

PLANS AND DOCUMENTS  
referred to in the PDA  
DEVELOPMENT APPROVAL

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# **ENGINEERING SERVICES REPORT - SERENITAS EVERLEIGH LAND LEASE, GREENBANK**

SERENITAS MANAGEMENT PTY LTD



**Premise**

P002797-R01


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## 1. INTRODUCTION

Premise Australia Pty Ltd (Premise) has been commissioned by Serenitas Management Pty Ltd (Serenitas) to prepare an Engineering Services Report for a 225 site Over-50's Lifestyle Community development at Lot 9005 SP348213, Greenbank, QLD. This site sits within Precinct 11 of a +3000 lot master planned residential community being developed by Mirvac Queensland Pty Ltd (Mircac).

The Proposed development site comprises a total area of 12.20 ha (including the open space area to the north that will contain the stormwater basin and sewer pump station, both of which will be approved under separate applications) and forms a part of the Logan City Council (LCC) Local Government Area (LGA), with Economic Development Queensland (EDQ) being the assessing authority for the development. The proposed development location is shown below in **Figure 1**.



**Figure 1 - Nearmap Aerial Image of Site dated 7 April 2025**

The proposed layout for the development prepared by BDA Architecture is shown in **Figure 2** below. The development will consist of 225 home sites with associated communal open space that include pickle ball court, bowls court, pool and central facility.

This report addresses the engineering services that will be required to service the proposed development and has been developed to support Development Application (DA) for the site. Engineering Services Layout plans prepared by Premise are included in **Appendix A**.



Figure 2 - Proposed Concept Master Plan (BDA Architecture)

## 2. DATA SOURCES

In the preparation of this report, information regarding the site was obtained from the following sources:

- > Concept Master Plan, provided by BDA Architecture
- > Nearmap Aerial Imagery (accessed April 2025)
- > Logan Planning Scheme 2015 Version 9.1
- > WSAA Codes
- > SEQ Water Supply and Sewerage Design & Construction Code
- > Queensland Globe

## 3. SITE CHARACTERISTICS

The site is zoned Priority Development Area (PDA) under the Logan Planning Scheme 2015 Version 9.1.

Mirvac are currently undertaking bulk earthworks within the site as part of the overall Everleigh Estate Development works.

The site is located at the north-west of the established Everleigh Estate and surrounded by the following features:

- > **To the East** - The constructed Everleigh Precinct 10.1& 10.2, future Precinct 8.2 and 8.3, and constructed Guroman Drive

- > **To the North** - Conservation area
- > **To the West** - Vacant land parcel which will be future Princinct 13 and medical centre
- > **To the South** - Anderson Drive within the constructed Everleigh Precinct 9.8

LIDAR and survey contour information indicates that the existing land falls from southeast towards the northwest corner, ranging from RL75 AHD to RL55 AHD, a contour plan is shown in **Figure 3** below. Under natural conditions, stormwater runoff across the site follows natural contours and flows generally towards the low point of discharge in the northwest corner.

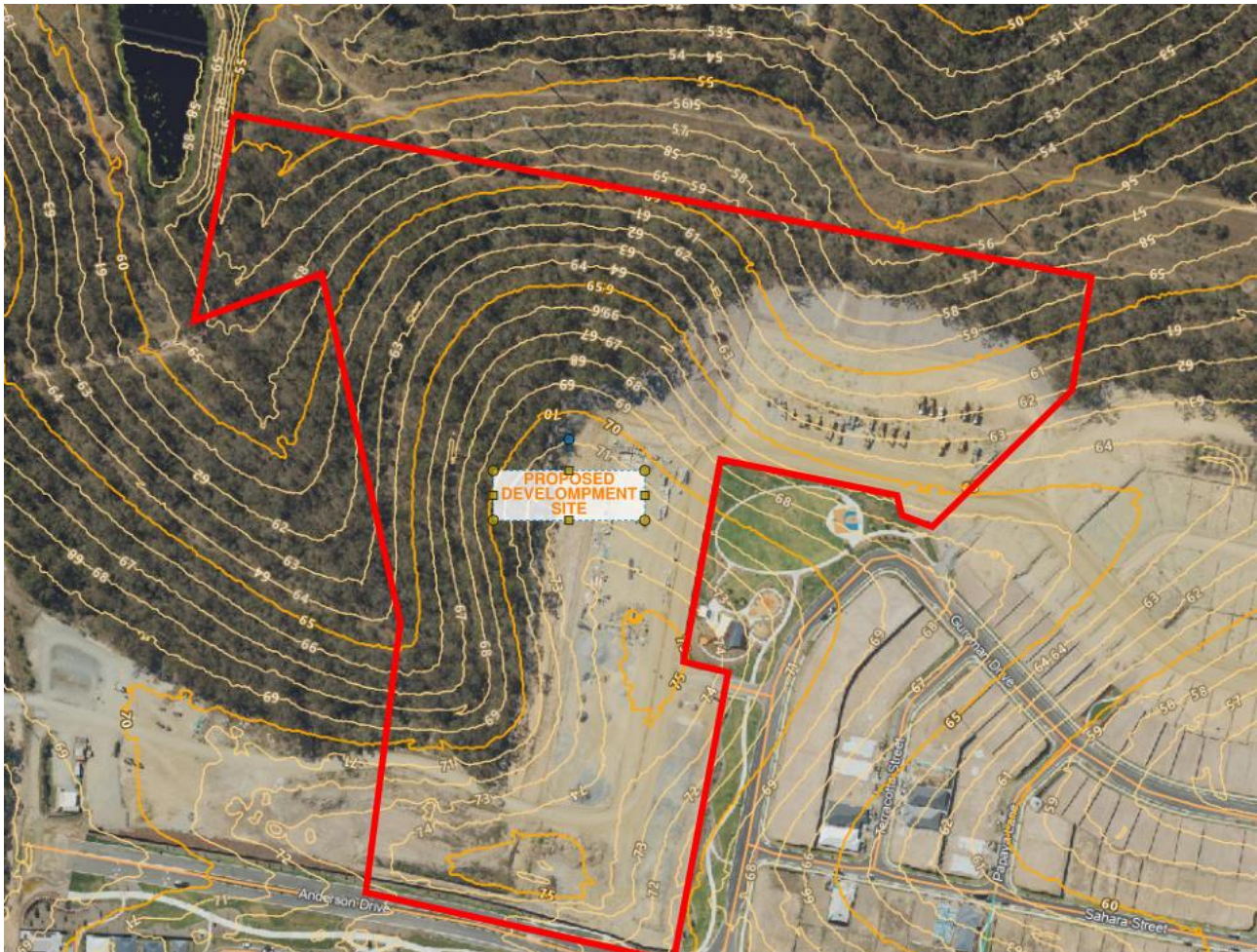


Figure 3 - Contour LIDAR 1m (Queensland Globe)

LCC's Flood Hazard Overlay indicates the site is not impacted by flooding. An extract is displayed in **Figure 4** below.

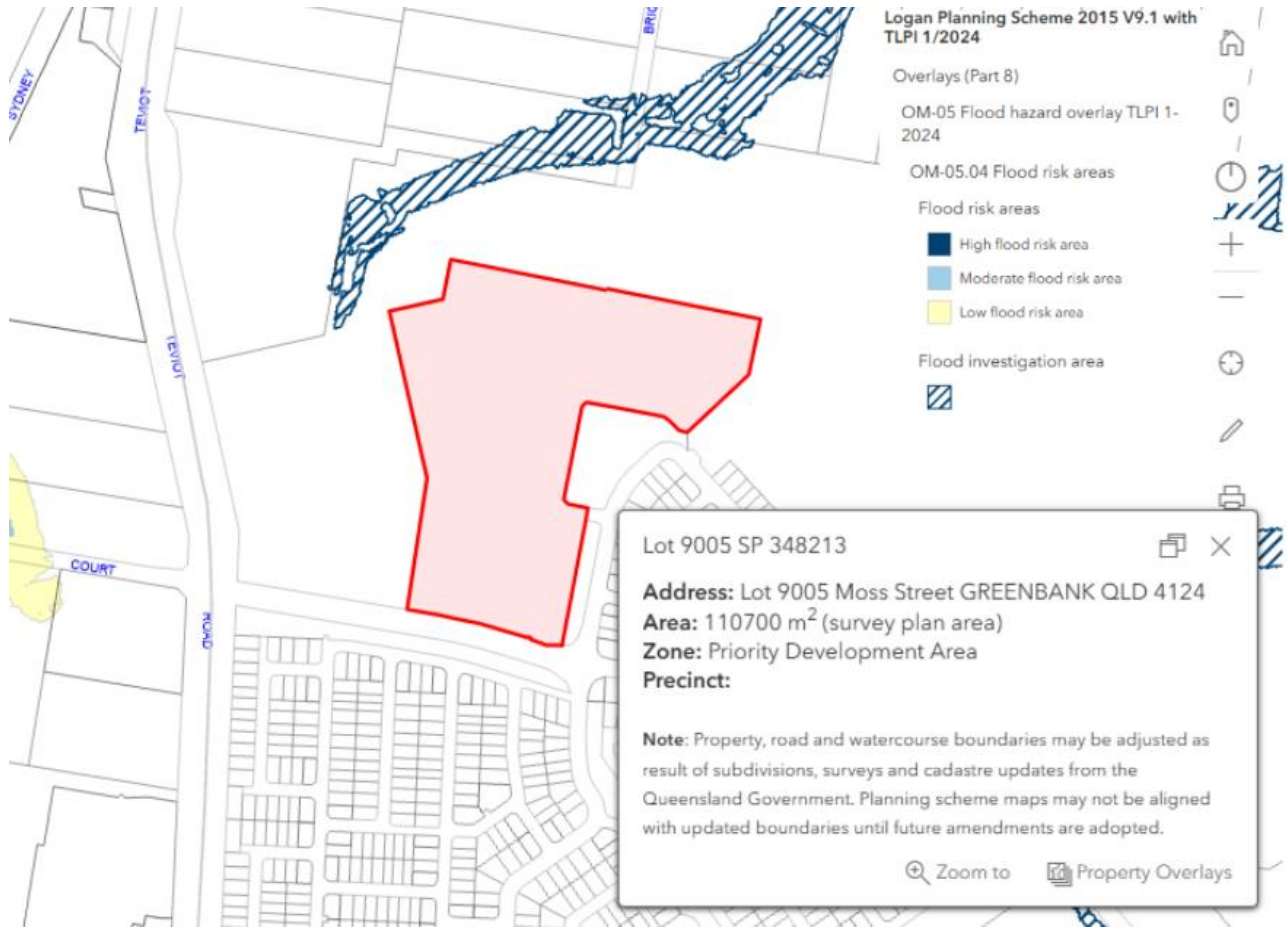


Figure 4 - LCC Flood Risk Areas Mapping

## 4. SERVICES FOR DEVELOPMENT

### 4.1 Transport and Access

Guroman Drive located to the east of the site is classified as a neighbourhood connector 2. Guroman Dr is currently an asphalt sealed pavement with a carriageway width of 7m with kerb and channel on both sides. Anderson Drive running along the southern boundary of the site is classified as a trunk connector 1 and consists of an asphalt-sealed pavement with a carriageway width of 14m with kerb and channel on both sides.

The primary site access will be from Ginger Lane (Road 127) along the eastern boundary of the site off Guroman Drive. The secondary access (for maintenance only) will be from Limelight Drive (Road 126) in the northeastern corner of the site off Burgandy Drive.

The internal roadways are designed with 9.0 to 15.0m road corridor widths comprising a 6.0m wide carriageway and minimum 1.5m wide verge/strips on both sides of the roadway. The internal development roadways comprise reinforced concrete. The paved area has been sized to accommodate a waste Collection Vehicle (10.3m). The roadworks layout is shown in **Appendix A**.

Most internal roads have maximum longitudinal slopes of 4.5%, to optimise trafficability and pedestrian movements throughout the site. Refer to SKC110 in **Appendix A** for the typical road sections.

Parking will be provided in accordance with the traffic engineer's advice.

### 4.2 Earthworks and Retaining Walls

Bulk earthworks are currently being undertaken by Mirvac as part of the Everleigh development. However, minor cut and fill earthworks adjustments are expected to be required as part of the Serenitas development works. The final bulk earthworks will be designed to achieve a cut/fill balance, thus reducing the need for off-site importing or exporting. This will minimise both infrastructure and social impacts in terms of reduced construction and haulage activity. The preliminary Earthworks plans have been provided in SKC200 to SKC 204 in **Appendix A**.

Retaining structures will be required across much of the site to reduce steep grades across the lots and provide "flat" building pads for future house construction. Most wall heights are within the 0m – 1m range. However, a retaining wall with a maximum height of approximately 4.6m will be required to the south of the proposed stormwater detention basin.

The earthworks and retaining wall design is preliminary only at this stage and will be confirmed during detailed design.

### 4.3 Erosion and sediment control

Erosion and Sediment Control (ESC) measures will be required during all stages of development from site establishment to project completion.

An Erosion and Sediment Control (ESC) Plan will be prepared in accordance with International Erosion Control Association (IECA) Best Practice Erosion and Sediment Control (BPESC) document and submitted to EDQ through the operational works process, prior to construction commencing. The ESC Plan will incorporate an Erosion and Sediment Control strategy for the bulk earthworks, required for the proposed development. It will also identify responsibilities of key project personnel relating to erosion and sediment control for the construction activities.

It is expected that exposed areas will be stabilised as soon as practicable once earthworks have been completed for the area, and in the case of any extended site inactivity periods. Sediment control devices will be removed once construction works are completed, and the site is operational. The earthworks will also be staged to minimise exposed areas.

The Erosion and Sediment Control Program will be devised during the detailed design phase.

## 4.4 Stormwater

There is currently no stormwater infrastructure located within the development site. However, several existing stormwater pipe connections to service part of lot 9005 are located on the eastern side of the site, with various sizes - DN675 and DN750.

The proposed development stormwater management strategy is to discharge site surface and roofwater runoff to underground stormwater infrastructure within the internal road network. Stormwater flows from the western portion of the site are proposed to be conveyed to the end-of-line stormwater quality and quantity treatment device at the northwest corner of the site. The 1% AEP flows are proposed to be captured in the pipe network as there will be insufficient capacity within the roads to convey these flows. Stormwater flows from the eastern portion of the site are proposed to be conveyed to the existing stormwater network to the east of the site within the Everleigh Development. It is expected that 10% AEP flows will be conveyed within the pipe network and balance flows up to the 1% AEP flow will be conveyed overland within the road corridor for the eastern portion of the site.

The preliminary stormwater layout is shown on SKC100 to SKC104, enclosed as **Appendix A**. A detailed stormwater design will be confirmed at the operational works phase of the development, in accordance with QUDM and LCC standards and requirements. Detention basin design has been undertaken by Engeny as part of the Everleigh Development and will be approved under a separate application.

### 4.4.1 STORMWATER QUANTITY

A hydrologic model covering the entire Everleigh Site has been undertaken using the hydrologic software XPRAFTS by Engeny. Refer to the Everleigh Stormwater Master Plan (QC4060\_005-REP-701-3 Rev 3) prepared by Engeny, dated 14 March 2025 in **Appendix B**. Further analysis of the proposed project area and all the contributing catchments within the future Everleigh Precinct 13 has been provided in the Everleigh Precinct - Stormwater Detention and Water Quality Analysis prepared by Engeny (dated 19/02/2025) in **Appendix C**.

The modelled detention basin has a capacity of 12ML and mitigates post-development peak flows for all storm events up to and including the 1% AEP. See **Appendix C** for detention basin design characteristics.

### 4.4.2 STORMWATER QUALITY

A stormwater quality analysis, using MUSIC software, has been undertaken by Engeny to assess the management and treatment of pollutant loads from the site. An 800 m<sup>2</sup> bioretention basin filter area and 400 m<sup>2</sup> sediment basin area has been determined as required as part of the stormwater treatment device at the northwest corner of the site. Stormwater Quality modelling results are provided in the Everleigh Stormwater Master Plan (QC4060\_005-REP-701-3 Rev 3) prepared by Engeny, dated 14 March 2025 in **Appendix B** and Everleigh Precinct - Stormwater Detention and Water Quality Analysis prepared by Engeny (dated 19/02/2025) in **Appendix C**.

## 4.5 Sewer Reticulation

There is currently no existing sewer infrastructure located within the development site. The existing DN150 uPVC gravity sewer main is running outside the eastern site boundary.

The development site will be serviced by an internal underground sewer network (refer to SKC500), enclosed as **Appendix A**. The eastern portion of the site will connect to the existing sewer network to the east.

To service the eastern portion of development (111 lots), it is proposed to provide a new connection into a DN 150 temporary end (TE1/30), which is located in future Everleigh Precinct 8.3 (near proposed lot 184). There is 208 EP available in this existing sewer network, which has sufficient capacity to service the eastern portion of the development, with a residual amount of 12EP that may be used for the communal open space facilities (subject to final design).

For the western portion of development (114 lots), the sewer will be connected into a proposed external gravity sewer main which is provided by Mirvac, near proposed lot 114. The site sewerage will be conveyed via a DN150 uPVC sewer network, before connecting into a DN225 uPVC sewer network and travelling east before ultimately reaching the sewer pump station located at the northeast corner of the site. From the pump station, sewerage will be pumped south via a DN110 PE rising main to the existing sewer manhole located at Anderson Drive.

The proposed sewer pump station location design and construction is being undertaken by Mirvac under a separate application as part of the Everleigh Development.

On 27<sup>th</sup> November 2024, EDQ advised via email to adopt a rate of 1.76 EP/ 2 Bedroom Dwelling for a relocatable home park. Anticipated sewer demand has been calculated in accordance with the WSAA Water Supply Code and LCC planning scheme and results are shown in **Table 1**.

	Units	EP/Unit	Total EP	Average Dry Weather Flow (ADWF)	Peak Wet Weather Flow (PWWF)	Design Flow PWWF
<b>Eastern Portion</b>	<b>111</b>	1.76	196	200 L/EP/d	2.27 L/s	<b>2.27 L/s</b>
<b>Western Portion</b>	<b>114</b>	1.76	201	200 L/EP/d	2.33 L/s	<b>2.33 L/s</b>

**Table 1 - Calculated Sewer Demand**

The proposed development is within the overall Everleigh water and sewer infrastructure plan, and it has been demonstrated that the current sewerage servicing solution has sufficient capacity to service the proposed development. Refer to Sewerage Infrastructure Masterplan (MIR-0020/R01), prepared by Premise, enclosed as **Appendix D**.

The internal sewer infrastructure will require detailed design through the subsequent operational works process in accordance with the WSAA Gravity Sewerage Code, and LCC standards and requirements.

## 4.6 Water Reticulation

There is currently no existing water infrastructure located within the development site.

Outside the site boundary, there are existing PVC water mains of various sizes - DN100, DN150, and DN200 along Guroman Drive, and DN150 and DN250 mains along Anderson Drive.

The development site will be serviced by an internal underground water network (refer to SKC600) and it is proposed that two new connections be provided from the existing water mains listed below:

- > DN150 mPVC PN16 running on the southern side of the Ginger Lane, near the proposed lot 34, within the existing Precinct 10.1
- > DN100 mPVC PN16 running on the southwestern side of Limelight Drive, near the proposed lot 184, within the future Precinct 8.3

In accordance with the WSAA Water Supply Code, the peak hour demand for the water main is the hourly Average Day Demand (AD), multiplied by the Peak Hour Factor (PHF) for the catchment, combined with the Non-Revenue Water (NRW). Anticipated water loadings have been calculated in accordance with the standards mentioned above and LCC planning scheme are presented in the following table:

Units	EP/Unit	Total EP	Average Day Demand (AD)	Peak Hour Factor (PHF)	Non-Revenue Water (NRW)	Peak Hour Demand
225	1.76	396	165L/EP/d	3.1	25L/EP/d	<b>2.46L/s</b>

**Table 2 - Calculated Water Demand**

The proposed development is within the overall Everleigh water and sewer infrastructure plan, and it has been demonstrated that the current water servicing solution has sufficient capacity to service the proposed development. Refer to Water Infrastructure Masterplan (P000196/R01), prepared by Premise, enclosed as **Appendix E**.

The internal water infrastructure will require detailed design through the subsequent operational works process in accordance with the WSAA Water Supply Code, and LCC standards and requirements.

## 4.7 Electricity & Telecommunications

### 4.7.1 ELECTRICITY

Energex low voltage electrical cables exist in proximity to the site. The existing service is anticipated to be extended to provide connection for the proposed lots. It is understood that the proposed development must incorporate low-voltage electricity supply to all facilities within the development in order to comply with LCC requirements.

### 4.7.2 TELECOMMUNICATIONS

Telecommunications infrastructure exist in proximity to the site. Telecommunications for the development will be provided by Telstra. The existing service is anticipated to be extended in order to provide connection for the proposed lots.

Refer to SKC110 in **Appendix A** for the typical alignment of combined services details.

## 5. CONCLUSIONS

This report has discussed the services required for the Serenitas Over 50's Life Community development. It has been demonstrated that the proposed development can be adequately serviced with all necessary engineering services including roadworks, stormwater, sewer reticulation, water supply, electricity, and telecommunications, in accordance with Logan City Council Planning Scheme requirements and relevant engineering standards.



**APPENDIX A**

**CONCEPT ENGINEERING PLANS**



**APPENDIX B**

**EVERLEIGH STORMWATER MASTER PLAN**



## APPENDIX C

# STORMWATER DETENTION AND WATER QUALITY ANALYSIS



**APPENDIX D**

**SEWERAGE INFRASTRUCTURE MASTERPLAN REPORT**



**APPENDIX E**

**WATER INFRASTRUCTURE MASTERPLAN REPORT**



