



Illyarrie Land Lease Community Stockland Engineering Services Report Revision A – 3 April 2024

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APPENDIX A – CIVIL ENGINEERING DRAWINGS

1. INTRODUCTION

This report has been prepared by Cossill & Webley (CW) to support Stockland’s Development Application for the development of a 153 dwelling Land Lease Community (LLC), within Stockland’s Illyarrie Master Planned Community (MPC), located at Sinagra. The extent and location of The Site is defined in Figure 1 below.

This report summarises our assessment of the engineering aspects of the proposed development of the LLC (referred to herein as The Site).

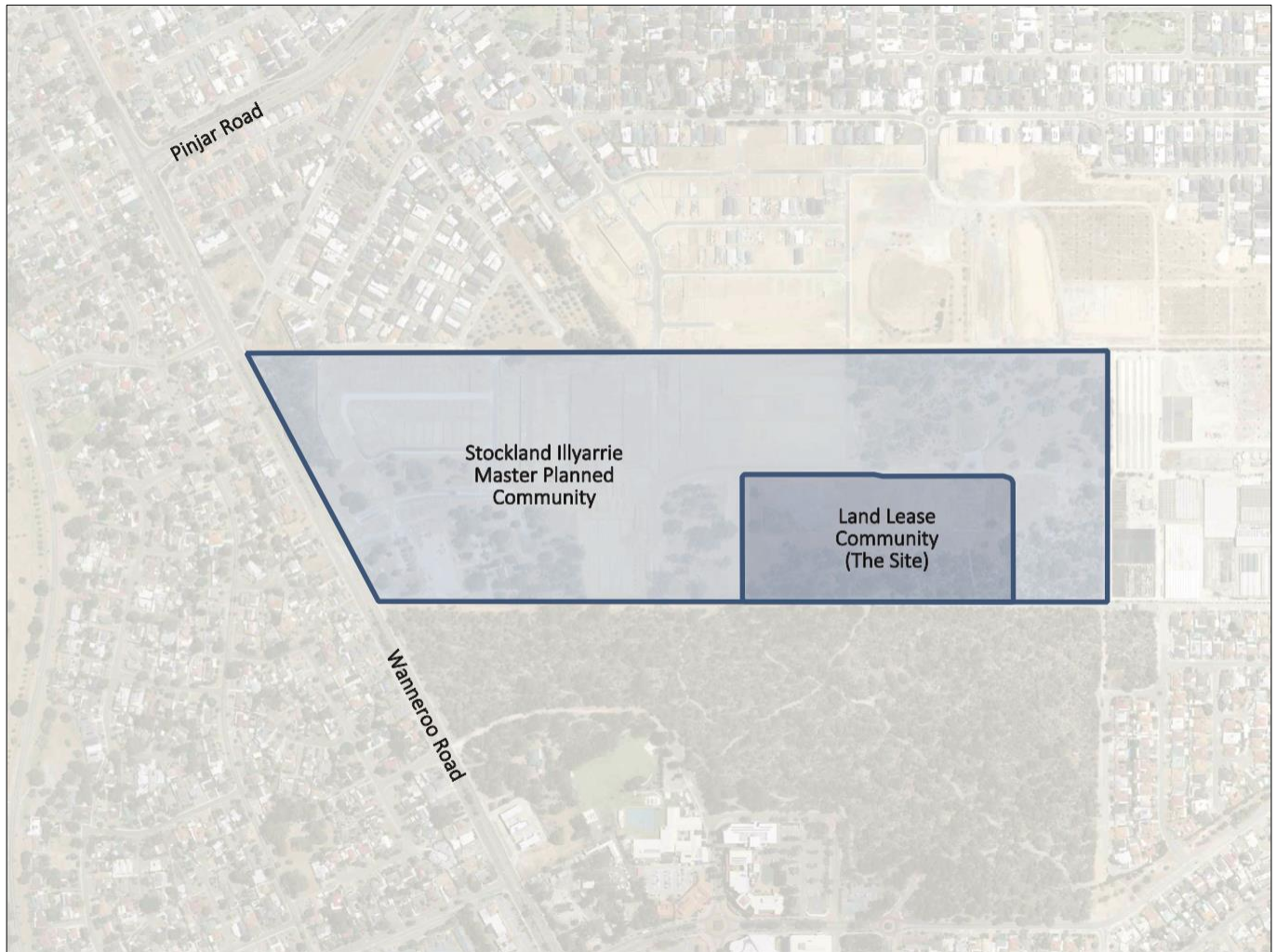


Figure 1 – Locality Plan (Aerial: Metromap)

2. SITE DESCRIPTION

The Site is part of the Stockland Illyarrie Masterplan Community, located at Piara Waters, within the City of Wanneroo Local Government Area.

The Site has an area of 6.92 hectares, and will be located on Lot 1, being created and titled under Subdivision Approval 162837. The current description of the land where the Land Lease Community will be located is Lot 1665 on P103478.

The Site is bound by the Stockland Master Planned Community to the north, east, and west boundaries. The southern boundary is bound by Lot 9000 on P407802.

3. PROPOSED DEVELOPMENT

The proposed development is a Land Lease Community, consisting of:

- 153 residential dwellings;
- A Clubhouse for residents, consisting of games room, function room, community kitchen, library, cinema, hobby shed, gym, pickleball courts, and swimming pool;

The proposed development layout of The Site is shown in Figure 2 below.

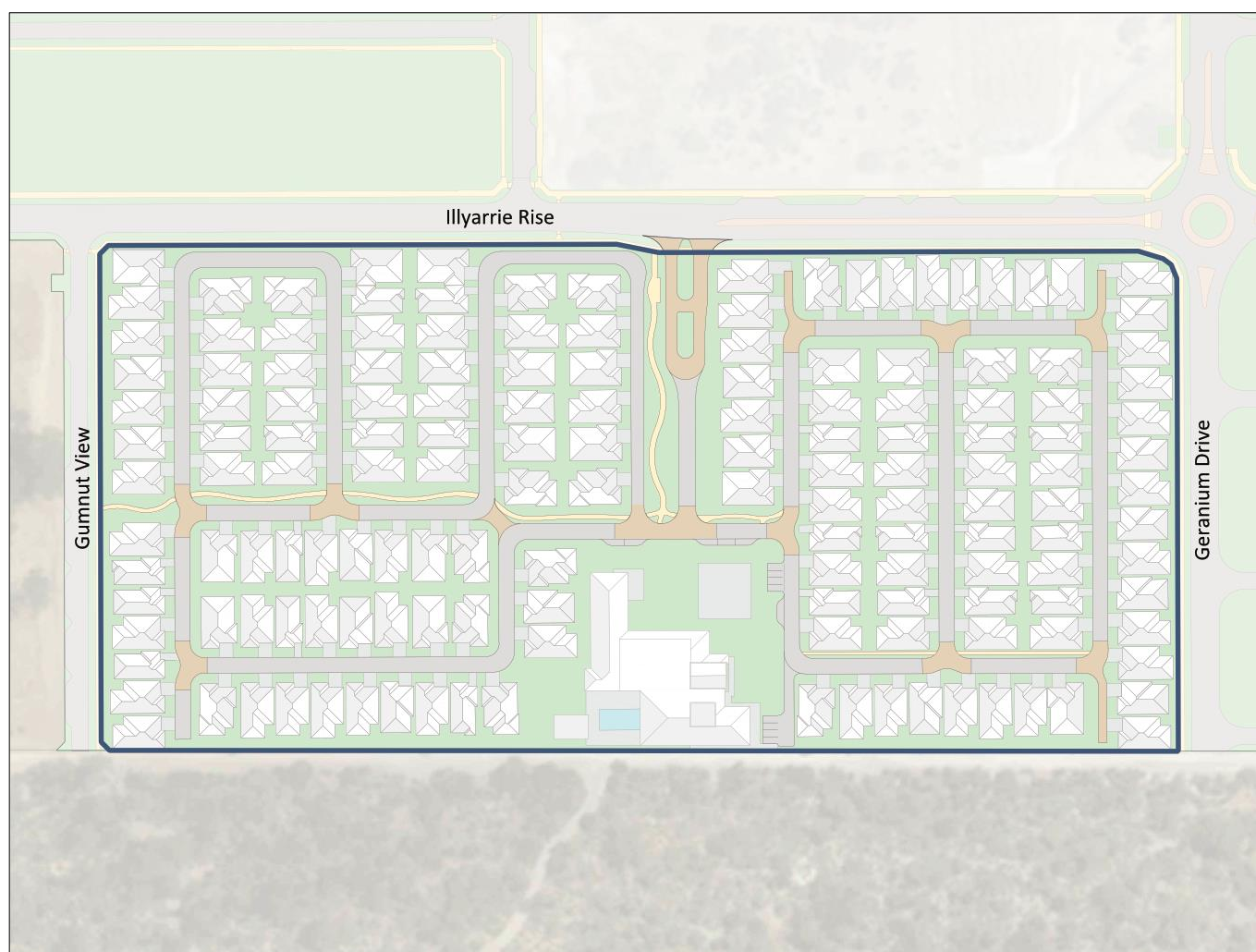


Figure 2 - Development Layout

3.1 Geology and Landform

3.1.1 Geology

The Geological Survey of Western Australia indicates that The Site is characterised by the following soil types:

- Sand – pale and olive yellow, medium to coarse-grained;

Figure 3 below shows the extent of each soil type identified on the Perth Plan of the Geological Survey of Western Australia.

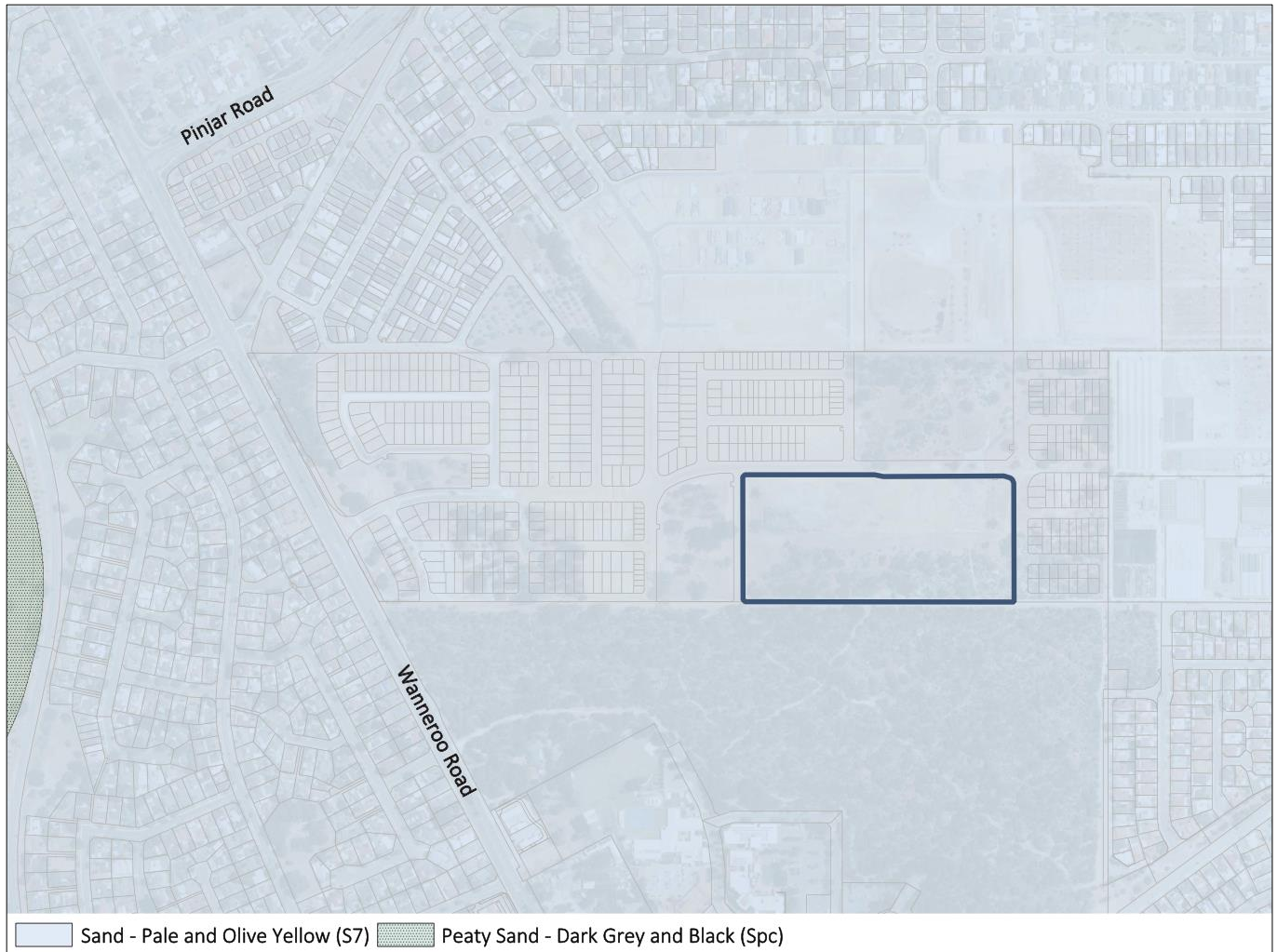


Figure 3 – Snippet of Perth Plan of Geological Survey of Western Australia (Source: Geological Survey of WA)

3.1.2 Landform

The Site is sloping with 3% fall from the highest to lowest point on the site. The highest point of The Site, located on the eastern boundary is RL 68.3m AHD. The lowest point of The Site is located on the western boundary at RL57.23m AHD, as shown in Figure 4 below.

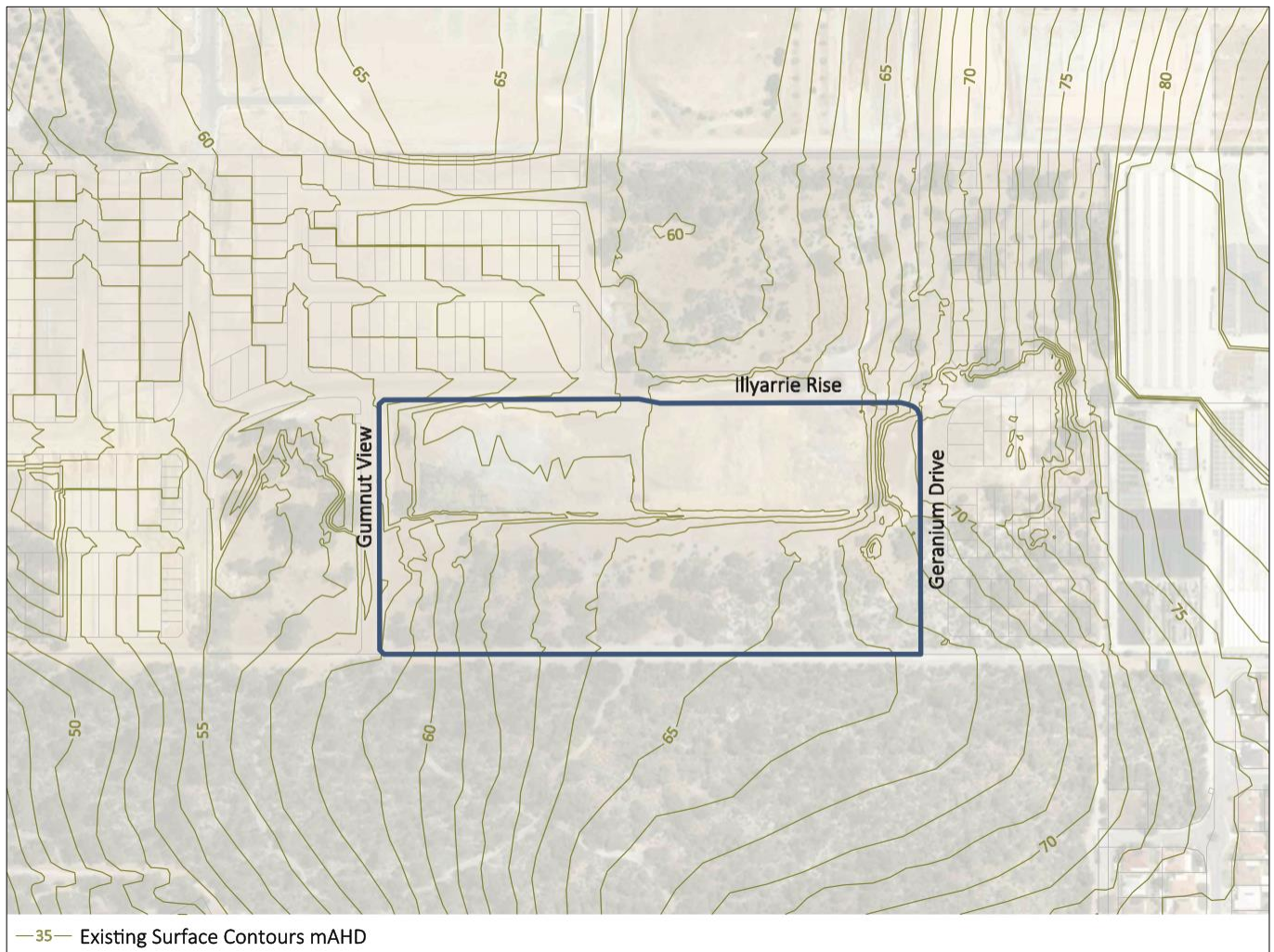


Figure 4 - Existing Surface Contours (Source: MNG Access)

3.2 Groundwater

A desktop review of the Perth Groundwater Atlas indicates the Historical Maximum Ground Levels vary from RL 39m at the eastern boundary of the site to RL 34m AHD at the western boundary, as defined in Figure 5 below.

Natural and proposed ground levels are significantly higher than the Historical Maximum Groundwater Levels, and as such it is not anticipated that the groundwater levels will have any impact on the design of the Land Lease Community.

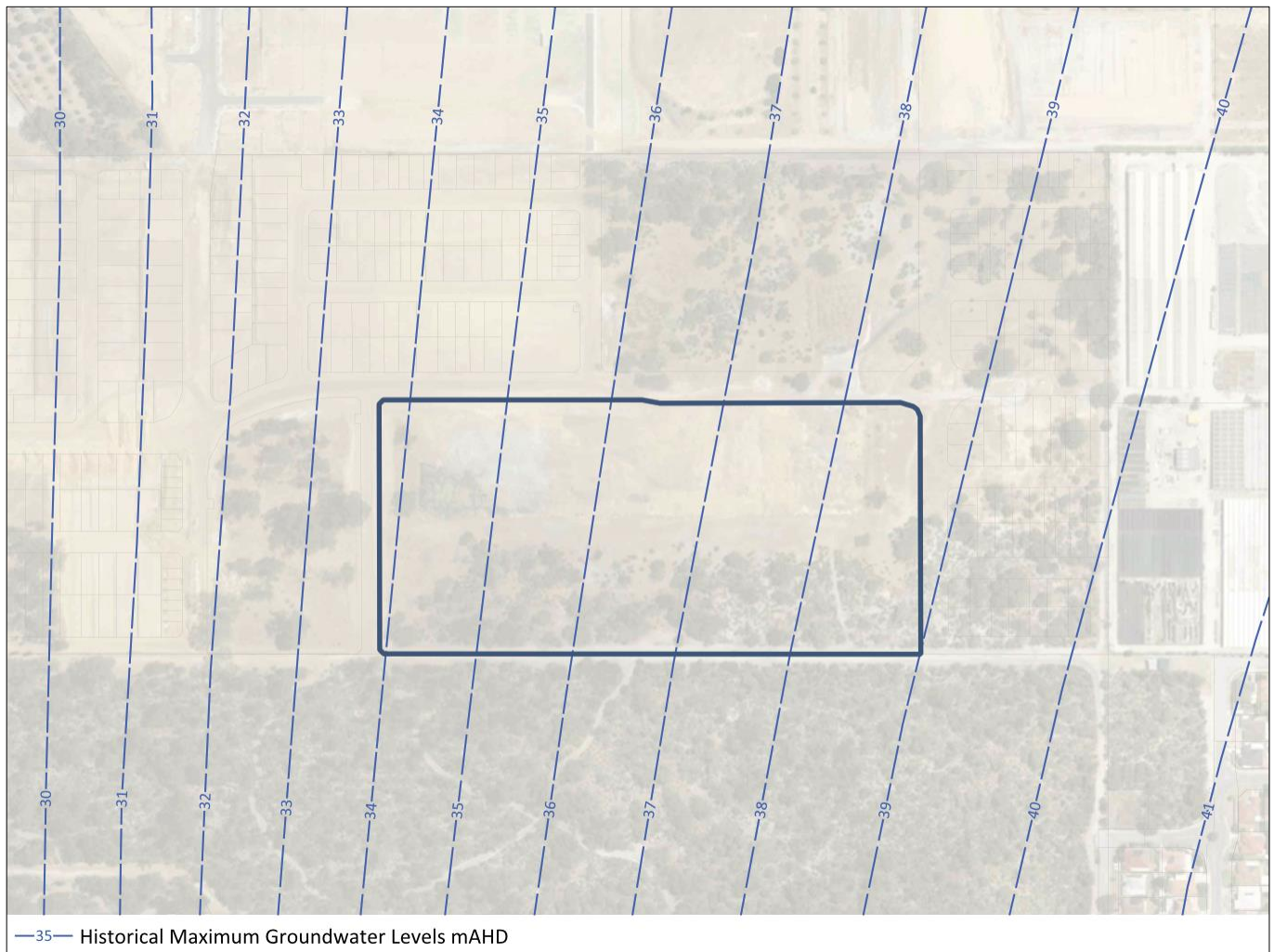


Figure 5 - Existing Average Annual Maximum Groundwater Levels (Source: Perth Groundwater Atlas)

3.3 Acid Sulphate Soils

A desktop review of the Acid Sulphate Soils Risk Map for the South Perth Metropolitan Region, as published by the Department of Environment and Conservation indicates that The Site is classified as no known risk of Acid Sulphate Soil potential.

4. EARTHWORKS

It is proposed to undertake earthworks across The Site, to create flat pads for each dwelling in the development, as shown on sketches 6373-LLC-205, 6373-LLC-206, and 6373-LLC-SK203, in Appendix A.

The site is expected to generate around 43,000 cubic metres of cut, of which 30,000 cubic metres will be used to fill various areas of The Site, with the residual 13,000 cubic metres used as fill elsewhere in the MPC.

Following completion of the earthworks across The Site, levels will range from RL68.2m AHD through to RL57.5m AHD.

5. ROADWORKS & FOOTPATHS

5.1 Connection to Existing Roads

Access to The Site is proposed from Illyarrie Rise, as shown on drawing 6373-LLC-SK204, in Appendix A. Illyarrie Rise is a Neighbourhood Connector being constructed as part of Stockland's Illyarrie Master Planned Community.

5.2 Internal Road Network

The internal road network is will be privately owned and maintained infrastructure, owned and maintained by the operators of the Land Lease Community. Broadly the internal road network consists of the Entrance Arrangement, Dwelling Access Roads, and Car Parking. The internal road network is illustrated on drawing 6373-LLC-SK204, in Appendix A.

5.2.1 Entrance Arrangement

The entrance arrangement, as shown in Figure 6 below, from Illyarrie Rise consists of a divided road that serves the following purposes:

- Intercom access for visitors; and
- Turn-around area for errant drivers.

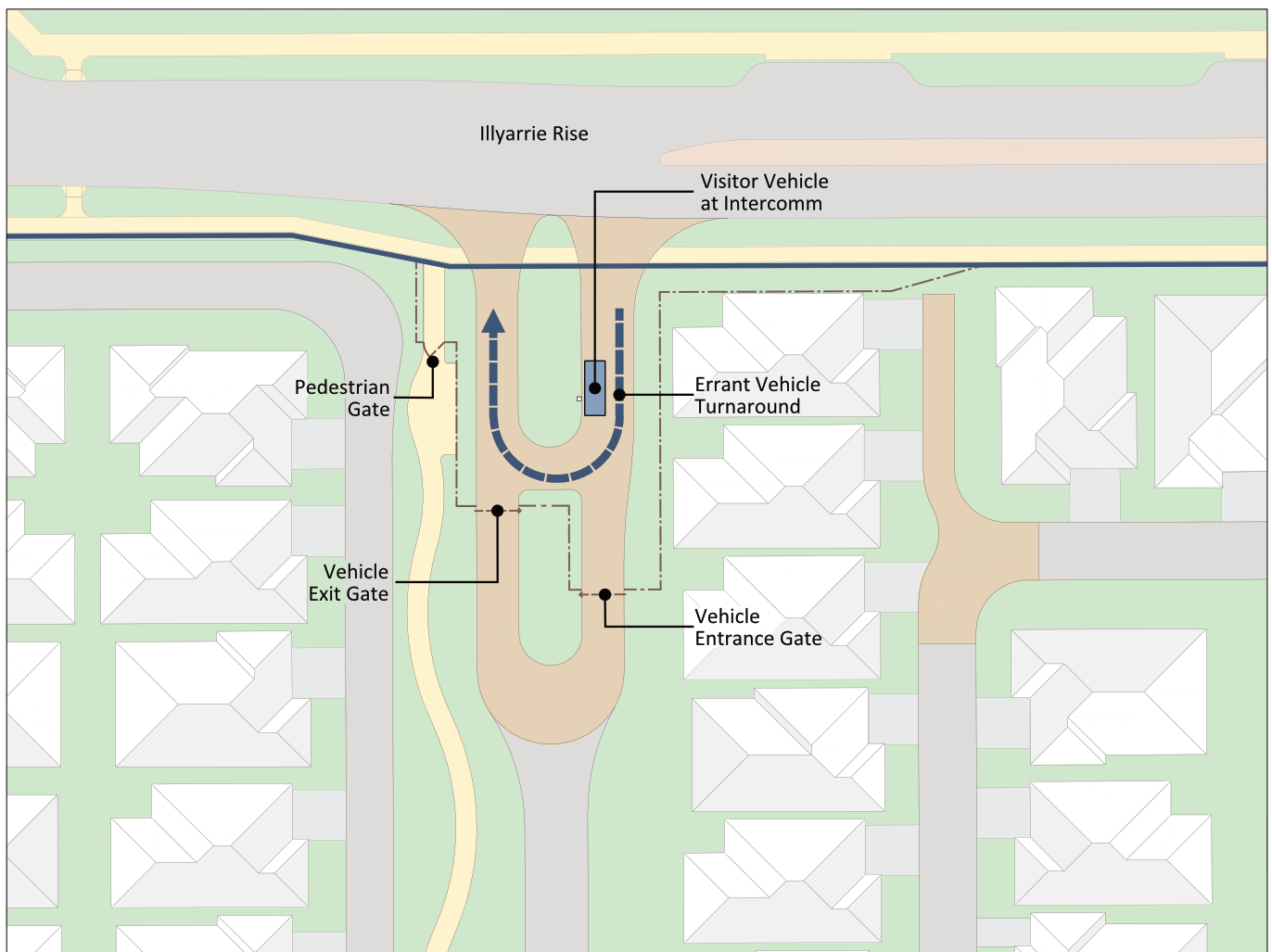


Figure 6 - Entrance Arrangement

5.2.2 Dwelling Access Roads

Internal access roads are proposed to be shared vehicle and pedestrian zones, with a speed limit of 10km/h. The carriageway varies in width, typically 5.5m wide, and is proposed to be constructed from a concrete pavement, with an inverted crown. A typical carriageway cross section is shown in Figure 7 below.

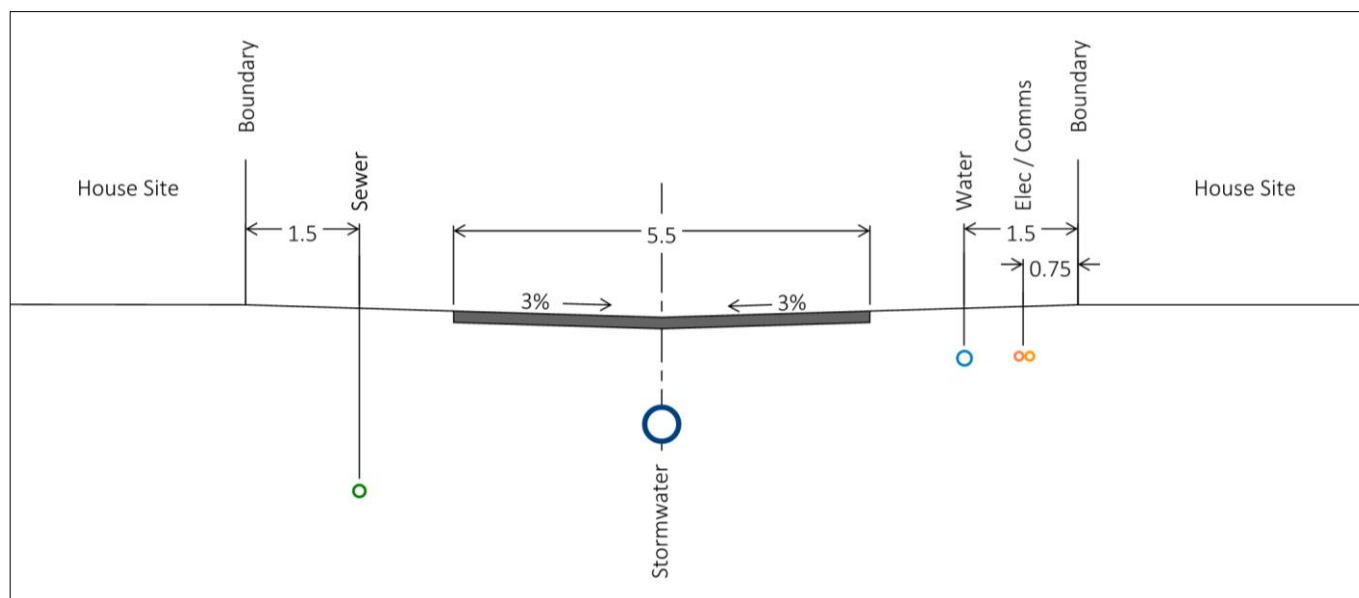


Figure 7 - Typical Dwelling Access Road Cross Section

5.2.3 Parking Bays

Parking bays for visitors, located adjacent to the Clubhouse, and Wellness Centre are proposed, as defined on drawing 6373-LLC-SK204. A total of 13 visitor parking spaces, designed to AS/NZS 2890.1:2004 Australian Standard are proposed to be provided.

5.2.4 Pedestrian Access

Pedestrian access is proposed from Illyarrie Rise and Gumnut View, via dedicated footpaths within the Landlease Community, as defined on drawing 6373-LLC-SK204, included in Appendix A. Footpaths terminate at the internal access roads, at which point the internal access roads operate a shared zone.

5.3 Refuse Collection

It is intended that the residential dwellings, along with the Clubhouse will be serviced by 240 litre general waste and recycling bins, collected by a side loading garbage truck operated by the City of Wanneroo.

Turning movements for a Bucher Sport Gen 6 Side Loader garbage truck, as shown on drawings 6373-LLC-SK206, SK207, SK208, and SK209, and included in Appendix A, have been undertaken for The Site, demonstrating that a City of Wanneroo garbage truck can have full access to The Site for the purposes of garbage collection.

6. STORMWATER DRAINAGE

JDA Consultant Hydrologists have prepared a stormwater management plan summarising the proposed drainage strategy for The Site, that is consistent with the approved Urban Water Management Plan. The broad intent for stormwater management for The Site is detailed as follows:

- First 15mm of Rainfall – Soakwells are proposed to be provided for residential dwellings and Clubhouse for the first 15mm of rainfall. For road reserves, the first 15 mm of rainfall from the road reserve will be retained on-site using roadside rain gardens, as illustrated on sketch 6373-LLC-SK210, in Appendix A.
- 20% AEP Storm Event – It is proposed that runoff from The Site for the 20% AEP event will be captured in pit and pipes and discharged into the regional infiltration basin located in MPC POS A located to the west of the Site; and
- Up to and including 1% AEP – Runoff from The Site will discharge from The Site as piped and overland flow into the infiltration basin located in MPC POS A.

Stormwater drainage infrastructure within the LLC will be privately owned and operated by the owner / operator of the Land Lease Community.

7. WATER RETICULATION

7.1 Potable Water - Point of Supply

Potable water supply to The Site will be provided from a 100mm diameter Water Corporation connection, which is currently being constructed as part of the water reticulation for the Master Planned Community, as shown in Figure 8 below.

7.2 Fire Fighting Service – Point of Supply

Fire fighting water supply to The Site will be provided from a 150mm diameter Water Corporation connection, which is currently being constructed as part of the water reticulation for the Master Planned Community, as shown in Figure 8 below.

7.3 Internal Water Reticulation

From the point of connection, as shown in Figure 8 below, potable water reticulation will continue through The Site, servicing every dwelling, and the Clubhouse, and Wellness Centre.

A separate fire fighting main, located parallel to the potable water main will provide fire fighting coverage to the Class 1A residential dwellings through the provision of fire hydrants within the internal road network.

Beyond the point of connections, the water reticulation will be owned and maintained, by the operators of the Land Lease Community.

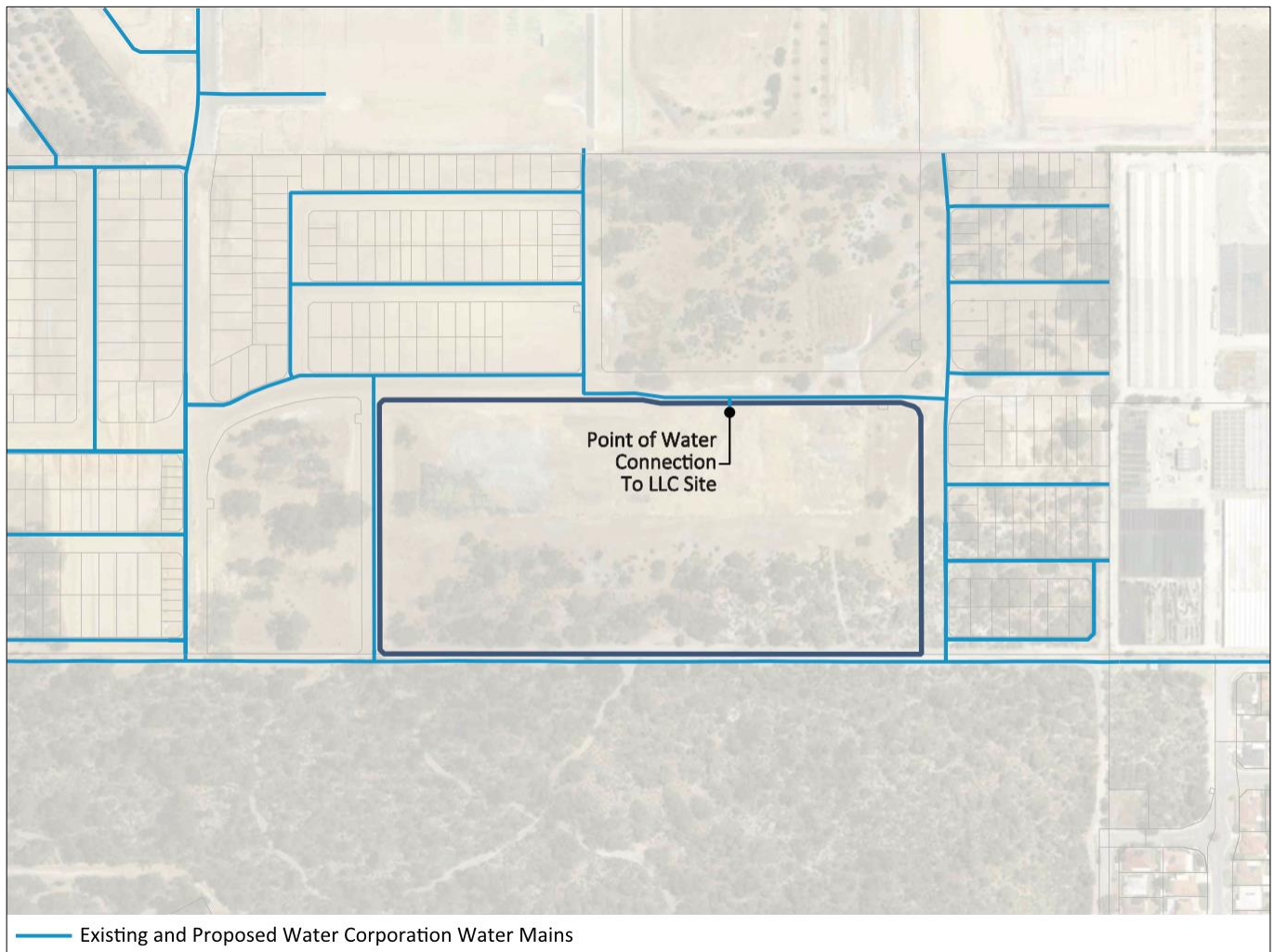


Figure 8 – Water Connection to LLC Site

8. SEWER RETICULATION

8.1 Point of Connection

A Sewer connection to The Site will be provided by a 150mm diameter Water Corporation property connection, which are currently being constructed as part of the gravity sewer network for the Master Planned Community, as shown in Figure 9 below.

8.2 Internal Sewer Reticulation

From the point of connections, as shown in Figure 9 below, gravity sewer reticulation will continue through The Site, servicing every dwelling and the Clubhouse.

Beyond the point of connections, the gravity sewer will be owned and maintained, by the operators of the Land Lease Community.

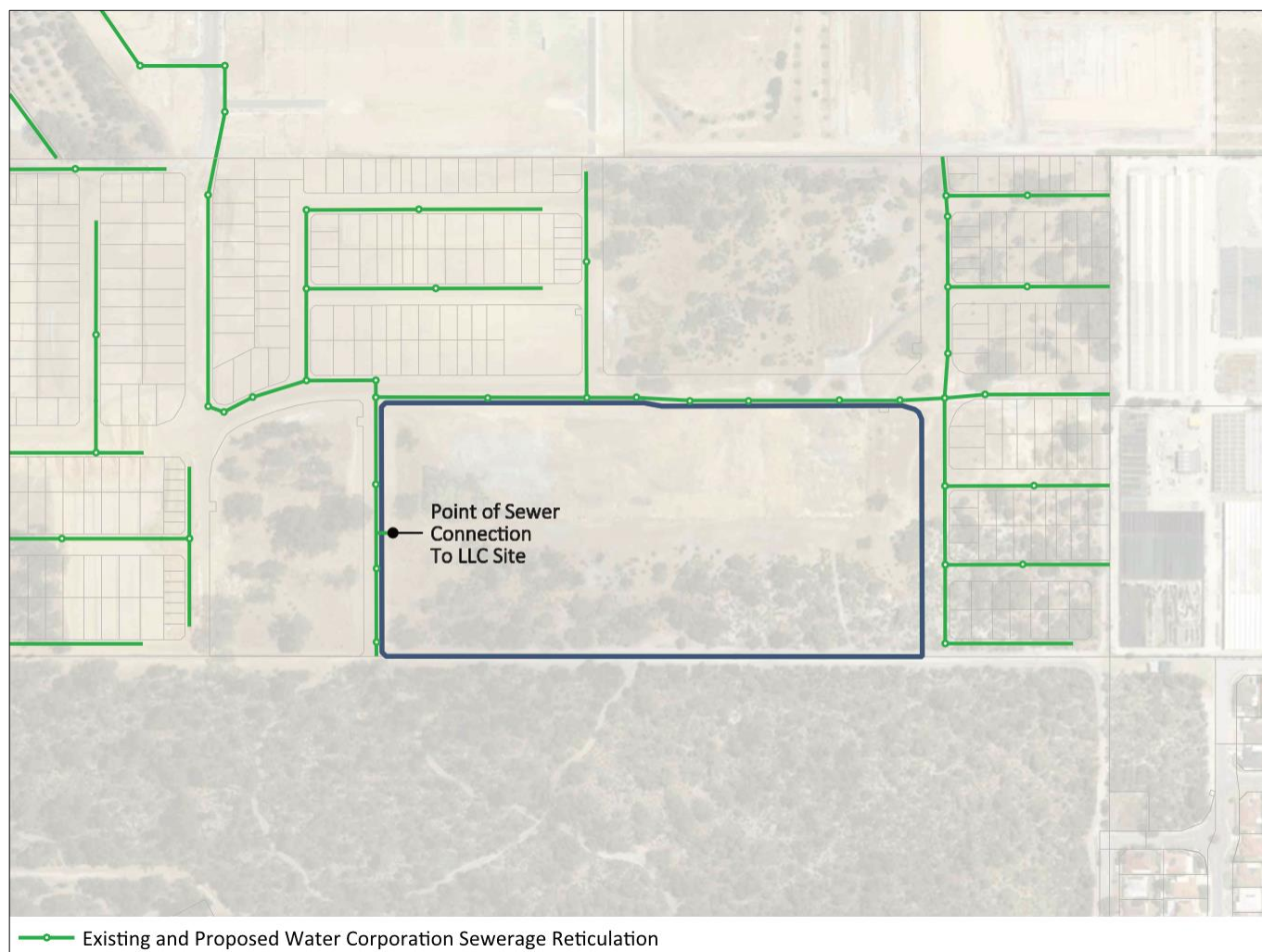


Figure 9 – Sewer Reticulation Connection to LLC Site

9. POWER SUPPLY

9.1 Point of Supply

The LLC will be provided with a Western Power point of connection from the subdivision works, on Illyarrie Rise.

9.2 Internal Power Network

From the point of Western Power supply, from Gumblossum Avenue, the internal power network is intended to be a privately owned and operated AS3000 network.

10. GAS SUPPLY

It is not proposed to install gas reticulation throughout the development. Stockland are proposing a full electric community to encourage residents to move towards renewable energy sources, whilst creating healthier homes that do not rely on fossil fuels.

11. COMMUNICATIONS NETWORK

11.1 Point of Supply

The Master Planned Community is located within the NBN fixed-line footprint. The LLC Site will be provided with an Optic Fibre connection on Illyarrie Rise.

11.2 Internal Communications Network

Communications infrastructure within the LLC Site will be a privately owned and maintained Optic Fibre network, providing connections to each dwelling within the development. This network will be operated and maintained by the owner / operator of the Land Lease Community.

12. CONCLUSION

This Engineering Services Report demonstrates that the Land Lease Community (LLC) can be suitably accommodated within Stockland's Illyarrie Master Planned Community (MPC), as it can be provided with points of connection for water, sewer, electrical reticulation, and communications. This Engineering Service Report also affirms that stormwater runoff from the LLC can be suitably managed.

From a civil engineering perspective, the incorporation of the LLC site into the MPC can be suitably accommodated, and is an appropriate outcome for The Site.

APPENDIX A – CIVIL ENGINEERING DRAWINGS

Drawing Title	Drawing Number
Finished Surface Plan – Sheet 1 of 1	6373-LLC-205
Site Cross Sections Finished Surface Level	6373-LLC-206
Concept Earthworks Plan – Cut / Fill Extents	6373-LLC-SK203
Concept Roadworks Plan Sheet 1 of 1	6373-LLC-SK204
Concept Intersection Details Sheet 1 of 1	6373-LLC-SK205
AutoTurn Movements Sheet 1 of 4	6373-LLC-SK206
AutoTurn Movements Sheet 2 of 4	6373-LLC-SK207
AutoTurn Movements Sheet 3 of 4	6373-LLC-SK208
AutoTurn Movements Sheet 4 of 4	6373-LLC-SK209
Concept Rain Garden Layout	6373-LLC-SK210
Concept Typical Service Arrangement Plan and Section	6373-LLC-SK211