

**CIVIL ENGINEERS REPORT FOR REZONING OF PORTION
66 AND 67 OF THE FARM BRAKKLOOF 443
DIVISION KNYSNA
BITOU MUNICIPALITY**

April 2023

Prepared by Tuiniqua (Pty)Ltd



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INDEX

1.	Terms of Reference	3
2.	Information Provided	3
3.	Geology and Substrate	4
4	Existing Services	4
5	Technical design parameters and standards	4
6	Water supply and storage	5
7	Sewer	7
8	Roads and storm water	7
9.	Waste /refuse	8
10	Foundations	11
11	Recommendation	11

LIST OF APPENDICES

APPENDIX	Detail	.
A	Locality map	
B	Site Development Plan	
C	GLS Report	
D	Proposed road layout and section of external road	
E	Proposed Stormwater and sewer pumpstation details	
F	Proposed Sewer and Stormwater layout	
G	Proposed water Reticulation	
H	Typical Shoring detail.	
I	Bitou Municipality confirmation of services	
J	Electrical Engineers Report	

1. TERMS OF REFERENCE

Tuiniqua (Pty)Ltd was appointed by Kyle Powter to provide a services report for rezoning in support of the proposed development of the site to allow for:

9 Residential Zone erven ranging from 1347 m² to 1987 m²
as per site development plan dated 05-04-23.

The report will make recommendations regarding the following:

- a) Bulk Water, Sewerage and Stormwater services to Portion 66 and 67 of Farm 443, Brakkloof, Plettenberg Bay in the Bitou Municipal Area.
- b) Calculations and payment of augmentation and related fees in accordance with the policy of the Municipality. -Geology and substrate of the site.
- c) - Foundations to be used for construction.
- d) -Stormwater drainage.
- e) -Erosion prevention during construction

This report must be seen as a guideline on proposed services, as site environmental requirements and conditions will determine final design and positioning of services.

The electrical supply report is included.

2. INFORMATION PROVIDED

The following development information was obtained:

-	Site development plan	-	05-04-23
-	GLS Report bulk services	-	10/08/21

Site Information:

The proposed development site is situated 3.9 km south of the Plettenberg Bay CBD and lies between the Whale Rock Ridge development and the ocean.

The site has the Duin en See development on the northern boundary and the serviced site Portion 57/443 to the South.

There is a 20 m access and services servitude on the western side of the development as well as a 10 m road reserve.

The proposed development site is approximately 25 695 m² in size and 9 new residential zoned erven are planned.

The site is typical of a Southern Cape dune area with uneven slopes.

The site geology consists of wind-blown free draining dune sands to unknown depths.

It is crucial that an Environment Construction Management Plan be drawn up and adhered to during construction phases.

3. GEOLOGY AND SUBSTRATE OF THE SITE.

The site is typical of the local coastal dune area with uneven slopes.

The site geology consists of wind-blown free draining dune sands to unknown depths but from previous excavations in the area the dune sand extends at least 3.5 m deep.

Typical Density tests by DCP have shown that the in situ soil bearing capacity is between 60 and 120 kPa.

The natural angle of repose is at least approximately 40 degrees but excavated faces in the neighboring property remained marginally stable for extended periods at over 50 degrees. This was especially evident where there were fine roots present in the excavated face. Shoring was not required in cut of up to 2m deep.

Tuiniqua was involved in the neighboring property in three houses where excavations were done. (Duin en See development.)

Standing water was not noted on the specific site or on the neighboring site even after extended downpours.

4. EXISTING SERVICES:

Robbeberg Road leading directly to the site is within a 10 m road reserve and consists of a tarred section with the final section to the site being a gravel road. There is a 110 mm municipal watermain in the services servitude on the western border of the site leading to a 200 mm watermain 200 m away on the corner of Aquarius close and Griz Nez Avenue. Sewer: There is a 110 mm and 150 mm unused Municipal sewer rising main also in the servitude. The rising main connects to a stilling chamber in Griz Nez Avenue on erf 13004. There is a 150 mm Municipal gravity main from the stilling chamber to Municipal Pumpstation 12.

GLS have confirmed that Bulk water services and Bulk sewerage services are available for this development. (See attached GLS report)

Bitou Municipality have confirmed that services are available for the proposed development.

5. TECHNICAL DESIGN PARAMETERS AND STANDARDS.

This report and services designs will be based on the following:

5.1 Guidelines for human settlement- planning and design- 2019 Red Book.

5.2 Council's policy on new developments- storage and transportation.

5.3 Augmentation and transport levies according to Council minute no 495-revised – July 2021.

6. WATER SUPPLY AND STORAGE

In order to calculate the additional water demand created by the development, consumption figures as per GLS consulting engineers are used. The figures of GLS – Bitou water masterplan have been used in place of the Red book

Water demand tables (GLS Figures):

Table 1	Recommended Average Demand			
Description	Size	No/units	AADD * m ³ /day	Total
Single residential	Erf 601 to 1400m ²	9	0,6	5.4
			Total Average Annual Daily Demand kl/d	5.4 kL/d

6.1 Fire risk category:

The site is classified as low risk GROUP 1: fire flow= 15 l/sec 1 fire hydrant open.

6.2 Elements of total water supply system:

6.2.1 Source (Keurbooms River - Uplands) to water purification works

The advertised augmentation fees make provision for transportation from the source up to the Water purification works in Flying Cloud Avenue.

Payment will be as per advertised fees at the time of payment

6.2.2 Storage requirements-

The site can be served from the Quarry reservoir.

Minimum storage capacity = 48 hours of Annual Average Daily Demand and Fire flow requirement.

For normal supply: = 18 m³

Fire:

Fire flow requirements = 15 l/sec for 1 hour (low)

Storage for fire flow = 54 m³

The fire flow is however shared with all erven served by the reservoir and a pro-rata contribution is proposed.

The home owner regulations must prescribe that each dwelling have a minimum of 5000 liters storage for roof runoff collection. To reduce water use, reduce stormwater runoff, reduce peak runoff and provide water in emergencies.

6.2.3 Pro rata contributions to existing infrastructure

The existing Municipal system has spare capacity and no upgrades are required. The primary point of supply is the water purification works in Flying Cloud Avenue. The secondary point of supply for the development is proposed as the 110 mm watermain on the western boundary of the property.

The developer needs to contribute on a pro-rata basis to existing infrastructure from the development to the water purification works in Flying Cloud Avenue. (Estimated at R45 000.00 per site)

Availability and costs to be negotiated with the Municipality and owners of the spare capacity in the pipes and reservoir(s).

Note: Final figures to be provided by the Municipality on confirmation by GLS and signing of the services agreement.

6.3 **Internal reticulation.**

The internal water reticulation is to be designed according to the minimum Municipal requirements and “Red Book” and installed according to SANS1200. Materials to comply with ISO standards.

The development to be supplied with a municipal approved bulk meter off the 110mm diameter mains at the boundary of the development.

Minimum internal reticulation pipe diameter to be 50 mm diameter with Hydrants of a 75 mm min.

Unit connections crossing roads to be 40 mm i.d. with 2 x 20 mm i.d. HDPE pipes at the erf for two erven and on the near side of the road 40mm i.d. branches to 2 x 20mm HDPE connections.

Pipe cover to be 1000mm minimum under roads and 600 mm under sidewalks and open spaces.

6.4 **Water supply – Environmental considerations.**

6.4.1 Internal network.

The internal water reticulation is to follow the proposed road network where possible to reduce the impact to the environment. Consideration will be given to place pipeline routes to flattest grades and in previously disturbed areas.

Other services can be installed to share trenches and services can be installed under roads and pathways.

6.4.2 Trenching and pipeline placement.

Trenching to be done in accordance with SANS 1200. In addition to this all topsoil along the route to be removed to 150 mm deep, maintained and replaced as the final compacted layer in the road reserves. Regular compaction tests to be done to ensure adequate soil compaction in pipeline trenches.

In trenches of slopes over 25% grade - bio textiles and reseeded to be used to rehabilitate and protect the compacted topsoil.

Pipelines to be placed in consultation with and to recommendations of the environmentalist and in accordance with the Environmental Management Plan.

7. SEWERAGE

The development topography will require two internal pumpstations. A 110 mm rising sewer main needs to be constructed from the pumpstation to the municipal gravity network in Griz Nez Avenue.

7.1 Elements of total (bulk sewer) system:

7.1.1 Site to existing sewer purification works.

The site is 200 m from the municipal sewer network that will convey the sewer through a series of pumpstations through the Piesang Valley sewer scheme to the Ganze Vallei sewer purification works.

Due to lay of land the site requires two internal sewer pumpstations.

The existing Municipal system has spare capacity, and no upgrades are required.

The developer will have to pay pro rata capital levies for the existing sewer network.

Based on GLS figures the estimated PDDWF(Peak Day Dry Weather Flow) for the development is estimated at 4.05 kl/day

7.1.2. Sewer Purification works

The sewage works at Old Nick will be the primary delivery point for sewage.

Augmentation payment is required by the Municipality towards the existing sewer purification works.

The Municipality has indicated that the existing works has capacity for the proposed rezoning.

7.2 Internal sewage reticulation.

Sewage reticulation will be designed according to Municipal standards and “Red Book” standards and installed in accordance with SANS 1200.

Each unit to be provided with an individual house connection. The internal network to consist of 110 and 160mm diameter Class 34 uPVC pipes with manholes at not more than 80 meters and at flow direction changes. Rodding eyes to be installed at all the top of lines.

Sewer lines are to be placed at a minimum of 1m below final road surface level and 650mm deep in erven and open spaces (minimum).

8. ROADS and STORMWATER

8.1 Access.

The proposed development will gain access from Robberg Road (Minor Road 4(a)K), Whale Rock drive and Robbeberg Road.

Robbeberg road has a 10 m road servitude with the road partially surfaced and the remainder of the road to the site has a gravel surface.
Inside the site there is a section of paved road.

The site will generate very little traffic and the impact on the existing road network will be minor and not affect the current level of service.

The Robbeberg Road terminates at the site and is subject to very light vehicular traffic.
The gravel section road requires upgrading to include alignment, stormwater and a 4.5m wide tarred surface up to the proposed entrance to the site.

Road types and design guidelines.

Layer works, surfacing and geometry of the access road and parking to be in accordance with the “Red Book”.

8.2 Stormwater management:

The development has a small catchment area. Only approximately 10 125 m² of the site will contribute to stormwater runoff towards the main access road- Robbeberg.

The rest of the site drains to a level central area and towards the large open space towards the east.

The development has permeable dune sand soil conditions and noticeable runoff is not envisaged. There are also large open areas where runoff can be dissipated.

Most of the stormwater runoff will be accommodated on site.

There is a further 30 m of services and road servitude in between the natural growth along the vlei and the lower ends of the western sloping sites.

As stated above, the sands are very permeable and undevelopable areas have been provided for, this allows for free drainage of general runoff from the houses. Each house is required by local by law to provide at least one 5000 liter rainwater collection tank. This will serve as a retention vessel in downpours. Due to the large open space, runoff from the roofs and hardened surfaces can easily be dealt with on each plot without erosion. Driveways can be constructed from grass blocks to allow for effective retarding of surface flow and facilitate percolation.

The common roadways will have a kerb and channel side drain where mostly water from the road is collected, transported and transferred to a trapezoidal grass block side drain and discharged into an effective 1,2m deep stilling gabion chamber that will also serve as a silt trap. The retention chamber will facilitate percolation and will have an overflow outlet with the headwall outlet to have a gabion mattress and stone pitching to further dissipate flow.

See retention chamber detail attached.

9. WASTE/ REFUSE

9.1 Waste removal

It is proposed that the municipality extend their bulk service to the development and that an approved collection and storage area be constructed at the entrance to the development. In this regard the municipality require an acceptable access to the site.

Waste will be transported to the Municipal waste transfer and compaction facility at Kwanokuthula, at this facility waste is separated, compacted and transported to approved landfill sites.

9.2 Construction waste

9.2.1 Management and design in construction waste:

Local practices in the management and disposal of construction and demolition wastes depend on the availability of disposal and recycling sites

The first step is to evaluate what type of waste will be generated.

The process can only work if the waste is efficiently separated and stored for collection.

Effective waste management is the responsibility of all parties involved with the project's development. Each of the principal project participants—the Owner, their Architectural and Engineering (A/E) services (or Construction Management consultant), the Contractor, and Subcontractors—will engage in waste management to some degree throughout the project. Initially, the Owner and their A/E must establish waste reduction goals and define what levels of diversion are achievable and reasonable under the project's conditions

The Contractor is responsible for the means, methods, techniques, sequences, and procedures of construction, which include waste disposal methods. However, the A/E's design team can contribute to waste reduction in several ways. These include:

- Observe Value Engineering principals.
- Be efficient in area and volume.
- Observe standard material and product dimensions
- Where possible, select construction systems that do not require temporary support, shoring, construction aids, or other materials that will be disposed of as debris during the project.
- Where possible, select materials that do not rely on adhesives, which require containers and create residue and packaging waste. Furthermore, adhesives inhibit salvage and recycling at the end of the component's or building's life.
- Where possible, reduce requirements for applied finishes, laminates, coatings, adhesives, and the associated scrap, packaging, and waste
- Where possible, avoid materials which are sensitive to damage, contamination, environmental exposure, or spoilage on-site, which increase the potential for jobsite waste.

The Owner and their consultant must determine how their waste management requirements will be represented in the contract documents and incorporated into the project. Several provisions are relevant to the project's overall waste reduction performance.

There are essentially three ways to represent waste reduction requirements in the contract documents.

- o Describe the waste reduction goals
- o Specify definitive minimum waste and debris diversion criteria
- o Develop incentives to reward the Contractor.

Require the Contractor to submit a C&D Waste Management Plan

9.2.2 Construction site waste reduction:

There are a variety of ways a Contractor can divert construction waste or demolition debris at the jobsite. The following general practices are common:

1. Up to 10-12% of a project's construction waste stream can be cardboard alone
 - Purchase materials in bulk where possible. Avoid individual packaging for volume purchases.
 - Use returnable containers and packing materials.
 - Reuse non-returnable containers on the jobsite to the maximum extent possible. Develop one-hundred-and-one-uses for plastic barrels, buckets, and tubs.
 - Give away non-returnable containers. Contact local and community organizations (schools, youth groups, community service groups).
2. Use scrap in lieu of cutting full new materials
3. For materials that are heated, mixed, exposed to environmental conditions, or otherwise subject to spoilage, limit preparation of these materials to quantities which can be installed within their expiration times.
4. Recycle damaged components, products, and materials, or disassemble them into their constituent materials for recycling.

9.2.3 Estimated waste volumes:

During the construction phase waste generated will be limited to organic waste and soil-mostly topsoil of between 0- 200 mm deep.

The road reserves and pipeline routes will be cleared and grubbed and a topsoil organic spoil in the order of 250m³ is expected. It is proposed that this material be used to rehabilitate the site on construction completion with the excess spoiled off site. This type of material can be used to cover land fill as the organic material will assist in greening the landfill.

The topsoil removed from road cut can be used to fill the redundant dam and to cover pipeline scars to promote greening.

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Other types of waste during the civils phase will be limited and dealt with by recycling.

During house construction waste will include all house construction materials and will be dealt with as described in 7.2.2. It is estimated that approximately 30 m³ of building waste per house will be generated during construction.

9.3 Household waste:

The average for the Western Cape is 2 kg /person waste per day.
This would relate to approximately 5 400 kg /month for the development.

In order to mitigate this, a waste management plan should be drawn up where recycling is not only encouraged but enforced.

The development needs to provide several accessible areas for recycling and to include organic waste and processing there off.

Bitou Municipality confirmed that they have the capacity to handle the waste generated by the development.

10. FOUNDATIONS TO BE USED FOR CONSTRUCTION.

Various options exist to found the house structures but piling, rafts and re-compaction with reinforced strip footings are proposed. The type of foundations will depend on site density tests, slopes and architecture of the house.

The sites PO 1 to 4 are on top of the respective dunes and care is required to minimize damage to the surrounding environment and here mini or bored piles could be employed after a platform has been cut. It has been our experience that the founding conditions improve with depth in these dune sand areas.

On the remainder of the sites- front plots where the existing ground level is more even rafts and re-compaction operations can be done and side slopes can be protected by shoring. Standard reinforced footings can be used.

See shoring detail attached.

11. RECOMMENDATION

The existing services networks have adequate capacity, and the site is placed to be readily serviced.

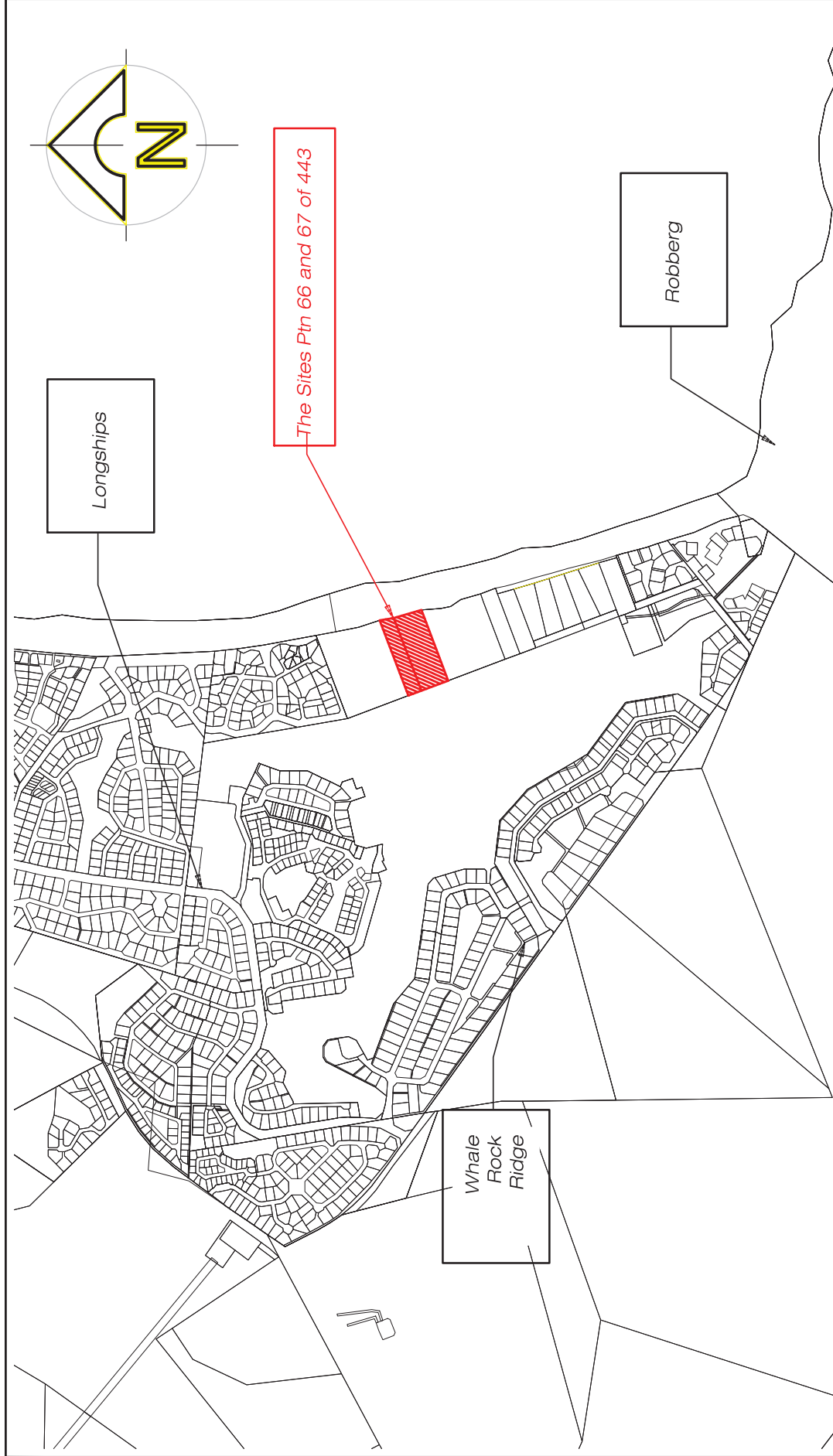
The proposed development is therefore supported from a servicing point of view.

Francois Scholtz Pr.Eng.

970144

Tuiniqua (Pty)Ltd Director.

APPENDIX A to J



 TUNIQUA Tuniqua (Pty) Ltd Reg. 2001/011886/07 Ptn (+27) 44 533 6369 Email engineer@tuniqua.co.za Fax (+27) 44 533 2858 Web www.tuniqua.co.za	Project Ptn 66 and 67 of Farm 443 Plettenberg Bay		Layout Description Locality Map		Scale 1 : 15000	Annexure A1
					Prepared By SVN	Date 01 - 10 - 2021

REVISIONS

REV	DATE	
A	2022-09-30	Issue for information
B	2023-03-28	REVISED SQA
1	2023-09-01	Issue for submission
2	2023-04-05	CAD revised



Property Schedule		Area
	Name	
P09		1925.39 m ²
P08		1318.64 m ²
P07		1332.61 m ²
P06		1346.57 m ²
P05		1346.90 m ²
P03		1956.72 m ²
P01		1956.72 m ²
P04		1956.72 m ²
P02		1956.72 m ²

Property Schedule Copy 1	
Name	Area
123-67 / 443	36558.82 m²
123-66	10009.97 m²
2	25568.82 m²

Application Description:
Consolidation of 2 even 66/443 and 67/443, subdivided into 9 even with common area remainder

OBJET:
ARCHITECTS | INTERIORS | DESIGN

114 breese street | 8001 - 021 461 3759
info@objek.co.za

- WITH -

Zimmer + Goss
INTERIOR ARCHITECTURE | DESIGN
LEVEL 3, 73 LOOP STREET, CAPE TOWN - 021 461 3759

project name

ERF 66 & 67 KNYSNA

project description
New development - 9 plots

Plettenberg Bay
property address

client name

The Keep

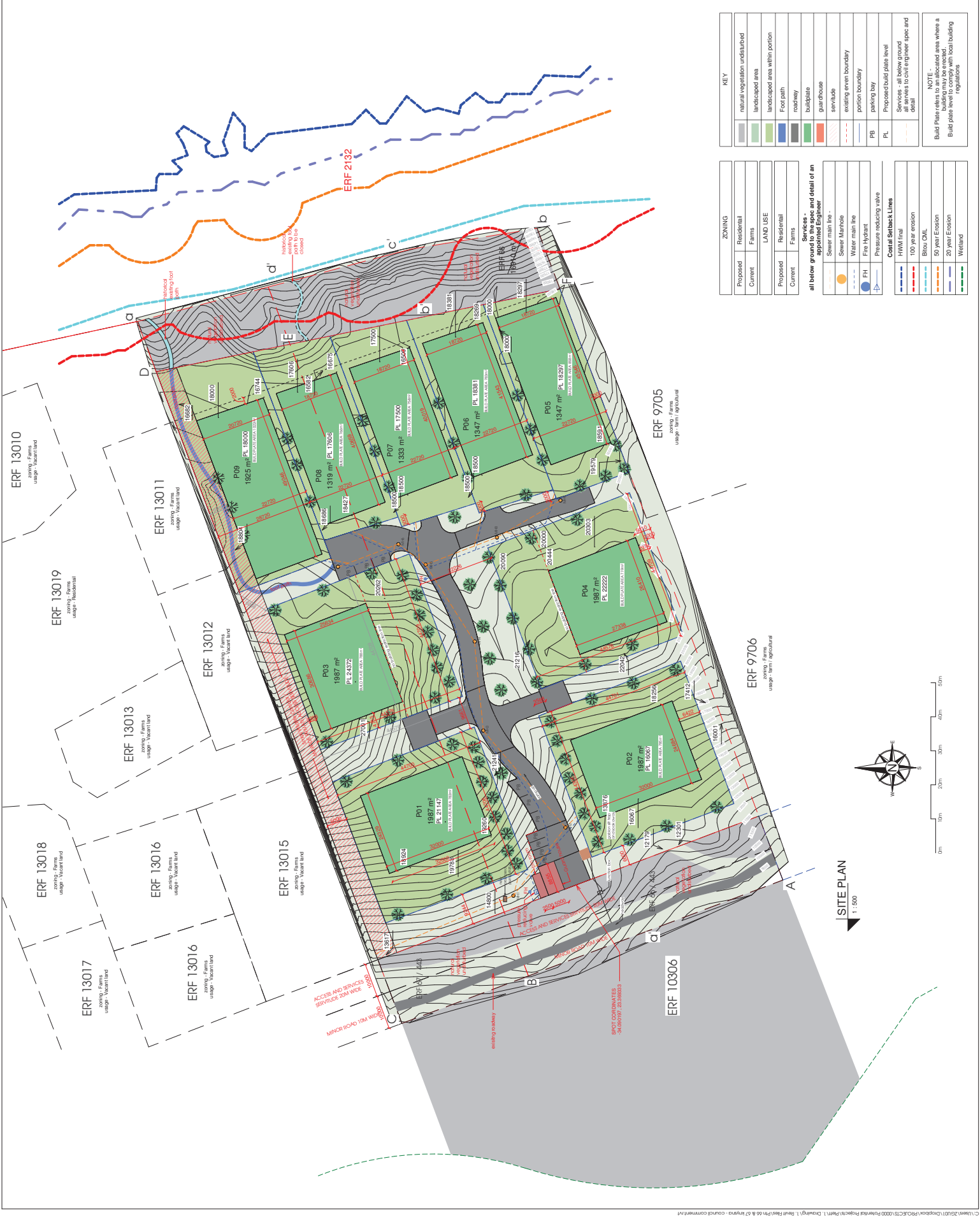
Site Development Plan - SDP

project status: **For Council Submission**

project number	sheet number	current rev
2020-01	10_03	2

drawing scale As indicated	drawn by Author	checked by Checker
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05/04/2023 08:10:54



10 August 2021

The Director: Services and Infrastructure
Bitou Municipality
Private Bag X1002
Plettenberg Bay
6600

Attention: Ms Franclyn Lucy Samuel

Dear Madam,

PROPOSED RESIDENTIAL DEVELOPMENT ON PORTIONS 66 & 67 OF FARM 443, PLETTENBERG BAY: CAPACITY ANALYSIS OF THE BULK WATER & SEWER SERVICES

The request by Mr Francois Scholtz of Tuiniqua Consulting Engineers regarding comments on the bulk water supply and sewer discharge of the proposed development (residential development on portions 66 & 67 of Farm 443, Plettenberg Bay), refers.

This document should inter alia be read in conjunction with the Water Master Plan (performed for the Bitou Municipality) dated June 2020 and the Sewer Master Plan dated June 2020.

The proposed development on portions 66 & 67 of Farm 443 was not taken into consideration for the master plans for the water and sewer networks.

1. WATER DISTRIBUTION SYSTEM

1.1 Distribution zone

The master plan indicated that the proposed development should be accommodated in the existing Whale Rock reservoir water distribution zone. The proposed connection is to the existing 110 mm Ø water reticulation pipe on the south western boundary of the proposed development in Robbeberg Road), as shown on Figure 1 attached.

The development is situated inside the water priority area.

1.2 Water demand

No allowance was made for development on portions 66 & 67 of Farm 443 in the original water analysis for the master plan.

For this re-analysis of the water master plan, the total annual average daily demand (AADD) for the proposed development was calculated as follows:

- 15 Single residential units @ 0,6 kL/d/unit = 9,0 kL/d
- Fire flow criteria (Low risk) = 15 L/s @ 10 m

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Directors: AG Hingeston, JJ Streicher, HA Baartman

1.3 *Present situation*

1.3.1 Reticulation network

The existing water reticulation network of the Whale Rock reservoir zone has sufficient capacity to accommodate the proposed development.

1.3.2 *Reservoir capacity*

The criteria for total reservoir volume used in the Bitou Water Master Plan is 48 hours of the AADD (of the reservoir supply zone) for gravity and pumped supply to the reservoir.

According to the water master plan the AADD of the Whale Rock reservoir water distribution zone is currently approximately 750 kL/d. The storage capacity of the existing Whale Rock reservoir is 2 000 kL, which results in a current storage capacity of 64 hours of the AADD.

There is therefore sufficient capacity in the existing Whale Rock reservoir to accommodate the proposed development.

1.3.3 *Bulk supply*

The existing bulk water system supplying water from the Plettenberg Bay Water Treatment Plant to the Whale Rock reservoir has sufficient capacity to accommodate the proposed development.

2. SEWER NETWORK

2.1 *Drainage area*

The master plan indicated that the proposed development should be accommodated within the existing Plettenberg Bay pumping station (PS) 12 drainage area. The recommended sewer connection to the existing system is at the existing 150 mm Ø outfall sewer in Gris Nez Avenue, as shown in Figure 2 attached.

A new private pumping station and rising main are proposed for the development in order to pump sewage from portions 66 & 67 of Farm 443 to the existing Plettenberg Bay sewer system. It is recommended that the private PS only pumps sewage into the municipal sewage network during off-peak periods (i.e. 1 am to 4 am).

Sewage from the Plettenberg Bay PS 12 drainage area gravitates to the Plettenberg Bay PS12, from where sewage is pumped directly to the Whale Rock PS 3 (sewage was previously pumped from the Plettenberg Bay PS12 to the Plettenberg Bay PS 11 drainage area).

From the Whale Rock PS 3 sewage is pumped to the Piesang Valley PS 5 drainage area via the Whale Rock 4 and 5 pumping stations. From the Piesang Valley PS 5 drainage area sewage gravitates to the Piesang Valley PS 5, which is one of 4 main pumping stations pumping sewage from the drainage areas south of the Piesang Valley River towards the Ganse Valley Wastewater Treatment Plant (WWTP), as shown on Figures 2 & 3 attached.

The development is inside the sewer priority area.

2.2 Sewer flow

No allowance was made for development on portions 66 & 67 of Farm 443 in the original sewer analysis for the master plan.

For this re-analysis of the sewer master plan, the total peak daily dry weather flow (PDDWF) for the proposed development was calculated as 6,3 kL/d.

2.3 Present situation

The existing Plettenberg Bay sewer reticulation system has sufficient capacity to accommodate the proposed development.

The following link services items will however be required to connect the proposed development to the existing Plettenberg Bay sewer system, as shown on Figures 2 & 3 attached:

Link services items:

• Item 1: New 3 L/s private on-site pumping station	=	R	780 000 *
• Item 2: 250 m x 90 mm Ø New accompanying rising main	=	R	250 000 *
Total	=	R	1 030 000 *

(* Including P & G, Contingencies and Fees, but excluding VAT - Year 2020/21 Rand Value. This is a rough estimate, which does not include major unforeseen costs).

Take note that the routes of the proposed pipelines are schematically shown on Figures 2 & 3 attached, but have to be finalised subsequent to detailed pipeline route investigations.

2.4 Minimum requirements

The minimum items required in order to accommodate the proposed development in the existing sewer system are link services items 1 & 2 to connect the proposed development to the existing Plettenberg Bay sewer system.

3. CONCLUSION

The developer of portions 66 & 67 of Farm 443 in Plettenberg Bay may be liable for the payment of a Development Contribution (as calculated by Bitou Municipality) for bulk water and sewer infrastructure as per Council Policy.

Over and above the development contributions referred to above, the developer will also be liable for the construction of link services items 1 & 2 required to connect the internal sewer system of the development to the existing Plettenberg Bay sewer system in Gris Nez Avenue.

The existing Plettenberg Bay water and sewer reticulation systems have sufficient capacity to accommodate the proposed development.

Link services items 1 & 2 will however be required to connect the proposed development to the existing Plettenberg Bay sewer system.

We trust that you find this of value.

Yours sincerely

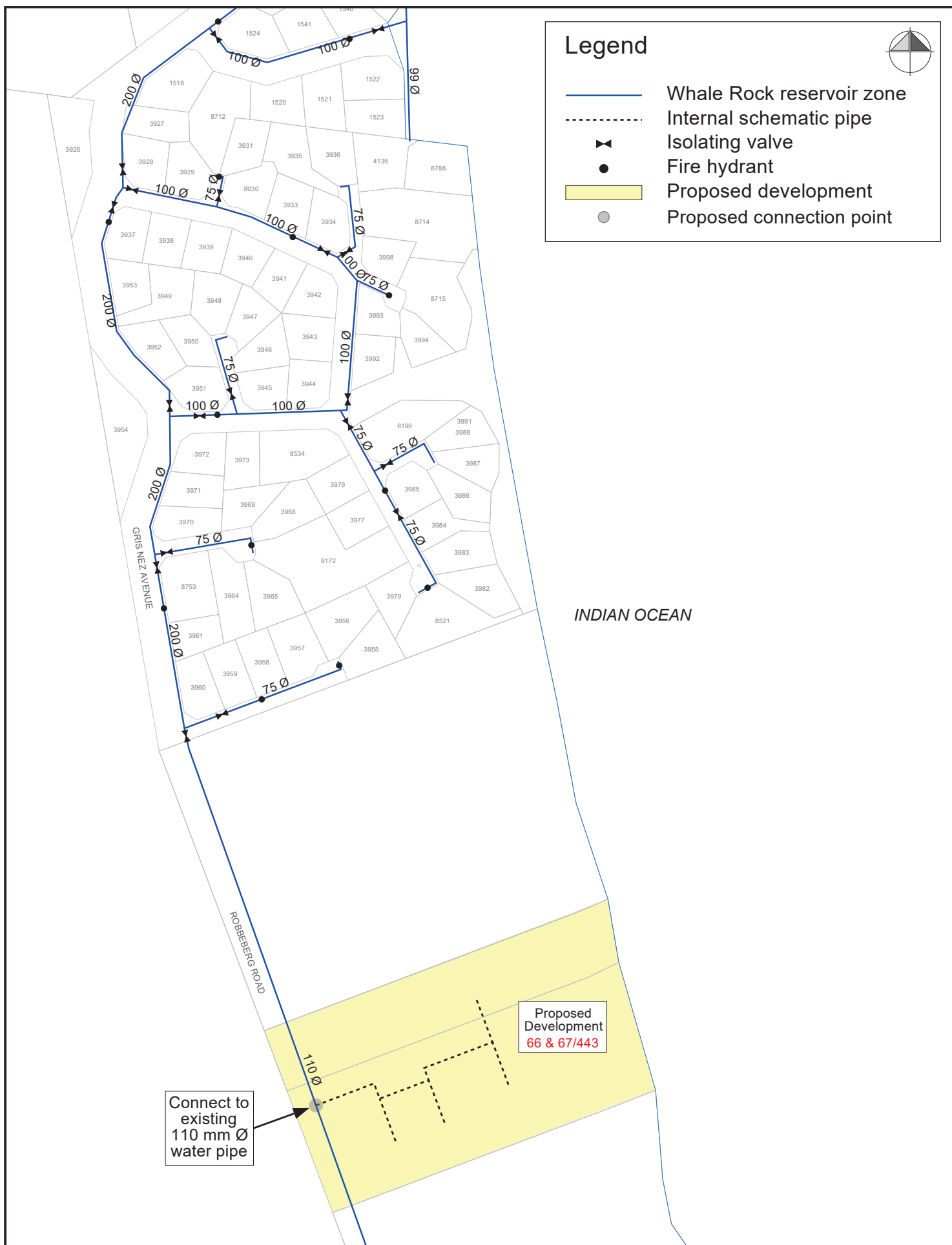
GLS CONSULTING (PTY) LTD
REG. NO.: 2007/003039/07



Per: PC DU PLESSIS

cc. Tuiniqua Consulting Engineers
P. O. Box 544
Plettenberg Bay
6600

Attention: Mr Francois Scholtz



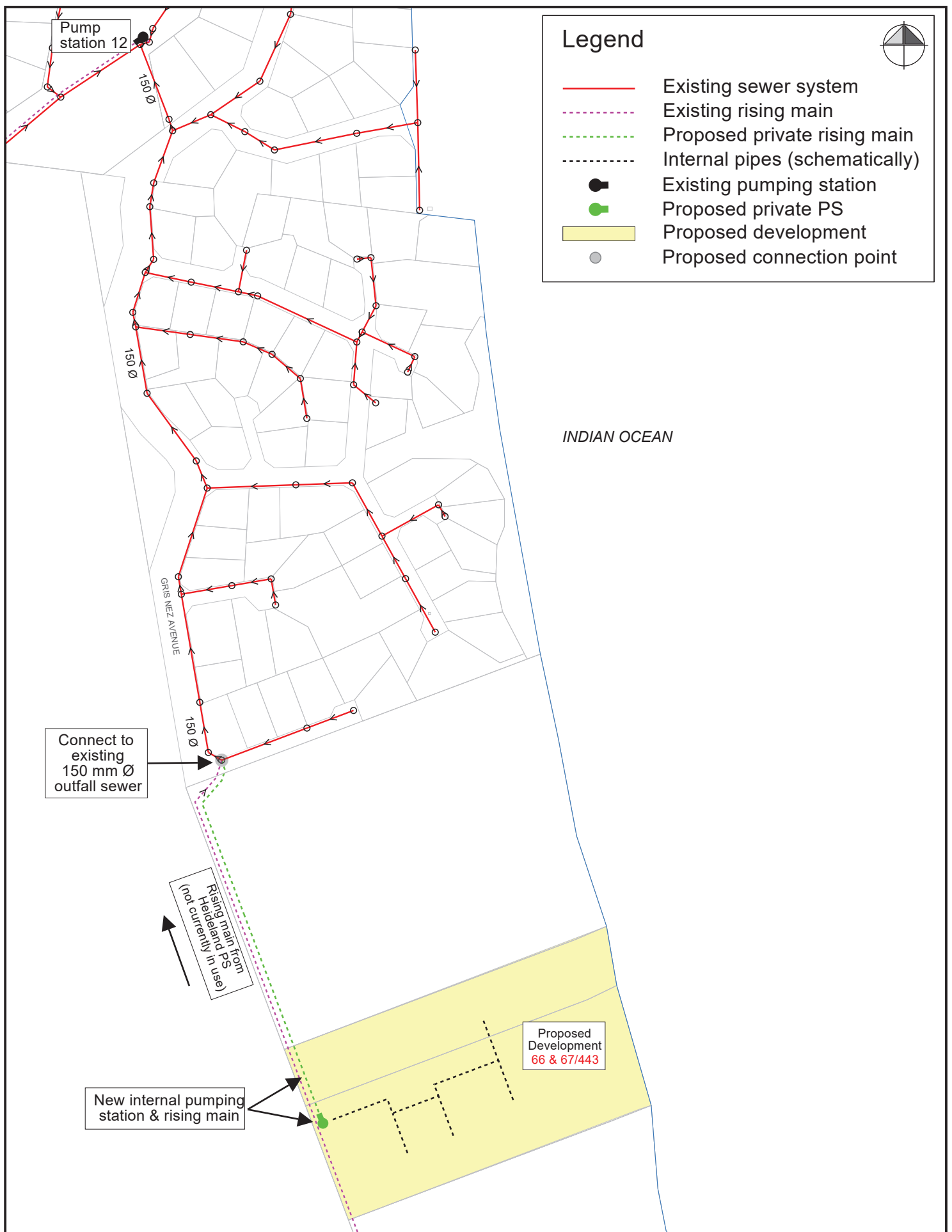
August 2021

Development of portions 66 & 67 of Farm 443, Plettenberg Bay



Figure 1

Proposed Development
Portions 66 & 67 of Farm 443
Existing Water System



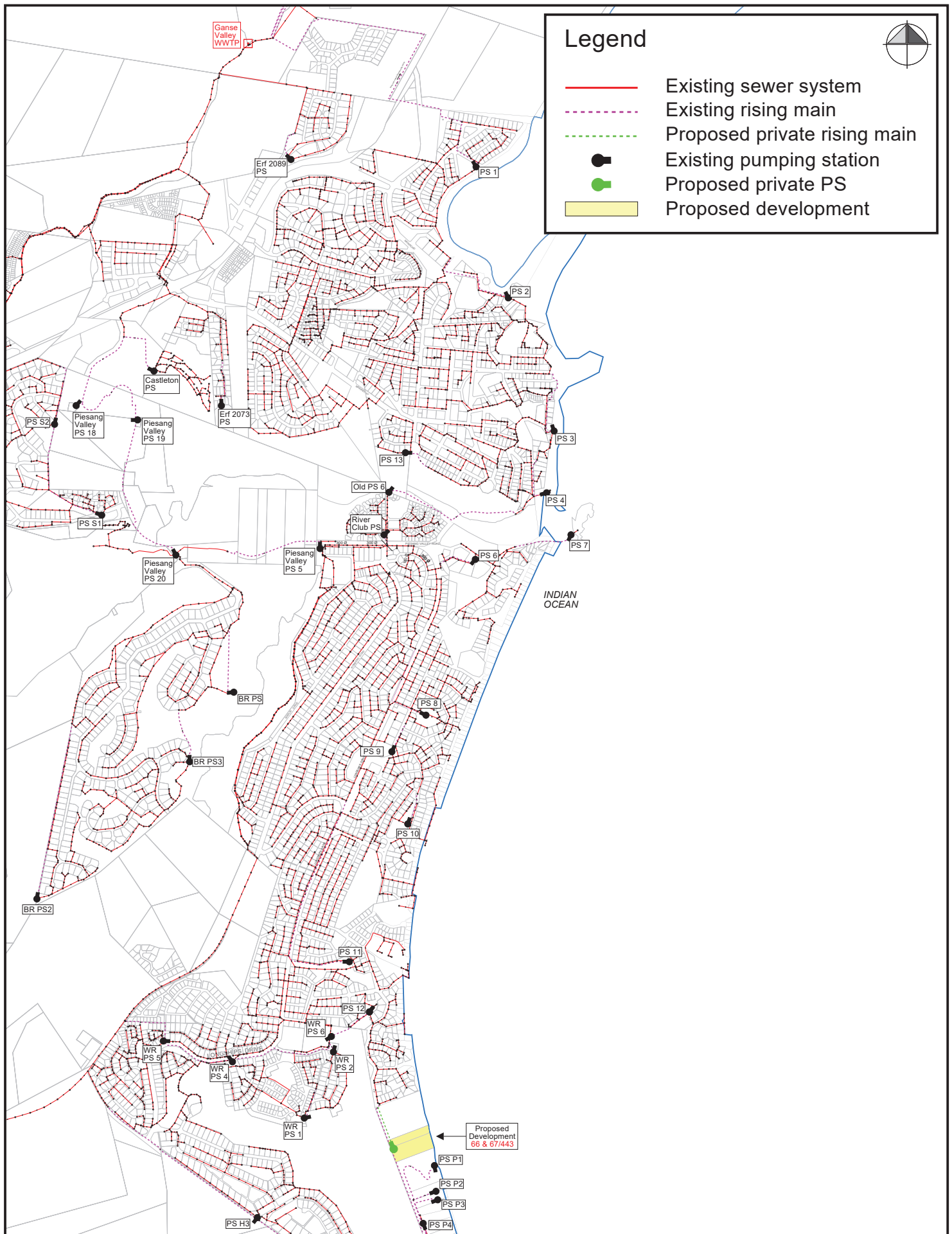
August 2021

Development of portions 66 & 67 of Farm 443, Plettenberg Bay



Figure 2

Proposed Development
Portions 66 & 67 of Farm 443
Existing Sewer System



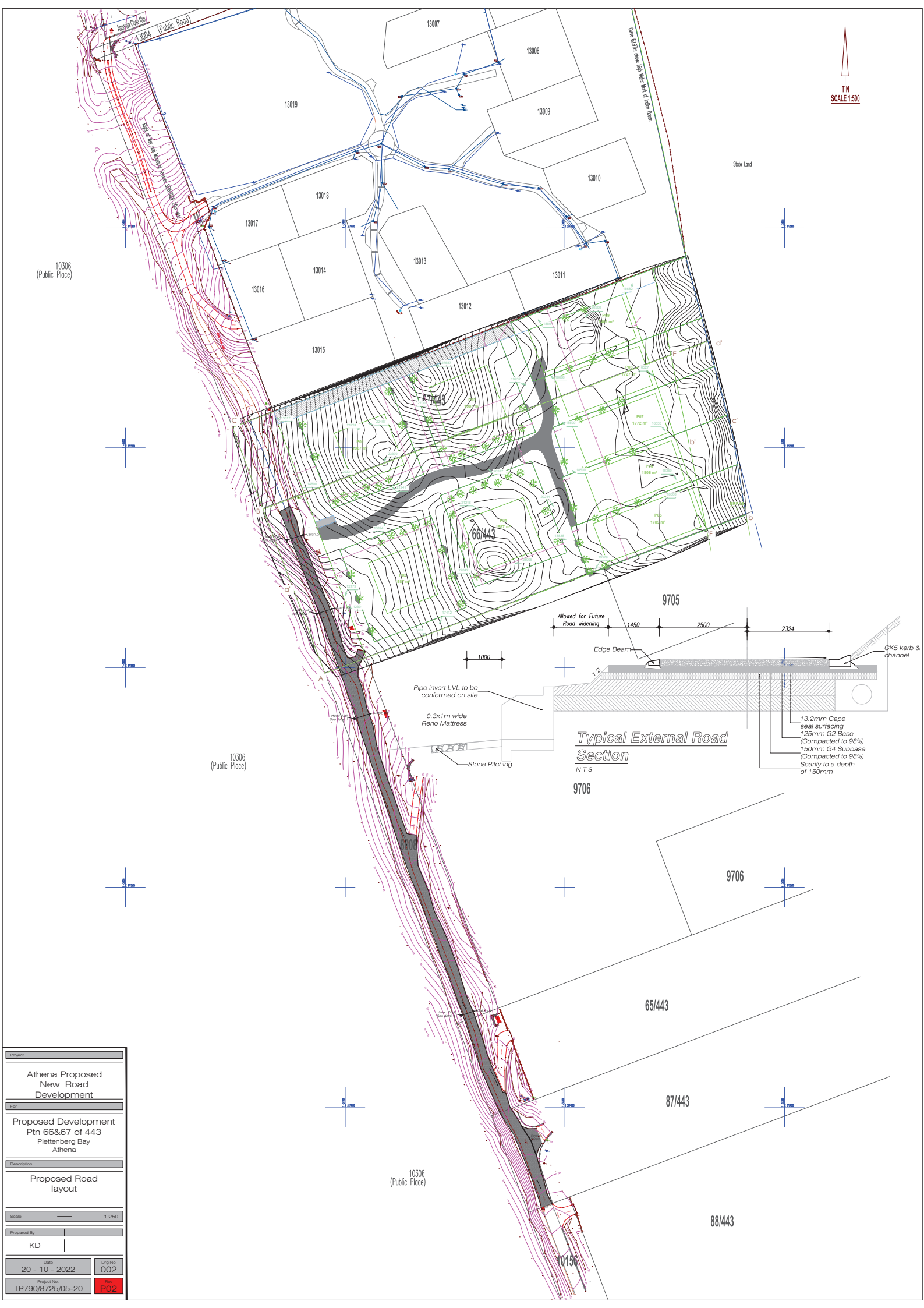
August 2021

Development of portions 66 & 67 of
Farm 443, Plettenberg Bay

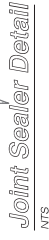


Figure 3

Proposed Development
Portions 66 & 67 of Farm 443
Sewer Master Plan



Project:
Athena Proposed New Road Development
For:
Proposed Development Ptn 66&67 of 443 Plettenberg Bay Athena
Description:
Proposed Road layout
Scale:
1:250
Prepared By:
KD
Date:
20 - 10 - 2022
Graphic:
002
Project No:
TP790/8725/05-20
Revision:
P02

Project

For

Description

Scale: — AS SHOWN

Prepared By	Approved By
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KD

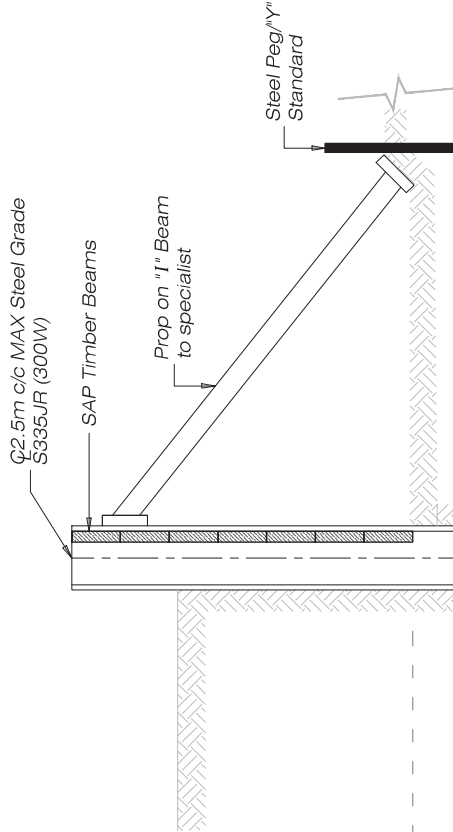
Date

10 - 10 - 2022

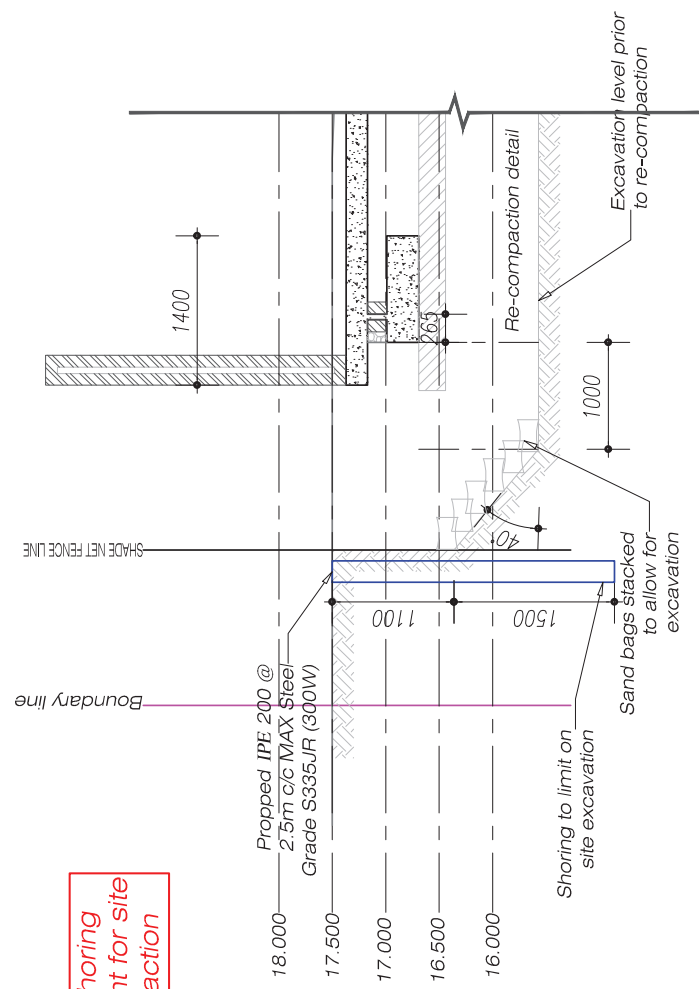
Drq No

001

Project No. TP750/13-304/10-22
 Page 0



Typical Shoring Detail to minimize environmental damage
NTS



Typical shoring arrangement for site re-compaction



TUINIQUEA
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Project
Proposed Development
on Ptn 66&67/443
Plettenberg Bay
Athena

Layout Description
Proposed
Shoring Detail

Scale:	AS SHOWN
Prepared By	KD
Proj	TP750/13-304/10-22
Date	20/10/2022
Rev	D1
	2



munisipaliteit umasipala municipality

to be the best together

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Our Ref.

18/104/444/

Enquiries

M. Rhode

Tel

044- 501 3264

email address

mrhode@plett.gov.za

11 October 2022

To: Kyle Powter

Dear Sir

CONFIRMATION OF BULK SERVICES: FARM 443 PORTION 66 & 67

We confirm that Bitou Municipality has sufficient bulk sanitation and water capacity for the above mentioned development.

Please contact the above official for any further information in this regard.

Yours faithfully

MR. V.W. FELTON
DIRECTOR: ENGINEERING SERVICES

12/10/2022
DATE

Mr. KYLE POWTER

ELECTRICAL SERVICES REPORT

FOR

**PROPOSED DEVELOPMENT OF PORTION 66 AND 67 OF THE
FARM BRAKKLOOF 443, PLETTENBERG BAY**

REPORT NO: G/19169/R1

Revised: 5 July 2022

Prepared by:

Clinkscales Maughan-Brown (South) (Pty) Ltd.

39 Victoria Street

GEORGE

6529

Contact: R. Steenekamp

Tel. No. 044-8741511



CLINKSCALES MAUGHAN-BROWN

**CONSULTING MECHANICAL
& ELECTRICAL ENGINEERS**

INDEX

Item	Description	Page
1.0	Introduction	3
2.0	Location	3
3.0	Supply Authority	3
4.0	Basis of Report	3
5.0	Demand	3
6.0	Availability of Capacity	4
7.0	Bulk and Link Services	4
8.0	Internal Services	4
9.0	Technical Particulars	5
10.0	Environmental Requirements	5
11.0	Programme	5
12.0	Capital Costs	5
13.0	Conclusion	6
Annexures	A – Drawing No. 19169/E/01 Revision A	

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1.0 **INTRODUCTION**

This report has been prepared by Clinkscales Maughan-Brown at their George office, who have been appointed by the Developer, Mr Kyle Powter, as the Electrical Consultants for this project. The purpose of this report is to provide the necessary information on the proposed electrical services within this Development and the connection to the existing municipal network in the area, in order to obtain all the necessary statutory approvals and to draw up a services agreement.

2.0 **LOCATION**

The planned development is on Portions 66 and 67 of Brakkloof 443, located south of the Plettenberg Bay CBD and between the Whale Rock Ridge development and the ocean. The site has the Duin-en-See development on the northern boundary and Portion 57/443 to the South. There is a 20m access and services servitude on the western side of the development as well as a 10m road reserve. The development includes for 9 residential erven, within an enclosed area with a single access controlled entrance, as indicated on Drawing No. 19169/E/01 Revision A, which is attached as Annexure A.

3.0 **SUPPLY AUTHORITY**

The Supply Authority for the area is Bitou Municipality, and therefore their Electricity Department was consulted on matters related to the electrical services.

4.0 **BASIS OF REPORT**

The report is based on the following:

- (i) Site development layout dated 15/06/2022 prepared by Messrs Objek Architects.
- (ii) Information obtained from Bitou Municipality Directorate Engineering Services', Mr Michael Kwampa, during a meeting held on 6 October 2021.
- (iii) Information obtained during a site inspection held on 3 November 2021 together with Mr. Michael Kwampa.
- (iv) General information received from the Client and other members of the professional team.

5.0 **DEMAND**

Based on the information currently available, the peak kVA demand of the entire Development has been calculated as follows:

9 residential erven @ 14kVA ADMD each	126kVA
---------------------------------------	--------

This is a provisional calculation and will be finalized after all the network load particulars have been concluded.

Energy saving measures and alternative energy resources as mentioned hereunder will be considered and implemented where economically viable:

- Comply with SANS 10400.
- The use of solar geysers or heat pumps to heat water instead of electric heater elements.
- The electricity used to heat water to be reduced by reducing the amount of hot water used by fitting low-flow faucet aerators.
- Thermal insulation of geysers (geyser blankets) and hot water pipes.

- Load management systems to limit load in buildings, i.e. geyser control relays to switch of geysers during peak periods, load control relays to prevent geysers and other high load appliances in buildings from operating simultaneously, etc.
- Heating, ventilation and air conditioning generally use the most electricity in a building. Through efficient operational management of these systems, the demand can be reduced by at least 15%.
- The use of LPG gas for heating and cooking.
- Energy efficient lighting design, making use of LED lighting and motion / photo detectors to switch off lighting in un-used sections of buildings and to automatically adjust lighting levels according to the amount of natural lighting in buildings, etc.
- The installation of energy efficient appliances and electronic devices, i.e. refrigerators, motors, pumps, fans, etc.
- Consideration will also be given to install a rooftop Photo Voltaic (PV) installation to reduce electricity consumption from the municipal grid, and to supplement the supply as necessary.

6.0 **AVAILABILITY OF CAPACITY**

The original electrical supply installed to Erf 66/443 was 60A three phase (41.6kVA), but it would appear that same was subsequently reduced to a 60A single phase supply (Meter No. A161268131). Erf 67/443 does not have an existing electrical connection.

The new capacity is estimated at 126kVA. Thus, the additional capacity required is estimated at 84.4kVA. It is assumed that this capacity is available at the identified point of connection.

As part of the environmental approval process, a letter of confirmation on the availability of capacity is normally required from Bitou Municipality.

7.0 **BULK AND LINK SERVICES**

The identified point of connection for this development is at the existing 95mm² Cu x 3 core 11kV cable running in the servitude on the western side of the development, in the position of the existing ground mounted transformer as indicated on the drawing.

The Developer will not be required to install any bulk or link infrastructure upstream from the Point of Connection.

8.0 **INTERNAL SERVICES**

There is an existing 100kVA ground mounted transformer "TR-Erf 443/66" located at the south-western corner of the development, which was originally installed by the Owners of Erf 443/66. This transformer supplies the existing house on Erf 66/443, and a supply (125A three phase) was recently installed by the Municipality to the Duin-en-See Development on adjacent Erf 58/443. The transformer does not have sufficient spare capacity for this development, and it is proposed that same be upgraded and replaced with a 315kVA miniature substation in the same position as indicated.

It is proposed that a low voltage cable be installed from the new miniature substation to a LV bulk metering / distribution kiosk located near the entrance, as indicated.

The Municipality's responsibility will end at the Point of Supply, i.e. load terminals of the new LV bulk meter to be installed. The Developer will have to enter into a supply agreement with the Municipality. The Developer will be responsible for operating and maintaining the internal network downstream from the meter.

The Developer will be responsible for metering of each individual residential unit's consumption, sending out accounts, debt collection, etc. The services of a metering agent could be employed to assist in this regard and using prepayment metering.

9.0 **TECHNICAL PARTICULARS**

All drawings and specifications of the network must comply with the Municipality's technical requirements and must be submitted to them for official approval before any construction can commence.

The 11kV cable type will be the paper insulated, lead covered with three stranded copper conductors, Table 19.

The distribution substation will be the fully enclosed miniature type housing a 11kV ring main unit similar or equal to the SF6 insulated ABB or Schneider type, 11kV/420V transformer and low voltage (LV) distribution equipment and area lighting control equipment.

The LV bulk kWh/kVA consumption meter will be the Landis & Gyr type and must have the ability to be remotely read from the electrical department's offices.

The Low Voltage (LV) network will be underground cables and ground mounted distribution kiosks. The LV cable type will be PVC insulated, PVC bedded, galvanised steel wire armoured 600/1000V with four copper or aluminium conductors. The LV distribution kiosks will be glass fibre or polyethylene type with doors both front and back, and will be installed to act as the distribution points for the service connections.

Private road and walkway lights will be the post top and / or bollard type to suit the architectural theme.

The internal network will be designed so that any internal faults do not cause nuisance tripping of the upstream municipal network.

No switching of supplies or work in close proximity of existing cables will be carried out without prior arrangement with the Municipality's electrical department. The Electrical Contractor will also be required to liaise with the Municipality's civil department and Telkom to obtain the necessary wayleaves and ensure that no damage is caused to existing underground services during construction.

10.0 **ENVIRONMENTAL REQUIREMENTS**

All work on site will comply in all respects with the environmental management requirements.

11.0 **PROGRAMME**

It is expected that construction of services will commence after all the necessary approvals have been received and the feasibility has been accepted. Due to the residential nature of this development it is expected that the total peak demand of the development will grow slowly over a period of between 1 and 5 years.

12.0 **CAPITAL COSTS**

The Developer will be responsible for the following:

- (i) Supply, installation and commissioning of the complete internal installation and connection to the existing municipal network as described above.

- (ii) Payment of the standard municipal Augmentation Fee towards the future upgrading of the Municipality's primary network beyond the point of connection for the demand required.

This fee has been provisionally calculated as follows based on this financial year's charge:

$$\begin{aligned}
 &= \text{Number of Equivalent Residential Units (ERU's)} \times \text{Cost per ERU} \\
 &= ((126\text{kVA less } 41.6\text{kVA}) \times 1 \text{ network factor}) \div (10.35 \times 0.38 \text{ diversity factor}) \times \\
 &\quad \text{R19 681.72, excl. VAT.} \\
 &= 21.5 \times \text{R21 433.39 excl. VAT} \\
 &= \text{R460 817.89, excl. VAT.}
 \end{aligned}$$

It is proposed that Bitou Municipality consider giving a credit for a portion of the cost of the recovered 100kVA transformer against the Augmentation Fee.

All work will be done under the direction of the Developer's Electrical Consultant, i.e. Messrs Clinkscapes Maughan-Brown, and by an Electrical Contractor to be approved by the Developer and the Municipality.

These calculations/amounts are provisional and must be agreed and finalised when the services agreement is compiled.

It is noted that all municipal capital contributions are adjusted annually on 1 July.

13.0 **CONCLUSION**

We trust that this information is sufficient to obtain the necessary statutory approvals for the development and to draw up the services agreement.

Please contact the writer should more information be required.

In order to speed-up the process, we will also forward a copy of this report directly to the Municipality's electrical department, for their approval and any further comments they may have.



R.L. Steenekamp Pr Eng Pr CPM
CLINKSCALES MAUGHAN-BROWN

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ANNEXURE A

Drawing No: 19169/E/01 Revision A – Plan layout of proposed electrical connection.

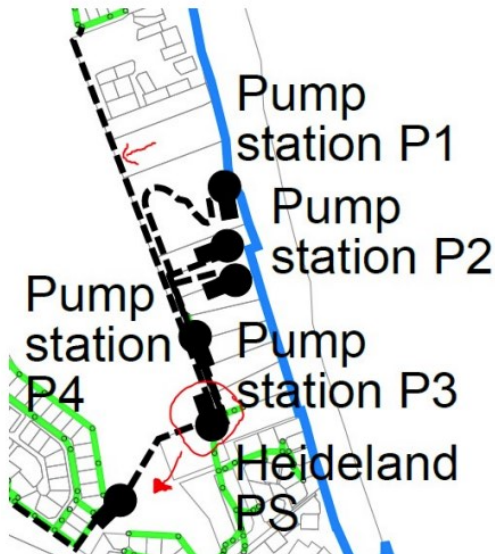


DRAWN KM	DESIGNED RLS	CHECKED RLS	APPROVED
SCALE 1:2000	DATE 21/10/2021	CAD REF No. 19169-E/01	DWS-SIZE A3
DRAWING NO 19169/E/01			REVISION A
			05/07/2022

From: Flip du Plessis <Flip.duPlessis@gl.s.co.za>
Sent: Wednesday, April 5, 2023 9:35 AM
To: engineer@tuiniqua.co.za
Cc: 'Asiphe Masivuye Mgoqi' <amgoqi@plett.gov.za>; eoosthuizen@plett.gov.za; 'Kyle p' <kylepowter1@gmail.com>; Neal Gibson <Neal.Gibson@gl.s.co.za>
Subject: RE: Gedeelte 66 en 67

Hi Francois

Die Heidelberg PS het altyd noordwaarts gepomp deur die 150 mm stygleiding aangrensend tot erwe 443/66 & 443/67. Om kapasiteit te skep in die stroomaf stelsel is die Heidelberg pompstasie omgeswaai om nou ooswaarts te pomp:



Volgens ons model is die bestaande 150 mm stygleiding dus nie tans operasioneel nie.

Let wel dat die diameter van die lyn 150 mm is en die vloeisnelheid deur die lyn dus baie laag gaan wees as julle deur dit pomp, wat uitsakking van die riool binne die lyn kan behels.

Behalwe vir die bostaande operasionele probleem het die stygleiding kapasiteit.

Vertrou dit is van waarde.

Groete

Flip

Flip du Plessis *BEng Civil Eng*
Civil Engineer III



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From: engineer@tuiniqua.co.za <engineer@tuiniqua.co.za>
Sent: Wednesday, April 5, 2023 7:54 AM
To: Flip du Plessis <Flip.duPlessis@gl.s.co.za>
Cc: 'Asiphe Masivuye Mgoqi' <amgoqi@plett.gov.za>; eoosthuizen@plett.gov.za; 'Kyle p' <kylepowter1@gmail.com>
Subject: Gedeelte 66 en 67

Hi Flip

Julle het vir ons n verslag vir 12 erwe gedoen wat nou verminder is na 9 erwe.

Vir omgewings impak redes wil ons in die bestaande styglyn wat basies deur die erf in die servituut loop aansluit met 2 non return valves.

Kan jy dalk kommentaar hierop lewer?

Dankie
Francois

