THE SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE (SANBI)

Contract No: SANBI: G527/2024

APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG

PROCUREMENT DOCUMENT

October 2024

Issued by:

South African National Biodiversity Institute
Private Bag X101
Silverton
0184
Gauteng

Contact:

Supply Chain Management
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Name of tenderer: .....

Address: .....

Tel no.: ..... **Fax no.:** .....

Email: .....

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PROJECT TITLE:	**APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG**
CONTRACT NO:	**SANBI: G527/2024**

Advertising date:	11 OCTOBER 2024	**Closing date:**	01 NOVEMBER 2024
Closing time:	11:00	**Validity period:**	**90 days**

T1.1 Tender Notice and Invitation to Tender

- It is estimated that tenderers should have a **CIDB contractor grading of 5CE or higher**.
- Tender documents will be available as from 11 OCTOBER 2024 and will be available **ONLINE ONLY** on:
  - SANBI website www.sanbi.org (click on “Opportunities”)
  - CIDB Website
  - National e-Tender Publication Portal

A **compulsory** site briefing session will take place on site on 25 OCTOBER 2024 starting from 10:00 at the Walter Sisulu National Botanical Garden, Gauteng. Bidders are encouraged to direct all technical and bidding procedure enquiries to the email addresses below.

Department:	Supply Chain Management
Email:	sanbi.tenders@sanbi.org.za
Cc:	tendaim@tenmud.co.za
Cut-off date for enquiries:	**29 October 2024 @ 11H00**

Any queries regarding the tender document or any related matter prior to submission of tenders must be directed to:

SANBI Representative (Technical Queries Only)	Mr. T. Mudavanhu Tel: 076 418 0732 E-mail: tendaim@tenmud.co.za
SANBI Supply Chain Management:	sanbi.tenders@sanbi.org.za

The closing time and date for the receipt of Tenders is **11:00** on **01 November 2024**

The Tenders will **NOT** be opened in public (please note that the two-envelope system is being followed). Requirements for sealing, addressing, delivery, opening, and assessment of Tenders are stated in the Tender Data.

PART T: TENDER INFORMATION
Part T1: Tendering Procedures

PROJECT TITLE:	**APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG**
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T1.2 Tender Data

The conditions of tender are the Standard Conditions of Tender as contained in Annex C of the CIDB Standard for Uniformity in Engineering and Construction Works Contracts – August 2019. (See www.cidb.org.za).

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

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

Clause number	Tender Data
C.1.1	**The Employer is:** The South African National Biodiversity Institute Biodiversity Centre 2 Cussonia Avenue Brummeria Pretoria Private Bag X101 Silverton 0184
C.1.2	The Tender Documents issued by the Employer comprise the following documents: **PART T: TENDER INFORMATION** **Part T1: Tendering procedures** T1.1 - Tender notice and invitation to tender T1.2 - Tender data **Part T2: Returnable documents** T2.1 - List of returnable documents T2.2 - Returnable documents/Schedules **PART C: THE CONTRACT** **Part C1: Agreements and Contract data** C1.1 - Form of offer and acceptance C1.2 - Contract data C1.3 - Form of Construction Guarantee C1.4 - Occupational Health & Safety Agreement 37(2) **Part C2: Pricing Data** C2.1 - Notes to tenderer C2.2 - Bill of Quantities

Clause number	Tender Data
	Part C3: Scope of Works C3.1 - Description of the works C3.2 - Design and Construction C3.3 - Drawings Annexure A: Set of Drawings *(provided separately)* **Part C4: Site Information** C4.1 - General site information C4.2 - Annexure 1: Tender Drawings C4.3 – Annexure 2: Occupational Health and Safety Specification C4.4 - Annexure 3: General Environmental Specification C4.5 - Annexure 4: Risk Management Plan C4.4 - Annexure 5: SABI Norms and Standards
C 1.3	The employer's agent is: **Tenmud Investments (Pty) Ltd** Contact: Mr. T. Mudavanhu Tel: 076 418 0732 E-mail: tendaim@tenmud.co.za
C.1.6.1	Contract will be awarded to the tenderer who achieved highest number of evaluation points.
C.1.6.2	A competitive negotiation procedure will not be followed.
C.1.6.3	A two stage-system will be followed.
C.2.1	Only those tenderers who score the minimum score in respect of the quality criteria stated in C.3.11.1 of this Tender Data shall be considered responsive and have their tenders evaluated further. (a) CIDB registration Only those tenderers who are registered with the CIDB, or are capable of being so prior to the evaluation of submissions, 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, for a **5CE or higher** class of construction work, are eligible to have their tenders evaluated. Joint ventures are eligible to submit tenders provided that: 1. every member of the joint venture is registered with the CIDB; 2. the lead partner has a contractor grading designation in the **5CE or higher** class of construction work; and the combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum tendered for a **5CE or higher** class of construction work or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations.
C.2.7	The arrangements for a compulsory clarification meeting are as stated in the Tender Notice and Invitation to Tender.
C.2.8	The last date for request for clarifications will be on the 29 October 2024
C.2.12	Replace contents Alternative offers will not be permitted
C.2.13.6	A two-envelope procedure will be followed as described in clause C.2.13.7.

C.2.13.7	Tenderers shall note the specific requirements for packaging of their tender documents and include only the following: • Original: one (1) original document marked “Original” including Form of Offer and Acceptance, Estimated monthly expenditure and Priced Bills of Quantity; and • Memory Stick: one (1) document pack without any pricing on a memory stick

Clause number	Tender Data
	• Technical: one (1) document pack **without any** pricing (files in PDF format) on a **memory stick** Financial or pricing details should **ONLY** be included in the printed document pack marked '**ORIGINAL**', and not in the PDF file(s) of the document(s) on the **memory stick**. **NB**: Service Providers are to submit one (1) pack of the original tender with the memory stick (USB) in the same envelope, Service Provider to ensure that the provided USB includes the proposal and is readable and not corrupt. Failure to comply will lead to your bid being **considered non-responsive**. **INCLUSION OF ANY PRICING INFORMATION ANYWHERE IN THE COPY WILL LEAD TO THE BID BEING DISQUALIFIED.** The original document will be placed in one envelope and the one copy will be placed in another envelope. The two envelopes shall be placed together in an outer envelope sealed and bearing the following: • The address as stated in C.2.15.1 below • The identification details as stated in C.2.15.1 below • Name of the Tenderer • The words "Not be opened before the Tender opening" The technical and financial envelopes should also contain the details of the last three bullets on them. The financial envelope must contain the words NOT TO BE OPENED WITH THE TECHNICAL ENVELOPE.
C.2.13.9	Telephonic, telegraphic, telex, facsimile or e-mailed tender offers will not be accepted.
C.2.15.1	The Employer's address for delivery of tender offers and identification details to be shown on each tender offer package are: Location of Tender box: Biodiversity Centre, Pretoria National Botanical Garden, 2 Cussonia Ave, Brummeria, Pretoria, Gauteng Province Identification details: Tender number: SANBI: G527/2024 Title of Tender: APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG
C.2.15.2	The closing time for submission of tender offers is as stated in the Tender Notice and Invitation to Tender.
C.2.16.1	The tender offer validity period is **90** days.
C2.16.3	Where a tenderer, at any time after the opening of their tender offer but prior to entering into a contract based on their tender offer: (1) withdraws their tender; (2) gives notice of their inability to execute the contract in terms of their tender; or (3) fails to comply with a request made in terms of C.2.17 or C.2.18 such tenderer shall be barred from tendering on any of the Employer's future tenders for a period to be determined by the Employer, but not less than six (6) months, from the date of tender closure. The Employer may fully or partly exempt a tenderer from the provisions of this condition if he is of the opinion that the circumstances justify the exemption
C.2.17	Provide clarification of a tender offer to a request to do so from the employer during the evaluation of tender offers.
C.2.18	Any additional information requested under this clause must be provided within 5 working days of the date of request. The tenderer shall, when requested by the Employer to do so, submit the names of all management and supervisory staff that will be employed to supervise the Labour-Intensive portion of the works together with satisfactory evidence that such staff members satisfy the eligibility requirements
C.2.22	Tender Documents will **not be returned** to tenderers

Clause number	Tender Data
C.2.23	The tenderer is required to submit with his/her tender, the following **(failure to provide below documentation will result in the tender being rejected)**: **1)** A copy of the Central Suppliers Database (CSD) registration report. **2)** A printed copy of the Active Contractor's Listing off the CIDB website (www.cidb.org.za) **3)** Letter of Good Standing from the office of the Compensation Commissioner as required by the Compensation for Occupational Injuries and Diseases Act (COIDA). The letter should be issued by the Department of Labour. **4)** In the case of a Joint Venture/Consortium the tax Compliance status Pin or Compliant tax status on CSD report must be submitted for each member of the Joint Venture/Consortium." **5)** The signed compulsory site briefing certificate **6)** Plant Documentation: Equipment owned by Contractor: registration documents must be provided. or Equipment to be rented (if any): letter of intent to hire with preferred rental companies (registration documents must be attached)
C.3.1.1	The Employer shall respond to clarifications received up to 7 working days before the tender closing time.
C.3.2	The Employer shall issue addenda until 5 working days before the tender closing time.
C.3.5.1	The two-envelope system will be followed for this Tender.
C.3.7	In the event of disqualification, the Employer may, at their sole discretion, impose a specified period during which tender offers will not be accepted from the offending tenderer and report same to the CIDB and National Treasury.
C.3.11.1	The procedure for the evaluation of responsive tenders is stated in **Annexure A**.
C.3.13	Tender offers will only be accepted if: a) the tenderer submits a copy of the CSD registration report or registration number (refer to T2.1.12); b) the tenderer is registered with the Construction Industry Development Board in an appropriate contractor grading designation (refer to T2.1.11); c) the tenderer or any of its directors/shareholders is 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; d) the tenderer has completed the Compulsory Enterprise Questionnaire and there are no conflicts of interest which may impact on the tenderer's ability to perform the contract in the best interests of the employer or potentially compromise the tender process and persons in the employ of the state are permitted to submit tenders or participate in the contract (refer to T2.1.14); e) the tenderer is registered and in good standing with the compensation fund issued by the Department of Labour (Letter of good standing with COIDA); f) 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. g) A copy of Tax Compliance Status Pin or CSD report. h) Plant Documentation: Equipment owned by Contractor: registration documents must be provided. or Equipment to be rented (if any): letter of intent to hire with preferred rental companies (registration documents must be attached)

Annexure A

This annexure contains all the criteria that the Employer shall use to evaluate tenders. In accordance with clause C.3.11 of the Standard conditions of tender. No other factors, methods or criteria shall be used. The tenderer shall provide all the information requested in the forms included in Part T2.2 – Returnable schedules.

Tenders shall be evaluated in three stages as follows

- Stage 1 – Evaluation of Eligibility and Administrative compliance
- Stage 2 – Evaluation of Functionality
- Stage 3 – Evaluation of Tender Price and Preference

1 Stage 1: Eligibility and Administrative compliance

The first stage will determine whether bids are compliant with all mandatory and disqualifiable submission requirements. Bidders that are deemed compliant will be eligible for further evaluation.

The criteria as identified in Clauses C.2.23 and C.3.13 in the Tender Data will be used to determine the tenders' eligibility.

For administrative compliance, the tenderers must complete all the returnable forms in Part T2.2, the Bill of Quantities and the Offer section in Part C1.1.

2 Stage 2: Functionality

The tenderers who complied with the eligibility and administrative criteria in stage 1 are considered for further evaluation on their capability to execute the project.

In this stage tenderers, will be evaluated on functionality according to the criteria listed below. Tenderers who fail to score a minimum of 70 points out of a possible 100 points on functionality criteria will not be eligible for further consideration.

Scoring quality

The functionality (quality) evaluation criteria are listed below. Maximum points for each criterion are in bold while points for each sub-criterion are indicated in brackets.

FUNCTIONALITY CRITERIA		
ID	**CRITERIA**	**POINTS**
	• Supporting documents required to support the claims above must be submitted as proof including corresponding orders/appointment letters, completion certificates and reference letters for projects . Bidders must submit all the requested documents as proof to be awarded the points. • The submitted documents for the projects (appointment, completion and reference letters) must be valid and verifiable. • SANBI reserves the right to verify the information provided and the bidder shall be notified of such. Additional supporting documents might be requested and should be submitted within the stipulated timeframes. • SANBI may also conduct site visits to verify the submitted projects. The bidder must make adequate means to enable the verification process. • Both appointment letters and reference letters must be on the employer's letterhead, dated and signed by the employer.	

1	***Failure by the bidder to provide the requested additional supporting documents and site visit shall disqualify the bidder for further evaluation.***	**25**

Implementation method and project plan or programme (15 Points)

(a) Project methodology

- Include the method to be followed in delivering this project, the methodology and approach must be specific to the project and location of works.
- Include the team organogram of the people who will be working on the project.
- Include the approach to time and quality management of the project.
- Include a list of subcontractors (if any) to be utilised for various disciplines and how the work will be dispatched to subcontractors considering reasonable response times.

Sub-Criteria	Points
No Methodology	0
Poor Methodology	3
Average Methodology	6
Above Average Methodology	9
Good Methodology	12
Comprehensive (Exceptional) Methodology	15

(b) Weekly plan/programme with milestones (10 Points)

- The programme should:
  - Indicate the sequence of work execution.
  - Provide the milestones and resources linked to the activity.
  - Be practical, realistic and include all activities linked to the project.

Sub-Criteria	Points
No Programme	0
Poor Programme	2
Average Programme	4
Above Average Programme	6
Good Programme	8
Comprehensive (Exceptional) Programme	10

2	**Contractor's Experience** • Five valid, verifiable and positive reference letters (on the client's letterhead, dated, signed and stamped) regarding work of similar scope and value completed in the last ten (10) years.	**40** (25)

Sub-Criteria	Points
No valid and positive reference letter	0
One valid and positive reference letter	5

Two valid and positive reference letters	10
Three valid and positive reference letters	15
Four valid and positive reference letters	20
Five valid and positive reference letters or more	25

- List of at least five similar valid and verifiable projects with appointment letters, completion certificates and telephonic references indicating work of similar scope and value completed in the last ten (10) years. (15)

Sub-Criteria	Points
No project	0
One Project	3
Two Projects	6
Three Projects	9
Four Projects	12
Five or more Projects	15

- Failure to complete and sign the schedule of the tenderer's experience will result in the bidder forfeiting these points.

3

Contractor's Resources – Personnel **35**

Proposed personnel:

- CV for proposed key personnel to be full-time on site **(at least three (3) — Contracts Manager, Site Agent & OHS Officer/Agent/Manager)** indicating: (35)
  - Previous work experience of similar projects
  - Total number of years' working experience in construction
  - Individual experience on similar work in last five years
  - Certified copies of qualifications, professional registration or personnel's certification or other recognised training courses completed.
  - Valid professional registration for Contracts Manager (ECSA or SACPCMP) and OHS personnel (SACPCMP).

  These resources must be full-time on site for the duration of the project.

Sub-Criteria	Points
Combined CV experience of less than 5 years	6
Combined CV experience of more than 5 years	12
Combined CV experience of more than 10 years	18
Combined CV experience of more than 15 years	24
Combined CV experience of more than 20 years	30
Combined CV experience of more than 25 years	35

Note: Each CV with 10 years or more experience will receive a maximum of 10 points.

TOTAL		**100**

Functionality shall be scored by not less than three evaluators in accordance with the following schedules:

Each evaluation criterion will be assessed in terms of five indicators – no response, poor, satisfactory, acceptable, good and very good. Scores ranging from of 0 to 5 will be allocated to no response, very poor, poor, acceptable, good and very good responses, respectively. The scores submitted by each of the evaluators will be averaged, weighted and then totaled to obtain the final score for functionality. The prompts for judgment and the associated scores used in the evaluation of quality shall be as follows:

Score	Prompt for judgement
0	Failed to address the question / issue
1	Very poor response: - response / answer / solution lacks convincing evidence of skill / experience sought or medium risk that relevant skills will not be available.
2	Poor response – some elements of the response / answer / solution are present but documentary evidence is mostly lacking in respect of the required information
3	Acceptable response / answer / solution to the particular aspect of the requirements and evidence given of skill / experience sought
4	Above acceptable - response / answer / solution demonstrating real understanding of requirements and evidence of ability to meet it.
5	Excellent - response / answer / solution provides confidence that the tenderer will add real value to the project.

The minimum number of evaluation points for functionality proposal is 70 points in order to progress to stage 3 of the evaluation.

The stage three will evaluate the price and specific goals of those bids that meet the minimum threshold for functionality. In accordance with the Preferential Procurement Regulations, 2022 pertaining to the Preferential Procurement Policy Framework Act (No. 5 of 2000), the 80/20-point system will be applied in evaluating proposals that qualify for further consideration, where price constitutes 80 points and a maximum of 20 points will be awarded based on the bidder's specific goals.

3 Stage 3: Tender Price and Preference

The tenderers who complied with the functionality criteria in stage 2 are considered for further evaluation in terms of their Tender Price and Preference points.

3.1 Correction of arithmetical errors

Pursuant to clause C.3.9 of the standard conditions of tender as amended in the Tender Data, correction of arithmetical errors shall be undertaken.

3.2 Calculation of score for Tender Price

The score for Tender Price shall be calculated using the following formula:

$$N_F = W_f \times \left[1 - \left(\frac{P_t - P_{min}}{P_{min}}\right)\right]$$

Where:

N_F = the score for Tender Price awarded for the tender under consideration

W_f = the weighting given to financial offer, determined as follows:

- 90 where the Tender Price, inclusive of VAT, of all responsive tender offers received has a value in excess of R50 000 000,00; or
- 80 where the Tender Price, inclusive of VAT, of one or more responsive tender offers has a value that equals or is less than R50 000 000,00.

P_t = Tender Price of the tender under consideration

P_{min} = Tender Price of the lowest responsive tender

In the event that the calculated value of N_F is negative, the allocated score shall be 0

3.3 Financial and Preference

After calculation of the scores for Tender Price and for Preference, a combined score will be calculated as follows:

NT = NF + NP

Where:

NT = Total score for tender under consideration

NF = Score for Tender Price

NP = Score for Preference

The tender with the highest score should be recommended for appointment.

Annexu re 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.

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.

Note:

1) *A conflict of interest may arise due to a conflict of roles which might provide an incentive for improper actsin 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.*
2) *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.*

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.

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 fulfill 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 their 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; or

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.3.8 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.

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.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.1.6.3 Proposal procedure using the two stage-system

C.1.6.3.1 Option 1

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.

C.1.6.3.2 Option 2

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.

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 Tenderer's obligations

C.2.1 Eligibility

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 their principals, is not under any restriction to do business with employer.

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 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.2.2 Cost of tendering

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.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.2.3 Check documents

Check the tender documents on receipt for completeness and notify the employer of any discrepancy or omission.

C.2.4 Confidentiality and copyright of 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.2.5 Reference documents

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.2.6 Acknowledge addenda

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.2.7 Clarification meeting

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 tenderer. All signatories to the tender offer shall initial all such alterations.

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.

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.2.13.7 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.2.13.8 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.2.13.9 Accept that tender offers submitted by facsimile or e-mail will be rejected by the employer, unless stated otherwise in the tender data.

C.2.14 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.2.15 Closing time

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.

C.2.15.2 Accept that, if the employer extends the closing time stated in the tender data for any reason, the requirements of these conditions of tender apply equally to the extended deadline.

C.2.16 Tender offer validity

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.2.16.2 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.2.16.3 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.2.16.4 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.2.17 Clarification of tender offer after submission

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.

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.*

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 tender data.

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 contract data.

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.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 tender data.

C.2.23 Certificates

Include in the tender submission or provide the employer with any certificates as stated in the tender data.

C.3 The employer's undertakings

C.3.1 Respond to requests from the tenderer

C.3.1.1 Unless otherwise stated in the tender Data, respond to a request for clarification received up to five (5) working days before the tender closing time stated in the Tender Data and notify all tenderers who collected tender documents.

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.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 Tender Data. If, as a result a tenderer applies for an extension to the closing time stated in the Tender Data, the Employer may grant such extension and, shall then notify all tenderers who collected tender documents.

C.3.3 Return late tender offers

Return tender offers received after the closing time stated in the Tender Data, unopened, (unless it is necessary to open a tender submission to obtain a forwarding address), to the tenderer concerned.

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 tender data. Tender submissions for which acceptable reasons for withdrawal have been submitted will not be opened.

C.3.4.2 Announce at the meeting held immediately after the opening of tender submissions, at a venue indicated in the tender data, the name of each tenderer whose tender offer is opened and, where applicable, the total of their prices, number of points claimed for its specific goals and time for completion for the main tender offer only.

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.3.5.2 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 specific goals status level.

C.3.6 Non-disclosure

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.3.7 Grounds for rejection and disqualification

Determine whether there has been any effort by a tenderer to influence the processing of tender offers and instantly disqualify a tenderer (and their tender offer) if it is established that he engaged in corrupt or fraudulent practices.

C.3.8 Test for responsiveness

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.3.8.2 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.

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.3.9 Arithmetical errors, omissions and discrepancies

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.3.9.2 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.

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	Cost effective

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.

PART T 2: Returnable Documents

PROJECT TITLE:	**APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG**
CONTRACT NO:	**SANBI: G527/2024**

T2.1 List of Returnable Documents

1. RETURNABLE SCHEDULES REQUIRED FOR TENDER EVALUATION PURPOSES

Tender document name	Number of pages issued	Returnable document
Resolution of Board of Directors (T2.1.01)	1 Page	▮ Yes ☐ No
Resolution of Board of Directors to enter into consortia or JV's (T2.1.02) (If Applicable)	2 Pages	▮ Yes ☐ No
Special Resolution of Consortia or JV's (T2.1.03) (If Applicable)	3 Pages	▮ Yes ☐ No
Schedule of proposed sub-contractors (T2.1.04)	1 Page	▮ Yes ☐ No
Capacity of Tenderer (T2.1.05)	3 Pages	▮ Yes ☐ No
Preference Point System (T2.1.06)	6 Pages	▮ Yes ☐ No
Schedule of Key Personnel (T2.1.07)	1 Pages	▮ Yes ☐ No
Compensation of Occupational Injuries and Disease Act (COIDA) (T2.1.08)	1 Page	▮ Yes ☐ No

2. OTHER DOCUMENTS REQUIRED FOR TENDER EVALUATION PURPOSES

Tender document name	Number of pages issued	Returnable document
Declaration of Interest (T2.1.09)	2 Pages	▮ Yes ☐ No
Medical Certificate for the confirmation of permanent disabled status (T2.1.10)	1 Page	▮ Yes ☐ No
Proof of registration with Construction Industry Development Board (T2.1.11)	1 Page	▮ Yes ☐ No
Copy of CSD Registration Certificate (T2.1.12)	1 Pages	▮ Yes ☐ No

3. RETURNABLE SCHEDULES THAT WILL BE INCORPORATED INTO THE CONTRACT

Tender document name	Number of pages issued	Returnable document
Record of Addenda to tender documents (T2.1.13)	1 Page	▮ Yes ☐ No
Compulsory Enterprise Questionnaire (T2.1.14)	3 Pages	▮ Yes ☐ No

4. OTHER DOCUMENTS THAT WILL BE INCORPORATED INTO THE CONTRACT

Tender document name	Number of pages issued	Returnable document
Applicable Form of Guarantee	3 Pages	▮ Yes ☐ No
Priced Bill of Quantities	6 Pages	▮ Yes ☐ No

C1.1 Form of Offer and Acceptance
C1.2 Contract Data
C1.3 Form of Guarantee

RETURNABLE DOCUMENT CHECKLIST

This form has been created as an aid to ensure a tenderer's compliance with the completion of the returnable schedules and subsequent placement in the correct **Technical** and **Financial** envelopes.

A TECHNICAL ENVELOPE (1 COPY)

Reference No	Document Description	Tick if completed
T2.1.01	Resolution of Board of Directors	
T2.1.02	Resolution of Board of Directors to enter into consortia or JV's (If Applicable)	
T2.1.03	Special Resolution of Consortia or JV's (If Applicable)	
T2.1.04	Schedule of proposed sub-contractors	
T2.1.05	Capacity of Tenderer	
T2.1.06	Preference Point System	
T2.1.07	Schedule of Key Personnel	
T2.1.08	Compensation of Occupational Injuries and Disease Act (COIDA)	
T2.1.09	Declaration of Interest	
T2.1.10	Medical Certificate for the confirmation of permanent disabled status	
T2.1.11	Proof of registration with Construction Industry Development Board	
T2.1.12	Copy of CSD Registration Certificate	
T2.1.13	Record of Addenda to tender documents	
T2.1.14	Compulsory Enterprise Questionnaire	

B FINANCIAL ENVELOPE (ORIGINAL DOCUMENT)

The entire original tender document must be submitted in this envelope including the forms as listed below:

Reference No	Document Description	Tick if completed
Form C1.1	Form of Offer and Acceptance	
Form C1.2	Contract Data – Part 1	
Form C2.2	Priced Bill of Quantities	

PART 2: RETURNABLE DOCUMENTS

PROJECT TITLE:	**APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG**
CONTRACT NO:	**SANBI: G527/2024**

T2.2 Returnable documents/Schedules

T2.1.01: RESOLUTION OF BOARD OF DIRECTORS

RESOLUTION of a meeting of the Board of *Directors / Members / Partners of:

.....

.....
(*legally correct full name and registration number, if applicable, of the Enterprise)*

Held at.....(place)

On ..... (date)

RESOLVED that:

1. The Enterprise submits a Bid / Tender to the South African National Biodiversity Institute in respect of the following project:

   .....

   .....
   (*project description as per Bid / Tender Document)*

   Bid / Tender Number:.....*(Bid / Tender Number as per Bid / Tender Document)*

2. *Mr/Mrs/Ms: .....

   in *his/her Capacity as ..... *(Position in the Enterprise)*

   and who will sign as follows: .....

   be, and is hereby, authorised to sign the Bid / Tender, and any and all other documents and/or correspondence in connection with and relating to the Bid / Tender, as well as to sign any Contract, and any and all documentation, resulting from the award of the Bid / Tender to the Enterprise mentioned above.

	Name	Capacity	Signature
1			
2			
3			
4			

Note:

1. ** Delete which is not applicable*
2. ***NB**. This resolution must be signed by all the Directors / Members / Partners of the Bidding Enterprise.*
3. *Should the number of Directors / Members/Partners exceed the space available above, additional names and signatures must be supplied on a separate page.*

ENTERPRISE STAMP

T2.1.02: RESOLUTION OF BOARD OF DIRECTORS TO ENTER INTO CONSORTIA OR JOINT VENTURES

RESOLUTION of a meeting of the Board of *Directors / Members / Partners of:

.....

.....
(*Legally correct full name and registration number, if applicable, of the Enterprise)*

Held at.....(place)

On ..... (date)

RESOLVED that:

1. The Enterprise submits a Bid /Tender, in consortium/Joint Venture with the following Enterprises:

   .....

   .....
   (List all the legally correct full names and registration numbers, if applicable, of the Enterprises forming the Consortium/Joint Venture)

   to the South African National Biodiversity Institute in respect of the following project:

   .....

   .....
   (*Project description as per Bid /Tender Document)*

   Bid / Tender Number:.....*(Bid / Tender Number as per Bid / Tender Document)*

2. *Mr/Mrs/Ms: .....

   in *his/her Capacity as ..... *(Position in the Enterprise)*

   and who will sign as follows: .....

   be, and is hereby, authorised to sign a consortium/joint venture agreement with the parties listed under item 1 above, and any and all Other documents and/or correspondence in connection with and relating to the consortium/joint venture, in respect of the project described under item 1 above.

3. The Joint Venture formation/arrangement will be in the following proportions:

Name of Contractor	Proportion (%)

4. The Enterprise accepts joint and several liability with the parties listed under item 1 above for the due fulfilment of the obligations of the joint venture deriving from, and in any way connected with, the Contract to be entered into with the Employer in respect of the project described under item 1 above.

5. The Enterprise chooses as its *domicilium citandi et executandi* for all purposes arising from this joint venture agreement and the Contract with the Employer in respect of the project under item 1 above:

   Physical address: .....

   .....

   ..... (code)

   Postal address: .....

   .....

   ..... (code)

   Telephone number: .....(code)

   Fax number.....(code)

	Name	Capacity	Signature
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Note:

1. ** Delete which is not applicable.*
2. ***NB**. This resolution must be signed by all the Directors / Members / Partners of the Bidding Enterprise.*
3. *Should the number of Directors / Members / Partners exceed the space available above, additional names and signatures must be supplied on a separate page.`*

ENTERPRISE STAMP

T2.1.03: SPECIAL RESOLUTION OF CONSORTIA OR JOINT VENTURES

RESOLUTION of a meeting of the duly authorised representatives of the following legal entities who have entered into a consortium/joint venture to jointly bid for the project mentioned below: (*legally correct full names and registration numbers, if applicable, of the Enterprises forming a Consortium/Joint Venture)*

1. .....

.....

2. .....

.....

3. .....

.....

4. .....

.....

5. .....

.....

6. .....

.....

7. .....

.....

8. .....

.....

Held at.....(place)

On ..... (date)

RESOLVED that:

A. The above-mentioned Enterprises submit a Bid in Consortium/Joint Venture to the South African National Biodiversity Institute in respect of the following project:

.....

.....
(*Project description as per Bid /Tender Document)*

Bid / Tender Number:.....*(Bid / Tender Number as per Bid / Tender Document)*

*Mr/Mrs/Ms: .....

in *his/her Capacity as ..... *(Position in the Enterprise)*

and who will sign as follows: .....
be, and is hereby, authorised to sign the Bid, and any and all other documents and/or correspondence in connection with and relating to the Bid, as well as to sign any Contract, and any and all documentation, resulting from the award of the Bid to the Enterprises in Consortium/Joint Venture mentioned above.

B. The Enterprises constituting the Consortium/Joint Venture, notwithstanding its composition, shall conduct all business under the name and style of: .....

C. The Enterprises to the Consortium/Joint Venture accept joint and several liabilities for the due fulfilment of the obligations of the Consortium/Joint Venture deriving from, and in any way connected with, the Contract entered into with the Employer in respect of the project described under item A above.

D. Any of the Enterprises to the Consortium/Joint Venture intending to terminate the consortium/joint venture agreement, for whatever reason, shall give the Employer 30 day's written notice of such intention. Notwithstanding such decision to terminate, the Enterprises shall remain jointly and severally liable to the Employer for the due fulfilment of the obligations of the Consortium/Joint Venture as mentioned under item D above.

E. No Enterprise to the Consortium/Joint Venture shall, without the prior written consent of the other Enterprises to the Consortium/Joint Venture and of the Employer, cede any of its rights or assign any of its obligations under the consortium/joint venture agreement in relation to the Contract with the Employer referred to herein.

F. The Enterprises choose as the *domicilium citandi et executandi* of the Consortium/Joint Venture for all purposes arising from the consortium/joint venture agreement and the Contract with the Employer in respect of the project under item A above:

Physical address:.....

.....

..... (code)

Postal address: .....

.....

..... (code)

Telephone number:.....(code)

Fax number .....(code)

	Name	Capacity	Signature
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

Note:

1. ** Delete which is not applicable.*
2. ***NB**. This resolution must be signed by all the Duly Authorised Representatives of the Legal Entities to the Consortium Joint Venture submitting this Bid.*
3. *Should the number of Duly Authorised Representatives of the Legal Entities joining forces in this Bid exceed the space available above, additional names and signatures must be supplied on a separate page.*
4. *Resolutions, duly completed and signed, from the separate Enterprises who participate in this Consortium/Joint Venture must be attached to the Special Resolution.*

T2.1.04: SCHEDULE OF PROPOSED SUBCONTRACTORS

PROJECT TITLE:	**APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG**
CONTRACT NO:	**SANBI: G527/2024**

We notify you that it is our intention to employ the following Subcontractors for work in this contract.

If we are awarded a contract, we agree that this notification does not change the requirement for us to submit the names of proposed Subcontractors in accordance with requirements in the contract for such appointments. If there are no such requirements in the contract, then your written acceptance of this list shall be binding between us.

	Name and address of proposed Subcontractor	**Nature and extent of work**	**Previous experience with Subcontractor**
1			
2			
3			
4			

Name of representative	**Signature**	**Capacity**	**Date**

Name of organisation:	

T2.1.05: CAPACITY OF TENDERER

PROJECT TITLE:	**APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG**
CONTRACT NO:	**SANBI: G527/2024**

1. **WORK CAPACITY:** *(The Tenderer is requested to furnish the following particulars, attach additional pages if more space is required. Failure to furnish the particulars may result in the Tender being disregarded.)*

Skilled artisans employed		**Unskilled employees employed**	
Categories of artisans	**Number**	**Categories of employees**	**Number**

1.1. Provide full particulars of:

Machinery	**Plant**	**Workshops**

2. **PARTICULARS OF COMMITMENTS WHICH THE TENDERER HAS PREVIOUSLY COMPLETED AND PRESENTLY ENGAGED WITH:**

Any reference to words “Bid” or Bidder” herein and/or in any other documentation shall be construed to have the same meaning as the words “Tender” or “Tenderer”.

2.1. Current projects:

	Project	Place (town)	Reference / Contact person	Contact Tel. No.	Contract amount	Contract period	Date of commencement	Scheduled date of completion
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Any reference to words “Bid” or Bidder” herein and/or in any other documentation shall be construed to have the same meaning as the words “Tender” or “Tenderer”.

2.2. Previous projects:

	Project	Place (town)	Reference / Contact person	Contact Tel. No.	Contract amount	Contract period	Date of commencement	Scheduled date of completion	Actual date of completion
1									
2									
3									
4									
5									
6									
7									
8									

Name of Tenderer	**Signature**	**Date**

Any reference to words “Bid” or Bidder” herein and/or in any other documentation shall be construed to have the same meaning as the words “Tender” or “Tenderer”.

T2.1.06: PREFERENCE POINT SYSTEM

PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2022

This preference form must form part of all tenders invited. It contains general information and serves as a claim form for preference points for specific goals.

NB: BEFORE COMPLETING THIS FORM, TENDERERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF THE TENDER AND PREFERENTIAL PROCUREMENT REGULATIONS, 2022

---

1. GENERAL CONDITIONS

1.1 The following preference point systems are applicable to invitations to tender:

- the 80/20 system for requirements with a Rand value of up to R50 000 000 (all applicable taxes included); and
- the 90/10 system for requirements with a Rand value above R50 000 000 (all applicable taxes included).

1.2 To be completed by the organ of state

a) The applicable preference point system for this tender is the 80/20 preference point system.

1.3 Points for this tender (even in the case of a tender for income-generating contracts) shall be awarded for:

(a) Price; and

(b) Specific Goals.

1.4 To be completed by the organ of state:

The maximum points for this tender are allocated as follows:

	POINTS
PRICE	80
SPECIFIC GOALS	20
Total points for Price and SPECIFIC GOALS	**100**

1.5 Failure on the part of a tenderer to submit proof or documentation required in terms of this tender to claim points for specific goals with the tender, will be interpreted to mean that preference points for specific goals are not claimed.

1.6 The organ of state reserves the right to require of a tenderer, either before a tender is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the organ of state.

2. DEFINITIONS

(a) **"tender"** means a written offer in the form determined by an organ of state in response to an invitation to provide goods or services through price quotations, competitive tendering process or any other method envisaged in legislation;

(b) **"price"** means an amount of money tendered for goods or services, and includes all applicable taxes less all unconditional discounts;

(c) **"rand value"** means the total estimated value of a contract in Rand, calculated at the time of bid invitation, and includes all applicable taxes;

(d) **"tender for income-generating contracts"** means a written offer in the form determined by an organ of state in response to an invitation for the origination of income-generating contracts through any method envisaged in legislation that will result in a legal agreement between the organ of state and a third party that produces revenue for the organ of state, and includes, but is not limited to, leasing and disposal of assets and concession contracts, excluding direct sales and disposal of assets through public auctions; and

(e) **"the Act"** means the Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000).

3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES

3.1. POINTS AWARDED FOR PRICE

3.1.1 THE 80/20 OR 90/10 PREFERENCE POINT SYSTEMS

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

80/20 **or** **90/10**

$$\boldsymbol{Ps = 80\left(1 - \frac{Pt - P\,min}{P\,min}\right)} \quad \text{or} \quad \boldsymbol{Ps = 90\left(1 - \frac{Pt - P\,min}{P\,min}\right)}$$

Where

Ps = Points scored for price of tender under consideration

Pt = Price of tender under consideration

Pmin = Price of lowest acceptable tender

3.2. FORMULAE FOR DISPOSAL OR LEASING OF STATE ASSETS AND INCOME GENERATING PROCUREMENT

3.2.1. POINTS AWARDED FOR PRICE

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

80/20 **or** **90/10**

$$\boldsymbol{Ps = 80\left(1 + \frac{Pt - P\,max}{P\,max}\right)} \quad \text{or} \quad \boldsymbol{Ps = 90\left(1 + \frac{Pt - P\,max}{Pmax}\right)}$$

Where

Ps = Points scored for price of tender under consideration

Pt = Price of tender under consideration

Pmax = Price of highest acceptable tender

4. POINTS AWARDED FOR SPECIFIC GOALS

4.1. In terms of Regulation 4(2); 5(2); 6(2) and 7(2) of the Preferential Procurement Regulations, preference points must be awarded for specific goals stated in the tender. For the purposes of this tender the tenderer will be allocated points based on the goals stated in table 1 below as may be supported by proof/ documentation stated in the conditions of this tender:

4.2. In cases where organs of state intend to use Regulation 3(2) of the Regulations, which states that, if it is unclear whether the 80/20 or 90/10 preference point system applies, an organ of state must, in the tender documents, stipulate in the case of—

(a) an invitation for tender for income-generating contracts, that either the 80/20 or 90/10 preference point system will apply and that the highest acceptable tender will be used to determine the applicable preference point system; or

(b) any other invitation for tender, that either the 80/20 or 90/10 preference point system will apply and that the lowest acceptable tender will be used to determine the applicable preference point system,

then the organ of state must indicate the points allocated for specific goals for both the 90/10 and 80/20 preference point system.

Table 1: Specific goals for the tender and points claimed are indicated per the table below.

***Note to tenderers: The tenderer must indicate how they claim points for each preference point system.*)**

The specific goals allocated points in terms of this tender	Number of points allocated (90/10 system) (To be completed by the organ of state)	Number of points allocated (80/20 system) (To be completed by the organ of state)	Number of points claimed (90/10 system) (To be completed by the tenderer)	Number of points claimed (80/20 system) (To be completed by the tenderer)
Categories of persons historically disadvantaged by unfair discrimination on the basis of race Information will be verified on CSD report. Points will be allocated based on the percentage of ownership per goal - 100% black ownership = 10 points		10		
Categories of persons historically disadvantaged		10		

by unfair discrimination on the basis of gender. Information will be verified on CSD report. Points will be allocated based on the percentage of ownership per goal - 100% female ownership = 10 points				

DECLARATION WITH REGARD TO COMPANY/FIRM

4.3. Name of company/firm…….

4.4. Company registration number: ……..……..……...

4.5. TYPE OF COMPANY/ FIRM

- ϒ Partnership/Joint Venture / Consortium
- ϒ One-person business/sole propriety
- ϒ Close corporation
- ϒ Public Company
- ϒ Personal Liability Company
- ϒ (Pty) Limited
- ϒ Non-Profit Company
- ϒ State Owned Company

[TICK APPLICABLE BOX]

4.6. I, the undersigned, who is duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the specific goals as advised in the tender, qualifies the company/ firm for the preference(s) shown and I acknowledge that:

i) The information furnished is true and correct;

ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;

iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4 and 4.2, the contractor may be required to furnish documentary proof to the satisfaction of the organ of state that the claims are correct;

iv) If the specific goals have been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the organ of state may, in addition to any other remedy it may have –

(a) disqualify the person from the tendering process;

(b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct

(c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;

(d) recommend that the tenderer or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted from obtaining business from any organ of state for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied; and

(e) forward the matter for criminal prosecution, if deemed necessary.

……
SIGNATURE(S) OF TENDERER(S)

SURNAME AND NAME: ……
DATE: ……

ADDRESS: ……
……
……
……

T2.1.07: SCHEDULE OF KEY PERSONNEL

The Tenderer shall list below the key personnel who will be engaged on the Contract by completing this schedule.

Key Contract Personnel Name	Job Title	Qualifications	Professional Registration	Proposed Project Position

T2.1.08: COMPENSATION OF OCCUPATIONAL INJURIES AND DISEASE ACT (COIDA)

PROJECT TITLE:	**APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG**
CONTRACT NO:	**SANBI: G527/2024**

The tenderer is registered and in good standing with the compensation fund issued by the Department of Labour (Letter of good standing with COIDA).

T2.1.09: DECLARATION OF INTEREST

PROJECT TITLE:	**APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG**
CONTRACT NO:	**SANBI: G527/2024**

Any person, including persons in the employ of the South African National Biodiversity Institute ; or persons acting on behalf of the South African National Biodiversity Institute performing business as a sole proprietor or in partnership; or persons acting in the capacity of a trustee/s of a trust; or any legal entity, including legal entities and trusts, of which the members, directors, shareholders, trustees and/or beneficiaries are in the employ of the South African National Biodiversity Institute or act on behalf of the South African National Biodiversity Institute, may make an offer or offers in terms of this tender invitation.

In view of the possible allegations of favouritism, should the resulting tender, or part thereof, be awarded to persons employed by the South African National Biodiversity Institute; or to persons who act on behalf of the South African National Biodiversity; or to persons connected or related to them, the bidder / tenderer or the bidder / tenderer's duly authorized representative shall disclose herein any relationship and/or kinship, including blood relation, which he/she; his/her employer; the bidder / tenderer's management members directors; partners; shareholders; trustees; and/or beneficiaries may have with any person or persons in the employ of the South African National Biodiversity Institute and/or with any person or persons acting on behalf of the South African National Biodiversity Institute and who may directly or indirectly be involved in, and/or may be in a position to influence the adjudication and/or evaluation and/or award of this bid / tender.

In order to give effect to the above, the following questionnaire shall be completed and submitted with the tender. Failure to furnish the information requested in the questionnaire below may render the tender submission not to be considered at all.

(In answering the questions below, indicate the applicable answer with a ✓ and cross the other out)

1. Is the bidder / tenderer and/or the duly authorized representative in the employ of the South African National Biodiversity Institute?

   ☐ YES ☐ NO

   If yes, State the full particulars of such person/s, together with their current position held as an employee of the South African National Biodiversity Institute.

   _____

   _____

2. Is the bidder / tenderer and/or the duly authorized representative in the employ of the person/s or legal entity acting on behalf of the South African National Biodiversity Institute, and who may directly or indirectly be involved in, and/or may be in a position to influence, the adjudication and/or evaluation and/or award of this tender?

   ☐ YES ☐ NO

   If yes, State the full particulars of such person/s, together with their current position held as an employee of such person/s or legal entity acting on behalf of the South African National Biodiversity Institute.

   _____

3. Does the bidder / tenderer, the bidder's / tenderer's duly authorised representative, and/or any of the bidder's / tenderer's employees, management, partners, members, directors, shareholders, trustees and/or beneficiaries have any relationship (family, friend, business- or financial interest) with a person, or persons in the employ of the South African National Biodiversity Institute and/or in the employ of the person/s or legal entity acting on behalf of the South African National Biodiversity Institute, and who may directly or indirectly be involved in, and/or may be in a position to influence, the adjudication and/or evaluation and/or award of this tender?

☐ YES ☐ NO

If yes, State the full particulars of the persons between whom the relationship exists, the nature of the relationship and the current position/status of such employee/s of the South African National Biodiversity Institute and/or of the person/s and/or legal entity acting on behalf of the South African National Biodiversity Institute herein.

_____

_____

I, the undersigned, _____
(name of the person duly authorised to sign the bid / tender documents on behalf of the bidder / tenderer) hereby certify that the information, furnished above, is correct in all respects. I accept and understand that the South African National Biodiversity Institute, may act against me and the bidder / tenderer, jointly and severally, should this declaration prove to be false.

Duly signed at_____on this the_____day of_____(month)

_____(year)

_____	_____
Full name of signatory	Name of Bidder / Tenderer
_____	_____
Capacity of Signatory	Signature

COMMISSIONER OF OATHS

T2.1.10: MEDICAL CERTIFICATE FOR THE CONFIRMATION OF PERMANENT DISABLED STATUS

PROJECT TITLE:	**APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG**
CONTRACT NO:	**SANBI: G527/2024**

I,_____(*surname and name*), Identity number,

_____do hereby declare that I am a registered medical practitioner, with my

practice number being_____, practicing at _____

_____(Physical and postal addresses) declare that I have examined Mr/Mrs

_____, identity number of _____

and have found the said person to be permanently disabled

or having a recurring disability.

"Disability" means, in respect of a person, a permanent impairment of a physical, intellectual, or sensory function, which results in restricted, or lack of, ability to perform an activity in the manner, or within the range, considered normal for a human being." – As per Preferential Procurement Policy Framework Act: No 5 of 2000 (PPPFA)

The nature of the disability is as follows:

_____

_____

_____

Thus signed at_____on this_____day of_____of_____.

_____
Signature

_____
Date

OFFICIAL STAMP OF
MEDICAL PRACTITIONER

T2.1.11: PROOF OF REGISTRATION WITH CONSTRUCTION INDUSTRY DEVELOPMENT BOARD

PROJECT TITLE:	**APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG**
CONTRACT NO:	**SANBI: G527/2024**

The Tenderer shall provide a printed copy of the Active Contractor's Listing off the CIDB website.www.cidb.org.za. In the case of a joint venture, a printed copy of the Active Contractor's listing must be provided for each member of the joint venture.

Name of Contractor:

Contractor Grading Designation:

CIDB Contractor Registration Number:

T2.1.12: COPY OF CSD REGISTRATION CERTIFICATE

PROJECT TITLE:	**APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG**
CONTRACT NO:	**SANBI: G527/2024**

A copy of Central Suppliers Database (CSD) Registration Certificate must be included for evaluation purposes.

T2.1.13: RECORD OF ADDENDA TO TENDER DOCUMENTS

PROJECT TITLE:	**APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG**
CONTRACT NO:	**SANBI: G527/2024**

I / We confirm that the following communications received from the South African National Biodiversity Institute before the submission of this tender offer, amending the tender documents, have been taken into account in this tender offer: *(Attach additional pages if more space is required)*

	Date	Title or Details
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		

Name of Tenderer	Signature	Date

I / We confirm that no communications were received from the South African National Biodiversity Institute before the submission of this tender offer, amending the tender documents.

Name of Tenderer	Signature	Date

T2.1.14: COMPULSORY ENTERPRISE QUESTIONNAIRE

PROJECT TITLE:	**APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG**
CONTRACT NO:	**SANBI: G527/2024**

The following particulars must be furnished. In the case of a joint venture, separate enterprise questionnaires in respect of each partner must be completed and submitted.

Section 1: Name of enterprise: .....

Section 2: VAT registration number, if any: .....

Section 3: CIDB registration number, if any: .....

Section 4: Particulars of sole proprietors and partners in partnerships

Name*	Identity number*	Personal income tax number*

*Complete only if sole proprietor or partnership and attach separate page if more than 3 partners.

Section 5: Particulars of companies and close corporations

Company registration number: .....

Close corporation number: .....

Tax reference number: .....

Section 6: Record in the service of the state

Indicate by marking the relevant boxes with a cross, if any sole proprietor, partner in a partnership or director, manager, principal shareholder or stakeholder in a company or close corporation is currently, or has been within the last 12 months, in the service of any of the following:

- a member of any municipal council
- a member of any provincial legislature
- a member of the National Assembly or the National Council of Province
- a member of the board of directors of any municipal entity
- an official of any municipality or municipal entity
- an employee of any provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999(Act No 1 of 1999)
- a member of an accounting authority of any national or provincial public entity
- an employee of Parliament or a provincial legislature

If any of the above boxes are marked, disclose the following:

Name of sole proprietor, partner, director, manager, principal shareholder or stakeholder	Name of institution, public office, board or organ of state and position held	Status of service (tick appropriate column)	
		Current	Within last 12 months

*Insert separate page if necessary.

Section 7: Record of spouses, children and parents in the service of the state

Indicate by marking the relevant boxes with a cross, if any spouse, child or parent or a sole proprietor, partner in a partnership or director, manager, principal shareholder or stakeholder in a company or close corporation is currently, or has been within the last 12 months, in the service of any of the following:

- a member of any municipal council
- a member of any provincial legislature
- a member of the National Assembly or the National Council of Province
- a member of the board of directors of any municipal entity
- an official of any municipality or municipal entity
- an employee of any provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No 1 of 1999)
- a member of an accounting authority of any national or provincial public entity
- an employee of Parliament or a provincial legislature

Name of spouse, child or parent	Name of institution, public office, board or organ of state and position held	Status of service (tick appropriate column)	
		Current	Within last 12 months

*Insert separate page if necessary.

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

(i) authorises the Employer to obtain a tax clearance certificate from the South African Revenue Services that my/our tax matters are 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, 2004;

(iii) confirms that no partner, member, director or other person, who wholly or partly exercises, or may exercise, control over the enterprise, 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; and

(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.

Signed: ..... Date: .....

Name: ..... Position: .....

Enterprise name: .....

PART C: THE CONTRACT
Part C1: Agreement and Contract Data

PROJECT TITLE:	**APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG**
CONTRACT NO:	**SANBI: G527/2024**

C1.1 Form of Offer and Acceptance

The Employer, identified in the Acceptance signature block, has solicited offers to enter into a contract for the

APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG

The tenderer, identified in the Offer signature block, has examined the documents listed in the Tender Data and addenda thereto as listed in the Returnable Schedules, and by submitting this Offer has accepted the Conditions of Tender.

The tenderer, identified in the Offer signature block, has examined the draft contract as listed in the Acceptance section and agreed to provide this Offer.

By the representative of the tenderer, deemed to be duly authorised, signing this part of this Form of Offer and Acceptance the tenderer offers to perform all of the obligations and liabilities of the **Contractor** under the contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the conditions of contract identified in the Contract Data.

THE OFFERED TOTAL OF THE PRICES INCLUSIVE OF VAT IS:

(in words).....Rand;

R ..... (in figures)

THE OFFERED PRICES ARE AS STATED IN THE PRICING SCHEDULE

This Offer may be accepted by the Employer by signing the Acceptance part of this Form of Offer and Acceptance and returning one copy of this document including the Schedule of Deviations (if any) to the tenderer before the end of the period of validity stated in the Tender Data, or other period as agreed, whereupon the tenderer becomes the party named as the **Contractor** in the conditions of contract identified in the Contract Data.

Signature(s) .....

Name(s) .....

Capacity .....

For the Tenderer: .....

.....

Name & signature of witness ..... Date .....

Acceptance

By signing this part of this 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 Agreements and Contract Data *[which includes this Agreement]*

Part C2 Pricing Data

Part C3 Scope of Work

Part C4 Site Information

and 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 the said documents are valid unless contained in this Schedule, which must be duly signed by the authorised representative(s) of both parties.

The Tenderer shall within the time required to submit documentation in accordance with clause 5.3.2 of the Contract Data (C1.2) 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 working 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(s) .....

Name(s) .....

Capacity .....

For the Employer: .....

.....

.....
(Insert name and address of organisation)

Name &

signature of witness ..... Date .....

.....

Any reference to words "Bid" or Bidder" herein and/or in any other documentation shall be construed to have the same meaning as the words "Tender" or "Tenderer".

Schedule of Deviations

1 Subject .....

Details .....

.....

.....

.....

2 Subject .....

Details .....

.....

.....

.....

3 Subject .....

Details .....

.....

.....

.....

4 Subject .....

Details .....

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.....

.....

5 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:

Signature(s) ....

Name(s) ....

Capacity ....

.....
[Name and address of organisation]

Name and signature of witness ..... Date .....

FOR THE EMPLOYER:

Signature(s) ....

Name(s) ....

Capacity ....

.....
[Name and address of organisation]

Name and signature of witness ..... Date .....

CONFIRMATION OF RECEIPT

The Tenderer (now Contractor), identified in the Offer part of this Agreement, hereby confirms receipt from the Employer, identified in the Acceptance part of this Agreement, of one fully completed original copy of this Agreement, including the Schedule of Deviations (if any) today:

The.....*[day]*

of..... *[month]*

20.....*[year]*

at.....*[place]*

For the Contractor: .....
Signature

.....
Name

.....
Capacity

Signature and name of witness: .....
Signature

.....
Name

PART C: THE CONTRACT
Part C1: Agreement and Contract Data

PROJECT TITLE:	**APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG**
CONTRACT NO:	**SANBI: G527/2024**

C.1.2 Contract Data

C.1.2 Contract Data

The Conditions of Contract are the *General Conditions of Contract for Construction Works (Third Edition, 2nd print, 2015)* published by the South African Institution of Civil Engineering. Copies of these conditions of contract may be obtained from the South African Institution of Civil Engineering (Tel: 011-805 5947).

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

Part 1: Data provided by the Employer

Clause	Data
1.1.1.13	**Clause 1.1.1.13: Defects Liability Period** The Defects Liability Period is **12 months,** measured from the date of the Certificate of Completion
1.1.1.14	**Clause 1.1.1.14: Due Completion Date** The time for achieving Practical Completion is as follows: **3 *Months*** after the Commencement date
1.1.1.15	The name of the Employer is **The South African National Biodiversity Institute,** represented by Mr. T Mupudzi and/or such persons or person duly authorised thereto be the Employer in writing.
1.2.1.2	The Employer's address for receipt of communications is: **Delivery Address:** **Attention:** Deputy Director: Supply Chain Management Pretoria National Botanical Garden Biodiversity Centre, 2 Cussonia Avenue Brummeria, Pretoria **Postal Address:** **Attention:** Deputy Director: Supply Chain Management South African National Biodiversity Institute Private Bag X101 Silverton, Gauteng 0184
1.1.1.26	**Clause 1.3.: Pricing Strategy** The Pricing Strategy is a re-measurement contract.

3.1.3	**Clause 3.1.3: Specific Approval of the Employer Required** The Engineer is required to obtain the specific approval of the Employer before executing any of the following functions or duties: 1 Clause 6.3: Variations 2 Clause 5.11.1: Suspension of the Works 3 Clause 5.12: Extension of Time for Practical Completion
3.2.3	**Clause 3.2.3: Specific Approval of the Employer Required** The Employer's Agent is required to obtain the specific approval of the Employer before executing any of the following functions or duties: 1 Clause 6.3: Variations 2 Clause 5.11.1: Suspension of the Works 3 Clause 5.12: Extension of Time for Practical Completion
5.3.1	**Clause 5.3.1: Commencement of the Works** The documentation required before commencement with Works execution are: Health and Safety Plan (Refer to Clause 4.3) Initial programme (Refer to Clause 5.6) Security (Refer to Clause 6.2) Insurance (Refer to Clause 8.6) Cash flow projection
5.3.2	**Clause 5.3.2: Timeframe to deliver documentation** The time to submit the documentation required before commencement with Works execution is twenty-one (21) days.
5.3.3	**Clause 5.3.3: Time to instruct commencement of the Works** *Add the following to Clause 5.3.3 after the last sentence:* "The Contractor shall not commence working until they have an approved project specific health and safety plan in terms of the Occupational Health and Safety Act, 1993: Construction Regulations, 2014 and complied with the initial requirements thereof."
5.4.2	The access and possession of Site shall not be exclusive to the Contractor but as set out in the Site Information.
5.8.1	**Clause 5.8.1: Non-Working Times** The non-working days are Saturdays and Sundays. The special non-working days are: 1. All gazetted public holidays falling outside the year end break. 2. The year-end break
5.12.2.	**Clause 5.12.2.: Some reasons for extension of time**

	Clause 5.12.2.2: Abnormal climatic conditions. *Add the following:* Regardless of the cause of any delay an extension of time will only be considered if it can be shown that the activity delayed is on the critical path indicated on the Programme of Works (Clause 5.6.1). No extension of time will be granted in respect of any delays attributed to normal climatic conditions. Normal Climatic Conditions shall be deemed to include normal rainfall and associated wet conditions and materials, strong winds and extremes of temperature. However, in the event that delays to critical activities exceed the number of working days listed below for each month, then abnormal climatic conditions shall be deemed to exist, and an extension of time shall be granted in accordance with the provisions of that Clause. The number of days quoted below shall be regarded as a fair estimate of the delays to be anticipated and allowed for under normal climatic conditions where inclement weather prevents or disrupts work on the critical path. January 3 days May 1 days September 1 days February 6 days June 1 days October 2 days March 7 days July 1 days November 2 days April 5 days August 1 days December 4 days Claims for delays for abnormal climatic conditions shall be accompanied by substantiating facts and evidence, which shall be submitted timeously as each day or half-day delay is experienced. Should an extension of time be granted by the Engineer such extension of time will be added to the Time for Completion. It shall be further noted that where the critical path is not affected, no extension of time for abnormal climatic conditions or for any other reason will be entertained. Rainfall of 10mm or less per day shall be deemed to be normal climatic conditions.
5.13.1	**Clause 5.13.1: Penalty for Delay** The penalty for failing to complete the Works is R6000 per day.
5.14.1	**Clause 5.14.1: Practical completion** The requirements for achieving Practical Completion are: Works to reach a state of readiness fit for intended purpose and occupation without danger/undue inconvenience to the Employer/public.
5.14.2	**Clause 5.14.2: Issue of Certificate of Practical Completion** *Replace* "the Employer's Agent" *in the second and third lines with the following*: ", the Contractor shall notify the Employer's Agent, who shall inspect the Works and the Employer's Agent"
5.14.4	**Clause 5.14.4: Certificate of Completion** *Replace* "the Employer's Agent" *in the third line of the first paragraph with*: ", the Contractor shall notify the Employer's Agent, who shall inspect the works and the Employer's Agent"
5.16.3	**Clause 5.16.3: Latent defect liability** The latent defect period is five (5) years for building works.
6.2	**Clause 6.2: Security** The Form of Guarantee is to contain the wording of the pro-forma document as per the contract document. The liability of the guarantee shall be for 10% of the Approved Contract Sum.

6.8.2	**Clause 6.8.2: Contract Price Adjustment** Contract Price Adjustment **<u>is not applicable</u>**
6.8.3	**Clause 6.8.3: Variation in Cost of Special Materials** Price adjustments for variations in the costs of special materials are not allowed
6.10.1.5	**Clause 6.10.1.5: Interim Payments - Materials on Site** No percentage advance on materials on site but not yet built into the Permanent Works is allowed for, or will be paid.
6.10.3	**Clause 6.10.3: Retention Money** The percentage retention on the amounts due to the Contractor is 10% (ten percent). The limit of retention is 10% of the Contract Sum, including allowances for contingencies. This reduces to 5% upon the issue of the Certificate of Completion. The remaining 5% retention will be released upon the issue of the Final - Approval Certificate upon lapse of the defects liability period. Security plus Retention amount will not exceed 15% of the Contract Sum
6.10.4	**Clause 6.10.4: Delivery, dissatisfaction with and payment of payment certificate** *Replace* “28 days” *in the second last sentence with* “30 days”
6.10.6	**Clause 6.10.6: Set-Off and Delayed Payments** A guarantee in lieu of retention is not permitted
6.10.6.2	**Clause 6.10.6.2: Set-Off and Delayed Payments** *Replace the words* “prime overdraft rate certified by the Contractor’s banker” *with the words* “interest 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), will apply”
6.10.8	**Clause 6.10.8: Contractor’s completion statement** *Replace* “28 days” *in the last sentence with* “30 days”
6.10.9	**Clause 6.10.9: Final payment certificate** *Replace* “28 days” *in the last sentence with* “30 days”
6.12	**Clause 6.12: Additional** *Add Clause 6.12 as follows:* In respect of any amount owed by the Contractor to the Employer, the Contractor shall pay the Employer interest at 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), will apply
8.6.1	**Clause 8.6.1: Insurance** *Add the following:* **Damage to the Works** (a) Without in any way limiting the Contractor’s obligations in terms of the Contract, the Contractor shall bear the full risk of damage to and/or destruction of the Works by whatever cause during construction of the Works and hereby indemnifies and holds harmless the Employer against any such damage. The Contractor shall take such precautions and security measures and other steps for the protection and security of the Works, as he may deem necessary.

	(b) The Contractor shall at all times proceed immediately to remove or dispose of any debris arising from damage to or destruction of the Works and to rebuild, restore, replace and/or repair the Works. (c) The Employer shall carry the risk of damage to or destruction of the Works and material paid for by the Employer that is the result, whether direct or indirect or proximate or remote, of the excepted risks as set out in Clause 8.6.2. (d) Where the Employer bears the risk in terms of this Contract, the Contractor shall, if requested to do so, reinstate any damage or destroyed portions of the Works and the costs of such reinstatement shall be measured and valued in terms of Clause 6.7 hereof. .
8.6.1.1.2	**Clause 8.6.1.1.2: Insurance** The value of the materials supplied by the Employer to be included in the insurance sum is -Nil.
8.6.1.1.3	**Clause 8.6.1.1.3: Insurance** The amount to cover professional fees for repairing damage and loss to be included in the insurance sum is -Nil.
8.6.1.3	**Clause 8.6.1.3: Insurance** The limit of indemnity for liability insurance is R10 000 000.00 for any single claim – the number of claims to be unlimited during the construction.
8.6.1.5	**Clause 8.6.1.5: Additional Insurance** Additional Insurance is required for the following: a) Where the contract involves manufacturing and/or fabrication of the works or part thereof at premises other than the Site, the Contractor shall satisfy the Employer that all materials and equipment for incorporation in the works are adequately insured during manufacture and/or fabrication. In the event ofthe Employer having an insurable interest in such works during manufacture or fabrication then such interest shall be noted by endorsement to the Contractor's Policies of Insurance. .
10.1.5	**Clause 10.1.5: Employer's Agent's ruling on Contractor's Claim** *Add the following to Clause 10.1.5 before the last sentence*: "If the Employer's Agent does not respond in accordance with the foregoing procedure and timetable, either Party may consider that the claim has been rejected by the Employer's Agent and either Party may submit the dispute by issuing a Dispute Notice in terms of Clause 10.3.1.'
10.3.1	**Clause 10.3: Dispute Notice** *Replace Clause 10.3.1.1 with the following* "The dispute arises from any ruling.":
10.5, 10.6, 10.7	**Clause 10.5, 10.6, 10.7: Dispute Resolution** Dispute resolution shall be by **Arbitration**.
11	**Clause 12: Confidentiality** The Contractor shall treat the details of the Works comprised in this Contract as private and confidential (save in so far as may be necessary for the purposes hereof) and shall not publish or disclose the same or any particulars thereof in any trade or technical paper elsewhere without prior written consent of the Engineer.
12	**Clause 13: Amendments in writing**

	No amendments of this Contract or of any provisions or terms hereof and no waiver or relaxation or suspension of any of the provisions or terms of this Contract shall be of any force or effect unless reduced to writing and signed by both the parties hereto.

PART 2: DATA PROVIDED BY THE CONTRACTOR

Clause

1.1.1.9 The Contractor is ……

1.2.1.2 The Contractor's address for receipt of communications is:

Physical address:	Postal address:
.....	.....
.....	.....
.....	.....
.....	.....

Telephone: .....

Fax: .....

Email: .....

PART C: THE CONTRACT
Part C1: Agreement and Contract Data

PROJECT TITLE:	**APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG**
CONTRACT NO:	**SANBI: G527/2024**

C1.3 FORM OF CONSTRUCTION GUARANTEE

C1.3.1 PRO FORMA PERFORMANCE GUARANTEE

GUARANTOR DETAILS AND DEFINITIONS

"Guarantor" means: .....

Physical address: .....

"Employer" means: .....

"Contractor" means: .....

"Engineer" means: .....

"Works" means: .....

"Site" means: .....

"Contract" means: The Agreement made in terms of the Form of Offer and Acceptance and such amendments or additions to the Contract as may be agreed in writing between the parties.

"Contract Sum" means: The accepted amount inclusive of tax of R .....

Amount in words: .....

"Guaranteed Sum" means: The maximum aggregate amount of R .....

Amount in words: .....

"Expire Date" means: .....

CONTRACT DETAILS

Engineer issues: Interim Payment Certificates, Final Payment Certificate and the Certificate Completion of the Works as defined in the Contract.

PERFORMANCE GUARANTEE

1 The Guarantor's liability shall be limited to the amount of the Guaranteed Sum.

2 The Guarantor's period of liability shall be from and including the date of issue of this Performance Guarantee and up to and including the Expiry Date or the date of issue by the Engineer of the Certificate of Completion of the Works or the date of payment in full of the Guaranteed Sum, whichever occurs first. The Engineer and/or the Employer shall advise the Guarantor in writing of the date on which the Certificate of Completion of the Works has been issued.

3 The Guarantor hereby acknowledge that:

3.1 any reference in this Performance Guarantee to the Contract is made for the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a suretyship;

3.2 its obligation under this Performance Guarantee is restricted to the payment of money.

4 Subject to the Guarantor's maximum liability referred to in 1, the Guarantor hereby undertakes to pay the Employer the sum certified upon receipt of the documents identified in 4.1 to 4.3:

4.1 A copy of a first written demand issued by the Employer to the Contractor stating that payment of a sum certified by the Engineer in an Interim or Final Payment Certificate has not been made in terms of the Contract and failing such payment within seven (7) calendar days, the Employer intends to call upon the Guarantor to make payment in terms of 4.2;

4.2 A first written demand issued by the Employer to the guarantor at the Guarantor's physical address with a copy to the Contractor stating that a period of seven (7) days has elapsed since the first written demand in terms of 4.1 and the sum certified has still not been paid;

4.3 A copy of the aforesaid payment certificate which entitles the Employer to receive payment in terms of the Contract of the sum certified in 4.

5 Subject to the Guarantor's maximum liability referred to in 1, the Guarantor undertakes to pay to the Employer the Guaranteed Sum or the full outstanding balance upon receipt of a first written demand from the Employer to the Guarantor at the Guarantor's physical address calling up this Performance Guarantee, such demand stating that:

5.1 the Contract has been terminated due to the Contractor's default and that this Performance Guarantee is called up in terms of 5; or

5.2 a provisional or final sequestration or liquidation court order has been granted against the Contractor and that the Performance Guarantee is called up in terms of 5; and

5.3 the aforesaid written demand is accompanied by a copy of the notice of termination and/or the provisional/final sequestration and/or the provisional liquidation court order.

6 It is recorded that the aggregate amount of payments required to be made by the Guarantor in terms of 4 and 5 shall not exceed the Guarantor's maximum liability in terms of 1.

7 Where the Guarantor has made payment in terms of 5, the Employer shall upon the date of issue of the Final Payment Certificate submit an expense account to the Guarantor showing how all monies received in terms of this Performance Guarantee have been expended and shall refund to the Guarantor any resulting surplus. All monies refunded to the Guarantor in terms of this Performance Guarantee shall bear interest at the prime overdraft rate of the Employer's bank compounded monthly and calculated from the date payment was made by the Guarantor to the Employer until thedate of refund.

8 Payment by the Guarantor in terms of 4 or 5 shall be made within seven (7) calendar days upon receipt of the first written demand to the Guarantor.

9 Payment by the Guarantor in terms of 5 will only be made against the return of the original Performance Guarantee by the Employer.

10 The Employer shall have the absolute right to arrange their affairs with the Contractor in any manner which the Employer may deem fit and the Guarantor shall not have the right to claim their release from this Performance Guarantee on account of any conduct alleged to be prejudicial to the Guarantor.

11 The Guarantor chooses the physical address as stated above for the service of all notices for al purposes in connection herewith.

12 This Performance Guarantee is neither negotiable nor transferable and shall expire in terms of 2, where after no claims will be considered by the Guarantor. The original of this Guarantee shall be returned to the Guarantor after it has expired.

13 This Performance Guarantee, with the required demand notices in terms of 4 or 5, shall be regarded as a liquid document for the purposes of obtaining a court order.

14 Where this Performance Guarantee is issued in the Republic of South Africa the Guarantor hereby consents in terms of Section 45 of the Magistrate's Courts Act No 32 of 1944, as amended, to the jurisdiction of the Magistrate's Court of any district having jurisdiction in terms of Section 28 of the said Act, notwithstanding that the amount of the claim may exceed the jurisdiction of the Magistrate's Court.

Signed at .....

Date .....

Guarantor's signatory: (1) .....

Capacity.....

Guarantor's signatory: (2) .....

PART C: THE CONTRACT
Part C1: Agreement and Contract Data

PROJECT TITLE:	**APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG**
CONTRACT NO:	**SANBI: G527/2024**

C1.4 Occupational Health and Safety Agreement 37(2)

AGREEMENT MADE AND ENTERED INTO BETWEEN THE

.....

(Hereinafter called the **"EMPLOYER"**)

.....

(Contractor / Mandatary / Company / CC Name)

IN TERMS OF SECTION 37(2) OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, ACT NO. 85 OF 1993 AS AMENDED

I,....., representing

....., as an Employer in its own right, do hereby undertake to ensure, as far as is reasonably practicable, that all work will be performed, and all equipment, machinery or plant used in such a manner as to comply with the provisions of the Occupational Health and Safety Act (OHSA) and the Regulations promulgated there under.

I furthermore confirm that I am / we are registered with the Compensation Commissioner and that all registration and assessment monies due to the Compensation Commissioner have been fully paid or that I / we are insured with an approved licensed compensation insurer.

COID ACT Registration Number: .....

Or Compensation Insurer: ..... Policy No.: .....

I undertake to appoint, where required, suitable competent persons, in writing, in terms of the requirements of OHSA and the Regulations and to charge him / them with the duty of ensuring that the provisions of OHSA and Regulations as well as the Council's Special Conditions of Contract, Way Leave, Lock-Out and Work Permit Procedures are adhered to as far as reasonably practicable.

I further undertake to ensure that any Sub-contractors employed by me will enter into an Occupational Health and Safety Agreement separately, and that such Sub-contractors comply with the conditions set.

I hereby declare that I have read and understand the appended Occupational Health and Safety Conditions and undertake to comply therewith at all times.

I hereby also undertake to comply with the Occupational Health and Safety Specification and Plan.

Signed at ..... this ..... day of ..... 20 .....

....
WITNESS MANDATORY

Signed at ..... this ..... day of ..... 20 .....

....
WITNESS FOR AND ON BEHALF OF THE EMPLOYER

OCCUPATIONAL HEALTH AND SAFETY CONDITIONS

1. The Chief Executive Officer of the Contractor shall assume the responsibility in terms of Section 16(1) of the Occupational Health and Safety Act (as amended). Should the Contractor assign any duty in terms of Section 16(2), a copy of such assignment shall immediately be provided to the representative of the Employer as defined in the Contract.

2. All work performed on the Employer's premises shall be performed under the supervision of the construction supervisor who understand the hazards associated with any work that the Contractor performs on the site in terms of Construction Regulations 2003.

3. The Contractor shall appoint a Competent Person who shall be trained on any occupational health and safety aspect pertaining to them or to the work that is to be performed.

4. The Contractor shall ensure that he familiarises himself with the requirements of the Occupational Health and Safety Act and that they, their employees, and any sub-contractors, comply with them.

5. Discipline in the interests of occupational health and safety shall be strictly enforced.

6. Personal protective equipment shall be issued by the Contractor as required and shall be worn at all times where necessary.

7. Written safe work procedures and appropriate precautionary measures shall be available and enforced, and all employees shall be made conversant with the contents of these practices.

8. No substandard equipment/machinery/articles or substances shall be used on the site.

9. All incidents referred to in terms of Section 24 of the Occupational Health and Safety Act shall be reported by the Contractor to the Department of Labour and the Employer.

10 The Employer hereby obtains an interest in the issue of any formal inquiry conducted in terms of Section32 of the Occupational Health and Safety Act and into any incident involving a Contractor and/or their employees and/or their Sub-Contractor/s.

11. No use shall be made of any of the Employer's machinery / plant / equipment / substance / personal protective equipment or any other article without prior arrangement and written approval.

12. No alcohol or any other intoxicating substance shall be allowed on the site. Any person suspected of being under the influence of alcohol or any other intoxicating substance shall not be permitted access to, or allowed to remain on the site.

13. Prior to commencement of any work, verified copies of all documents mentioned in the agreement, must be presented to the Employer.

PART C: THE CONTRACT
Part C2: Pricing Data

PROJECT TITLE:	**APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG**
CONTRACT NO:	**SANBI: G527/2024**

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C2.1	Notes to Tenderer	
C2.2	Provisional Bill of Quantities	

Any reference to words “Bid” or Bidder” herein and/or in any other documentation shall be construed to have the same meaning as the words “Tender” or “Tenderer”.

PART C: THE CONTRACT
Part C2: Pricing Data

PROJECT TITLE:	**APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG**
CONTRACT NO:	**SANBI: G527/2024**

C2.1 Notes to Tenderer

Note that all the products should be CSIR and SABS approved.

C2.1.2. General Notes

2.1 The tenderer's attention is drawn to, inter alia, the following as contained in this document:

2.1.1 The General Conditions of Contract for Construction Works (2015) published by the South African Institution of Civil Engineering, are applicable to this contract.

2.1.2 The Bills of Quantities have been drawn up in accordance with the "Standard System of Measuring Building Work Seventh Edition (Revised 2015)" published by the Association of South African Quantity Surveyors

2.1.3 The General Preambles for Trades (2017 edition), as published by the Association of South African Quantity Surveyors, shall be deemed to be incorporated in the bills of quantities and no claims arising from brevity of description of items, fully described in the said General Preambles, will be entertained

2.1.4 "Supplementary Preambles" are incorporated in the bills of quantities to satisfy the requirements of the project and shall take precedence over the provisions of the said General Preambles

2.1.5 Descriptions in the Bills of Quantities are abbreviated and comply generally with those in the said General Preambles

2.1.6 The units of measurement described in the Bills of Quantities are metric units. Abbreviations which may be used in the Bills of Quantities are as follows:

mm	=	millimetre	m	=	linear metre
m2	=	square metre	m3	=	cubic metre
km	=	kilometre	ha	=	hectare
h	=	hour	kg	=	kilogram
t	=	ton	L	=	litre
kl	=	kilolitre	kN	=	kiloweton
MN	=	meganewton	MPa	=	megapascal
kW	=	kilowatt	%	=	percent
No	=	number	sum	=	lump sum
PC Sum	=	Prime Cost Sum			
Prov Sum	=	Provisional Sum			

Any reference to words “Bid” or Bidder” herein and/or in any other documentation shall be construed to have the same meaning as the words “Tender” or “Tenderer”.

PART C: THE CONTRACT
Part C2: Pricing Data

PROJECT TITLE:	**APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG**
CONTRACT NO:	**SANBI: G527/2024**

C2.2 Bills of Quantities

Attached

PART C: THE CONTRACT
Part C3: Scope of Work

PROJECT TITLE:	**APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG**
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Status

Should any requirement or provision in the parts of the Scope of Work conflict with any requirement of any Standardised Specification, Particular Specification or any drawings, the order of precedence, unless otherwise specified, is:

Drawings

Scope of Work

Standardised Specifications

PART C: THE CONTRACT
Part C3: Scope of Work

PROJECT TITLE:	**APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG**
CONTRACT NO:	**SANBI: G527/2024**

C 3.1. Description of the Works

C3.1.1 Background

C3.1.2 Scope of Works

The scope of works per phase includes, but is not necessarily limited to, the following:

- Development of an automated new irrigation system compliant with the South African National Standard (SANS) and regulation and amenable to future upgrades

Note: All works to be carried out according to SANS standards.

C3.1.3 Location of the Works

The project is located at the Walter Sisulu NBG, Gauteng.

Part C3: Scope of Work

PROJECT TITLE:	**APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG**
CONTRACT NO:	**SANBI: G527/2024**

C3.2. Design & Construction

This project is for the appointment of a contractor for the supply and installation of an irrigation system for the South African National Biodiversity Institute (SANBI) in the Walter Sisulu National Botanical Garden, Gauteng

C3.2.1 Initial Basic Civil and Structural Information: (To be provided)

All engineering designs and relevant documentation are provided for in this tender document.

C3.2.2 Site Camp

No major site camp is envisioned for this project, but should there be a need, the area must be kept to an absolute minimum. There are open areas around the Walter Sisulu NBG which may be used for a small site camp. No large containers will be allowed for offices or storage. Water and electricity are available on site. Security of the site and materials is the sole responsibility of the Contractor.

C3.2.3 Equipment / Plant

No large plant is envisioned for the project. The majority of work should be labour intensive with hand operated tools. Should there be a need to bring large machinery onto the work site, it should be as per the arrangement with SANBI or SANBI's representative. Any damage or disturbance of the site/infrastructure by large machinery will have to be remediated at the cost of the Contractor.

C3.2.4 Applicable Project Specifications

Refer to the Scope of Work

PART C: THE CONTRACT

Part C3: Scope of Work

PROJECT TITLE:	**APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG**
CONTRACT NO:	**SANBI: G527/2024**

C3.3. DRAWINGS

C3.3.1 Drawings List:

The drawings are contained in Annexure A and provided separately.

PART C: THE CONTRACT
Part C4: Site Information

PROJECT TITLE:	**APPOINTMENT OF A CONTRACTOR FOR THE SUPPLY AND INSTALLATION OF AN IRRIGATION SYSTEM FOR SOUTH AFRICAN NATIONAL BIODIVERSITY INSTITUTE(SANBI) IN THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG**
CONTRACT NO:	**SANBI: G527/2024**

C4.1. General Site Information

The proposed construction is to take place within Walter Sisulu NBG, Gauteng.

FIGURE 1: SITE LOCALITY PLAN - AERIAL PHOTO OF THE WALTER SISULU NBG

C4.2. Annexure F

OCCUPATIONAL HEALTH AND SAFETY SPECIFICATIONS FOR CONTRACTORS WHO ARE ON CONTRACT WITH SANBI

C4.2.1 Scope

This specification establishes general requirements to enable SANBI and the Contractors to satisfy the requirements of Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) and the Construction Regulations, 2014 as amended.

The Construction Regulations, 2014, require an Employer to stop any Contractor from executing construction work which is not in accordance with the Contractor's health and safety plan for the site or which poses to be a threat to the health and safety of persons.

This specification establishes generic health and safety requirements for health and safety as stated in the scope of work associated with a contract and

- provides the overarching framework within which the Contractor is required to demonstrate compliance with certain requirements for occupation health and safety established by the Occupational Health and Safety Act of 1993;
- establishes the manner in which the Contractor is to manage the risk of health and safety incidents in the execution of the contract; and
- establishes the manner in which the Employer's health and safety agent will interact with the Contractor.

C4.2.2 Requirements

C4.2.2.1 General requirement

The Contractor shall:

- create and maintain a safe and healthy work environment,
- execute the works in a manner that complies with all the requirements of the Act and all its associated regulations, and in so doing, minimize the risk of incidents occurring; and
- respond to the notices issued by the SANBI's Health and Safety Agent as follows:
    - Improvement Notice: improve health and safety performance over time so that repeat notices are not issued;
    - Contravention Notice: rectify contravention as soon as possible;
    - Prohibition Notice: terminate affected activities with immediate effect and only recommence activities when it is safe to do so.

Any incident occurring as a result of the contractors 'negligence which may affect SANBI employees will be claimed against the contractor.

C4.2.3 Administration

C4.2.3.1 Application and Notification of intention to commence construction work

C4.2.3.1.1 Application for construction work permit

A client who intends to have construction work carried out, must at least 30 days before that work is to be carried out apply to the provincial director in writing for a construction work permit to perform construction work if the intended construction work will:

- exceed 180 days;
- will involve more than 1800 person days of construction work; or
- the works contract is of a value equal to or exceeding thirteen million rand or Construction Industry Development Board (CIDB) grading level 5.

An application must be done in a form similar to Annexure 1 in the Regulation and a site-specific number assigned by the Provincial Director must be displayed on site.

C4.2.3.1.2 Notification of construction work

A contractor who intends to carry out any construction work other than work contemplated in regulation 3(1), must at least 7 days before that work is to be carried out notify the provincial director in writing ina form similar to Annexure 2 if the intended construction work will:

- include excavation work;
- include working at a height where there is risk of falling;
- include the demolition of a structure; or
- include the use of explosives to perform construction work.

The Contractor shall ensure that no work commences on an electrical installation which requires a new supply or an increase in electricity supply before the person who supplies or contracts or agrees to supply electricity to that electrical installation has been notified of such work.

The Contractor shall ensure that no asbestos work is carried out before the Provincial Director of the Department of Labour has been notified in writing.

C4.2.3.2 Copy of the Act

The Contractor shall ensure that a copy of the Act and relevant regulations is available on site for inspection by any person engaged in any activity on the site.

Good standing with the compensation fund or a licensed compensation insurer
The Contractor shall, before commencing with any works on the site, provide the SANBI with proof of good standing with the compensation fund or with a licensed compensation insurer.

C4.2.3.3 Emergency procedures

The Contractor shall submit for acceptance to the SANBI 's Health and Safety Agent an emergency procedure which include but are not limited to fire, spills, accidents to employees, exposure to hazardous substances, which:

- identifies the key personnel who are to be notified of any emergency;
- sets out details including contact particulars of available emergency services; and
- the actions or steps which are to be taken during an emergency.

The Contractor shall within 24 hours of an emergency taking place notify the SANBI's Health and Safety Agent in writing of the emergency and briefly outline what happened and how it was dealt with.

C4.2.3.4 **Health and safety file**

The Contractor shall maintain on site a health and safety file which contains copies of the following;

C4.2.3.4.1 **Documents required before the contractor commences with construction activities**

- the Contractor's health and safety policy, signed by the chief executive officer, which outlines the Contractor's objectives and how they will be achieved and implemented by the Contractor
- the notification made to the Provincial Director of Labour, and if relevant, the notification of the person who supplies or contracts or agrees to supply electricity to that electrical installation;
- the letters of appointment, as relevant, of the construction supervisor for the site in respect of construction works covered by the Construction Regulations and the registered person responsible for the electrical installation covered by the Electrical Installations Regulations;
- a copy of the certificate of registration of the registered person responsible for the electrical installation covered by the Electrical Installations Regulations where applicable;
- the approval of the design of the part of an electrical installation which has a voltage in excess of 1 kV by a person deemed competent in terms of the Electrical Installations Regulations;
- proof of registration of the electrical contractor who undertakes the electrical installation in terms of the Electrical Installations Regulations where applicable;
- the preliminary hazard identification undertaken by a competent person;
- the organogram which outlines the roles and responsibilities of the construction supervisor's assistants and safety officers; and
- the contractor's health and safety plan
- the emergency procedures;
- the procedure for the replacement of lost, stolen, worn or damage personal protective clothing and
- proof that the contractor is registered and in good standing with the compensation fund or with a licensed compensation insurer;

C4.2.3.4.2 **Documents required after construction activities have commenced**

- the letters of appointments, if relevant, of:
  - persons who are required to assist the construction supervisor;
  - safety officers;
  - health and safety representatives;
  - replacement construction supervisor, and
  - assistants of construction supervisor.
- any revisions to the organogram which outlines the roles and responsibilities of the construction supervisor's assistants and safety officers
- each and every subcontract agreement;
- proof that every subcontractor is registered and in good standing with the compensation fund or with a licensed compensation insurer;
- proof of all subcontractor's induction training whenever it is conducted;

- copies of the minutes of the Contractor's subcontractor's health and safety meetings;
- copies of each of the Contractor's subcontractors' health and safety policy, signed by the Chief Executive Officer, which outlines the Contractor's objectives and how they will be achieved and implemented by the Contractor;
- the health and safety plans of all the Contractor's subcontractors who are required to provide such plans;
- a comprehensive and updated list of all the subcontractors employed on site by the contractor, indicating the type of work being performed by such sub-contractors;
- the outcomes of the monthly audits for compliance with the approved health and safety plan of each and every sub-contractor working on the site;
- any report made to an inspector by the health and safety committee;
- the minutes of all health and safety meetings and any recommendations made to the Contractor by the health and safety committee;
- the findings of all audit reports made regarding the implementation of the Contractor's or a subcontractor's health and safety plan
- the inputs of the safety officer, if any, into the health and safety plan;
- details of induction training conducted whenever it is conducted including the list of attendees;
- proof of the following where suspended platforms are used:
    - a certificate of system design issued by a professional engineer, professional certificated engineer or a professional engineering technologist;
    - proof of competency of erectors;
    - proof of compliance of operational design calculations with requirements of the system design certificate;
    - proof of performance test results;
    - sketches indicating the completed system with the operational loading capacity of the platform;
    - procedures for and records of inspections having been carried out;
    - procedures for and records of maintenance work having been carried out;
    - proof that the prescribed documentation has been forwarded to the provincial director;
- letters of appointments for competent persons to supervise the activities which law requires to be so supervised;
- A copy of risk assessments made by competent person;
- records of the register of inspections made by a competent person immediately before and during the placement of concrete or any other load on formwork;
- the names of the first aiders on site and copies of the first aid certificates of competency;
- the names of the persons the persons who are in possession of valid certificate of competency in first aid and copies of such certificates;
- details of all incidents together with the Contractor's report on such incident and
- the record of inspections carried out by the designers of structures to ensure compliance with designs.

The health and safety file shall be made available for inspection by any inspector, subcontractor, the Project Manager, the SANBI's Health and Safety Agent or employee of the Contractor upon the request of such persons.

The Contractor shall hand over the health and safety file to the SANBI's Health and Safety Agent upon completion of the contract and if relevant, a certificate of compliance accompanied by a test report for the electrical installation in accordance with the provisions of the Electrical Installation Regulations.

C4.2.3.5 **Health and safety committee**

The Contractor shall convene health and safety meetings whenever more than two health and safety representatives have been appointed for the site. These meetings shall be attended by all health and safety representatives and persons nominated by the Contractor. Such meetings shall be convened at least once every month to:

- make recommendations to the Contractor regarding any matter affecting the health or safety of persons on the site; and
- discuss any incident on the site in which or in consequence of which any person was injured, became ill or died.

The Contractor shall consult with the health and safety committee on the development, monitoring and review of the risk assessment.

The Contractor shall ensure that minutes of the health and safety committee meetings are kept.

SANBI Health and Safety Agent shall be invited to attend such meetings as an observer.

C4.2.3.6 **Inspections, formal enquires and incidents**

The Contractor shall inform the relevant safety representative:

- beforehand of inspections, investigations or formal inquiries of which he has been notified by an inspector and
- as soon as reasonably practicable of the occurrence of an incident on the site.

The Contractor shall record all incidents and notify the SANBI's Health and Safety Agent of any incident, except in the case of a traffic accident on a public road, as soon as possible after it has occurred and reports such incidence to an inspector.

The Contractor shall investigate all incidents and issue the SANBI's Health and Safety Agent with copies of such investigations.

C4.2.3.7 **Personal protective equipment and clothing**

The Contractor shall ensure that:

- all workers are issued with the necessary personal protective clothing;
- all workers are identifiable at all times by having the company for which they work for printed on the back or front of their overalls; and
- clear procedures are in place for the replacement of lost, stolen, worn or damage personal protective clothing.

C4.2.4 Appointments

C4.2.4.1 **Health and safety representatives**

The Contractor shall appoint in writing one health and safety representative for every 50 employees working on the site, whenever there are more than 20 employees on the site, to:

- review the effectiveness of health and safety measures;
- identify potential hazards and potential major incidents;
- in collaboration with their employer, examine the causes of incidents;
- investigate complaints by any employee of the Contractor relating to that employee's health or safety on the site;
- make representations to the Contractor on matters arising from a), b), c) or d) or on general matters affecting the health or safety of the employees at the workplace;
- inspect the site with a view to, the health and safety of employees, at regular intervals;
- participate in consultations with inspectors at the workplace and accompany inspectors on inspections of the workplace; and
- participate in any internal health or safety audit.

The Contractor shall provide the health and safety representatives with the necessary assistance, facilities and training to carry out the functions established in 4.3.1

C4.2.4.2 Appointment of construction supervisor and safety officers

The Contractor shall, prior to commencing the work, appoint a full-time competent employee in writing as the construction supervisor for the site, with the duty of supervising the performance of the work falling within the scope of the contract and may appoint one or more competent employees to assist the appointed construction supervisor.

The Contractor may, having considered the size of the project, the degree of dangers likely to be encountered or the accumulation of hazards or risks on the site, appoint a full time or part-time construction safety officer in writing, who has in the Contractor's opinion the necessary competencies and resources, to assist the Contractor in the control of all safety related aspects on the site.

The Contractor shall compile and maintain an organogram which outlines the roles and responsibilities of the construction supervisor's assistants and safety officers.

C4.2.4.3 Competent persons

The Contractor shall appoint in writing competent persons to supervise or inspect, as relevant, any of the following:

- formwork and support work operations;
- excavation work;
- demolition work;
- scaffolding work operations;
- suspended platform work operations;
- material hoists;
- operation of batch plants;
- explosive power tools;
- vehicles and mobile equipment;
- fire equipment; and

- the stacking and storage of articles on the site.

The Contractor shall appoint in writing competent persons to:

- induct employees in health and safety; and
- prepare a fall protection plan.

C4.2.5 Creating and maintaining a safe and healthy work environment

C4.2.5.1 General

The Contractor shall with respect to the site and the construction works that are contemplated:

- cause a preliminary hazard identification to be performed by a competent person before commencing any physical construction activity;
- evaluate the risks associated with such work constituting a hazard to the health and safety of such employees and the steps that need to be taken to comply with the Act; and as far as is reasonably practicable, prevent the exposure of such employees to the hazards concerned or, where prevention is not reasonably practicable, minimize such exposure.

The Contractor shall ensure that:

- all reasonably practicable steps are taken to prevent the uncontrolled collapse of any new or existing structure or any part thereof, which may become unstable or is in a temporary state of weakness or instability due to the carrying out of construction work;
- no structure or part of a structure is loaded in a manner which would render it unsafe; and
- account of information, if any, provided by the designer of the structure is taken into account in the risk assessment;

Note: The information provided by the designer should outline known or anticipated dangers or hazards relating to the works and make available all information required for the safe execution of the work. It should provide as relevant, geotechnical information (or make reference to reports provided in the site information), the loading the structure is designed to withstand, the methods and sequenceof construction.

The Contractor shall carry out regular inspections and audits to ensure that the works are being performed in accordance with the requirements of this specification

C4.2.5.2 Risk assessment

The Contractor shall before the commencement of any work on site and during construction work, cause a risk assessment to be performed by a competent person appointed in writing. Such an assessment shall as a minimum:

- identify the risks and hazards to which persons may be exposed to;
- analyse and evaluate the identified risks and hazards;
- document a plan of safe work procedures, including the use of any personal protective equipment or clothing and the undertaking of periodic “toolbox talks” or inductions before undertaking hazardous work, to mitigate, reduce or control the risks and hazards that have been identified;
- provide a monitoring plan; and
- provide a review plan.

C4.2.5.3 Health and safety plans

The Contractor shall prior to commencing the works to which this specification applies, submit to SANBI's Health and Safety Agent for approval a suitable and sufficiently documented health and safety plan, based on this specification and the risk assessment that is conducted.

The health and safety plan must be specific to the current project and shall as a minimum provide:

- the information about hazards associated with the task to be performed; and
- an outline of the manner in which the Contractor intends complying with the requirements of this specification.
- The arrangements to ensure the safety of all SANBI staff affected by the activities of the project/work.
- The manner in which hazards will be communicated to all staff/including SANBI employees.

C4.2.5.4 **Responsibilities towards employees and visitors**

The Contractor shall as far as is reasonably practicable, cause every employee to be made conversant with the hazards to their health and safety attached to any work which he has to perform, any article or substance which he has to produce, process, use, handle, store or transport and any plant or machinery which he is required or permitted to use, as well as with the precautionary measures which should be taken and observed with respect to those hazards or safe work procedures. Safety for SANBI employees must be considered throughout the project life cycle.

The Contractor shall provide suitable on-site signage to alert workers and visitors to health and safety requirements. Such signage shall include but not be limited to:

- unauthorized entrance prohibited;
- signage to indicate what personal protective equipment is to be worn; and
- activity related signs.

The Contractor shall not permit any person who is or who appears to be under the influence of intoxicating liquor or drugs, to enter or remain at a workplace.

C4.2.6 Subcontractors

The Contractor may only subcontract work in terms of a written subcontract and shall only appoint a subcontractor should he be reasonably satisfied that such a subcontractor has the necessary competencies and resources to safely perform the work falling within the scope of the contract.

The Contractor shall provide any sub-contractor who is submitting a tender or appointed to perform a sub-contract falling within the scope of the contract, with the relevant sections of this specification and any work specific information which might be pertinent to the sub-contract.

C4.2.7 First aid, emergency equipment and procedures

The Contractor shall where more than five employees are employed at a workplace, provide a first aid box or boxes at or near the workplace which shall be available and accessible for the treatment of injured persons at that workplace. Such first aid boxes shall contain suitable first aid equipment.

The Contractor shall ensure that where there are more than 10 employees employed on the site that for every group of up to 50 employees at that workplace, at least one person is readily available during normal working hours, who is in possession of a valid certificate of competency in first aid.

C4.2.8 Facilities for workers

The Contractor shall provide and keep clean and fit for use at or within reasonable access of the site:

- at least one shower facility for every 15 workers
- at least one sanitary facility for every 30 workers;
- changing facilities for each sex; and
- sheltered eating areas.

2.5.4.2 A contractor shall provide reasonable and suitable living accommodation for the workers at construction sites which are remote from their homes and where adequate transportation between the site and their homes, or other suitable living accommodation, is not available

C4.2.9 Waste management

Construction will result in waste generation although in different scales depending on the nature and size of the project.
The goal for construction waste management is primarily the reduction of waste generated. Waste reduction is the responsibility of all on site, as it relates to materials procurement, handling, storage and use. Waste generated during construction will be reused, recycled or disposed to landfill.

Waste collection during building works will be appropriately managed through the staged nature of construction and the use of known quantities of materials. The majority of recyclable material that could be recovered during construction is likely to be off cuts and discards of concrete reinforcement (steel), metal off cuts, drainage pipes, telecommunication and electrical cabling, plastics, paint and timber.
No uncontrolled hazardous materials or dangerous goods will be stored on site.
Principal contractor will be required to provide waste management plan before construction work commences.

C4.2.10 Points to remember - Legal
C4.2.10.1**Requirements**

- Application for construction work permit
- Notice of construction work
- Letter of good standing from the Department of Labour/ Insurance
- Risk assessment and safe working procedures
- Appointment letter of Principal contractor and other legal appointments
- Health and safety plan
- Valid medical certificates of fitness for employees
- Fall protection plan
- Health and safety inductions.
- Notice boards and display of site-specific number assigned to the project.
- Management of plant & Noise
- Management of premises
- Management of Plant, labour & materials on site
- Management of safety file

C4.3. Annexure G

GENERAL ENVIRONMENTAL SPECIFICATIONS

Index to Environmental Specifications

Clause	Description
E1	Location of camp and depot
E2	Demarcation of the site
E3	Refuse
E4	Protection of fauna and flora
E5	Defacement of natural features
E6	Protection of archaeological and palaeontological Sites
E7	Effluent and storm-water management
E8	Run off from construction camps
E9	Discharge of construction water
E10	Servicing/fuelling of construction equipment
E11	Fuels and chemicals
E12	Dust control
E13	Noise control
E14	Materials use, handling, storage and transport
E15	Use of cement/concrete
E16	Fuel storage and use
E17	Hazardous materials
E18	Transport of materials outside the site
E19	Fire
E20	Removal of topsoil
E21	Stabilisation of steep slopes
E22	Site Rehabilitation
E23	Landscaping and preparation for re-vegetation

E1 Location of camp and depot

The Contractor's Camp and Materials Storage Area, if required, shall be located at a position approved by the Responsible Person. No site staff other than security personnel shall be housed on site. The Contractor's Camp and Materials Storage Area, if required, shall be kept neat and tidy and free of litter.

E2 Demarcation of the site

It is important that activities are conducted within a limited area to facilitate control and to minimise the impact on the existing natural environment, existing tenants and other construction activities in the vicinity and public thoroughfares.

The Contractor shall demarcate the boundaries of the site in order to restrict thier construction activities to the site. The method of demarcation and the location of the demarcated area shall be determined by the Contractor and approved by the Responsible Person before any work being undertaken. The Contractor shall ensure that all plant, labour and materials remain within the boundaries of the site. Failure to do so may result in the Contractor being required to fence the boundaries of the site at his/her own expense to the satisfaction of the Responsible Person.

If additional areas (e.g. for lay down, rest areas) are required, these must be approved in writing by the Responsible Person. The Contractor is advised that it may take approximately one week to obtain such permission from the Responsible Person.

Suitable temporary fencing may need to be erected during construction to minimise the risk of injury to the public, and animals.

E3 Refuse

Refuse refers to all solid waste, including construction debris (e.g. wrapping materials, timber, cans etc.) waste and surplus food, food packaging etc.

The Contractor shall institute an on-site waste management system that is acceptable to the Responsible Person to prevent the spread of refuse within and beyond the site. The Contractor is reminded that wind velocities on the construction site can be high.

All waste shall be collected and contained immediately. The Contractor shall institute a weekly clean up of the site if so instructed by the Responsible Person. This daily/weekly clean up shall be for the Contractor's account.

The Contractor shall not dispose of any waste and/or construction debris by burning or burying. The use of waste bins and skips is recommended. The bins shall be provided with lids and an external closing mechanism to prevent their contents from blowing out. The Contractor shall ensure that all waste is deposited by thier employees in the waste bins for removal by the Contractor. Bins shall not be used for any purposes other than waste collection and shall be emptied on a regular basis. All waste shall be disposed of off-site at approved landfill sites.

Hazardous waste, including waste oil and other chemicals (e.g. paints, solvents) shall be stored in (an) enclosed area(s), and shall be clearly marked. If deemed necessary by the Responsible Person, the Contractor shall obtain the advice of a specialist waste expert concerning the storage of hazardous waste. Such waste shall be disposed of off-site by a specialist waste contractor, at a permitted hazardous waste disposal site.

E4 Protection of fauna and flora

All fauna within and around the site shall be protected. Birds and animals shall not be caught or killed by any means, including poisoning, trapping, shooting or setting of snares. Offenders may be prosecuted in terms of the Animals Protection Act 71 of 1962.

E5 Defacement of natural features

Defacement of any features outside of the construction site shall not occur without the prior written permission of the Responsible Person. Any features defaced by the Contractor shall be restored to the satisfaction of the Responsible Person.

E6 Protection of archaeological and paleontological sites

If any possible paleontological/archaeological material is found during excavations, the Contractor shall stop work immediately and inform the Responsible Person. The Responsible Person will inform the South African Heritage Resource Agency (SAHRA) and arrange for a paleontologist/archaeologist to inspect, and if necessary excavate, the material, subject to acquiring the requisite permits from the National Monuments Council. Costs incurred will be for the Employer's account.

E7 Effluent and storm-water management

The Contractor must ensure that pollution of the ground or surface water does not occur as a result of site activities. Pollution could result from the accidental release of contaminated run-off from construction camps, discharge of contaminated construction water, chemicals, oils, fuels, sewage, run- off from stockpiles, solid waste, litter, etc.

E8 Run-off from construction camps

The Contractor shall ensure that polluted run-off (excluding silt "pollution"), such as run-off from construction camps where equipment is cleaned and/or serviced, fuel stores, workshops, etc. is not discharged overland. The Contractor shall erect an earth/brick berm 0,5 m high around such areas and shall collect all run-off from these areas and store it in a conservancy tank for removal from the site. The Contractor shall ensure that silt-laden water is not discharged directly into any surface watercourses (i.e. vleis, etc.), and shall take suitable measures to prevent this.

Natural run-off shall be diverted away from any camps towards the storm-water drains where these are available. Special care must be taken in areas susceptible to erosion, e.g. steep slopes. The Contractor shall ensure that excessive quantities of sand, silt and silt-laden water do not enter the storm-water drain system, or any surface watercourse. The Contractor shall take appropriate measures, e.g. the erection of silt traps, or drainage retention areas, to prevent silt and sand entering drainage or watercourses. Any partial or complete blockage of the storm-water drainage system shall be cleared by the Contractor at his/her own expense.

E9 Discharge of construction water

Construction water refers to all water dirtied as a result of construction activities.

The Contractor may discharge silt laden water overland and allow this water to filter into the ground. However, s/he shall ensure that he does not cause erosion as a result of any overland discharge.

The Contractor may not discharge cement-laden water overland, i.e. washings from trowels, wheelbarrows and the like.

Trucks delivering concrete shall not wash the trucks or the chutes on the site. All washing operations shall take place off site at a location where wastewater can be disposed of in the correct manner.

E10 Servicing/fuelling of construction equipment

Servicing and fuelling should preferably occur off site.

However, if these activities occur on site, the Contractor shall ensure that all servicing of vehicles and equipment takes place in designated areas agreed upon by the Responsible Person. All waste shall be collected and disposed of off-site at an appropriately licensed landfill site. All equipment that leaks onto the ground shall be repaired immediately or removed.

Similarly, no vehicles or machines shall be refuelled on site except at designated refuelling locations, unless otherwise agreed with the Responsible Person. The Contractor shall not change oil or lubricants anywhere on site except at designated locations, except if there is a breakdown or an emergency repair. In such instances, the Contractor shall ensure that he has Drizit pads (or equivalent) and/or drip trays available to collect any oil, fluid, etc.

E11 Fuels and chemicals

The Contractor shall take all reasonable precautions to prevent the pollution of the ground and/or water resources by fuels and chemicals as a result of their activities.

The Contractor shall keep the necessary materials and equipment on site to deal with ground spills of any of the materials used or stored on site.

The Contractor shall ensure that no oil, petrol, diesel, etc. is discharged onto the ground. Pumps and other machinery requiring oil, diesel, which is intended to remain in one position for longer than two days shall be placed on drip trays. The drip trays shall be emptied regularly and the contaminated water disposed of off-site at a facility capable of handling such wastewater. Drip trays shall be cleaned before any possible rain events that may result in the drip trays overflowing, and before long weekends and holidays.

The Contractor shall remove all oil-, petrol-, and diesel-soaked sand immediately and shall dispose of it as hazardous waste.

Should the Responsible Person/ECO and/or the relevant authorities deem it necessary to institute a programme for the removal of contaminated ground resulting from the non-compliance of the controls detailed above, these costs will be for the Contractor's account. Remedial action shall be approved by the ECO and relevant authorities, if appropriate.

E12 Dust control

The Contractor shall be responsible for the continued control of dust arising from his/her operations, through measures including, but not limited to, spraying of water on bare areas, rotovating straw bales into the soil surface and the scheduling of dust-generating activities to times when wind velocity is low. Overhead sprayers shall not be used in windy conditions, due to water loss through evaporation. The use of water carts is preferred.

The Contractor shall inform the Responsible Person 48 hours in advance of anticipated “unavoidable” dust-generating activities. The Responsible Person and/or ECO may inform adjacent land users, tenants and communities about the possibility of dust pollution, and the approximate duration of the problem.

E13 Noise control

The Contractor shall take all reasonable precautions to minimise noise generated on site as a result of their operations, especially when working in areas or on activities that may impact on neighbouring land users.

The Contractor shall comply with the applicable regulations with regard to noise.

The Contractor shall inform the Responsible Person 48-hours in advance of anticipated “unavoidable” noise-generating activities. The Responsible Person and/or Environmental Officer may inform adjacent land users, tenants and communities about the possibility of noise pollution and the approximate duration of the problem.

E14 Materials use, handling, storage and transport

Procedure for material handling must be discussed with and approved by the Responsible Person prior to commencement of this activity.

E15 Use of cement/concrete

The Contractor is advised that cement and concrete are regarded as highly hazardous to the natural environment on account of the very high pH of the material, and the chemicals contained therein. Therefore the Contractor shall ensure that:

- concrete is mixed on mortar boards, and not directly on the ground;
- visible remains of concrete, either solid, or from washings, are physically removed immediately and disposed of as waste. Washing visible signs into the ground is not acceptable; and
- all aggregate is also removed.

E16 Fuel storage and use

Tanks containing fuels shall have lids and shall remain firmly shut. Only clean, empty tanks may be stored on the bare ground. Fuel stores shall be placed on a bunded sealed base - the bunds shall have a volume of 110% of the volume of the largest tank in the storage area. Any waste water or spilled fuel collected within the bund shall be disposed of as hazardous waste.

The Contractor shall take all the necessary precautions to prevent fires or spills. No smoking shall be allowed in the vicinity of the fuel stores. Failure to adhere to this specification shall be cause for a spot fine being imposed on the offender.

The Contractor shall ensure that there is adequate fire-fighting equipment at the fuel stores.

E17 Hazardous materials

The Contractor shall comply with all relevant national, regional and local legislation with regard to the transport, use and disposal of hazardous materials. If necessary, the Contractor shall obtain the advice of the manufacturer with regard to the safe handling of hazardous materials. Any claims against the Contractor shall be for his/her account.

The Contractor shall provide the Responsible Person with a list of hazardous substances on site, together with storage procedures for these materials.

The Contractor shall ensure that there is an emergency procedure to deal with accidents and incidents (e.g. spills) arising from hazardous substances. The Contractor shall report major incidents (spills in excess of 50 litres) to the Responsible Person immediately.

The Contractor shall maintain a register of spills or incidents involving hazardous materials, as well as measures taken.

The Contractor shall ensure that information on all hazardous substances is available to all personnel on site. The Contractor shall furthermore be responsible for the training of all personnel on site who will be handling the material about its proper use, handling and disposal.

E18 Transport of materials outside the site

The Contractor shall comply with all the applicable local, regional and national by-laws with regard to road safety and the transport of materials, especially hazardous and/or toxic materials. Any claims against the Contractor shall be for their account.

The Responsible Person shall provide the Environmental Officer with a schedule of the proposed transportation of significant quantities of hazardous material onto the site, before commencing work on site. The Environmental Officer may request further details or notifications of specific material movements if considered necessary.

E19 Fire

The Contractor shall take all the necessary precautions to ensure that fires are not started as a result of his/her activities on site, and shall also comply with the requirements of the Occupational Health and Safety Act 85 of 1993.

No open fires shall be permitted on- or off-site. Closed fires or stoves shall only be permitted at designated safe sites in the construction camps. Fires shall also not be permitted near any potential sources of combustion, such as fuel stores, stockpiles of plant material etc.

The Contractor is advised that sparks generated during welding, cutting of metal or gas cutting can cause fires. Every possible precaution shall therefore be taken when working with this equipment near potential sources of combustion. Such precautions include having an approved fire extinguisher immediately available at the site of any such activities.

The Contractor shall be liable for any expenses incurred by any organisations called to assist with fighting fires, and for any costs relating to the rehabilitation of burnt areas.

E20 Removal of topsoil

Following removal of vegetation from the site, all topsoil shall be removed (up to a maximum of 30 cm depth) and stock-piled for re-use in subsequent rehabilitation and landscaping activities. The stockpiles shall not be higher than 2 m in order to minimise composting. The stockpiles of topsoil shall be located in an area agreed with the Responsible Person.

E21 Stabilisation of steep slopes

The disturbance of steep slopes, for example by the removal of vegetation, may result in slope instability and erosion by rain and surface run-off. The Contractor shall ensure that slopes that are disturbed during construction are stabilised to prevent erosion occurring. Where re-vegetation of slopes is undertaken, this shall be in accordance with the specification provided in EP6.

Slopes that are susceptible to accidental damage during construction shall be protected to reduce the risk of disturbance.

Any erosion that does occur must be reinstated at the Contractor’s cost.

E22 Site rehabilitation

The Contractor shall be responsible for rehabilitating any areas cleared or disturbed for construction purposes that are to be incorporated into open space or buffer zones. The Contractor shall re-vegetate such areas in accordance with the specification provided below.

The Contractor shall stabilise, by straw rot ovation or other means, any areas that are cleared or disturbed for construction purposes which are not going to be incorporated into open space or buffer zones (i.e. areas that will be subsequently developed by another party).

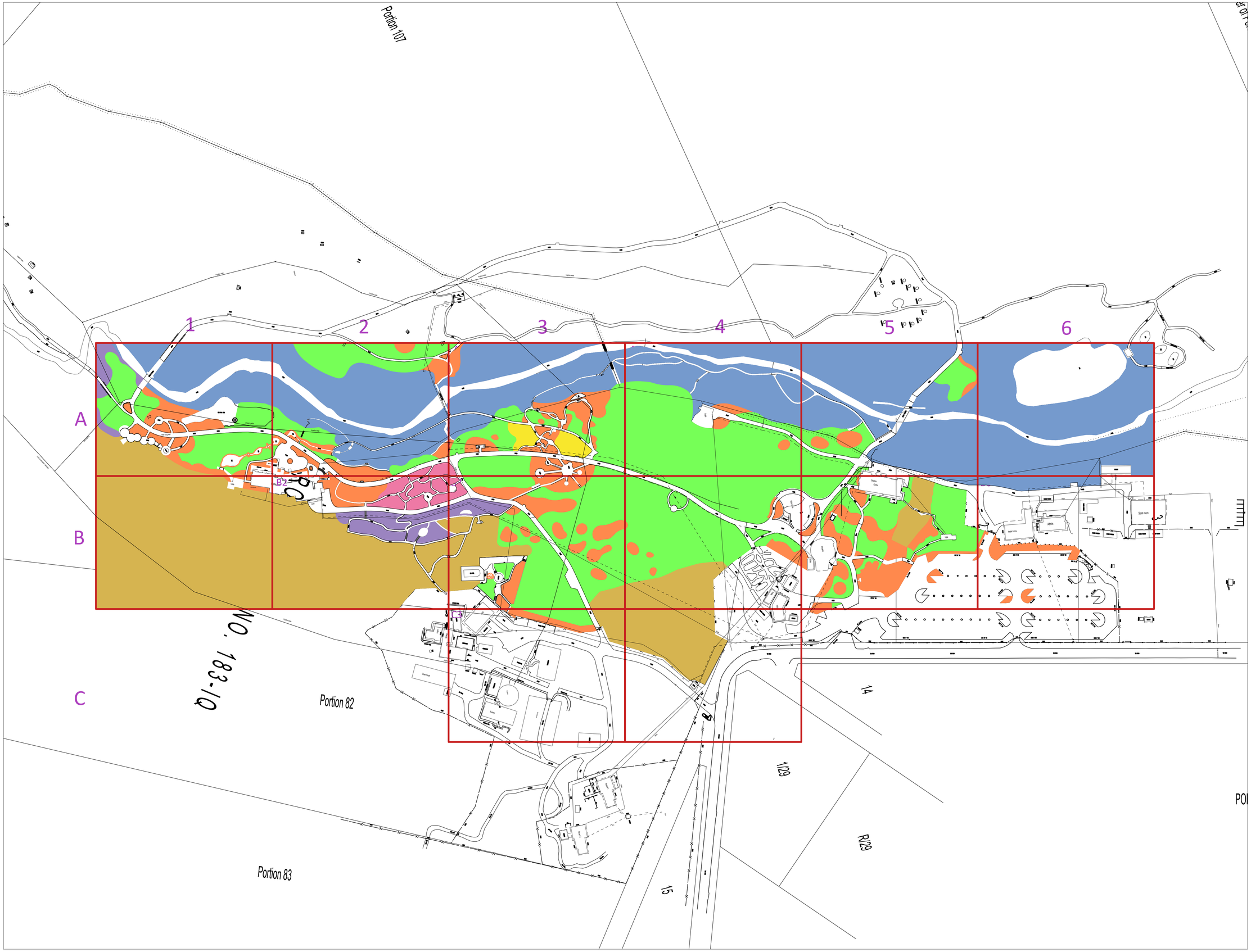
All construction equipment and excess aggregate, gravel, stone, concrete, bricks, temporary fencing and the like shall be removed from the site upon completion of the work. No discarded materials of whatsoever nature shall be buried on the site or on any other land not owned by ACSA.

E23 Landscaping and preparation for re-vegetation

Areas that require reshaping shall be cut, filled and compacted so as to follow the contours of the surrounding landscape. Topsoil removed from the area initially shall be replaced. Care must be taken not to mix the topsoil with the subsoil during shaping operations. Should a crust form on the soil before re-vegetation is commenced, the Contractor shall, at their own cost, loosen the crust by scarifying to a depth of 150 mm.

ANNEXURE C

DETAILED DESIGN DRAWINGS



Legend

- Lawn (32 414m^2)
- Natural with ornamental fill (2185m^2)
- Ornamental garden beds (11 492m^2)
- Succulent garden (1195m^2)
- River planting (37 076m^2)
- Wild natural bush (28 322m^2)
- Ornamental grassland beds (616m^2)

project

WALTER SISULU BOTANICAL GARDEN

consultant

TENMUD INVESTMENTS (PTY) LTD

contact details:
T: +27 76 418 0732
E: info@temud.co.za

discipline

LANDSCAPE ARCHITECTURE

drawing title

BOTANICAL SURVEY

scale 1:1250 (A1)

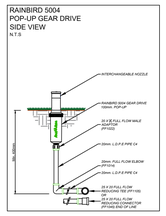
date 2024-08-21

KEY

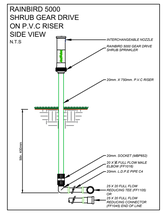
0

DETAILS

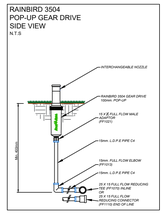
RAINBIRD 5004
POP-UP GEAR DRIVE
SIDE VIEW
N.T.S



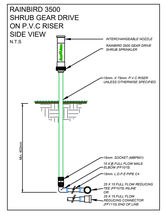
RAINBIRD 5000
SHRUB GEAR DRIVE
ON P.V.C RISER
SIDE VIEW
N.T.S



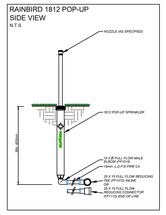
RAINBIRD 3504
POP-UP GEAR DRIVE
SIDE VIEW
N.T.S



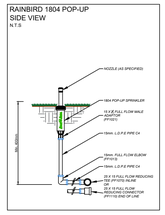
RAINBIRD 3500
SHRUB GEAR DRIVE
ON P.V.C RISER
SIDE VIEW
N.T.S



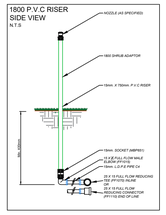
RAINBIRD 1812 POP-UP
SIDE VIEW
N.T.S



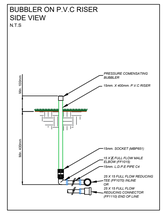
RAINBIRD 1804 POP-UP
SIDE VIEW
N.T.S



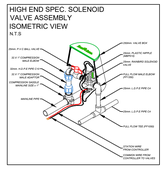
1800 P.V.C RISER
SIDE VIEW
N.T.S



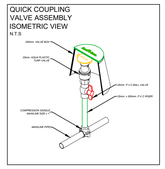
BUBBLER ON P.V.C RISER
SIDE VIEW
N.T.S



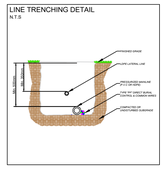
HIGH END SPEC. SOLENOID
VALVE ASSEMBLY
ISOMETRIC VIEW
N.T.S



QUICK COUPLING
VALVE ASSEMBLY
ISOMETRIC VIEW
N.T.S



LINE TRENCHING DETAIL
N.T.S



SLEEVE DETAIL
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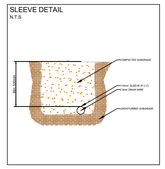
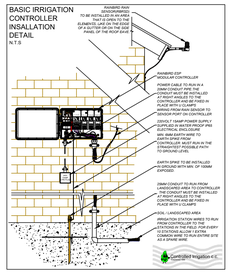
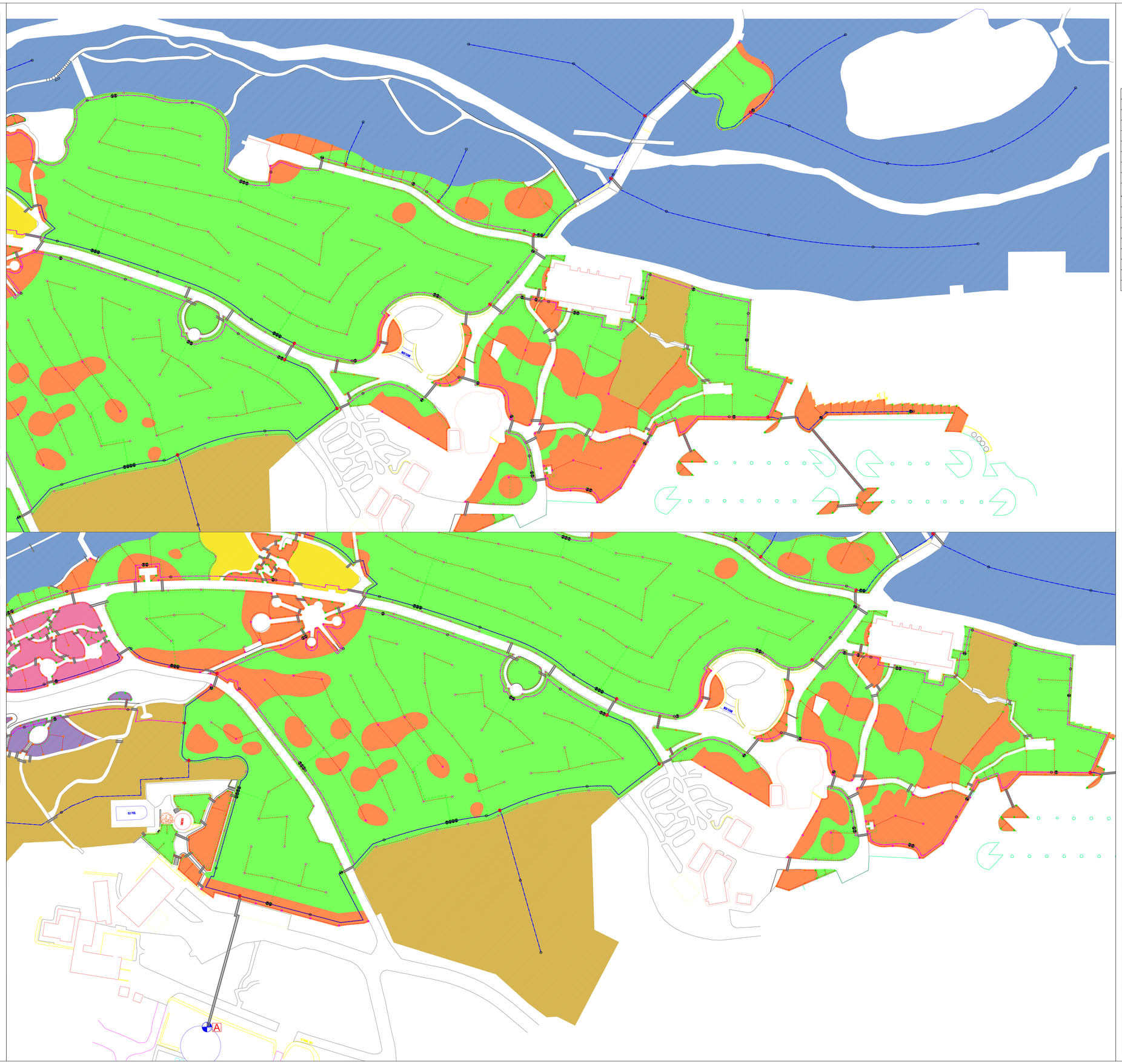


BASIC IRRIGATION
CONTROLLER
INSALLATION
DETAIL
N.T.S





IRRIGATION PLAN

LEGEND

RAIN BIRD 3500 GEAR DRIVE 4 INCH POP-UP 6-9M
RAIN BIRD 3500 GEAR DRIVE ON P.V.C RISER 5-9M
RAIN BIRD 5000 GEAR DRIVE 4 INCH POP-UP 9-15M
RAIN BIRD 5000 GEAR DRIVE ON P.V.C RISER 9-15M
RAIN BIRD BUBBLER ON P.V.C RISER
RAIN BIRD 4 INCH POP-UP CONE WITH ROTARY NOZZLE
SHRUB ADAPTOR ON P.V.C RISER WITH ROTARY NOZZLE
RAIN BIRD 12 INCH POP-UP CONE WITH ROTARY NOZZLE
WATER CONNECTION POINT
RAIN BIRD IRRIGATION CONTROLLER POSITION (10 Amp 220V POWER SUPPLY)
RAIN BIRD SOLENOID VALVE WITH ISOLATING VALVE IN VALVE BOX
AQUA TURF VALVE WITH ISOLATING VALVE IN VALVE BOX
ISOLATING VALVE IN VALVE BOX
Ø25 mm LDPE PE100 PN04
2 x Ø25 mm LDPE PE100 PN04
Ø50 mm HDPE PE100 PN08
Ø63 mm HDPE PE100 PN08
Ø90 mm HDPE PE100 PN08
Ø110 mm Sleeve (BY OTHERS)

WATER & PRESSURE REQUIREMENTS:

THE SYSTEM HAS BEEN DESIGNED TO:

FLOW: 400ℓ/m Bar PRESSURE: 5 Bar

NOTES

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Client:

SANBI
South African National Biodiversity Institute
Biodiversity for Life

Project:
Walter Sisulu Botanical Gardens (MDV-24-136)

Revision:	Date:
00	2024 -08 -21

Drawing Title:
Irrigation Layout for Tender

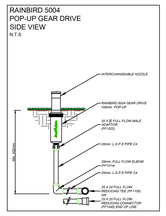
Drawn & Designed:	Checked By:
L.T.B	L.M

Drawing Number.	Scale:
TEN-SANBI-01	1 : 500 (A0)

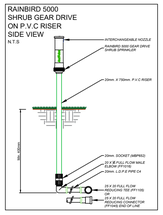
DESIGNED IN ACCORDANCE TO THE SABI STANDARD.

DETAILS

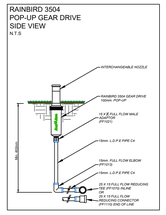
RAINBIRD 5004
POP-UP GEAR DRIVE
SIDE VIEW
N.T.S



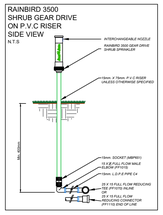
RAINBIRD 5000
SHRUB GEAR DRIVE
ON P.V.C RISER
SIDE VIEW
N.T.S



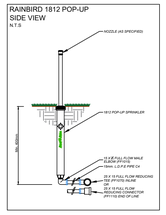
RAINBIRD 3504
POP-UP GEAR DRIVE
SIDE VIEW
N.T.S



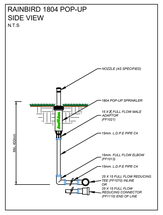
RAINBIRD 3500
SHRUB GEAR DRIVE
ON P.V.C RISER
SIDE VIEW
N.T.S



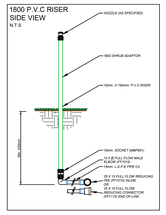
RAINBIRD 1812 POP-UP
SIDE VIEW
N.T.S



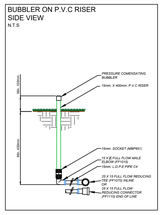
RAINBIRD 1804 POP-UP
SIDE VIEW
N.T.S



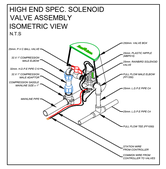
1800 P.V.C RISER
SIDE VIEW
N.T.S



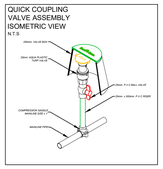
BUBBLER ON P.V.C RISER
SIDE VIEW
N.T.S



HIGH END SPEC. SOLENOID
VALVE ASSEMBLY
ISOMETRIC VIEW
N.T.S



QUICK COUPLING
VALVE ASSEMBLY
ISOMETRIC VIEW
N.T.S



LINE TRENCHING DETAIL
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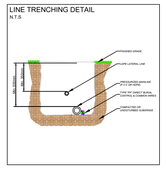

SLEEVE DETAIL
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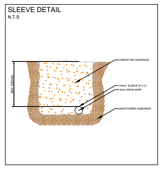
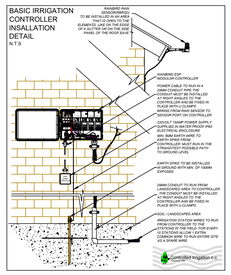
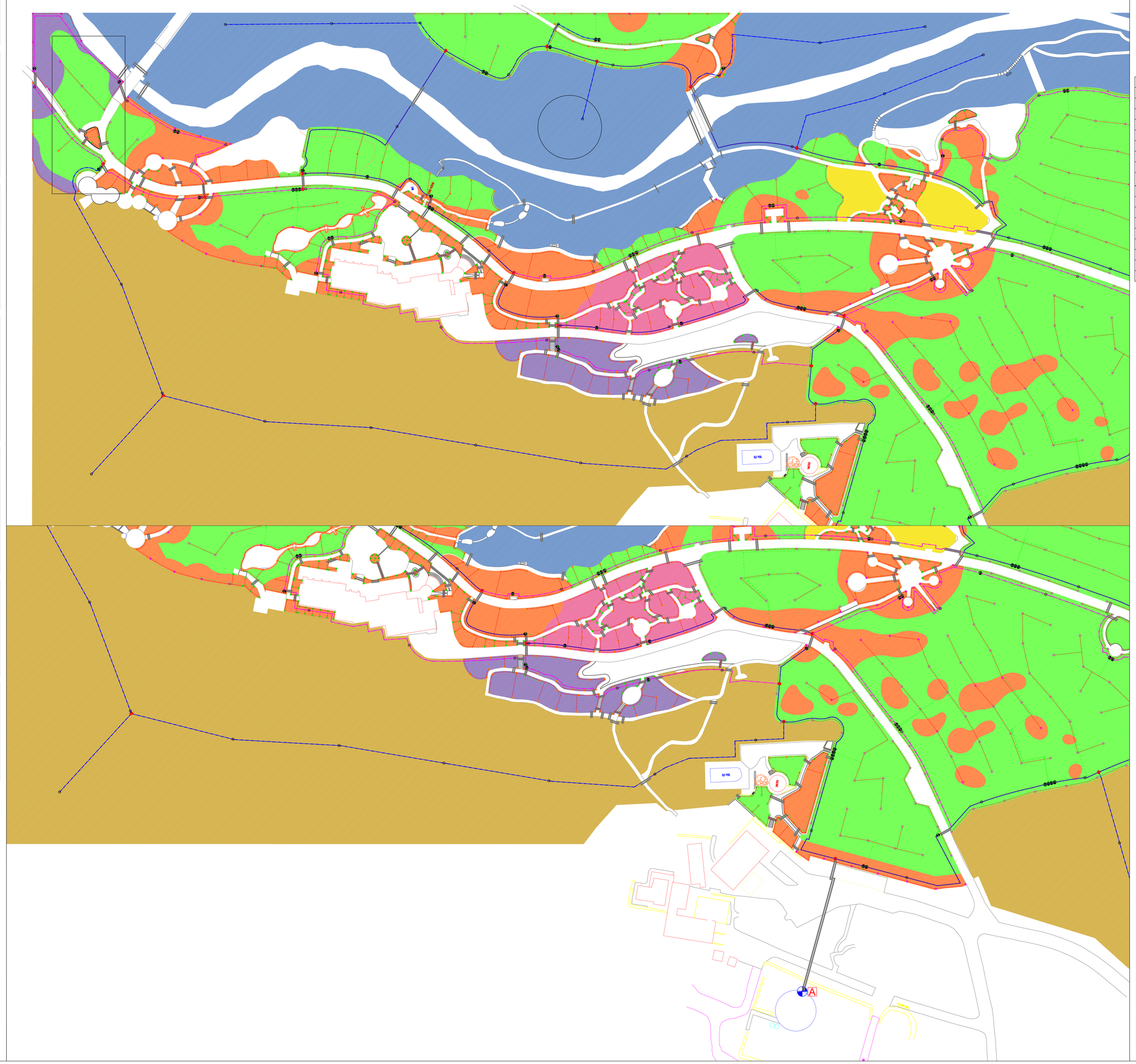


BASIC IRRIGATION
CONTROLLER
INSALLATION
DETAIL
N.T.S





IRRIGATION PLAN

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Ø110 mm Sleeve (BY OTHERS)

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Client:

SANBI
South African National Biodiversity Institute
Biodiversity for Life

Project:
Walter Sisulu Botanical Gardens (MDV-24-136)

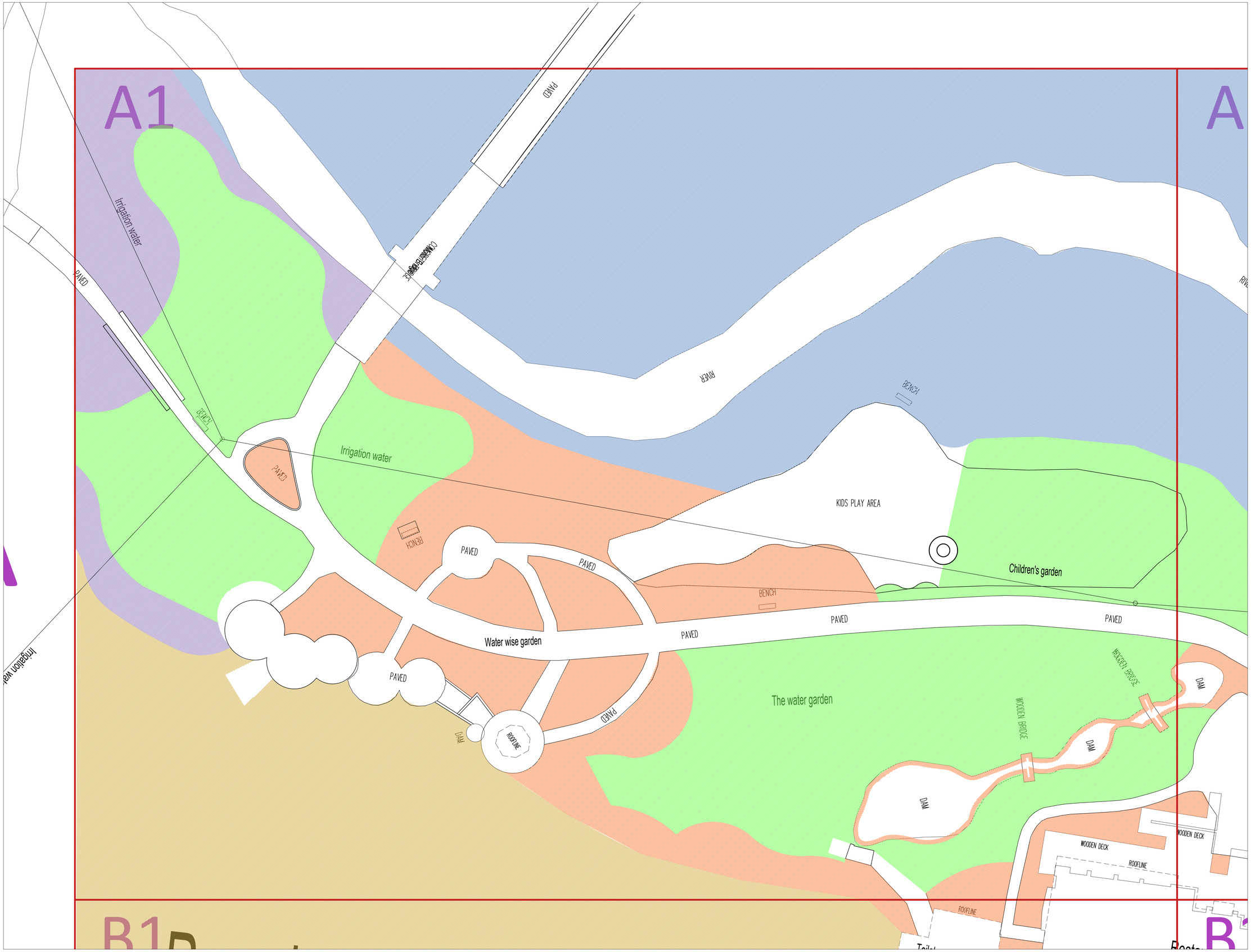
Revision:	Date:
00	2024 -08 -21

Drawing Title:
Irrigation Layout for Tender

Drawn & Designed:	Checked By:
L.T.B	L.M

Drawing Number.	Scale:
TEN-SANBI-02	1 : 500 (A0)

DESIGNED IN ACCORDANCE TO THE SABI STANDARD.



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discipline
LANDSCAPE ARCHITECTURE

drawing title
BOTANICAL SURVEY

scale 1:200 (A1)

date 2024-08-21

KEY

A1

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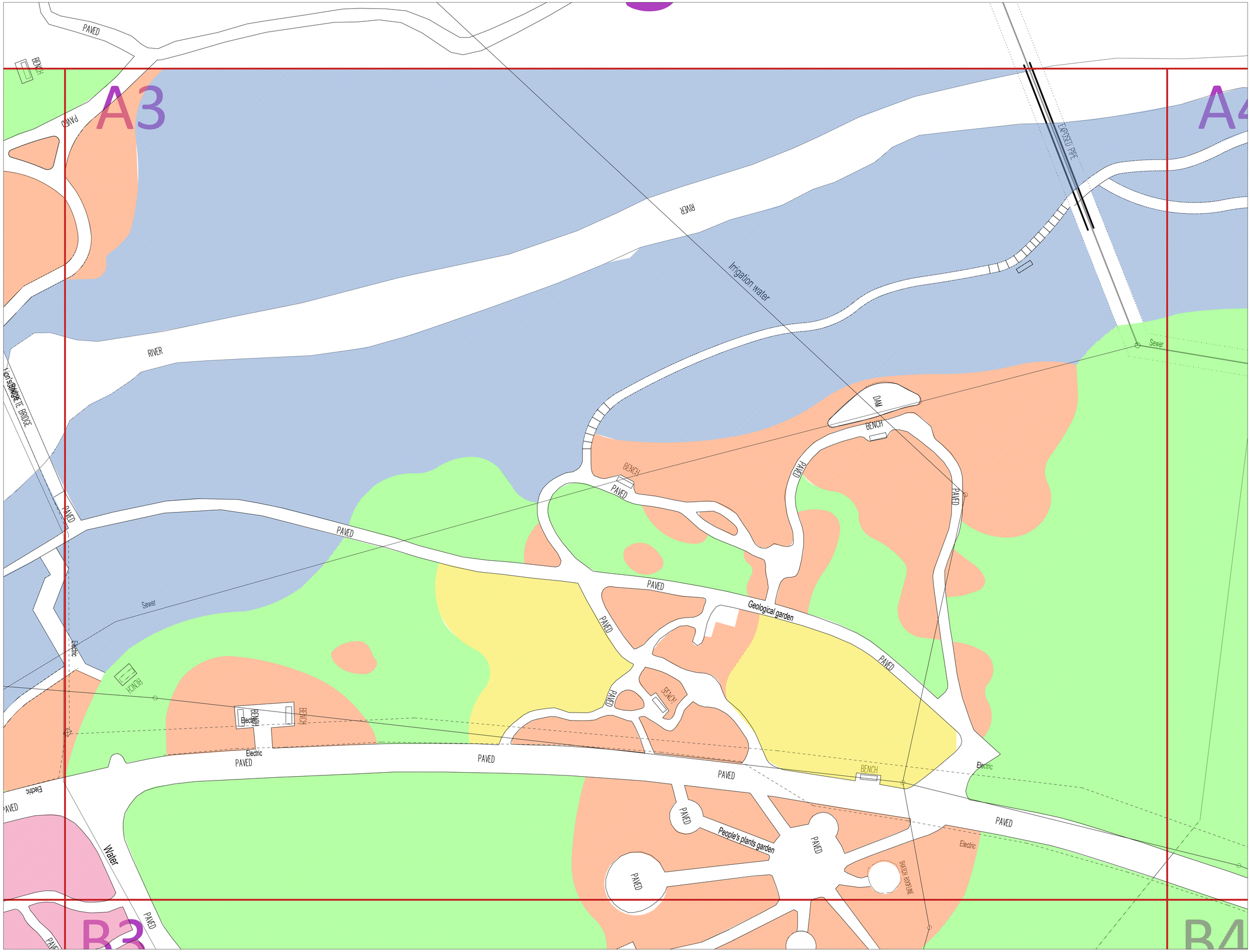
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A4
B3
B4
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BENCH
RIVER
Irrigation water
EXPOSED PIPE
Sewer
DAM
Geological garden
People's plants garden
Electric
Water
CONCRETE BRIDGE
BENCH
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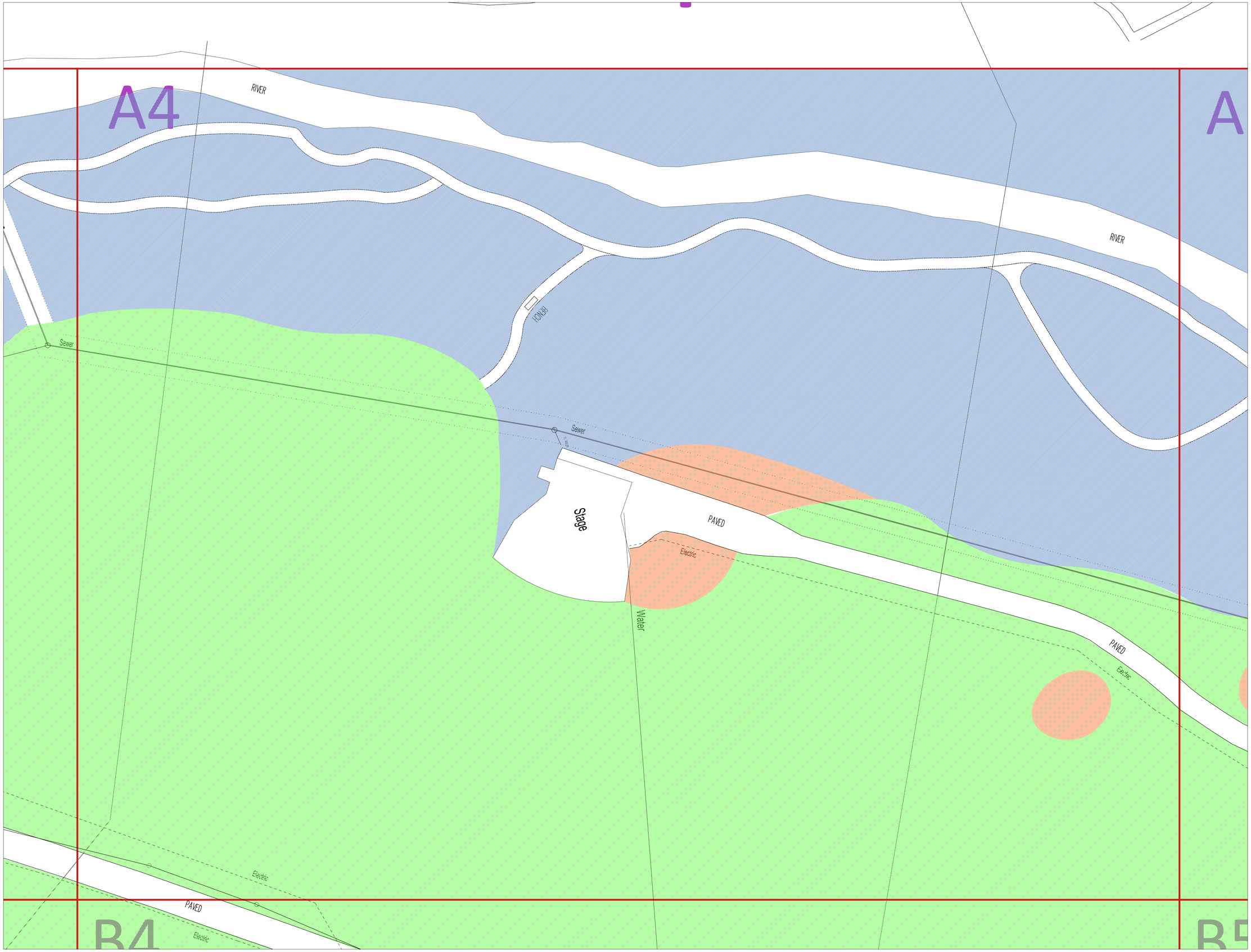
BENCH



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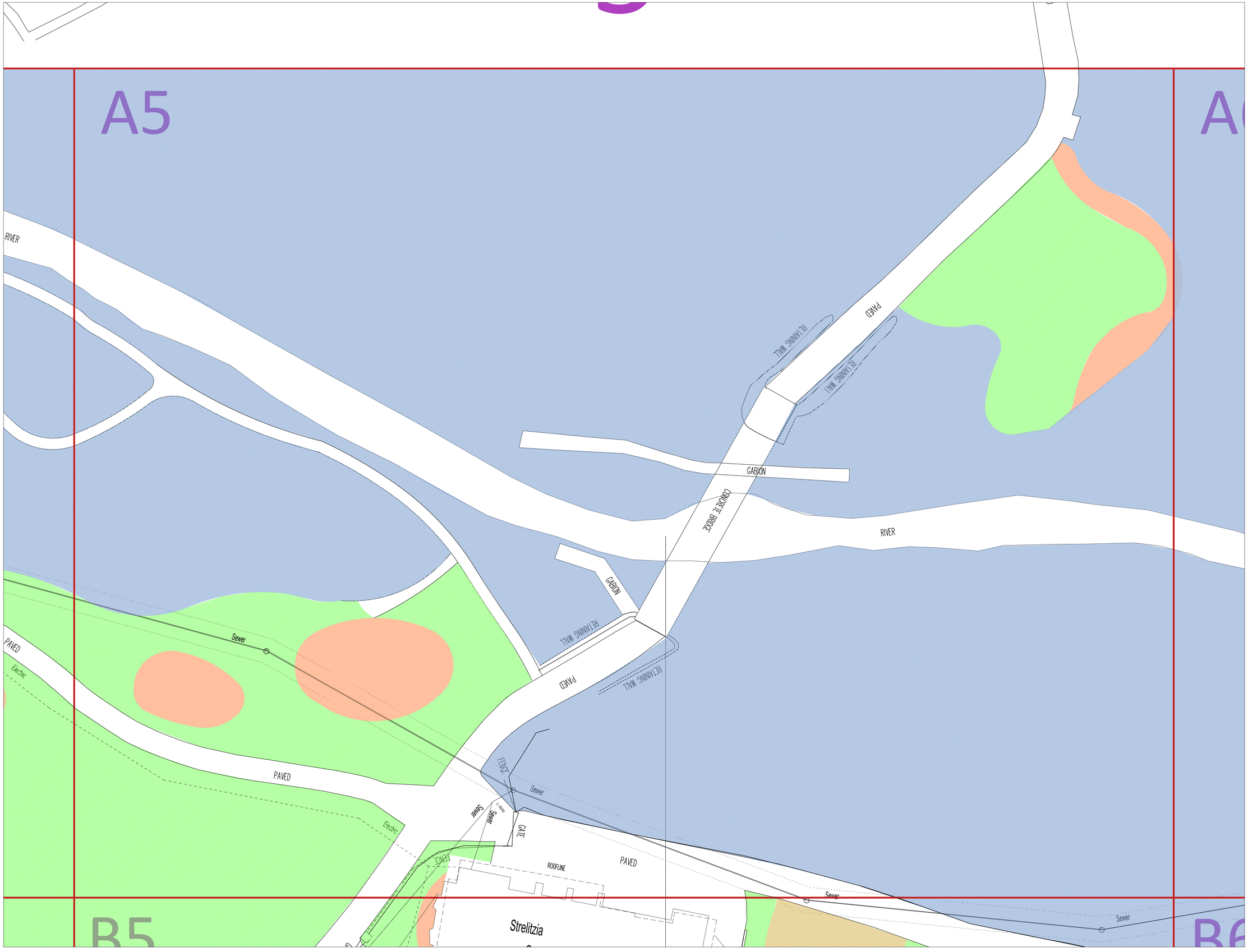

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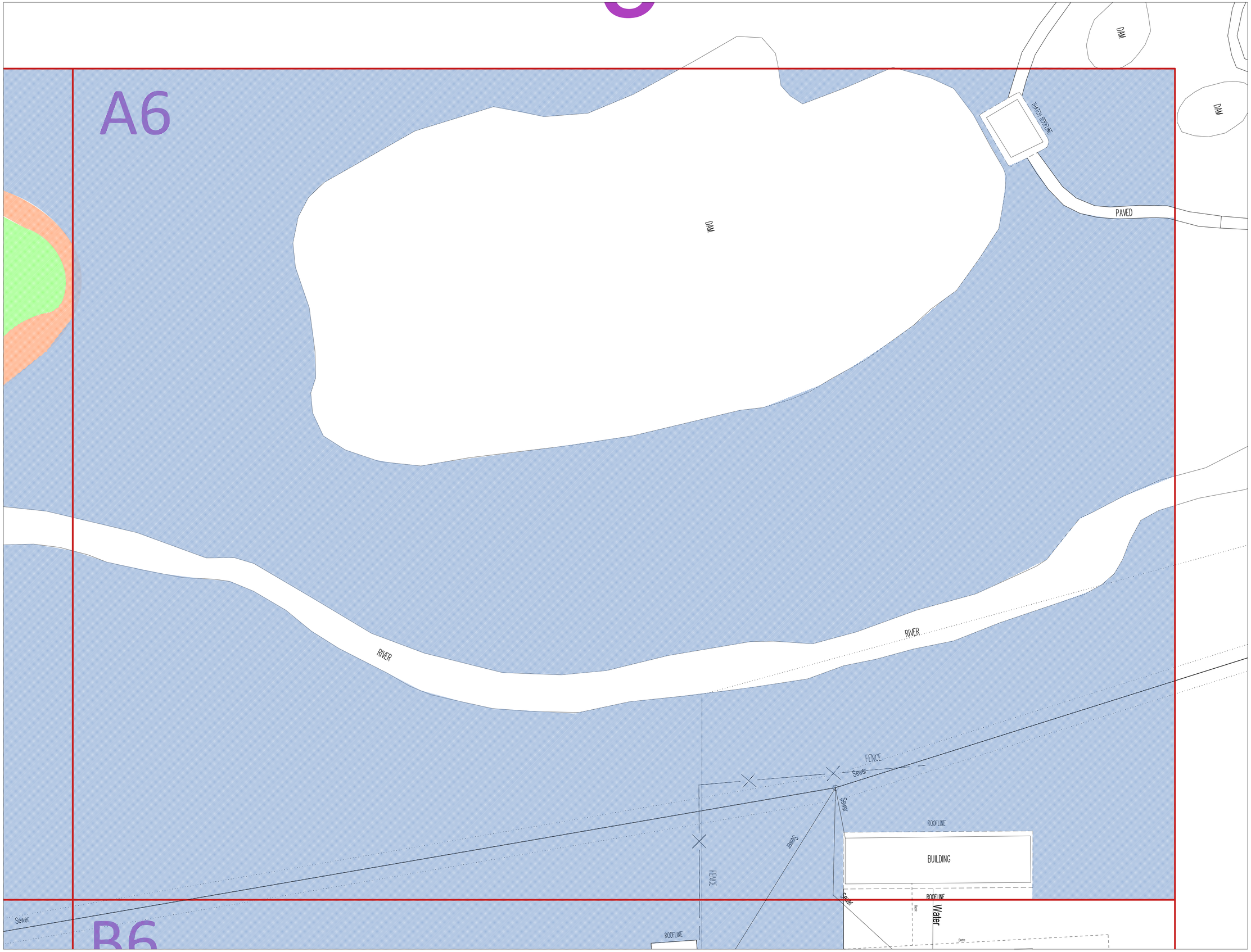

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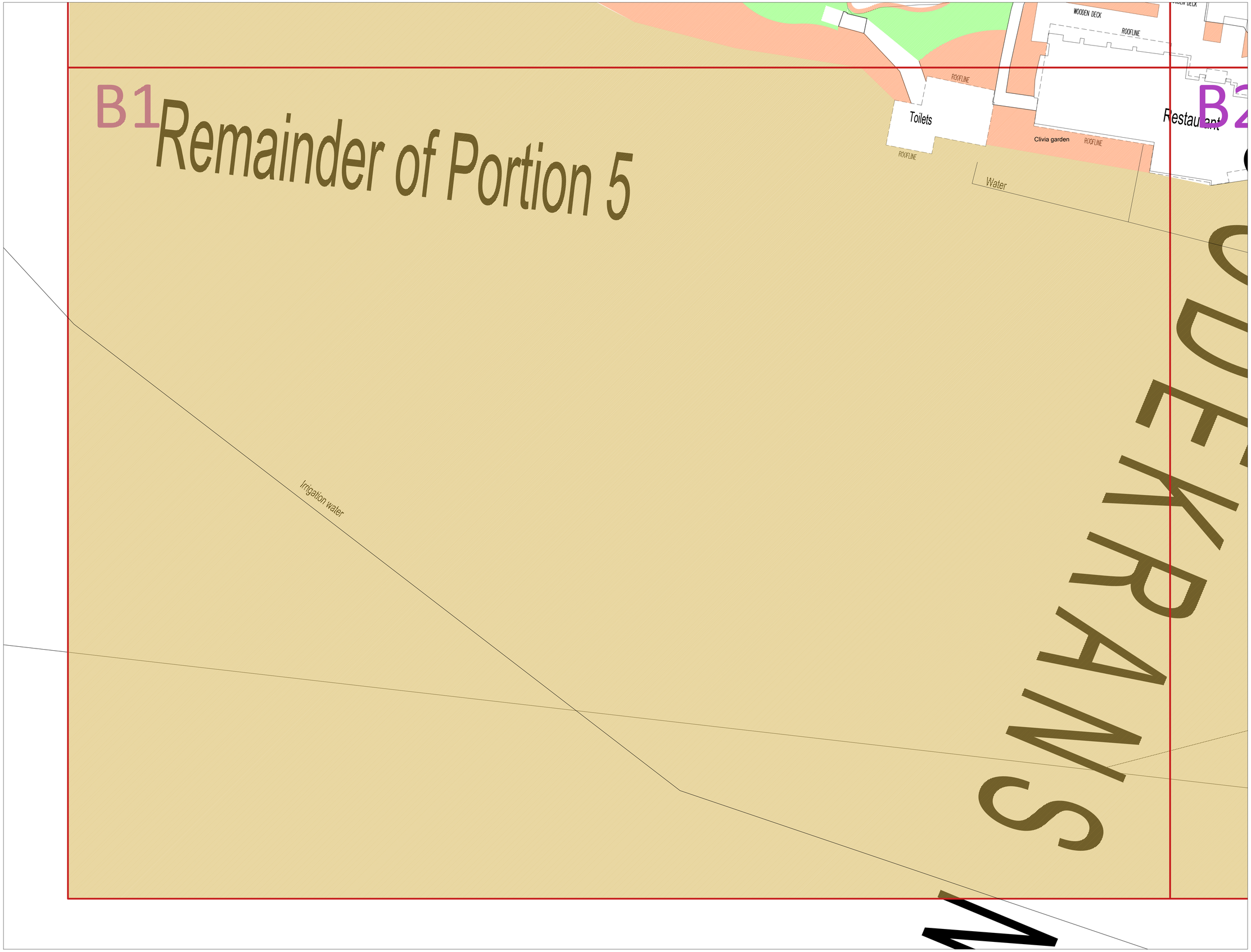

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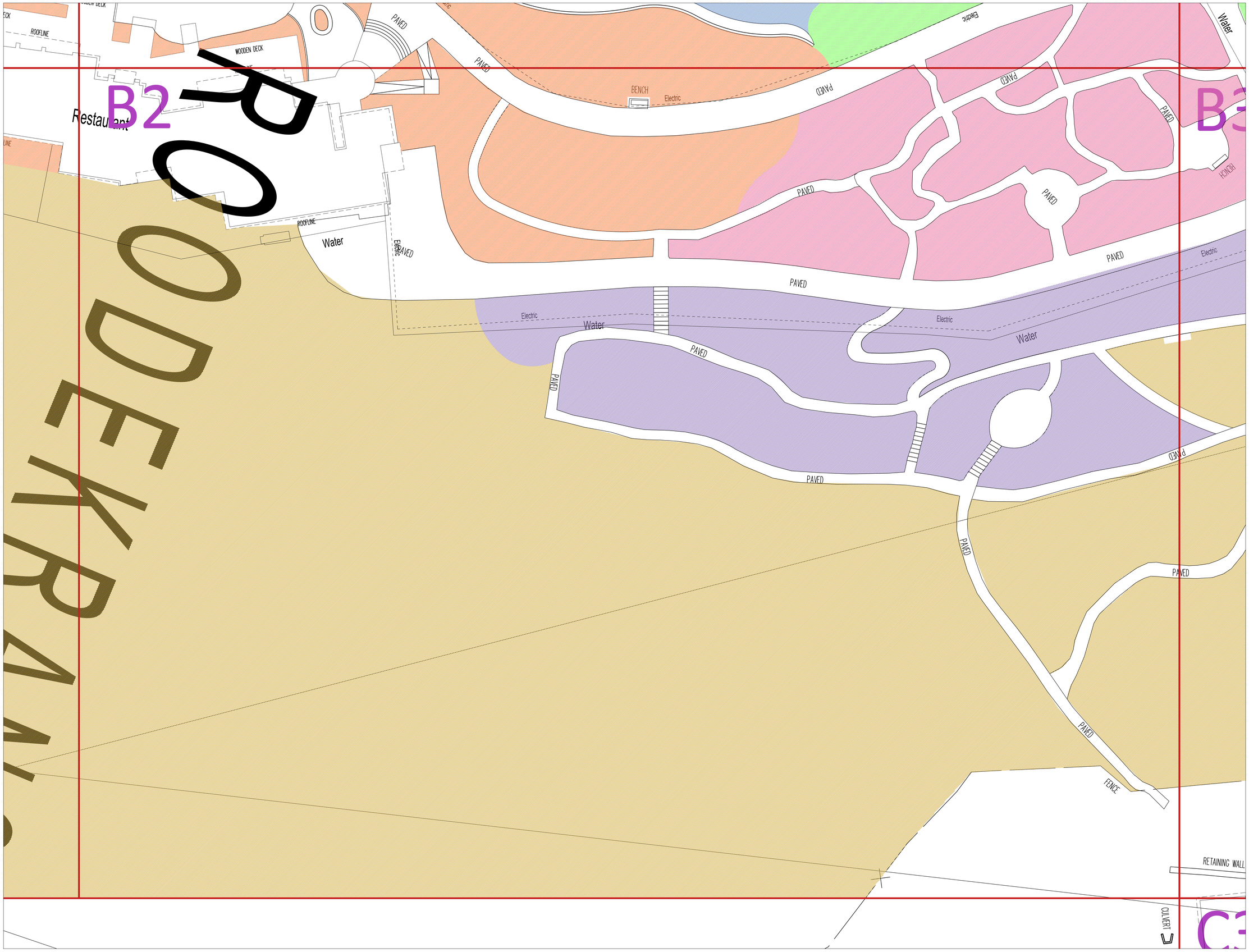

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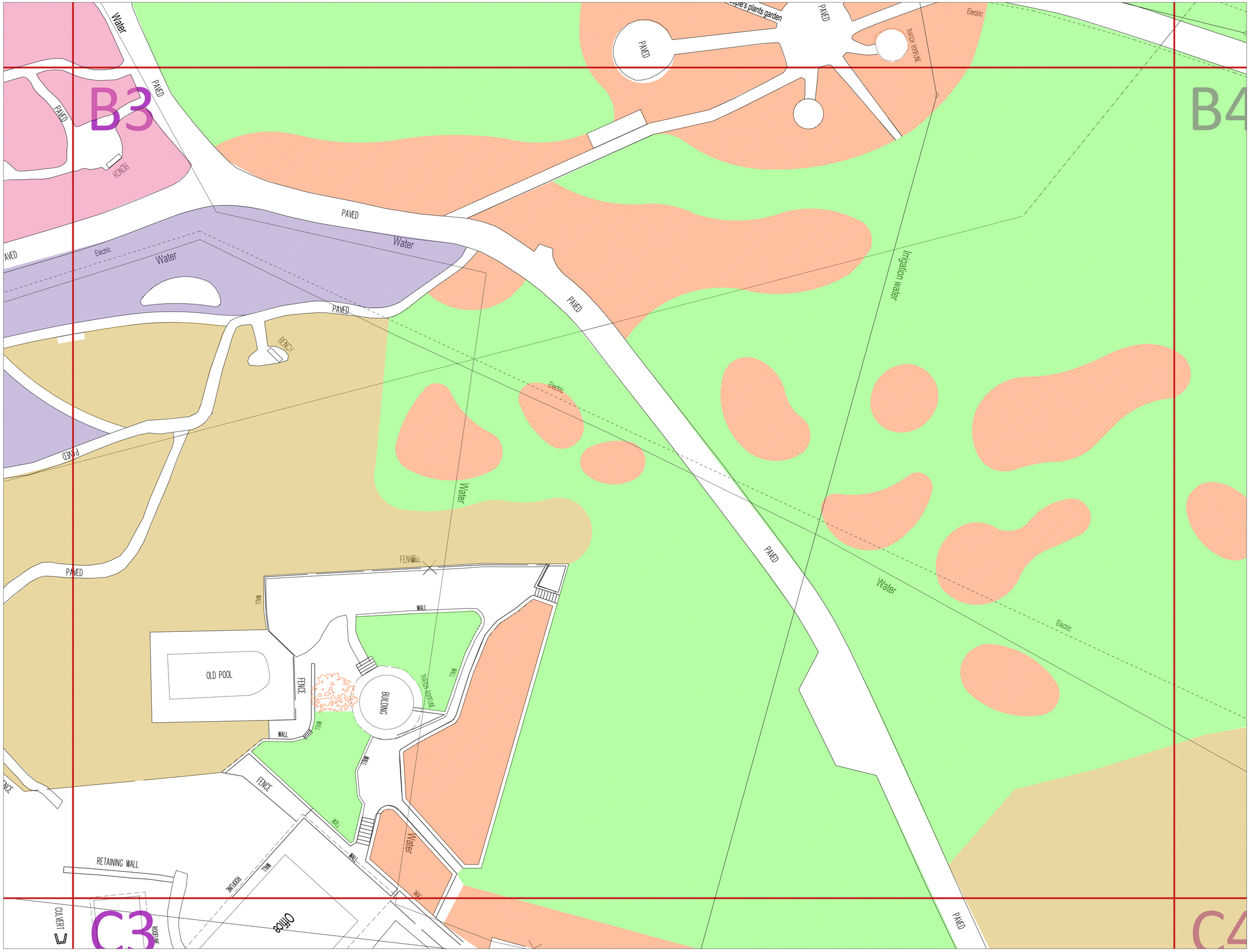

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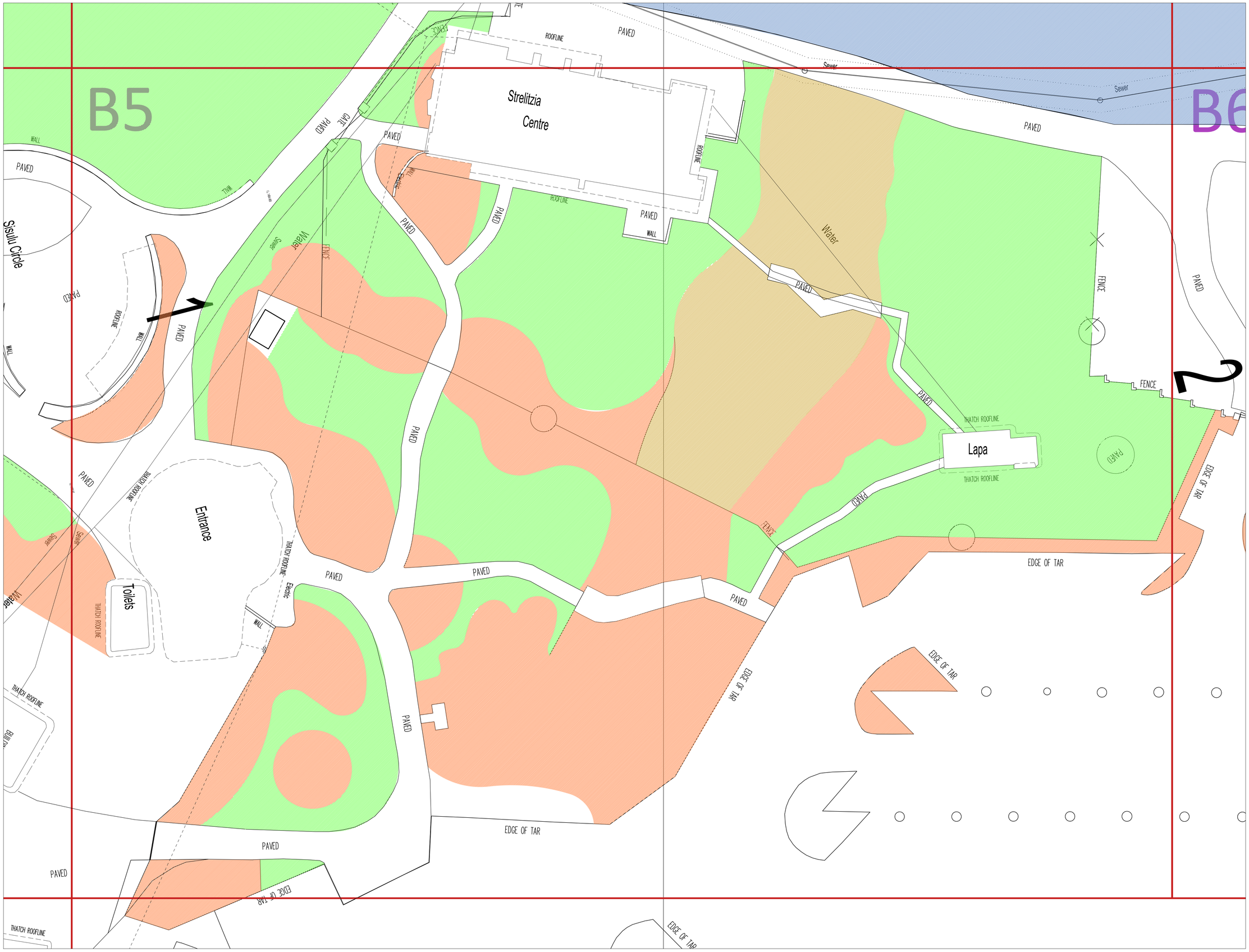

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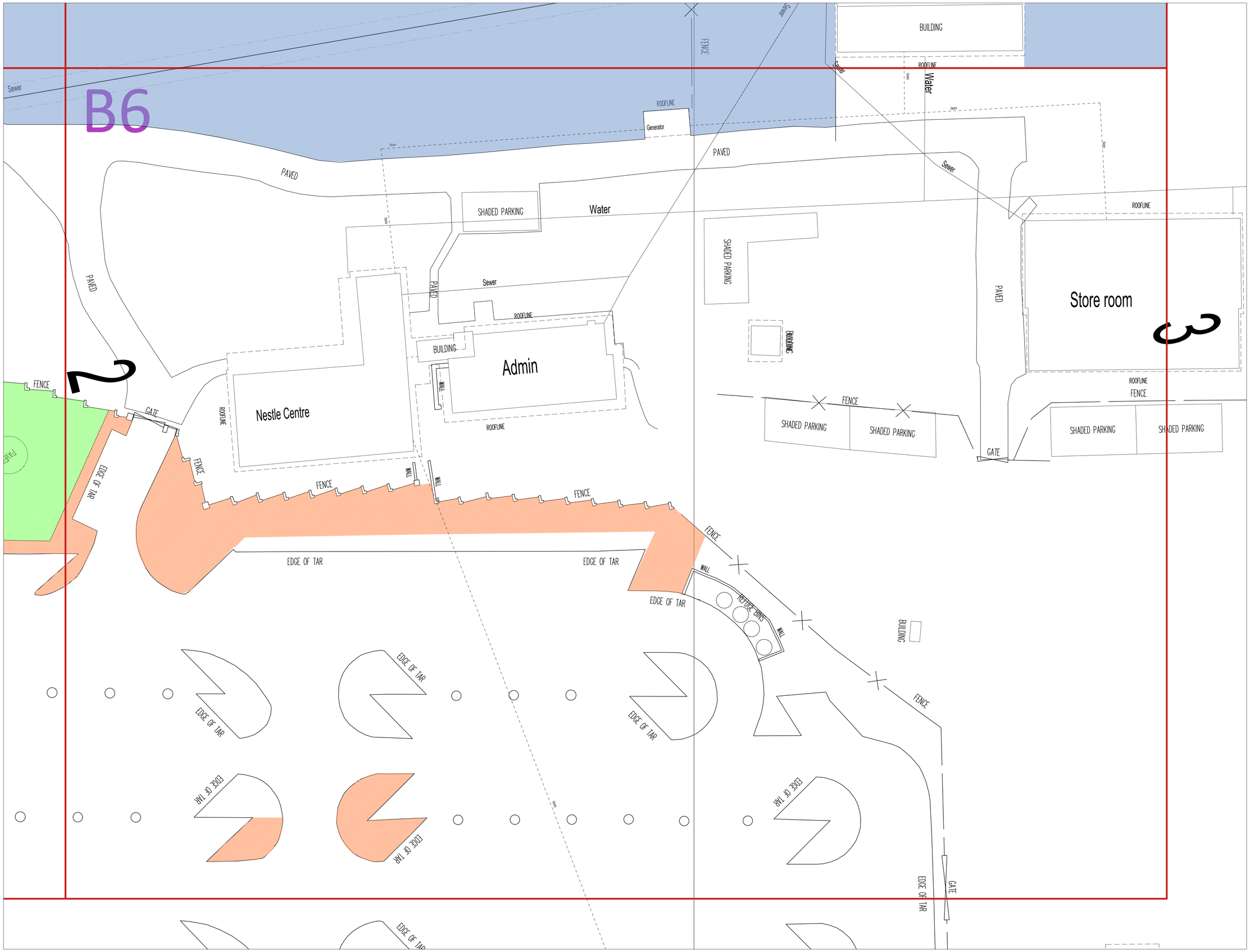

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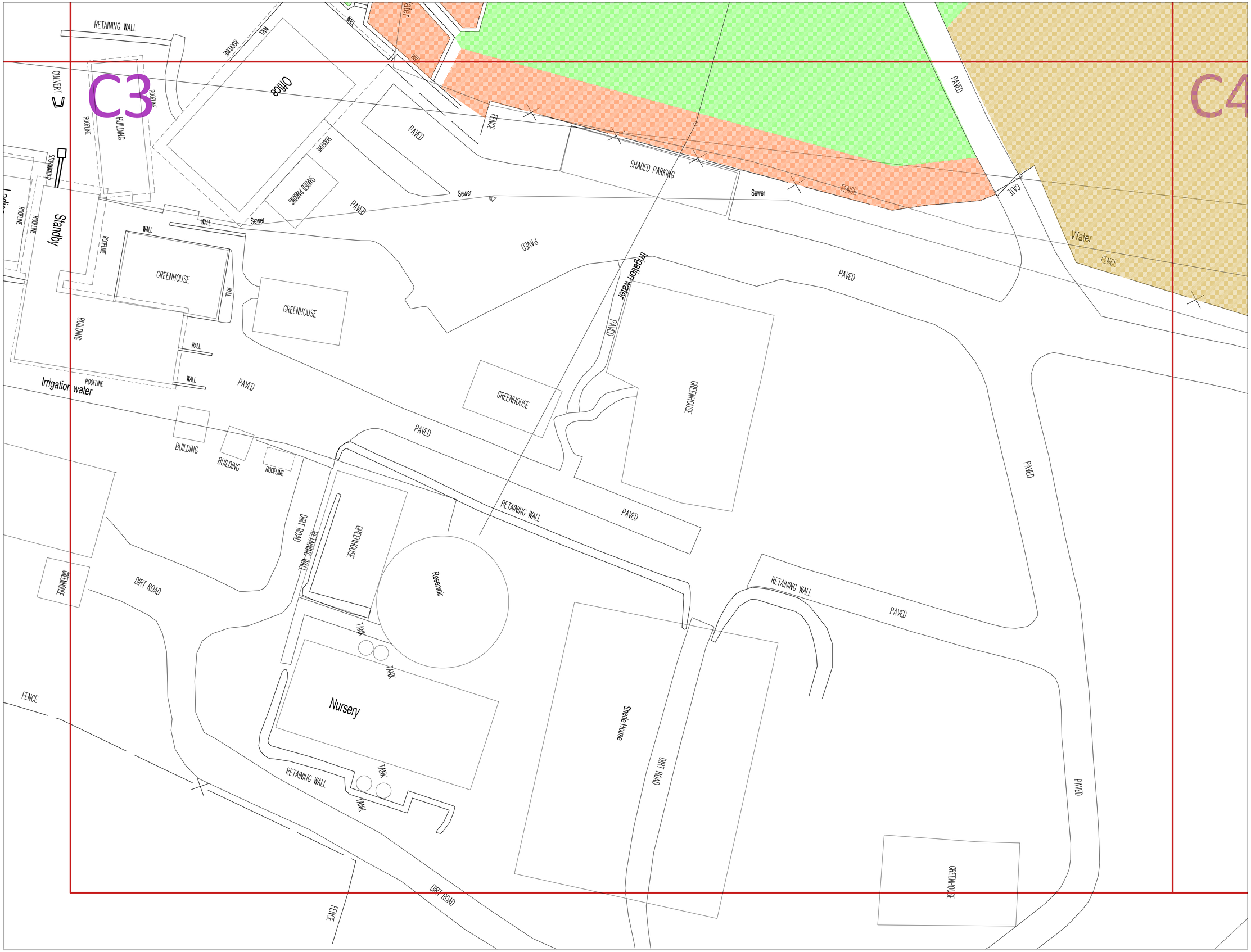

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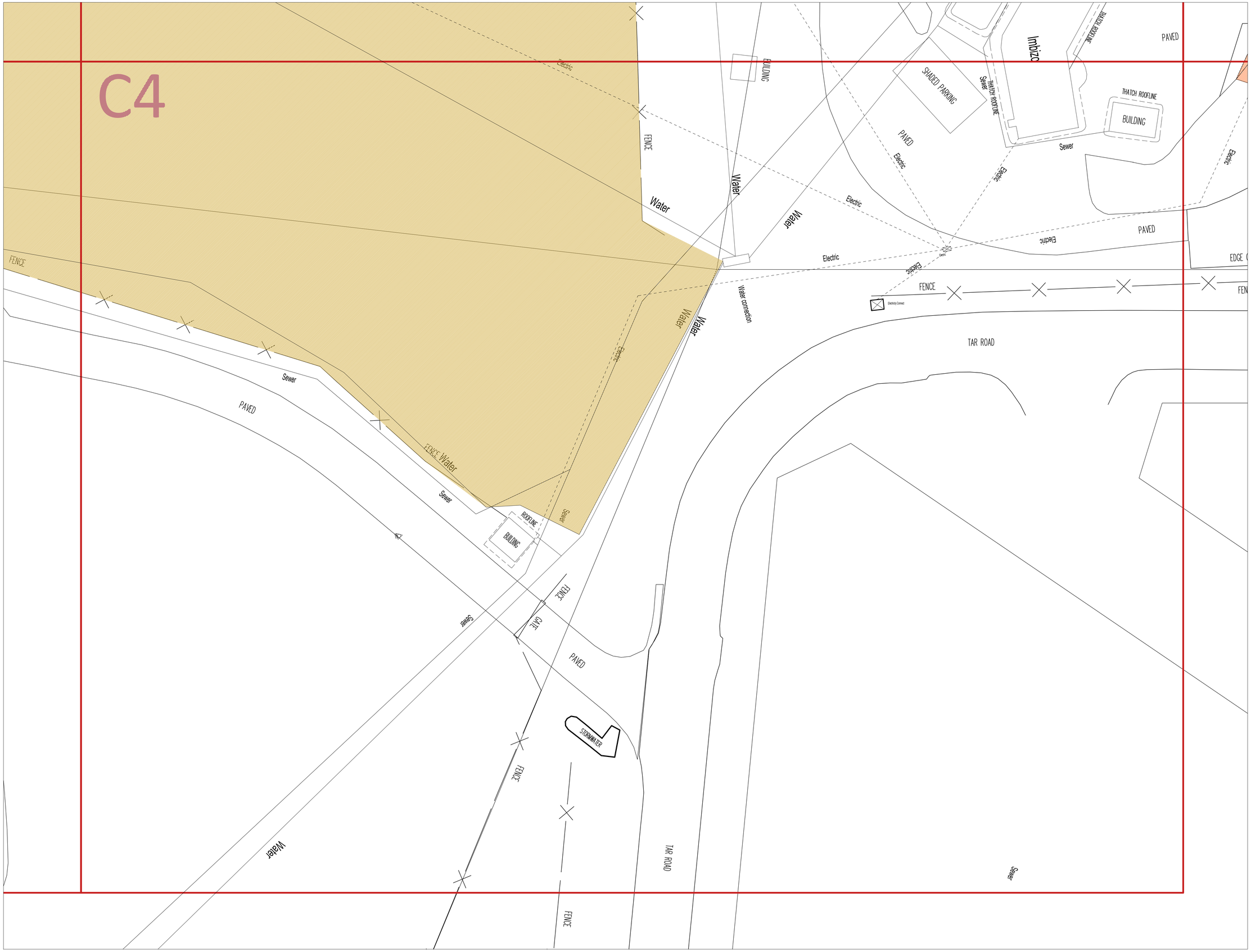

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KEY

C4

ANNEXURE D

RISK MANAGEMENT PLAN

SANBI
Biodiversity for Life
South African National Biodiversity Institute

RISK MANAGEMENT PLAN

THE DESIGN REVIEW, PROCUREMENT AND CONSTRUCTION MONITORING OF THE CONSTRUCTION OF AN IRRIGATION SYSTEM AT THE WALTER SISULU NATIONAL BOTANICAL GARDEN, GAUTENG.

Limitations Statement

In preparing this document, Tenmud Investments has relied upon and presumed accurate certain information (or the absence thereof) provided by government agencies and authorities, consultants and professional officers, and others identified herein, except as otherwise stated in this document.

Tenmud Investments has used its best endeavors to verify the accuracy and/or completeness of any such information. No warranty or guarantee, whether express or implied, is made with respect to the data reported or to the findings observations and conclusions expressed in this document.

This document has been prepared on behalf of and for the exclusive use of the South African National Biodiversity Institute of and is subject to and issued in connection with the provisions of the contract for the design and development of SANBI.

Tenmud Investments accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report by any third party.

Introduction

This Risk Management Plan has been developed specifically for the Robben Island Museum for the design review, procurement and construction monitoring of the construction of an irrigation system at the Walter Sisulu National Botanical Garden, in Gauteng.

The Risk Management Plan outline is listed below:

A. Context

Project

Strategic

Organizational

Risk Management Framework

B. Risk Identification & Analysis

Reference Tables

Risk Register

C. Risk Response

D. Roles & Responsibilities

E. Monitoring and Review Programme

F. SANBI Risk Management Policy

Part A: Context

Project

The South African National Biodiversity Institute (SANBI) intends to extend its network of the irrigation system within Walter Sisulu National Botanical Garden. The extension seeks to preserve and maintain the natural status of the garden and ensure that the operational efficiency of the garden is at its maximum.

Strategic

The strategic context is based on SANBI's Risk Management Policy and the maintenance of Walter Sisulu National Botanical Garden being a significant project.

This Risk Management Plan has been prepared in accordance with "ISO 31000: 2009 Risk Management Principals and Guidelines". As such, with the management of the design, construction and commissioning of SANBI aims closely mirror those of ISO 3100 in that it seeks to:

- increase the likelihood of the project achieving its objectives
- encourage proactive management
- be aware of the need to identify and treat risk throughout the organisation
- improve the identification of opportunities and threats
- achieve compatible risk management practices between organisations and nations
- comply with relevant legal and regulatory requirements and international standards
- improve financial reporting
- improve governance
- improve stakeholder confidence and trust
- establish a reliable basis for decision making and planning
- improve controls
- effectively allocate and use resources for risk treatment
- improve operational effectiveness and efficiency
- enhance health and safety performance as well as environmental protection
- improve loss prevention and incident management
- minimize losses
- improve organisational learning; and
- improve organisational resilience.

Organizational

The intention of this Risk Management Plan is to ensure that all risks are clearly identified and appropriate treatment plans can be developed and meets the aims of SANBI's Risk Management Policy to ensure that all operations are performed within the SANBI approved risk tolerance levels.

The communications strategies for the Risk Management Plan will be based on the contractual and reporting structures established for the project through the implementation of the Project Management Plan process. Periodic review by the Project Manager of the risks identified, and any necessary contingency plans will take place.

Further and on-going identification and assessment programs will be undertaken by the contractors (as appropriate) during the design, construction and commissioning phases for the Rehabilitation projects.

Prior to the opening of the rehabilitated buildings to the general public, a further detailed Risk Management Plan will be developed examining and assessing relevant levels of risk associated with day-to-day operations.

Risk Management Framework

The following descriptors have been developed to assess the likelihood of a risk event occurring and are used in conjunction with the consequence descriptions to assess the level of risk.

Part B: Risk Identification & Analysis

Reference Tables

Consequence

LEVEL	DESCRIPTION	FINANCIAL IMPACT	HEALTH	REPUTATION	OPERATION
1	Insignificant	Less than R1,000	No injuries	Unsubstantiated, low impact, low profile or no news item	Little impact
2	Minor	R1,000 to R10,000	First aid treatment	Substantiated, low impact, low news profile	Inconvenient delays
3	Moderate	R10,000 to R50,000	Medical treatment	Substantiated, public embarrassment, moderate impact, moderate news profile	Significant delays to major deliverables
4	Major	R50,000 to R150,000	Death or extensive injuries	Substantiated, public embarrassment, high impact news profile, third party actions	Non achievement of major deliverables.
5	Catastrophic	More than R150,000	Multiple deaths or severe permanent disablements	Substantiated, public embarrassment, very high multiple impacts, high widespread multiple news profile, third party action.	Non achievement of key objectives.

Likelihood

LEVEL	DESCRIPTION	EXAMPLES	FREQUENCY
A	**Almost Certain**	Expected to occur in most circumstances	More than once per year
B	**Likely**	Will probably occur in most circumstances	At least once per year
C	**Possible**	Should occur at some time	At least once in three years.
D	**Unlikely**	Could occur at some time	At least once in ten years
E	**Rare**	May occur, only in exceptional circumstances	Less than once in fifteen years.

Level of Risk

CONSEQUENCE LIKELIHOOD	INSIGNIFICANT 1	MINOR 2	MODERATE 3	MAJOR 4	CATASTROPHIC 5
A – Almost Certain	High	High	Extreme	Extreme	Extreme
B – Likely	Moderate	High	High	Extreme	Extreme
C – Possible	Low	Moderate	High	Extreme	Extreme
D – Unlikely	Low	Low	Moderate	High	Extreme
E- Rare	Low	Low	Moderate	High	High

The treatment of identified risks will be managed through the review, design and construction stages of the Project. The risk profile will be used as a guide for reviewing and managing the documentation that will be used to inform the design, construction, fit out and commissioning of the facility.

Risk Register

#	Risk	Likelihood	Consequence	Risk Score	Strategies on Risk
1	Project objectives differ from community expectations	Rare	Minor	Low	• Future users and community members are representatives on the Focus Group.
2	Differing Focus Group expectations	Possible	Minor	Moderate	• Involve all stakeholders in development of concept plans.
3	Failure to secure adequate funding for entire project	Possible	Moderate	High	•SANBI funds listed and approved in budget and Long Term Financial Plan. • •External funding sources to be approached for additional funds
4	Inadequate funding to complete the project or sections of the project	Unlikely	Moderate	Moderate	• Re-scope project focusing on time and resources. •Regularly review budget and expenditure.
5	Inaccurate capital cost estimates/contingencies if funding not used within timeframe	Possible	Minor	Moderate	•Sign contract for construction by set project milestone. • Ensure accurate budgets are prepared and subsequently managed by qualified staff. •Ensure allocated funds are utilized in a timely and cost effective manner.
6	Delayed delivery of design and construction component, therefore delays in progress of project	Possible	Minor	Moderate	•Ensure Purchasing Policy followed and contractors advised to follow timeframes to ensure payment and continuing business. •A detailed schedule of works to be developed upon appointment of contractors. •Regular project team meetings to be had to ensure projects are progressing on schedule.
7	Budget exceeded	Unlikely	Moderate	Moderate	•Separate GL account created for project which all income and expenditure is to be credit/debited. • Passed and forthcoming expenditure to be reviewed at each project team meeting ensuring it is on budget. •Up to date cost estimates obtained.
8	Contractor non compliant with legislation	Unlikely	Moderate	Moderate	•Periodic audit of contractor's project plan. • Contractor documentation fully verified prior to commencement. •Implementation of Project Manager.
9	Principal Contractors not adhering to safety standards	Unlikely	Major	High	•Ensure OSH guidelines are in place. • Identify all risks at all stages of the project. •Manage and mitigate the risks identified – risk register to be updated and controlled by Project Manager. •Provide advice, procedures and site risk assessments.
10	Risk of litigation, public liability and professional negligence	Unlikely	Moderate	Moderate	•Ensure all contractors follow Shire procedures. • Use on the Shire template for engagement. •Ensure all insurance covers required are authorised.
11	Project unable to source adequate equipment	Unlikely	Moderate	Moderate	• Manage the progress of program and timeline – extend it required to finalise installations.
12	Operational Management change/issues	Unlikely	Moderate	Moderate	• Project Plan to include contingencies.
13	Negative impact on the environment	Possible	Minor	Moderate	• Compliance with environmental legislation and approvals.
14	Meeting project milestones	Possible	Minor	Moderate	• Continual review of project and scheduling at project team meetings. •Detailed schedule of works to be completed upon appointment of contractor.
15	Contractors go out of business	Unlikely	Moderate	Moderate	• Due diligence completed during tender process to ensure contractors have proven track record, are financially sound and have the capability to complete works.
16	Extreme weather conditions	Unlikely	Minor	Low	•Include contingencies for inclement weather and/dangerous work conditions. • Ensure appropriate safety equipment provided and used. •Additional time has been allowed for during construction phase in the event of unexpected weather or natural disaster
17	Site security	Unlikely	Minor	Low	• Completion of a site security assessment. •Necessary security in place from construction.
18	Negative impact on Council via media/public comment	Unlikely	Moderate	Moderate	•Communication plan developed and implemented. • Community information kept up to date. •Support confirmed from stakeholders regularly.
19	Insufficient supply of materials	Unlikely	Minor	Low	• Materials to be sourced well in advance of construction.
20	Delay in reporting and acquitting any funding received.	Rare	Minor	Low	• Project manager to monitor reporting dates, obtain relevant report templates and ensure completion well prior to deadlines.

Part C: Risk Response

There are four things SANBI will do about an identified risk. The strategies are:

- **Avoid the risk**. Do something to remove it. Use another supplier for example.
- **Transfer the risk**. Make someone else responsible.
- **Mitigate the risk**. Take actions to lessen the impact or chance of the risk occurring. If the risk relates to availability of resources, draw up an agreement and get sign-off for the resource to be available. Council may also at this level accept the risk with the controls in place.
- **Accept the risk**. The risk might be so small the effort to do anything is not worthwhile.

Part D: Roles & Responsibilities

Client (Project Sponsor)

- Ensure the preparation of the Risk Management Plan
- Co-ordinate the implementation of the Risk Management Plan
- Encourage a management climate which is aware of and supports risk management
- Oversee development of processes to deal with new risk management issues

Project Manager

- Provide advice on the implementation of the Risk Management Plan
- Ensure the ongoing review of risks and update of risk register is performed
- Review the risk and treatment registers periodically, assist with implementation and training issues
- Undertake practices and procedures to identify new risk management issues
- Oversee development of processes to deal with new risk management issues
- Ensure risk management controls and processes are built into strategic planning processes
- Monitor and review the risk management process throughout the life of the project
- Raise any item as required to the Project Sponsor

Part E: Monitoring & Review

The Risk Register will be reviewed on a monthly basis by the Project Manager with a re-evaluation of the risks occurring. The results sent to the Project Sponsor for review and recommendations for alterations if required.

Risk status will be reported to the Project Client on an agreed regular basis and risk identified able to be downgraded will be actioned on a timely basis.

Final evaluation at the completion of the project will be the responsibility of the Project Manager with the results communicated to all stakeholders.

ANNEXURE E

SABI NORMS

SABI

SOUTH AFRICAN IRRIGATION INSTITUTE
SUID AFRIKAANSE BESPROEIINGSINSTITUUT

SABI NORMS FOR THE DESIGN OF IRRIGATION SYSTEMS

DATE OF LAST REVIEW: 25 May 2017

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DISCLAIMER:

Although the norms have been compiled with great care, SABI, its employees or representatives shall not under any circumstances be held responsible for any loss or damage to any person, object or organisation as a result of the application of these norms.

Background

A norm is defined as a widely accepted or required standard against which performance or achievement can be assessed.

The SABI design norms serve to guide the designer in calculations and decision-making in the planning and design of agricultural irrigation systems. The norms are presented under the following four main headings:

- System planning
- Irrigation systems
- Water supply systems
- Greenhouses and tunnels

The design of irrigation systems requires a balanced approach that results in both technically, financially and ethically acceptable solutions for the customer. Diverging from the norms is acceptable if it can be well motivated from both a technical and an ethical perspective by the designer.

1. System Planning

1.1 Suitability of irrigation systems

When selecting the type of irrigation system to be used in a specific situation, there are a number of 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:

- **Crop:** information should be collected on the cultivar, planting and harvesting date / growing season, row direction and spacing of plants, crop heights, tilling practices, climatic water requirements and any climate control requirements.

- **Soil:** an investigation of soil and analysis and interpretation of the data by a soil scientist is recommended. Factors such as texture, structure, infiltration rate, water holding capacity, soil depth and permeability should be taken into consideration, as well as crop specific requirements such as wetted leaves, dry leaves and stems, root development

- **Water:** both aspects of quantity and quality should be investigated. A hydrological study and confirmation from the water management authority are recommended to ensure adequate water is lawfully available. The water quality should be suitable for both the crop and soil of the specific situation, and may also require special treatment if a detrimental effect on the irrigation equipment is expected.

- **Climate:** the closest weather station should be identified in order to access long-term historical weather data such as evaporation, rainfall, temperature, humidity and wind, as these will have an influence on the water requirements and system orientation.

- **Site:** the size, shape and slope of the site available should be taken into consideration when selecting the irrigation system.

Table 1 has been compiled by the ARC-IAE to assist designers with the selection of the most appropriate type of irrigation system (Burger et al, 2003).

The following symbols are used in the table to indicate the degree of limitation or obstacles that might occur:

o	No limitation
x	Little limitation
xx	Moderate limitation
xxx	Severe
#	Requires further thorough investigation by an expert.

Table 1 Comparison between systems

Criteria	Flood	Sprinkler	Micro spray	Drip	Big gun / traveling irrigator	Centre pivot and linear move
1. Climate						
Temperature > 30°C	o	xx	xx	o	xx	xx
Relative humidity < 40%	o	xx	xx	o	xx	xx
Wind speed > 15 km/h	o	xxx	xxx	o	xxx	xxx
Rainfall < 300 mm/year	o	o	o	xx	o	O
2. Topography						
Earthworks > 250 m^3/ha	xx	o	o	o	o	O
3. Salinity						
Salinity > 2 000 ppm	x	xx	xx	xxx	xx	xx
4. Flow rate						
< 100 m^3/h	xx	o	o	o	x	xx
5. Water quality						
Turbidity (silt, fine sand)	o	x	xx	xxx	x	x
Lime, iron	o	x	xx	xxx	x	x
Algae	o	o	xx	xxx	o	o
6. Soils						
> 20% clay	x	x	xx	xx	xx	xxx

Criteria	Flood	Sprinkler	Micro spray	Drip	Big gun / traveling irrigator	Centre pivot and linear move
10 - 20% clay	x	o	o	o	x	x
< 5% clay	xx	o	o	xx	o	o
< 600 mm deep	xxx	x	x	x	x	x
600 - 1200 mm deep	xx	o	o	o	o	o
7. Initial infiltration rate of soil						
< 20 mm/h	x	xx	xx	x	xx	#
> 150 mm/h	xxx	o	o	o	o	o
8. Crops						
Nursery	xxx	x	o	o	xx	x
Row crops	x	o	xx	x	x	x
Bed crops	x	o	xx	xx	x	x
Field crops	o	o	xxx	xxx	o	o
Orchards, vineyards	x	x	o	x	xx	xx
Fungal diseases	o	xx	xx	o	xx	xx
Ablution of chemicals	o	xx	x	o	xx	xx
9. Operation						
Managerial inputs	xx	xx	xx	xxx	xx	x

Criteria	Flood	Sprinkler	Micro spray	Drip	Big gun / traveling irrigator	Centre pivot and linear move
Labour	xx	xx	o	o	x	o
Energy requirements	o	xx	xx	xx	xxx	xx
Water use	xxx	xx	xx	x	xx	xx
Application of chemicals	#	xx	x	x	xx	xxx

1.2 Allowable depletion levels of soil water

The following allowable depletion values are recommended to be used during the planning process to determine the size of the soil water reservoir and irrigation cycle length. These values are aimed at maintaining the maximum evapotranspiration rates of crops which were grouped according to water stress sensitivity (Annandale & Steyn, 2008).

Table 2 Allowable depletion values as a percentage of the available water in the active root zone

Crop group	Allowable depletion (% of available water) to maintain the following ET rates (mm/day)								
	2 mm	3mm	4 mm	5 mm	6 mm	7 mm	8 mm	9 mm	10 mm
1	50	43	35	30	25	23	20	20	18
2	68	58	48	40	35	33	28	25	23
3	80	70	60	50	45	43	38	35	30
4	88	80	70	60	55	50	45	43	40

Crop group 1: Onions, peppers, potatoes
Crop group 2: Bananas, cabbage, peas, tomatoes
Crop group 3: Lucern, beans, citrus, groundnuts, pineapples, sunflowers, watermelons, wheat
Crop group 4: Cotton, sorghum, olives, grapes, maize, soybeans, sugar beet, tobacco

Please note that the allowable water depletion (α) values provided above should be used in combination with the soil's total available water (the waterholding capacity (WHC) between -10 kPa and -1 500 kPa (WHC_{1500})).

Older methods used the water holding capacity (WHC) between -10 kPa and -100 kPa (WHC_{100}), for which different α values than those provided in Table 2 will be applicable. Care must be taken in using the relevant α and WHC values so that those used are applicable to the particular calculation.

1.3 Percentage wetted area

The values for the percentage of area that an irrigation system wets (W), that can be used during the planning process are displayed in Table 3. The values are based on data from FAO Publication nr 56 (Allen et al, 1998). In the case of drip irrigation, the lateral movement of water in the soil can be

assessed with an on-site trial, and in the case of micro sprinklers, the wetted diameter of the specific sprinkler can be obtained from a manufacturer's catalogue to get a more accurate value.

Table 3 Percentage wetted area

Type of water application	W, %
Rain, Snow	100
Overhead Systems (Sprinklers, Centre Pivot, Linear, Traveling gun, Rotating boom) Drip	100
Micro sprinkler	30 – 40
Flood irrigation (basins and beds)	40 – 80
Flood irrigation (narrow furrows)	80 - 100
Flood irrigation (wide furrows)	60 – 100
Flood irrigation (alternative furrows)	40 – 60
	30 – 50

1.4 System Efficiency

Table 4 shows the recommended and minimum values for the efficiency of different types of irrigation systems based on the results of a WRC project (Reinders, 2010), and is determined by a water balance approach. The assumption is that the maximum theoretical efficiency of any irrigation system should be 100%. Assumptions are then made for acceptable losses in any system that can occur and the total losses deducted from 100%, to obtain the maximum (recommended) attainable efficiency. The minimum acceptable value is based on the previous norms. Although this process makes it possible for the designer to determine an appropriate efficiency for any specific situation that is being designed for, by putting together the loss percentage values, he/she must however always strive for a system designed for the maximum attainable efficiency.

The efficiency values shown in Table 4 apply only to the physical performance of the irrigation system and it is assumed that the irrigator applies appropriate and economical management practices.

Table 4 System efficiency

Irrigation system	Losses				Proposed default system efficiency (net to gross ratio) (%)	
	Non-beneficial spray evaporation and wind drift (%)	In-field conveyance losses (%)	Filter and minor losses (%)	Total Losses (%)	Min	Max
Drip (surface and subsurface)	0	0	5	5	90	95
Micro sprinkler	10	0	5	15	80	85
Centre Pivot, Linear move	8	0	2	10	80	90
Centre Pivot LEPA	0	0	5	5	85	95
Flood: Piped supply	0	0	2	5	80	95
Flood: Lined canal supplied	0	5	5	10	70	90
Flood: Earth canal supplied	0	12	5	14	60	86
Sprinkler (permanent)	8	0	2	10	75	90
Sprinkler (movable)	10	5	2	17	70	83
Traveling gun	15	5	2	22	65	78

1.5 Irrigation hours per week

These values are used to determine the required system discharge. The norms recommended by DWAF (1985) are accepted:

- Micro and permanent sprinkler systems ≤143 hours
- Centre pivots systems ≤143 hours
- Moveable sprinkler and other movable systems ≤108 hours
- Flood irrigation systems ≤60 hours

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.

1.6 Surveying and mapping

The map that will be used for the detailed design of the system should be drawn at an appropriate scale and contour interval, and it should be based on accurate data so that the irrigation system is designed correctly and all the design details can be legibly displayed.

1.6.1 Recommended contour intervals and scales of maps

The following scale and contour interval combinations are generally used:

Table 5 Recommended scales and contour intervals

Irrigation systems	Contour interval	Smallest scale
Micro irrigation (narrow row spacing: ≤ 3 m)	0,5 m	1: 500
Micro irrigation (wide row spacing: > 3 m)	1,0 m	1: 1 000
Sprinkler irrigation	1-2 m	1: 2 000
Centre pivots	2-5 m	1 : 5 000
Flood irrigation	0,5 m	1 : 1 000

1.6.2 Use of GPS Systems

Global Positioning Systems (GPS) surveying is an evolving technology. As GPS hardware and processing software are improved, new specifications will be developed and existing specifications will be changed.

GPS receivers can be divided into the following three categories:

a) Recreational Grade GPS / GNSS

Recreational grade GPS receivers are the least expensive and the simplest to use of the three types. These units have less functionality and are intended for recreational navigation uses. These units can be expected to produce locations with accuracy of approximately 15-30 meters. This grade of GPS is not advisable for data collection for irrigation design purposes.

b) Mapping/Resource Grade GPS / GNSS

Mapping or Resource Grade GPS collect positions with accuracies between 0.5 and 5 meters with differential corrections. These units have expanded functionality as well and can also record features as points, lines and polygons. These units also allow for loadable feature libraries designed to efficiently collect attribute information describing the feature.

c) Survey Grade GPS / GNSS

Survey grade GPS tools are intended for tasks requiring a very high degree of accuracy - positions determined by these receivers can be accurate to within less than a few centimeters. These systems produce data of the highest horizontal and vertical positional accuracy. They are relatively expensive and complex, requiring specialized training and dedicated staff to oversee its use.

The level of accuracy depends on the type of equipment you are using. In most cases for irrigation, the mapping (resource) grade receivers are adequate as some mapping grade receivers are even capable of sub-meter accuracy and better, especially when differential correction is applied, real-time or as post-processing.

The following guidelines for the selection of GPS equipment are proposed:

Table 6 Recommended GPS specifications

Minimum number of channels	250
Update rate	1 Hz
Correction	Global Real Time Differential Correction preferred
Accuracy	At a 95% confidence index:
Moving systems:	< 2.5 m
Sprinkler systems:	< 1 m
Micro and flood irrigation systems:	< 0.5 m
Antenna	External
Operating temperature	-20° C to + 60° C
Battery life	Minimum 5 hours (8 hours preferred)
Performance	Real Time Differential: 0.08m Horizontal, 0.16m Vertical RTK: 8mm + 1ppmHorizontal, 15mm + 1ppm Vertical
Protection	
Enclosure:	IP65 (dust proof and 1m water quick submersion)
Humidity:	100% sealed
Drop proof:	Shock proof against 1m drop
The following user settings are recommended:	
Minimum number of satellites	5
PDOP	< 3
Satellite filter angle	10°
Signal to noise ratio (SNR)	6
Other options recommended	Internal GSM for Network RTK (NTRIP) where available. Windows Mobile Data Logger with Survey/GIS software. Smart Voice Announcement System. System upgradeable to full RTK with base unit.

2. Irrigation systems

2.1 Micro sprinkler irrigation

2.1.1 Minimum gross application rate

The application rate should be equal to or greater than 3 mm/h on the wetted area (Lategan, 1995). 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.

2.1.2 Distribution Uniformity

a) Emitter uniformity approach

The following minimum emitter uniformity (EU) values are proposed:

- Level terrain where slope < 2%: EU = 95%
- Undulating terrain or slopes > 2%: EU = 90%

b) 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.

2.1.3 Flow velocity in laterals

A minimum flow velocity of 0,4 m/s at the lateral end point is required. (T-Tape, 1998)

2.2 Drip Irrigation

2.2.1 Distribution Uniformity

a) Emitter uniformity approach

The following emitter uniformity (EU) values are recommended for pressure sensitive drip emitters:

Table 7 Recommended EU Values of pressure sensitive drip irrigation systems

Emitter Type	Number of emitters per plant	Topography or slope	EU (%)	
			Min	Recommended
Point application	≥3	≤2%	90	95
Point application	<3	≤2%	85	90
Point application	≥3	Undulating terrain or slope >2%	85	90
Point application	<3	Undulating terrain or slope >2%	80	90
Line source	All	≤2%	80	90
Line source	All	Undulating terrain or slope >2%	80	85

If the EU value of 90% cannot be obtained with pressure sensitive emitters, it is strongly recommended that pressure compensating emitters should be used.

b) 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.

c) Pressure compensating emitters

It is recommended that maximum allowable pressure variation (in m) will be within the following safety limits:

- Minimum design pressure = the minimum working pressure at which compensation takes place as per the manufacturer + 3m
- 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.

2.2.2 Flow velocity in laterals required for effective flushing

The following minimum flow velocity at the lateral end point is required (Netafim, 2013):

- Good quality water: 0.4 m/s
- Average quality water: 0.5 m/s
- Poor quality water: 0.6 m/s

2.2.3 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 (Netafim, 2008).

2.2.4 Flow velocity in manifolds

The maximum allowable flow velocity in any section of the manifold should be 2 m/s (Keller & Bliesner, 1990).

2.2.5 Specific management systems

There are several variations of the use of drip irrigation for which specialist knowledge and additional information can be obtained, for example:

- Underground drip irrigation. The publication on “Engineering aspects of sub-surface drip irrigation systems” (Koegelenberg, F. 2005. ARC- Institute for Agricultural Engineers) can be consulted.
- Open Hydroponics Systems and pulse irrigation. This system requires additional flow due to short irrigation times, and steps must be taken to keep water from draining from the system between irrigation start-ups. The Irrigation Design Manual of the ARC can be consulted for any queries.

2.3 Sprinkler Irrigation

2.3.1 Sprinkler 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. The following norms for the selection of sprinklers based on the laboratory-tested CU values are recommended: (Keller, 1990):

- CU ≥ 85% for vegetable crops
- 75% ≤ CU ≤ 85% for deep rooted crops e.g. lucern
- CU ≥ 70% for tree crops

When applying chemicals through the system, the CU should be ≥ 80%.

2.3.2 Sprinkler 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 in Table 8 (Rainbird, 1998):

Table 8 Sprinkler spacing according to average wind speed

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.	
	Between sprinklers (%)	Between Laterals (%)
<10	40	65
10 - 15	40	60
>15	30	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.

2.3.3 Minimum gross application rate

The following minimum gross application rates are recommended:

- Moveable systems ≥ 5 mm/h
- Permanent systems ≥ 4 mm/h

2.3.4 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 (Jensen 1983).

2.4 Centre Pivot

2.4.1 Maximum irrigation time vs. soil infiltration rate

The design of a centre pivot should ensure that the application rate does not exceed the soil's infiltration rate, especially at the end of the machine.

2.4.2 Christiansen uniformity coefficient (CU)

It is recommended that the CU as calculated by the supplier for the selected nozzle package should be ≥ 95%. In the field a 85% CU value can be expected.

2.4.3 Friction through centre pivot

≤ 3,6% (m/100m) of the total centre pivot length.

2.4.4 Effective radius of end gun

50% of the wetted radius of the end gun.

2.5 Travelling irrigators

2.5.1 Pressure variation over the length of the travelling path

The moving direction must be such that the pressure difference between the upper and lower ends of a strip does not exceed 20% of the working pressure.

2.5.2 Speed variation

The maximum speed variation allowed between the fastest and slowest speed is 10%.

2.5.3 Site

It is recommended that cross slopes over the strips be limited to less than 5% during system lay-out. A pressure regulator is recommended for travelling irrigators on steep slopes to ensure a constant flow rate.

2.5.4 Flow rate

The design flow rate must be increased by ± 2.5 m^3/h to allow for driving water when a hydraulically driven travelling irrigator is used. Confirmation of this value must be insured by the specific supplier.

2.5.5 Sprinkler choice

The type of sprinkler and pressure may be selected from the manufacturer's catalogue. Big gun sprinklers with a high jet angle (> 23 degrees) are only recommended for low wind areas. The following minimum working pressures are recommended to limit droplet size:

- 300 kPa for 12 mm nozzles
- 400 kPa for 14 mm and 16 mm nozzles
- 500 kPa for 18 mm and 20 mm nozzles

2.5.6 Strip width

Strips should be set out perpendicular to prevailing winds if possible. Manufacturer's manuals should be used in choosing strip widths. Because of the influence of wind on travelling irrigators, most manufacturers recommend strip widths for different wind velocities as follows:

Table 9 Reduction factors for travelling irrigator strip widths to allow for windy conditions

Wind velocity [km/h]	Strip width [% of wetted diameter]
0 - 8	70%
8 - 16	60%
> 16	50%

2.6 Flood irrigation

Although flood irrigation appears to be a relatively simple system, it requires various design information to ensure a well-designed scheme. The infiltration rate of the soil must be thoroughly investigated and the results thereof taken into account during the planning phase of the system. A water runoff control plan must be implemented to ensure that rainwater is kept away from the irrigation area.

The following norms are recommended:

2.6.1 Slope of beds

Slope along the length of the field must be < 0,7% to prevent erosion unless an in situ test is done. The slope across the width must be = 0% for basin and border irrigation.

2.6.2 Allowable flow depth in beds

50 mm $\leq$ flow depth $\leq$ 150 mm

2.6.3 Allowable soil infiltration rate per bed

It is recommended that the infiltration rate of the soil types occurring within one bed may not vary more than 10% from the average. Bed lay-out should be adjusted accordingly.

3. Water supply systems

3.1 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 life time. The following values for allowable pipe friction in mainlines are accepted as norms:

The following applies for pipelines with a diameter of 200 mm or smaller:

- 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
- Gravity pipeline: Maximum allowable flow velocity of 3.0 m/s

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.

3.2 Valves

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.

3.3 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.

3.3.1 Disc and mesh filters

Disc / mesh filter openings must be ≤ 1/5 that of the emitter orifice diameter. The appropriate micro emitter manufacturer's recommendations must be used for flow path openings of ≤ 1mm. The following norms are accepted (ASAE EP405.1, 1997):

Table 10 Allowable pressure difference over a filter bank

Type	Allowable pressure difference over clean filter/-bank (kPa)		Allowable pressure build-up (kPa)	Allowable pressure difference before backwashing (kPa)	
	Single filter	Filter bank		Single filter	Filter bank
Disc-/Mesh filter	10	30	40	50	70

3.3.2 Sand Filters

When using a sand filter, a 200 µm 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.

a) Flow rate

The maximum allowable flow rate through a clean sand filter: Flow rate ≤ 50 m^3/h per m^2 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 m^3/h per m^2 sand surface area) is required to backwash the filters (Burt & Styles, 1994). The maximum backwash rate must not exceed 1,2 times the filtration rate.

b) 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 3.3.1 must be complied with.

Table 11 Allowable pressure differences over sand filters

Type	Allowable pressure difference over clean filter/-bank (kPa)		Allowable pressure build-up (kPa)	Allowable pressure difference before backwashing (kPa)	
	Filter	Filter bank		Filter	Filter bank
Sand filter	10	40	20	30	60

c) Outlet pressure during backwash

Minimum pressure during backwash of a sand filter: ≥200 kPa (Smith, 2010)

d) 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 micron. A filtration performance of ≥90% must be achieved under laboratory conditions.

3.4 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:

- Discharge 10%
- Pressure head 5%

If fertilizers are pumped through the irrigation system then an additional 20% flow capacity can be designed for in the system.

3.5 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.

3.6 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 ±5% of the published pump curve (applicable to both centrifugal end-suction and borehole pumps).

3.7 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. Table 9 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).

Table 12 Minimum power rating of electric motors for certain output powers

Output Power [kW]	≤ 7,5 kW	>7.5 kW
Minimum power rating of motor	Power requirement of the pump at the highest design duty point + 20% OR Maximum input power requirement of the pump as per the pump curve (overload point)	Power requirement of the pump at the highest design duty point. Overload protection essential

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.

3.8 Motor efficiency

It is recommended that electric motors with an efficiency rating of at least "IE2" (or "EFF1") are used to drive the pump.

Efficiency	EFF system	IE systems
Premium		IE3
High	EFF1	IE2
Standard	EFF2	IE1
Lower than standard	EFF3	

3.9 Variable speed drives (VSDs)

The 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:

- where the duty points vary because of elevations differences between delivery points
- especially center pivots operating against slopes greater than 2% and static irrigation systems where block inlets are located at different elevations.

3.9.1 General

- The basic principles of correct pump and motor design and selection apply at all times.
- 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.
- 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.
- The motor should be capable of delivering the required power of the pump at all the different duty points but should not be oversized.
- 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.
- At very low frequencies, it may be necessary to install an auxiliary fan to the motor to ensure adequate cooling takes place.
- The motor with which the VSD is to be used, should be rated VSD compatible according to the manufacturer.
- 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.)
- 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.
- 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.
- Before a VSD is supplied, the designer should ensure that support or maintenance services for the VSD are readily available in the area.

3.9.2 Totally Enclosed Fan Cooled Motors (TEFC) Motors

- 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.
- 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).
- 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 if the minimum running frequency of the motor can be decrease to below 25 Hz.

3.9.3 Submersible motors

- See first two points under TEFC.
- 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.
- 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.
- The maximum number of starts per day of the motor is as stated by the motor manufacturer.
- 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.

3.9.4 Electrical supply and connection

- 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.
- The earthing of the VSD and motor must be in accordance to the requirements of the VSD manufacturer.
- 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.

4. Greenhouses and Tunnels

When an irrigation system is designed for greenhouses, it requires the precise application of water as a high value crop is irrigated in a relatively small volume of growing media. The media must be well drained and pulse irrigation should be possible. Each irrigation block must be provided with its own mainline. The system must be equipped with anti-drainage valves to ensure that the water does not drain out of the system when it is switched off. Because of this it is recommended that the pump house and valves are placed at the lowest point of the greenhouse. Provision should however be made for the system to be flushed. The following norms are recommended:

4.1 Crop water requirement (mm/day)

If a crop is grown in a soilless medium, there must be drainage due to leaching, for example if 33% of drainage water is required, then the application rate must be 50% more to the crops.

- Maximum daily demand (soilless medium in greenhouses):
  Design for 6 ℓ/m²/day for plant consumption plus 3 ℓ/m²/day (33% leaching) = 9 ℓ/m²/day. If more leaching is required, then the demand will increase.
- Maximum hourly demand (soilless medium in greenhouses):
  Design for 0.8 ℓ/m²/h for plant consumption plus 0.4 ℓ/m²/h (33% leaching) = 1.2 ℓ/m²/h. If more leaching is required, then the demand will increase.

In the case of tunnels, the maximum daily demand can be increased to 10 mm/day (excluding any leaching requirements).

4.2 Overhead irrigation

Christiansen uniformity coefficient (CU): $\geq$ 95%

Gross application rate (GAR): 12mm/h ≤ GAR ≤18mm/h

4.3 Drip Irrigation

- Drip Spacing:
  ≤ 0.3m (Soilless medium)
  ≤ 0.4m (Soil medium)

- Flush Velocity of laterals:
  ≥0.5 m/s is required at the end point of the lateral.

- Mainline velocity:
  ≤3.5 m/s (pipe diameter > 50mm)
  ≤3 m/s (pipe diameter ≤ 50mm)

4.4 Pipelines, Pumps and Accessories

- Friction losses through mainline:
  ≤ 1.5% (Maximum friction loss of longest section of the mainline)
  ≤ 2.2m/s (Maximum flow velocity in the rest of the mainlines)

Mainlines must be of such size that friction loss plus the static height combination for every mainline must be approximately the same.

- Velocity through filtration manifold:
  ≤3.2m/s

- Velocity through pump house mainline:
  ≤3 m/s

All mainline equipment and accessories (water meters, control valves and reflux valves) should be the same size as the mainlines.

- Allowable velocity through suction pipe:
  ≤1 m/s (when whole system is in use)

4.5 Installation of drainage pipes

The drain should be placed perpendicular to the direction dripper lines with a maximum drain interval according to the slope

- 1% slope, draining pipe interval ≤ 20 m.
- 1.5% slope, draining pipe interval ≤ 25 m.
- 2% slope, draining pipe interval ≤ 30 m.

NOTE: The slope of the drainage pipe should not exceed the slope of the site area.

4.6 Allowable ground slopes in greenhouses

- Parallel gutters (dripper pipe direction):
  Soilless medium: 1% <slope <2%
  Soil medium: 0.5% <slope <2%

- Perpendicular to gutters:
  Soil less medium: 0.25 % < slope < 2 %.
  Soil medium: 0.5 % <slope < 2 %.

NOTE: Confirm with Greenhouse Manufacturers.

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ANNEXURE F

BILLS OF QUANTITIES

PROVISIONAL BILLS OF QUANTITIES

FOR

Proposed Irrigation System to Walter Sisulu National Botanical Garden

FOR

The South African National Biodiversity Institute

CIVIL ENGINEERS
Tenmud Investments
53A Vincent Road
Vincent
East London
5247
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Fax:
e Mail: tendaim@tenmud.co.za

QUANTITY SURVEYORS
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Multi-Disciplinary Built Environment Professional
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OHS AND ENVIRONMENTAL CONSULTANTS
Tenmud Investments
Tel. +27 010 109 5641
Fax:
e Mail: tendaim@tenmud.co.za

23/08/2024

Item		Unit	Quantity	Rate	Amount
	BILL NO. 1				
	PRELIMINARIES				
	PRELIMINARY				
	In accordance with project specification and SABS 1200A				
	Fixed-Charge and Value-Related Items				
1	Contractual requirements	Item			
	Establishment of Facilities on site				
2	Facilities for Contractor including offices and storage sheds, workshops, latrine facilities, laboratories, livings, accommodation, tools and equipment, water and electrical power and plant , etc.	Item			
3	Other fixed-charge obligations	Item			
4	Removal of Site Establishment	Item			
5	Facilities for Engineer	Item			
	Health and Safety				
6	Submit Health and Safety File	Item			
	Carried to Summary			**R**	

Item		Unit	Quantity	Rate	Amount
	BILL NO. 2				
	EARTHWORKS				
	SITE CLEARANCE				
	Site clearance				
1	Digging up and removing rubbish, debris, vegetation, hedges, shrubs, bush, etc and trees not exceeding 200mm girth	m²	3 380		
	EXCAVATIONS ETC				
	Digging up topsoil				
2	Digging up topsoil to an average depth of ?mm and preserving for use as filling	m²	1 690		
	Excavation in earth for trenches				
3	Not exceeding 2m deep	m³	5 070		
	Extra over bulk excavations in earth for excavation in				
4	Soft rock	m³	51		
5	Hard rock	m³	254		
	Extra over all excavations for carting away				
6	Surplus material from excavations and/or stock piles on site to a dumping site to be located by the contractor	m³	1 690		
	Risk of collapse of excavations				
7	Sides of bulk excavations not exceeding 1,5m deep	m²	10 140		
	Keeping excavations free of water				
8	Keeping excavations free of water other than subterranean water	Item			
	FILLING ETC				
	Earth filling obtained from the excavations (not compacted)				
9	In prescribed stock piles on site	m³	1 690		
	Compaction of surfaces				
10	Compaction of natural or excavated ground surface over site by wetting and compacting with ? passes of a ? ton vibratory roller	m²	5 070		
	Carried to Summary			**R**	

Item		Unit	Quantity	Rate	Amount
	BILL NO. 3 **PUMP SYSTEM**				
	PUMP SYSTEM				
	400 L/MIN DUAL PUMP SET BUILT UP WITH VSD				
1	Item Code: PROD1	No	1		
	PUMP SYSTEM MISCELLANEOUS				
2	Item Code: PROD1	Item			
	INSUL TAPE,CABLETIES,GLANDS,CONDUITS,FASTENERS ETC				
3	Item Code: MISC ELEC FITT	Item			
	MISCELANEOUS FITTINGS				
4	Item Code: MISC PUMP FITT	Item			
	CONN. TO EXIST. MAINS,PTFE,HEMP,ADD. FITTINGS ETC.				
5	Item Code: MISC WCP FITT	Item			
	Carried to Summary			**R**	

Item		Unit	Quantity	Rate	Amount
	BILL NO. 4 **MAINLINE**				
	MAINLINE				
	90MM PN08 X P/M HDPE PIPE SANS PE100				
1	Item Code: HD090PN08	m	1 200		
	63MM PN08 X P/M HDPE PIPE SANS PE100				
2	Item Code: HD063PN08	m	2 100		
	50MM PN08 X P/M HDPE PIPE SANS PE100				
3	Item Code: HD050PN08	m	1 500		
	SAB ELBOW 90MM				
4	Item Code: CE90	No	14		
	SAB TEE 90MM				
5	Item Code: CT90	No	1		
	SAB COUPLING 90MM				
6	Item Code: CC90	No	10		
	SAB ELBOW 63MM				
7	Item Code: CE63	No	50		
	SAB TEE 63MM				
8	Item Code: CT63	No	5		
	SAB COUPLING 63MM				
9	Item Code: CC63	No	10		
	SAB ELBOW 50MM				
10	Item Code: CE50	No	10		
	SAB 50MM COMPRESSION TEE				
11	Item Code: CT50	No	5		
	SAB END CAP 50MM				
12	Item Code: CP50	No	14		
	Carried to Summary			**R**	

Item		Unit	Quantity	Rate	Amount
	BILL NO. 5 **ISOLATING POINTS**				
	ISOLATING POINTS				
	SAB 90MM X 2" HP SADDLE PN16				
1	Item Code: HPS90X2	No	18		
	EMJAY PP NIPPLE 2" (50MM) BSP				
2	Item Code: MBP513	No	18		
	COMPACT BALL VALVE FEM/THR 2"				
3	Item Code: H-V202200	No	18		
	250MM ROUND VALVE BOX WITH LID				
4	Item Code: VB250	No	18		
	COMPACT BALL VALVE FEM/THR 2"				
5	Item Code: H-V202200	No	18		
	SAB 63MM X 1.1/2" HP SADDLE PN16				
6	Item Code: HPS63X11/2	No	4		
	EMJAY PP NIPPLE 1.1/2" (40MM) BSP				
7	Item Code: MBP512	No	4		
	COMPACT BALL VALVE FEM/THR 1.1/2"				
8	Item Code: H-V202150	No	4		
	250MM ROUND VALVE BOX WITH LID				
9	Item Code: VB250	No	4		
	SAB MALE ADAPTER 63MM x 2"				
10	Item Code: CMA63X2	No	10		
	SAB MALE ADAPTER 50MM x 2"				
11	Item Code: CMA50X2	No	17		
	COMPACT BALL VALVE FEM/THR 2"				
12	Item Code: H-V202200	No	6		
	250MM ROUND VALVE BOX WITH LID				
13	Item Code: VB250	No	6		
	Carried to Collection			**R**	

Item		Unit	Quantity	Rate	Amount
	FLAGS,PTFE,INS TAPE,REP COUPLING,ADD FF FITTINGS				
14	Item Code: MISC SPRAY FIT	No	28		
	DANGERTAPE,IT,ADD PIPE FITTING-COUPLING,ELBOWS ETC				
15	Item Code: MISC PIPE FITT	No	3		
	Carried to Collection			**R**	

		Amount
BILL NO. 5 **ISOLATING POINTS** **COLLECTION**		
	Page No	
Brought Forward from Page	5 6	
Carried to Summary	**R**	

Item		Unit	Quantity	Rate	Amount
	BILL NO. 6 **SPRAYLINE MATERIALS**				
	SPRAYLINE MATERIALS				
	SAB 90MM X 1" HP SADDLE PN16				
1	Item Code: HPS90X1	No	34		
	SAB 63MM X 1" HP SADDLE PN16				
2	Item Code: HPS63X1	No	59		
	SAB 50MM X 1" HP SADDLE PN16				
3	Item Code: HPS50X1	No	10		
	SAB MALE ADAPTER 32MM x 1"				
4	Item Code: CMA32X1	No	103		
	SAB MALE ELBOW 32MM x 1"				
5	Item Code: CME32X1	No	103		
	32MM PN10 X P/M HDPE PIPE SANS PE100				
6	Item Code: HD032PN10	No	103		
	250MM ROUND VALVE BOX WITH LID				
7	Item Code: VB250	No	103		
	25 CLASS 4 LDPE PIPE				
8	Item Code: LD25C4	m	10 700		
	20 CLASS 4 LDPE PIPE				
9	Item Code: LD20C4	m	401		
	15 CLASS 4 LDPE				
10	Item Code: LD15C4	m	892		
	1804 R/BIRD POP-UP 100mm				
11	Item Code: RB1804	m	57		
	RAINBIRD 12 HI POP BODY POP-UP				
12	Item Code: RB1812	No	238		
	SHRUB ADAPTER (PA400)				
13	Item Code: 6300	No	97		
	Carried to Collection			**R**	

Item		Unit	Quantity	Rate	Amount
	EMJAY PP SOCKET 1/2" (15MM) BSP				
14	Item Code: MBP651	No	97		
	15MM X 0.75M GREEN PVC RISER				
15	Item Code: PR15X0.75	No	97		
	RAINBIRD GEAR DRIVE POP UP FR/PC				
16	Item Code: RB3504	No	165		
	RAINBIRD GEAR DRIVE SHRUB SPRINKLER F				
17	Item Code: RB3500S	No	335		
	EMJAY PP SOCKET 1/2" (15MM) BSP				
18	Item Code: MBP651	No	335		
	15MM X 0.75M GREEN PVC RISER				
19	Item Code: PR15X0.75	No	335		
	RAINBIRD GEAR DRIVE POP-UP P/C				
20	Item Code: RB5004PC	No	295		
	RAINBIRD PC SHRUB ROTOR - SAM				
21	Item Code: RB5000SPCSAM	No	106		
	EMJAY PP SOCKET 3/4" (20MM) BSP				
22	Item Code: MBP652	No	106		
	20MM X 0.75M GREEN PVC RISER				
23	Item Code: PR20X0.75	No	106		
	***NELSON MP1000 ROTATOR**				
24	Item Code: MP1 VAR	No	295		
	FULL FLOW MALE ELBOW 25MM X 1"				
25	Item Code: FF1350	No	110		
	FULL FLOW TEE 25MM				
26	Item Code: FF1050	No	110		
	FULL FLOW TEE 25MM				
27	Item Code: FF1050	No	500		
	FULL FLOW ELBOW 25MM				
28	Item Code: FF1060	No	400		
	Carried to Collection			**R**	

Item		Unit	Quantity	Rate	Amount
	FULL FLOW CONNECTOR 25MM				
29	Item Code: FF1040	No	100		
	FULL FLOW REDUCING TEE 25MM X 15MM				
30	Item Code: FF1070	No	680		
	FULL FLOW REDUCER 25MM X 15MM				
31	Item Code: FF1110	No	250		
	FULL FLOW ELBOW 15MM				
32	Item Code: FF1013	No	240		
	FULL FLOW MALE ADAPTOR 15MM X 1/2"				
33	Item Code: FF1021	No	240		
	FULL FLOW MALE ELBOW 15MM X 1/2"				
34	Item Code: FF1015	No	580		
	FULL FLOW REDUCING TEE 25MM X 20MM				
35	Item Code: FF1105	No	320		
	FULL FLOW REDUCER 25MM X 20MM				
36	Item Code: FF1045	No	102		
	FULL FLOW ELBOW 20MM				
37	Item Code: FF1014	No	300		
	FULL FLOW MALE ADAPTER 20MM X 3/4"				
38	Item Code: FF1022	No	300		
	FULL FLOW MALE ELBOW 20MM X 3/4"				
39	Item Code: FF1016	No	120		
	FLAGS,PTFE,INS TAPE,REP COUPLING,ADD FF FITTINGS				
40	Item Code: MISC SPRAY FIT	No	103		
	Carried to Collection			**R**	

		Amount
BILL NO. 6 **SPRAYLINE MATERIALS** **COLLECTION**		
	Page No	
Brought Forward from Page	8	
	9	
	10	
Carried to Summary	**R**	

Item		Unit	Quantity	Rate	Amount
	BILL NO. 7 **AIR VALVES**				
	AIR VALVES				
	SAB 90MM X 1" HP SADDLE PN16				
1	Item Code: HPS90X1	No	4		
	SAB 63MM X 1" HP SADDLE PN16				
2	Item Code: HPS63X1	No	7		
	SAB 50MM X 1" HP SADDLE PN16				
3	Item Code: HPS50X1	No	5		
	25MM X 0.30M GREEN PVC RISER				
4	Item Code: PR25X0.30	No	16		
	COMPACT BALL VALVE FEM/THR 1"				
5	Item Code: H-V202100	No	16		
	AQUA DOUBLE ACTING AIR RELEASE VALVE 25MM				
6	Item Code: AQ88CPM	No	16		
	150MM ROUND VALVE BOX WITH LID				
7	Item Code: VB150	No	16		
	FLAGS,PTFE,INS TAPE,REP COUPLING,ADD FF FITTINGS				
8	Item Code: MISC SPRAY FIT	No	16		
	Carried to Summary			**R**	

Item		Unit	Quantity	Rate	Amount
	BILL NO. 8 **TURF VALVE MATERIALS**				
	TURF VALVE MATERIALS				
	SAB 90MM X 1" HP SADDLE PN16				
1	Item Code: HPS90X1	No	18		
	SAB 63MM X 1" HP SADDLE PN16				
2	Item Code: HPS63X1	No	38		
	SAB 50MM X 1" HP SADDLE PN16				
3	Item Code: HPS50X1	No	30		
	25MM X 0.30M GREEN PVC RISER				
4	Item Code: PR25X0.30	No	95		
	EMJAY PP MALE/FEMALE ELBOW 1" (25MM) BSP				
5	Item Code: MBP756	No	385		
	COMPACT BALL VALVE FEM/THR 1"				
6	Item Code: H-V202100	No	95		
	AQUA 25 PLASTIC TURF VALVE				
7	Item Code: AQ71PM	No	95		
	AQUA PLASTIC TURF VALVE KEY				
8	Item Code: AQ70PMK	No	25		
	EMJAY COMB. FEMALE ELBOW 20MM X 3/4"				
9	Item Code: MB734	No	25		
	TORK 19-26MM HOSE CLAMP PERFORATED (20MM PIPE)				
10	Item Code: THC8	No	100		
	20MM X 30M DRAGLINE M-DUTY BLACK				
11	Item Code: DL20X30	No	25		
	3/4in SNAP ON HOSE CONNECTOR				
12	Item Code: SB225	No	25		
	SNAP ON SPRAY NOZZLE				
13	Item Code: SB500	No	25		
	Carried to Collection			**R**	

Item		Unit	Quantity	Rate	Amount
	20MM X .6M DRAGLINE STAND				
14	Item Code: DS20X.6	No	20		
	AQUA PLASTIC SPRINKLER F/C 3/4" - 3.57MM X 2.38MM				
15	Item Code: AQ46-3.57X2.38	No	20		
	PTFE, STABALISING RODS, HOSE REP COUPLINGS ETC				
16	Item Code: MISC TV FITT	No	95		
	Carried to Collection			R	

		Amount
BILL NO. 8 **TURF VALVE MATERIALS** **COLLECTION**		
	Page No	
Brought Forward from Page	13	
	14	
Carried to Summary	**R**	

Item		Unit	Quantity	Rate	Amount
	BILL NO. 9 **AUTOMATION**				
	AUTOMATION				
	R-BIRD 240 STN IVM 2 WIRE PRO CONTROLLER				
1	Item Code: RBESPLX-IVMPRO240	No	1		
	SQUARE BATTERY				
2	Item Code: BSQ9	No	2		
	EMJAY PP NIPPLE 1" (25MM) BSP				
3	Item Code: MBP510	No	103		
	RAINBIRD 25mm GLOBE SOLENOID VALVE C/W FC				
4	Item Code: RB100DVF	No	103		
	RAINBIRD IVM 2WIRE SOLENOID				
5	Item Code: RBLX-IVMSOL	No	103		
	EARTH SPIKE 1.2M WITH BOLT				
6	Item Code: ES	No	1		
	TWO WIRE LIGHTING ARRESTORS				
7	Item Code: ZED31-2	No	1		
	R-BIRD WIRED RAINSENSOR				
8	Item Code: RBRSD	No	1		
	10MM EARTH CABLE				
9	Item Code: EC10	No	5		
	RAINBIRD CABLE 2.5MM				
10	Item Code: RBSCABLE2.5	No	3 500		
	RAINBIRD DB WIRE CONNECTOR RED/YELLOW				
11	Item Code: RBDB0100	No	150		
	RAINBIRD IVM 2WIRE SURGE DEVICE				
12	Item Code: RBLX-IVMSD	No	25		
	150MM ROUND VALVE BOX WITH LID				
13	Item Code: VB150	No	25		
	Carried to Collection			**R**	

Item		Unit	Quantity	Rate	Amount
	CONDUIT,FASTENERS,GLANDS, INS. TAPE, JUNCTION BOX				
14	Item Code: MISC AUTO FITT	No	1		
	Carried to Collection			R	

			Amount
BILL NO. 9 **AUTOMATION** **COLLECTION**			
		Page No	
	Brought Forward from Page	16	
		17	
	Carried to Summary	**R**	

Item		Unit	Quantity	Rate	Amount
	BILL NO. 10 **CONSUMABLES**				
	CONSUMABLES				
	PTFE SEAL&BOND 19MMX30MX0.1MM				
1	Item Code: PTFE19X30	No	310		
	RAINBIRD YELLOW FLAG				
2	Item Code: RBFL/Y	No	200		
	RAINBIRD GREEN FLAG				
3	Item Code: RBFL/G	No	750		
	RAINBIRD BLUE FLAG				
4	Item Code: RBFL/B	No	750		
	DANGER TAPE X 1 COIL				
	PROD1				
	RAINBIRD 430MM RECTANGULAR VALVEBOX WITH LID				
5	Item Code: RBVB430	No	20		
	Carried to Summary			**R**	

Item			Amount
	BILL NO. 11 **PROVISIONAL SUMS**		
	BUDGETARY ALLOWANCES		
	Engineering investigation to support irrigation infrastructure		
1	Provide the sum of R120,000 (One Hundred and Twenty Thousand rands) for the investigation and determination of necessary repairs to existing support irrigation infrastructure and determining of remedial repairs.	Item	120 000 00
	Connection to existing Water Irrigation System		
2	Provide the sum of R200,000.00 (Two Hundred Thousand Rands) for connecting new irrigation system to existing and attending to any minor repairs and replacing oif incombaitible fittings ands pipe. The cost shall including all pressure testing of existing systems and ensure the system is working according to design.	Item	200 000 00
	Carried to Summary	**R**	

Bill No.	**SUMMARY**	Page		Amount
1	PRELIMINARIES	1		
2	EARTHWORKS	2		
3	PUMP SYSTEM	3		
4	MAINLINE	4		
5	ISOLATING POINTS	7		
6	SPRAYLINE MATERIALS	11		
7	AIR VALVES	12		
8	TURF VALVE MATERIALS	15		
9	AUTOMATION	18		
10	CONSUMABLES	19		
11	PROVISIONAL SUMS	20		
	ADD: CONTINGENCIES			
	Add 10% Contingencies to be used at client's discretion			0 00
	SubTotal excluding Value Added Tax			
	ADD VAT @ 15%:			
	Carried to Tender		**R**	
	SUMMARY			

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