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Appendix G6: GLS Bulk Services Report – Water and Sewage

Infrastructure planning

Draft Report

10 September 2024

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

Attention: Ms Asiphe Mgoqi

Dear Madam

PROPOSED DEVELOPMENT OF ERF 2074, PLETTENBERG BAY: CAPACITY ANALYSIS OF THE BULK WATER & SEWER SERVICES

The request by Mr Peter Becker of Poise Consulting Engineers for GLS Consulting to investigate and comment on the bulk water supply and sewer discharge of the proposed development (development on Erf 2074, Plettenberg Bay) refers.

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

The proposed development was conceptually taken into consideration as future development area P51 in the master plans for the water and sewer networks.

1 WATER DISTRIBUTION SYSTEM

1.1 Distribution zone

The master planning indicated that the proposed development on Erf 2074 should be accommodated in the existing Upper Tower water distribution zone. The connection to the existing system should be done to the existing 100 mm Ø pipeline from the Upper Tower water distribution zone, as shown on Figure 1 attached.

The development is situated inside the water priority area.

1.2 Water demand

The original water analysis for the master plan was performed with a total annual average daily demand (AADD) for development on Erf 2074 (future development area P51 in the June 2020 water master plan) of 48,0 kL/d.

For this re-analysis, the total annual average daily demand (AADD) and fire flow for the proposed development were calculated and classified as follows:

- 228 Residential units @ 0,5 kL/d/unit = 114,0 kL/d
- Fire flow criteria (Moderate risk 2) = 25 L/s @ 10 m

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Directors: Philip du Plessis, Tsolane Mokoena

1.3 Present situation

1.3.1 Reticulation network

The existing water system has sufficient capacity to accommodate the proposed development in the present Upper Tower water distribution zone to comply with the pressure and fire flow criteria as set out in the master plan.

It is, however, recommended that the diameter of the pipeline connecting to the existing system is 160 mm diameter, in order to prevent energy losses during peak demand conditions. All internal pipes within the development area can be 110 mm diameter pipes if a ring main is formed (to prevent energy losses during fire flow conditions).

If a separate fire flow system is however implemented, then the internal pipes can be smaller than 110 mm diameter as per the design of the Civil Engineer for the development.

1.3.2 Reservoir and tower capacities

The criteria for total reservoir volume used in the Bitou Municipality Water Master Plan is 48 hours of the AADD (of the reservoir supply zone). The “Upper” and “Lower” towers are supplied with water from the 1 200 kL “Close to Town” reservoir. The existing reservoir volume available at the “Close to Town” reservoir is 151 hours of the total AADD.

The criteria for total volume used for towers in the Bitou Municipality Water Master Plan is 6 hours of the AADD (of the tower supply zone). It is proposed that the development is supplied with water from the “Upper” tower. The existing volume available at the “Upper” tower is 130 hours of the total AADD supplied. This will reduce to 37 hours of the total AADD supplied when the development is fully developed.

There is therefore sufficient reservoir and tower storage capacity available in the existing “Close to Town” reservoir and “Upper” tower to accommodate the proposed development.

2 SEWER NETWORK

2.1 Drainage area

It is proposed that sewage from the proposed development is accommodated within the existing Plettenberg Bay Pumping Station (PS) no. 1a drainage area.

The proposed connection point for the internal sewer reticulation network of the development to the existing municipal sewer system is to the existing 160 mm diameter outfall sewer to the north-east of Erf 2074, as shown on Figure 2 attached.

An alternative connection point to the existing 160 mm diameter outfall sewer north of Marine Way (shown as “Alternative” connection point on Figure 2) can also be considered.

Sewage is pumped from the Plettenberg Bay PS 1a through a 355 mm diameter rising main to the Ganse Valley Wastewater Treatment Plant (WWTP).

The development is inside the sewer priority area.

2.2 Sewer flow

In the original sewer master plan, the peak day dry weather flow (PDDWF) for the proposed development area (future development area P51 in the June 2020 sewer master plan) was calculated at 40,0 kL/d.

For this re-analysis, the PDDWF for the proposed development was calculated as 91,2 kL/d.

2.3 Present situation

2.3.1 Internal sewer reticulation system

The Civil Engineering Infrastructure Report prepared by Poise Consulting Engineers for the development (version 1 of the report, dated 1 July 2024) indicated that 2x internal pumping stations will be required to service the development. The connection to the municipal sewer system will be to an existing 160 mm diameter outfall sewer adjacent to Marine Way, to the north-east of the development.

No detailed topographical information was available to determine if it will be possible for the development to connect to the existing infrastructure with only one internal PS. It is assumed that this option (to connect to the existing sewer system without the need for the internal sewer PS at the north-easter corner of the development) was investigated by Poise Consulting Engineers. This should, however, be verified.

An alternative connection point to the north of Marine Drive (shown as “Alternative” connection point on Figure 2) is proposed as part of this investigation. From the available topographical information it seems that the internal sewer infrastructure of the development will be able to gravitate towards the alternative connection point to the north of Marine Drive.

2.3.2 External sewer reticulation system

The existing gravity sewer system between the proposed development gravitating towards the Plettenberg Bay PS 1a has sufficient capacity to accommodate the proposed development.

The Plettenberg Bay PS 1a and accompanying 355 mm diameter rising main also have sufficient spare capacity to accommodate the proposed development.

3 CONCLUSION

The developer of Erf 2074 in Plettenberg Bay will 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 this contribution the developer will be liable for the construction of any link services items to connect to the existing water and sewer services and any augmentation levies as per council tariffs

The existing water system has sufficient capacity to accommodate the proposed development to comply with the pressure and fire flow criteria as set out in the master plan.

There is sufficient reservoir and tower storage capacity available at the existing “Close to Town” reservoir and the “Upper” tower to accommodate the proposed development.

Sewage from the proposed development will drain towards the existing Plettenberg Bay PS 1a. There is sufficient capacity in the existing Plettenberg Bay sewer reticulation system to accommodate the proposed development.

Also, find attached hereto Appendix A which includes general notes from Bitou Local Municipality regarding development approvals and conditions.

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. Poise Consulting Engineers
12 Boston Light Drive
Plettenberg Bay
6600

Attention: Mr Peter Becker

APPENDIX A **September 2024**

GENERAL NOTES FROM BITOU LOCAL MUNICIPALITY ATTACHED TO GLS BULK WATER AND SEWER SERVICES CAPACITY REPORT

1. The GLS report is a services capacity report and the costs estimated in this report are only approximate values applicable at the time of the study.

2. Should the development be approved by Council the approval will be linked to certain development conditions. These conditions will be the official conditions applicable to the project and will take precedence over this report. Once approval is granted, Council will enter into a formal services agreement with the developer.

3. Costs for network upgrades, etc. As mentioned in the GLS report could change from time to time due to escalation, new tariff structures, additional requirements etc.

4. The Developer may be liable to pay a Development Contribution as per Council policy. The value payable will be calculated using Bitou Local Municipality's Development Contribution Calculator.

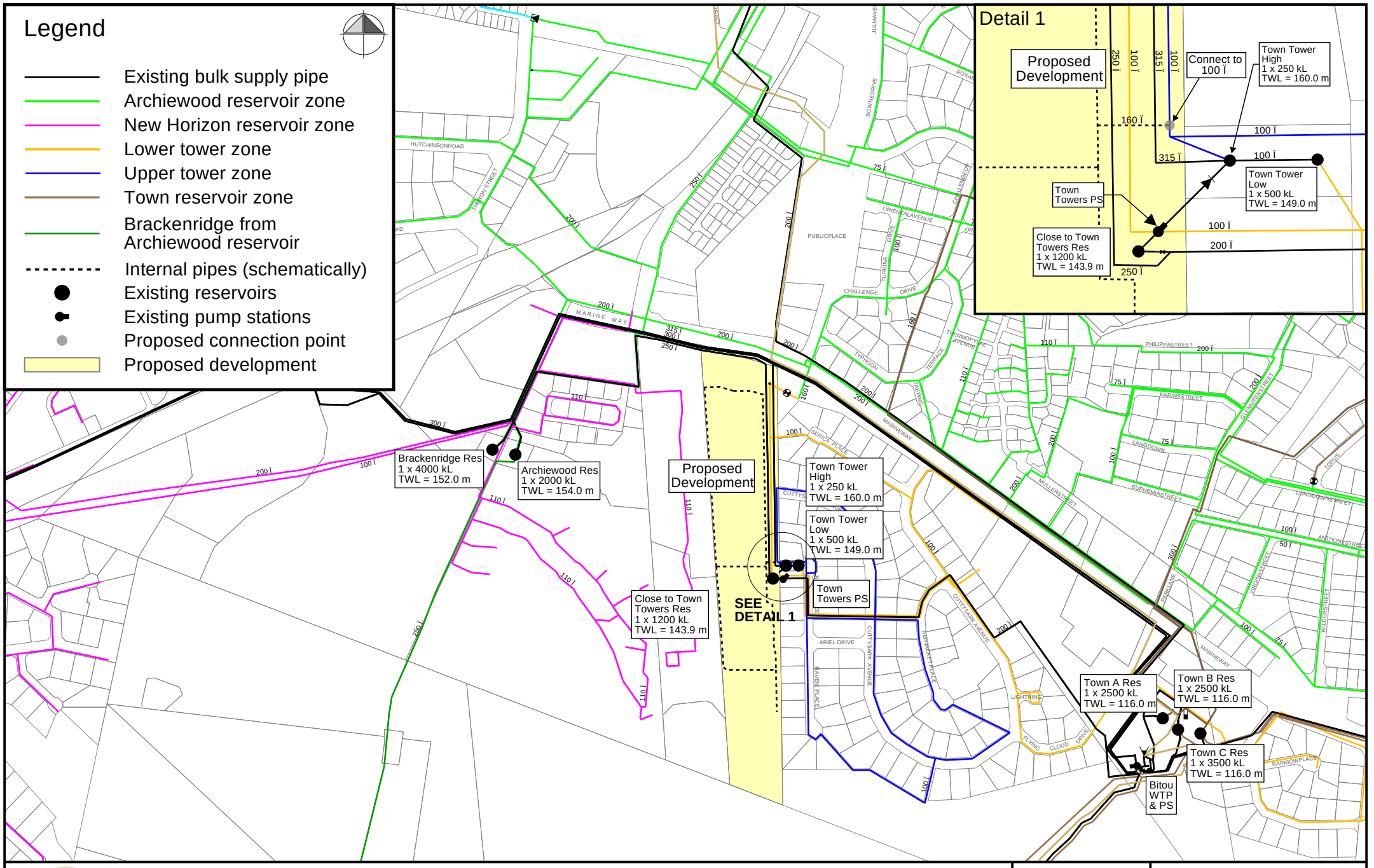
5. The Development Contribution monies are calculated according to the approved Council Policy at the time of payment.

6. The Development Contribution monies are payable before the approval of the building plan certificate or final approval of the subdivision for the transfer of units will be issued, as applicable for the type of development.

7. Where servitudes are required, all the costs and arrangements therefore will be for the developer's account.

8. The developer will be solely responsible for the cost of the link services as identified in the GLS report. The developer will also be responsible for the costs of upgrading to the minimum requirements of the services as identified in the GLS report. These costs may however be offset against the Development Contribution monies payable.

9. The above conditions are subject to any approved Council policies, which may be amended from time to time.



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Development of Erf 2074 - Plettenberg Bay

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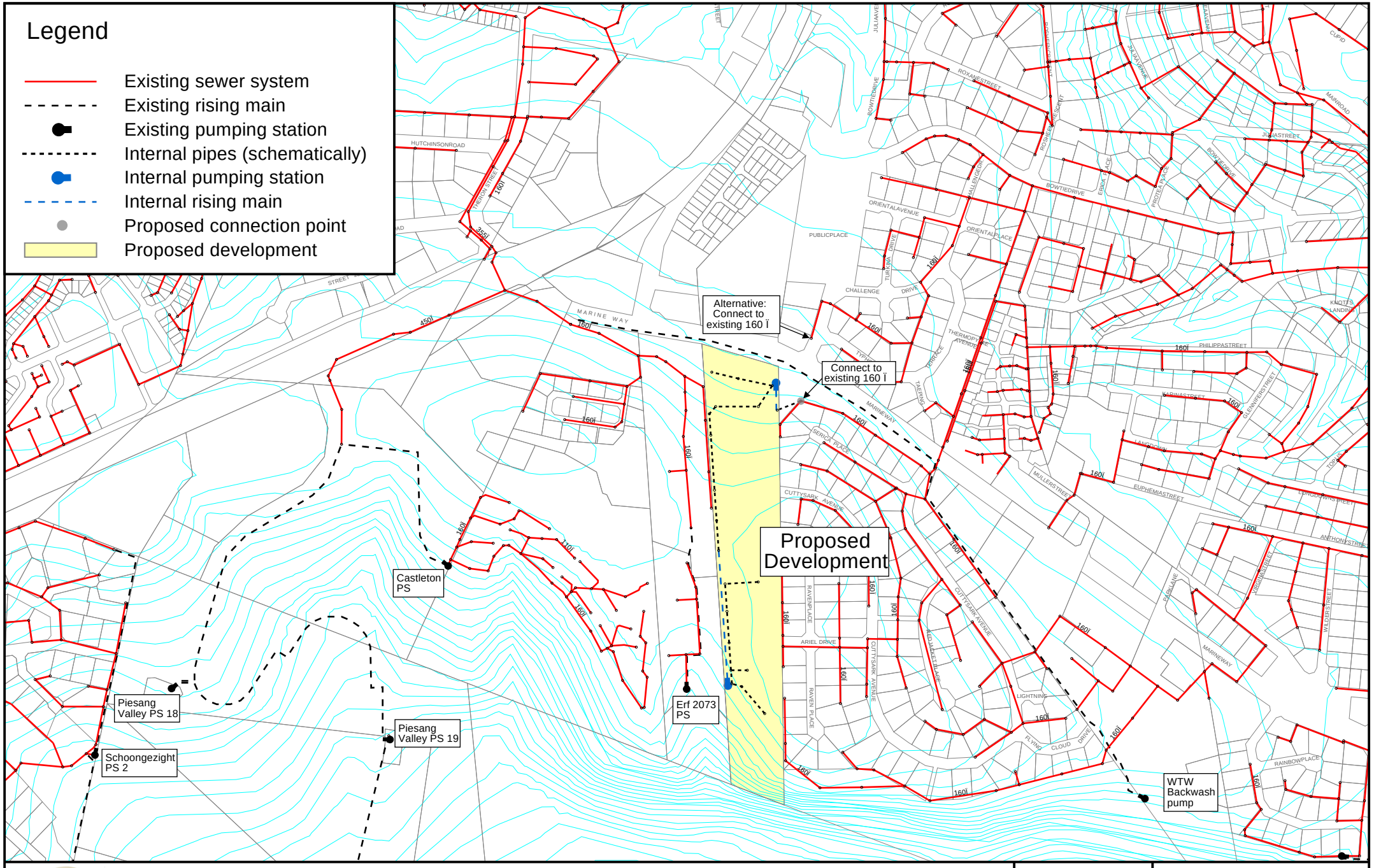
Figure 1
Proposed Development
Bitou - Erf 2074
Water Master Plan



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Development of Erf 2074 - Plettenberg Bay

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Figure 2
Proposed Development
Bitou - Erf 2074
Existing Sewer System