems:

- i. Where the duty points vary because of elevations differences between delivery points
- ii. Especially centre pivots operating against slopes greater than 2% and static irrigation systems where block inlets are located at different elevations.

19.4.6.1. GENERAL

- i. The basic principles of correct pump and motor design and selection apply at all times.
- ii. The integration of the VSD with the control system and automation of the irrigation system should be investigated in order to find the most appropriate and cost effective solution.
- iii. Alternative options should be considered first, such as cutting the impeller to the correct size and using soft starters, especially in the case of single duty point applications, as they can offer more cost effective solutions than the installation of a VSD.
- iv. The motor should be capable of delivering the required power of the pump at all the different duty points but should not be oversized.
- v. If no other information is available, it is recommended that the supply frequency to the motor should not be less than 25 Hz and not be more than 60 Hz.
- vi. At very low frequencies, it may be necessary to install an auxiliary fan to the motor to ensure adequate cooling takes place.
- vii. The motor with which the VSD is to be used, should be rated VSD compatible according to the manufacturer.
- viii. The enclosure of the VSD to be used should have a suitable IP rating for the environment in which it is to be used (dust, moisture, etc.)
- ix. When more than one VSD is used in parallel, or if more than one pump is used per VSD, the designer should make sure that the pumps will operate in all cases without influencing one another negatively from a hydraulic perspective.
- x. The integration of the VSD with the rest of the electrical system at the pump station must be assessed and if the situation requires it, the necessary electrical filters should be installed to protect all components of the system.
- xi. Before a VSD is supplied, the designer should ensure that support or maintenance services for the VSD are readily available in the area.

19.4.6.2. TOTALLY ENCLOSED FAN COOLED MOTORS (TEFC)

- i. Where running speeds are expected to exceed the normal 50Hz frequency levels, contact the pump and motor manufacturers to find out if the proposed maximum running frequency of the motor is acceptable. Generally, ≤ 60 Hz is accepted as the maximum but the manufacturer should confirm this.

- ii. The motor maximum kW (power rating) must not be exceeded when pumping at any given time but in particular when running at higher than normal speed (> 50 Hz).
- iii. It is generally advisable not to run the motor at a lower frequency than 25Hz for prolonged periods of time. If this is required, it is suggested that the motor manufacturer should be contacted to establish.

19.4.6.3. SUBMERSIBLE MOTORS

- i. See first two points under Section 19.4.6.2: TEFC.
- ii. The minimum running frequency of a submersible motor will be determined by the minimum flow velocity across the motor, as stipulated by the motor manufacturer, as the flow also contributes to cooling of the motor.
- iii. The necessary precautions need to be taken to prevent prolonged periods of no flow through the pump as it may lead to the damage of the motor.
- iv. The maximum number of starts per day of the motor is as stated by the motor manufacturer.
- v. The maximum current demand of a submersible motor is usually greater than the current demand of a TEFC motor of similar power rating. The VSD must be able to meet both the current and the power requirements of the motor.

19.4.6.4. ELECTRICAL SUPPLY AND CONNECTION

- i. The maximum allowable cable length between the motor and the VSD as recommended by the VSD manufacturer should be adhered to. This is of particular importance in the case of submersible motors. In general, it is recommended that all situations where the distance between the VSD and the motor is greater than 15 m, is investigated from a cable sizing perspective.
- ii. The earthing of the VSD and motor must be in accordance to the requirements of the VSD manufacturer.
- iii. If a VSD is used in conjunction with a generator, approval should be sought from both devices' manufacturers that the generator and the VSD can be used together.

CHAPTER 20 — IRRIGATION INSTALLATION

SECTION 20.1 GENERAL

20.1.1. STANDARD OF WORKMANSHIP

All irrigation work shall be carried out by experienced tradesmen under supervision of persons qualified to interpret and implement the contract drawings and specifications according to trade conventions as well as understand and be authorised to act on instructions issued by the Consultant. All landscape irrigation systems will be designed and drawn up by a SABI accredited Irrigation Consultant

The onus is on the Contractor to produce work which conforms in quality and accuracy of detail to the requirements hereinafter specified. The Contractor shall satisfy himself of the position of any services on site and make good any damage caused to such services at his own expense. The Contractor shall set out the Works according to the Drawings and shall agree the setting out with the Consultant, prior to installation.

The Work shall be executed in accordance with the Specification and Drawings and any subsequently authorised variation, to the complete satisfaction of the Irrigation Consultant.

All materials and equipment used in the Contract shall be new and of a quality without defects to satisfy all the requirements as prescribed in the specifications, and to withstand the conditions under which the equipment will be operating.

20.1.2. EXCAVATION AND BACKFILLING OF TRENCHES

Excavation, backfilling and compaction of trenches 650 mm deep and 250 mm wide for all pipes over 63mm. Diameter and 450 mm deep and 250 mm wide for all pipes below and including 63mm. Pipe Compaction of trenches through hard surfaced areas to be to site engineer's specification for other civil works.

The alignment of trenches on the ground shall give special consideration given to a route which will be easily recognisable in the future from "as built" drawings showing relevant distances from salient features like buildings, kerbs and other identifiable physical boundaries.

The Contractor shall acquaint himself with the positions of trenches previously made for services already installed, and he shall make his excavations as far as possible along these routes.

The excavations shall be straight and wide enough that the pipe can be laid along the centre of the trench with sufficient clearance on either side of it to accommodate the selected fill and permit proper compaction thereof. In all cases, any stones or other obstacles which would touch the pipe must be removed from the base and sides of the trench.

The Contractor shall consult with the Landscape Architect regarding any areas where solid rock is encountered during excavation of trenches, and the Landscape Architect shall at his discretion instruct the Contractor to install the pipe at a lesser depth than that specified.

No distinction of any kind regarding the classification of soft and hard material will be made and no claim for additional compensation in this regard shall be considered.

Backfilling of excavations through planted areas to be to the same degree of compaction of the surrounding planting area, such that no subsidence occurs after backfilling. If rock or other adverse conditions preclude the installation at the prescribed depth, the Employer's permission must be obtained for burial at a shallower depth. The Backfill material surrounding the pipe by 50mm shall be free of rock or other hard materials. Suitable material for filling around pipes shall, if deemed necessary by the Landscape Architect, be selected from that excavated by passing it through a 40mm sieve.

In other than areas to be planted, backfilling shall be according to the specifications in the main contract or to site engineer's instructions.

If the backfill is not considered by the Landscape Architect to be moist enough for good compaction, water must be added to facilitate the process.

Joints in the mainline pipes and fittings must be left open for inspection by the Landscape Architect until pressure testing has been completed and the results have his approval.

20.1.3. SLEEVES

All sleeves under buildings and main access roads will be provided by others. Where sleeves are required to be installed by the contractor, the surface under which the sleeves are installed must afterwards be fully reinstated to its' former condition. The material used for the sleeves must be strong enough to withstand the degree of compaction required to achieve this.

If the position of sleeves provided by others is not readily apparent from the drawings, the Contractor shall consult with the Landscape Architect to establish these.

20.1.4. PRESSURE TESTING

Before trenches are completely backfilled, the Contractor shall in the presence of the Irrigation Consultant and the Landscape Architect, pressure test all pipe work which may be subjected to full static pressure from the source, using equipment intended for this purpose and provided by him.

The test shall verify that there are no partially fractured pipes in the network, that any thrust blocks have been properly constructed, that the pipes will withstand the SANS test pressures for the classes of pipe specified as well as determine the degree of leakage from the network if any.

If the results indicate an unacceptable degree of leakage from the system, the Contractor shall at his own cost, locate the leaks and effect the necessary repairs so that a repeat test can be concluded to the satisfaction of the Consultant. All costs of repeat tests shall be borne by the Contractor, including those of the Consultant if he is unable to receive compensation from the Employer.

After pressure testing, and before sprinkler heads, nozzles or emitters are finally installed, all pipes and equipment shall be systematically flushed, starting nearest the source, until no debris remains in the system.

All valves must then be checked for correct closure and the bonnet removed for cleaning and further flushing if the valve contains stones or other foreign matter.

The pressure in the various zones shall be adjusted to that specified for the types of system installed using the flow control on the valves.

Irrigation times must be set according to the current irrigation requirements such that an adequate and economical watering regime is achieved, and all plant material is maintained in optimum conditions of development.

Any other adjustments must be made as directed by the Landscape Architect or Irrigation Consultant.

20.1.5. CHECKS DURING INSTALLATION

During installation the Contractor as well as the Landscape Architect should perform on-going audits to ensure all design specifications and regulations are met. The following checks should be undertaken regularly throughout construction:

- i. Whether all products meet appropriate product standards;
- ii. Whether all construction complies with all regulations, including engineering design specifications, and environmental and occupational health and safety requirements;
- iv. Whether appropriate disease prevention measures are being taken.
- v. Pressure testing

20.1.6. MANUFACTURERS WARRANTIES AND SERVICING FACILITIES

All materials and equipment installed shall carry a full guarantee by the manufacturer or distributor covering defective materials and workmanship, and the manufacturer or distributor of the equipment must have a full and permanent facility in South Africa for replacing and repairing or servicing the equipment, such facility carrying a stock of all the necessary spares so that these services can be effected without delay.

CHAPTER 21 — IRRIGATION COMMISSIONING

SECTION 21.1 AFTER INSTALLATION DOCUMENTATION

Following the completion of the installation the contractor should provide a complete record of work that includes:

- i. A commissioning report
- ii. Reproducible "As built" drawings of the system showing the location of all pipelines, control valves and sprinklers, with each valve on the drawing marked with the number of the controller station which operates it.
- iii. Written operating instructions and manuals including technical literature provided by the manufacturers covering the operation, adjustment and maintenance of all equipment installed.
- iv. A maintenance schedule for the proper maintenance of all structures and equipment.
- v. A complete set of any specialised tools necessary for carrying out routine adjustments or maintenance work on the system shall be supplied.
- vi. A list of recommended spare parts together with the names and addresses of two alternative suppliers.

Where appropriate the installing contractor and/or the designer should operate the system for an agreed commissioning period to ensure that the system operates to specification. This period should ideally be covered by a warranty. The warranty may extend beyond the commissioning period. If necessary, the contractor should arrange for training of key staff to ensure correct operation of all equipment.

21.1.1. OPERATIONS MANUAL

The system operation manual should specify the following:

- i. The correct way to operate all equipment and installations.
- ii. Scheduling methods and crop water requirements.
- iii. How the system should work and its optimal operating range.
- iv. Protocols for operating the system safely.
- v. How the system handles natural extreme events such as floods and storms.
- vi. How the system's operation will be monitored.
- vii. How environmental impacts such as drainage will be monitored.
- viii. Emergency procedures.

21.1.2. MAINTENANCE MANUAL

A system maintenance manual should include the following:

- i. A service manual and parts book.
- ii. A schedule of maintenance and replacement that specifies the frequency of inspection and service for all elements of the system.

Maintenance records as well as financial records of costs to operate and maintain the system should be kept.

PART E: SOFT LANDSCAPING

CHAPTER 22 — SOIL IMPROVEMENT

This chapter covers all soil improvement required for planting works, the supply, delivery and application of compost, agricultural (dolomitic) lime, Bone phosphate and other chemical fertilisers. Application requirements may vary according to soil test results.

Scope also includes the supply all necessary labour, machinery, transport and equipment for the fine trimming and seedbed preparation of site for planting.

SECTION 22.1 GENERAL

22.1.1. SOIL ANALYSIS

The Contractor shall take representative soil samples to be tested of all soils on which vegetation is to be established with the guidance of the Landscape Architect. These samples shall consist of at least 1 kg of soil. The sample shall be placed directly in a plastic bag and labelled with a location number or description from which the exact position can be established after testing.

The Contractor shall submit the results, together with the method used in the analysis, to the Landscape Architect. These results shall include the following and/or other components as specified:

- i. Phosphate (Bray I or Bray II method)
- ii. Potassium, Calcium, Magnesium and Sodium
- iii. pH (Water)
- iv. Soil fraction or particles and texture class.

22.1.2. PRODUCT DELIVERY, STORAGE AND HANDLING

Supply manufactured items such as fertilizer, bone meal, mulch, etc. in standard containers, clearly indicating contents, weight, component analysis, and the name of the manufacturer.

Store manufactured materials, subject to deterioration, in a weatherproof place off site and in such a manner that their effectiveness will not be impaired.

22.1.3. FINE TRIMMING FOR GROUND COVER AND LAWN AREAS

The Contractor must ensure that all areas to be planted are compacted sufficiently to avoid any subsidence later on. Soil surface to be planted should not exceed a tolerance of 30 mm in height when measured from the basic topographical line.

Provision must be made for proper and effective storm water drainage. Stones larger than 50 mm in diameter and all foreign material must be removed. Final surface must be shaped to desired profiles and tie in with existing levels.

22.1.4. MIXES

All ingredients shall be thoroughly mixed into topsoil and plant holes. Compost shall be well mixed at root zone level and not installed below root ball for trees. Topsoil and mix shall not be mixed while in a muddy condition.

SECTION 22.2 COMPOST

Compost must be free of weed, seeds, harmful salts, soil, sand, animal by-products and pathogens. The compost must be made up of pure plant organics (plant-based compost with no manure) and manufactured to within a 6.0 to 7.0 pH. The resultant porous nature of the pro-pH range of duct must yield a high water retention capacity, ensuring vigorous early and sustained growth to the maturity of all plant material.

Compost must not be stored in bulk on site and must be ensured safe covered storage away from wind, rain and sun. Contractor must prevent the compost from excessively drying out. Mature compost should be spread on the surface

at the required depth so that it constitutes between 25 and 30% of the final growing medium. The compost must then be thoroughly mix / rotovated into the entire growing medium profile.

Application rate:

- i. Open ground Trees: 0.3 m³
- ii. Trees out of 100 litre containers and larger: 0.06 m³
- iii. Trees and shrubs out of 50 litre containers and larger: 0.04 m³
- iv. Trees and shrubs out of 20 litre containers: 0.02 m³
- v. Trees and shrubs out of 10 litre containers: 0.01 m³
- vi. Groundcover areas: 0.04 m³/m²
- vii. Lawn areas: 0.01 m³/m²

Sample of compost must comply with specification and be approved by the Landscape Architect prior to delivery to site.

SECTION 22.3 CHEMICAL FERTILIZERS AND BONE PHOSPHATE

Before adding supplementary nutrients to soil the Contractor shall have the top 150 mm of the prepared surfaces tested and submitted to the Landscape Architect to determine the amount and type of fertilizer required for establishing proper growth conditions. The choice of the type of fertilizer to be used and the application thereof shall be the responsibility of the Contractor but shall be approved by the Landscape Architect before application. Excess applications of fertilizers can damage plants and result in leaching and potential environmental contamination.

Chemical fertilizers and bone phosphate to be complete commercial, packed in standard bags clearly showing the name of the manufacturer, weight and analysis by weight. (All according to the soil analysis recommendation.)

Fertilizers and bone phosphate shall be thoroughly mixed in with the soil within twelve hours after application, to prevent loss through wind and weather conditions. All soil improvement will be done in dry non-windy weather conditions.

Dolomitic lime must not be applied simultaneously with the super phosphate in the quantities specified in the soil analysis recommendation, unless otherwise instructed. The above-mentioned lime must be applied during the cross ripping / rotation procedure to a depth of 250 mm.

Where smaller quantities of agricultural lime are prescribed (400 kg / ha and less), Super phosphate may then be added and worked in to 200 mm depth. If lime has to be added in quantities larger than 400 kg / ha, then Superphosphates must be added 6 weeks later to 200 mm depth.

22.3.1. SUPERPHOSPHATE FERTILIZER

Purchase and apply only upon instruction from Landscape Architect (depending on soil analysis).

Application rate for plant holes:

- i. 100 l trees and larger: 300 g/hole
- ii. 50 l trees/shrubs: 200 g/hole
- iii. 10 & 20 l Plants: 100 g/hole
- iv. 2 & 4 l Plants: 20 g/hole
- v. Application rate over surface: 100 g/m²

Spread prior to fine trimming and work into a depth of 200 mm / spread in plant hole.

22.3.2. SLOW RELEASE GRANULAR 2:3:2 FERTILIZER

Purchase and apply only upon instruction from Landscape Architect (depending on soil analysis).

Application rate for plant holes:

- i. 100 l trees and larger: 1 kg/hole
 - a. This should be mixed well with the soil that has been removed from the hole.
- ii. 50 l trees/shrubs: 750 g/hole
 - a. This should be mixed well with the soil that has been removed from the hole.
- iii. 20 l Plants: 500 g/hole
 - a. This should be mixed well with the soil that has been removed from the hole.
- iv. 4 & 2 l Plants: 250 g/hole
 - a. This should be mixed well with the soil that has been removed from the hole.
- v. Application rate for Groundcover areas: 100 g/m²
 - a. This should be mixed well with the soil prior to planting.

- vi. Application rate for Lawn areas: 100 g/m²
 - a. Apply this with an accurately calibrated fertilizer spreader. Lightly rake the fertilizer into the top 10mm of the surface.
- i. Application rate for Hydroseeded Veld grass areas: 50 g/m²
 - a. Mix well into soil / compost mix before planting.
 - b. As these are natural areas no additional feeding should be necessary after establishment.

Spread prior to fine trimming and work into a depth of 200 mm / spread in plant hole.

22.3.3. LIMESTONE AMMONIUM NITRATE (LAN)

Purchase and apply only upon instruction from Landscape Architect (depending on soil analysis). Provision made for 3 applications for lawn and groundcover areas. Spread two weeks after planting, thereafter upon instruction from Landscape Architect. Irrigate well after every application

Application rate:

- i. Groundcover Areas: 25 g/m²
- ii. Lawn Areas: 15 g/m²

22.3.4. MIXTURE 5:1:5 FERTILISER

Purchase and apply only upon instruction from Landscape Architect (depending on soil analysis) during maintenance contract. Provision made for 3 applications. Irrigate well after every application.

Application rate:

- i. 30 g/m² for lawn and groundcover areas

22.3.5. BONE MEAL

Purchase and apply only upon instruction from Landscape Architect (depending on soil analysis).

Application rate:

- i. 50 l, 100 l trees and larger: 50 g/hole
- ii. 10 & 20 l plants: 30 g/hole

22.3.6. FERTILISER TABLETS

Purchase and apply only upon instruction from Landscape Architect (depending on soil analysis). Tree tablets to be organic of the type 21gm and slow-release (minimum 2-year release).

Application rate:

- i. Open ground Trees: 10 tablets
- ii. Trees out of 100 litre containers and larger: 6 tablets
- iii. Trees and shrubs out of 50 litre containers and larger: 4 tablets
- iv. Trees and shrubs out of 20 litre containers: 2 tablets
- v. Trees and shrubs out of 10 litre containers: 1 tablet

22.3.7. MOISTURE RETENTION SOIL ADDITIVE

Purchase and apply only upon instruction from Landscape Architect (depending on soil analysis). Only non-toxic and environmentally friendly brands will be allowed. The optimum ratio of moisture retaining soil additive should be at 3- 4% mixture to the topsoil at the roots level.

Application rate:

- i. Trees: 20 – 120 kg per tree
 - a. Application method – depends on root depth and the size of the tree planting hole to achieve 3% ratio by volume. Mix the additive with the backfill soil and fill around the roots of the plants.
- ii. Shrubs (standalone): 0.5 – 2 kg per shrub
 - a. Application method – depends on root depth and volume. Mix the additive with the backfill soil and fill around the roots of the plants.
- iii. Shrub beds: 5 kg per m²
 - a. Application method – mixed into the upper 200mm of the topsoil.
- iv. Groundcover areas: 3 kg per m²
 - a. Application method – mixed into the upper 150mm of the topsoil.
- v. Lawn areas: 3 kg per m²

- a. Application method – mixed into the upper 100mm of the topsoil.

SECTION 22.4 MULCH

Supply and deliver organic mulches to a depth of 50 mm – 75 mm in all planted areas (excluding lawn and veld grass areas) or to landscape architects' specification. Chips to have a nominal size of 20 mm – 80 mm. All to approval of the Landscape architect.

Organic mulches (compost, straw, bark chips, etc.) benefit the landscape environment further by increasing the organic matter and microbial activity in soil, providing an ideal environment for other beneficial soil organisms.

All mulches increase the water-holding capacity of soil and reduce the need for frequent watering. They reduce and maintain more even temperatures, prevent weed growth, protect soil from erosion and provide a 'finished' look to a landscape.

Inorganic mulches (aggregate stone, river pebbles, etc.) are to be utilised only if specifically requested by the Landscape Architect.

CHAPTER 23 — PLANTING

This chapter covers the supply, storage (if applicable), planting and maintenance of planting material for the duration of the contract.

SECTION 23.0A. INVASIVE ALIEN PLANT MANAGEMENT

23.0.1. LEGISLATIVE COMPLIANCE

All planting works shall comply with the National Environmental Management: Biodiversity Act (NEM:BA, Act No. 10 of 2004) and the Alien and Invasive Species (AIS) Regulations (2016). It is unlawful to plant, cultivate, sell or permit the spread of Category 1A, 1B or 2 listed invasive species. The Contractor and Landscape Architect shall ensure that:

- i. No listed invasive alien plant species are planted or retained on site;
- ii. Any invasive species identified on site during pre-construction survey are removed and disposed of in accordance with the AIS Regulations before construction commences;
- iii. Disturbance activities that may promote invasive spread (e.g. topsoil stripping, vegetation clearing) are followed immediately by rehabilitation or planting to prevent re-invasion.

23.0.2. KZN CONTEXT

KwaZulu-Natal has a high diversity of invasive species in both coastal and inland environments. Species of particular concern in the eThekweni municipal area include (but are not limited to): *Chromolaena odorata* (triffid weed), *Lantana camara*, *Psidium guajava* (guava), *Melia azedarach* (syringa), *Solanum mauritianum* (bugweed), *Acacia mearnsii* (black wattle) and various *Eucalyptus* and *Pinus* species. The Contractor shall refer to the current SANBI/EDTEA invasive species lists for the KwaZulu-Natal province.

23.0.3. INDIGENOUS PLANTING PREFERENCE

In accordance with the PRDGS and D'MOSS objectives, a minimum of 80% of all planted species (by number of individuals) shall be indigenous to KwaZulu-Natal. Where coastal, estuarine or riparian environments are involved, 100% indigenous planting using locally provenant material is required. The Landscape Architect shall approve the full plant schedule prior to procurement.

SECTION 23.1 PLANT MATERIAL

All plant material must be nursery grown and be in a healthy vigorous growing condition free of disease and / or pests. Purchase all plants at registered SANA nurseries. Plants should preferably be sourced locally, however the contractor must provide for sourcing of plant species countrywide. Nomenclature of specified plants shall conform to the International Code of Nomenclature for Cultivated Plants. The names of varieties named therein are generally in confirmation with the names accepted in the nursery trade.

Plant Material must be true to name and type, structurally sound, well branched, healthy and vigorous and free from disease, insect infestations, rodent damage, sun scald, salt spray damage, and other abrasions to the bark and densely foliated. No pot bound plants will be accepted, roots should be evenly spread through the

root medium with a healthy well rooted, well balanced developed root system. Pruning wounds must show vigorous bark growth on all edges and all parts must show live and green cambium tissue when cut. No broken, bruised or misshaped plants should be stored or planted on the site. Dead plants should immediately be removed from the site.

All material must conform to the sizes shown on the plant list, except that larger material may be used when approved by the Landscape Architect. Use of larger plants will not increase the tendered price.

Botanical names of all tree and shrub species on site must be clearly identifiable prior to planting by attaching labels to stems. Label must not strangle stems and will only be removed after practical completion, after handover to the Employer. All plants must be transported to the site in trucks with closed canopies. Plants in transit may not be exposed to wind or any other harmful elements. Plants must be acclimatised to conditions on site prior to arrival on site.

23.1.1. INSPECTION

Plant material must be made available at the source for inspection by the Landscape Architect. Approval of plant material at source will not impair the right of the Landscape Architect to inspect plants upon arrival on the site or during the course of construction and to reject plants which have been damaged, or which, in any way do not conform to the specifications. Give timely notice in writing to the Landscape Architect when acceptance is required. If partial acceptance is desired, give notice to the Landscape Architect in writing.

Final inspection of all plant material will be made at the end of the specified guarantee period. All plants must be in a healthy growing condition at the time of this inspection. Container and plant sizes must be in accordance with the specification in the Bill of Quantities. Sizes relate to the time of planting and not to the size of plant at the end of the contract or maintenance period.

23.1.2. STORAGE OF PLANTS

Any plants not immediately replanted are the responsibility of the Contractor and shall be kept under approved nursery conditions in an area approved by the Landscape Architect. All plants shall be maintained by regular watering, as well as, by providing protection against wind, excessive humidity, salt spray and direct midday sunlight until such time as they are to be replanted. The cost of providing a nursery shall be held to be included in the tendered rates for Site Establishment. Plants are not to be kept on site for a period of more than four (4) months.

23.1.3. PLANTS FURNISHED BY THE EMPLOYER (ETHEKWINI MUNICIPALITY NURSERY)

In the case of plants that are to be supplied by the Employer, the Contractor shall give at least six weeks advance notice of his requirements to the eThekweni Municipality's Nursery. The collection, loading and transportation of the plants from the nursery will be the responsibility of the Contractor. This includes any machinery and labour needed for the loading of the plants at the nursery and offloading on site.

Upon receipt of the plants the Contractor shall ensure that the plants are in good condition and free from obvious diseases and pests. No damaged or deformed plants shall be stored or planted on the site and shall immediately be removed and replaced by the Contractor. The plants shall be fully maintained from the date of receipt until the end of the Period of Maintaining, including watering, weeding, fertilizing, etc. Any losses of plants due to the lack of maintenance, including diseases developed during the Contract Period and Period of Maintaining, shall be replaced at the Contractor's expense.

23.1.4. SUBSTITUTIONS

Supply and install plant material as specified on the plant list. Requests for substitution with other plant material must be submitted to the Landscape architect for approval prior to any ordering thereof.

23.1.5. DAMAGE AND REPLACEMENTS

The Contractor will replace all plants at his own expense with same species, or similar approved and size due to losses incurred during the contract and maintenance periods for any reasons whatsoever, be they due to tropical storm events, storm water damage, wind damage, vandalism, theft, etc. All plant material found dead, or not in a healthy, satisfactory growing condition or which, in any other way, does not meet the requirements of the specifications, shall be replaced by the Contractor at his own expense.

The guarantee on plant material and irrigation work executed shall run concurrent to the Maintenance Period. All replacements must be plants of the same size and species as shown on the plant list, supplied and planted in accordance with the drawings and specifications

SECTION 23.2 GENERAL PLANTING GUIDELINES

Planting work is to be carried out by experienced personnel under the direction of a skilled foreman / site agent. Proceed with planting operations only during suitable weather conditions. Do not use plant material of which the root ball has been cracked or broken preparatory to or during the planting process.

If impenetrable shale, solid rock or clay layers are present just below the soil surface, making it impossible to make the appropriate hole size to accommodate the container plant without entering the impenetrable layers, or if a high water table causes problems, the Contractor shall request the necessary guidance immediately from the Landscape Architect.

23.2.1. SOIL PREPARATION

This section covers the preparation of the in-situ soil before and after ground shaping where no topsoil needs to be imported. All soil should be loosened to a depth of 300 mm by hand or with a mechanical ripper. It may be necessary to soak the soil periodically during this process to achieve the required depth.

Evaluate the condition of soil and take soil samples for testing as is required. Identify soil ameliorants (fertilizer, bone meal, compost, etc.) as recommended by the soil test and apply correct amounts needed over the entire surface and thoroughly mix them into the entire growing media profile.

Cultivate and bring the soil to a fine tilth, this is best achieved by making several passes with an appropriate rotovator. Remove all stones bigger than 15 mm, unwanted vegetation and any other rubble and rubbish. After the final cultivation the final shaping of the ground profile and preparation of planting beds is done by floating out the surface with a box blade or hand rakes. Water well to settle the newly prepared soil. This is the final step before planting.

SECTION 23.3 PLANTING OF TREES

23.3.1. TREE PLANT SIZES

- i. Trees out of 200 l size containers: 5500 mm stem height after planting with stem diameter of 150 mm measured 300 mm above soil level and with a crown diameter of 2000 mm. Root ball to be approximately 1500 mm across and 1000 mm deep. Tree to be naturally shaped and full bodied.
- ii. Trees out of 100 l size containers: 2500 mm stem height after planting with stem diameter of 60 mm measured 200 mm above soil level and with a crown diameter of 1200 mm. Tree to be naturally shaped and full bodied.
- iii. Trees out of 50 l size containers: 2000 mm stem height after planting with stem diameter of 40 mm measured 200 mm above soil level and with a crown diameter of 1000 mm. Tree to be naturally shaped and full bodied.
- iv. Trees out of 20 l size containers: 1600 mm stem height after planting with stem diameter of 25 mm measured 200 mm above soil level and with a crown diameter of 500 mm. Tree to be naturally shaped and full bodied.
- v. Open ground trees are to be utilised only if specified by the Landscape Architect.

23.3.2. PLANTING METHOD OF TREES

The location of all tree planting pits shall be marked out on site by the Contractor, and approved by the Landscape Architect, prior to excavation.

Prepare the tree planting hole by digging a hole that is at least twice the width of the bag /container but no deeper than the root mass. Square holes are preferred to round holes especially in harder or compact soils and all sides must be vertical. The sides of the planting hole should be roughed up with a spade to break up compaction caused by the spade.

Next prepare the soil by thoroughly mixing a plant-based compost into the excavated material. The compost should make up 30% of the volume of each hole. Thoroughly mix into the excavated material an application of suitable fertilizers as recommended by the Landscape Architect.

Before planting remove the bag with a sharp blade and not a blunt spade. Next with a sharp knife carefully remove the plastic bag without damaging the root ball.

Position the tree in the middle of the excavated hole ensuring that the trunk is straight and that the root ball is level. Face the plant to give the best appearance in relationship to adjacent structures. Cut away any ropes or tags which might girdle the trees.

Next backfill the planting hole with a third of the prepared backfill mix and put the tree in. Ensure the tree's root ball is level with the surrounding area, with root flare above ground level. Then fill the hole with the remainder of the backfill mix.

To eliminate the air pockets water as the backfilled soil is placed in the hole and gently firm the soil around the roots. If the planting hole is dug deeper than the mass of the root ball, tamp firmly to prevent settling below finished level and plant 50 mm higher than the surrounding soil level to accommodate future settling.

Create a circular bowl around the base of the planted tree with the excess mixed material. Ensure that the bowl is level so that when watering the entire bowl fills up evenly. Water the newly planted tree by slowly running in water from a hand-held hose. Preferably use a trigger nozzle to minimize water wastage.

Stake the tree with a recognized tree stake, as recommended in Section 23.3.3: Tree Planting Accessories below. The thick end of the stake must be driven at least 150 mm into the original compacted ground and not just into the prepared soil of the trees hole. The stake must be planted well out of contact with the trees' root system and the stake should not be longer than the height of the tree. Loosely apply the specified tree tie (refer to Section 23.3.3: Tree Planting Accessories) so that the movement of the tree is not restricted. Tack the tree tie in position on the stake. Remove all surplus material. Clean tree stem up as required and treat any wounds to Landscape Architects instruction.

Fill the tree bowl with 75 mm of organic mulch ensuring the root flare and base of the tree remain exposed.

Trees that cannot be planted immediately (i.e. trees in containers), should be stored in a designated area as provided by the Contractor and should be tended up to and including such time as the trees are planted.

Open ground trees are only to be utilised if specified by the Landscape Architect. If specified refer to Section 23.4: Planting of Open Ground Trees below for the planting method.

23.3.3. TREE PLANTING ACCESSORIES

Anchor stakes to be sturdy, straight, planed all round, Tanalith treated wooden poles, these stakes must be at least 50 mm in diameter (minimum) should not be longer than the height of the tree. They should be suitably sharpened at one end, long enough to be securely planted, giving enough support throughout the tree's main stem.

For trees out of open ground suitable stabilising anchors are to be used and approved by the Landscape Architect.

Tree ties to be approved rubber hose type strapping, reinforced internally with 5 mm galvanised wire, nailed into the stake at the most suitable height, or a suitably approved alternative, approval of which is to be obtained prior from the Landscape Architect.

SECTION 23.4 PLANTING OF OPEN GROUND TREES / TRANSPLANTING TREES

Open ground trees are only to be utilised if specified by the Landscape Architect. Trees from open ground should be carefully lifted and transported to the site under ideal conditions i.e. kept moist protected against sun and wind.

Trees should be replanted, as far as possible, on the same day as being lifted, or laid in soil on site to prevent their roots drying out. They must be sourced from a legal vendor and comply with conservation regulations. The minimum root ball size of an open ground tree should be 1.2 m diameter and 600 mm deep.

Trees should preferably be hardened off before being prepared for lifting and delivery.

23.4.1. PLANTING METHOD

Prepare the tree planting hole. The excavated hole should be a minimum of 2 x 2 x 1m deep. It should be dish shaped, and the sides of the planting hole should be roughed up with a spade to break up compaction caused by the spade. Cylindrical holes should be avoided. All holes should have a drainage slot on the low side of the hole to accommodate a drainage pipe.

Next prepare the soil / growing mix with a growing media mix to consisting of the following:

- i. 70% topsoil
- ii. 30% mature plant-based compost
- iii. 5 kg bone meal per m³
- iv. 3 kg of organic fertilizer per m³ (dependent on results of soil tests)

This growing media should be meticulously mixed in a designated area and stockpiled for use in the planting process. Sufficient growing media mix should be in the proximity of the planting operation the day before planting.

The trees are to be in good condition, freshly harvested or stabilised off-site. During loading, unloading or planting under no circumstances should the tree be lifted by the stem. Failure to comply with this will result in the instant rejection of the tree.

Before planting a record of the following is to be noted on a tag nailed low down on the stem, with a permanent marker:

- v. Date Harvested
- vi. Date Planted
- vii. Root ball diameter
- viii. Root ball depth
- ix. Height of tree from flare
- x. Number of tree

The root ball should be watered immediately after harvesting, arrive on site moist and be kept moist until finally watered in-situ. Unobstructed roots grow horizontally, as such it is important to direct them so during installation.

Position the tree so that the final level of the tree ball is 150 mm higher than the surrounding soil level and higher in the case of potential waterlogging. Ring the bottom of the root ball with 60 mm perforated cordrain pipe. The two ends must meet at the drainage slot. Install 110 mm perforated inspection pipe right to the bottom of the hole at the drainage slot. The inspection pipe should have a cap properly secured to the pipe. Ensure that soil does not fill this pipe.

Next partially backfill the hole with the growing media mixture to the required height to set the tree bowl. Install a tap and sprayer at the end of the hose that is to water the tree. This should allow you to switch the water on and off at the tree and control the flow. Lightly water as back filling takes place. Compact the backfill to avoid future settling.

As back filling takes place remove tree from the wire cage with care so that the root ball is not disturbed and set the tree in the most stable vertical position, unless otherwise specified by the Landscape Architect. Backfill only up to the soil level on the splay of the tree. This is critical.

Create a symmetrical, level, watering bowl exactly the same dimensions as the tree bowl. This is to ensure that the initial watering is to the root ball and does not bypass it down the side. Slowly water to saturate the root ball and remove air pockets in the back-fill.

Finally apply 75 mm of mulch to the watering bowl, taking care not to let it come into contact with the trunk and root flare. The Landscape Architect is to be present from the arrival of the tree until the completed transplant.

SECTION 23.5 EXISTING TREES

Evaluate whether work to take place will impact on existing trees and refer to the Landscape Architect where necessary. Existing trees to be retained as far as possible. No existing trees are to be removed unless specified or approved by the Landscape Architect.

SECTION 23.6 PLANTING OF SHRUBS

23.6.1. SHRUB PLANT SIZES

- xi. Shrubs out of 10l containers: 500 to 800 mm height and 200 to 600 wide after planting depending on species.
- xii. Shrubs out of 4l containers: 300 to 500 mm height and/or runner length after planting depending on species.

23.6.2. SHRUBS PLANTED IN A PLANTING BED

Prepare the planting area as referred to in Section 23.2.1: Soil Preparation.

Prepare the shrub planting hole in the prepared planting area by digging a hole twice the width of the bag /container but no deeper than the root mass. Square holes are preferred to round holes especially in harder or compact soils and all sides must be vertical.

Next with a sharp knife carefully remove the plastic bag without damaging the root ball. Position the shrub in the middle of the backfilled hole, ensuring it is level and straight. Planting densities as indicated on the approved plan should be adhered to at all times unless otherwise instructed by the Landscape Architect.

Backfill planting hole with backfill from excavated hole, and shrubs root ball level with the surrounding area. To eliminate air pockets, water as the backfill soil is placed in the hole and gently firm the soil around the roots. Create a small symmetrical bowl around the plant with the plant in the middle. Saturate the planting hole by slowly watering every plant.

Apply a suitable layer of organic mulch around the base of shrubs and groundcovers to a depth of 50 mm -70 mm ensuring the root interface is left exposed. Keep transplants well-watered.

23.6.3. SHRUBS PLANTED INDIVIDUALLY

Prepare the shrub planting hole in the prepared planting area by digging a hole twice the width of the bag /container but no deeper than the root mass. Square holes are preferred to round holes especially in harder or compact soils and all sides must be vertical.

Next prepare the soil by thoroughly mixing a plant-based compost into the excavated material. The compost should make up 30% of the volume of each hole. Thoroughly mix into the excavated material an application of suitable fertilizers as recommended by the Landscape Architect.

With a sharp knife carefully remove the plastic bag without damaging the root ball. Position the shrub in the middle of the backfilled hole, ensuring it is level and straight. Planting densities as indicated on the approved plan should be adhered to at all times unless otherwise instructed by the Landscape Architect.

Backfill planting hole with backfill from excavated hole, and shrubs root ball level with the surrounding area. To eliminate air pockets, water as the backfill soil is placed in the hole and gently firm the soil around the roots. Create a small symmetrical bowl around the plant with the plant in the middle. Saturate the planting hole by slowly watering every plant.

Apply a suitable layer of organic mulch around the base of shrubs and groundcovers to a depth of 50 mm -70 mm ensuring the root interface is left exposed. Keep transplants well-watered.

23.6.4. OPEN GROUND ALOES

Open ground aloes are only to be utilised if specified by the Landscape Architect. Aloes from open ground should be carefully lifted and transported to the site under ideal conditions i.e. kept moist protected against sun and wind.

Aloes should be replanted, as far as possible, on the same day as being lifted, or laid in soil on site to prevent their roots drying out. They must be sourced from a legal vendor and comply with conservation regulations.

Aloes should preferably be hardened off before being prepared for lifting and delivery.

SECTION 23.7 PLANTING OF GROUNDCOVERS

23.7.1. GROUNDCOVER PLANT SIZES

- i. Groundcovers out of 10l containers: 500 to 800 mm height and 200 to 600 wide after planting depending on species.
- ii. Groundcovers out of 4l containers: 300 to 500 mm height and/or runner length after planting depending on species.
- iii. Groundcovers out of 2l containers: 150 to 350 mm height and/or runner length after planting depending on species.
- iv. Groundcovers out of plugs: 50 to 200 mm height and/or runner length after planting depending on species. Plugs to be well rooted and established in container.

23.7.2. PLANTING METHOD OF GROUNDCOVERS

Prepare the planting area as referred to in Section 23.2.1: Soil Preparation.

Prepare the planting hole in the prepared planting area by digging a hole twice the width of the bag /container but no deeper than the root mass. Square holes are preferred to round holes especially in harder or compact soils and all sides must be vertical.

Next with a sharp knife carefully remove the plastic bag without damaging the root ball. Keep transplants well-watered. Position the groundcover in the middle of the backfilled hole, ensuring it is level and straight. Planting

densities as indicated on the approved plan should be adhered to at all times unless otherwise instructed by the Landscape Architect.

Backfill planting hole with backfill from excavated hole, and the groundcovers root ball level with the surrounding area. To eliminate air pockets, water as the backfill soil is placed in the hole and gently firm the soil around the roots. Create a small symmetrical bowl around the plant with the plant in the middle. Saturate the planting hole by slowly watering every plant.

Apply a suitable layer of organic mulch around the base of shrubs and groundcovers to a depth of 50 mm -70 mm ensuring the root interface is left exposed. Keep transplants well-watered.

SECTION 23.8 PLANTING OF LAWN

23.8.1. GENERAL

Lawn must be pure as regards to the species, unless specified as 'veld sods,' which may contain more than one species. The lawn shall have a good, healthy green colour, without any dead spots. All lawn is to be obtained from an approved source, mown short and weed free.

23.8.2. LAWN PLANT SIZES

- i. Lawn sods must be 1000 mm X 500 mm in size. The lawn must be cut short and be weed free.
- ii. Sprigs must be well matted and have a soil layer of at least 5 mm.

23.8.3. INSTALLATION OF SOD LAWNS

23.8.3.1. REMOVE EXISTING LAWN

Should any existing turf be already in place and unless otherwise specified by the Landscape Architect all existing lawn is to be removed prior to planting new lawn.

- i. Strip off and remove all existing turf up to and including root level.
- ii. Remove stripped turf completely from site and dispose of.

23.8.3.2. ROTOVATE

- i. Rotovate the soil to a minimum depth of 100mm.
- ii. In the area immediately below the track, rip to a depth of 300mm.
- iii. Rotovate in two directions.
- iv. Ensure that all foreign plant material including roots are removed and disposed of.
- v. Ensure that all rubble, stone and other undesirable material is removed and disposed of.

23.8.3.3. FERTILISE

- i. Undertake a representative soil test of the area to be planted for fertilizer, lime and compost recommendations to obtain optimum nutrient levels, pH and organic content.
- ii. Unless otherwise specified in the soil test, both slow and quick release NPK fertiliser is to be applied as per manufacturer specification for spring application. Contractor to motivate recommendations.
- iii. Unless otherwise specified in the soil test, add compost to improve water holding capacity and soil texture.
- iv. Fertilisers to be of commercial quality, packed in standard bags clearly showing the name of the manufacturer, weight and analysis by weight.
- v. Fertilisers to be thoroughly mixed in with the soil within twelve hours after application in order to prevent loss through wind and weather conditions.
- vi. Compost must be free of weed, seeds, harmful salts, soil, sand, animal by-products and pathogens. The compost must be made up of pure plant organics and manufactured within a 6.0 to 7.0 pH range.
- vii. All soil improvement to be done in dry and non-windy weather conditions.

23.8.3.4. LEVEL AND COMPACT

- i. Ensure that this area is levelled according to the current slope with no depressions, humps or bumps. Soil surface should not exceed a tolerance of 30 mm in height when measured from the basic topographical line.
- ii. Final surface must be shaped to ensure proper drainage and prevent erosion.
- iii. Should fill be needed, the imported 'track' soil may be considered subject to a soil test by an authorised institution, and enrichment of the soil as recommended.
- iv. Ensure that all areas to be planted are compacted sufficiently to avoid any subsidence later on.

23.8.3.5. SOD

- i. Sods must be cut short and weed free. Sods must be well matted and have a soil layer embedding the root zone. Lawn must be pure as regards to the species and must have a good, healthy green colour, without any dead spots.
- ii. Sods must be transported to the site in a rolled up form or on pallets and be protected from excessive sun, heat and from drying out.
- iii. Sods must be laid down on the same day on ground that has been wet lightly. Sods which lie on the site for more than a day before being planted will not be accepted by the Landscape Architect.
- iv. Sods must be laid against each other to form a continuous grass mat where the height between the sods does not exceed 5mm.
- v. A mixture of topsoil and compost must be worked in-between the sods.
- vi. After laying, the sods must be rolled with a garden roller to ensure a level surface.
- vii. All the sods must, immediately after being laid, be thoroughly irrigated and kept moist.
- viii. All sods laid against steep slopes must be anchored to the ground by means of stakes or anchors in such a way that the anchor will not damage any machinery.
- ix. Anchors and stakes must be removed after the specified maintenance period.

23.8.3.6. TOP DRESS

- i. Top dressing must consist of equal parts of topsoil and compost. Compost must be free of weed, seeds, harmful salts, soil, sand, animal by-products and pathogens. The compost must be made up of pure plant organics and manufactured within a 6.0 to 7.0 pH range.
- ii. Top dress all sodded areas after laying.
- iii. Ensure that the grass is cut and all cuttings removed.
- iv. Apply top dressing in layers with a maximum thickness of 5-10 mm, roll and neatly finish.
- v. A topdressing mix using the imported 'track' soil may be considered subject to a soil test by an authorised institution, and enrichment of the soil as recommended.
- vi. The application of the topdressing may be withheld until later in the 3-month maintenance period. Contractor to motivate should this be preferred.

23.8.3.7. CLEAN-UP

- i. On completion of the planting operations, remove all surplus material from the site.
- ii. Make good all damage resulting from planting operations.

23.8.4. INSTALLATION OF SPRIG LAWNS

In the event that sprigs are specified, these must be taken from the sods immediately prior to planting.

23.8.4.1. RIPPING

- i. Rip the soil to a depth of 100mm.
- ii. All existing lawn growth is to be ripped into the affected area.
- iii. Ensure that dust control measures are in place and soil moisture levels are at an ideal spectrum before the commencement of ripping.

23.8.4.2. SOIL AMELIORATION

- i. Undertake a representative soil test of the area to be rehabilitated for fertilizer, lime and compost recommendations to obtain optimum nutrient levels, pH and organic content.
- ii. Unless otherwise specified in the soil test, add compost to improve water holding capacity and soil texture.
- iii. Compost must be free of weed, seeds, harmful salts, soil, sand, animal by-products and pathogens. The compost must be made up of pure plant organics and manufactured within a 6.0 to 7.0 pH range.
- iv. All soil improvement to be done in dry and non-windy weather conditions.

23.8.4.3. ROTOVATE

- i. Rotovate in two directions.
- ii. Ensure that all rubble, stone and other undesirable material is removed and disposed of.
- iii. Ensure that dust control measures are in place and soil moisture levels are at an ideal spectrum before the commencement of rotovating.

23.8.4.4. LEVELLING

- i. Ensure that this area is levelled according to the current slope with no depressions, humps or bumps. Soil surface should not exceed a tolerance of 30 mm in height when measured from the basic topographical line.
- ii. Final surface must be shaped to ensure proper drainage and prevent erosion.

23.8.4.5. SPRIG

- i. Sprigs to be applied at a rate of 20 plugs per square m.
- ii. Ideally, sprigs should be planted within 48 hours of being harvested.
- iii. Lightly roll the sprigs in.
- iv. Ensure that all areas to be planted are compacted sufficiently to avoid any subsidence later on.

23.8.4.6. TOP DRESS

- i. Top dressing must consist of equal parts of topsoil and compost. Compost must be free of weed, seeds, harmful salts, soil, sand, animal by-products and pathogens. The compost must be made up of pure plant organics and manufactured within a 6.0 to 7.0 pH range.
- ii. Top dress all affected areas after laying sprigs.
- iii. Apply top dressing in layers with a maximum thickness of 5-10 mm, roll and neatly finish.
- iv. The application of the topdressing may be withheld until later in the specified maintenance period. Contractor to motivate should this be preferred.

23.8.4.7. FERTILISE

- i. Unless otherwise specified in the soil test, both slow and quick release NPK fertiliser is to be applied 7- 10 days following the completion of construction works, as per manufacturer specification for spring application. Contractor to motivate recommendations.
- ii. Fertilisers to be of commercial quality, packed in standard bags clearly showing the name of the manufacturer, weight and analysis by weight.
- iii. Fertilisers to be thoroughly mixed in with the soil within twelve hours after application in order to prevent loss through wind and weather conditions.

23.8.4.8. CLEAN-UP

- i. On completion of the planting operations, remove all surplus material from the site.
- ii. Make good all damage resulting from planting operations.

23.8.5. INSTALLATION OF SEEDED LAWNS

Lawns established via seeding will only be installed by the Contractor if the Landscape Architect issues instructions to do so.

23.8.5.1. SEEDING

- i. For seeded lawn, undertake ripping, soil amelioration and rotovating as referred to in Section 23.8.4.
- ii. Distribute the specified seed evenly by hand or mechanical spreader.
- iii. Lawn seed species to be provided by the Landscape Architect.
- iv. Seed must be supplied and spread at 20g/m² (200kg per hectare).
- v. The seed must then be raked into the soil, levelled, rolled and irrigated.
- vi. Top dress and fertilise as per Section 23.8.4.

23.8.6. MAINTENANCE & REHABILITATION OF EXISTING LAWN AREAS**23.8.6.1. AERATE / SCARIFY / LOOSEN**

- i. Aerate the entire area utilising a spike roll or similar.
- ii. Aerate in at least 2 directions.
- iii. Remove visible weeds and other undesirable organic material and dispose of.
- iv. Ensure that all rubble, stone and other undesirable material is removed and disposed of.
- v. Scarify if thatch layer and level of compaction justify such. Contractor to motivate in this regard.
- vi. Lightly loosen the soil across the entire area to improve the seedbed.

23.8.6.2. LEVEL

- i. Ensure that this area is levelled according to the current slope with no depressions, humps or bumps. Soil surface should not exceed a tolerance of 30 mm in height when measured from the basic topographical line.
- ii. Levelling can take place either through mechanical or by manual means.
- iii. Should fill be needed, the imported 'track' soil may be considered subject to a soil test by an authorised institution, and enrichment of the soil as recommended.
- iv. Ensure that all areas that are filled are properly compacted to avoid any subsidence later on.

23.8.6.3. OVER SEED / SPRIG / SOD

- i. Sprig denuded areas greater than 200 x 200mm. Sprigs to be applied at a rate of 20 plugs per square meter before over seeding. Ideally, sprigs should be planted within 48 hours after being harvested.
- ii. Re-sod denuded areas larger than 2000 x 2000mm. For the laying of sods refer to Section 23.8.3: Installation of Sod Lawns. Take care to ensure that the final turf level does not exceed a tolerance of 30 mm in height.
- iii. Distribute seed evenly at a rate of 20g/m² (200kg per hectare) over the entire existing lawn area. Rake the seed into the soil, roll and irrigate.

23.8.6.4. TOP DRESS

- i. Top dressing must consist of equal parts of topsoil and compost. Compost must be free of weed, seeds, harmful salts, soil, sand, animal by-products and pathogens. The compost must be made up of pure plant organics and manufactured within a 6.0 to 7.0 pH range.
- ii. Top dress all areas after sprigging / seeding / sodding.
- iii. Apply top dressing in layers with a maximum thickness of 5-10 mm, roll and neatly finish.
- iv. A topdressing mix using the imported 'track' soil may be considered subject to a soil test by an authorised institution, and enrichment of the soil as recommended.

23.8.6.5. FERTILISE

- i. Fertiliser must be incorporated during top dressing.
- ii. Unless otherwise specified in a soil test, both slow and quick release NPK fertiliser is to be applied as per manufacturer specification for spring application. Contractor to motivate recommendations.
- iii. Fertilisers to be of commercial quality, packed in standard bags clearly showing the name of the manufacturer, weight and analysis by weight.
- iv. The fertilised area is to be well irrigated after each application to ensure that there is no fertiliser left on the leaves of the grass.

23.8.6.6. CLEAN-UP

- i. On completion of the planting operations, remove all surplus material from the site.
- ii. Make good all damage resulting from planting operations.

SECTION 23.9 HYDROSEEDING

Includes all materials and work relating to the supply, preparation, fertilisation, application and initial maintenance of hydroseeding.

- i. Supply grass seeding mix at specified density. Final Mix to be confirmed by Landscape Architect.
- ii. Supply processed mulch which consists of either straw or weed free veld grass that has been processed by an agricultural hammermill where the fibre length does not exceed 25 mm and apply at a rate of 250 kg/ha.
- iii. Supply agricultural lime at a rate of 1000 kg/ha.
- iv. Supply superphosphate at a rate of 500 kg/ha.
- v. Supply Limestone Ammonium Nitrate at a rate of 250 kg/ha. Apply 8 to 12 weeks after germination.
- vi. Supply Urea 150 kg/ha. Apply 8 to 12 weeks after germination.
- vii. Supply 2:3:2 (22)+Zn at a rate of 350 kg/ha.
- viii. Supply 3:2:2 (22)+Zn at a rate of 350 kg/ha.
- ix. Supply GROMOR organic supplement or similar approved processed chicken/cattle manure will be applied at 1000 kg/ha.
- x. Supply soil binder / anti erosion compound such as HYDROPAM at a rate of 5 kg/ha or as specified by the suppliers. The soil binder/anti erosion compound will be applied simultaneously with the hydroseeding mixture.

The tendered rates shall include full compensation for supplying and applying the specified mixture, weeding of noxious weeds, reseeding all or any bare patches, applying fertiliser at a later stage and mowing, and all other work that that may be necessary for establishing an acceptable grass cover (however excluding geo-ute or similar and maintenance during the maintenance period).

Inclusive of all watering that may be required to achieve successful establishment.

PART F: POST CONSTRUCTION MAINTENANCE

CHAPTER 24 — SITE HANDOVER AND POST CONSTRUCTION MAINTENANCE

There shall be a Maintenance Period after works completion, as well as continual general maintenance to all areas during construction. It is the Contractor's responsibility to maintain the newly installed landscape until it is "works complete" and ready to hand over to the Employer. The site is to be maintained on a routine basis as specified in this document and will be deemed to be included in the rate tendered in the Bills of Quantities.

Should any damage occur on the works during the maintenance period, this must be immediately brought to the Landscape Architect's attention. The Landscape Architect will adjudicate as to whether the remedial work is as a result of a latent defect on the part of the Contractor or alternatively as caused by a third party.

Payment for maintenance will be made on a monthly basis, after approval of the work.

Any hand over must be the subject of a signed works completion certificate with an agreed snag list. At no stage should there be a split responsibility between the two entities and the Contractor should ensure that sufficient money is allowed for in the contract for the pre-completion maintenance up until works completion is achieved.

The Maintenance and Establishment Period shall be a minimum of twelve (12) months from the date of Practical Completion for all soft landscaping works (planting, lawn and irrigation), and a minimum of ninety (90) days for hard landscaping works, unless a longer period is specified in the Contract. This minimum 12-month period for soft landscaping is required to encompass at least one full wet season and one full dry season in the KwaZulu-Natal subtropical climate, sufficient to demonstrate establishment. During this period the Contractor remains fully liable for the performance of all works. The contract, begins directly after the Landscape Architect's acceptance of the works completion. Maintenance activities during the construction period are however deemed to be inclusive of the construction work.

In the event of sectional completion of parts of the project, i.e. works completion for a certain section of the works, the contractor shall be entitled to a maintenance fee for these areas. The maintenance fee will be a pro-rata amount of the original tendered amount.

Pre-works completion maintenance will only be applicable if there is good reason, i.e. significant delays caused by others. As soon as the Contractor becomes aware of such delays, he must submit a motivation to the Landscape Architect for consideration.

Notwithstanding any provisions in the Contract Documents, the Contractor shall be responsible for making monthly inspections of all plantings during the maintenance period and submit a written report of each inspection to the Landscape Architect and the Employer.

At the end of the maintenance contract there will be a final inspection to ensure that the works is according to specification. Only once defective work has been rectified will the site be handed over and Final Completion reached. When the maintenance contract has come to an end, all material must be in a healthy, vigorous growing condition, beds and tree basins free of rubbish or debris.

The contractor must provide for all site establishment; machinery, tools, office, temporary nursery, toilets, meeting arrangements, etc. as will be required to successfully undertake the maintenance work.

The Contractor shall provide the Landscape Architect with all operations and maintenance manuals, guarantees, certificates and warranties provided by the manufacturer for all materials and equipment installed. In accordance with PRDGS Stage 6 (Post-Implementation Review and Close-Out) and CIDMS close-out requirements, the following documentation package shall be submitted at Final Completion:

- i. Marked-up and finalised as-built drawings (CAD format and PDF);
- ii. Final planting schedule confirming all installed species, sizes and locations;
- iii. Irrigation as-built documentation including zone layouts, controller programming, valve positions and GPS coordinates of key components;
- iv. Asset location data (GPS coordinates or GIS-compatible format) for all installed street furniture, lighting fixtures, signage, play and gym equipment and major hard landscaping elements;
- v. All manufacturer warranties, installation certificates and test results (electrical, hydraulic, structural);
- vi. Maintenance manual for all planted areas, irrigation systems and hard landscaping elements; and
- vii. Full photographic record of all completed works from site establishment through to final completion.

Documentation shall be submitted in formats compatible with the Municipality's CIDMS and asset management systems, as directed by the EMM UD&LA Unit.

At the time of acceptance, all material must be in a healthy, vigorous growing condition. Beds and tree basins free of rubbish or debris.

The Contractor shall instruct the eThekweni Municipality in writing of any corrective or preventative measures necessary to ensure healthy plant growth. Please report in writing to the Landscape Architect, any damage to plant material.

CHAPTER 25 — MAINTENANCE OF HARD LANDSCAPED AREAS

SECTION 25.1 GENERAL

25.1.1. PAVING

All exterior paved areas, including roads and parking lots are to be kept clean and all silt, litter, etc. swept up and removed. Weeds which occur in these areas must also be removed and the material taken off site.

25.1.2. ROCKS, GRAVEL AND PEBBLES

Rocks; gravel and pebbles must be washed down and raked to keep them free of dust and sediment. Where the surface has become uneven, the materials need to be realigned. Material must also be kept true to form.

25.1.3. WATER FEATURES

Water features must be routinely checked and cleaned by a competent person in accordance with the specialists' recommendations and maintenance manuals. Amongst others, the system requires that spray nozzles are cleaned and re-aligned, system back washed when required, strainer and filter cleaned, sump pump operates, automatic replenishment valve functioning and the adjustment of time switches etc.

The contractor is to immediately report any malfunctioning to the Landscape Architect for an instruction that may occur in the operation of the water features.

25.1.4. LITTER

The Contractor must clear the site of litter on a weekly basis and empty any public dustbins and replace litter bags.

CHAPTER 26 — MAINTENANCE OF IRRIGATION

SECTION 26.1 GENERAL REQUIREMENTS

The Contractor shall liaise with the landscape maintenance contractor in setting irrigation schedules which conform to the requirements of the plant material and standard of plant maintenance required by the landscape contract.

All landscaped areas must be kept moist according to landscape architects' specification, so that plants do not wither. In addition to normal irrigation, all trees are to be individually watered once every two weeks by filling the pond around the tree.

Hand watering must be undertaken in areas where no automatic system exists, as directed by the Landscape Architect.

The Irrigation System must be maintained in a working order and damaged items repaired or replaced in accordance with the specification, maintenance manual and guarantees. Items of malicious damage or damage caused by other external factors must be referred to the Landscape Architect for a decision regarding additional remuneration.

The pump system must be maintained in accordance with manufacturer's recommendation. The cleaning of filters incorporated into the system must also be undertaken.

Maintenance tasks must be undertaken to ensure optimum performance of the irrigation system. Typically, this will include but not be limited to the trimming of grass around pop-up sprinklers so that they do not become overgrown and ensuring pop-up sprinklers in beds do not become covered with soil.

SECTION 26.2 MANAGEMENT, OPERATION AND MAINTENANCE

The installed system is the key to cost-effective lifelong water application. A system that has been designed and built as a water-efficient system must be operated correctly if it is to demonstrate its efficiency. Correct operation and maintenance of an irrigation system require an understanding and application of basic irrigation principles:

- i. Regular service of parts and equipment as per the schedule

- ii. Regular maintenance checks of all physical parts of the system from the water source to the drainage and reuse sections
- iii. Schedule of maintenance
- iv. Correctly trained staff to operate the system
- v. Objective information on which to base irrigation schedules
- vi. Detailed instructions for the correct operation of the system
- vii. Working life of system components
- viii. Redevelopment/upgrading plan

The operator should monitor the system to ensure it operates to specifications.

26.2.1. OPERATOR'S SKILLS

Once the system has been commissioned and handed over by the installer, the responsibility for ongoing operation and maintenance lies with the manager of the system. Staff should be able to demonstrate the following skills:

- i. Knowledge of basic soil plant water relationships.
- ii. Basic knowledge of hydraulics and system components.
- iii. Ability to read plans, manuals and technical specifications.
- iv. Ability to apply objective scheduling methods.
- v. Ability to plan irrigation, schedule and order water (peak and off-peak).
- vi. Understand application rates and how many hours to water.
- vii. Ability to monitor and understand water quality and impurities such as snails.
- viii. Ability to test pressure/flow rates in system (valves/emitters).
- ix. Ability to monitor pump performance, including alignment and efficiency.
- x. Basic knowledge of pipe repairs.
- xi. Understand how to operate the system safely within OH&S regulations.
- xii. Ability to read water meter, rain gauge, tensiometers, and compare to benchmarks.
- xiii. Keep records/monitor/check list.
- xiv. Determine the potential for off-site and groundwater impacts from operation and drainage.
- xv. Understand the operational risks.

CHAPTER 27 — MAINTENANCE OF SOFT LANDSCAPED AREAS

SECTION 27.1 GENERAL

27.1.1. INSPECTION

Before the commencement of the post construction maintenance period the Contractor shall arrange with the Landscape Architect for a joint inspection by themselves, the Contractor and the eThekweni Municipality in order to make written and photographic notes of any existing defects or damages.

27.1.2. DAMAGE AND REPLACEMENTS

All Planting material specified during the contract and which was planted by the contractor which dies during the maintenance period must be replaced at the contractor's cost by the same species or similar approved.

27.1.3. HERBICIDES AND PESTICIDES

Herbicides, pesticides and other chemical products may only be used with the prior written approval of the Landscape Architect. The use of such products shall meet all requirements set by the Department of Water Affairs, SANS specifications and all other relevant legal requirements.

Such products shall be applied by specialists in the applicable field and strictly according to the manufacturer's guidelines.

The Contractor shall make his own deductions and conclusions as to the nature of the weeds or pests where work is to be executed and shall accept full responsibility thereof.

SECTION 27.2 MAINTENANCE OF TREES

27.2.1. GENERAL

Maintaining trees shall include all measures necessary to establish and maintain all plants in a vigorous and healthy growing condition, including, but not limited to:

- i. Noxious weeds, wherever they occur on site, are to be removed, using acceptable methods and removed from site immediately.
- ii. Cultivating and weeding of tree basins.
- iii. The control of all pests, etc. and the eradication thereof. The supply and application of the required herbicides/pesticides and chemicals is deemed to be part of the routine maintenance. Use herbicides in accordance with the manufacturer's directions. Make good any damage resulting from herbicides used at no extra cost. Aquatic weeds must be removed by hand and under no circumstances are herbicides to be used.
- iv. Watering when required and in sufficient quantities to saturate the root system.
- v. Insect control when required. Use only approved chemical methods in accordance with the manufacturer's directions. Make good any damage at no extra cost.
- vi. All trees are to be regularly pruned by specialists and branches and leaves removed from site. Trees are to be pruned according to species and to the desired shape. All prune wounds are to be suitably sealed off. All damaged branches and stems are to be treated and tied up as is common horticultural practice.
- vii. Trees are to be kept staked and tied according to specification. Broken or unserviceable stakes are to be systematically replaced with the same type of stake.
- viii. Trees, must be protected from extreme wind, salt spray and drought stress by wind-break material, mulching or other means as may be required by the landscape architect. The cost of this material is deemed to be inclusive.
- ix. Fertilisers, compost and top dressing will be applied as specified elsewhere and when instructed to do so by the Landscape Architect. The supply and application thereof will only be upon instruction and will be in addition to the maintenance rate.
- x. All trees specified during the contract and which was planted by the contractor which dies during the maintenance period must be replaced at the contractor's cost by the same species or similar approved.

27.2.2. PRUNING

Prune plants in such a manner that the natural shape and character is retained. Do not cut a leader. Use only clean and sharp tools. Treat all wounds and cuts over 13 mm diameter with approved tree wound dressing.

SECTION 27.3 MAINTENANCE OF SHRUBS

27.3.1. GENERAL

Maintaining shrubs shall include all measures necessary to establish and maintain all plants in a vigorous and healthy growing condition, including, but not limited to:

- i. Noxious weeds, wherever they occur on site, are to be removed, using acceptable methods and removed from site immediately.
- ii. Cultivating and weeding of shrub basins.
- iii. The control of all pests, etc. and the eradication thereof. The supply and application of the required herbicides/pesticides and chemicals is deemed to be part of the routine maintenance. Use herbicides in accordance with the manufacturer's directions. Make good any damage resulting from herbicides used at no extra cost. Aquatic weeds must be removed by hand and under no circumstances are herbicides to be used.
- i. Watering when required and in sufficient quantities to saturate the root system.
- ii. Insect control when required. Use only approved chemical methods in accordance with the manufacturer's directions. Make good any damage at no extra cost.
- iii. Shrubs overhanging kerbs or creeping onto paving are to be selectively pruned.
- iv. All shrubs are to be regularly pruned by specialists and branches and leaves removed from site. Shrubs are to be pruned according to species and to the desired shape. All prune wounds are to be suitably sealed off. All damaged branches and stems are to be treated and tied up as is common horticultural practice.
- v. Shrubs, must be protected from extreme wind, salt spray and drought stress by wind-break material, mulching or other means as may be required by the landscape architect. The cost of this material is deemed to be inclusive.
- vi. Fertilisers, compost and top dressing will be applied as specified elsewhere and when instructed to do so by the Landscape Architect. The supply and application thereof will only be upon instruction and will be in addition to the maintenance rate.

- vii. All shrubs specified during the contract and which was planted by the contractor which dies during the maintenance period must be replaced at the contractor's cost by the same species or similar approved.

27.3.2. PRUNING

Prune plants in such a manner that the natural shape and character is retained. Do not cut a leader. Use only clean and sharp tools. Treat all wounds and cuts over 13 mm diameter with approved tree wound dressing.

SECTION 27.4 MAINTENANCE OF GROUNDCOVERS AND PLANT BEDS

27.4.1. GENERAL

Maintaining planting areas shall include all measures necessary to establish and maintain all plants in a vigorous and healthy growing condition, including, but not limited to:

- i. Noxious weeds, wherever they occur on site, are to be removed, using acceptable methods and removed from site immediately.
- ii. Cultivating and weeding of planting beds and tree basins. Subdividing of plants if required.
- iii. The control of all pests etc. and the eradication thereof. The supply and application of the required herbicides/pesticides and chemicals is deemed to be part of the routine maintenance. Use herbicides in accordance with the manufacturer's directions. Make good any damage resulting from herbicides used at no extra cost. Aquatic weeds must be removed by hand and under no circumstances are herbicides to be used.
- iv. Watering when required and in sufficient quantities to saturate the root system.
- v. Groundcovers overhanging kerbs or creeping onto paving are to be selectively pruned.
- vi. Insect control when required. Use only approved chemical methods in accordance with the manufacturer's directions. Make good any damage at no extra cost.
- vii. All stones, rubble and site litter must be collected and removed from the site as part of the routine maintenance.
- viii. Aerate plant beds on a weekly basis by means of light forking. However, no forking of plant beds must be done in beds where plants root by means of rhizomes.
- ix. Plants must be protected from extreme wind, salt spray and drought stress by wind-break material, mulching or other means as may be required by the landscape architect. The cost of this material is deemed to be inclusive.
- x. Fertiliser is to be applied after consultation with the landscape architect. The cost thereof is measured elsewhere and will be remunerated extra.
- xi. Wash-aways and sagging in the planting areas must be rectified. Groundcovers which are available on site may be harvested and planted in areas to combat wash aways as part of the routine maintenance. Abnormal damage is to be referred to the Landscape Architect for a decision and instruction.
- xii. All Planting material specified during the contract and which was planted by the contractor which dies during the maintenance period must be replaced at the contractor's cost by the same species or similar approved.

SECTION 27.5 MAINTENANCE OF LAWN AREAS

Maintaining lawn areas shall include all measures necessary to establish and maintain all lawn and grassed areas in a vigorous and healthy growing condition.

27.5.1. CORDON OFF

- i. All sprig and seed areas should ideally be cordoned off for the full maintenance period to allow lawn to recover and re-establish. Sodded areas should be cordoned off for at least 2 weeks.
- ii. Suitable temporary barriers and fencing should be used to cordon off lawn areas.
- iii. Public notices must be sited throughout the area informing of the closure period.

27.5.2. IRRIGATE

- i. Irrigate all lawn areas at a rate of 25mm per week. Adjust irrigation during rainy periods
- ii. Check coverage in all areas. Rectify any problems or shortcomings such as dry spots, ponding, erosion etc.
- iii. Check performance of lawn in all areas. If plants are suffering from overwatering or water stress, make minor adjustments to rectify.
- iv. Monitor the system for leaks on an ongoing basis and rectify.

27.5.3. MOW

- i. Mow all lawn areas once per week.
- ii. Manually weed the lawn once per week. Do not re-use weeds as mulch.
- iii. Pick up litter, rubble, stone and other undesirable material before mowing.
- iv. Mow the lawn using a suitable sized mower. Ensure the lawn is dry when mowing except in cases where continuous rain necessitates the cutting of moist lawns. Lawnmowers are to be set so as to cut the leaves and not cut into the root mat.
- v. Trim all lawn edges bordering on paving, structures, kerb stones, roads, poles, fencing, and planted areas once per week. Lawn roots growing into these areas are also to be contained and where necessary removed. Be careful not to ringbark freestanding trees in the lawn. Apply a suitable protective plastic collar around the stem of each tree if required.
- vi. All grass clippings must be removed and disposed of.

27.5.4. REMEDIATE

- i. Rectify areas that are slow to grow by either sowing seed, planting sprigs or sodding with the relevant species. Contractor to liaise with the Landscape Architect in such instances.
- ii. Wash-aways and subsidence in the lawn areas must be rectified. Abnormal damage is to be referred to the Landscape Architect for a decision and instruction.

27.5.5. FERTILIZE AND TOP DRESS

This specification is an additional maintenance recommended for the POS Management teams beyond the maintenance period covered by the construction contract.

- i. Aerate the lawn once a year, at the end of the dormant season.
- ii. Scarify the lawn in spring if the thatch or organic mat build-up is excessive. Be sure to remove all cuttings.
- iii. Top dress the lawn once a year at the end of the dormant season.
- iv. Fertilize the lawn three times a year as follows, as per manufacturer specifications:
 - a. August 3:2:1
 - b. December 5:1:5
 - c. February 5:1:5

SECTION 27.6 MAINTENANCE OF HYDROSEEDING AREAS

Maintenance of hydroseeded areas shall include re-seeding, weeding, grass cutting, and all work that may be required to keep the grassed areas in an acceptable condition. It also includes watering if required and the application of fertilisers.

Veldgrass areas must be slashed (cut) three times a year and the clippings removed from the site.

PART G: QUALITY ASSURANCE, GOVERNANCE AND LIFECYCLE MANAGEMENT

CHAPTER 28 — QUALITY ASSURANCE, INSPECTION AND ACCEPTANCE

SECTION 28.1 PURPOSE

This Chapter establishes the mandatory quality assurance, inspection, testing, verification and acceptance requirements applicable to all public realm works undertaken on behalf of the Municipality.

These requirements shall form part of every construction contract and shall apply irrespective of whether the works are delivered through Framework Contracts, Traditional Contracts, Design-and-Build Contracts or any alternative procurement method.

Compliance with this Chapter is mandatory.

SECTION 28.2 QUALITY MANAGEMENT SYSTEM

The Contractor shall establish, implement and maintain a documented Quality Management System (QMS) for the duration of the Contract.

The QMS shall include:

- i. organisational responsibilities;
- ii. quality objectives;
- iii. inspection procedures;
- iv. testing procedures;
- v. document control;
- vi. material approval procedures;
- vii. calibration records;
- viii. corrective action procedures;
- ix. non-conformance management;
- x. internal quality audits; and
- xi. continuous improvement measures.

The Principal Agent shall not permit construction activities to commence until the Project Quality Plan has been reviewed and accepted.

Acceptance of the Quality Plan shall not relieve the Contractor of any contractual obligations.

SECTION 28.3 INSPECTION AND TEST PLANS

Inspection and Test Plans (ITPs) shall be prepared for every major construction activity.

Each ITP shall identify:

- i. work activity;
- ii. applicable specification;
- iii. inspection frequency;
- iv. responsible person;
- v. required records;
- vi. acceptance criteria;
- vii. Hold Points;
- viii. Witness Points; and
- ix. required signatories.

No work may proceed beyond a Hold Point without written approval.

SECTION 28.4 HOLD POINTS

Mandatory Hold Points shall include, as a minimum:

- i. Site establishment;

- ii. Survey control verification;
- iii. Earthworks completion;
- iv. Imported material approval;
- v. Topsoil approval;
- vi. Irrigation pressure testing;
- vii. Reinforcement inspection;
- viii. Underground services prior to backfilling;
- ix. Tree pit preparation;
- x. Mock-up approval;
- xi. Practical Completion inspection; and
- xii. Final Completion inspection.

Additional Hold Points may be specified within Task Orders.

SECTION 28.5 QUALITY ACCEPTANCE

No work shall be accepted unless it complies with:

- i. this PRSS;
- ii. Contract Drawings;
- iii. Standard Drawings;
- iv. Manufacturer Specifications;
- v. Applicable SANS Standards;
- vi. Employer requirements; and
- vii. Approved samples and mock-ups.

Where work fails to comply, the Contractor shall remove and replace such work entirely at its own cost.

CHAPTER 29 — MEASUREMENT AND PAYMENT

SECTION 29.1 GENERAL

Measurement and payment provisions contained in this Chapter shall supplement the General Conditions of Contract and Bill of Quantities.

Unless expressly stated otherwise, tendered rates shall constitute full compensation for all labour, supervision, materials, plant, temporary works, transport, testing, overheads, profit and incidental costs required to complete the Works.

SECTION 29.2 PRINCIPLES OF MEASUREMENT

Measurement shall be based on completed and accepted work only.

No payment shall be made for:

- i. rejected work;
- ii. defective work;
- iii. temporary works (unless separately itemised);
- iv. remedial works;
- v. wastage beyond specified allowances; or
- vi. work undertaken without written instruction.

SECTION 29.3 RE-MEASUREMENT

Framework Contracts shall generally operate on a re-measurement basis.

Payment shall be based upon actual quantities completed, measured and certified by the Principal Agent.

SECTION 29.4 QUALITY LINKED PAYMENT

No payment certificate shall include work that:

- i. has not passed quality inspections;
- ii. has failed testing;
- iii. has outstanding non-conformances; or
- iv. remains subject to unresolved defects.

Payment certification shall therefore constitute confirmation of both quantity and quality.

CHAPTER 30 — STANDARD DRAWINGS

SECTION 30.1 STATUS OF STANDARD DRAWINGS

The Municipality's Public Realm Standard Drawings shall form an integral part of this Specification.

The Standard Drawings shall possess equal contractual status to the written Specification.

Where discrepancies occur, the order of precedence shall be:

- i. Contract-specific Particular Specifications;
- ii. Contract Drawings;
- iii. Public Realm Standard Specification;
- iv. Public Realm Standard Drawings.

SECTION 30.2 STANDARD DRAWING LIBRARY

The Municipality shall maintain a controlled library of approved Public Realm Standard Drawings.

The library shall include, but not be limited to:

- i. Tree planting details;
- ii. Structural tree pits;
- iii. Root barriers;
- iv. Tree grilles;
- v. Irrigation systems;
- vi. Benches;
- vii. Bins;
- viii. Bollards;
- ix. Guardrails;
- x. Public art foundations;
- xi. Accessible ramps;
- xii. Tactile paving;
- xiii. Bus stop details;
- xiv. Cycle infrastructure;
- xv. Playgrounds;
- xvi. Outdoor gyms;
- xvii. Streetscape furniture;
- xviii. Rain gardens;
- xix. Bioswales;
- xx. Permeable paving;
- xxi. Green infrastructure;
- xxii. Waterfront infrastructure;
- xxiii. Boardwalks;
- xxiv. Retaining walls; and

xxv. Public lighting interfaces.

Only approved Standard Drawings shall be used unless otherwise authorised by the Municipality.

CHAPTER 31 — ASSET PERFORMANCE REQUIREMENTS

SECTION 31.1 GENERAL

Public realm assets shall be designed, constructed and commissioned to achieve the intended service life with routine municipal maintenance.

Performance shall be measured over the entire asset lifecycle rather than solely at Practical Completion.

SECTION 31.2 MINIMUM DESIGN LIFE

Unless otherwise approved:

Asset	Minimum Design Life
Concrete structures	50 years
Retaining structures	50 years
Steel structures	25 years
Timber structures	20 years
Benches	20 years
Bollards	25 years
Lighting	25 years
Irrigation systems	15 years
Playground equipment	20 years
Outdoor gym equipment	20 years
Paving	30 years
Trees	95% survival after establishment
Shrubs	95% survival
Groundcovers	95% establishment

SECTION 31.3 ASSET PERFORMANCE STANDARDS

All public realm assets shall demonstrate:

- i. structural integrity;
- ii. durability;
- iii. vandal resistance;
- iv. corrosion resistance;
- v. accessibility compliance;
- vi. environmental resilience;
- vii. maintainability;
- viii. replacement compatibility;
- ix. user safety; and
- x. operational efficiency.

Failure to achieve these standards shall constitute defective work.

CHAPTER 32 — CONSTRUCTION GOVERNANCE AND LIFECYCLE HANDOVER

32.0.1 GENERAL

The Municipality shall promote continuous improvement in the planning, design, delivery, operation and management of public realm infrastructure.

Knowledge gained from completed projects shall be incorporated into future projects and revisions of this Specification.

32.0.2 POST-OCCUPANCY EVALUATION

For projects identified by the Employer, a Post-Occupancy Evaluation shall be undertaken approximately twelve (12) months after Practical Completion.

The evaluation may assess:

- i. functionality;
- ii. accessibility;
- iii. public safety;
- iv. user satisfaction;
- v. environmental performance;
- vi. biodiversity;
- vii. climate resilience;
- viii. operational performance;
- ix. maintenance requirements;
- x. asset condition;
- xi. design quality; and
- xii. achievement of project objectives.

32.0.3 LESSONS LEARNED

Following completion of the Post-Occupancy Evaluation, the Employer may convene a Lessons Learned Workshop involving relevant municipal departments, consultants and contractors.

The workshop shall identify:

- i. successful practices;
- ii. deficiencies;
- iii. opportunities for improvement;
- iv. specification amendments;
- v. standard drawing amendments; and
- vi. recommendations for future projects.

32.0.4 CONTINUOUS IMPROVEMENT REGISTER

The Employer may maintain a Continuous Improvement Register documenting recommendations arising from project reviews.

The Register shall inform future revisions of:

- i. this Public Realm Standard Specification;
- ii. Public Realm Standard Drawings;
- iii. procurement documentation;
- iv. technical standards; and
- v. municipal public realm delivery procedures.

SECTION 32.1 PURPOSE

This Chapter establishes governance requirements ensuring that approved design intent is preserved throughout construction and that completed public realm assets are transferred into municipal operation with complete technical, contractual and asset information.

SECTION 32.2 DESIGN INTENT PROTECTION

The approved Urban Design and Landscape Architectural intent shall be protected throughout implementation.

No Contractor, supplier or subcontractor shall alter:

- i. layouts;
- ii. spatial relationships;
- iii. levels;
- iv. planting palettes;
- v. materials;
- vi. finishes;
- vii. furniture;
- viii. lighting;
- ix. accessibility features; or
- x. public art integration

without written approval from the Principal Agent following consultation with the Landscape Architectural Professional.

SECTION 32.3 DESIGN CHANGE CONTROL

All proposed design changes shall:

- i. be fully documented;
- ii. include technical justification;
- iii. assess cost implications;
- iv. assess programme implications;
- v. assess lifecycle implications;
- vi. assess maintenance implications; and
- vii. receive written approval before implementation.

Verbal instructions shall not constitute approval.

SECTION 32.4 MULTIDISCIPLINARY COORDINATION

The Principal Agent shall convene regular multidisciplinary coordination meetings including, where applicable:

- i. Landscape Architectural Professional;
- ii. Urban Designer;
- iii. Civil Engineer;
- iv. Architect;
- v. Electrical Engineer;
- vi. Environmental Specialist;
- vii. Quantity Surveyor;
- viii. Contractor; and
- ix. Specialist suppliers.

Minutes shall record all decisions affecting design, programme, quality and asset delivery.

SECTION 32.5 LIFECYCLE HANDOVER

Prior to Final Completion the Contractor shall submit:

- i. As-built drawings;
- ii. GIS-compatible asset information;
- iii. Asset Register;
- iv. Digital photographic record;
- v. Product data sheets;
- vi. Test certificates;
- vii. Commissioning certificates;
- viii. Operations and Maintenance Manuals;
- ix. Manufacturer warranties;
- x. Spare parts schedules;
- xi. Maintenance schedules;
- xii. Plant schedules;
- xiii. Irrigation zoning plans;
- xiv. Defects Register; and
- xv. Final Completion documentation.

No Final Completion Certificate shall be issued until all documentation has been accepted.

SECTION 32.6 POST-OCCUPANCY EVALUATION

Major public realm projects shall undergo a formal Post-Occupancy Evaluation approximately twelve (12) months after handover.

The evaluation shall assess:

- i. asset performance;
- ii. user experience;
- iii. accessibility;
- iv. environmental performance;
- v. maintenance outcomes;
- vi. operational efficiency;
- vii. public safety;
- viii. resilience; and
- ix. lessons learned.

The findings shall inform continuous improvement of future public realm projects and subsequent revisions of this PRSS.

SECTION 32.7 GOVERNANCE STATUS OF THIS PART

The provisions contained in Part G: Quality Assurance, Governance and Lifecycle Management constitute mandatory governance requirements for all public realm projects undertaken by or on behalf of the Municipality.

These provisions shall be read together with the Municipality's Public Realm Delivery and Governance System (PRDGS) and shall support the lifecycle governance principles of the Construction Industry Development Management System (CIDMS).

Failure to comply with this Part shall constitute non-compliance with the Contract and may result in the withholding of approvals, payment certification, Practical Completion or Final Completion until the identified deficiencies have been satisfactorily rectified.

PART H: REFERENCES

eThekweni Metropolitan Municipality. Standard Specifications for Civil Engineering Works.

eThekweni Metropolitan Municipality. Standard Specifications for Electrical Engineering Works.

Department of Water Affairs and Forestry, February 2005. Environmental Best Practice Specifications: Construction Integrated Environmental Management Sub-Series No. IEMS 1.6. Third Edition. Pretoria.

JBCC (The Joint Building Contracts Committee), July 2007. Guide to: Interim, Practical, Works and Final Completion. JBCC Series 2000 Code 2202

SABI (South African Irrigation Institute), May 2017. SABI norms for the design of irrigation systems

SABI (South African Irrigation Institute). SABI Code of Practice for On-Farm Irrigation Design

SALI (South African Landscapers Institute), June 2018. Landscape Construction And Pre-Completion Maintenance Best Practice Guidelines. Draft for Comment

SALI (South African Landscapers Institute), June 2018. Landscape Maintenance Best Practice Guidelines. Draft for Comment

Vosloo, P.T & Maritz, M.J. Landscaping: an analysis of current contracting processes and documentation

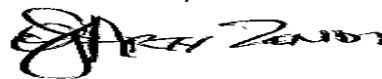
Vosloo, P.T. May 2008. The determination of pertinent contract document requirements for landscape projects in South Africa, University of Pretoria, South Africa

Annexure:

Occupational Health and Safety specification

**37.2 Agreement in terms of Occupational
Health and Safety Act No. 85 of 1993**



Document Title	37.2 Agreement in terms of OHS Act of 1993
Client	eThekweni Municipality – Architectural Dept.
Project Name	Framework Contract for landscaping streetscaping horticultural irrigation and aucillary work
Contract Number	CSA - 3348
Revision	01
Date	17/08/2026
Internal Reference no.	37.2 AGM/084/08/2026
Compiled by (Safety officer)	Name and surname: Siya Nkosi Signature:  Date: 17 August 2026
Reviewed by (Manager: Safety& Risk)	Name and surname: Arty Zondi Signature:  Date: 17 August 2026



ETHEKWINI MUNICIPALITY

OCCUPATIONAL HEALTH AND SAFETY

OCCUPATIONAL HEALTH AND SAFETY ACT 1993, (ACT NO. 85 OF 1993) MANDATORY AGREEMENT – 37.2

Contractor Acknowledgement of Responsibility in terms of the Occupational Health and Safety Act

Written agreement between ETHEKWINI Municipality (the “employer”)

And

(the “Contractor”)

as provided for in terms of Section 37 (2) of the Occupational Health and Safety Act No.85 of 1993 as amended by Act 181 of 1993.

I hereby declare that I,, am authorised to represent the “mandatary” and acknowledge that the “Contractor” is an employer in its own right with all duties and responsibilities as prescribed in the Occupational Health and Safety Act no. 85 of 1993.

I agree to ensure that all work performed, or machinery and plant used by the “Contractor” on any ETHEKWINI Municipality premises shall be in accordance with the provisions of the said Act.

Furthermore, I agree the “Contractor” shall comply with all ETHEKWINI Municipality site rules and safety, health, and environmental requirements as may be communicated or stipulated by ETHEKWINI Municipality prior to and during any Contract awarded to the “Contractor” by ETHEKWINI Municipality.

Furthermore, I undertake to ensure that ETHEKWINI Municipality is timeously informed should the “Contractor”, for whatever reason, be unable to perform in terms of this agreement.

The Contractor must compile a health and safety file that would be approved by Occupational Health and Safety Unit.

The Contractor must develop activity risk assessments and written safe working procedures and train all its employees on risk assessment and safe working procedure.

The Contractor’s driver must obey the traffic signs and speed limit within eThekwini Municipality premises.

The Contractor shall ensure his/her vehicle is in good working condition and safe for use, and

that they are used in accordance with their design and intended use.

The Contractor must ensure that all his or her employees have a valid medical certificate of fitness.

The Contractor shall ensure that all employees under his/her control are always wearing the appropriate Personal Protective Equipment.

The Contractor must be provided a fully equipped first aid box with a trained employee to administer first aid treatment.

The Contractor shall ensure a high level of housekeeping on site, adequate care must be taken by the contractor to ensure that storage and stacking is correctly and safely carried out, on completion the work.

The Contractor must be registered and in good standing with the Compensation for Occupational Injuries and Diseases Commissioner.

The Contractor is expected to comply with the SANS 10147 when servicing the ammonia plant.

The Contractors must ensure that appropriate safety symbolic signs are displayed when working.

The Contractor shall provide and develop an effective fall protection plan and fall rescue plan whilst working on heights.

The Contractor must be familiar with the Markets Emergency Evacuation Plan and appoint his/her emergency team.

The Contractor must be familiar with proper lock out and permit to work system to ensure that work done considering health and safety requirements

The Contractor must hire a full time Safety officer to oversee this project to ensure health and safety compliance.

The eThekweni Municipality Safety Officer must conduct a health and Safety induction for all employees before commencing the work.

Signed thisday of20.....

On behalf of the “mandatary” (print).....

(sign)

On behalf of the “employer” (print).....

(sign)