

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

**September 2021**

**Prepared by Tuiniqua (Pty)Ltd**



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## 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:

15 Residential Zone erven ranging from 763 m<sup>2</sup> to 1316 m<sup>2</sup>  
as per site development plan 66/67/443 SDP/4 dated 8 April 2021.

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.

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 and traffic impact will be dealt with by others under separate reports.

## 2. INFORMATION PROVIDED

The following development information was obtained:

- |                             |                   |
|-----------------------------|-------------------|
| - VPM Site development plan | - 66/67/443 SDP/4 |
| - 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 m<sup>2</sup> in size and 15 new residential zoned erven are planned.

The site is typical of dune area with uneven slopes.

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

### 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 and a 110 mm sewer rising main also in the servitude. There is a 200 mm municipal watermain 200 m away on the corner of Aquarius close to Griz Nez Avenue.

There is a Municipal gravity sewer at the same point.

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

### 3. TECHNICAL DESIGN PARAMETERS AND STANDARDS.

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

- 3.1 Guidelines for human settlement- planning and design- 2019 Red Book.
- 3.2 Council's policy on new developments- storage and transportation.
- 3.3 Augmentation and transport levies according to Council minute no 495-revised – July 2021.

### 4. 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 <sup>3</sup> /day	Total
Single residential	Erf 601 to 800m <sup>2</sup>	1	0,6	
Single residential	Erf 801 to 1000 m <sup>2</sup>	7	0.6	
Single residential	Erf1001 to1200 m <sup>2</sup>	2	0.6	
Single residential	Erf 1201 to 1400m <sup>2</sup>	5	0.6	
			Total Average Annual Daily Demand kL/d	9,0 kL/d

#### 4.1 Fire risk category:

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

#### 4.2 Elements of total water supply system:

##### 4.2.1 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.

The estimated augmentation fees for existing and new are set out below:

Based on current advertised fees (Approved Tariffs for 2021-2022):

## Water augmentation:

Description	Size	No/units	Water levy/unit --	Total
Single residential	Erf 601 to 800m <sup>2</sup>	1	36008.19	36 008.19
Single residential	Erf 801 to 1000 m <sup>2</sup>	7	45513.56	318 594.92
Single residential	Erf 1001 to 1200 m <sup>2</sup>	2	54837.80	109 675.60
Single residential	Erf 1201 to 1400m <sup>2</sup>	5	64156.83	320 784.15
			Total	R 785 062,86

(Figures exclude VAT and are increased by the Municipality from time to time)

### 4.2.2 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 m<sup>3</sup>

#### Fire:

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

Storage for fire flow = 54 m<sup>3</sup>

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

The home owner regulations should prescribe that each dwelling have a minimum of 5000 liters storage for roof runoff collection.

### 4.2.3 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 watermains 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.*

### 4.3 **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.

#### **4.4 Water supply – Environmental considerations.**

##### **4.4.1 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.

##### **4.4.2 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.

## **5. 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.

### **5.1 Elements of total (bulk sewer) system:**

#### **5.1.1 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 at least one internal sewer pumpstation but two have been planned. One development pumpstation and a series of private pumpstations can also be considered. 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.  
( Estimated at R22 000.00 per site)

Based on GLS figures the estimated PDDWF(Peak Day Dry Weather Flow) for the development is estimated at 6.3 kl/day

### 5.1.2. 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.

#### Sewer augmentation

Table 3 Augmentation Levies – Sewer 2021-2022				
Description	Size	No/units	Sewer levy/unit --	Total
Single residential	Erf 601 to 800m <sup>2</sup>	1	13130.13	
Single residential	Erf 801 to 1000 m <sup>2</sup>	7	13130.13	
Single residential	Erf 1001 to1200 m <sup>2</sup>	2	13130.13	
Single residential	Erf 1201 to 1400m <sup>2</sup>	5	13130.13	
			Total	R 196 954,50

(Figures exclude VAT and are increased by the Municipality from time to time)

## 5.2 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).

## 6. ROADS and STORMWATER

### 6.1 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”.

## **6.2 Stormwater management:**

The development has a small catchment area. 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.

Only one row of erven drain towards the west and vlei. 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.

## **7. WASTE/ REFUSE**

### **7.1 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.

### **7.2 Construction waste**

#### **7.2.1 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.

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

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

#### 7.2.2 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.

### 7.2.3 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 250m<sup>3</sup> 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.

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 m<sup>3</sup> of building waste per house will be generated during construction.

### 7.3 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.

## 8. **RECOMMENDATION**

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

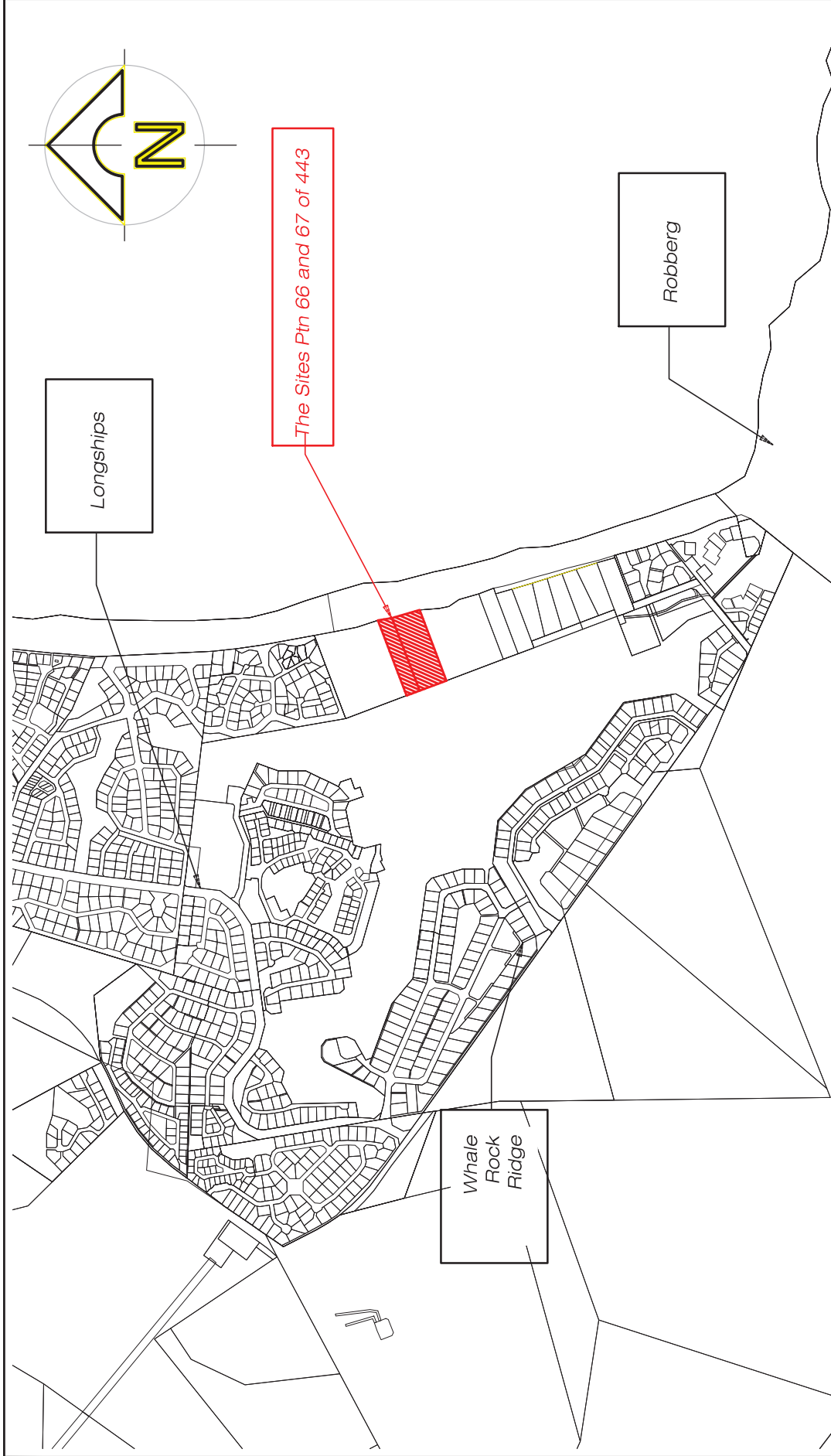
**The proposed development is therefore supported from a servicing point of view**

Francois Scholtz Pr.Eng.

970144

Director.

## APPENDIX A




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**Project**  
 Ptn 66 and 67 of  
 Farm 443  
 Plettenberg Bay

**Layout Description**  
 Locality Map

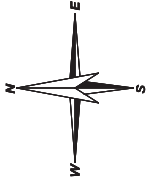
**Scale**  
 1 : 15000

**Prepared By**  
 SVN

**Date**  
 01 - 10 - 2021

**Annexure**  
**A1**

## APPENDIX B



Indian Ocean

STATE  
LAND

**1:1000**



AREAS		SQUARE METRES
ERF NUMBER		
1		763
2		869
3		924
4		1066
5		962
6		1316
7		1285
8		1245
9		1245
10		1216
11		1015
12		850
13		972
14		936
15		834
Total		15536

- Single Residential Erven
- Private Open Space

NOTES:  
 Sizes and dimensions are approximate and subject to final survey.  
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PTN. 67 & 66 /443 PLETT  
 DRAWN BY: LIZEMARIE BOTHA  
 DR. NR. 67/ 66/443SDP/4  
 DATE: 08 APRIL 2021

# DIAGRAM 8 : SITE DEVELOPMENT PLAN

## APPENDIX C



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	<u>250 000 *</u>
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

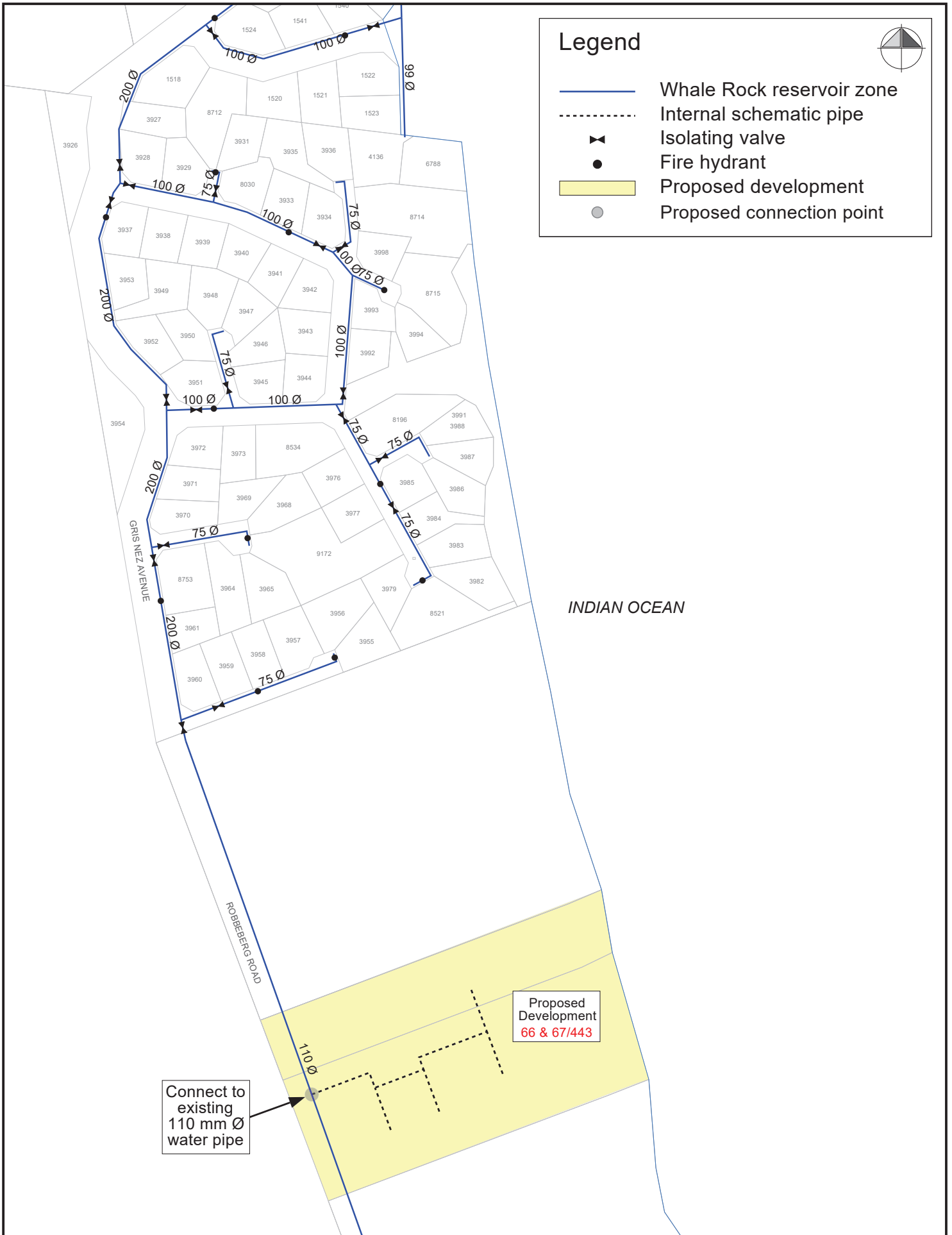


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Per: PC DU PLESSIS

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

Attention: Mr Francois Scholtz



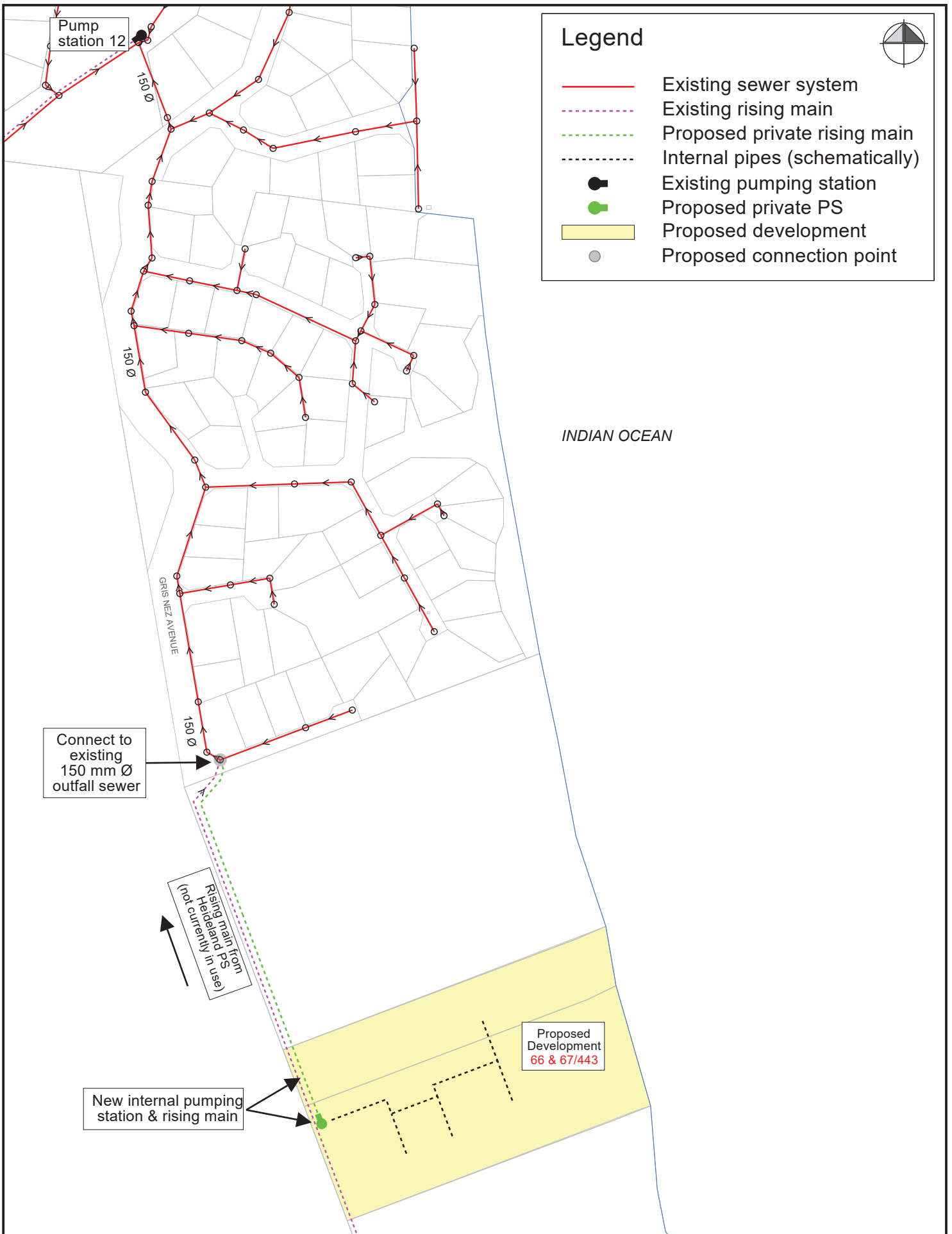
August 2021

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



Figure 1

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



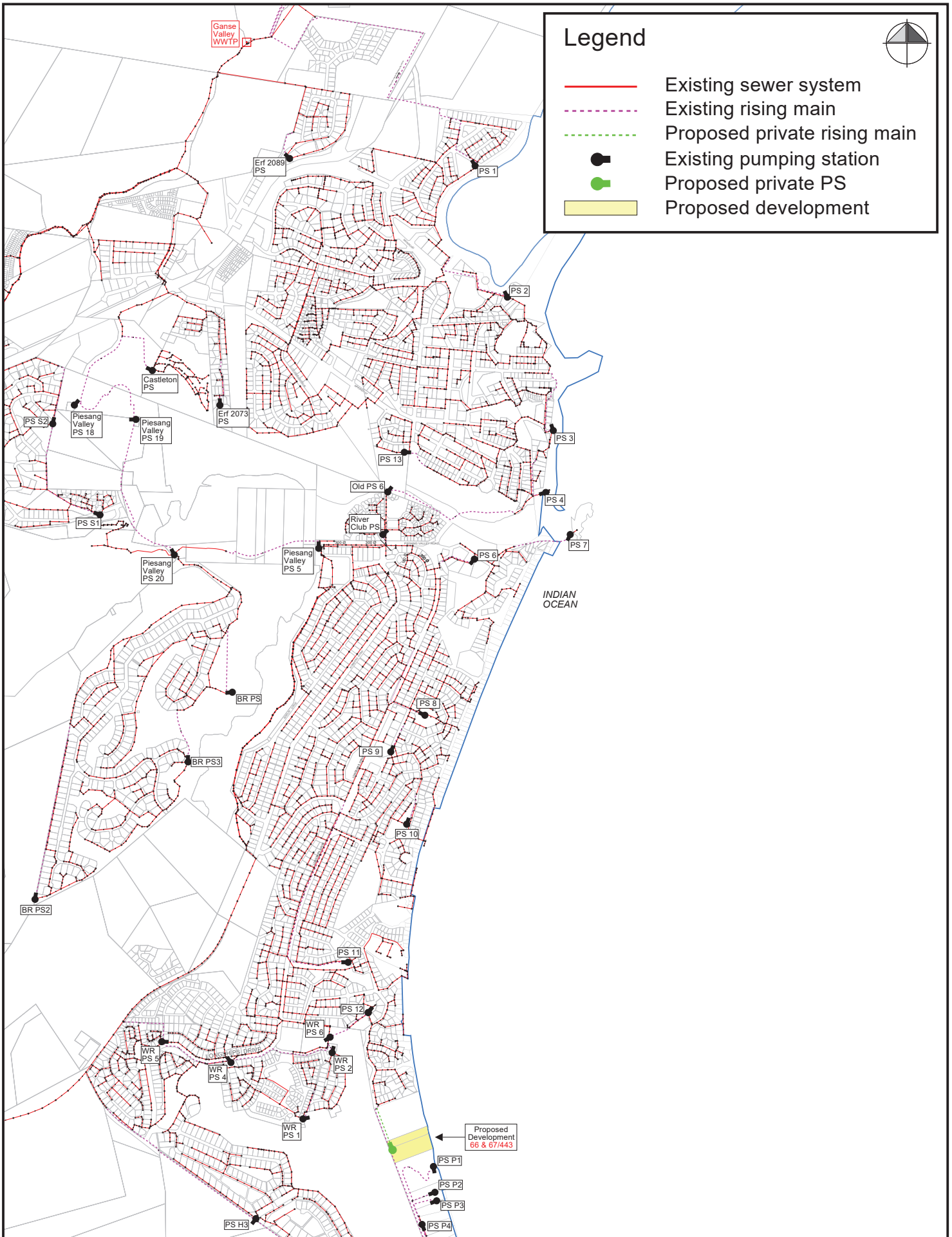
August 2021

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



PTN 66&67 Of 443

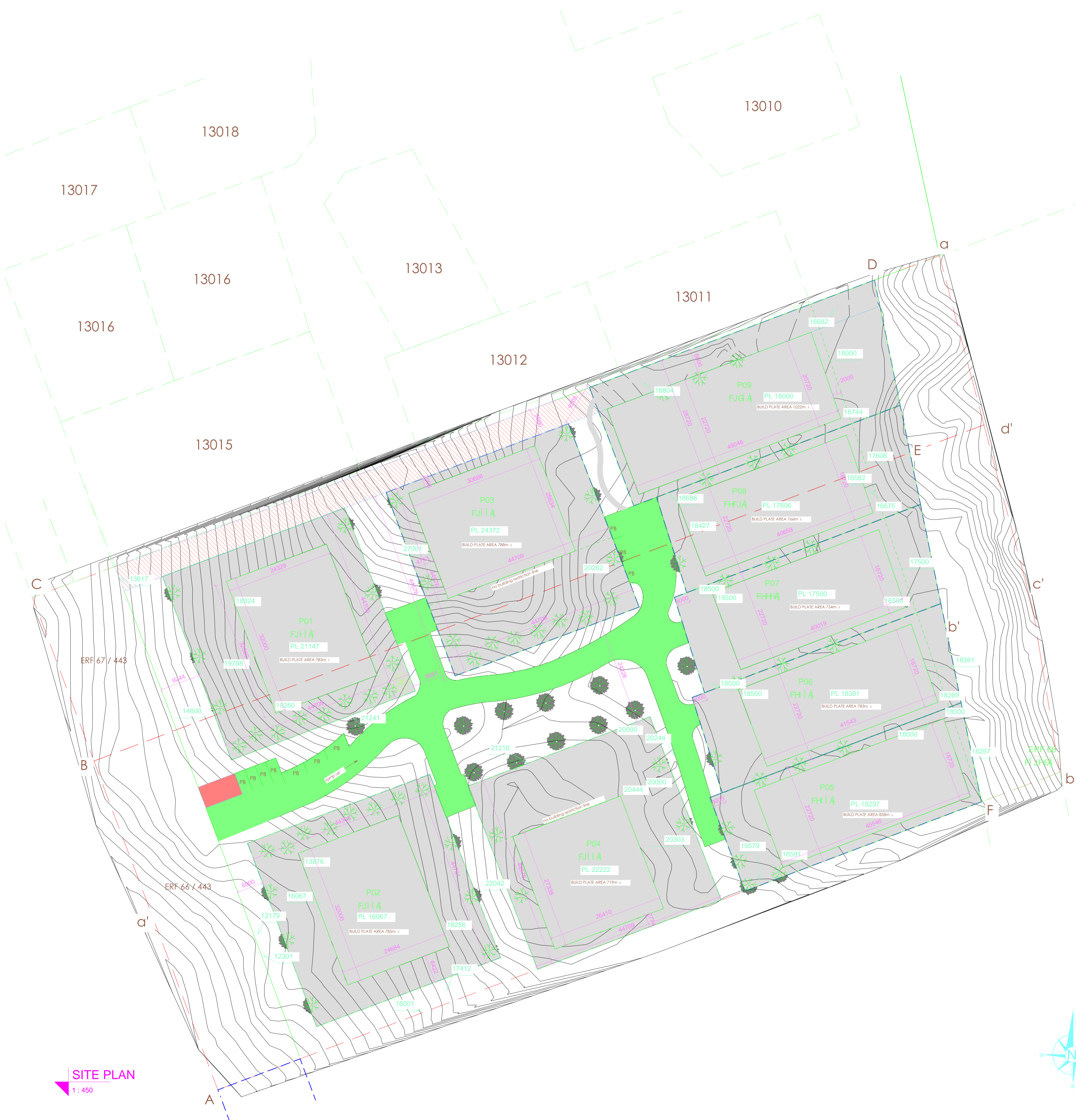



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Project
Proposed Development on Ptn 66&67/443 Plettenberg Bay Athena

Layout Description
Locality Plan

Scale:	AS SHOWN
Prepared By	KD
Proj No	TP750/13-304/10-22
Date	20/10/2022
Proj No	A1
Rev	2



**SITE PLAN**  
1:450

KEY

[Light Green Box]	landscaped area
[Light Grey Box]	landscaped area within portion
[Thin Grey Line]	Foot path
[Dark Green Box]	roadway
[Grey Box]	buildplate
[Red Box]	guardhouse
[Hatched Box]	servitude
[Dashed Line]	existing erven boundary
[Thin Green Line]	portion boundary
[PB]	parking bay
[PL]	Proposed build plate level

NOTE -  
Build Plate refers to an allocated area where a building may be erected.  
Build plate level to comply with local building regulations



ATHINA ESTATE

**GENERAL NOTES** A1

THIS DRAWING REMAINS THE COPYRIGHT OF OBJEK (PTY) LTD.  
ALL DIMENSIONS ARE IN "mm" UNLESS OTHERWISE INDICATED.  
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ALL RELEVANT DETAILS, LEVELS AND DIMENSIONS ARE TO BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF WORK.  
RC STRUCTURE TO STRUCTURAL ENGINEER'S DETAIL AND SPECIFICATION  
ALL PENETRATIONS THROUGH STRUCTURAL ELEMENTS TO BE VERIFIED WITH RELEVANT CONSULTANTS.  
ALL WORK TO BE CARRIED OUT STRICTLY IN ACCORDANCE WITH NATIONAL BUILDING REGULATIONS AND LOCAL AUTHORITY REGULATIONS.  
THE ARCHITECT ACCEPTS NO RESPONSIBILITY FOR ERRORS RESULTING FROM MISINTERPRETATION OF THE DRAWINGS  
ANY DISCREPANCIES TO BE REPORTED TO THE ARCHITECT IMMEDIATELY

REVISIONS

REV	DATE	Issue for Information
A	2022-06-30	Issue for Information

Property Schedule

Name	Area
P09	1925.39 m <sup>2</sup>
P08	1318.44 m <sup>2</sup>
P07	1332.61 m <sup>2</sup>
P06	1346.57 m <sup>2</sup>
P05	1346.90 m <sup>2</sup>
P03	1986.72 m <sup>2</sup>
P01	1986.72 m <sup>2</sup>
P04	1986.72 m <sup>2</sup>
P02	1986.72 m <sup>2</sup>
9	15216.98 m <sup>2</sup>

Property Schedule Copy 1

Name	Area
ERF 67 / 443	8658.85 m <sup>2</sup>
ERF 66	16909.97 m <sup>2</sup>
2	25568.82 m <sup>2</sup>

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

**ARCHITECTS | INTERIORS | DESIGN**  
114 bree street | 8001 - 021 461 3759  
info@objek.co.za

- WITH -  
LEVEL 3, 73 LOOP STREET, CAPE TOWN - 021 461 3759

project name	ERF 66 & 67 KNYSNA				
project description	New development				
property address	Plettenberg Bay				
client name	The Keep				
sheet name	Site Development Plan - SDP				
project status	For Council Submission				
project number	2020-01	sheet number	10_03	current rev	A
drawing scale	As indicated	drawn by	Author	checked by	Checker
issued date	30/06/2022 10:53:51				

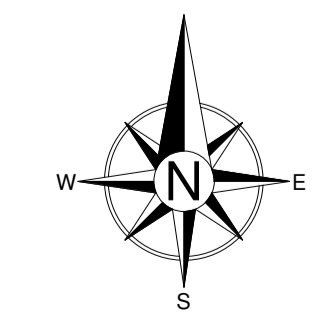
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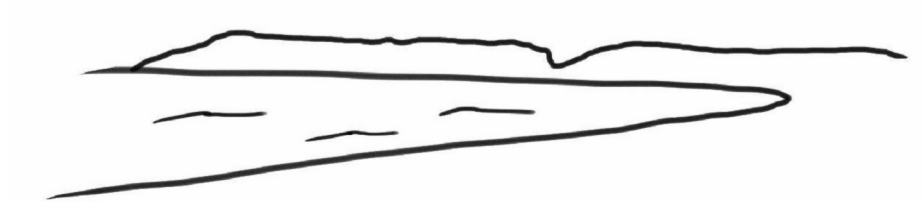


**SITE PLAN**  
1:450



KEY	
	landscaped area
	landscaped area within portion
	Foot path
	roadway
	buildplate
	guardhouse
	servitude
	existing erven boundary
	portion boundary
	parking bay
	Proposed build plate level

NOTE -  
Build Plate refers to an allocated area where a building may be erected.  
Build plate level to comply with local building regulations



ATHINA ESTATE

**GENERAL NOTES** A1

THIS DRAWING REMAINS THE COPYRIGHT OF OBJEK (PTY) LTD.  
ALL DIMENSIONS ARE IN "mm" UNLESS OTHERWISE INDICATED.  
DO NOT SCALE THIS DRAWING.  
ALL RELEVANT DETAILS, LEVELS AND DIMENSIONS ARE TO BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF WORK.  
RC STRUCTURE TO STRUCTURAL ENGINEER'S DETAIL AND SPECIFICATION  
ALL PENETRATIONS THROUGH STRUCTURAL ELEMENTS TO BE VERIFIED WITH RELEVANT CONSULTANTS.  
ALL WORK TO BE CARRIED OUT STRICTLY IN ACCORDANCE WITH NATIONAL BUILDING REGULATIONS AND LOCAL AUTHORITY REGULATIONS.  
THE ARCHITECT ACCEPTS NO RESPONSIBILITY FOR ERRORS RESULTING FROM MISINTERPRETATION OF THE DRAWINGS  
ANY DISCREPANCIES TO BE REPORTED TO THE ARCHITECT IMMEDIATELY

**REVISIONS**

REV	DATE	REVISIONS

Property Schedule	
Name	Area
P09	1925.39 m <sup>2</sup>
P08	1318.64 m <sup>2</sup>
P07	1332.61 m <sup>2</sup>
P06	1346.57 m <sup>2</sup>
P05	1346.90 m <sup>2</sup>
P03	1986.72 m <sup>2</sup>
P01	1986.72 m <sup>2</sup>
P04	1986.72 m <sup>2</sup>
P02	1986.72 m <sup>2</sup>
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Application Description:  
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**OBJEK:**  
ARCHITECTS | INTERIORS | DESIGN  
114 bree street | 8001 - 021 461 3759  
info@objek.co.za

- WITH -  
**Zeanne + GOSS**  
INTERIOR | ARCHITECTURE | DESIGN  
LEVEL 3, 73 LOOP STREET, CAPE TOWN - 021 461 3759

project name  
**ERF 66 & 67 KNYSNA**

project description  
New development

property address  
Plettenberg Bay

client name  
The Keep

sheet name  
Site Development Plan - SDP

project status  
**For Council Submission**

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

drawing scale As indicated	drawn by Author	checked by Checker
-------------------------------	--------------------	-----------------------

issued date  
15/06/2022 22:12:27

# **ENGINEERS SUPPLEMENTARY REPORT FOR REZONING OF PORTION 66 AND 67 OF THE FARM BRAKKLOOF 443**

## **BITOU MUNICIPALITY**

**October 2022**

**Geology and substrate of the site.  
Foundations to be used for construction.  
Stormwater drainage.  
Erosion prevention during construction.**

**Prepared by Tuiniqua (Pty)Ltd**



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

**INDEX**

- 1. Geology and substrate of the site.
- 2. Foundations to be used for construction.
- 3. Stormwater drainage.
- 4. Erosion prevention during construction.

**LIST OF APPENDICES**

<b>APPENDIX</b>	<b>Detail</b>	<b>Dwg. No.</b>
A	Locality map	A1
B	Site Development Plan	B1
C	Stormwater layout and soak-away	C1
D	Typical Shoring detail.	D1

## 1. TERMS OF REFERENCE

Tuiniqua (Pty)Ltd was requested to provide supplementary information for the environmental process to allow for:

9 Residential Zone erven ranging from 1347 m<sup>2</sup> to 1987 m<sup>2</sup>  
as per site development plan dated 30-06-2022.

The total site is approximately 25 569 m<sup>2</sup> in size  
The report will discuss the following:

- Geology and substrate of the site.
- Foundations to be used for construction.
- Stormwater drainage.
- Erosion prevention during construction.

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

## 2. 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.

The proposed development site is approximately 25 569 m<sup>2</sup> in size and 9 new residential zoned erven are planned.

## 3. 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.

#### **4. Stormwater drainage.**

The development has a small catchment area. 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.

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 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 not have an outlet.

See retention chamber detail attached.

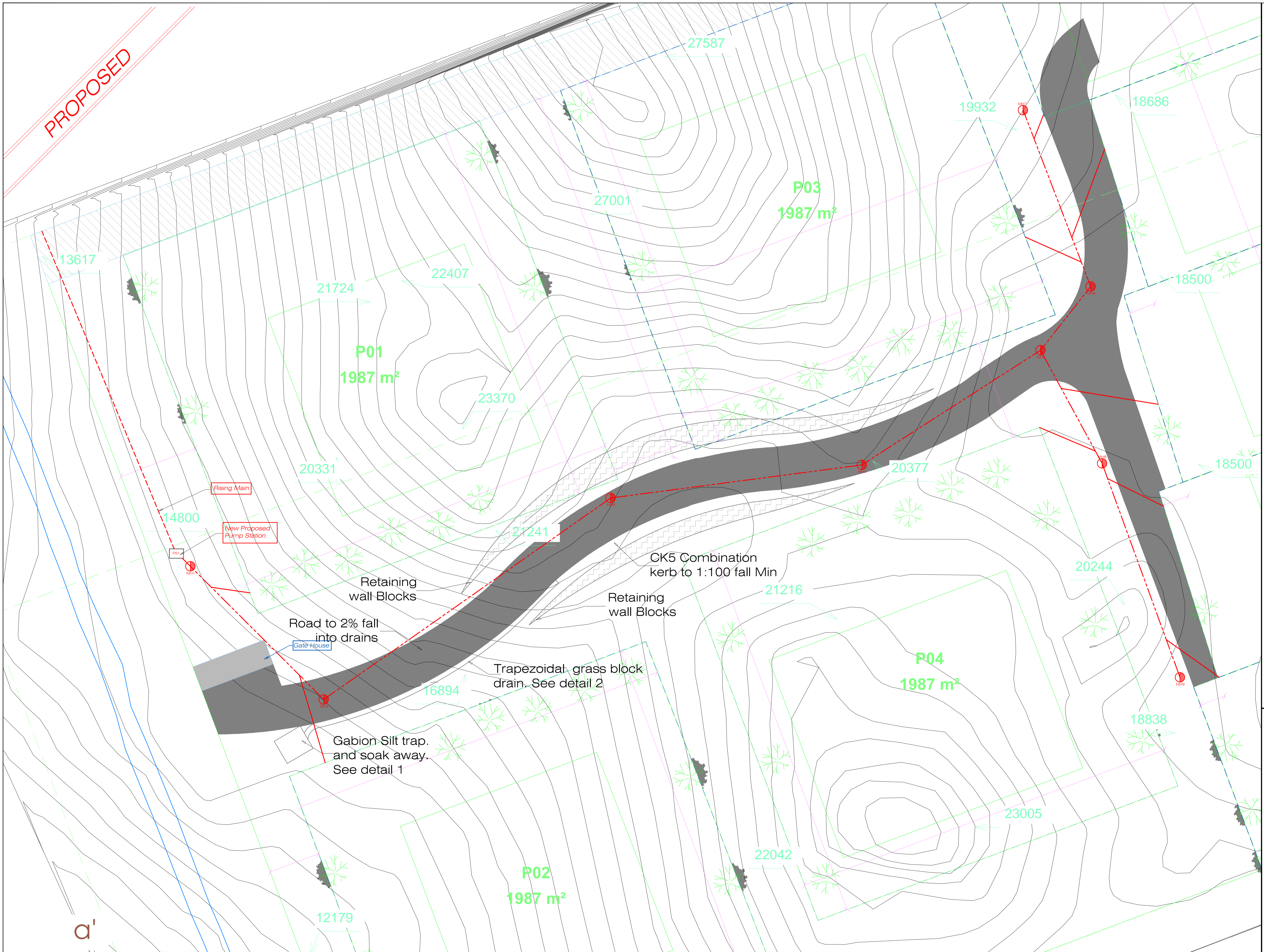
#### **5. Erosion prevention during construction.**

The possible erosion during construction of the roadway and installation of services is limited to the road reserve and the chances of enough water collecting to do damage is remote.

The necessary precautions need however to be taken that will include a series of berms across the internal access road to retard flow from higher areas. The proposed gabion retention pond needs to be constructed first with site runoff discharged into it. The gabion retention/silt pond needs to be cleaned out prior to handing over the internal services. Building sites need to be surrounded with a trench and berm arrangement to contain all building site runoff.

The civil contract to include an environmental management plan specification where the control of on site stormwater must be specified.

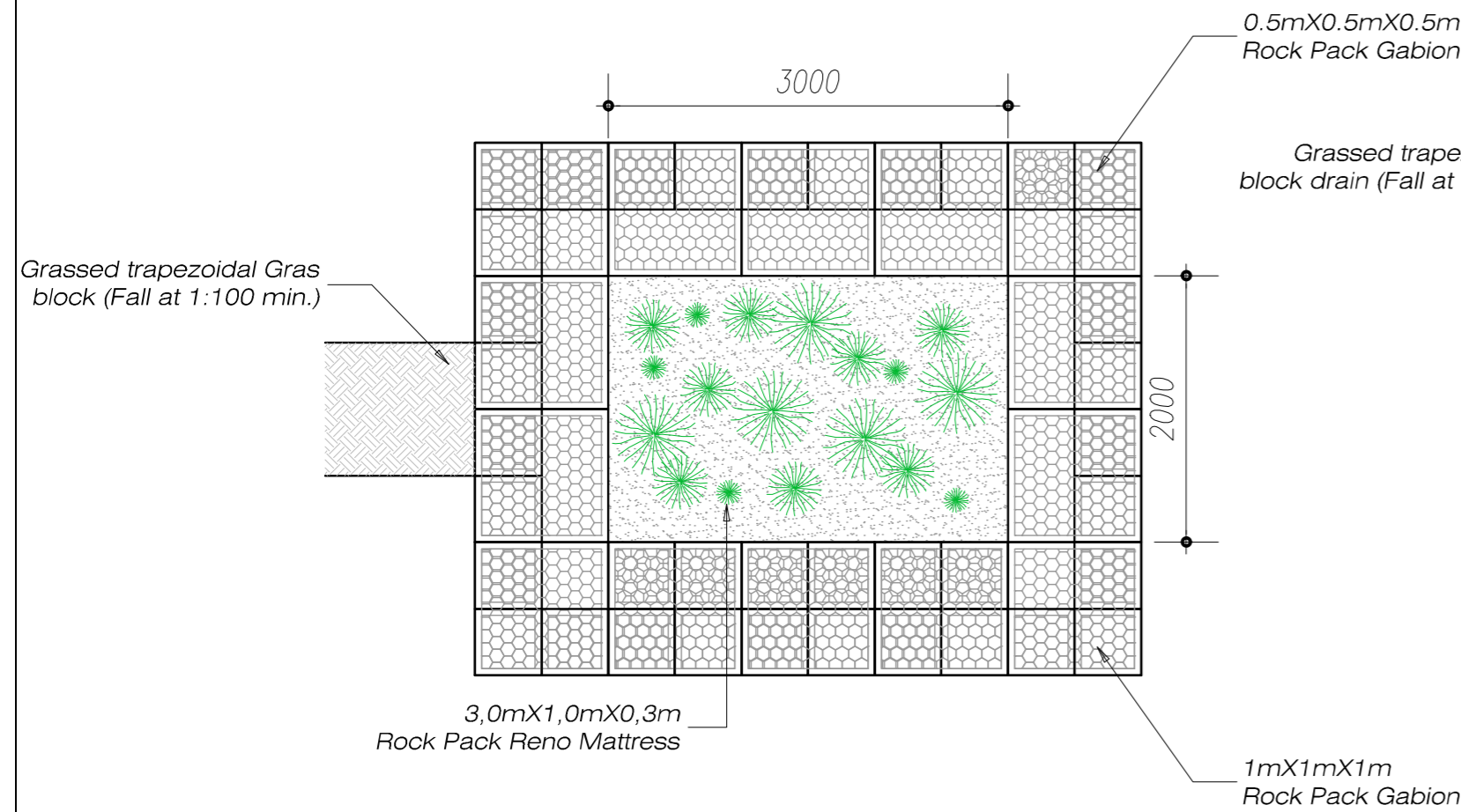
Francois Scholtz Pr. Eng.



Legend	
Water main	— (solid blue line)
Ø75mm Class 12 uPVC water main	- - - (dashed blue line)
Ø50mm Class 9 uPVC water main	- - - (dotted blue line)
Gate Valve	⊗ (blue symbol)
Pressure Reducing Valve	⊕ (blue symbol)
Fire Hydrant	⊕ (blue symbol with 'FH')
Ø160mm Sewer main	- - - (dashed black line)
Ø100mm Sewer main	- - - (dotted black line)
Conservancy Tank	⊠ (black symbol)
Ø160mm uPVC Class 34 HD Sewer main	- - - (dashed red line)
Ø110mm uPVC	- - - (dotted red line)
Rodding Eye	⊙ (red symbol)
Sewer Manhole	⊙ (red symbol with 'MH')
Convert Existing Conservancy Tank To Sewer Pumpstation	⊠ (red symbol)
Existing Gravel Road Centreline	- - - (dashed brown line)
New Gravel Road	- - - (dotted brown line)
New Paved Road	▨ (hatched brown line)

Project	
Athena Estate	
For	
Proposed Development Ptn 66 & 67 of 443 Plettenberg Bay Athena Estate	
Description	
Proposed Sewer & Stormwater layout	
Scale:	1:250
Prepared By:	KD
Date:	20 - 10 - 2022
Dwg No:	B1b
Project No:	TP790/8725/05-20
Rev:	P02

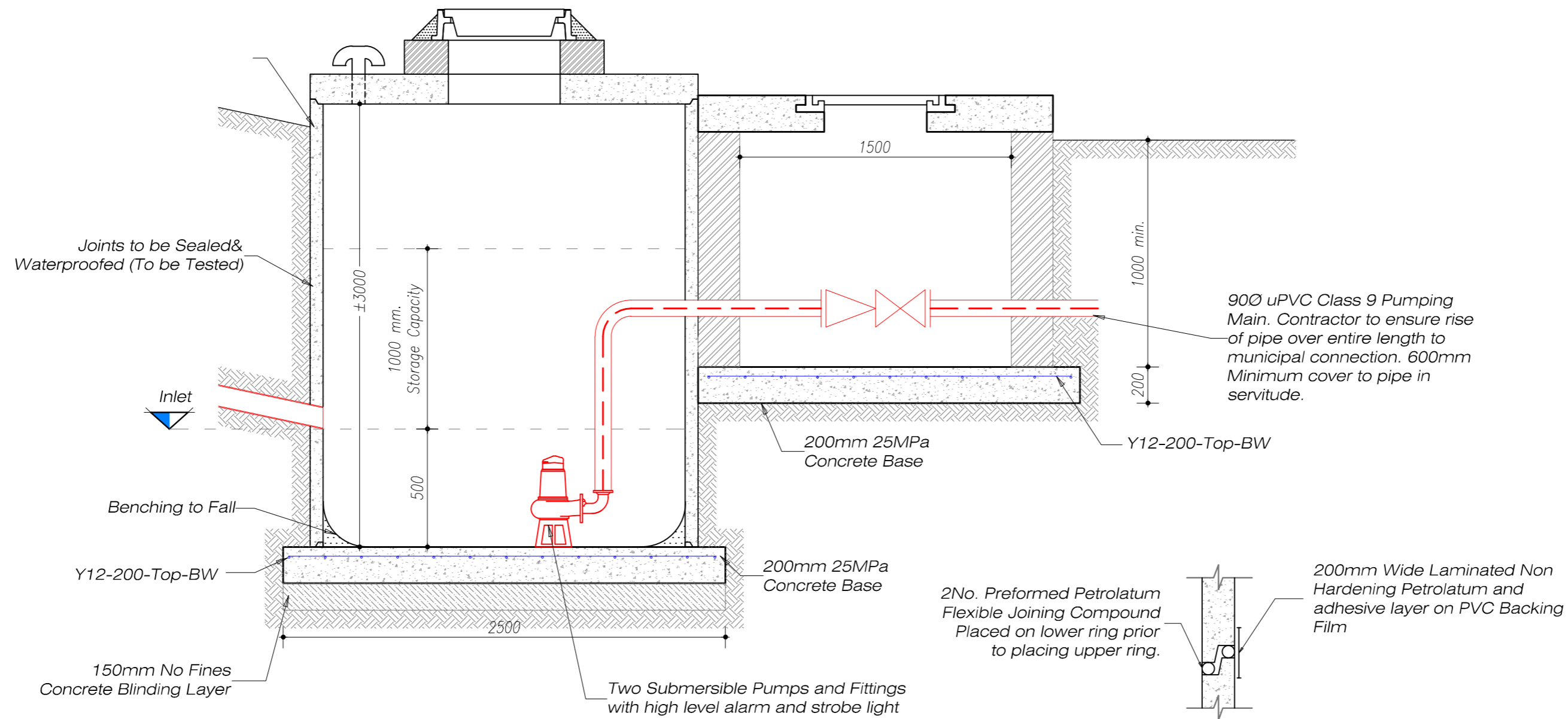
a'



**Gabion Silk Trap Detail 1**

NTS

Note: Emergency Storage required = 4 Hours. Actual storage = 11 hours

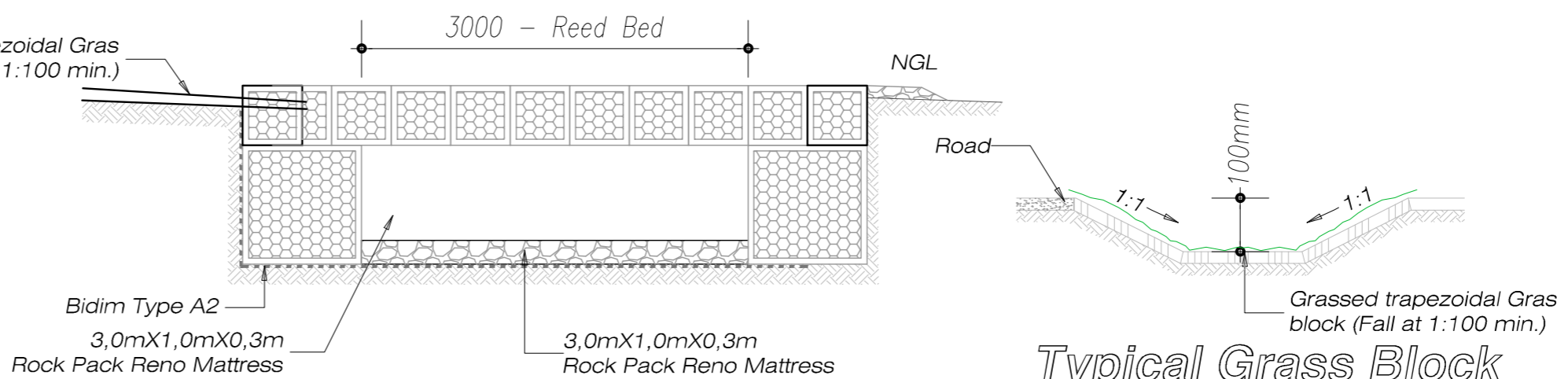


**Sewer Pump Station Section**

NTS

**Joint Sealer Detail**

NTS



**Typical Section Detail 1**

NTS

**Typical Grass Block Side Drain Detail 2**

NTS

Revisions		Date
No.	Detail	
A	Revised Services	22-03-07



Project

Athena

For

Proposed Sewer System  
 on Ptn 66&67/443  
 Plettenberg Bay  
 Athena

Description

Proposed Detail  
 Sewer/Stormwater

Scale: AS SHOWN

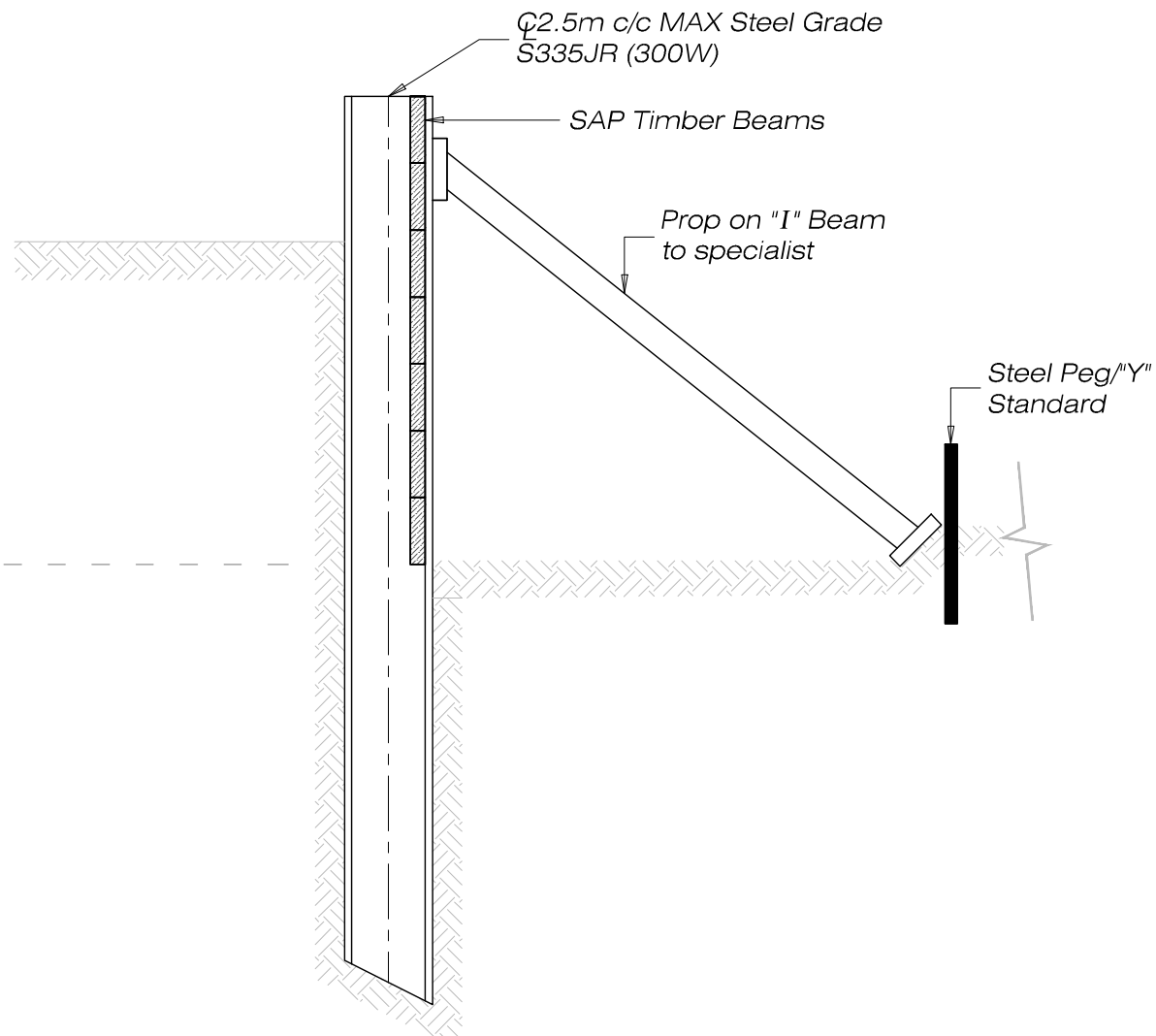
Prepared By Approved By

KD

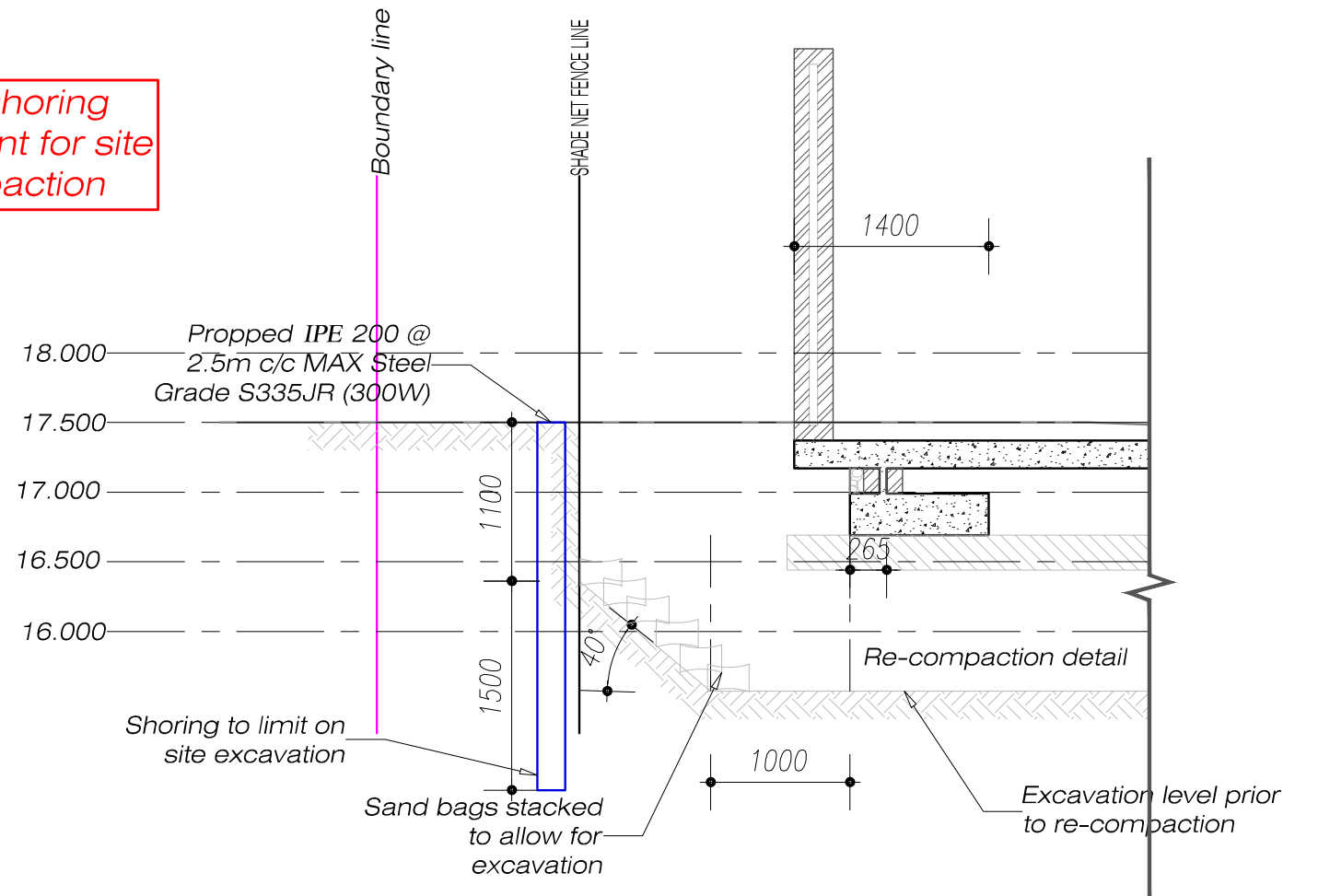
F. Scholtz Pr. Eng. Reg. no. 9701LL

Date 20 - 10 - 2022 Drg No B1a

Project No. TP750/13-304/10-22 Rev 2



Typical shoring arrangement for site re-compaction



*Typical Shoring Detail to minimize environmental damage*

NTS



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

Layout Description
Proposed Shoring Detail

Scale:	AS SHOWN
Prepared By	KD
Proj No	TP750/13-304/10-22
Date	20/10/2022
Dir No	D1
Rev	2