



Request for Proposals (RFP)

For the Planning, Design, Construction, Supervision and Close out (Turnkey) of Stormwater Management and Landscaping at Ndlambe Green Village in Ekuphumleni Township, Kenton-on-Sea in the Ndlambe Local Municipality, Eastern Cape Province.

RFP No. 3482.1/17/06/2022

Date of Issue:	Friday, 27 May 2022	
Compulsory Briefing Session	Date: Friday, 10 June 2022 Time: 11:00 -12:00 Venue: virtual Link: https://teams.microsoft.com/join/19%3ameeting_ZWViMig3ODItMTJhMC00YmY0LWFmNjMtNDFjZGY3NGUwNGNm%40thread.v2/0?context=%7b%22Tid%22%3a%22fd3c5d5-ddb2-4ed3-9803-f89675928df4%22%2c%22Oid%22%3a%2204026bf5-27a2-4947-8703-ac28b7b7b2b3%22%7d	
Closing Date:	Friday, 17 June 2022 at 16:30	
Electronic submission	Email: tender@csir.co.za If the size of the documents exceed 25MB, send multiple emails. Use the tender number and description as the subject on the email.	
Enquiries	Strategic Procurement Unit	E-mail: tender@csir.co.za
CSIR business hours	08h00 – 16h30	

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0 INTRODUCTION

The Council for Scientific and Industrial Research (CSIR) is one of the leading scientific research and technology development organisations in Africa. In partnership with national and international research and technology institutions, CSIR undertakes directed and multidisciplinary research and technology innovation that contributes to the improvement of the quality of life of South Africans. The CSIR's main site is in Pretoria while it is represented in other provinces of South Africa through regional offices.

1 BACKGROUND

The CSIR has been appointed by the Department of Science and Innovation (DSI) as its Implementing Agent for the design and construction of the Stormwater Management and Landscaping at Ndlambe green village in Ekuphumeleni Township, Kenton-on-Sea in the Ndlambe Local Municipality, Eastern Cape Province.

A Project Brief (Annexure "A"1) has been developed in consultation with the DSI and NLM. The Brief captures the requirements of the NLM in the Eastern Cape and the DSI.

2 INVITATION FOR PROPOSAL

Proposals are hereby invited from Service Providers for the implementation of a turnkey project, to plan, design, construct, supervise and closeout the Stormwater Management and Landscaping at Ndlambe green village in Ekuphumeleni Township, Kenton-on-Sea for NLM in the Eastern Cape, sponsored by the DSI under contract to the CSIR.

3 PROPOSAL SPECIFICATION

All proposals are to be submitted in a format specified in this enquiry (**Section 27**).

3.1 Scope of Services

The Service Provider shall in broad terms, provide the services related to the requirements and scope of work as described but not limited to the following:

3.1.1 Requirements

- The Service Provider must submit monthly progress reports to CSIR;
- The Service Provider must ensure that each work stage (1 – 6), (refer to ECSA Board Notice 42 of 2004) is approved and signed off by CSIR before commencing on the next stage.
- The Service Provider must liaise, co-operate and provide the necessary information with project stakeholders in all work stages
- The Service Provider will be expected provide the CSIR with a construction guarantee
- The Service Provider will be expected to enter into a FIDIC EPC/Turnkey contract

3.1.2 Planning

- Inspect the site and advise on the necessary surveys, analysis, tests and site or other investigations, where such information will be required;
- Convene a project team;
- Prepare a scoping report;
- Confirm the services and scope of work required;
- Develop a project program and execution plan

3.1.3 Design, Implementation and Site Monitoring

- Liaise, cooperate and share information with project sponsors and other parties contracted by the client throughout the different stages of the project;
- Preparation of preliminary design report;
- Preparation of preliminary budget;
- Preparation of detail and final design;
- Submission of drawings to local authority
- Preparation of working drawings;
- Preparation of final cost estimate (Budget);
- Compilation of contract documents (Contract information, Bill of Quantities, Contract specification, etc.).

3.1.4 Construction

- Site monitoring, supervision and construction

3.1.5 Close out

- Preparation of a close-out report, as-built drawings and final accounts

3.2 Competencies of service provider

- Knowledge of application of Sustainable Urban Drainage Systems (SUDS).
- Proven experience in construction of SUDS (if possible).
- The Service Provider must have the necessary/ relevant construction experience and must be able to put together a consortium of built environment professionals who meet the professional registration requirements.
- The built environment professionals must have proof of registration with recognized Engineering and Landscape Architect professional bodies;
- The Contractor/ Service Provider must have a CIDB grading of 2CE or higher;
- Good knowledge of relevant national and provincial legislation, policies, strategies, norms and standards;
- Proven project management skills;
- Ability to produce systematic, comprehensive and informative documents and reports;
- Stakeholder management:
 - Ability to work with the community and resolve issues that may arise;
 - Ability to work with external consultants and specialists appointed by client.

3.3 Pricing Schedule

3.3.1 The Service Providers are advised to utilise the Estimated Construction amount of **R2 800 000 .00** (including VAT and professional fees).

3.3.2 The pricing schedule must include a summary table listing the cost of each work stage including VAT and all professional fees.

3.3.3 Value added or additional services (priced separately)

3.4 Credentials

The tenderer must submit the following (Important: Refer to the Evaluation Criteria Section and provide the applicable information, with relevant reference to Themes):

- 3.4.1 Proof of registration with the relevant professional council.
- 3.4.2 CIDB grading Certificate of 2CE or higher
- 3.4.3 A company profile of the tenderer which concisely summarises the tenderer's relevant experience, including a list of relevant current/recent work, each with a contactable reference. Cross-references to applicable Work Stages are required.
- 3.4.4 For key team members, submit an abridged CV which clearly illustrates the member's relevant credentials. Cross-reference to applicable Work Stages is required.

4 FUNCTIONAL EVALUATION CRITERIA

- 4.1 The evaluation of the functional / technical detail of the proposal will be based on the following criteria:

The functionality evaluation criteria will be based on the following:

Functional Factors	Weight
a. Methodology	20
b. Relevant practice/ discipline experience	25
c. Relevant key personnel experience	15
d. Local presence	20
e. Management skills	20

4.2 Proposals with functionality / technical points of less than the pre-determined minimum overall percentage of **70%** and less than **50%** on any of the individual criteria will be eliminated from further evaluation.

4.3 Refer to **Annexure A** for the scoring sheet that will be used to evaluate functionality.

5 ELIMINATION CRITERIA

Proposals will be eliminated under the following conditions:

- Submission after the deadline;
- Proposals submitted at incorrect email address;
- National Treasury Restricted suppliers;
- Failure to submit proof of registration with the relevant professional council;
- Contractor/ Service Provider who **does not have** CIDB grading of 2CE or higher;
- Failure to complete [SBD 4 Declaration of Interest form](#)

6 NATIONAL TREASURY CENTRAL SUPPLIER DATABASE REGISTRATION

Before any negotiations start with the winning bidder, it will be required from the winning bidder to:

- be registered on the National Treasury's Central Supplier Database (CSD). Registrations can be completed online at: www.csd.gov.za;
- provide the CSIR with their CSD registration number.
- No points will be scored during the evaluation process if the supplier does not provide the CSIR with a valid copy of their B-BBEE certificate or sworn affidavit. B-BBEE certificate must be issued by SANAS accredited agency or a valid sworn affidavit in line with DTI regulations. (RSA suppliers only).
- If no certificate can be provided, no points will be scored during the evaluation process.

SECTION B – TERMS AND CONDITIONS

7 PROPOSAL SUBMISSION

The CSIR requires that all tender submissions be submitted electronically. Should tender file size exceed 25MB, bidders can submit tender in multiple emails. Use the tender number **3482.1/17/06/2022** and description of the tender as the subject on your email.

All proposals must be submitted at: tender@csir.co.za

8 TENDER PROGRAM

The tender program, as currently envisaged, incorporates the following key dates:

• Issue of tender documents:	Friday, 27 May 2022
• Compulsory Briefing session:	Date: Friday, 10 June 2022 Time: 11:00 -12:00 Venue: virtual
• Closing / submission Date:	Friday, 17 June 2022 at 16h30pm
• Estimated contract duration	7 months

Compulsory Briefing Session	Date: Friday, 10 June 2022 Time: 11:00 -12:00 Venue: virtual Link: https://teams.microsoft.com/l/meetup-join/19%3ameeting_ZWViMiq3ODItMTJhMC00YmY0LWFmNjMtNDFjZGY3NGUwNGNm%40thread.v2/0?context=%7b%22Tid%22%3a%22fd3c5d5-ddb2-4ed3-9803-f89675928df4%22%2c%22Oid%22%3a%2204026bf5-27a2-4947-8703-ac28b7b7b2b3%22%7d
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9 SUBMISSION OF PROPOSALS

All proposals must be submitted to: tender@csir.co.za

9.1 Proposals must consist of two parts, each of which is submitted in a separate e-mail and clearly marked:

PART 1: Technical Proposal: **RFP No. 3482.1/17/06/2022**

PART 2: Pricing Proposal, B-BBEE and other Mandatory Documentation:

RFP No. 3482.1/17/06/2022

The pricing proposal is the last to be opened and therefore should not contain other mandatory documentation. It is only opened if the tenderer has met all other requirements. All other documents should therefore be part of PART1.

- 9.2** Proposals submitted by companies must be signed by a person or persons duly authorised.
- 9.3** The CSIR will award the contract to the successful tenderer whose proposal is determined to be the most advantageous to the CSIR, taking into consideration the technical (functional) solution, price and B-BBEE status.

10 DEADLINE FOR SUBMISSION

- 10.1** Proposals shall be submitted to tender@csir.co.za no later than Friday, **17/06/2022**. The CSIR business hours are between 08:00 – 16:30.
- 10.2** Proposals received by the CSIR later than the due date and at an incorrect location will be regarded as a late tender. Late tenders will not be considered.

11 AWARDING OF TENDERS

- 11.1** Awarding of tenders will be published on the National Treasury e-tender portal or the CSIR's tender website. No regret letters will be sent out.

12 EVALUATION PROCESS

12.1 Evaluation of proposals:

All proposals will be evaluated by an evaluation team for functionality, price and B-BBEE status. Based on the results of the evaluation process and upon successful negotiations, the CSIR will approve the awarding of the contract to successful tenderers.

A two-phase evaluation process will be followed.

- The first phase includes evaluation of **elimination** and **functionality criteria**,
- The second phase includes the evaluation of **price** and **B-BBEE** status.

Pricing Proposals will only be considered after functionality phase has been adjudicated and accepted. Only proposals that achieved the specified minimum

qualification scores for functionality will be evaluated further using the preference points system.

12.2 Preference points system

The 80/20 preference point system will be used where 80 points will be dedicated to price and 20 points to B-BBEE status.

The tenderer should prepare for a possible presentation should CSIR require such and the tenderer shall be notified timeously.

13 PRICING PROPOSAL

13.1 Price needs to be provided in South African Rand (incl. VAT), with details on price elements that are subject to escalation and exchange rate fluctuations, if any, clearly indicated.

13.2 Only firm prices* will be accepted during the tender validity period. Non-firm prices** (including prices subject to rates of exchange variations) will not be considered.

**Firm price is the price that is only subject to adjustments in accordance with the actual increase or decrease resulting from the change, imposition, or abolition of customs or excise duty and any other duty, levy, or tax which, in terms of a law or regulation is binding on the contractor and demonstrably has an influence on the price of any supplies, or the rendering costs of any service, for the execution of the contract;*

***Non-firm price is all prices other than "firm" prices.*

13.3 Payment will be according to the CSIR Payment Terms and Conditions.

14 VALIDITY PERIOD OF PROPOSAL

Each **proposal** shall be valid for 120 Business Days from Closing Date.

Bidders are to note that they may be requested to extend the validity period of their bid, at the same terms and conditions, if the internal evaluation process has not been finalised within the validity period. However, once the adjudication body has approved

the process and award of the business to the successful bidder(s), the validity of the successful bidder(s)' bid will be deemed to remain valid until a final contract has been concluded

15 APPOINTMENT OF SERVICE PROVIDER

- 15.1** The contract will be awarded to the tenderer who scores the highest total number of points during the evaluation process, except where the law permits otherwise.
- 15.2** Appointment as a successful service provider shall be subject to the parties agreeing to mutually acceptable contractual terms and conditions. In the event of the parties failing to reach such agreement within a mutually agreed date after provisional appointment date, CSIR reserves the right to appoint an alternative supplier.
- 15.3** The Service Provider or the successful tenderer will be appointed for the duration of the project which incorporates any necessary project related extensions. The Service Provider is to note that once appointed, work will be expected to commence at very short notice. This is due to the urgent nature of the project. Failure to accommodate this may result in the Service Provider being removed from the project.

16 ENQUIRIES AND CONTACT WITH THE CSIR

Any enquiry regarding this RFP shall be submitted in writing to CSIR at tender@csir.co.za with ***“Request for Proposals (RFP) No: 3482.1/17/06/2022 For the Planning, Design, Construction, Supervision and Close out (Turnkey) of Stormwater Management and Landscaping at Ndlambe green village in Ekhuphumleni Township, Kenton-on-Sea in the Ndlambe Local Municipality, Eastern Cape Province”*** as the subject.

Contact by any means whatsoever with CSIR personnel is not permitted during the RFP process other than as required through existing service arrangements and/or as requested by the CSIR as part of the RFP process. Any form of canvassing by the tenderer to any member of staff or supplier, for purposes of influencing the award of the contract, will automatically disqualify the tenderer from the evaluation process. Tenderers shall not offer or give any consideration of any kind to any employee or representative of the CSIR as an inducement or reward for doing, or refraining from

doing, any act in relation to the obtaining or execution of this or any other contract with the CSIR.

17 MEDIUM OF COMMUNICATION

All documentation submitted in response to this RFP must be in English, unless otherwise indicated under technical specification.

18 COST OF PROPOSAL

Tenderers are expected to fully acquaint themselves with the conditions, requirements and specifications of this RFP before submitting proposals. Each tenderer assumes all risks for resource commitment and expenses, direct or indirect, of proposal preparation and participation throughout the RFP process. The CSIR is not responsible directly or indirectly for any costs incurred by tenderers.

19 CORRECTNESS OF RESPONSES

19.1 The tenderer furthermore confirms satisfaction regarding the correctness and validity of their proposal and that all prices and rates quoted cover all the work/items specified in the RFP, and that prices and rates quoted cover all obligations under any resulting contract.

19.2 The tenderer accepts that any mistakes regarding prices and calculations will be at their own risk.

20 VERIFICATION OF DOCUMENTS

20.1 Tenderers should check the numbers of the pages to satisfy themselves that none are missing or duplicated. No liability will be accepted by the CSIR regarding anything arising from the fact that pages are missing or duplicated.

20.2 The CSIR requires that all bids be submitted electronically to CSIR at tender@csir.co.za.

20.3 Pricing schedule and B-BBEE credentials should be submitted with the proposal, but as a separate document and no such information should be available in the technical

proposal. It's standard practice to have only the price and pricing schedule submitted as a separate submission.

21 ENGAGEMENT OF CONSULTANTS

The service provider will only be remunerated at the rates not exceeding those set out in the relevant councils' pricing guideline excluding travel expenses. The CSIR travel policy will be applicable.

22 TRAVEL EXPENSES

22.1 All travel expenses for the CSIR's account, be it directly via the CSIR's travel agent or indirectly via re-imbursements, must be in line with the CSIR's travel policy. The following will apply:

22.1.1 Only economy class tickets will be used.

22.1.2 A maximum of R1400 per night for accommodation, dinner, breakfast and parking will be allowed.

22.1.3 No car rentals of more than a Group B will be accommodated.

23 ADDITIONAL TERMS AND CONDITIONS

23.1 A tenderer shall not assume that information and/or documents supplied to CSIR, at any time prior to this request, are still available to CSIR, and shall consequently not make any reference to such information document in its response to this request.

23.2 A copy of all relevant affiliations, memberships and/or accreditations that support your submission must be included in the tender.

23.3 In case of proposal from a joint venture, the following must be submitted together with the proposal:

- Joint venture Agreement including split of work signed by both parties;
- Each party's B-BBEE and Tax Clearance Certificate;
- Proof of ownership/shareholder certificates/copies of Identity document; and
- Company registration certificates.

- 23.4** An omission to disclose material information, a factual inaccuracy, and/ or a misrepresentation of fact may result in the disqualification of a tender, or cancellation of any subsequent contract.
- 23.5** The supplier shall under no circumstances offer, promise or make any gift, payment, loan, reward, inducement, benefit or other advantage, which may be construed as being made to solicit any favour, to any of the CSIR employees or its representatives. Such an act shall constitute a material breach of the Agreement and the CSIR shall be entitled to terminate the Agreement forthwith, without prejudice to any of its rights.
- 23.6** CSIR's decision on tenders received shall be final and binding.
- 23.7** Failure to comply with any of the terms and conditions as set out in this document will invalidate the Proposal.

24 CSIR RESERVES THE RIGHT TO

- 24.1** Extend the closing date;
- 24.2** Request documentary evidence regarding any tendering issue;
- 24.3** Award this RFP; and
- 24.4** Cancel or withdraw this RFP

25 DISCLAIMERS

This RFP is a request for proposals only and not an offer document; answers to it must not be construed as acceptance of an offer or imply the existence of a contract between the parties. By submission of their proposals, tenderers shall be deemed to have satisfied themselves with and to have accepted all Terms & Conditions of this RFP. The CSIR makes no representation, warranty, assurance, guarantee or endorsements to tenderers concerning the RFP, whether with regard to its accuracy, completeness or otherwise and the CSIR shall have no liability towards tenderers or any other party in connection therewith.

26 DECLARATION BY THE TENDERER

Only tenderers who completed the declaration below will be considered for evaluation.

RFP No: 3482.1/17/06/2022.

I hereby undertake to render services described in the attached tendering documents to CSIR in accordance with the requirements and task directives / proposal specifications stipulated in **RFP No. 3482.1/17/06/2022** at the price/s quoted. My offer/s remains binding upon me and open for acceptance by the CSIR during the validity period indicated and calculated from the closing date of the proposal.

I confirm that I am satisfied with regards to the correctness and validity of my proposal; that the price(s) and rate(s) quoted cover all the services specified in the proposal documents; that the price(s) and rate(s) cover all my obligations and I accept that any mistakes regarding price(s) and rate(s) and calculations will be at my own risk.

I accept full responsibility for the proper execution and fulfilment of all obligations and conditions devolving on me under this proposal as the principal liable for the due fulfilment of this proposal.

I declare that I have no participation in any collusive practices with any tenderer or any other person regarding this or any other proposal.

I accept that the CSIR may take appropriate actions, deemed necessary, should there be a conflict of interest or if this declaration proves to be false.

I confirm that I am duly authorised to sign this proposal.

NAME (PRINT)

CAPACITY

SIGNATURE

NAME OF FIRM

DATE

WITNESSES	
1
2
DATE:	

27 CHECKLIST FOR PROPOSAL COMPLIANCE

PART 1	TECHNICAL PROPOSAL
	Technical proposal (Methodology)
	Company profile
	Key personnel summary
	Key personnel CVs
PART 2	PRICING PROPOSAL
	Pricing schedule (Annexure 3)
	Itemised running costs per item if relevant
	Key personnel summary Table 2
	B-BBEE certification
	CIDB grading Certificate of 3CE or higher
	CSIR Declaration form
SBD 4 Declaration form	

Compulsory Briefing Session	<p>Date: Friday, 10 June 2022 Time: 11:00 -12:00 Venue: virtual Link: https://teams.microsoft.com/l/meetup-join/19%3ameeting_ZWViMiq3ODItMTJhMC00YmY0LWFmNjMtNDFjZGY3NGUwNGNm%40thread.v2/0?context=%7b%22Tid%22%3a%22fd3c5d5-ddb2-4ed3-9803-f89675928df4%22%2c%22Oid%22%3a%2204026bf5-27a2-4947-8703-ac28b7b7b2b3%22%7d</p>
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28 ANNEXURE “A” SCORE SHEET TO EVALUATE FUNCTIONALITY

Service providers proposals will be evaluated and allocated scores as follows:

Competence Criterion	Key Aspects of Criterion	Points Allocation		Weight
Methodology	- Work plan - Stormwater management concept plan and narrative that includes SUDS and landscaping	No submission	0	(20%)
		Concept plan and work plan lacking detail or not meeting project timeline and objectives,	5	

		Well laid out concept plan and detailed, realistic work plan that meets project timeline and objectives.	10	
Relevant company experience	Years minimum experience in stormwater design, landscaping construction, and construction project management	No submission	0	(25%)
		Three to five years	5	
		More than five years	10	
Relevant key personnel professional registration	Registration with relevant professional association (company/individual)	No evidence of registration	0	(15%)
		Evidence of registration	10	
Local presence	Has a fully operational practice in the area	No local presence	0	(20%)
		Has a fully operational practice in the Eastern Cape	5	
		Has a fully operational practice within 300 radius around Ekuphumeleni (Kenton on Sea)	10	
Management skills	List of past construction project management (indicating cost and duration and contact details)	Less than three projects, about R2,5m worth in total	5	(20%)
		Four or more projects, more than R3,5m worth in total	10	
TOTAL				100

Proposals with functionality / technical points of less than the pre-determined minimum overall percentage of **70%** and less than **50%** on any of the individual criteria will be eliminated from further evaluation

29 ANNEXURE A1: CLIENT BRIEF

Provide a spatial design plan for stormwater (including SUDS) and landscaping.

Use information in Annexure A2 in addition to planned survey and Geotech to inform stormwater design.

29.1 Stormwater design

Stormwater design for EcoSun Green Village Site (ERF 4026) (33°40'39.2"S 26°40'08.0"E) and surrounding areas affecting the site (See Appendix A2).

- The stormwater design on the EcoSun Green village site must apply sustainable principles (SUDS);
- The Sustainable drainage design must comply with the South African Guidelines for Sustainable drainage systems (SUDS);
- Conventional stormwater principles must be SANS compliant and must only be applied where sustainable principles (SUDS) are not possible;
- Industry specific standards and guidelines must be used for guidance, i.e. The Red Book, SUDS standards.

29.2 Services required

Design and construction services are required.

Only ECSA compliant professional services will be accepted for the inception to close out stages 1- 6 as tabled below.

Inception to close out (Stage 1 to 6)		
Stages	Services*	Proposed Scope
1	Inception Stage	Inception and scoping Report
2	Preliminary Design Scope	Preliminary Design Report
3	Design Stage**	Detailed Design Report
4	Procurement stage	Procurement plan (including programme, payment schedule and Bill of quantities)
5	Construction stage	Construction
6	Close out	Close out

*The services are to include construction, landscaping and the supply of movable furniture and assets.

**This stage of work must include detailed design that would normally be required for construction purposes.

29.3 Disbursement

Disbursements cost must be included in proposal i.e.:

- Floodline analysis
- Survey
- Geotech

- Mileage/Travelling

29.4 Construction

Construction cost must be included in the proposal.

29.5 Landscaping

Landscape design must accommodate for the following:

1. Type of building

- Security house – area 20m²
- Storage building - Area 50m²

2. Space usage

- Outdoor gym
- Recreational Park
- Outdoor market - shelters (20m² x 5)

3. Internet connection

Plan for the installation of internet fibre

4. Perimeter fencing

- Fencing for the whole village with gates (entrance & exit)

5. Plants

- Ground cover that is easily maintained and sustainable
- Plants and trees that are drought resistant
- Plants responsive to local climate

6. Seating

- External secure & robust / weather resistant seating

7. Refuse area

- Domestic recycle 240L waste bins (x4)
- Lockable

29.6 Movable furniture and assets

General purposes furniture

- 200 foldable chairs

- 15 Steel Foldable Tables

Furniture for manager's office

- Chair
- Desk
- 3 office chairs
- Cupboard
- Plug points
- Landline connection
- Computer laptops x3 (HP brand)
- Projector
- Indoor recycling bin set (50L)

Security measures for the Multipurpose centre

Closure of solar panels with Security Fine Stainless Steel Mesh

<u>Quantity</u>	<u>Items</u>
2	1000 Wide x 1960 Long x 100 High x15 Panels joined
1	4000 Wide x 2000 Long x 100 High
1	6100 Wide x 2250 Long x 180 High

Eascape Trellis Gates for Doors

<u>Quantity</u>	<u>Items</u>
4	Centre Opening A 1750 / B 1750 x 2080
1	Centre Opening A 880 / B 880 x 2115
1	Centre Opening A 1032 / B 1033 x 2105

Eascape Trellis Bars for Windows, Fixed Units

<u>Quantity</u>	<u>Items</u>
2	1180 x 1770 with 1 row Flites (sash is 830 high)
4	860 x 1140 with 1 row Flites (sash is 540 high)
10	560 x 545 with 1 row Flites (sash is 560 high)

30 ANNEXURE A2: Stormwater

APPENDIX: KENTON ON SEA: STORMWATER MANAGEMENT STUDY REPORT

PROJECT AREA

The project study area, MPC site (GPS Coord. S33.676560, E26.670585°) is situated in Kenton-on-Sea. Kenton-on-Sea, more commonly known as Kenton, is a small coastal town on the Sunshine Coast, in the Eastern Cape of South Africa. It is situated between the Bushmans and the Kariega Rivers, and lies approximately halfway between the industrial centres of East London (180 kilometres) and Port Elizabeth (130 kilometres). Kenton is part of the Ndlambe Local Municipality in the Sarah Baartman District Municipality of the Eastern Cape.

The figure below shows the project site:



Figure 1 Kenton-on Sea locality plan.

1.3 REPORTS AND OTHER RELATIVE STUDIES/ DOCUMENTS

There were no other previous reports related to Stormwater management for Kenton that were available at the time of preparing this Desktop Study Report.

2 POPULATION SIZE

According to SA Census 2011 the population size for Kenton on Sea is 5154 over an area of 5.18 km² with a 1,853 Households.

3 EXISTING ROAD NETWORK AND STORMWATER DRAINAGE

No maps and drawings for the existing stormwater network were available at the time of doing this report. Cadastral Layouts and 5m spaced contours were accessed from Planet GIS and used for stormwater studies.

4 TOPOGRAPHY AND TERRAIN

Using the Planet GIS Contours and Cadastral Layouts, the topography of Kenton was determined. The Topography of the site Kenton is generally sloping from North West to the South East at approximately 1 in 80 slope with elevations ranging from approximately 54.000 m to 29.000m above sea level. Refer to ANNEXURE A for the Topographical Survey Plan.

5 DESIGN STANDARDS AND GUIDELINES

The following design standards were used as a guide:

- Guidelines for Human Settlement Planning and Design compiled under the patronage of the Department of Housing by CSIR Building and Construction Technology 2003 (Red Book),
- SANRAL: Drainage Manual, 6th Edition.

6 METHOD OF RUNOFF CALCULATION

The rational method was used in the hydrological assessment. This method is particularly suitable for the calculation of peak flows and runoff volumes for a catchment area smaller than 1500 Hacters. The rational method is based on physical considerations of run-off generated by rainfall and takes into account specific catchment parameters such as size of catchments, topography and permeability of soil and vegetation cover of catchments. These physical characteristics are combined with rainfall depth-duration-frequencies to yield estimates of peak runoff. The Rational Formula assumes uniform rainfall intensity over the entire catchment area, which is reasonable assumption for smaller catchment areas. However, to take into account the variability in rainfall intensity over bigger catchments as well as the shape of the catchment, an area reduction factor is normally applied. The runoff coefficient is estimated on the basis of three factors – topography of catchment, permeability of soils and vegetation cover. Catchment's area characteristics (size of catchment, length/slope of main stream and land slope) are determined on the basis of existing topographical maps. This method is traditionally used to size storm sewers, channels and other stormwater structures which handle runoff from drainage areas.

The Rational Formula is expressed as

$$Q = CIA / 3.6$$

Where:

Q = peak rate of runoff in cubic meters per second (m³/s)

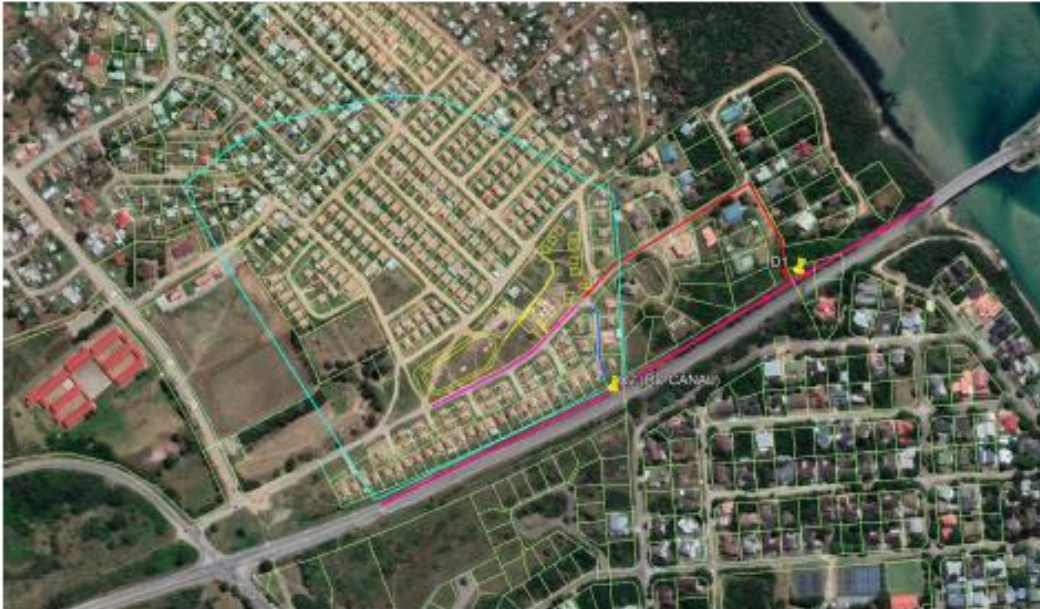
C = runoff coefficient, a dimensionless unit

I = average intensity of rainfall in millimeters per hour (mm/hr)

A = the watershed area in square Kilometers (Km²)

7 Rainfall Catchment Area

One catchment area was identified and is shown in Map below:



Refer to DWG ATTACHED FOR A DETAILED LAYOUT WITH LEGEND

8 Runoff Calculation

Factors that influence the runoff, such as land use, precipitation duration, soil type, prevailing moisture content, as well as size and character of the catchment area are taken into account. Two scenarios are usually considered during the hydrological modelling which includes pre- and post-development land use of the area. Because the area of concern is already developed only post-development was considered during the hydrological modelling. Post-development took the change in land use as well as the increase in impervious areas into account. Parameters used for the calculations using the rational formula are shown below:

Mean Annual Rainfall (mm)	657
Catchment area (Hacters)	13.5
Vertical difference in height of catchment (m)	9.49
Flow length of longest water course (km)	0.42
Average slope of catchment (%)	1.25%
Catchment runs off co-efficient post-development	0.50

9 Runoff Calculation Results

The Runoff Calculation result in the following results below:

			(Q=C x I x A)					
			1:5	1:5	1:25	1:25	1:100	1:100
	A	T _c	Q (minor)	Q (minor)	Q (major)	Q (major)	Q (major)	Q (major)
NR.	(ha)	(minute)	(m ³ /s)	(l/s)	(m ³ /s)	(l/s)	(m ³ /s)	(l/s)
A	13.5	32.5	1.52	1518	2.03	2034	2.48	2479

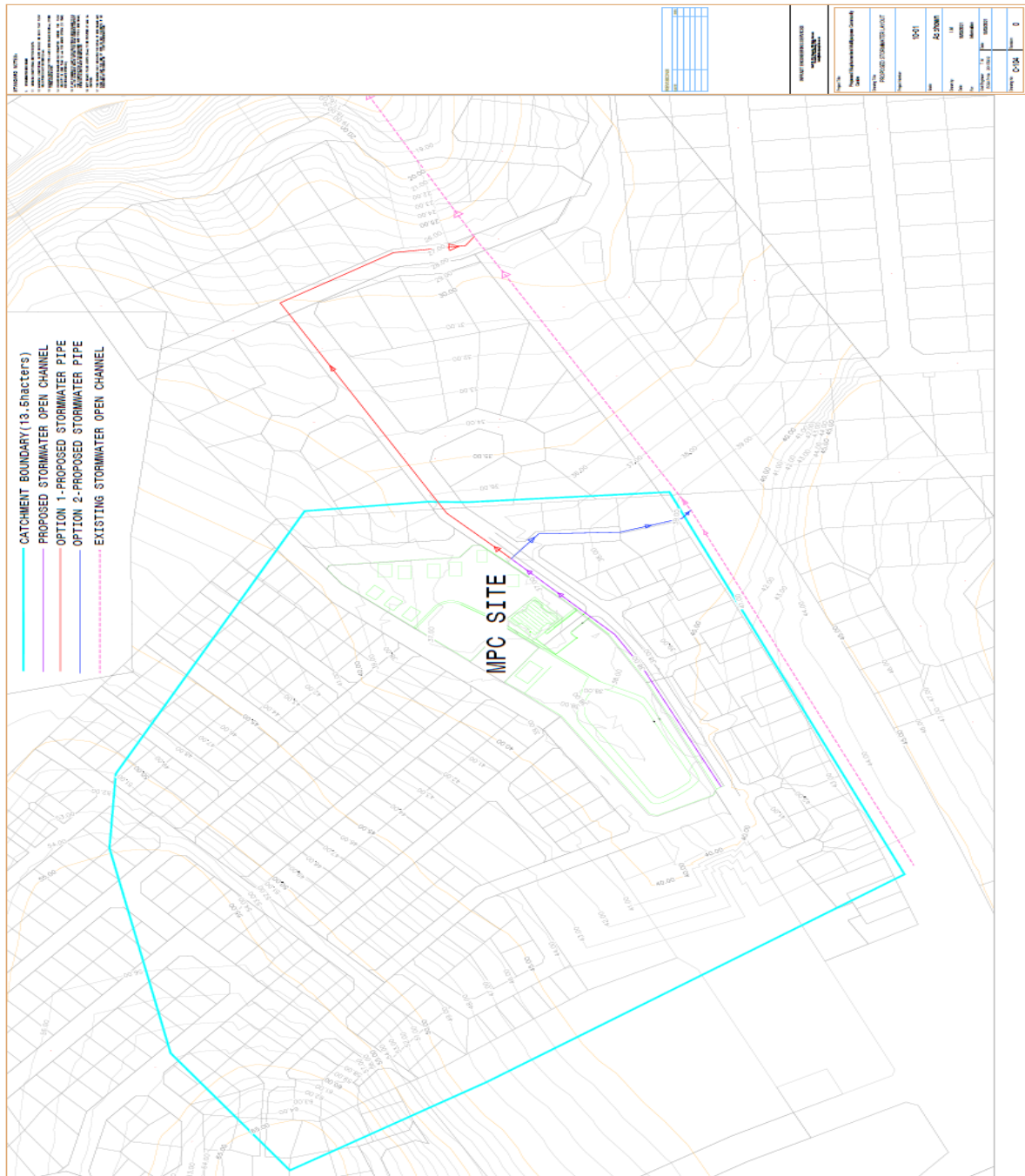
10 Pipe Sizing Calculations and Results

Drawing attached shows the following:

- Proposed Stormwater Open Channel discharging into
either
- Option 1- Proposed Stormwater Pipe discharging into existing open channel.
Or
- Option 2- Proposed Stormwater Pipe discharging into existing open channel.

Option 1 is the more practical route compared to option 2. Choosing Option 1 the sizing of the pipe required with a slope of 1 in 50 is as shown below;

Return Period	Q (m ³ /s)	n	Pipe Slope	Dia
1:25	2.03	0.012	50	825
1:100	2.48	0.012	50	900



END OF RFP