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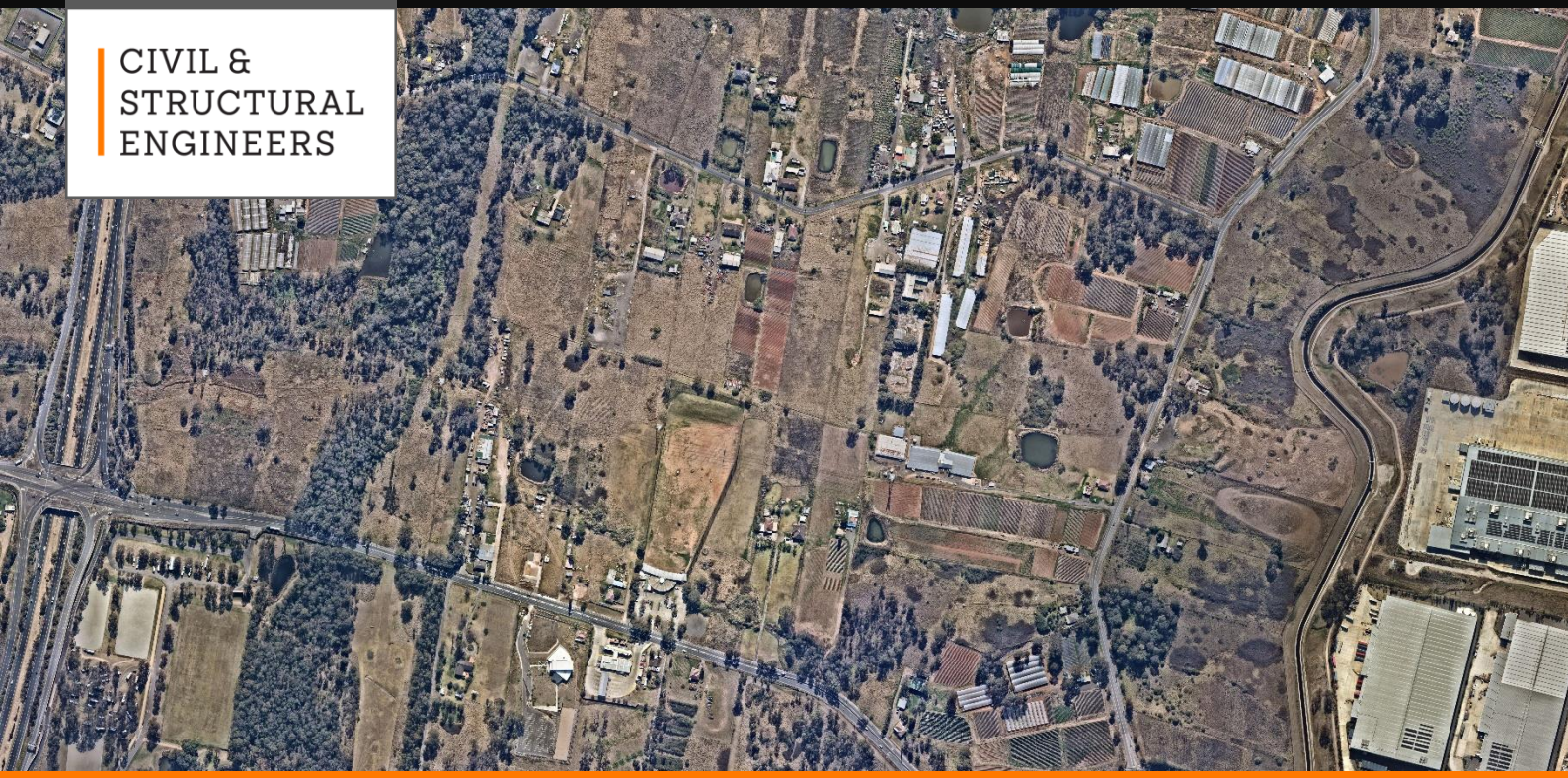
CIVIL & STRUCTURAL ENGINEERS



CIVIL ENGINEERING REPORT

INCORPORATING CONCEPT STORMWATER MANAGEMENT STRATEGY, CIVIL WORKS AND FLOODING

PLANNING APPLICATION

KEYHOLE SITE

HORSLEY PARK, NSW

Prepared for:
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Client Contact	Ms. Samantha Wilson, Frasers Property

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TABLE OF CONTENTS

1 INTRODUCTION & SCOPE

Costin Roe Consulting Pty Ltd has been commissioned by Frasers Property Australia to undertake a *Civil Engineering Report* to accompany a planning application with the NSW Department of Planning, Industry and Environment (DPIE) to rezone the land from RU2 Rural Landscape to E4 Industrial to enable the future industrial development of the land.

This report presents a civil engineering assessment of multiple lots (approximately 66.80 Ha) on land known as the "*Keyhole Lands*". The proposal is located in the suburb of Horsley Park on the eastern side of Eastern Creek between The Horsley Drive (to the south) and Chandon Road (to the north).

Figure 1.1 Locality Plan (Source: Nearmaps – 4 October 2023)

This report provides a summary of civil engineering characteristics of the development site and technical considerations to confirm that rezoning of the land can occur and a strategy to enable future industrial development can occur and be integrated into future more detailed State Significant Development Applications.

This report includes high level discussion of the following aspects:

- Earthworks, benching levels & geotechnical considerations;
- Roads and Access; and
- Stormwater Management and Water Cycle Management Strategy (WCMS).

The WCMS comprises several key areas of stormwater and water management which are provided below. These key areas have been established with the aim to reduce impacts from the

proposed development on the surrounding environment and neighbouring properties including the adjacent South Creek and South Creek corridor. The water cycle management strategy identifies the management measures required to meet the targets set. The key water cycle management areas assessed in this report are:

- Storm Water Quantity;
- Storm Water Quality;
- Water Supply and Reuse;
- Flooding; and
- Erosion and Sediment Control

The *Keyhole Land* is noted to form part of the *Horsley Park and Cecil Park Urban Investigation Area and Draft Structure Plan* completed by Fairfield City Council (2018) and noted as industrial land in the draft structure plan.

A pre-planning application meeting was also held with Fairfield City Council on 16 December 2020. Subsequent to this meeting, *Pre-planning Proposal Advise* was provided by Council and is included in **Appendix C**. Additionally, Council also provided a Gateway Determination and -report (*Referenced PP-2021-3824, dated April 2023*), also included in **Appendix C**.

The engineering advise in the report considers the *Pre-planning Proposal Advise* as well as the Gateway Determination Report provided by Council.

2 SITE DESCRIPTION AND PROPOSED DEVELOPMENT

2.1 Site Description

The rezoning area is located on multiple parcels of land to the north of The Horsley Drive, east of Eastern Creek and south of Chandos Road in the suburb of Horsley Park as shown in **Figure 2.1** and **Figure 1.1**.

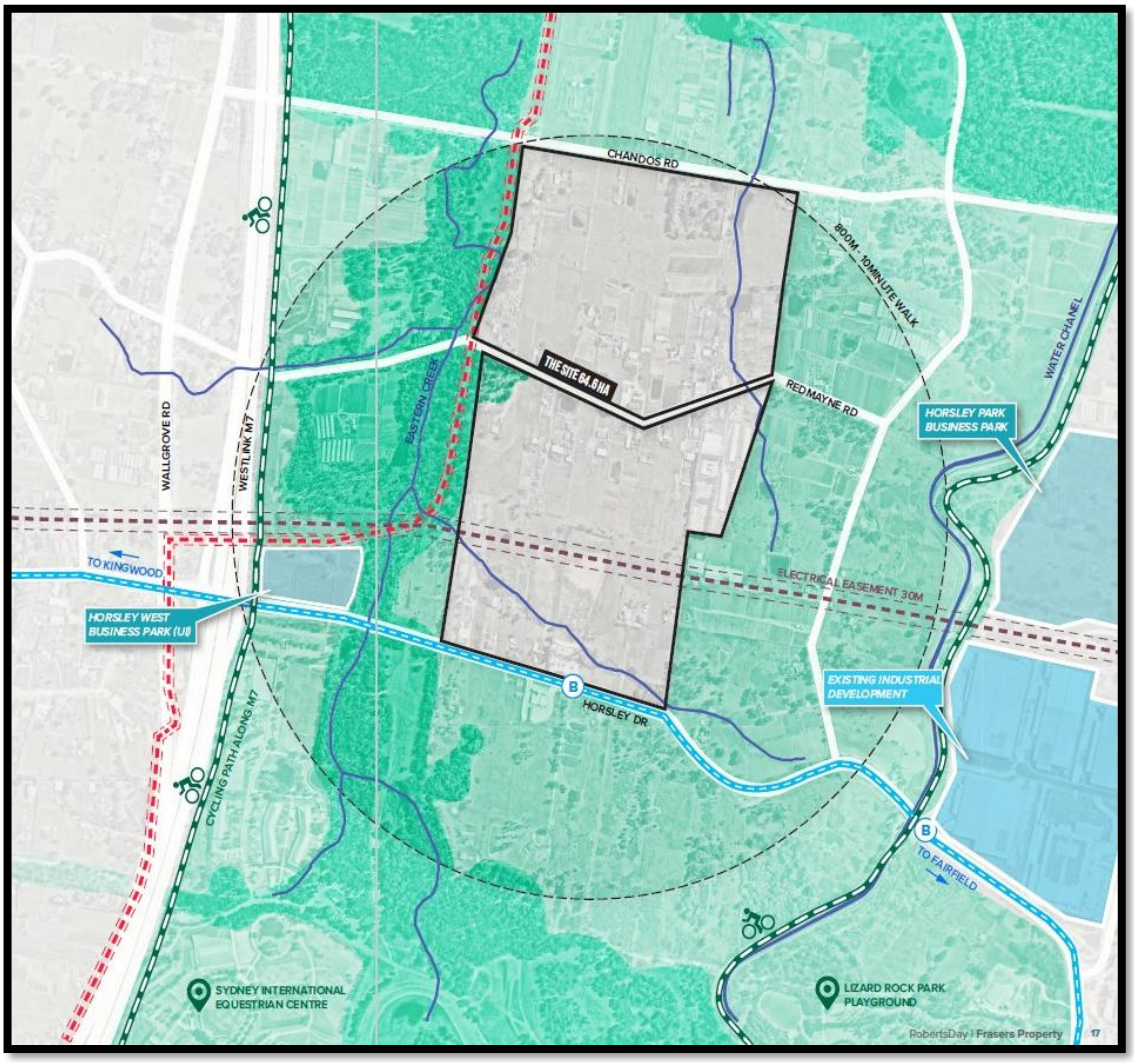


Figure 2.1 Locality Plan (Source: Roberts Day/ Frasers Property)

The land comprises a combined area of approximately 66.80 Ha. The current land-use is predominately rural and rural-residential and zoned as RU2 Rural Landscape.

The highest elevation on the land is RL 100m AHD at south-eastern corner of the site. The lowest levels range between RL 65m AHD at the north-western corner of the site. The level difference between the highest and lowest level is 35m.

Grades over the land vary from 1% to 5% with the grades becoming flatter as you move to the west, toward the Eastern Creek floodplain. Eastern Creek is located on the western boundary of the site.

Three watercourses are mapped on the study area (as noted by Ecoplanning). Eastern Creek (a 2nd-order Strahler stream) runs parallel to the western boundary of the study area. The other two watercourses are unnamed and are both 1st-order Strahler Watercourses, perennial in natures, that drain to Eastern Creek.

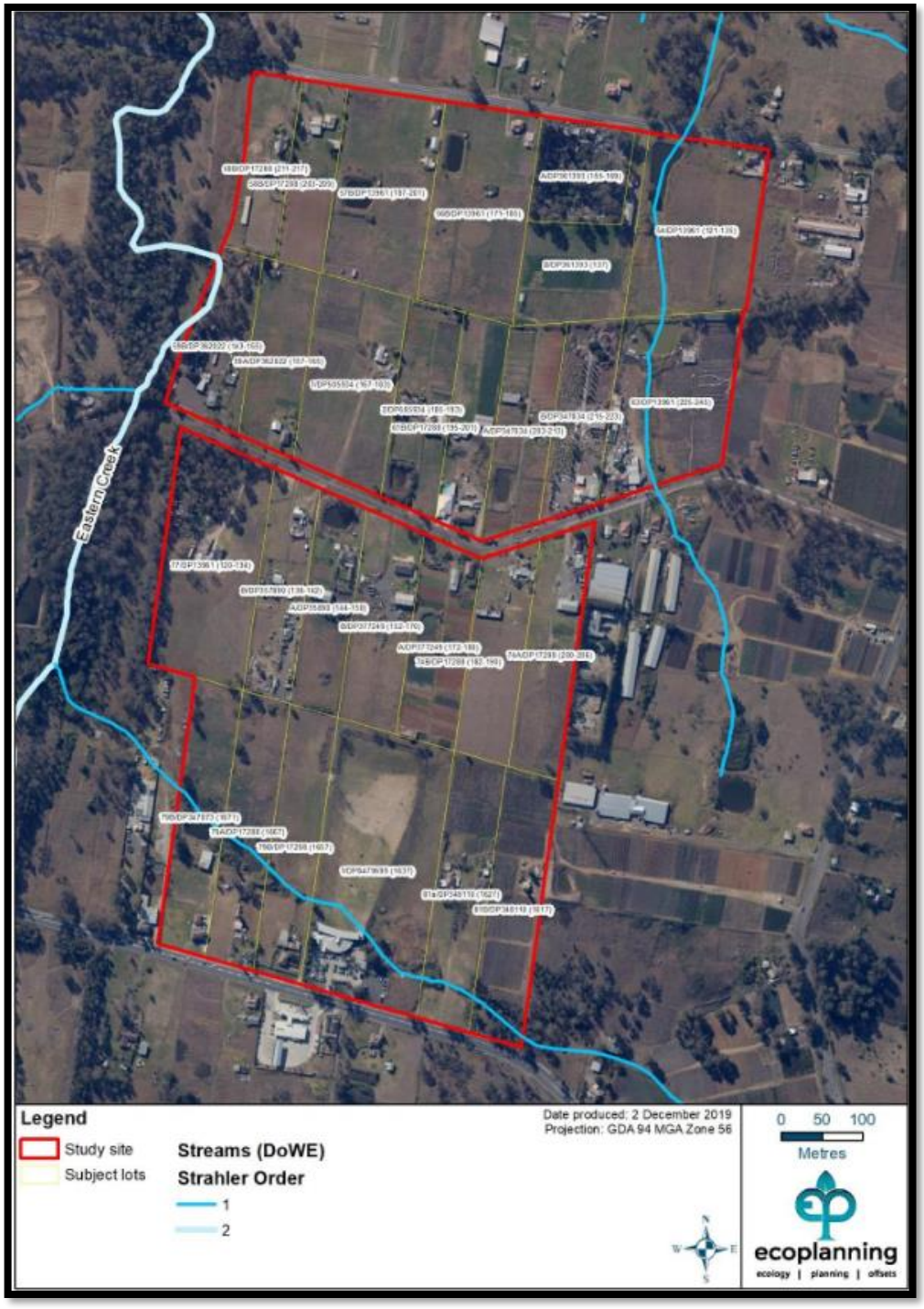


Figure 2.2 Mapped Streams showing Strahler Order (DoWE) (Source: Ecological Value of Stream Report, Ecoplanning, Dec 2019)

A High Pressure trunk gas main exists in easements through the eastern part of the subject site. Development around this main would require consultation with Jemena. A 3500 kPa primary main and a 1050 kPa secondary main is constructed within Chandos Road. Connection to the secondary main by installation of a regulator valve set would provide gas service to the proposed site.

The site is located within the bounds of Fairfield City Council (FCC), therefore the engineering requirements of the FCC *Stormwater Management Policy 2017* require consideration in the management objectives adopted for the precinct. Further, as noted in the FCC pre-planning application meeting notes, FCC has requested that consideration to the engineering requirements included in the *Western Sydney Engineering Design Manual,* Western Sydney Planning Partnership, 2020 document are made in the planning application strategy.

2.2 Proposed Rezoning and Development

The proposed rezoning is from rural to industrial land zoning, and ultimately development of the land as an industrial estate, over an area of approximately 66.8 Ha. An indicative Stage 1 and Stage 2 precinct layout is shown in **Figures 2.3.**

Future infrastructure works would include bulk earthworks, provision of services, road & intersection construction, stormwater management and erosion and sediment control during construction.

The preliminary masterplan layout provided by Frasers Property shows development lots will vary between 1 Ha and 7.6 Ha in size. Siting of the development lots will be sympathetic to the topography of the land (noting this will be constrained around the need to provide large level pads for the intended large format industrial development), access and flood planning requirements. The sites adjacent to Eastern Creek will need to allow for the minimum 500mm freeboard to the 1% AEP flood level of Eastern Creek Creek.

Access to lots would be made via new precinct access roads from The Horsley Drive. The new access roads and associated intersection will be constructed to Fairfield City Council and Transport for NSW (TfNSW) requirements and ownership of roads ultimately transferred to the relevant authority.

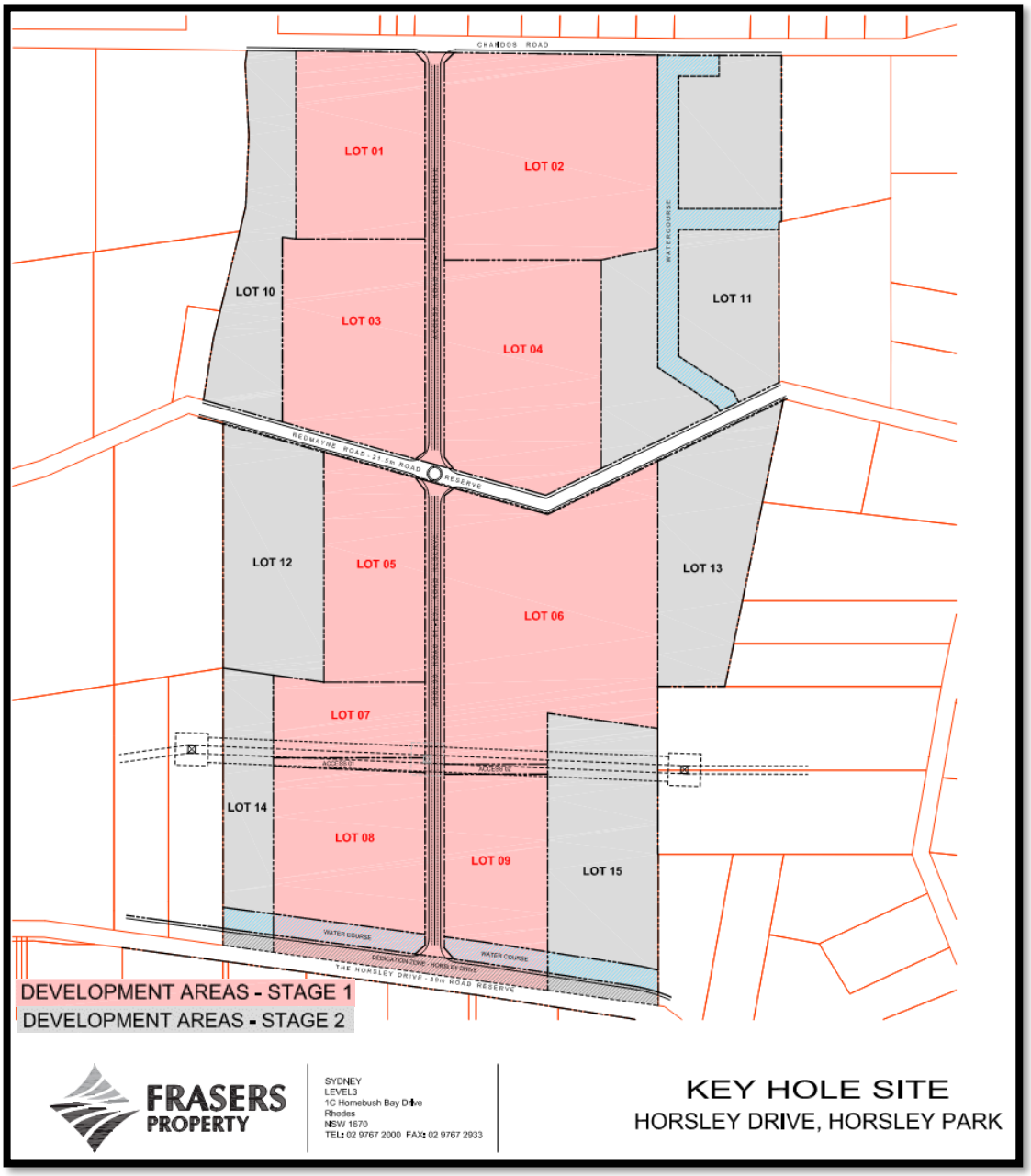


Figure 2.3. Indicative Development Masterplan

The land is noted to be included in the *Horsley Park and Cecil Park Urban Investigation Area* (HPCPUIA) assessment undertaken for Fairfield City Council by Jacobs Australia (2018). The *Keyhole* Land is noted as Employment Land in the three strategic options included in the report, as shown in **Figure 2.4** below.

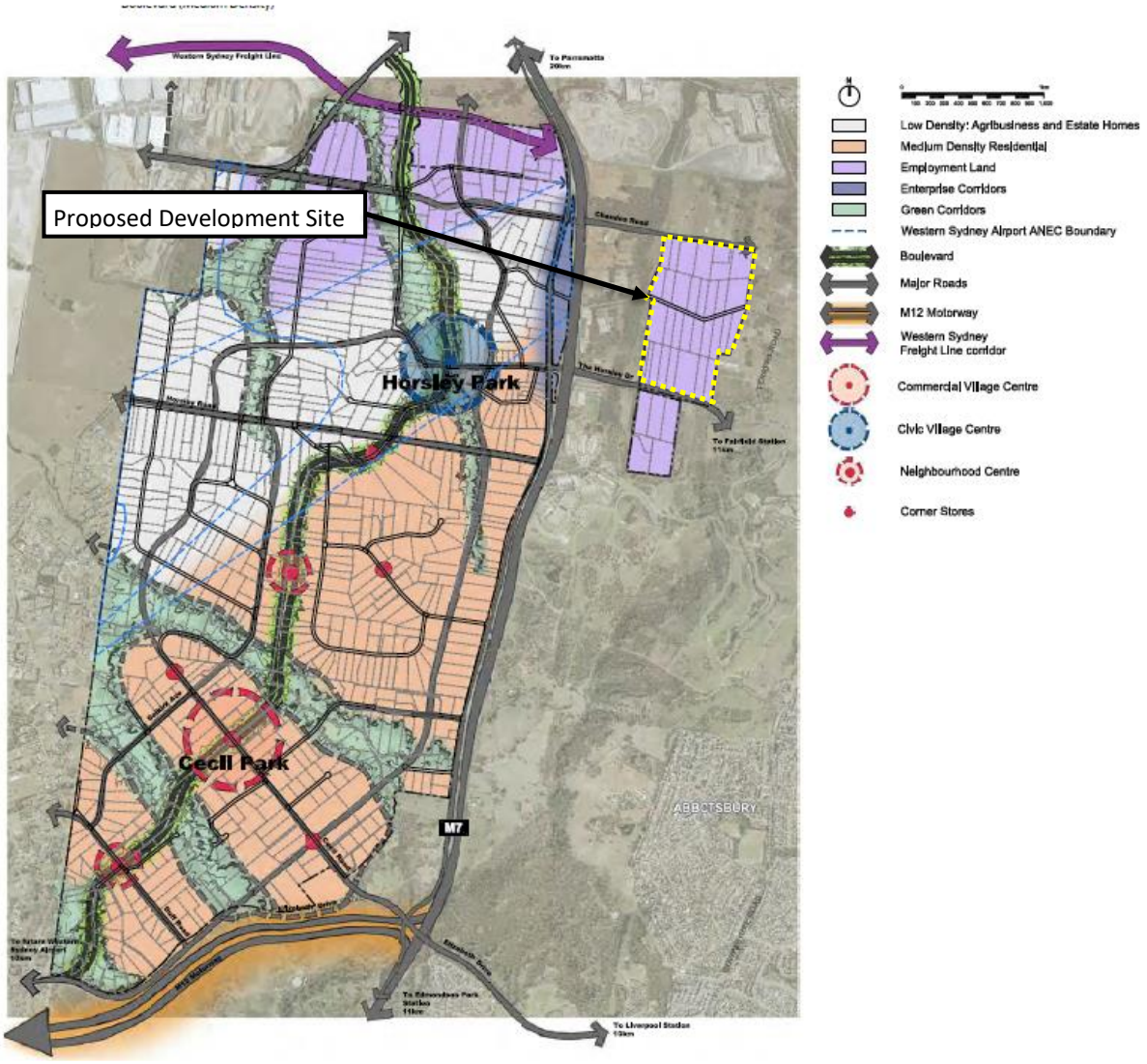


Figure 2.4 Draft Structure Plan (Source: Fig 2.3a, HPCPUIA 2018)

Further review of the HPCPUIA shows proposed blue and green grid which reflects key watercourse, green belts and riparian zones, as depicted in **Figure 2.5** below. It is noted that no blue green grids are proposed within the *Keyhole* Land, though consideration to interfacing with Eastern Creek on the west of the property, and conveyance of local flow paths has been included in the design.

Figure 3.2.2a Blue and Green Grid

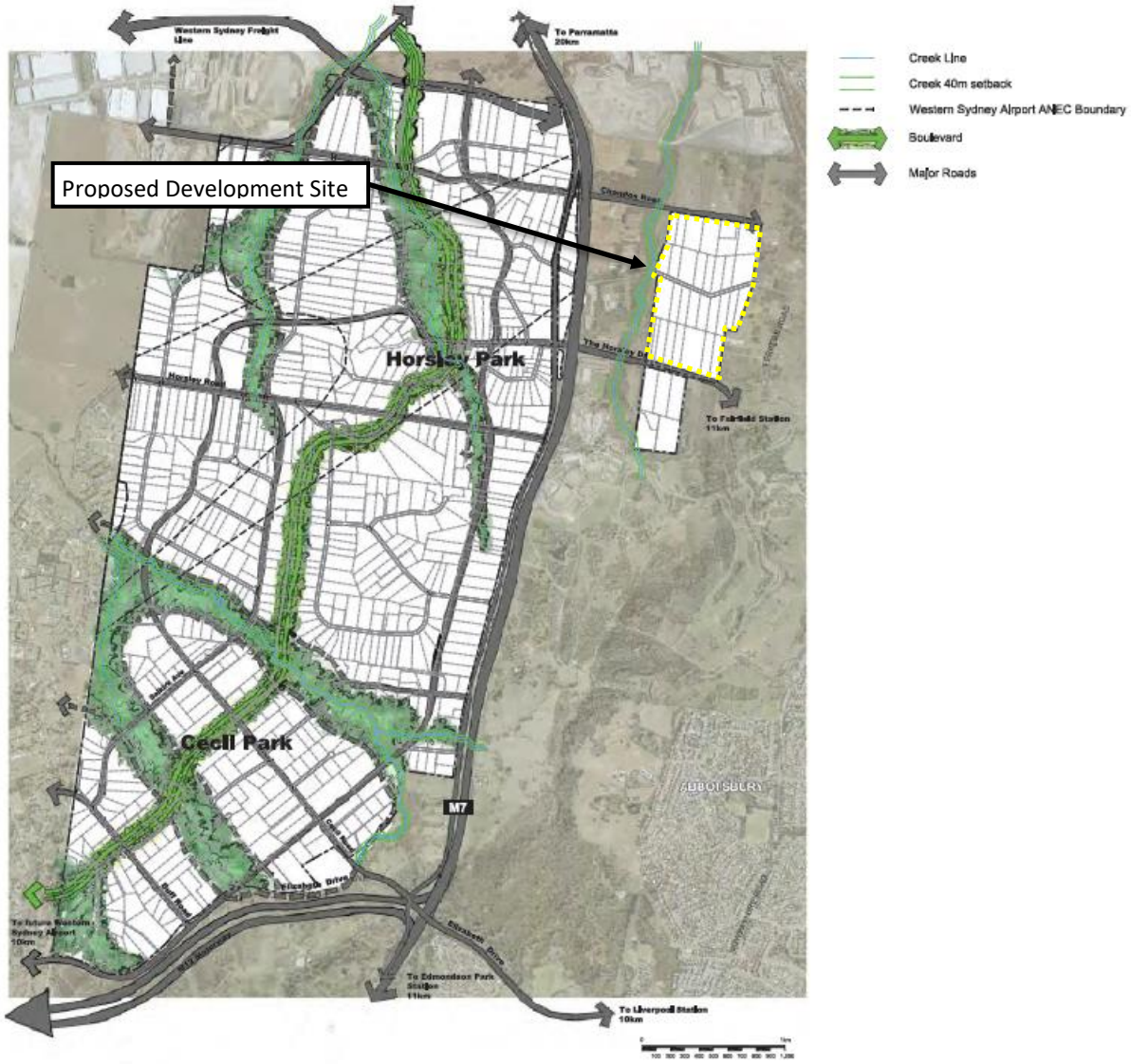


Figure 2.5 Blue and Green Grid (Source: Fig 3.2.2a, HPCPUIA 2018)

3 EARTHWORKS & FOUNDATIONS

3.1 Soil Profile and Geotechnical Considerations

The site is located within gently undulating regional topography consistent with Bringelly Shale Landscapes. Reference the Penrith 1:100,000 Geological Series Sheet indicates the site is underlain by shale, fine grained sandstone and laminate of the Bringelly Shale formation.

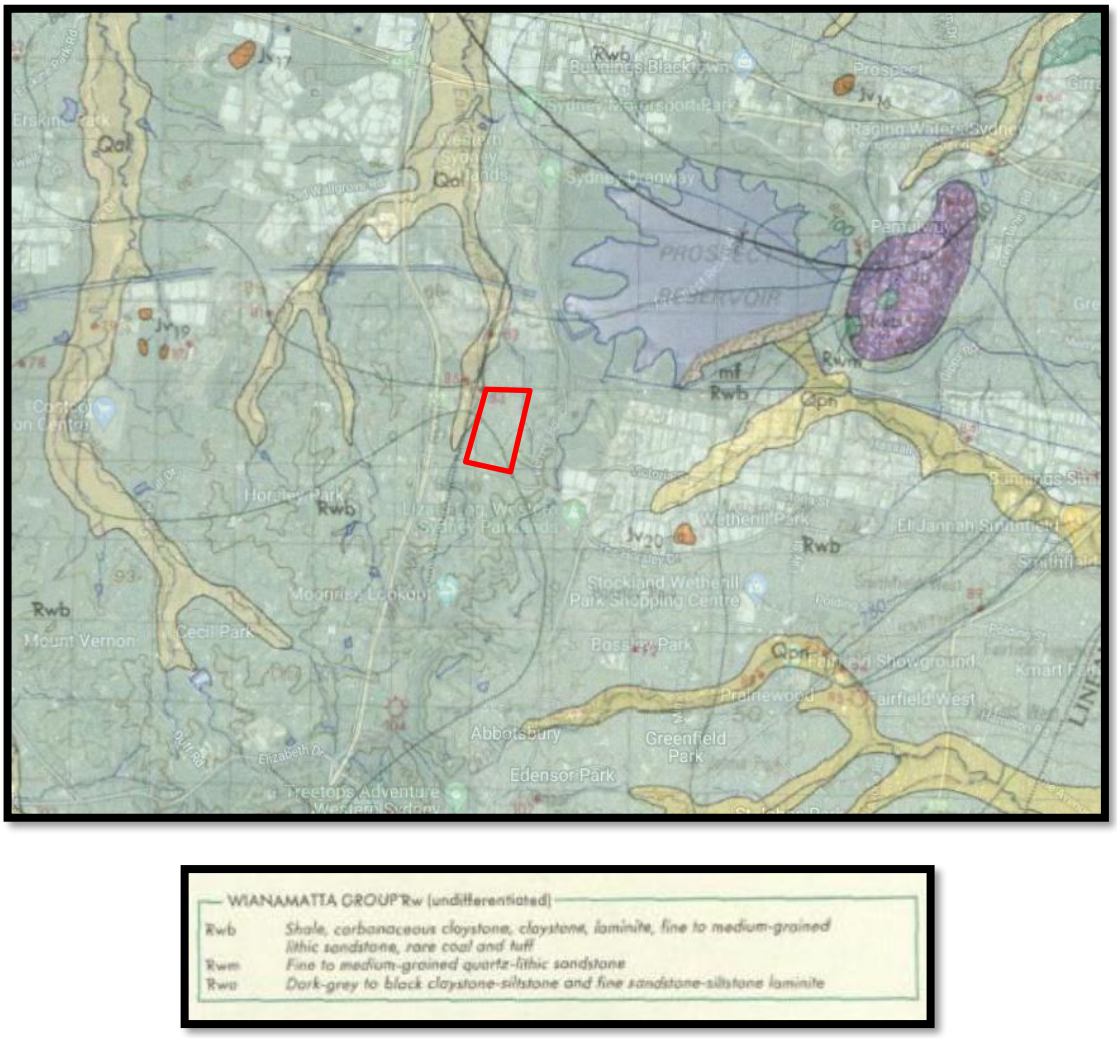


Figure 3.1 Regional topography consistent with Bringelly Shale Landscapes (Source: Penrith 1:100,000 Geological Series Sheet)

The shale bedrock is anticipated to be overlain by residual clay soils in the range of 1.5 to 3m in depth, and above this topsoil in the 100mm to 400mm range. Engineering properties of the residual clay soils are that they will be moderately reactive, highly plastic subsoils with low permeability.

A geotechnical report and investigation would be required as part of future development applications which would confirm the above anticipated conditions.

3.2 Earthworks

Bulk earthworks will be required to facilitate the development of the estate for industrial use. The earthworks will be undertaken to provide large flat building pads, facilitate site access and proposed estate roads, to drain the site stormwater via gravity, and to keep building levels above the 1% AEP flood level with a minimum freeboard of 0.5m.

High level earthworks and volume estimates have been completed and are shown on drawing **Co14052.00-SK30** of **Appendix A**. The earthworks volume estimates are based on a lot layout with flat building pads. The earthworks analysis has been completed to a level of detail to enable general pad levels to be set and to obtain an order of magnitude cut and fill volume estimate. It could be anticipated that the final earthworks volumes would be +/-10-15% from the conceptual volume estimates quoted below.

The earthworks volume estimates are as follows:

Topsoil cut	- 122,300	m^3
Cut	- 729,700	m^3
Fill	+ 821,425	m^3
Detailed Excavation ($1,500m^3$/Ha)	- 91,725	m^3
Difference	+ 0	m^3 *(approx. cut to fill achieved)*

Soil erosion and sediment control measures including sedimentation basins will also be provided for the development – please refer to the draft *Soil and Water Management Plan* in **Section 8** of this report. All Soil and Sediment Control measures will be performed in accordance with Fairfield City Council requirements and *Landcom Managing Urban Stormwater, Soils and Construction (1998) – The Blue Book*.

To assist in maintaining embankment stability, permanent batter slopes will be no steeper than 3 horizontal to 1 vertical while temporary batters will be no steeper than 2 horizontal to 1 vertical. This is in accordance with the recommended maximum batter slopes for residual clays and shale which are present in the area.

Permanent batters will also be adequately vegetated or turfed which will assist in maintaining embankment stability.

All geotechnical testing and inspections performed during the earthwork's operations will be undertaken to Level 1 geotechnical control, in accordance with AS3798-1996.

4 WATER CYCLE MANAGEMENT STRATEGY & DRAINAGE METHODOLOGY

4.1 Key Areas and Objectives

Water Cycle Management (WCM) is a holistic approach that addresses competing demands placed on a region's water resources, whilst optimising the social and economic benefits of development in addition to enhancing and protecting the environmental values of receiving waters.

Developing a WCMS at the SSD stage of the land development process provides guidance on urban water management issues to be addressed for the estate and development as a whole. This assists urban rezoning and estate infrastructure planning for the industrial development proposed on the land.

This WCMS has been prepared to inform the DPIE and Fairfield Council that the development is able to provide and integrate WCM measures into the stormwater management strategy for estate, and that a solution is available for the rezoned lands, which can be further developed as part of future SSDA design and submission. It presents guiding principles for WCM across the precinct which includes establishing water management targets and identifying management measures required for future building developments to meet these targets.

Several WCM measures have been included in the WCMS and engineering design as potential solutions for the precinct, with consideration to the Gateway Determination's requirement to allow room for the three main watercourses to largely flow naturally, rather than implementing engineering solutions.

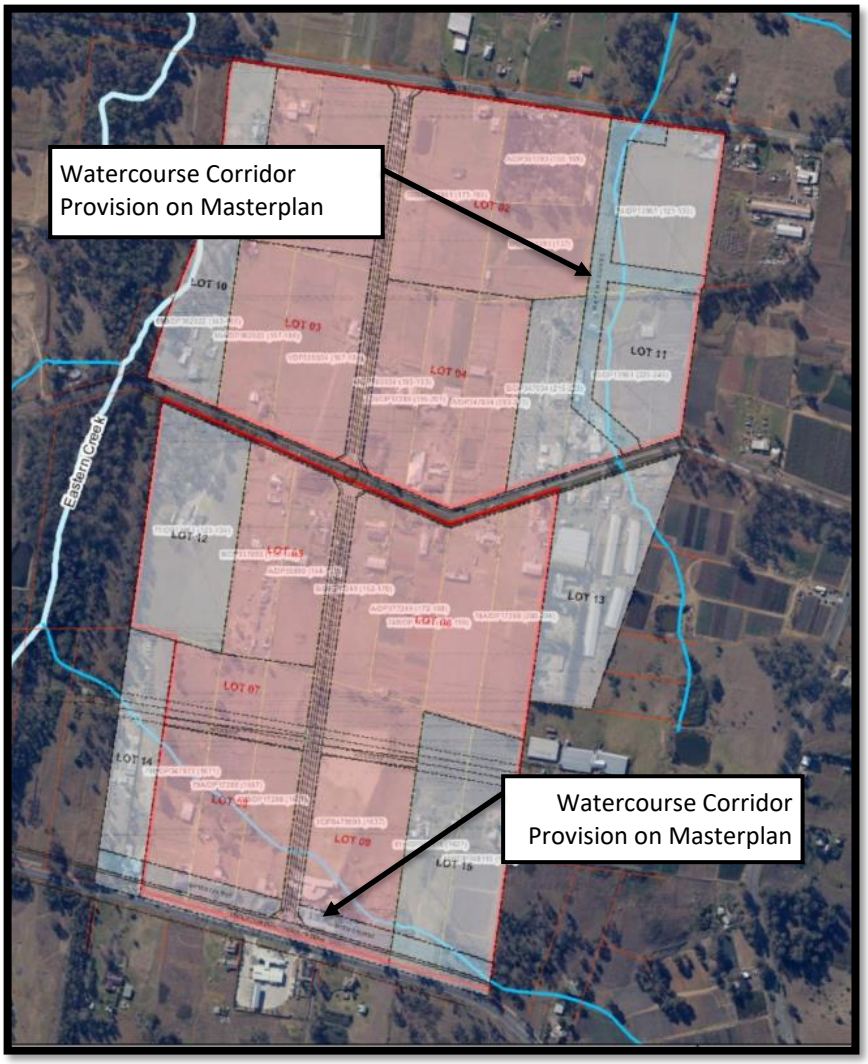


Figure 4.1 Architectural Masterplan overlayed onto Ecoplanning's Sthraler Order figure

These have been included in this report and the attached drawings, noting they are provided for information purposes only to demonstrate that with due consideration to further design progression that WCMS can be provided and integrated into a future SSDA submission and the rezoning can take place.

The key WCM elements and targets which are recommended for the rezoned land are included in **Table 4.1** following.

Table 4.1. WCM Targets

Element	Target	Reference
Water Quantity	The maximum Permissible Site Discharges (PSD) need to be satisfied by the OSD: • The maximum PSD for the 20% AEP and 1% AEP storm event is to be 78 l/s/Ha for the full range of storms;	*Section 4.2* of Fairfield City Councils *Stormwater Management Policy 2017* (urban area) *Section 9.3.*4 of the Western *Sydney Engineering Design Manual,* Western Sydney Planning Partnership, 2020
Water Quality	Load-based pollution reduction targets based on an untreated urbanised catchment: Gross Pollutants 90% Total Suspended Solids 85% Total Phosphorus 65% Total Nitrogen 45% Total Hydrocarbons 90%	*Section 9.4.1* of the *Western Sydney Engineering Design Manual,* Western Sydney Planning Partnership, 2020
Flooding	Regraded land in non-residential areas is to be 0.5m above the 1% AEP mainstream water level. No affectation to upstream downstream or adjoining properties as a result of development	*Western Sydney Engineering Design Manual,* Western Sydney Planning Partnership, 2020. Fairfield City Councils *Stormwater Management Policy 2017* (urban area)
Water Supply	Commercial and Industrial developments must supply 80% of their non-potable water demand using non potable sources.	*Western Sydney Engineering Design Manual,* Western Sydney Planning Partnership, 2020.
Erosion and Sediment Control	Appropriate erosion and sedimentation control measures must be described in the environmental assessment for all stages of construction to mitigate potential impacts to South Creek.	Landcom Blue Book Fairfield City Council DPI
Waterway and Stream Health	Confirmation of pre- and post stream forming flows and Stream Erosion Index (SEI) no greater than 2.0.	*Section 9.3.5* of the *Western Sydney Engineering Design Manual,* Western Sydney Planning Partnership, 2020

A summary of how each of the WCM objectives could be achieved are described below. Reference to the relevant sections of the report should be made for further and technical details relating to the WCM measures:

- *Stormwater Quantity Management*

  The intent of this criterion is to reduce the impact of urban development on existing drainage system by limiting post-development discharge within the receiving waters to 78 l/s/Ha, and to ensure no affectation of upstream, downstream or adjacent properties.

  Attenuation of stormwater runoff from the development could be managed via estate basins provided end-of-line prior to site discharge, or via individual on-site detention systems. The concept strategy considers two proposed estate basins in combination with individual systems (expected to comprise underground tanks).

  Preliminary sizing of the detention system storage requirements has been completed using DRAINS modelling software in accordance with the Fairfield City Council Policy for the 20% AEP to the 1% AEP storm for various durations. The modelling accounts for the drainage system provided for the adjacent sites and conveyance of upstream catchments around the site.

- *Stormwater Quality Management*

  There is a need to target pollutants that are present in stormwater runoff to minimise the adverse impact these pollutants could have on downstream receiving waters.

  The required pollutant reductions are included in **Table 4.1** of this document.

  A series of Stormwater quality improvement devises (SQID's) have been nominated as potential options which could be adopted in the estate. The potential management strategy could include the following measures:

  - Primary treatment could be made via end of line gross pollutant traps (GPT's), or site-specific systems. GPT's should be located upstream of each of the stormwater management basins, or prior to development detention systems.
  - Tertiary treatment of the precinct could be made via proprietary filtration systems or bio-retention systems. Bio-retention treatment could be provided in combination with estate stormwater management basins and are sized to treat the contributing catchment draining to them. Refer to drawing **Co14052.00-SK40.**
  - Some treatment will also be present by provision of rainwater reuse tanks on development sites through reuse and settlement within the tanks.
  - Development sites will not require any lot specific treatment systems due to the estate wide management systems proposed.

  Reference to **Section 4.5** of this document should be made for detailed Stormwater Quality modelling and measures.

- *Flood Management (refer **Section 6**)*

  The proposed development considered flooding and large rainfall events, both from the adjacent Eastern Creek, and from site generated runoff and upstream properties.

Consideration to flood requirements has been made per the outcomes of the modelling completed by *Catchment Simulation Solutions* (under Fairfield Council Developers Agreement) and assessed by our office as part of the planning application documentation. Refer **Section 6** for details.

The following measures are to be incorporated in future designs and SSDA applications:

- All buildings are sited 500mm above the 1% AEP design flood level of Eastern Creek.
- Built form development is clear of the 1% AEP flood extent;
- Stormwater detention measures have been included to manage post development runoff as discussed above and in **Section 4.4**; and
- Overland flow paths to manage runoff in large storm events have been made including achieving at least 500mm freeboard to building levels from the flow paths.
- Consideration to the Gateway Determination's requirement have been made allowing room for the three main watercourses to largely flow naturally, rather than implementing engineering solutions.

- *Water Demand Reduction/ Rainwater Reuse*

  Rainwater reuse measures will be provided as part of future building development designs. Rainwater reuse will be required to provide a reduction in demand on non-potable uses by at 80%. The reduction in demand will target non-potable uses such as toilet flushing and irrigation. **Refer Section 4.7**.

- *Waterway Health (Stream Erosion Index (SEI))*

  An SEI assessment for discharge from the development to the receiving waterways has been completed based on industry accepted modelling technique for stream health.

  The SEI focuses on channel form with the critical flow threshold is estimated for the stream whereby excess flow is summed over time to produce a measure of the erosion potential in the stream. Results are compared to a baseline (FCC requires less than 2.0) scenario. In NSW, this metric (based on flow) has generally been called a stream erosion index (SEI) (DEC 2006). Confirmation that an SEI has been included in **Section 4.6** of the report.

4.2 Existing Drainage System & Overland Flows

The site is currently undeveloped rural land with undulating topography which has been described in **Section 2.1**. There is no limited formal drainage currently on the site however several local depressions and natural gullies are present, and minor drainage systems associated with the existing rural residential dwellings. There are also several dams which are used for the currently rural farming operations on the land which lie in relation to the natural gullies.

The site is affected by two overland flow paths from minor upstream catchments to the east and south-east of the site. A catchment of approximately 12 Ha is required to be conveyed through the south of the precinct, and 24.8 Ha on the north-east (entering at two locations with a 15.6 Ha and 9.2Ha sub-catchments) as shown on drawing **Co14052.00-SK40**. Conveyance of these upstream flows has been included in the estate infrastructure stormwater concept and included in the flood modelling assessments.

The proposed method of conveyance would largely be via an open channel located within a 25m corridor, as required by the Gateway Determination Report.

A potential solution for the management of stormwater over the precinct has been shown on concept drawings **Co14052.00-SK40**.

4.3 Drainage System Requirements

As per general engineering practice and the guidelines of FCC, the proposed stormwater drainage system for the estate development will comprise a minor and major system to safely and efficiently convey collected stormwater run-off from the development to the legal point of discharge.

The minor system is to consist of a piped drainage system which has been designed to accommodate the 1 in 20-year ARI storm event (Q20 ARI/ 5% AEP). This results in the piped system being able to convey all stormwater runoff up to and including the Q20 event. The major system will be designed to cater for storms up to and including the 1 in 100-year ARI storm event (Q100 ARI/ 1% AEP). The major system will consider the use of defined overland flow paths, such as roads and open channels, to safely convey excess run-off from the site.

The design of the stormwater system for this site will be based on relevant national design guidelines, Australian Standard Codes of Practice, the standards of FCC and accepted engineering practice. Runoff from buildings will generally be designed in accordance with AS 3500.3 National Plumbing and Drainage Code Part 3 – Stormwater Drainage. Overall site runoff and stormwater management will generally be designed in accordance with the Institution of Engineers, Australia publication "Australian Rainfall and Runoff" (2019 Edition), Volumes 1 and 2 (AR&R).

Water quality and re-use are to be considered in the design to ensure that any increase in the detrimental effects of pollution is mitigated, FCC Water Quality Objectives are met and that the demand on potable water resources is reduced.

The proposed drainage system will be required to convey the overland flow from upstream catchments discussed in **Section 4.2**.

The legal point of discharge is a point specified by Council where stormwater from a property can be discharged. The legal point of discharge is usually Council's stormwater infrastructure (where available), the street kerb and channel for smaller developments or downstream receiving waters like an existing stream or gully, lake, pond or waterbody.

Legal discharge for the development is Eastern Creek on the western side of the development site where up to five discharge points could be required. Conveyance and discharge will also be required to the unnamed watercourse which crosses Chandos Road on the northern area of the proposed rezoned land toward the north-east

The design and construction of the proposed outlet structure to South Creek will be assessed in accordance with the NSW Office of Water document *Controlled Activities: Guidelines for Outlet Structures.*

The stormwater outlets will need to consist of a reinforced concrete pipe and 'natural' energy dissipater. The outlet is to be aligned with the creek to remove the potential for bank scour and shall include rip rap energy dissipaters constructed in accordance with the Outlet Structures Guidelines as published by the Department of Water & Energy and The Blue Book. This is shown figuratively below in **Figure 4.2** below.

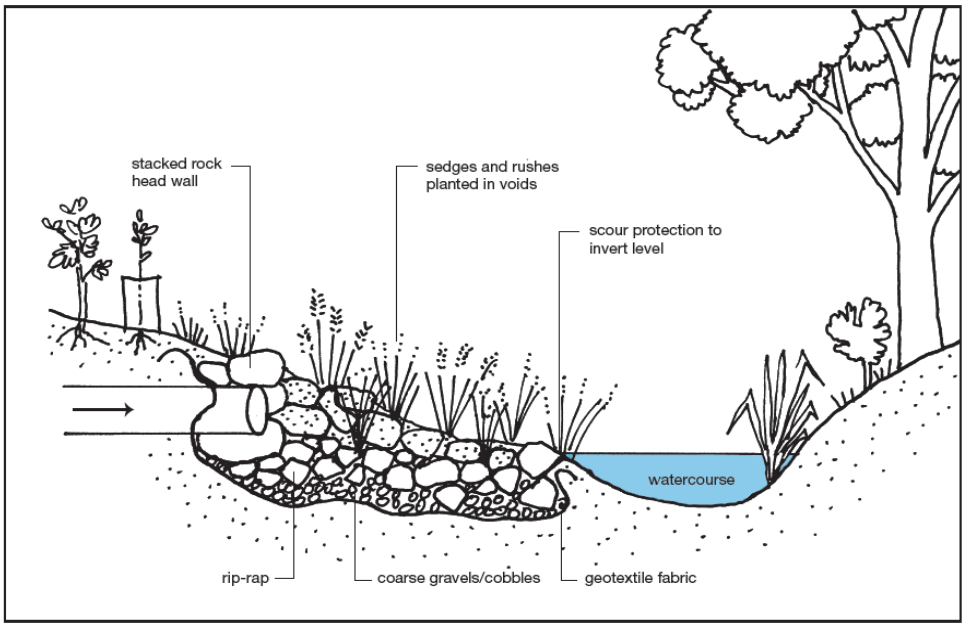


Figure 4.2. Typical Natural Outlet Structure Components

4.4 Stormwater Quantity Management

Attenuation of stormwater runoff from the rezoned land will be required.

Preliminary sizing of the detention systems basin has been completed using DRAINS modelling software in accordance with the Fairfield City Council Policy and Western Sydney Planning Partnership Engineering Design Guide for the 50% AEP to 1% AEP storms for various durations.

The modelling has shown that, ensuring the discharge limit of 78 l/s/Ha requires a site storage rate of 380-420m^3/Ha.

Based on the 66.8 Ha rezoning area, a total detention storage volume of approximately 27,000m^3 will be required to achieve Council's discharge controls (subject to detail modelling and SSDA or other applications). As noted, detention systems would be interspersed throughout the precinct with a general concept shown on drawing **Co14052.00-SK40**. Detention storage is noted to be required to be fully active.

4.5 Stormwater Treatment Systems

Developed impervious areas of the precinct, including roof, hardstand, car parking, roads and other extensive impervious areas are required to be treated by the Stormwater Treatment Measures (STM's). The STM's shall be sized according to the whole catchment area of the development. The STM's for the estate are based on a treatment train approach to ensure that all the objectives above are met.

Components of the treatment train for precinct could include the following (subject to future SSDA or Council Development Application assessments):

- The precinct will require on-lot treatment measures which meet the load-based percentage requirements noted in **Section 4.1**.
- Primary treatment is to be provided to remove gross pollutants, coarse sediment and hydrocarbons. This should be made by either on lot or end-of-line GPT's, or acceptable alternates (e.g. pit inserts). GPT's will be located at the downstream of the development and immediately upstream of the stormwater management basins.
- Tertiary treatment of the whole of the development will be made via bio-retention systems or proprietary filtration systems. Where estate stormwater management basins are provided, bio-retention should be constructed in combination with basins.
- It is recommended that stormwater from the upstream catchments should bypass treatment systems where practical; and
- A portion of the future building roofs will also provide a level of treatment via rainwater reuse and settlement within the building rainwater tanks.

Estate stormwater management measures including OSD Basin, water quality measures (bio-retention and gross pollutant traps) are proposed to be dedicated to council in conjunction with the roads and other public infrastructure. Maintenance as such is expected to also transfer to council in conjunction with dedication of the systems. Further discussion on maintenance is contained in **Section 4.9** of this document. On-lot systems would remain the responsibility of the landlord or tenant.

4.6 Stream Health and Stream Erosion Index

A Stream Erosion Index (SEI) calculation has been completed for discharge from the site to Eastern Creek and unnamed watercourse. The assessment has been completed in accordance with the methodology set out in Fairfield City Council's *WSUD Technical Guidelines* and *Water Sensitive Urban Design (WSUD) Policy* and targets the post development duration of stream forming flows shall be no greater than 2.0 times the pre-development duration of stream forming flows.

The critical flow threshold is estimated for the stream whereby excess flow is summed over time to produce a measure of the erosion potential in the stream. Results are compared to a baseline scenario (e.g. pre-development in the range of 1-3.5). In NSW, this metric (based on flow) has generally been called a stream erosion index (SEI) (DEC 2006).

The calculation methodology required to confirm the SEI (as part of future SSDA) would need to be based on the four following steps:

1. Estimate the critical flow for the receiving waterway above which mobilisation of bed material or shear erosion of bank material commences.
2. Develop and run a calibrated MUSIC model of the area of interest for predevelopment conditions to estimate the mean annual runoff volume above the critical flow.
3. Develop and run a MUSIC model for the post developed scenario to estimate the mean annual runoff volume above the critical flow.
4. Use the outputs from steps 3 and 4 to calculate the SEI for the proposed scenario.

4.7 Stormwater Harvesting

Stormwater harvesting refers to the collection of stormwater from the developments internal stormwater drainage system for re-use in non-potable applications. Stormwater from the stormwater drainage system can be classified as either rainwater, where the flow is from roof areas only, or stormwater where the flow is from all areas of the development.

Rainwater harvesting will be provided for this development with re-use for non-potable applications as part of future individual building development applications. Internal uses include such applications as toilet flushing while external applications will be used for irrigation. The aim is to reduce the water demand for the development.

In general terms the rainwater harvesting system will be an in-line tank for the collection and storage of rainwater. At times when the rainwater storage tank is full rainwater can pass through the tank and continue to be discharged via gravity into the stormwater drainage system. Rainwater from the storage tank will be pumped for distribution throughout the development in a dedicated non-potable water reticulation system.

Rainwater tanks are to be sized with reference to the NSW Department of Environment and Conservation document *Managing Urban Stormwater: Harvesting and Reuse*, using a simple water balance analysis to balance the supply and demand, based on the base water demands and a minimum demand reduction of 80%.

Sizing of rainwater harvesting tanks will need to be assessed once the development layout and reuse demands for each facility are known in accordance with the NSW Department of environment and Conservation document Managing Urban Stormwater: Harvesting and Reuse. This sizing would be completed as part of either estate SSDA or specific building applications following rezoning of the land.

4.8 Climate Change

An assessment has been undertaken for the effect of climate change on the development. The assessment takes into consideration potential effect from increased rainfall intensity and sea level rise.

The effect on development has been assessed for a 10-15% increase in rainfall intensity utilising the 0.5% AEP flood event as proxies for climate change (as recommended by DPIE). This increase is considered representative of potential climate change impacts for the Western Sydney area (being consistent with projected rainfall increases in accordance with the New South Wales Department of Environment and Climate Change (DECC) 'Floodplain Risk Management Guideline Practical Consideration of Climate Change' (Table 1, October 2007).

This assessment shows that the proposed stormwater drainage system and stormwater management systems (including the proposed detention system) would have sufficient capacity to manage the increased peak flows and water volume with minor increase in hydraulic grade line and peak water level within the basins. We confirm the increase in rainfall intensities will achieve the required minimum 0.5m freeboard to the proposed building pad levels in relation to local overland flow paths in and around the estate as nominated on the design drawings.

In relation to impact on the development from the adjacent Eastern Creek. Based on the modelling completed in the Overland Flow Assessment for the 0.5% AEP (which acts as a proxy for climate change conditions), the effect from climate change would result in an increase of 0.15m from the current 1% AEP to the reach 1% AEP + 10% flood level. Overall, the flood level differences of the extreme western development sites would be slightly reduced however these sites would still achieve flood freeboards greater than those adopted by many local councils (including Fairfield) and nominated in the NSW Floodplain Manual and still remain at higher level than the PMF. Further noting that the majority of lots in this development will continue to achieve freeboards greater than 0.5m.

The site is situated well upstream from any tidally influenced receiving waters including expected potential sea level rise of 0.3m. We confirm the development will not affect or be affected by potential sea level rise due to the plan distance and height differences from any tidally influenced water bodies.

4.9 Maintenance and Monitoring

It is important that each component of the water quality treatment train is properly operated and maintained.

Note that inspection frequency may vary depending on site specific attributes and rainfall patterns in the area. In addition to the below nominated frequency it is recommended that inspections are made following large storm events.

As noted in earlier sections of the report, the estate stormwater management measures including the Estate Basins and estate water quality measures (bio-retention and gross pollutant traps) are proposed to be dedicated to council in conjunction with the roads and other public infrastructure. Maintenance obligations as such are expected to also transfer to council in conjunction with dedication of the systems.

Maintenance schedules would be prepared as part of future SSDA design and applications to ensure in the effective operation and maintenance of the various water quality components.

5 SERVICE CONSIDERATION

5.1 Introduction

A *Service Infrastructure Assessment* has been completed by Landpartners Built Environment Consultants in conjunction with Frasers (Ref: 73931 dated April 2016). The following sections provide a general summary of relevant information

Reference to the Landpartners report SY073931.000 should be made for detailed information pertaining to water and wastewater servicing, gas and electricity as included in **Appendix F**. A summary of their findings is included as follows in **Section 5.2**.

An Endeavour Energy Transmission line is noted to traverse the site. Consultation with Endeavour Energy will be required throughout the future SSDA or Council Development Application stages of the precinct will be necessary, however general considerations of requirements from initial authority consultation and similar projects are included in **Section 5.3**.

5.2 Water & Wastewater Servicing

Water Supply

The site falls within the Cecil Park potable water system area. Significant trunk water main exist in The Horsley Drive (3 X 375mm and 1 X 250mm – trunk water mains), in Ferrers Road (1 X 450mm trunk main and a 150mm reticulation main). Smaller reticulation mains exist in Redmayne Road (1 X 100mm main) and Chandos Road (1 X 100mm main).

The presence of substantial trunk water mains adjacent to or close to the subject site provides an opportunity to provide reticulation systems to serve potential development of the site.

Trunk water mains are a means of transferring water to other Sydney Water assets such as reservoirs and water pumping stations to facilitate service to other areas. A study of each of the trunk water mains would need to be undertaken to determine the current and future supply requirements for the areas that these trunk mains service.

Whilst the presence of trunk water mains may indicate the potential for servicing an area, it may not necessarily mean that there is spare capacity to service development adjacent to a trunk main.

A significant study comprising a substantial modelling of the current system incorporating future demand requirements would need to be undertaken. These modelling processes are expensive and take considerable time to negotiate with Sydney Water and then undertake the required modelling.

The 150mm reticulation main in Ferrers Road is cross-connected to the 450mm trunk water main in Ferrers Road and one of the 375mm trunk water mains in The Horsley Drive. This main MAY have the potential to provide reticulation services to some or all of the subject site but modelling would need to be undertaken to confirm the requisite pressure and flow capacity from this main for industrial development within the subject site.

Should modelling of the relevant trunk water mains prove that capacity exists within those systems, then the potential to connect to the trunk mains in The Horsley Drive, connection

to the 450mm trunk main in Ferrers Road or amplification of the 150mm reticulation main in Ferrers Road to a 200mm-250mm main exists – this later option can be achieved via an under-pressure cutin to the 450mm trunk main without disrupting supply along that 450mm main.

Reticulation mains can then be provided for development within the subject site.

Wastewater

No wastewater systems exist in or near the subject area.

The only viable option would be the provision of a Sewer Pump Station (SPS) and appropriate rising main to a receiving system – probably within the Wetherill Park industrial precinct. The wastewater system in this area is the Wetherill Park system.

A 300mm/375mm sewer reticulation system exists at the corner of Victoria Street and Cowpasture Road, Wetherill Park and that system may have the capacity to receive pump flows from an SPS system within the subject area, subject to a modelling study.

A large SPS facility, with significant capacity for storage, emergency overflow storage, dual pumps, chemical dosing to ensure water quality at the receiving manhole (if capacity exists) and a 1.5 km rising main (possibly through privately or government-owned land) would need to be provided. Given the topography and conflicts with existing assets along the rising main route, an allowance of greater than $2 million should be made.

Modelling of the receiving system would need to be carried out to see if pump flows of 14 l/s can be accommodated at the receiving manhole and downstream system however given the size of the receiving wastewater system that level of pump flow should be capable of being accommodated in the system. If not then further costs may be incurred if upgrades/amplifications of existing assets are required however the likelihood of this occurring is low.

5.3 Endeavour Energy High Voltage Power Transmission Line

A high voltage transmission line is present on the southern portion of the site, traversing an east-west trajectory running parallel to The Horsley Drive as shown on **Figure 5.1** below.

Any adjustments, alterations or disruption to the asset will need to be made at the full expense of the developer.

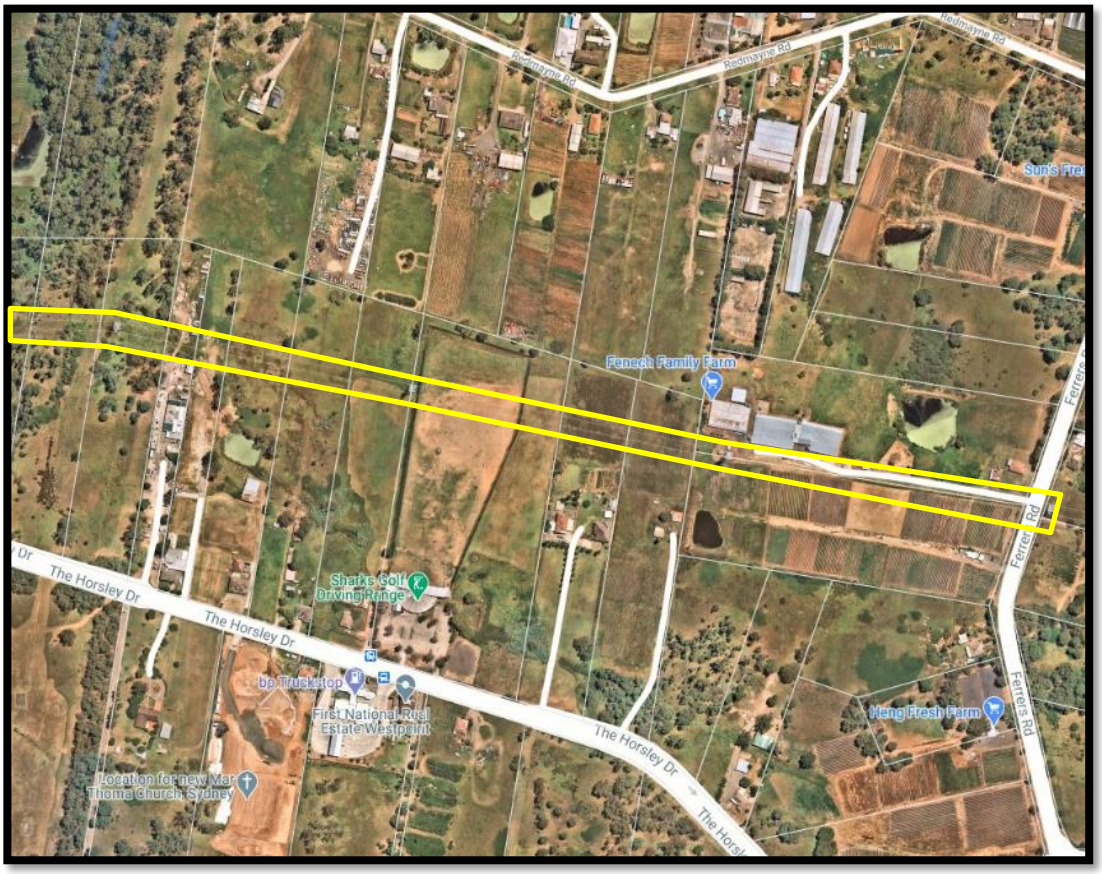


Figure 5.1 Location of High Voltage Transmission Tower and Easement

Potential requirements relating to the transmission lines (subject to confirmation from the asset authority) have been included below. It is anticipated that the transmission lines would be converted to overhead power poles to facilitate the construction of a roadway aligned with the power transmission alignment.

The asset requirements will require confirmation from the authority, and this would need to be undertaken by a suitable electrical consultant. A site-specific assessment by the authority would be required as part of any development proposals within the zone of the easement, transmission towers or transmission lines with consideration to the following typical criteria.

Typical Prohibited Activities

Activities and encroachments that are typically prohibited within a Transmission Line (TL) Easement include, but are not limited to (Note 2), the following:

- The construction of buildings, substantial structures, or parts thereof.
- The installation of fixed plant or equipment.
- The storage of flammable materials, corrosive or explosive material.
- The placing of garbage, refuse or fallen timber.
- The planting of trees or shrubs capable of growing to a height exceeding 4 metres.

- The placing of obstructions within 20 metres of any part of a transmission line structure or supporting guywire.
- Public spaces or recreational areas which encourage people to spend time within or congregate within the easement.
- The parking or storage of flammable liquid carriers or containers.
- The installation of site construction offices, workshops or storage compounds.
- Flying of kites or wire-controlled model aircraft within the easement area.
- Flying of any manned aircraft or balloon within 60m of any structure, guy-wire or conductor.
- Flying of remote controlled or autonomous aerial devices (such as UAVs) within 60m of any structure, guy-wire or conductor.
- Placing any obstructions on access tracks or placed within the easement area that restricts access.
- Any vegetation maintenance (such as felling tall trees) where the vegetation could come within the Ordinary Persons Zone – refer to the WorkCover NSW 'Work Near Overhead Power Lines' - Code of Practice 2006'.
- Any substantial excavation within 15 metres of a pole or supporting guy-wire or guy foundation or within 20 metres of a tower
- The climbing of any structure (any development that encourages or facilitates climbing will not be permitted).
- Any change in ground levels that reduce clearances below that required in AS7000.
- The attachment of any fence, any signage, posters, or anything else, to a structure or guy-wire. Note: Interference to electricity infrastructure is an offence under the Electricity Supply Act 1995.
- The movement of any vehicle or plant between the tower legs, within 5m of a structure, guy-wire or between a guy-wire and the transmission pole. Note: Any damage to electricity infrastructure is an offence under the Electricity Supply Act 1995. The storage of anything whatsoever within the tower base or within 10m of any tower leg.
- Any structure whatsoever that during its construction or future maintenance will require an Accredited person to access. Note: The final structure may meet AS7000 clearances, but may be accessible (e.g. by EWP) by Ordinary Persons within the Ordinary Persons Zone.
- Any work that generates significant amounts of dust or smoke that can compromise the TL high voltage insulation.
- The erection of any structure in a location that could create an unsafe situation work area for TransGrid staff.
- Burning off or the lighting of fires.
- Any activity (including operation of mobile plant or equipment having a height when fully extended exceeding 4.3 metres) by persons not Accredited or not in accordance with the requirements of the WorkCover NSW 'Work Near Overhead Power Lines' Code of Practice 2006 that is within (Note 1): − 3m of an exposed 132kV overhead power line − 6m of an exposed 220kV or 330kV overhead power line − 8m of an exposed 500kV overhead power line Note: Distances quoted are to the design conductor position (i.e. maximum sag and blowout).

Typical Permissible Activities

The following activities may possibly be approved with conditions and TransGrid's prior review and written consent. The proponent will be required to demonstrate (using an *Impact Assessment* process) that the risks associated with the activity have been satisfactorily mitigated.

- Temporary parking of caravans and other large vehicles in the outer 3m of the easement area, subject to a 4.3 metre height restriction and metallic parts being earthed.
- The erection of flagpoles, weathervanes, single post signs, outdoor lighting, subject to a 4.3 metre height restriction and metallic parts being earthed.
- The erection of non-electric agricultural fencing, yards and the like. Note: Fencing that exceeds 2.5 metres in height or that impedes access would not be approved.
- The erection of metallic fencing less than 2.5 metres in height providing that it is earthed, located more than 20 metres from any part of a transmission line structure or supporting guy and greater than 4 metres of the vertical projection of the overhead conductors.
- The erection of electric fencing provided that the height of the fencing does not exceed 2.5 metres and provided that the fence does not pass beneath the overhead conductors. Note: Approval may be given for a portable electric fence to pass underneath the conductors provided that it is supplied from a portable battery powered energiser that is located remotely from frequented areas. Where it is necessary for a permanent electric fence to pass beneath the overhead conductors, or where an extensive permanent electric fencing system is installed in proximity to a transmission line certain additional safety requirements will be required.
- The installation or use of irrigation equipment inside the easement. NOTE: An irrigation system will not be approved if it is capable of coming within 4 metres of the overhead conductors; exceeds 4.3 metres in height; consists of individual sections of rigid or semi-rigid pipe exceeding 4.3 metres; is capable of projecting a solid jet of water to within 4 metres of any overhead conductors; requires fuel to be stored within the easement; and/or requires an outage of the transmission line for its operation.
- The installation of low voltage electricity, telephone, communication, water, sewerage, gas, whether overhead, underground or on the surface. Note: Services that do not maintain standard clearances to the overhead conductors that are within 15 metres from the easement centre-line, 20 metres from any part of a transmission line supporting structure or are metallic and within 30 metres of any part of a structure will not be approved. TransGrid may impose additional conditions or restrictions on proposed development.
- The installation of high voltage electricity services, subject to there being no practicable alternative and provided the standard clearances are maintained to the supporting structures. Note: Where extensive parallels are involved certain additional safety requirements may be imposed by TransGrid, depending on the particular case and engineering advice.
- Swimming pools, subject to TransGrid's strict compliance criteria. Note: Above ground pools will not be approved. In-ground pools will not be approved if there is a practicable alternative site clear of the easement area. If there is no practical alternative site, in-ground pools including coping will not be approved if it encroaches more than 4.5 metres, or is less than 30 metres away from a transmission line structure. A site-specific assessment by TransGrid is required.

- Detached garages, detached carports, detached sheds, detached stables, detached glass houses, caravans, site containers, portable tool sheds, pergolas and unroofed verandas attached to residences on the outer 3 meters of the easement only.
- Prefabricated metal (garden) sheds. TransGrid approved sheds must be earthed. Note: Sheds exceeding 2.5 metres in height, with a floor area exceeding 8m², encroaching more than of up to 3 metres or within 30 metres of any part of a transmission line structure will not be approved. Connection of electric power will not be approved.
- Single tennis courts. Note: Tennis courts that hinder access are for commercial use or do not provide adequate clearances shall not be approved.
- Subdivisions. See Appendix C requirements.
- Roads, carparks, cycleways, walking tracks and footpaths on the outer part of the easement or as a thoroughfare across the easement, subject to horizontal and vertical clearances. Restrictions and other conditions on consent may also apply. These will not be approved when located within: − 20 metres of any part of a transmission line structure − 10 metres of the centre-line of a transmission line 132kV and below − 17 metres of the centre-line of a transmission line above 132kV
  Note: Roads and pathways that cross the transmission line as a thoroughfare may be permitted. Where it is proposed that a road passes within 30 metres of a transmission structure or supporting guy, TransGrid may refuse consent or impose restrictions and other conditions on consent. Where a road passes within 30 metres of a transmission structure or supporting guy, the structure's earthing system may require modification for reasons including, but not limited to, preventing fault currents from entering utility services which may be buried in the road. The option of raising conductors or relocation of structures, at the full cost to the proponent, may be considered.
- Excavation – subject to restriction criteria. Note: Substantial excavations located within 20 metres of any part of a steel tower or pole structure and exceeding a depth 3 metres will not be approved.

6 FLOODING

6.1 Introduction

The rezoning land is located within Fairfield City Council and has been identified in their *Rural Area Flood Study Ropes, Reedy & Eastern Creeks Final Report 2013*, as being affected by overland flow (the council report will be referred to as the *Council Flood Study* from hereon) from localised gullies within the site and the adjacent Eastern Creek on the west. The *Council Flood Study* was prepared for Council by BMT WBM.

As part of the pre-application consultation with Fairfield City Council (meeting dated December 2020) Council required modelling be undertaken and has been completed by *Catchment Simulation Solutions (CSS)*. CSS are noted to be one of three Council Preferred Consultants who have access to Council's flood model and are able undertake the modelling. Council's requirements are for the interpretation of the results produced by CSS are to be completed by a different engineering consultancy experience in flooding and overland assessments, and in this regard the interpretation has been undertaken by Costin Roe Consulting and included in this report.

The 1% AEP flood extent are included in Figure 5-15 of The *Council Flood Study* as shown in **Figure 6.1**.

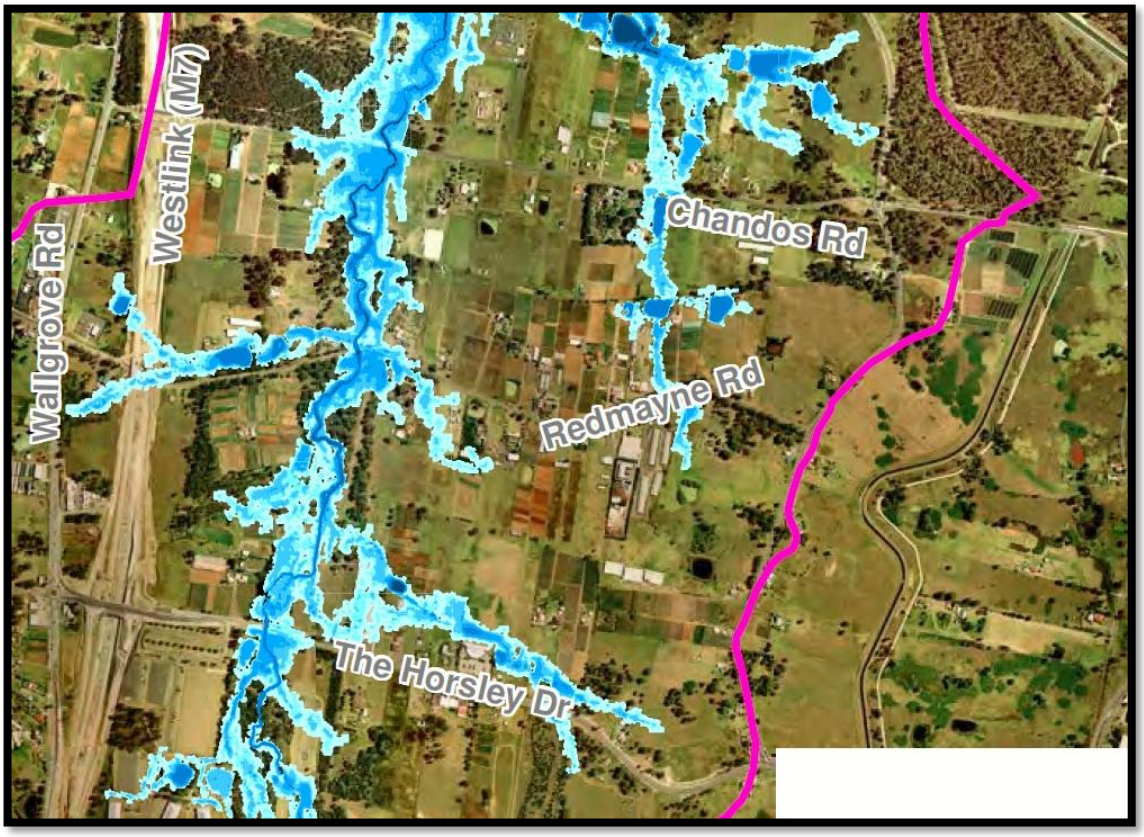


Figure 6.1. Council 1% AEP Flood (Source: *Council Flood Study Figure 5-15)*

A pre-development flood model would be compared with the civil engineering concepts completed by Costin Roe Consulting, to ensure that the objectives of Councils stormwater and

flood management requirements have been met and that the development does not result in any impact on upstream, downstream or adjacent properties.

We provide a summary, interpretation and confirmation of the outcomes of the CSS modelling output in the following sections of our engineering report

We include all output produced by the flood modellers in **Appendix E** including modelling of the 5% AEP, 1% AEP, 0.2% AEP and PMF storm events.

6.2 Methodology

CSS have reproduced the existing flood model locally in the area of the proposed development as a pre-development condition. The flood model comprises a two-dimensional hydrodynamic flood model based on the Tuflow modelling engine. The flood model used in Fairfield City Council flood studies as referenced above uses rain-on-grid hydrology.

CSS has been supplied with a simplified three-dimension digital terrain model of the proposed civil engineering design, and the proposed key in-ground drainage systems for use in their post developed flood assessment. Detailed development site drainage systems or existing or proposed site drainage systems have not been included in the pre or post development modelling hence some further refinement of the modelling output can be anticipated as part of future development assessments and SSDA applications.

Pre and post developed flood scenarios have been compared to confirm the effect of the development on the existing conditions and to understand flood planning requirements for the precinct.

6.3 Existing Flood Scenario

The existing flood scenario shows overland flow from four sources as described in **Section 4.2** of this report. The overland flow assessment shows the flow paths being directed through the pre-development site and discharging to Eastern Creek on the west, or the watercourse to the north and continuing north of Chandos Road. **Figure 6.2** shows the pre-development flood levels for the 5% AEP (1 in 20-year ARI) event, **Figure 6.3** shows the flood output for the 1% AEP event and **Figure 6.4** shows the flood output for the PMF AEP event.

Refer to **Appendix E, Figures E1 to E12** for flood depth, velocity, and hazard categorisation for pre-development/ existing conditions.

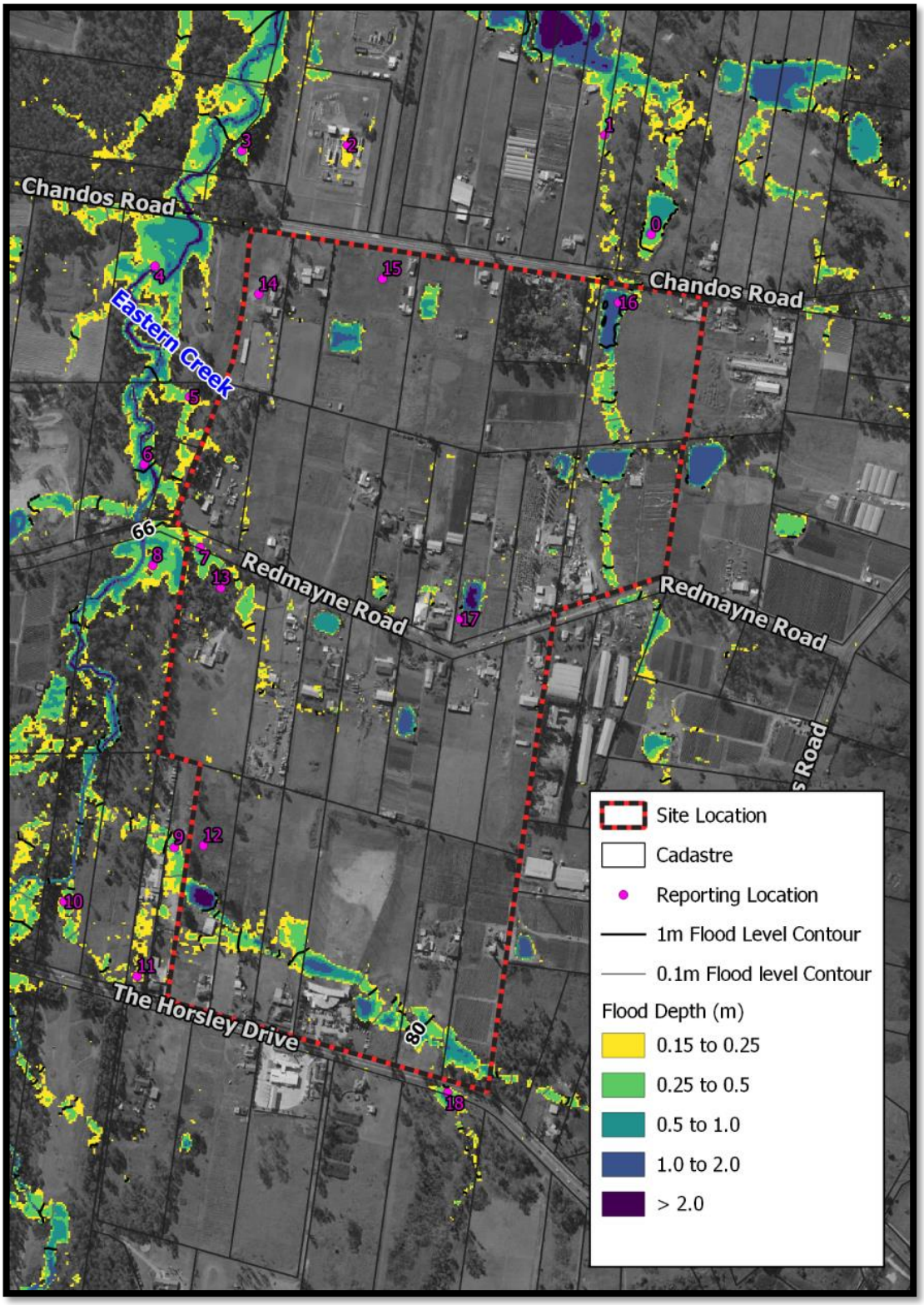


Figure 6.2 Flood Depth Output – 5% AEP (1 in 20-year ARI), Pre-Development

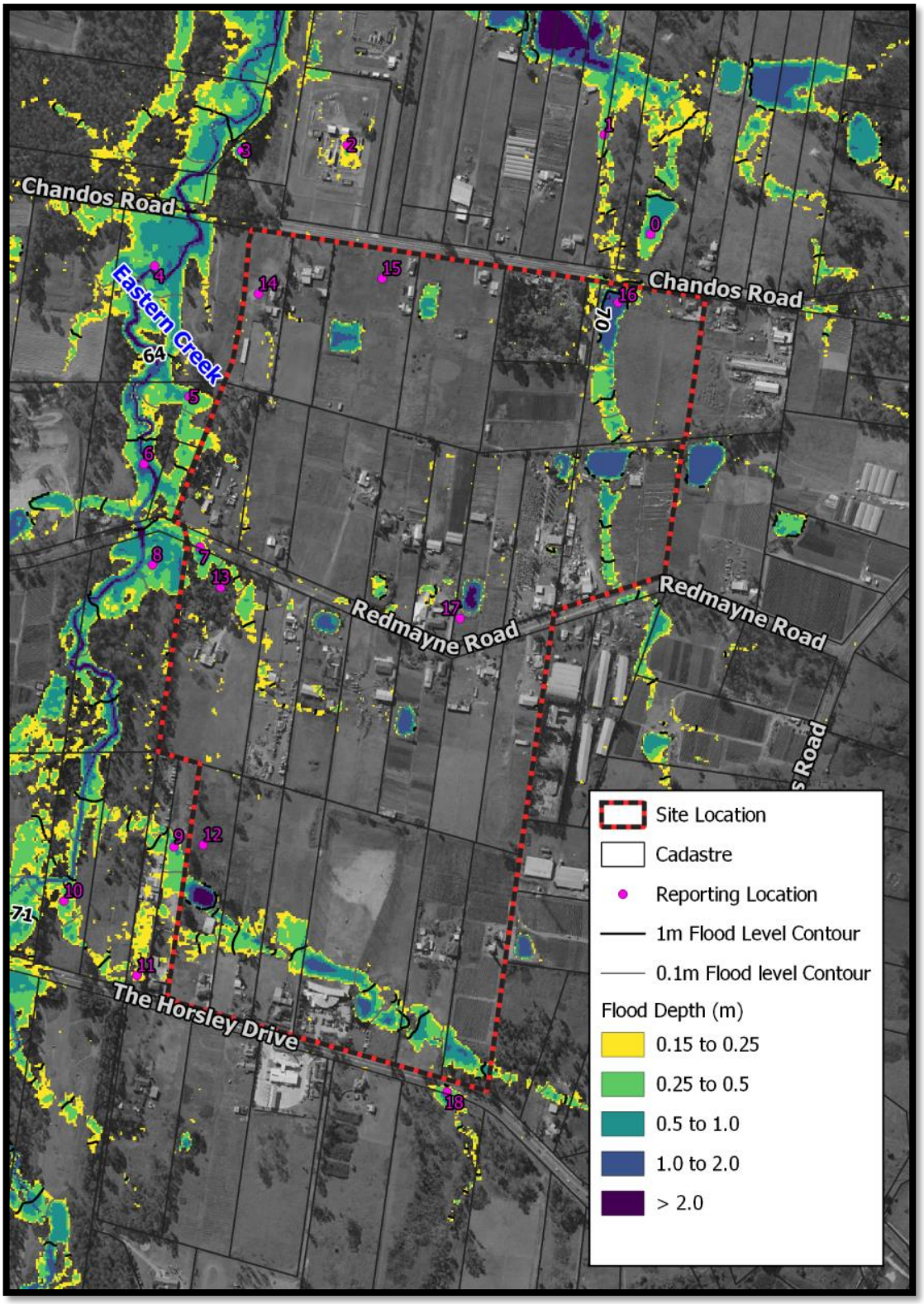


Figure 6.3 Flood Depth Output – 1% AEP (1 in 100-year ARI), Pre-Development

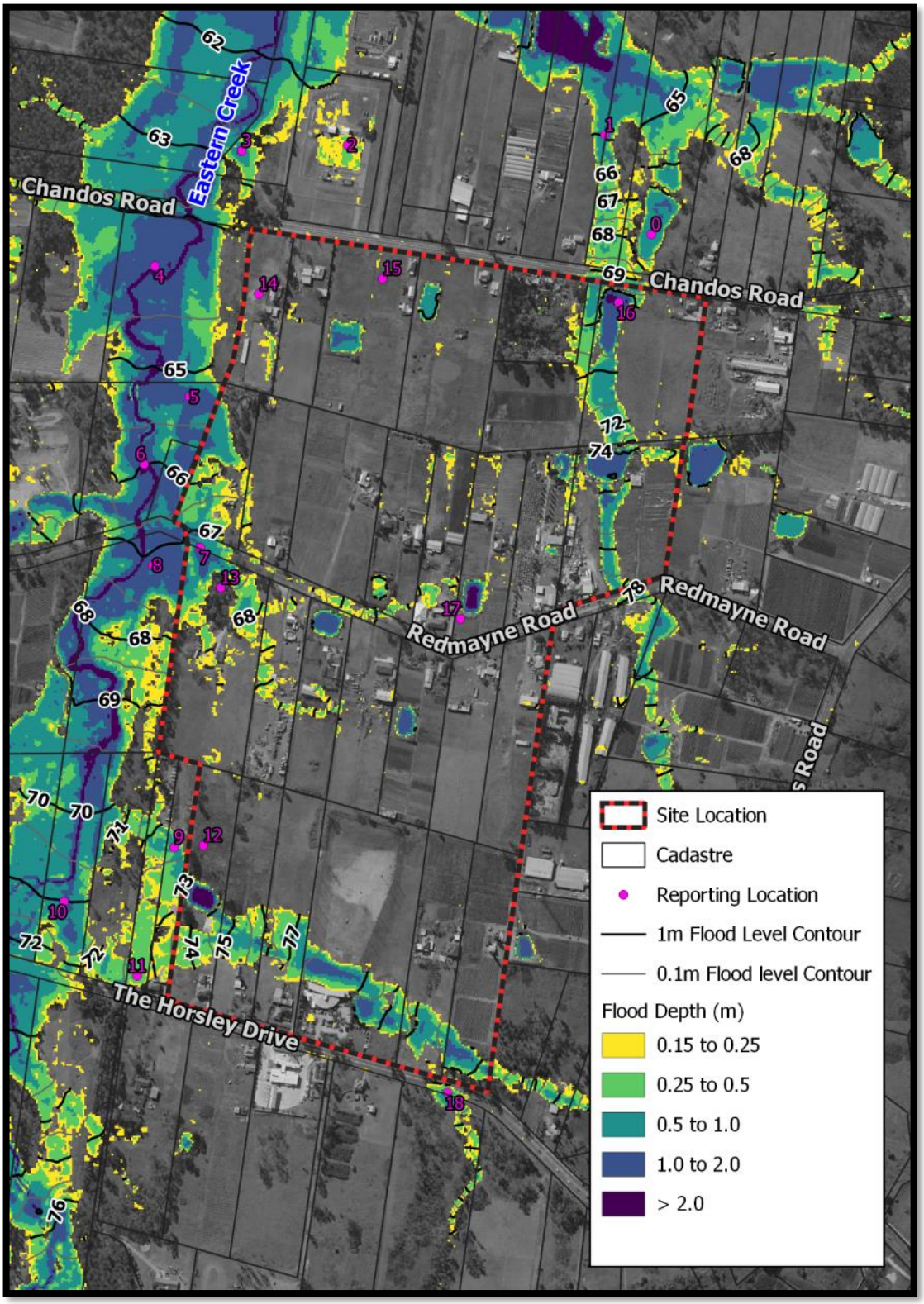


Figure 6.4 Flood Depth Output - PMF, Pre-Development

6.4 Developed Site Flooding

The developed flood scenario shows management of the overland flow paths and site measures, as designed, including the estate detention basin, new dam and storage areas, and erosion control measures. It is noted that as the development sites are not yet defined, the surface which represents the developed site as used in the flood modelling is based on flat pads with cut off drains to convey overland flow in the required direction of flow and to suit the overall management strategy for the precinct.

The flood assessment shows the system is able to convey the existing overland flow paths through the site, and that the development sites are above the 1% AEP flood. It is noted that the emergency overland flow path provided from the northern basin is not activated in the 1% or 0.2% AEP events, however, is activated in the PMF. This shows that overland flow will only occur in very infrequent or blockage events.

Figure 6.5 to 6.7 shows the post-development flood levels for the 5% AEP, 1% AEP events and PMF event.

Refer to **Appendix E, Figures E13 to E23** for flood depth, velocity and hazard categorisation for post-development conditions.

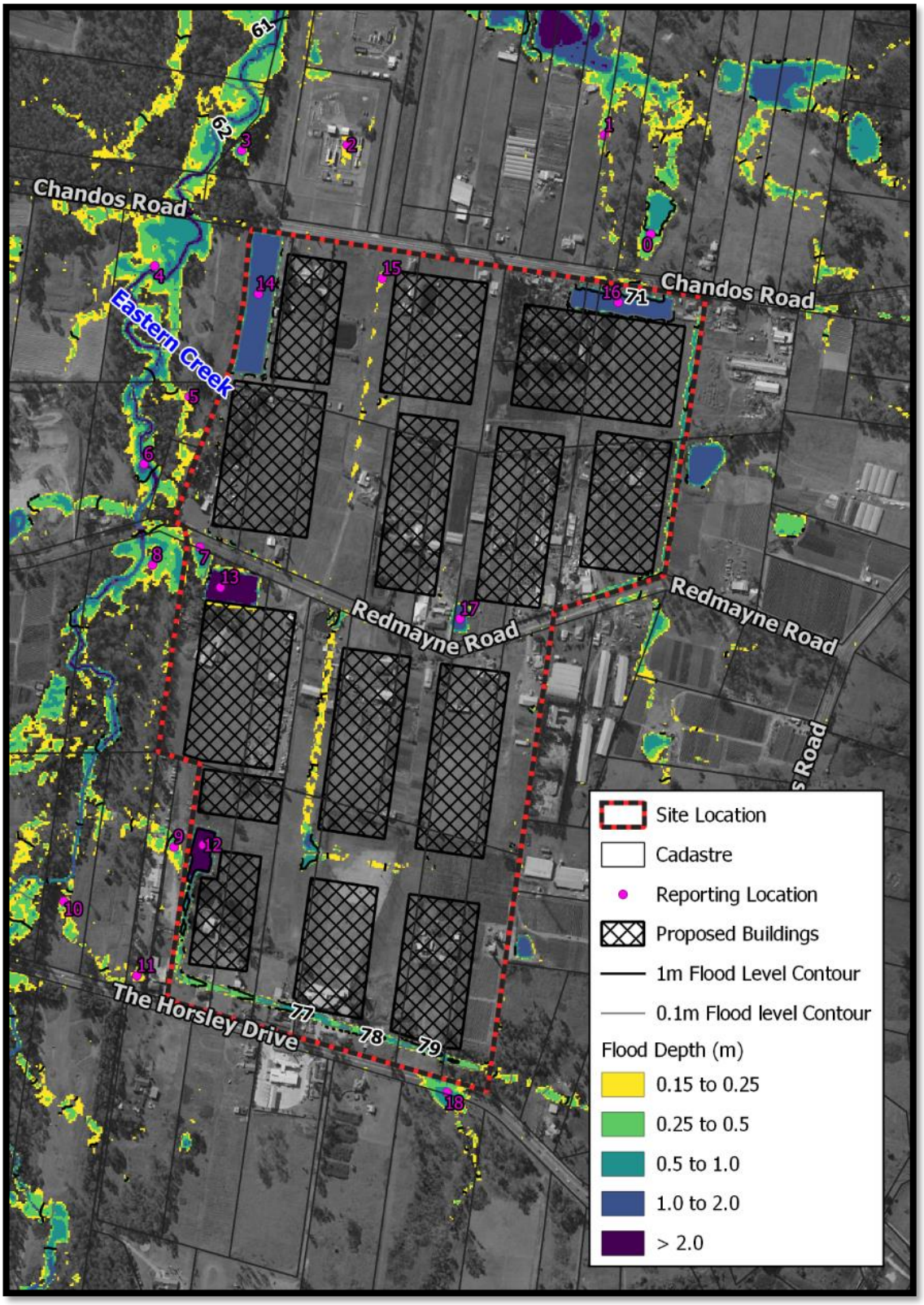


Figure 6.5 Flood Depth Output – 5% AEP, Post Developed

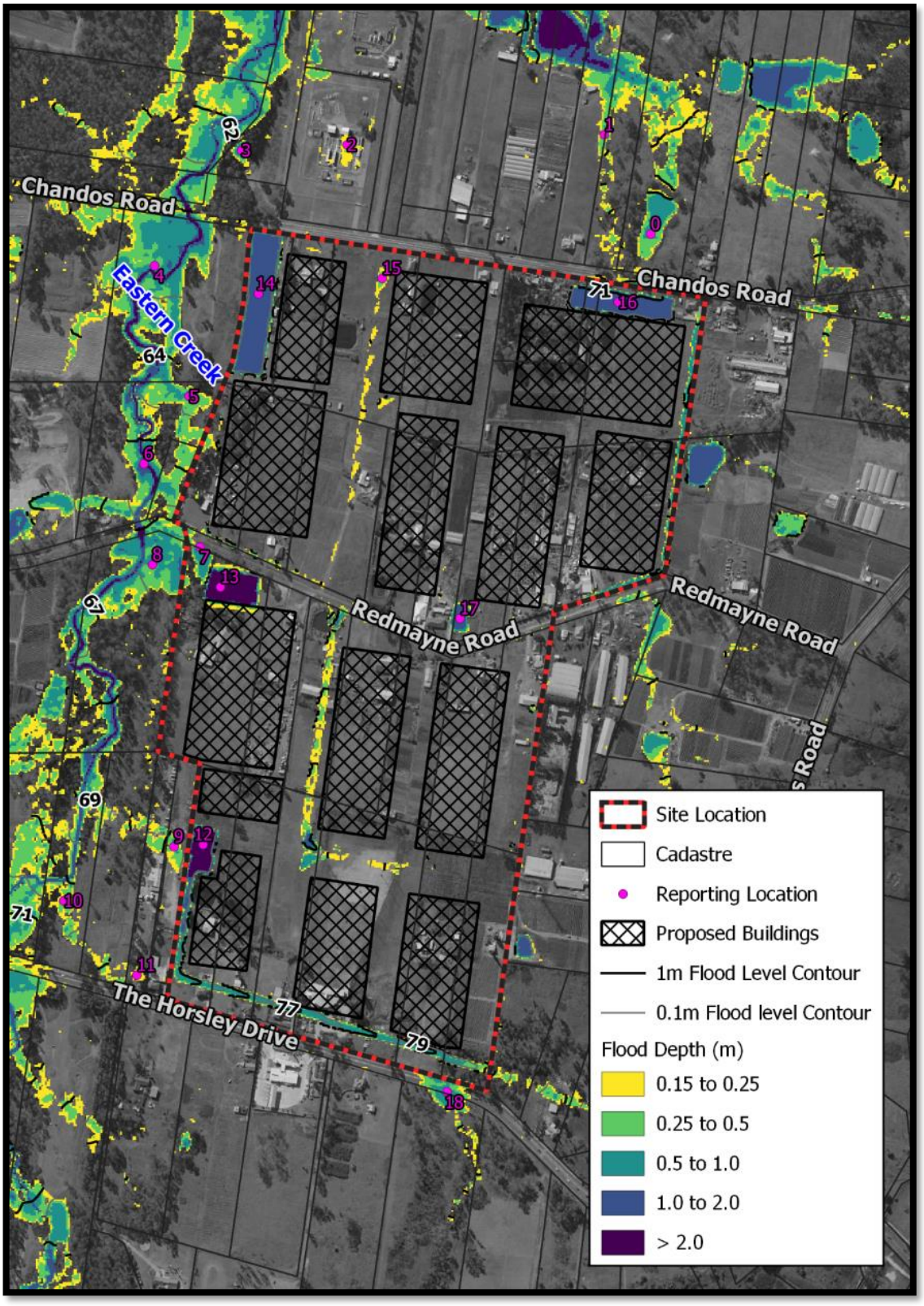


Figure 6.6 Flood Depth Output – 1% AEP, Post Developed

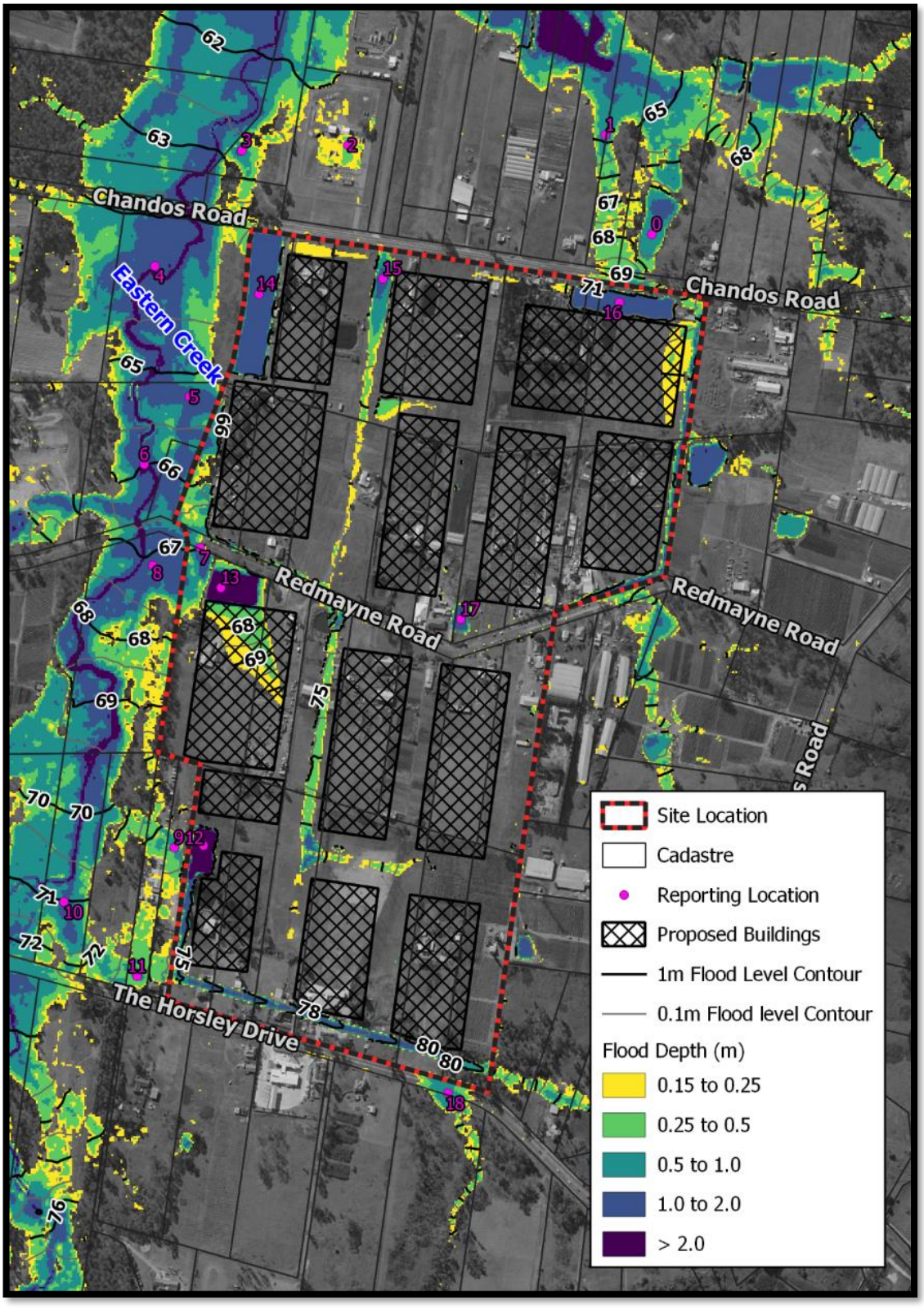


Figure 6.7 Flood Depth Output - PMF, Post Developed

6.5 Comparison of Pre and Post Development Conditions

Figure 6.8 shows flood difference (or afflux) for the 1 in 100-year ARI flood scenario.

The development can be seen to have an overall improvement in flood conditions downstream of the development within Eastern Creek as a result of the attenuation measures proposed in the stormwater management system of the development site. This improvement has been shown in both flood depth output figures and afflux figures for the site.

Generally, at key flow paths as shown in **Figure 6.8**, upstream entry point and downstream discharge points, acceptable flow afflux has been achieved for the 1% AEP event, with changes in offsite water level increases being less than 0.02m and as such below normally acceptable water level change thresholds, and modelling accuracy.

Some offsite locations (reporting Points 0, 3, 7, 18) are noted to have water level changes which are above the nominated 0.02m water level increase threshold. As noted, CSS was supplied with a simplified three-dimension digital terrain model of the proposed civil engineering design, and the proposed key in-ground drainage systems for use in their post developed flood assessment. Detailed development site drainage systems or proposed site and road drainage systems have not been included in the pre or post development modelling. Hence some further refinement of the modelling output can be anticipated as part of future design and development assessments and SSDA applications. The noted points are generally located near to roadways or where hydraulic structures would be designed or located. Once these items are designed (allowing for normal major/ minor engineering drainage design philosophy) and then modelled, it is anticipated that the minor differences would be reduced to acceptable values or eliminated.

The above refinement is particularly noted at Reporting Point 18 where 0.2m level change has been modelled. This location aligns with the future widening of The Horsley Drive proposed by TfNSW. The concept pre and post development modelling does not include the existing or new inground culvert crossing at this location, hence the model shows an increase in water level for the widened road, which is included in the model. As noted following more refined design and inclusion of required culvert/ inground drainage system, and then subsequent modelling of the system, the modelled water level change would be reduced to an acceptable limit. This modelling and design would form part of future SSDA or other similar applications and assessments.

We provide the following additional commentary regarding the adopted offsite impact threshold of 0.02m. Flood impact assessment, per the NSW Floodplain Development Manual and accepted flood modelling practice, requires a merit based approach. The industry standard for off-site water level difference is 0.02m. Localised changes of greater than 0.02m can also be acceptable in some circumstances such as in or around engineered structures or hydraulic restrictions.

It is noted that two-dimensional TUFLOW hydraulic modelling has noted accuracy to levels of approximately 0.1-0.2m, when comparing absolute level values and 0.01-0.02m when comparing pre and post development absolute level values. Measuring and reporting afflux of 0.02m as being unacceptable is beyond modelling accuracy, less than industry standards and not considered an appropriate impact criterium.

It is further noted that both adjoining Penrith City Council and Blacktown City Council both adopted the noted 0.02m offsite water level change and merit-based approach on flood impact

assessments. Reference should be made to Penrith Council *South Creek Floodplain Risk Management Study & Plan* and Blacktown *WSUD Developers Handbook 2020 Section 15.6.2.*

Table 6.1. Comparison Reporting Points

Reporting Location	Flood Level Difference (m)				Flood Velocity Difference (m/s)				Velocity x Product Difference (m^2/s)			
	5%AEP	1%AEP	0.2%AEP	PMF	5%AEP	1%AEP	0.2%AEP	PMF	5%AEP	1%AEP	0.2%AEP	PMF
0	0.05	0.03	0.05	0.11	0.04	0.03	0.05	0.14	0.03	0.02	0.05	0.20
1	-0.04	-0.05	-0.03	-0.03	-0.05	-0.09	-0.05	-0.12	-0.03	-0.05	-0.04	-0.12
2	-0.02	-0.03	-0.02	-0.01	-0.01	-0.02	-0.01	-0.02	0.00	0.00	0.00	-0.01
3	0.01	0.06	0.05	0.05	0.00	0.01	0.01	0.05	0.00	0.00	0.00	0.09
4	-0.04	-0.01	-0.02	-0.01	-0.02	-0.01	-0.02	-0.03	-0.05	-0.02	-0.03	-0.07
5	-0.08	-0.03	-0.04	-0.02	-0.06	-0.04	-0.06	-0.05	-0.04	-0.04	-0.05	-0.09
6	-0.03	-0.01	-0.01	0.00	-0.04	-0.01	-0.01	0.00	-0.16	-0.03	-0.06	0.00
7	0.18	0.20	0.21	-0.02	-0.26	-0.36	-0.15	0.28	-0.16	-0.22	-0.15	-0.04
8	-0.02	-0.01	0.00	-0.01	-0.04	0.00	0.00	0.00	-0.02	-0.01	-0.01	-0.01
9	-0.02	-0.05	0.03	-0.03	0.03	0.00	0.05	-0.05	0.00	-0.04	0.04	-0.06
10	-0.07	-0.05	-0.04	0.01	0.01	-0.02	-0.01	0.06	-0.03	-0.04	-0.04	0.06
11	0.01	0.01	-0.03	0.12	0.03	0.04	-0.01	0.22	0.01	0.01	-0.01	0.17
12	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-
16	1.05	1.00	1.02	0.98	-0.06	-0.10	-0.09	-0.24	-0.28	-0.26	-0.28	-0.44
17	-	-	-	-	-	-	-	-	-	-	-	-
18	0.25	0.26	0.28	0.24	-0.16	-0.16	-0.12	-0.23	-0.03	-0.06	-0.01	-0.11

Refer to **Appendix E, Figures E24 to E35** for flood depth difference, velocity difference between the pre and post development conditions for a range of storms which also show either consistent pre and post development values or minor reductions offsite.

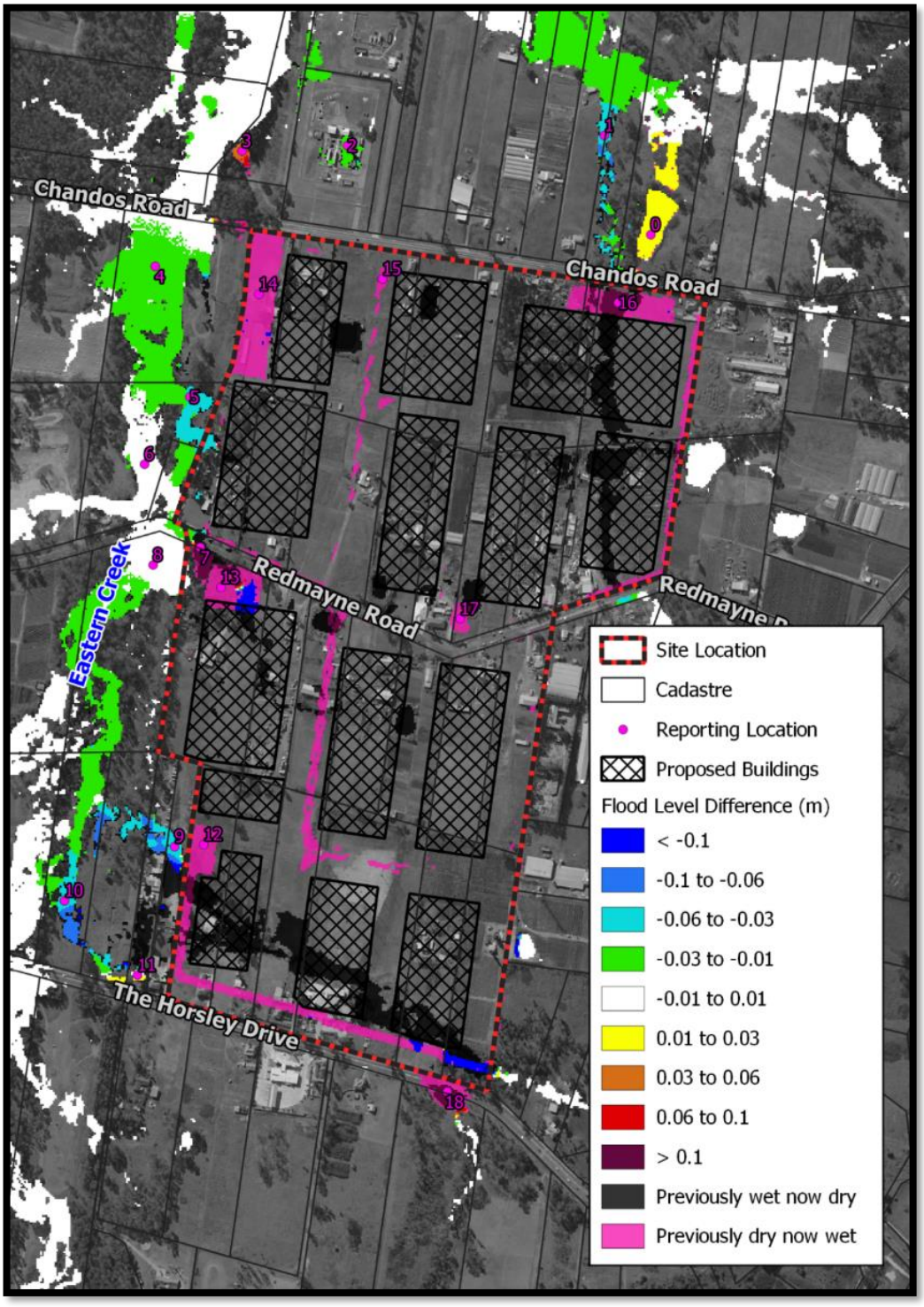


Figure 6.8 Flood Afflux – 1 in 100 year

6.6 Flooding Assessment Conclusion

Flood modelling has been undertaken by Fairfield City Council preferred flood modellers, *Catchment Simulation Solutions*. The assessment utilised Council's existing flood model, to then compare the post development flood scenario and to confirm the effect of the development on flooding.

The assessment shows that the proposed design allows for the conveyance of the existing flow paths through the development areas to Eastern Creek or Chandos Road via new flow paths or trunk drainage systems.

The modelling shows that overland flows are able to be collected and conveyed within drainage infrastructure without adversely impacting upstream or downstream properties. Further, that buildings are able to achieve sufficient flood immunity and safety within the precinct as a result of the proposed stormwater management strategy and stormwater management measures recommended to be included in the concept for the precinct. The management measures which have been proposed include attenuation of the proposed site drainage, and new farm dams and attenuation storage to three of the four upstream overland flow paths which will be conveyed through the development site.

The assessment also confirms that building pads will be free of flooding from the existing flow paths allowing for a minimum freeboard to the 1% AEP flood level of 500mm. Reference to drawings **Co14052.00-SK40** show the flood levels in relation to the proposed pad levels, and it is confirmed that the sites meet council freeboard requirements. The final building arrangements and adopted floor levels will be defined in future separate building development applications and will be required to be sited in accordance with the flood assessment completed as part of the estate development approval documents.

The assessment confirms that the proposed development meets council's flooding policy and the NSW Floodplain Manual recommendations. We confirm that no upstream, downstream or adjacent properties are adversely affected as a result of the development and the CSS modelling confirms acceptable flood management has been provided for the development.

7 SOIL AND WATER MANAGEMENT DURING CONSTRUCTION

7.1 Soil and Water Management General

Soil and water management would be required during the future construction period of the development. While all construction activities have the potential to impact on water quality, the key activities would be expected to include:

- Erosion and sediment control installation.
- Grading of existing earthworks to suit building layout, drainage layout and pavements.
- Stormwater and drainage works.
- Service installation works.
- Building construction works.

During typical construction activities, site runoff would be expected to convey a significant sediment load which require mitigation measures to ensure adequate management of runoff during construction. A *Soil and Water Management Plan* (SWMP) and *Erosion and Sediment Control Plan* (ESCP), or equivalent, would be implemented for the construction of the Proposal. The SWMP and ESCPs would be developed in accordance with the principles and requirements of *Managing Urban Stormwater – Soils & Construction Volume 1 ('The Blue Book')(Landcom, 2004)*.

The sections below outline typical controls for the management of erosion and sedimentation that could be expected during construction of the Proposal. More detailed ESCP and SWMP which confirm specific measures for the development would form part of future SSDA designs and approvals.

7.2 Typical Management Measures

Sediment Basins

Sediment basins to be sized (based on 5 day 85th percentile rainfall) and located to ensure sediment concentrations in site runoff are within acceptable limits. Basin sizes and storage requirements to be calculated in accordance with the Blue Book, based on 'Type F' soils. Type F soils are fine grained and require a relatively long residence time to allow settling.

Sediment basins for 'Type F' soils are typically wet basins which are pumped out following a rainfall event when suspended solids concentrations of less than 50 mg/L have been achieved.

Sediment Fences

Sediment fences are located around the perimeter of the site to ensure no untreated runoff leaves the site. They have also been located around the existing drainage channels to minimise sediment migration into waterways and sediment basins.

Diversion Drains

Diversion drains to convey site runoff to erosion control measures and sediment basins.

Stabilised Site Access

For the proposal, stabilised site access is proposed at one location at the entry to the works area. This will limit the risk of sediment being transported onto Muir Road and other public roads.

7.3 Other Management Measures

Other management measures that will be employed are expected to include:

- Minimising the extent of disturbed areas across the site at any one time.
- Progressive stabilisation of disturbed areas or previously completed earthworks to suit the proposal once trimming works are complete.
- Regular monitoring and implementation of remedial works to maintain the efficiency of all controls.

It is noted that the controls included in the preliminary ESCP are expected to be reviewed and updated as the design, staging and construction methodology is further developed for the Proposal.

8 CONCLUSION

This Civil Engineering Report has been prepared to accompany a planning application for rezoning of the "*Keyhole*" Land at Horsley Park as industrial land (IN1 or IN2).

An overview of civil engineering considerations including earthworks, walls, stormwater management, access and site servicing has been provided to assist in the planning application assessment. Specific mention has been made to on-site detention and water quality requirements as required as part of the *Water Cycle Management Plan* for the precinct. The two overland flow paths from the minor upstream catchments is proposed to be conveyed largely via an open channel located within a 25m corridor, as required by the Gateway Determination Report.

A strategy for the management of stormwater quality and quantity can be achieved via a combination of end-of-line estate level management basins and individual lot specific systems. It is proposed that two combined detention and water quality systems are provided on the western flank of the development extent to manage post-development runoff to pre-development flow rates and to clean the water to Council and DPIE load based pollution reduction requirements. Further consideration to stream health has been made in accordance with the Western Sydney Planning Partnership Engineering Design Guidelines as recommended by Fairfield Council, adopting an SEI<=2.0.

Management of soil and water during construction can be managed via site specific soil and water management plan and associated erosion and sediment control drawings.

The built form development is located in the vicinity of, however clear of the predicted 1% AEP Eastern Creek. The floor levels of proposed buildings near Eastern Creek will be set as a minimum to the 1% AEP flood level plus 0.5m freeboard in accordance with the requirements of Fairfield City Council and the NSW Floodplain Development Manual.

9 REFERENCES

Managing Urban Stormwater: Harvesting and Reuse – 2006 (NSW DEC);

Managing Urban Stormwater: Source Control – 1998 (NSW EPA);

Managing Urban Stormwater: Treatment Techniques – 1997 (NSW EPA);

Managing Urban Stormwater: Soils & Construction – 2004(LANDCOM);

Fairfield City Council Development Control Plan.

Stormwater Management Policy - 2017 (Fairfield City Council)

Water Sensitive Urban Design – "Technical Guidelines for Western Sydney" by URS Australia Pty Ltd, May 2004

Western Sydney Engineering Design Manual – 2020 (Western Sydney Planning Partnership)

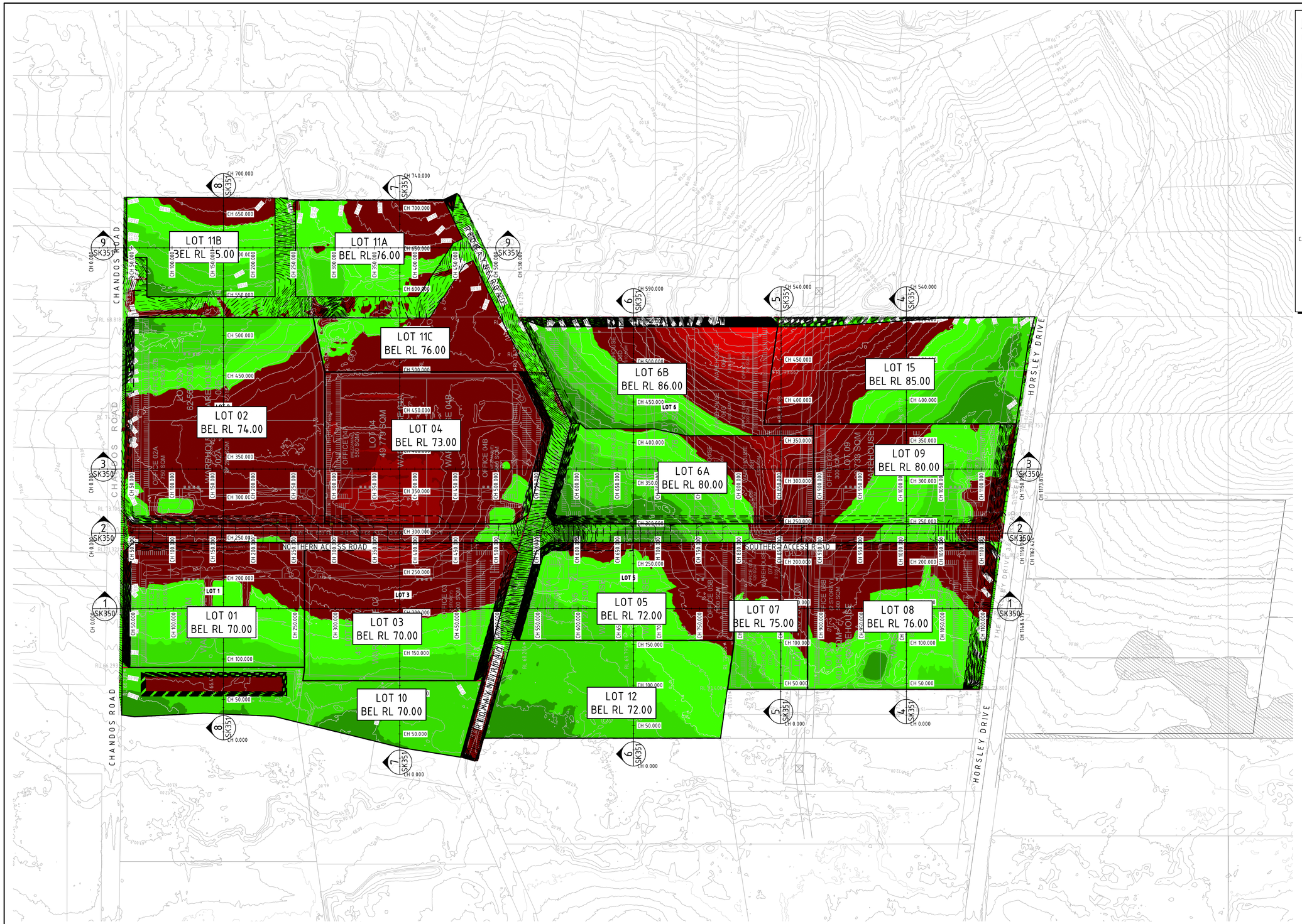
NSW Floodplain Development Manual – April 2005 (NSW DPE)

NSW Flood Risk Management Manual – 2023 (NSW DPE)

Appendix A

Costin Roe Consulting Pty Ltd

Planning Application Drawings

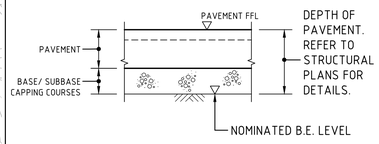


LEGEND:

LEVELS DATUM IS AHD.

EXISTING SITE LEVELS AND DETAILS BASED ON LIDAR INFORMATION OBTAINED FROM ELVIS (ELEVATION AND DEPTH - FOUNDATION SPATIAL DATA)

- 70.00 – EXISTING CONTOUR (1.0m INTERVAL)
- 75.50 – B.E.L. CONTOUR (MAJOR 2.5m)
- 75.10 – B.E.L. CONTOUR (MINOR 0.5m)
- – PRECINCT BOUNDARY
- PROPOSED WAREHOUSE BEL RL77.00 – PROPOSED BULK EARTHWORKS LEVEL



NOMINATED B.E.L. DETAIL
NTS

DEPTH RANGE

No.	FROM DEPTH	TO DEPTH	COLOUR
1	-15.000	-12.500	
2	-12.500	-10.000	
3	-10.000	-7.500	
4	-7.500	-5.000	
5	-5.000	-2.500	
6	-2.500	0.000	
7	0.000	2.500	
8	2.500	5.000	
9	5.000	7.500	
10	7.500	10.000	

EARTHWORK ESTIMATES

SITE AREA = 61.15 Ha

TOPSOIL STRIP (200mm OVER 61.15 Ha) = (-122,300m³)

CUT = -729,700m³
FILL = +821,425m³

ALLOWANCES
DETAILED EXCAVATION = -91,725m³ (1,500m³/Ha)

DIFFERENCE = +0.00m³ (i.e. BALANCED)

NOTE:
EARTHWORKS VOLUMES ARE APPROXIMATE ONLY.
NO ALLOWANCE HAS BEEN MADE FOR DELETERIOUS MATERIAL, EROSION AND SEDIMENT CONTROL, BULKING OR COMPACTION OF FILLED SOILS, THE REMOVAL OF UNCONTROLLED OR CONTAMINATED MATERIAL OR ANY OTHER UNSPECIFIED EXCAVATION RELATED TO CONSTRUCTION ACTIVITIES. DETAILED EXCAVATION ALLOWANCE IS APPROXIMATE ONLY AND ACCOUNTS FOR STORMWATER/SERVICES TRENCHING AND FOUNDATIONS. THE DETAILED EXCAVATION VOLUMES ARE TO BE CONFIRMED BY THE CONTRACTOR. REFER ANY CONCERNS TO ENGINEER.

PRELIMINARY BULK EARTHWORKS PLAN
SCALE 1:2000

20m 0 50 100 150 200m
SCALE 1:2000 AT B1 SIZE SHEET

FOR INFORMATION

ISSUED FOR INFORMATION ONLY	10.10.23	A
AMENDMENTS	DATE	ISSUE

AMENDMENTS	DATE	ISSUE

ARCHITECT

CLIENT
FRASERS PROPERTY

PROJECT
KEYHOLE SITE
HORSLEY DRIVE, HORSLEY PARK
NSW, 2175

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	LDV	AUG'22	XC	B1	AS SHOWN	C014052.00-SK 30

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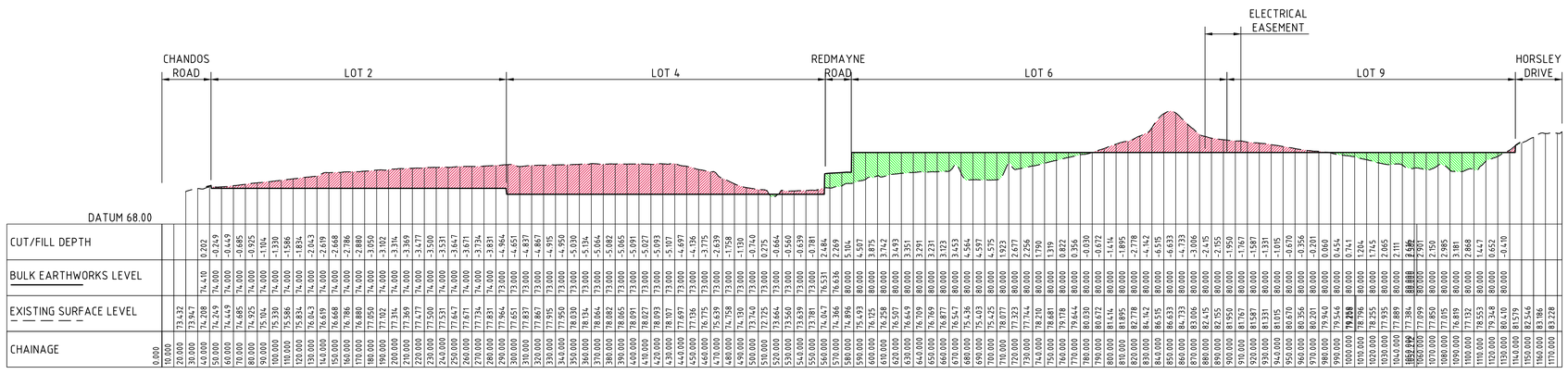
DRAWING TITLE
KEYHOLE SITE
PRELIMINARY BULK EARTHWORKS PLAN

DRAWING No C014052.00-SK 30
ISSUE A

LEGEND:

- DENOTES BULK EARTHWORKS SURFACE
- DENOTES EXISTING SURFACE
- DENOTES AREA IN CUT
- DENOTES AREA IN FILL



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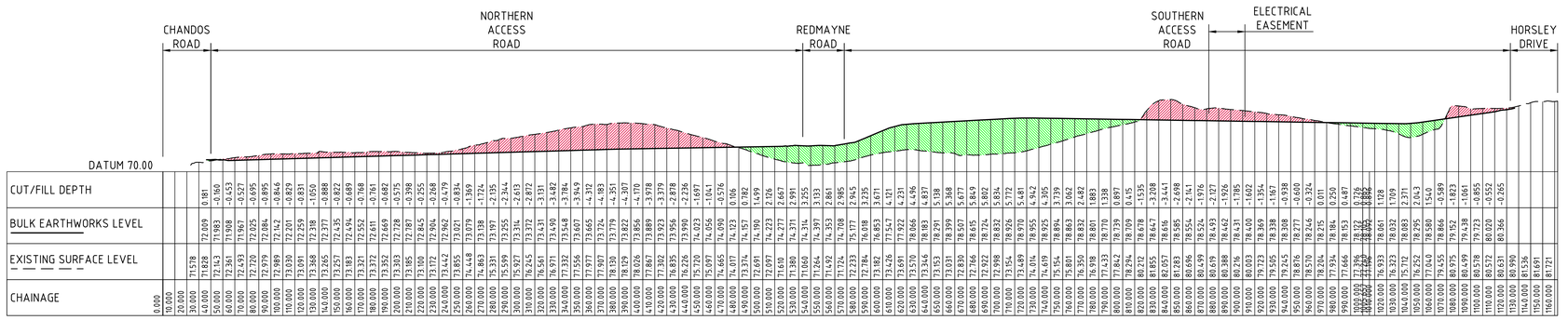
HORIZONTAL SCALE 1:2000
VERTICAL SCALE 1:400



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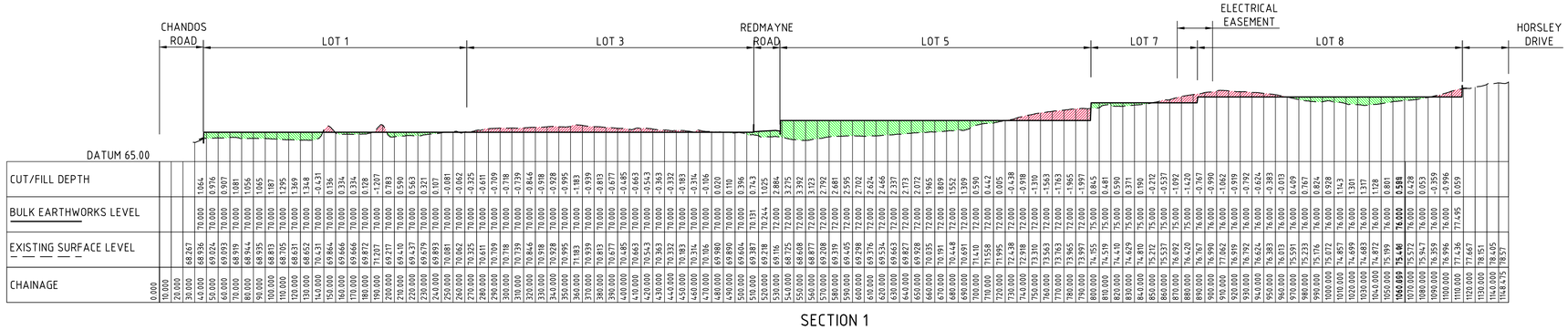
VERTICAL SCALE 1:400



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HORIZONTAL SCALE 1:2000
VERTICAL SCALE 1:400

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SCALE 1:400 AT B1 SIZE SHEET

20m 0 50 100 150 200m
SCALE 1:2000 AT B1 SIZE SHEET

FOR INFORMATION

	DATE	ISSUE
ISSUED FOR INFORMATION ONLY	10.10.23	A
AMENDMENTS	DATE	ISSUE

AMENDMENTS DATE ISSUE

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PROJECT
KEYHOLE SITE
HORSLEY DRIVE, HORSLEY PARK
NSW, 2175

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	LDV	AUG'22	XC	B1	AS SHOWN	C014052.00-SK 35

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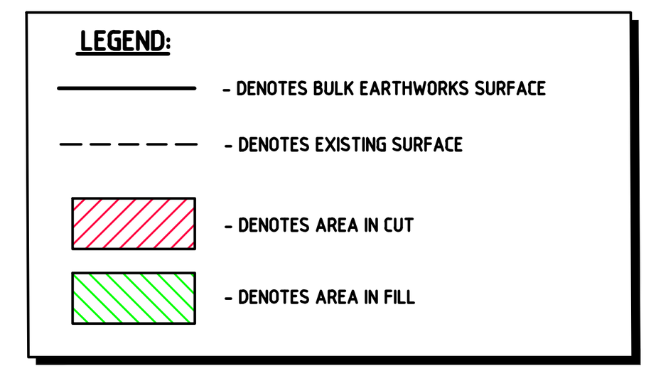
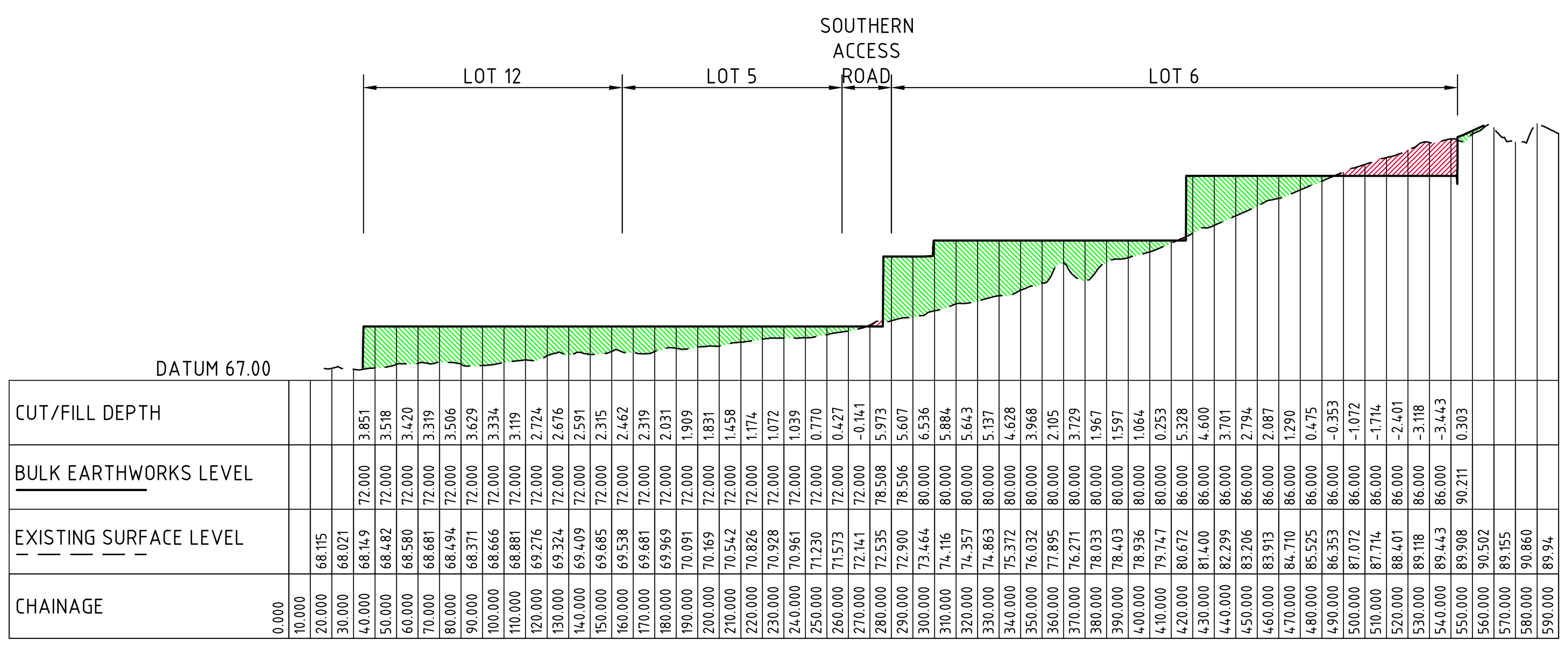
DRAWING TITLE
KEYHOLE SITE
PRELIMINARY BULK EARTHWORKS SECTIONS
SHEET 1

DRAWING No C014052.00-SK 35
ISSUE A





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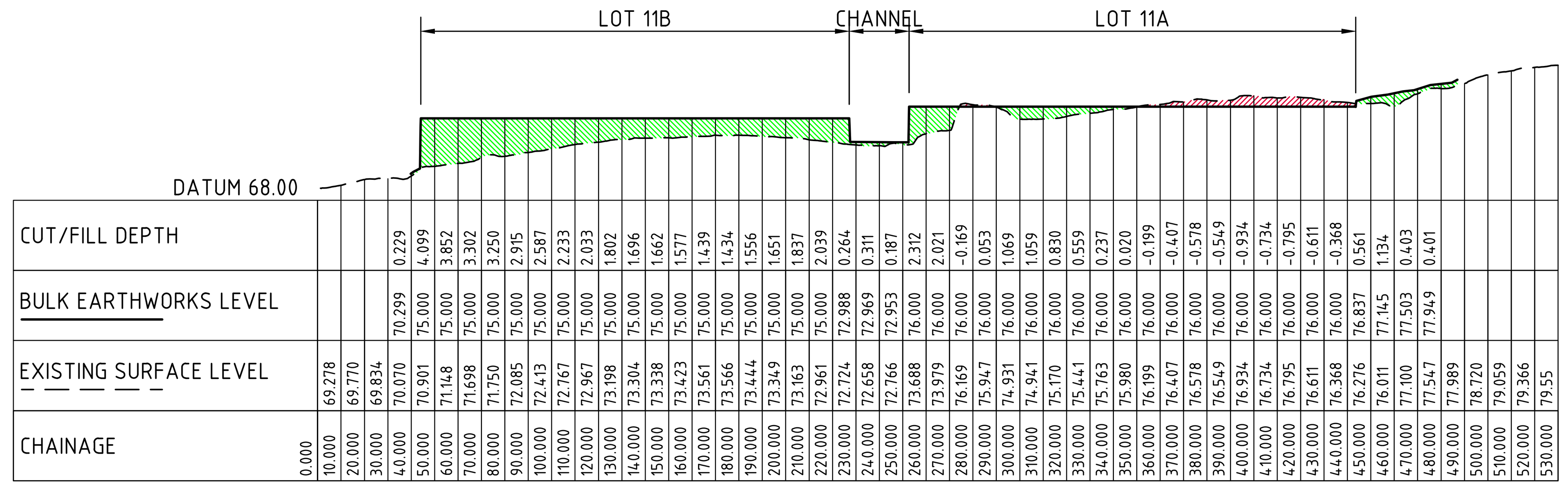
VERTICAL SCALE 1:400



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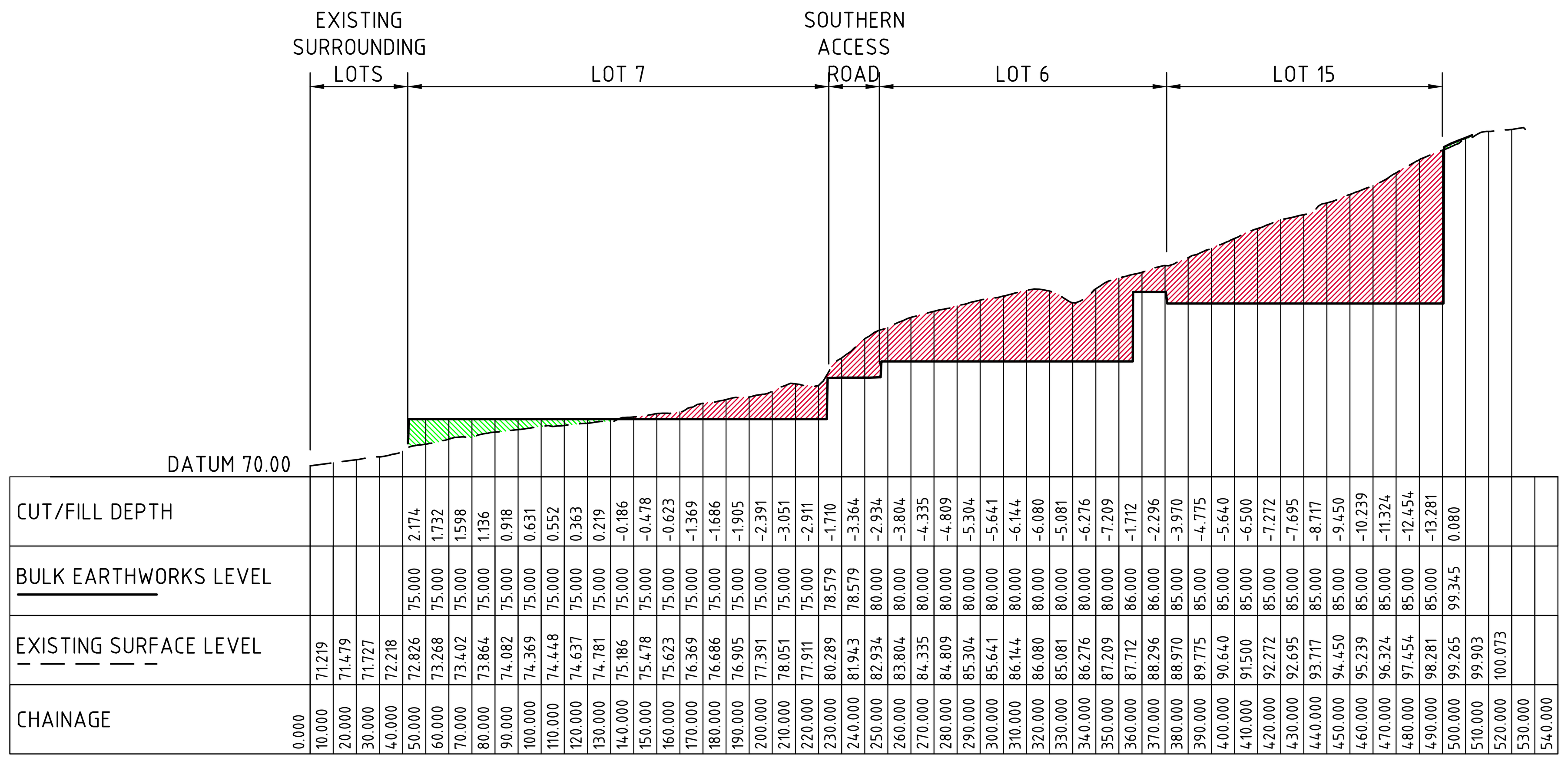
VERTICAL SCALE 1:400



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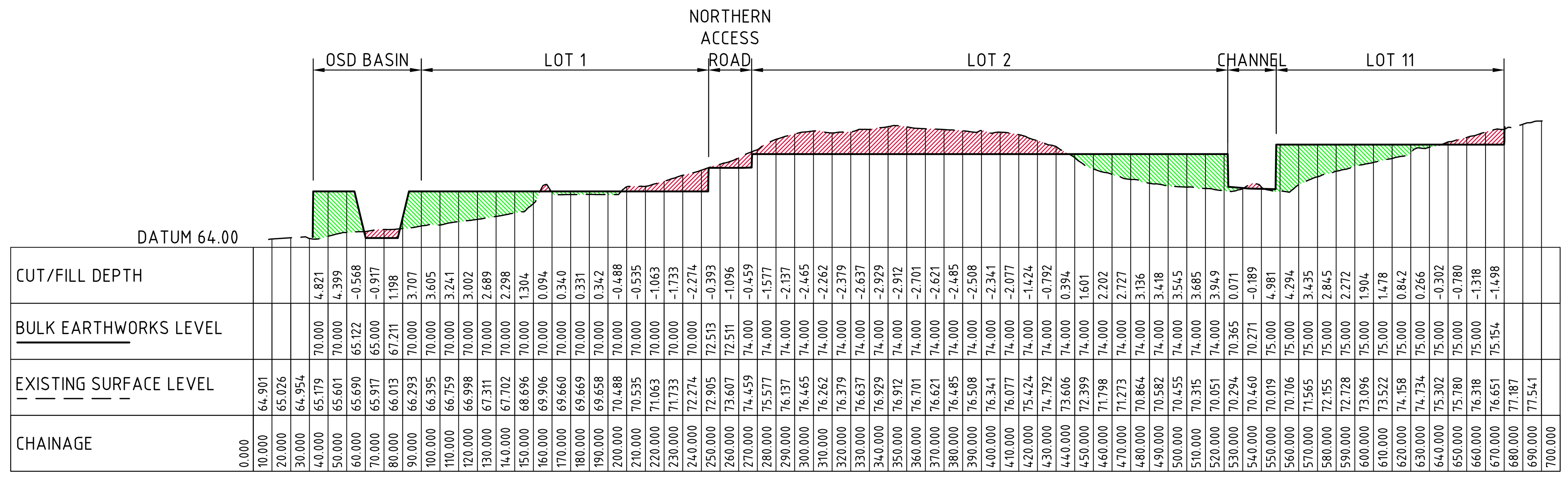

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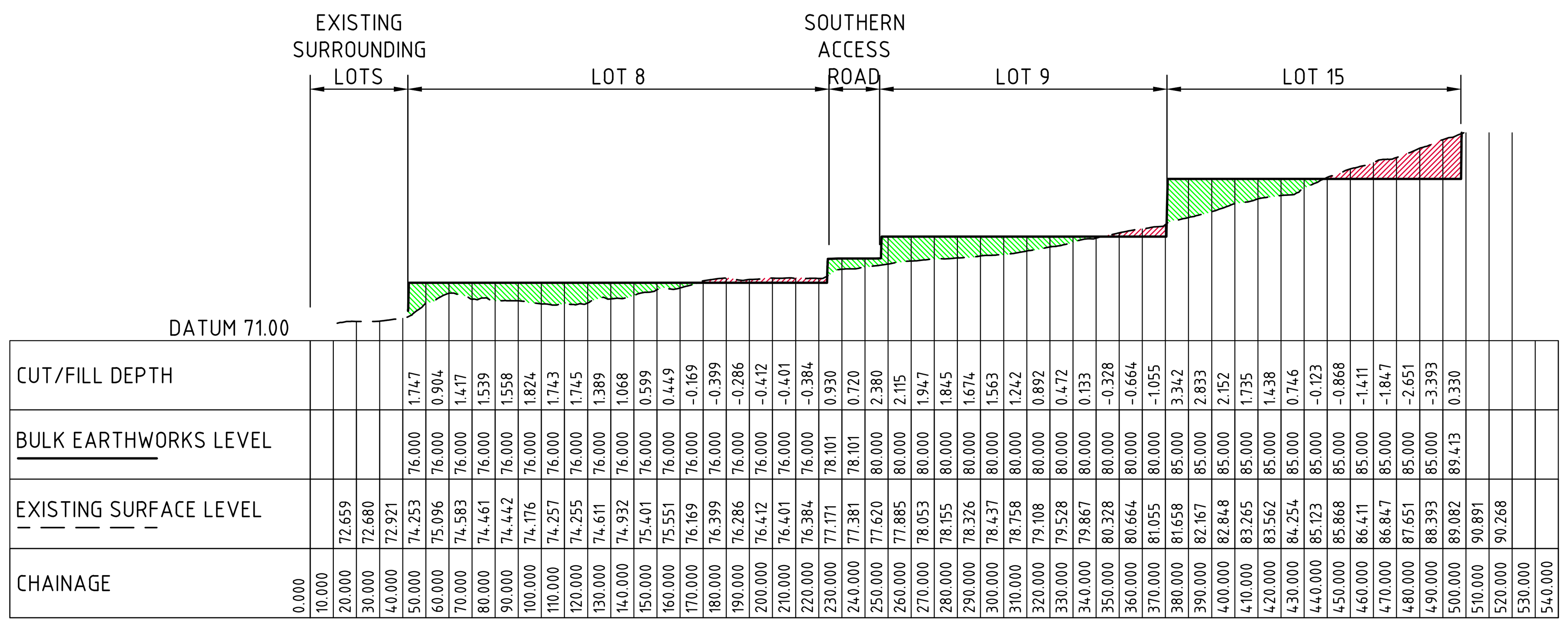
VERTICAL SCALE 1:400



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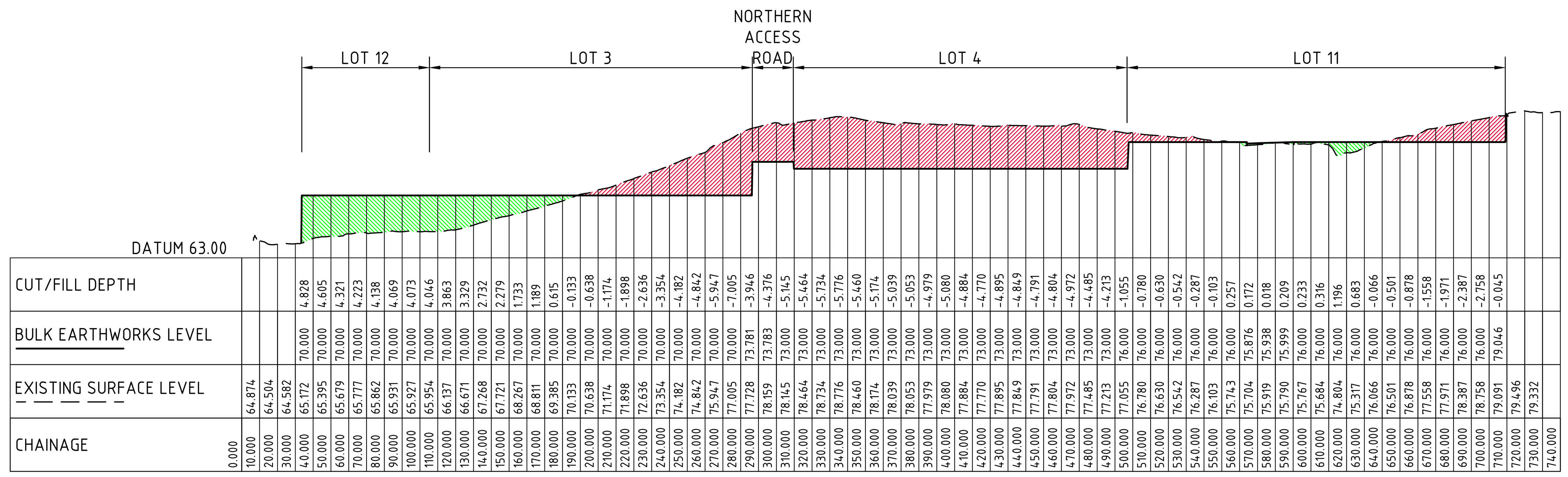

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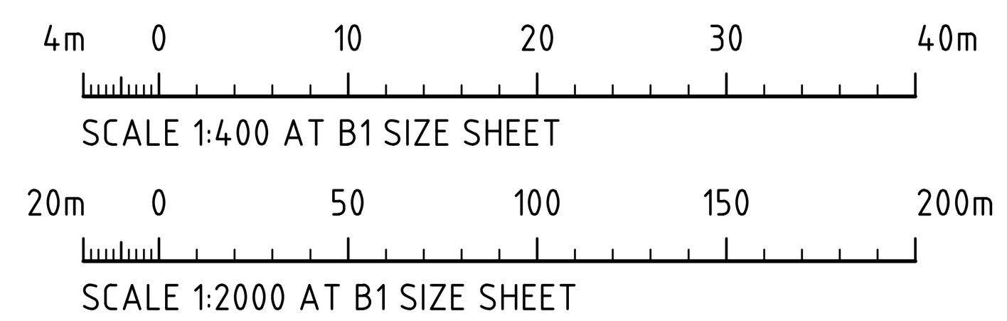
VERTICAL SCALE 1:400



FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION ONLY	10.10.23	A

ARCHITECT

CLIENT: FRASERS PROPERTY

PROJECT: KEYHOLE SITE
HORSLEY DRIVE, HORSLEY PARK
NSW, 2175

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	LDV	AUG'22	XC	B1	AS SHOWN	C014052.00-SK 36

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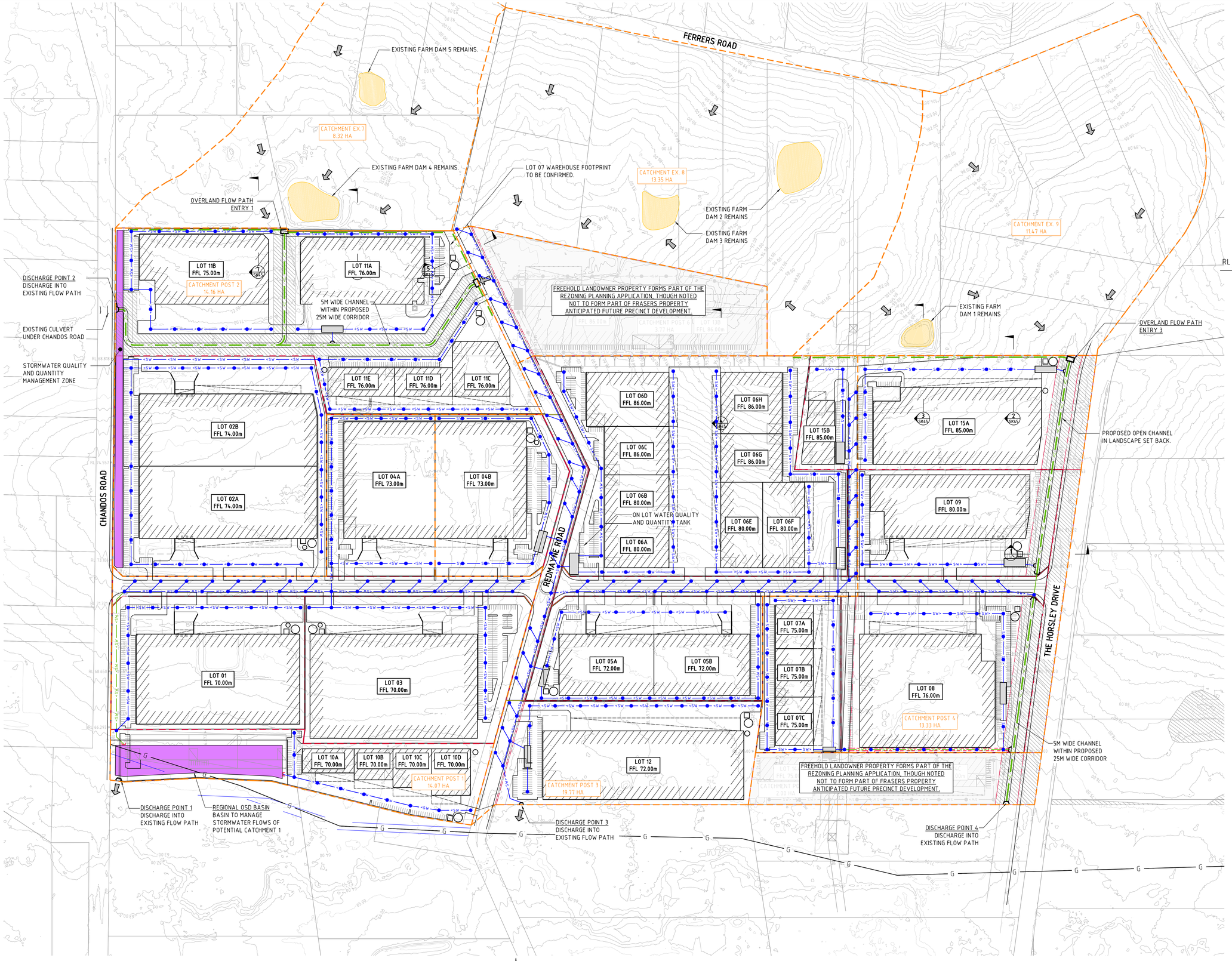
DRAWING TITLE
KEYHOLE SITE
PRELIMINARY BULK EARTHWORKS SECTIONS
SHEET 2

DRAWING No: C014052.00-SK36 ISSUE: A



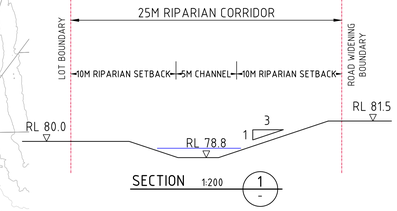
FLOOD MODEL LEGEND:

REFER TO FLOOD MODELING RESULTS FROM CATCHMENT SIMULATION SOLUTIONS.

- 1m FLOOD LEVEL CONTOUR
- 0.1m FLOOD LEVEL CONTOUR

FLOOR DEPTH (m)

- 0.15 TO 0.25
- 0.25 TO 0.50
- 0.5 TO 1.0
- 1.0 TO 2.0
- > 2.0



SECTION 1:200 (1)

STORMWATER MANAGEMENT NOTE:

STORMWATER UP TO THE 5% ANNUAL EXCEEDANCE PROBABILITY (AEP) ARE CONVEYED BY MINOR DRAINAGE SYSTEM.

STORMWATER ABOVE THE 1% ANNUAL EXCEEDANCE PROBABILITY (AEP) ARE CONVEYED BY MAJOR DRAINAGE SYSTEM.

STORMWATER DISCHARGE TABLE

POST DEV. CATCHMENT	AREA (Ha)	PSD (L/s)	OSD VOL. (m^3)
1	13.90	1000	5560
2	14.61	1050	5850
3	19.62	1410	7850
4	13.22	950	5290

REFER TO THE BELOW STORMWATER QUANTITY NOTE FOR PSD RATE. A SITE STORAGE REQUIREMENT RATE (SSR) OF 400m^3/Ha WAS ADOPTED TO CALCULATE OSD VOLUMES AND IS SUBJECT TO CHANGE DURING DETAILED DESIGN.

STORMWATER QUANTITY NOTE:

STORMWATER ON-SITE DETENTION TO BE DESIGNED TO COMPLY WITH FAIRFIELD CITY COUNCIL STORMWATER MANAGEMENT POLICY (SEPTEMBER 2017) SECTION 4.2, AND WESTERN SYDNEY ENGINEERING DESIGN MANUAL SECTION 9.3.5 (2020):

THE MAXIMUM PERMISSIBLE SITE DISCHARGE (PSD) FOR THE 20% AEP AND 1% AEP STORM EVENT IS TO BE 78L/S/Ha FOR THE FULL RANGE OF STORMS.

SITE STORAGE REQUIREMENT (SSR) TO ACHIEVE THE MAX PSD IS APPROXIMATELY 380 TO 420m^3/Ha.
THE POST DEVELOPMENT STREAM EROSION INDEX (SEI) MUST BE NO GREATER THAN 2.0.

STORMWATER QUALITY NOTE:

FAIRFIELD CITY COUNCIL STORMWATER MANAGEMENT POLICY (SEPTEMBER 2017) SECTION 9.4.1 – REDUCE BASELINE ANNUAL POLLUTANT LOAD FOR:

- LITTER & VEGETATION LARGER THAN 5mm (GP) BY 90%
- TOTAL SUSPENDED SOLIDS (TSS) BY 80%
- TOTAL PHOSPHOROUS (TP) BY 55%
- TOTAL NITROGEN (TN) BY 40%

LEGEND:

LEVELS DATUM IS AHD.

- OVERFLOW PATH
- PROPOSED DRAINAGE LINE
- PROPOSED INTERALLOTMENT DRAINAGE LINE
- DRAINAGE PIT
- PROPOSED HEADWALL
- PROPOSED SWALE
- PROPOSED INTERALLOTMENT SWALE
- LOT BOUNDARY
- PROPOSED INTERALLOTMENT EASEMENT
- EXISTING GAS MAIN
- PROPOSED INLET STRUCTURE
- EXISTING FARM DAM

2m 0 5 10 15 20m
SCALE 1:200 AT A0 SIZE SHEET

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:500 AT A0 SIZE SHEET

CONCEPT STORMWATER DRAINAGE PLAN
SCALE 1:1500

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION ONLY - REVISED ARCHITECTURAL MATERPLAN	06.10.23	E
ISSUED FOR INFORMATION ONLY	01.09.21	D
DRAWING RENAMED FROM P40 TO SK40	10.06.21	C
DRAWING RENAMED FROM C40 TO P40	16.04.21	B
ISSUED FOR INFORMATION ONLY	09.04.21	A

AMENDMENTS DATE ISSUE | AMENDMENTS DATE ISSUE | AMENDMENTS DATE ISSUE

CLIENT: FRASERS PROPERTY

PROJECT: KEYHOLE SITE
HORSLEY DRIVE, HORSLEY PARK
NSW, 2175

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	LDV	AUG '22	KC	A0	AS SHOWN	C014052-SK40

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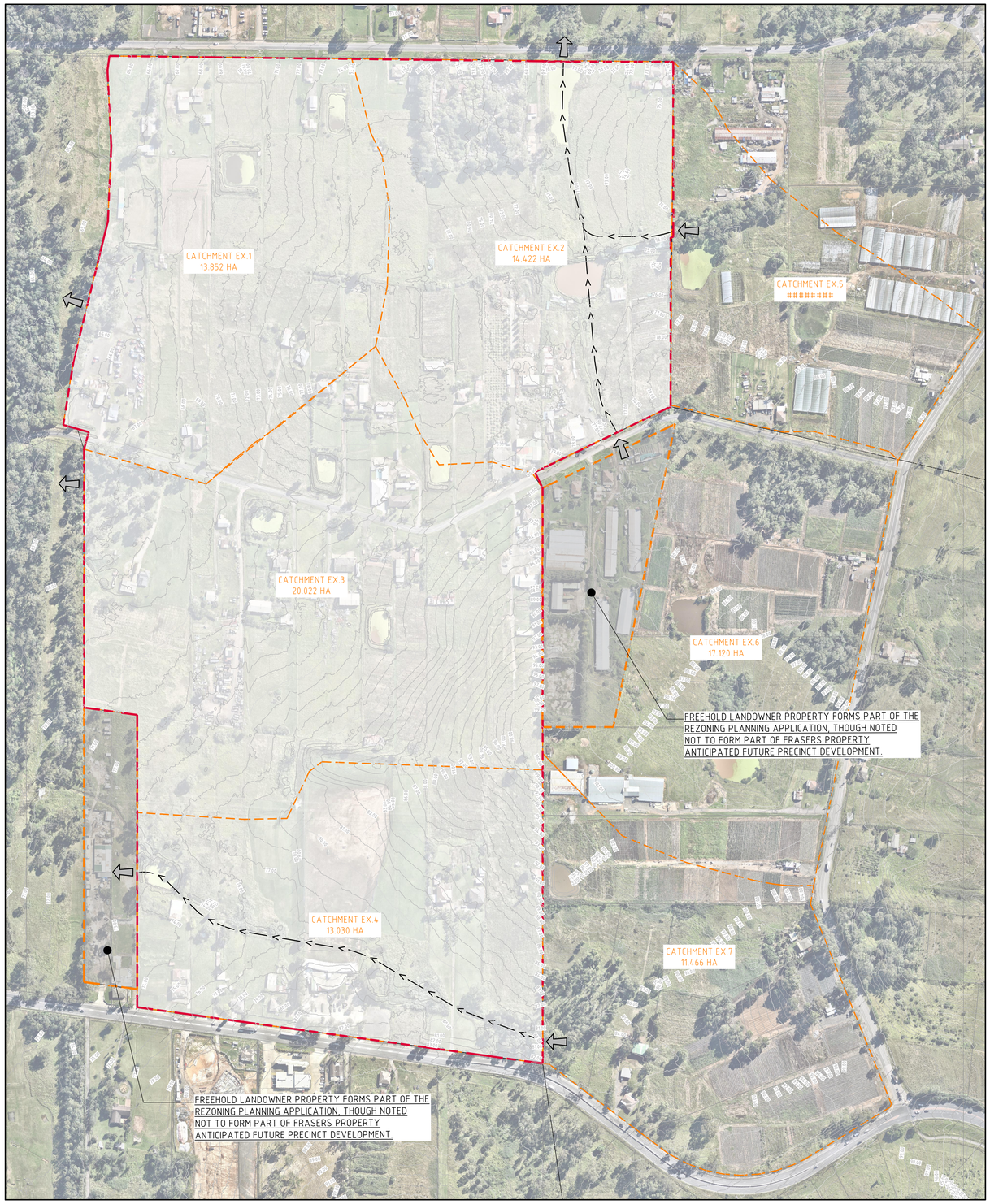
DRAWING TITLE: CONCEPT STORMWATER DRAINAGE LOCALITY PLAN

DRAWING No: C014052.00-SK40 ISSUE: E



CONCEPT PRE-DEVELOPMENT CATCHMENT PLAN
SCALE 1:2000

CONCEPT POST-DEVELOPMENT CATCHMENT PLAN
SCALE 1:2000

LEGEND

LEVELS DATUM IS AHD.

- EXISTING CONTOUR
- PRE DEVELOPMENT CATCHMENT
- FLOW PATH
- CATCHMENT DISCHARGE POINT

20m 0 50 100 150 200m
SCALE 1:2000 AT A0 SHEET SIZE

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
UPDATE POST-CATCHMENT	10.10.23	E
ISSUED FOR INFORMATION ONLY	01.09.21	D
DRAWING RENAMED FROM P41 TO SK41	10.06.21	C
DRAWING RENAMED FROM C41 TO P41	16.04.21	B
ISSUED FOR INFORMATION ONLY	09.04.21	A

CLIENT: FRASERS PROPERTY

PROJECT: KEYHOLE SITE
HORSLEY DRIVE, HORSLEY PARK
NSW, 2175

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDY	LDY	AUG '22	KC	A0	AS SHOWN	C014052-00-SK41

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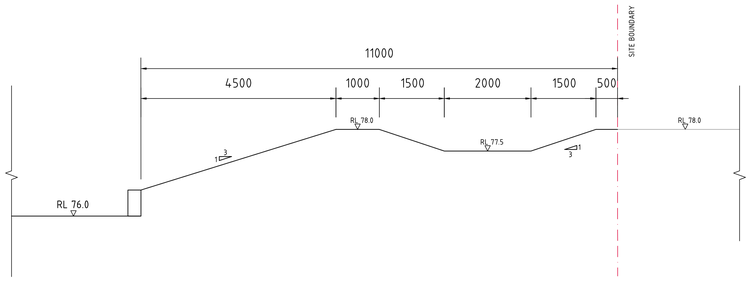
DRAWING TITLE: CONCEPT STORMWATER CATCHMENT PLANS

DRAWING No: C014052.00-SK 41 ISSUE: E



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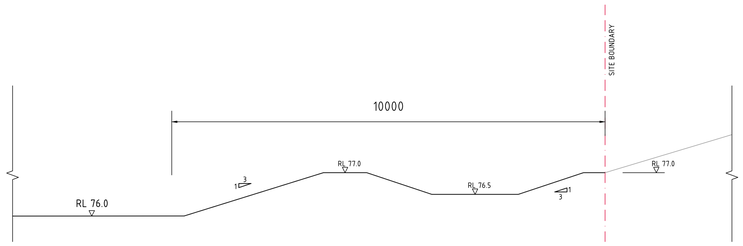

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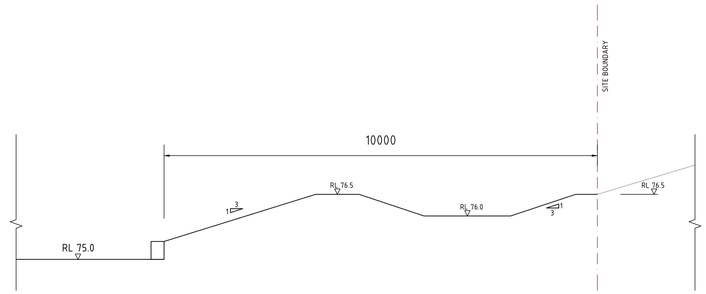

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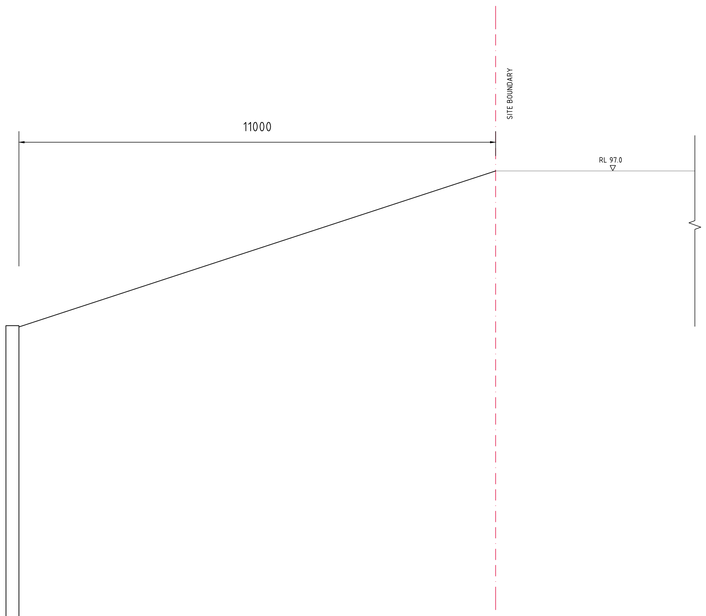

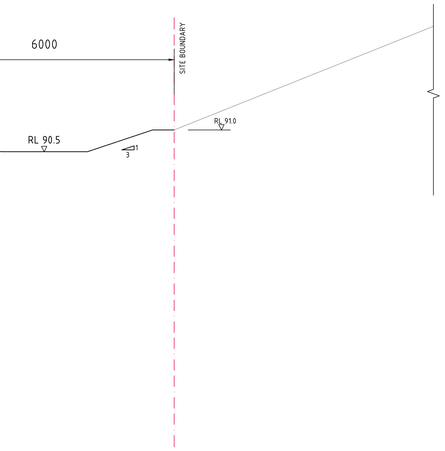

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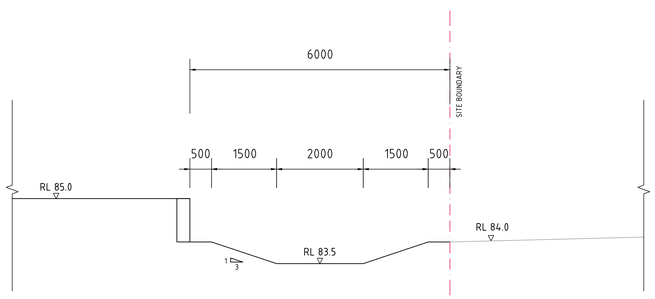

SECTION 1:50 2 SK40

SECTION 1:50 4 SK40

500mm 0 1 2 3 4 5m

SCALE 1:50 AT A0 SIZE SHEET

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
ISSUED FOR INFORMATION ONLY	10.10.23	B
ISSUED FOR INFORMATION ONLY	01.09.21	A

CLIENT: FRASERS PROPERTY

PROJECT: KEYHOLE SITE
HORSLEY DRIVE, HORSLEY PARK
NSW, 2175

DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF:
LDV	LDV	AUG '22	X C	A0	AS SHOWN	C014052.00-SK45

CONSULT AUSTRALIA

Costin Roe Consulting Pty Ltd.
ABN 50 003 696 446
PO Box N419 Sydney NSW 1220
Level 4, 8 Windmill Street, Millers Point NSW 2000
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COSTIN ROE CONSULTING | CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE: TYPICAL SECTIONS

DRAWING NO: C014052.00-SK45 ISSUE: B

Appendix B

Site Survey

LEGEND:

(A) EASEMENT FOR PIPELINE 24.385 WIDE & VARIABLE (DP499001)(P720206)
(B) EASEMENT FOR PIPELINE (DP1016620)(8352398)
(C) RIGHT OF WAY 6.095 WIDE (D413109)
(D) RIGHT OF WAY 6.095 WIDE (C875728)
(E) RIGHT OF WAY 6.095 WIDE (D143246)
(F) RIGHT OF WAY 6.095 WIDE (B880257)
(G) EASEMENT FOR TRANSMISSION LINE 30.48 WIDE (J324736)

APPENDIX B : SITE SURVEY
SCALE 1:1500

15m 0 15 30 45 60 75 90 105 120 135 150m
SCALE 1:1500 AT A0 SHEET SIZE

FOR INFORMATION

AMENDMENTS	DATE	ISSUE
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CLIENT: FRASERS PROPERTY

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DESIGNED	DRAWN	DATE	CHECKED	SIZE	SCALE
				A0	AS SHOWN

CAD REF:

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Co-tin Roe Consulting
PRECISION | COMMUNICATION | ACCOUNTABILITY

DRAWING TITLE: KEYHOLE SITE SURVEY (APPENDIX B)
DRAWING No
ISSUE

Appendix C
Pre-Planning Advice Letter &
Gateway Determination
Fairfield City Council

RECORD OF PRE PLANNING PROPOSAL LODGEMENT MEETING

FairfieldCity
Celebrating diversity

Pre Planning Proposal Advice

- This advice and comments of Council's Officers at the Pre Planning Proposal Lodgement Meeting are provided on **a preliminary basis**.
- Further investigation of the proposal and the site, as well as comments by other Statutory Authorities and local residents as part of the formal strategic assessment, **may** necessitate amendments to plans and documentation associated with the planning proposal.
- Council has the right to recommend a planning proposal not proceed pursuant to Clause 3.35 of the Environmental Planning and Assessment Act, 1979.

A. Meeting details

Meeting date	Subject lands	Suburb
16 December 2020	Key Hole Lands – Zone RU2	Horsley Park

Council officer name and position	email	Phone
Andrew Mooney – Acting Manager Strategic Land Use Planning	amooney@fairfieldcity.nsw.gov.au	9725 0214
Patrick Warren – Senior Strategic Land Use Planner	pwarren@fairfieldcity.nsw.gov.au	9725 0215
Leonie Gray – Manager Catchment Planning	lgray@fairfieldcity.nsw.gov.au	9725 0171
Philip Saverimuttu – Manager Traffic and Transport	psaverimuttu@fairfieldcity.nsw.gov.au	9725 0261
Robert Stevenson – Natural Resources Team Leader	rstevenson@fairfieldcity.nsw.gov.au	9725 0308

Proponent name and interest/position	email	mobile
Mike Robinson – Frasers Property	Michael.robinson@fraserspropery.com.au	0429 261 578
Tim Lewis – Ason Group	Tim.lewis@asongroup.com.au	0412 299 692
Michaela Leerdam – Frasers Property Group	Michaela.leerdam@fraserspropery.com.au	0429 261 578
Mark Wilson – Costin Roe Consulting	Mark@Costinroe.com.au	0421847806
Andrew Johnson – Ason Group	AndrewJohnson@asongroup.com.au	0402228301

Planning Proposal Summary
Rezoning of multiple lots (approximately 60.2 ha) known as the Key Hole Lands from RU2 Rural Landscape to a yet to be specified business zone/industrial zone to facilitate an industrial estate comprising warehousing and logistics facilities. The submitted preliminary concept plan shows 19 warehouses with a total building area of 176,800m^2 on the northern portion of the site between Redmayne and Chandos Road and 149,980m^2 to the southern portion of the

site located between Redmayne Road and the Horsley Drive.

Access is proposed from the Horsley Drive for the southern portion of the site and northern portion of the site proposes access from Redmayne Road. An alternate concept plan also proposes access from Chandos Road.

The applicant also proposes to upgrade of Redmayne Road to a width of 21.5 metres. The proposal would also require considerable realignment and straightening of Chandos Road currently classified as a local road under the control and management of Fairfield City Council.

The proposal would also require the provision of a range of other utility and infrastructure measures including storm water, sewerage, electrical and water.

Pre Planning Proposal Lodgement Fee (Major/Minor)			
Paid - date		Receipt Number	

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B. Issues to be addressed in Planning Proposal

Planning Proposal Detail
The objectives and intended outcomes of the proposed amendment to Fairfield LEP 2013
The objectives and intended outcomes of the planning proposal need to be clearly outlined including the purpose of the planning proposal including changes to the zoning map and any proposed development standard amendments. The proposed road upgrades should be identified within the zoning changes for Redmayne Rd to be included in the planning proposal. Property details of all the land subject to the amendments is to be provided.
Explanation of the provisions that are to be included in the proposed amendment
This section of the planning proposal should list all of the relevant sections of Council's LEP to be amended including reference to the relevant zoning maps, LEP Clauses and schedules to be amended or to become applicable to the development.
The justification of objectives, outcomes and the process for their implementation
The Planning Proposal must be prepared in accordance with the Department of Planning Industry and Environments "a guide to preparing planning proposals" responses to the relevant standard questions contained in that document are provided below in the following link. https://www.planning.nsw.gov.au/-/media/Files/DPE/Guidelines/guide-to-preparing-planning-proposals-2019-02-05.pdf?la=en The Planning Proposals relationship to the existing planning framework including exhibited draft plans or strategies must be provided. In this instance, the following strategies, plans, EPI's must be addressed. • **Metropolis of Three Cities** – A Vison to 2056 – the plan is underpinned by 10 strategic directions, of which the relevant ones must be addressed; • **Western City District Plan -** Is the greater Sydney Commissions overarching vision for the Western City and its residents. The Western City District Plan sets out 20 Strategic Planning Priorities of which the relevant ones must be addressed. The site is also located in the designated Metropolitan Rural Area (MRA). Action 78 and 79 of the MRA relate to maintaining and enhancing the values of the MRA using placed based planning to deliver targeted environmental, social and economic outcomes. • **State Environmental Planning Policy Western Sydney (Aerotropolis) 2020 –** The North West corner of the site located under the 20-25 ANEC (Australian Noise Exposure Concept). The site also falls broadly within the 3-13 kilometer wildlife buffer area. The extent of relevance of the SEPP to the planning proposal needs to be outlined. • **Fairfield City 2040 Shaping a Diverse City - Local Strategic Planning Statement -** The Fairfield Local Strategic Planning Statement, which sets a 20-year land use vision for Fairfield City came into force in March 2020. The Planning Proposal must consider its consistency with the relevant planning priorities and actions contained within the plan. • **Fairfield Urban Investigation Area (UIA)** – Draft Structure Plan endorsed by Council in April 2019 which identifies the subject land for employment purposes. • **Fairfield City Plan 2016-2026 –** The Planning Proposal must demonstrate the planning proposals consistency with the relevant themes and goals within the Fairfield City Plan. • **Environmental Planning and Assessment Act 1979 NSW** – The EP&A Act 1979 NSW and the EP&A Regulation 2000 set out: ○ Requirements for rezoning;   ○ Requirements regarding the preparation of a local environmental study as part of the rezoning process;   ○ Matters for consideration when determining a development application; and

- Approval permits and/or licenses required from other authorities under other legislation.

The Planning Proposal must address the requirements set out in Section 3.33 of the EP&A Act to explain the intended outcomes of the proposed instrument. The planning proposal must also provide justification and an environmental analysis of the proposal.

- **Fairfield Local Environmental Plan 2013 (Fairfield LEP 2013) –** The Fairfield LEP is the key environmental planning instrument applying to the site. The proposal must demonstrate how the proposal satisfies the objectives of the proposed zoning and satisfies the relevant clauses.

- **Fairfield City Wide Development Control Plan 2013 –** The proposal must be considered against the relevant DCP chapters including the industrial lands Chapter, traffic and parking and environmental constraints.

Details of any community consultation undertaken

Community consultation is required under Section 3.34 and Section 2.6 of the Environmental Planning and Assessment Act 1979. The Act sets out community consultation requirement for Planning Proposals and these are determined or confirmed at through the Gateway determination issued by the DPIE.

Should the applicant undertake preliminary consultation with affected land owners prior to lodgment of the planning proposal, the outcomes of this should be included in the planning proposal.

Relevant environmental considerations

Flooding – The southern portion of the subject land is affected by low, medium and high mainstream flooding. The flood affectation stems from the Eastern creek, which runs approximately 25 metres west of the site. The north west portion of the site is effected by low, medium and high risk mainstream flooding. The eastern portion of the subject area along the western boundary is also affected by the medium and low flood risk precincts.

In order to address flooding accurately Council's Catchment Branch requests that the proponent enter into a developers agreement to use Council's Tu-flow model, prior to preparation of a flood report. In addition the applicant should request a section 10.7 (2) and (5) Planning Certificate. This will confirm the extent of flood affectation and flood levels to Australian Height Datum (AHD). A flood report and a flood evacuation report will be required to be prepared as part of the planning proposal documentation.

Bushfire Prone Land – Eastern Creek located west of the subject site contains a riparian corridor that is categorized as Category 1 bushfire prone land vegetation. This requires a 30 metre bushfire buffer from the extent of vegetation to the nearest development. There are various categories of bushfire prone land across the site including category 3 vegetation requiring a 10-meter vegetation buffer. A bushfire prone land consultant should be engaged to prepare a bushfire report, to determine appropriate buffer zones to the sites western boundary. The Fire Protection Association Australia (see link below) can provide an accredited Bushfire Planning & Design (BPAD) Consultant.

http://www.fpaa.com.au/bpad.aspx

Ecologically Endangered Communities – The subject sites western boundary is located approximately 30 metres from Eastern Creek at its closest location. Eastern Creek contains ecologically endangered communities including alluvial woodland of a high and moderate Conservation significance. An ecological report including a test of significance must be undertaken by a suitably qualified ecologist to determine whether the provisions of the Biodiversity Conservation Act 2016 are triggered. If the provisions of the Act are triggered a Biodiversity development assessment report (BDAR) must be prepared by an accredited assessor accompanied by a credit report. This must be provided at planning proposal lodgment stage.

Western Gas Pipeline – The site is identified within the notification area of the western gas pipeline. The APGA Australian Pipeline database shows that the Central Trunk (Wilton to Horsley Park) is offset from the site by approximately 26 metres. It is a requirement of any future development application to consider Clause 66C of State Environmental Planning Policy Infrastructure 2007 (SEPP Infrastructure 2007). The relevant planning circular PS 18-010 - "*Development adjacent to high pressure pipelines transporting dangerous goods*", is linked below and provides further guidance. The asset contact is Ms Renee McCall of Jemena. She can be contacted on (07) 3498 7532 or on 0419719448. Alternatively she can be emailed at Renee.McCall@jemena.com.au. Jemena should be consulted at this stage to ensure any issues associated with construction within proximity to the pipeline are identified early in the planning process.

https://www.planning.nsw.gov.au/-/media/Files/DPE/Circulars/planning-circular-18-010-act-and-regulation-changes-2018-10-26.pdf?la=en

Blue and Green Grid – Section 5 Sustainability and Planning Priority W15 the Western City District Plan identifies green and blue grid priorities that interact with the sites northern and western boundary. The blue and green grid priorities identify the opportunities involved with the Prospect Creek and Reservoir Parklands whilst the ecological green grid identifies Western Sydney Parklands and Eastern Creek opportunities. The Planning Proposal must be assessed against the relevant blue and green grid priorities proximate to the proposal and demonstrate that the proposal supports these priorities.

The concept plan submitted by Frasier's Property dated 21.10.2020 shows minimal and inadequate landscaped areas with the exception of a biodiversity zone located on the sites western boundary. A greater amount of landscaped area should be provided (particularly within the sites front setbacks to Redmayne Road, Chandos Road and the Horsley Drive) to ensure the proposal is consistent with the objectives and priorities of the Blue and Green Grid contained in the Western City District Plan and Fairfield LSPS 2040.

The landscape treatment should promote a visual buffer along The Horsley Drive that represents a gateway/entry point into Wetherill Park as well as an important transition area to the adjoining Western Sydney Parklands. Vegetation including mature tree planting and deep soil zones should be provided along the sites eastern boundary to protect the adjoining residences from noise and provide greater visual amenity. A greater provision of landscaped area across the interior of the site should be provided to ensure urban heat island affect is minimized and urban green space cooling effect is maximized. Pervious surfaces should also be maximized and impervious surfaces minimized. Greater consideration also needs to be provided to preserving natural drainage lines through the site utilising the principles of Water Sensitive Urban Design (WSUD).

Fairfield City Council is a member of the Western Sydney Planning Partnership that has recently issued a Western Sydney Engineering Design Manual relevant to new residential/industrial estates in the Western City and supports implementation of the Western City District Plan Blue and Green Grid. A copy of the guidelines can be obtained via the link below. The planning proposal and concept plan for the site should detail how the proposed future development of the site will achieve consistency with the relevant guidelines contained in the Manual.

https://fairfieldcity-my.sharepoint.com/:f:/g/personal/nruddell_fairfieldcity_nsw_gov_au/EoHnAhvW0glFiF88D9oth0sB3CgCn5s7xJXu3JTWbE1v2g?e=5AcZMl

Horsley Park Urban Farming Master Plan 2019 – The subject site adjoins the Western Sydney parklands and falls within the centre of the Horsley Park urban farming precinct totaling 254 ha, of which 105ha are current farming lands and 24 ha are bushland corridor. Due to its context the development must consider its relationship with and potential impact on the adjacent farming precinct. Urban greenhouses are currently being established on the northern side of Chandos Road. The applicant should consult with the Western Sydney parklands Trust prior to lodgment of the planning proposal.

Aboriginal Heritage – Council's records indicate that the site falls within the Aboriginal Potential Investigation Area (PIA) layer and that an archeological relic is located at the south eastern corner of the southern precinct. Due to this an aboriginal archeological investigation is to be undertaken for the entire site by a heritage consultant with archeological qualifications. This must be submitted with the planning proposal. The relic onsite if existing must be identified and the appropriate aboriginal land council (Deerubin) consulted with. To ensure preservation of the relic at DA stage an aboriginal heritage permit would be required to be submitted and approved by the department of Environment, Energy and Science prior to works beginning onsite.

Relevant social considerations

The relevant social considerations should include how the planning proposal adequately addresses any social effects. Particularly for surrounding residents.

Relevant economic considerations

An economic report should be prepared that shows the economic uplift resulting from the proposal. This should include job creation and contribution to the local economy.

Relevant site specific considerations

A Site Specific Development Control Plan (SSDCP) is required to be prepared. This should be lodged with the planning proposal application. The SSDCP should include:

- Local Context
- Site and Built Form
- Car Parking, Access and Vehicle Management
- Advertising Signage
- Streetscape and amenity
- Storm water
- Development Guidelines for specific Activities and uses
- Site Servicing.

The addition of a Site Specific Development Control Plan (SSDCP) as an amendment to Council's city wide DCP will incur an additional cost of $10,000 in addition to the Major Planning Proposal lodgment fee.

Impacts on local infrastructure, eg road, drainage, open space, community facilities

Traffic and Transport – Development at this location will have a substantial effect on the regional and local road network. Specifically on Redmayne Road, Chandos Road and the Horsley Drive. A traffic impact assessment must be submitted by the applicant including SIDRA modelling. The modelling must take into consideration trip generation at the AM and PM peak times including the developments impact on the Level of Service (LOS) of key intersections including but not limited to:

- Horsley Drive /M7;
- Horsley Drive/Walgrove Road;
- Chandos Road/Walgrove Road;
- Redmayne Road/ Walgrove Road, and;
- Horsley Drive/Cowpasture Road

Access off Chandos Road – Councils traffic engineers have stated that access of chandos road is not supported as the width is not suitable for heavy rigid vehicles being 1 lane in each direction and there is an existing 5 tonne road limit.

Redmayne Road – Redmayne roads alignment and configuration is not considered suitable as a heavy rigid vehicle route. In order to facilitate safe access to the site the applicant must consider substantial widening and realignment of the road including straitening.

M7 Underpass and Chandos Road Overpass – The M7 overpass over Redmayne Road is 3.1 meters high. Analysis must be undertaken to determine whether this is a suitable height for heavy rigid vehicles. The Chandos Road overpass is only 1 lane in each direction. Analysis must be undertaken to determine whether widening of the overpass in this location would be required to facilitate two way traffic flow factoring in heavy rigid vehicles.

Jemena Metering Facility – The Jemena metering facility is located at 204 to 214 Chandos Road. A state significant Infrastructure Project (SSI) 10313 for a power to gas facility and a hydrogen bus refueling facility has been approved on the site. This will involve approximately 13 bus movements per day from the access at 194 to 202 Chandos Road.

Although Council officers are not in support of access from Chandos Road at this stage, should the applicant pursue this option Jemena must be contacted to ensure any proposed access from Chandos Road does not disrupt operation of the hydrogen bus refueling facility.

Consultation With Road Authorities – Council's traffic engineers require the applicant consult with the relevant local road authorities including the operators of the M7 (Trans urban and Western Sydney Road Group) and Transport for NSW. Preliminary comments from these agencies must be included in the planning proposal document lodged to Council.

Other considerations

Voluntary Planning Agreement – The applicant should consider the need for entering into a formal Voluntary Planning Agreement (VPA) with Council to ensure provision/upgrades of essential infrastructure services (in particular roads) and public domain areas is captured. For reference a link to Council's voluntary planning agreement policy including relevant documents is provided below.

https://www.fairfieldcity.nsw.gov.au/Planning-and-Building/Planning-and-Policies/Planning-Agreements

S7.12 - Indirect Development Contributions – Any future development application resulting from the planning proposal would be required to pay a section 7.12 indirect development contributions. For costs of work over $200,000 a levy of 1.0% of the total cost of the development is required to be payed to Council prior to a construction certificate being issued for the works.

Urban Design Study and Master Plan – An urban design study that informs on a master plan for the site must be submitted as part of the planning proposal. The following urban design considerations should be considered by these studies:

- Existing Site Plan (buildings, vegetation, roads)
- Building Mass/Block diagram study (FSR and Height of Buildings)
- Lighting impact including shadow diagrams
- Development yield analysis including potential yield of lots and employment generation

C. Supporting Information Required to be Submitted

Supporting information	Required (Y/N)
Concept Plans	Y
Master Plan	Y
Urban Design Study	Y
Environmental Study	Y
Social impact Study	N
Economic Impact Study	Y
Traffic Report	Y
Acoustic Report	Y
Flood Modelling Report	Y
Plan of Management	N
Aboriginal Archeological Investigation	Y
Bushfire report	Y
Flora and Fauna Report	Y

D. Strategic Planning and Local Environmental Plans

State Environmental Planning Policies
Consideration of relevance to planning proposal required
SEPP 19 – Bushland in Urban Areas SEPP 32 – Urban Consolidation (Redevelopment of Urban Land) SEPP 33 – Hazardous and Offensive Development SEPP 55 – Remediation of Land SEPP 64 – Advertising and Signage SEPP (Building Sustainability Index: BASIX) 2004 SEPP (Exempt and Complying Development Codes) 2008 SEPP (Infrastructure) 2007 SEPP (Major Development) 2005 SEPP (Miscellaneous Consent Provisions) 2007 SEPP (Mining, Petroleum Production and Extractive Industries) 2007 SEPP (State and Regional Development) 2011 SEPP (Sydney Region Growth Centres) 2006 SEPP (Western Sydney Employment Area) 2009 SEPP (Western Sydney Parklands) 2009 SEPP 21 – Caravan Parks SEPP No.29 – Western Sydney recreation area SEPP 30 – Intensive Agriculture SEPP 50 – Canal Estate Development

Western City District Plan 2018
Key Planning Priorities
The relevant key planning priorities must be considered as part of the planning proposal: **Infrastructure and collaboration** • Planning Priority W1. - Planning for a City Supported by Infrastructure **Liveability** • Planning Priority W6. – Creating and Renewing Great Places and local centres and respecting a districts heritage **Productivity** • Planning Priority W7 – Establishing the land use and transport structure to deliver a liveable, productive and sustainable Western Parkland City. • Planning Priority W8 – Leveraging industry opportunities from the Western Sydney Airport and Badgerys Creek Aerotropolis. • Planning Priority W9 – Growing and Strengthening the metropolitan cluster • Planning Priority W10 – Maximising freight and logistic opportunities and planning and managing industrial and urban services land. • Planning Priority W11 – Growing investment, business opportunities and jobs in strategic centres. **Sustainability**

- Planning Priority W12 – Protecting and improving the health and enjoyment of the districts waterways
- Planning Priority W14 – Protecting and enhancing bushland and biodiversity.
- Planning Priority W15 – Increasing urban tree canopy cover and delivering Green Grid connections.
- Planning Priority W17 – Better managing rural areas
- Planning Priority W19 – Reducing Carbon Emissions and managing energy, water and waste efficiently.
- Planning Priority W20 – Adapting to the impacts of urban and natural hazards and climate change.

Comments: The following sustainability planning priorities in the Western City District Plan are considered critical in achieving a good planning outcome for the site, including greater landscaped area and canopy cover:

- Planning Priority W20 – adapting the impacts of urban and natural hazards and climate change, and;
- Planning Priority W15 – Increasing Urban Tree Canopy Cover and delivering green Grid connections

These Planning priorities respond to goals within the 2016 to 2026 Fairfield City Plan, particularly:

- Theme 3 – Goal A – A sustainable natural environment, and;
- Theme 3 – Goal B – Environmentally aware and active community

The above goals directly relate to Green Grid opportunities particularly increasing urban tree canopy cover and delivering green grid connections. The Planning Proposal must consider the relevant priorities of the Western City District Plan as they relate to the green grid priorities in particular “priority 21 – Western Sydney Parklands and Eastern Creek” which is identified as a Western City District Priority in the Green Grid Plan.

Eastern creek connects into Western Sydney Parklands, which is one of the most significant regional open space assets in western Sydney. Any proposal for the key hole lands must consider this regional context. The parklands precinct will balance recreation, biodiversity, infrastructure and business and will continue to develop and support future growth. The project must demonstrate how it is improving connectivity from adjacent green grid priorities at eastern creek and prospect reservoir reserve including the surrounding urban farming precinct within the parklands.

Fairfield City Local Strategic Planning Statement 2040

Planning Priorities

The Planning Priorities in the Local Strategic Planning Statement (LSPS) can be found at the link below.

https://www.fairfieldcity.nsw.gov.au/Planning-and-Building/Planning-and-Policies/Local-Strategic-Planning-Statement-LSPS

Fairfield Local Environmental Plan (LEP) 2013

(current provisions applicable to the land that require LEP map changes or require detailed consideration under the planning proposal)
Land Use Zoning
RU2 – Rural Landscape
Development Standards
4.1 Minimum subdivision lot size 4.1A Minimum lot size for dual occupancy 4.3 Height of Buildings 4.4 Floor Space Ratio 4.5 Calculation of floor space area and site area
Miscellaneous Provisions
N/A
Additional Local Provisions Generally
6.2 Earthworks 6.3 Flood planning 6.4 Floodplain risk management 6.5 Terrestrial Biodiversity 6.6 Riparian Land and Watercourses 6.9 Essential Services
Additional Local Clauses
N/A
Schedule 1 Additional Permitted Uses
N/A
Schedule 5 Environmental Heritage
N/A

Fairfield Development Control Plan 2013
Relevant development controls
Chapter 3 - Environmental Management and Constraints Chapter 4A - Development in the Rural Zones Chapter 8 – Commercial Development in Local Centres – Business Use Chapter 9 - Industrial Development Chapter 11 - Flood Risk Management Chapter 12 - Car Parking, Vehicle and Access Management Chapter 14 - Subdivision Appendix C - Advice for preparing advertising signage Appendix D - Preservation of Trees and Vegetation Appendix E - Waste Not Policy to manage demolition and construction waste Appendix F - Landscape Planning Appendix H -Aboriginal Heritage Management

E. Fees

Fee Type	Fee Amount
Major Local Environmental Plan Amendment (LEP)	$50,000
Major Related Development Control Plan Amendment/creation of development control plan amendment to site specific Development Control Plan	$10,000
Total	$60,000.00

F. Relevant Internal Comments

Department	Attached
Catchment Planning	See Section B
Natural Resources	See Section B
Traffic Engineering	See Section B
Strategic Land Use Planning	See Section B
Assets	Preliminary Comments to be provided at PP stage
Development Planning	Preliminary Comments to be provided at PP stage

G. Conclusion

Matters for consideration
Overview of main matters relevant to Planning Proposal and preliminary draft site concept plan
The Planning Proposal must address the following matters prior to lodgement of the application to Council: • Traffic and transport issues raised in section B • Relevant planning and environmental legislation • Consideration of identified environmental affectations identified in Section B • Consideration of relevant strategic planning policies at a state and local level identified in Section B. • Consideration of entry into a Voluntary Planning Agreement with Council regarding the proposed realignment and reconfiguration of roads. • Lodgement of the relevant supporting documentation at planning proposal stage in line with Section C. • A reduction in bulk and scale to reduce impervious surfaces and increase vegetation cover onsite. A reduction in bulk and scale onsite will also facilitate a better planning outcome regarding front setbacks at the road interface and side setbacks to eastern creek and adjoining rural properties on the eastern boundary. • Measures that support the priorities and principles of the Western City District Plan Blue and Green Grid. This includes details of measures that achieve consistency with the Western Sydney Engineering Design Manual prepared by the Western Sydney Planning Partnership. • In light of the above, the preliminary draft concept plan for the proposed will

need to amended and a further meeting be scheduled with Council officers to discuss the planning proposal further.

Note:

- The information submitted is conceptual in nature and therefore a detailed assessment of the proposal is not yet possible.

IRF23/743

Gateway determination report – PP-2021-3824

Keyhole Lands - The Horsley Drive and Chandos Rd, Horsley Park (0 dwellings, 3,600 jobs)

April 23

Published by NSW Department of Planning and Environment

dpie.nsw.gov.au

Title: Gateway determination report – PP-2021-3824

Subtitle: Keyhole Lands - The Horsley Drive and Chandos Rd, Horsley Park (0 dwellings, 3,600 jobs)

Acknowledgment of Country

The Department of Planning and Environment acknowledges the Traditional Owners and Custodians of the land on which we live and work and pays respect to Elders past, present and future.

Contents

Table 1 Reports and plans supporting the proposal

Relevant reports and plans
Aboriginal Cultural Heritage Report
Acoustic Report
Archaeological Report
Biodiversity Assessment
Bushfire Risk Assessment
Civil Engineering Report
Draft Landscape Masterplan
Draft Master Plan
Economic Impact Assessment
Fairfield Business and Employment Lands Report
Geomorphic Assessment
Keyhole Lands Draft Planning Proposal
LEP Mapping
Map of The Applicable Area
Preliminary Site Investigation
Revised Planning Proposal Gateway Assessment Keyhole Lands
Revised Traffic Impact Assessment
Service Infrastructure Assessment
Social Impact Assessment – Revised Assessment
Site Specific DCP
Urban Design Response – Visual Impact Analysis

1 Planning proposal

1.1 Overview

Table 2 Planning proposal details

LGA	LGA name
PPA	Fairfield City Council
NAME	Keyhole Lands - The Horsley Drive and Chandos Rd, Horsley Park (0 dwellings, 3,600 jobs)
NUMBER	PP-2021-3824
LEP TO BE AMENDED	Fairfield Local Environmental Plan 2013
ADDRESS	Privately owned properties located between Chandos Road and Horsley Drive Horsley Park. 1681 & 1677, 1671, 1667 & 1657, 1637-1647, 1627-1617, The Horsley Drive 200-206 &182-190, 172-180 & 152-170, 144 & 150, 136-142, 120-134, 195-201, 203-213, 215- 223, Redmayne Road 121-135, 155-169, 137-153, 171-185, 203-209, 211-217 Chandos Road
DESCRIPTION	32 individual lots with a total area of approximately 60.2 hectares. Lot58B/17288, Lot58A/17288, Lot57/13961, Lot 56/13961 Lot A/361393, Lot B/361393, Lot 54/13961, Lot 59B/362022, Lot 59A/362022, Lot1/505934, Lot2/505934, Lot61B/17288, Lot A/347034, Lot B/347034, Lot 63/13961, Lot77/13961, Lot B/357890, Lot A/357890, Lot B/377249, Lot A/377249, Lot74B/17288, Lot74A/17288, Lot A/394855, Lot B/394855, Lot C/398446, LotD398446, Lot78B/347873, Lot79A/17288, Lot79B/17288, Lot1/849699, Lot81A/348110, Lot 81B/348110
RECEIVED	16 January 2023
FILE NO.	IRF23/743
POLITICAL DONATIONS	There are no donations or gifts to disclose, and a political donation disclosure is not required
LOBBYIST CODE OF CONDUCT	There have been no meetings or communications with registered lobbyists with respect to this proposal

1.2 Objectives of planning proposal

The planning proposal contains objectives and intended outcomes that adequately explain the intent of the proposal.

In summary, the objectives of the planning proposal are to:

- Amend the Land Zoning Map (Map Sheets 5 and 6) to rezone the subject site from RU2 Rural Landscape to IN1 General Industrial;
- Amend the Height of Buildings Map (Map Sheets 5 and 6) to remove the existing 9m maximum height of buildings control for the subject site;
- Amend the Floor Space Ratio Map (Map Sheet 6) to introduce a FSR control of 0.55:1 for the subject site. The geographic extent of the subject site will require the creation of a new Floor Space Ratio Map Sheet (Map Sheet 5) to accommodate the proposed new control.
- Amend the Lot Size Map (Map Sheets 5 and 6) for the subject site from 10,000m^2 to 930m^2; and
- Amend the Lot Size for Dual Occupancy Map (Map Sheets 5 and 6) to remove the existing 20,000m^2 control for the subject site.

Site Specific Development Control Plan (DCP)

To support the intent and the provisions of the planning proposal, the applicant will prepare a site specific DCP to include the proposed development controls for the subject site.

The objectives of this planning proposal are clear and adequate.

1.3 Explanation of provisions

The planning proposal seeks to amend the Fairfield LEP 2013 per the changes below:

Table 3 Current and proposed controls

Control	Current	Proposed
Zone	RU2 Rural Landscape	IN1 General Industrial (E4 General Industrial under Employment Zones Review)
Maximum height of the building	9m	No maximum building height (Consistent with other industrial lands in Fairfield Local Government Area (LGA))
Floor space ratio	No FSR control	0.55:1
Minimum lot size	10,000m^2	930m^2
Minimum lot size for Dual Occupancy	20,000m^2	Remove reference to the site
Industrial floor space	0	313,000m^2
Number of dwellings	0	0

Number of jobs	N/A	• 1,700 directly • 1,900 indirectly

The planning proposal contains an explanation of provisions that adequately explains how the objectives of the proposal will be achieved.

The Department has undertaken a reform of the employment zones. If a planning proposal is seeking to alter zoning of business and/or industrial zones or insert or amend Schedule 1 Additional Permitted Uses, the proposal is required to address the transition of the incoming employment zones by including an employment zones transition table ahead of public exhibition, to ensure the proposed LEP amendments align with the broader reform intent.

As this proposal is seeking to rezone the land from RU2 Rural Landscape to IN1 General Industrial, the proposal is required to be updated prior to public exhibition to include an employment zones translation table. The Gateway has been conditioned accordingly.

1.4 Site description and surrounding area

The subject site consists of 32 individual lots and has a total area of approximately 60.2 hectares, located between Chandos Road (to the north) and The Horsley Drive (to the south).

The site is surrounded by the Western Sydney Parklands as well as major roads, including the M7 Motorway and Wallgrove Road to the west, and The Horsley Drive to the south. The Jemena Metering Facility is immediately north of the site. Approximately 1.5km east of the site is the Wetherill Park industrial estate which serves as a major industrial hub for Western Sydney.

The site primarily consists of rural residential lots as well as commercial uses such as a golf driving range. The Eastern Creek riparian corridor adjoins the western boundary of the site and is characterised by areas of dense vegetation and biodiversity significance.

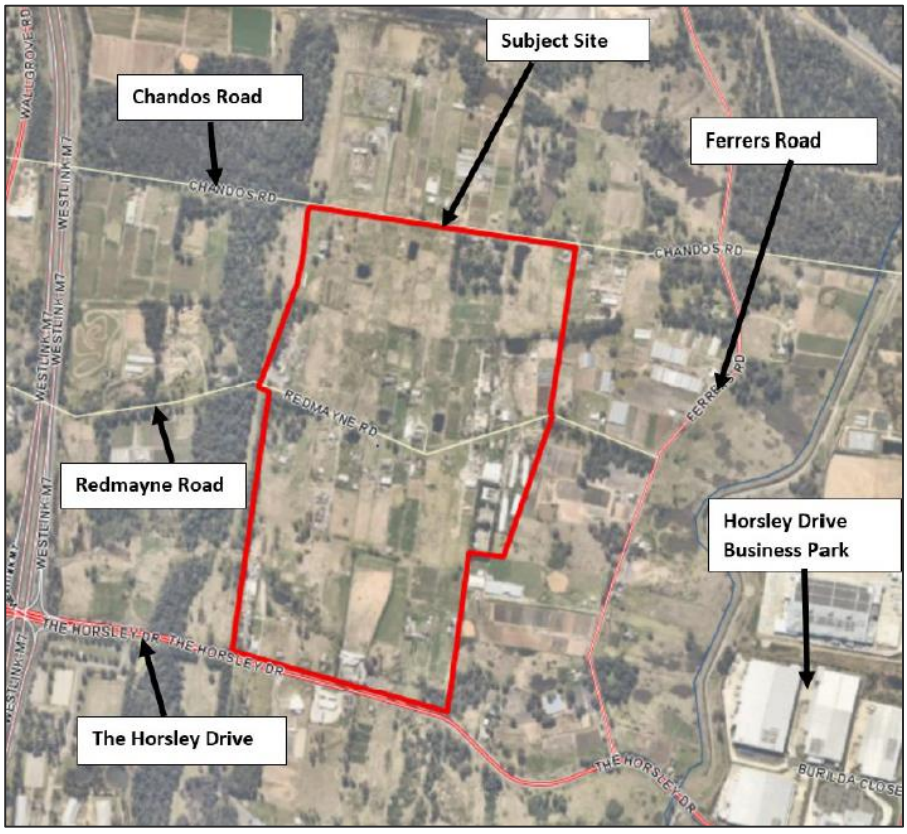


Figure 1 Subject site (Source: Planning Proposal)

Figure 2 Site context (Source: Nearmap)

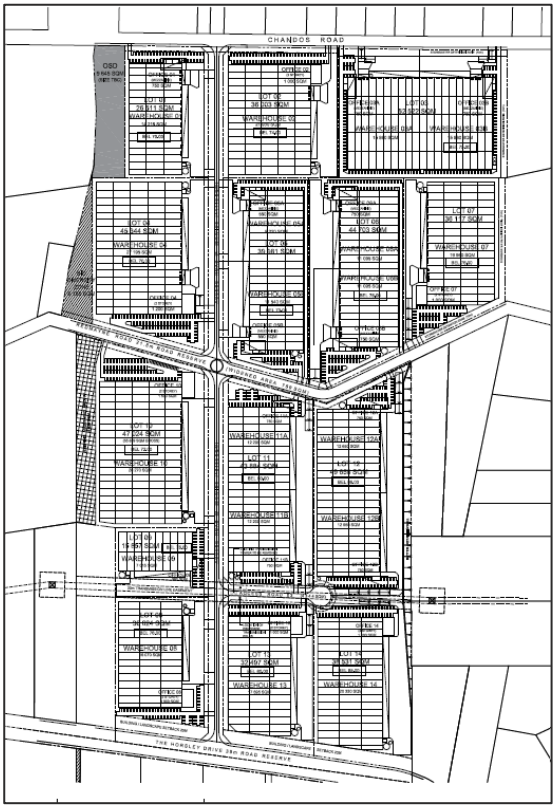


Figure 3 Draft Master Plan (Source: Draft Master Plan from Frasers Property)

1.5 Mapping

The planning proposal includes mapping amendments to the Fairfield LEP 2013. The proposal includes changes to the Land Zoning, Lot Size, Lot Size for Dual Occupancy Development, Height of Building and Floor Space Ratio Map Sheets.

There is inconsistency with the generation of the proposed map amendments as the zoning, lot size and height of buildings maps (**Figures 3-5**) are generated from a GIS based mapping tool, while the floor space ratio, minimum lot size subdivision and lot size dual occupancy maps (**Figures 6 and 7**) are generated from a spatial viewer.

All maps should be updated to be consistent with the Standard Technical Requirements for Spatial Datasets and Maps (2017). The Gateway has been conditioned accordingly.

Figure 3 Current and proposed Land Zoning Map. (Source: Planning Proposal)

Figure 4 Current and Proposed Lot Size Map. (Source: Planning Proposal)

Figure 5 Current and Proposed Height of Building Map. (Source: Planning Proposal)

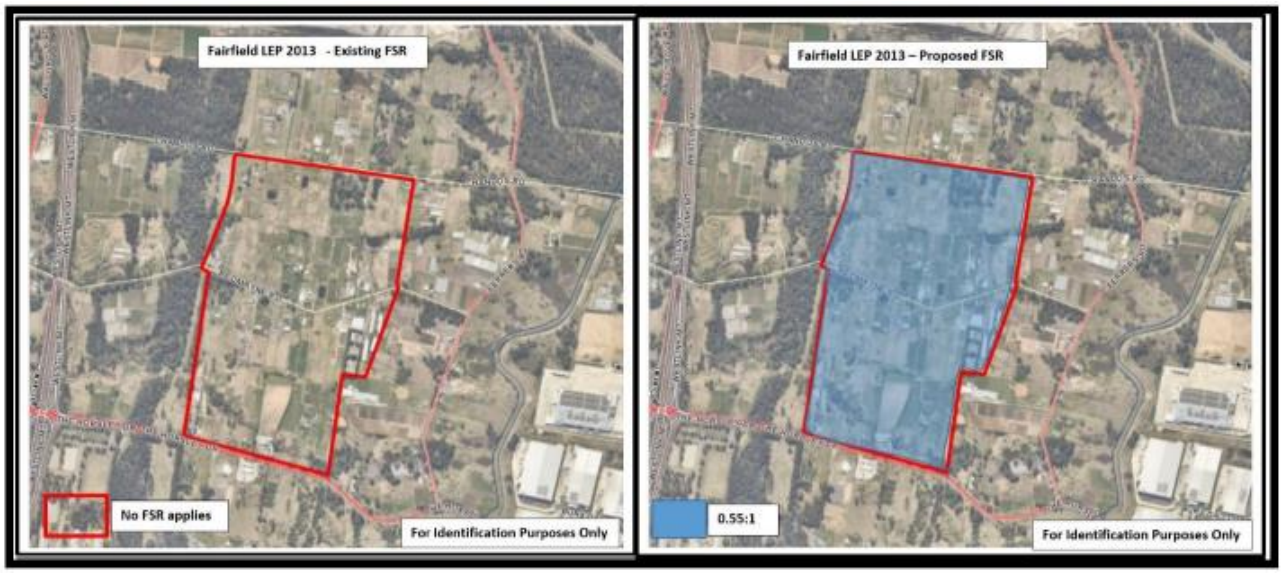


Figure 6 Current and Proposed Floor Space Ratio map. (Source: Planning Proposal)

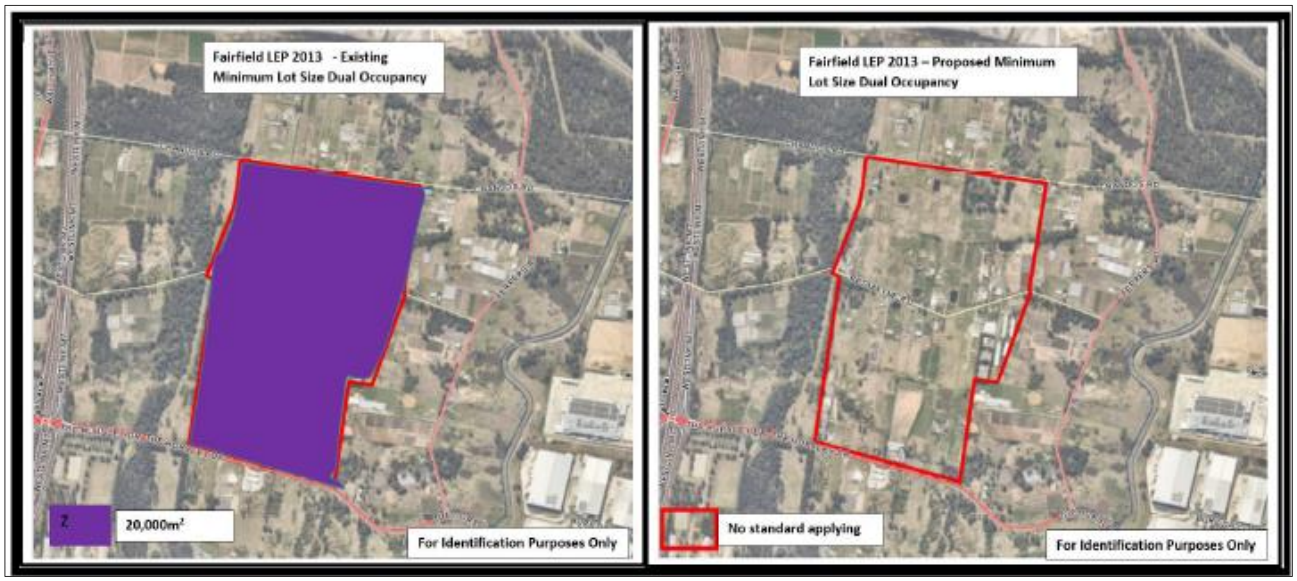


Figure 7 Current and Proposed Minimum Lot Size Dual Occupancy Map. (Source: Planning Proposal)

2 Need for the planning proposal

The proposal is not the result of a Council study or strategy but is consistent with Fairfield's Local Strategic Planning Statement (LSPS) and aligns with the Urban Investigation Area (UIA) draft Structure Plan which identified the Keyhole Lands as future employment lands.

The subject site is in an area known as the Keyhole Lands and is expected to provide employment generating land uses, specifically to facilitate industrial employment uses in Horsley Park. The proposal is supported by an Economic Impact Assessment prepared by Macroplan which supports the rezoning of the Keyhole Lands site given its positive impact to the local economy and existing industrial estates.

The subject site is also well serviced by existing major infrastructure including the M7 Westlink Motorway, Western Sydney Airport and Western Sydney Aerotropolis, and will benefit from future major infrastructure including upgrades to The Horsley Drive. Further, the proposal will support existing industrial precincts within the Western Parkland City which will assist in supporting the "30 minute city" direction of the District Plan.

The planning proposal is the best means of achieving the intended outcomes for the subject site.

3 Relationship with strategic planning framework

3.1 District Plan

The subject site is within the Western City District. The Greater Sydney Commission released the Western City District Plan on 18 March 2018. The plan contains planning priorities and actions to guide the growth of the district while improving its social, economic and environmental assets.

The Department is satisfied the planning proposal gives effect to the District Plan in accordance with section 3.8 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). **Table 4** includes an assessment of the planning proposal against relevant directions and actions.

Table 4 District Plan assessment

District Plan Priorities	Justification
W1 – Planning for a city supported by infrastructure	The planning proposal results in the rezoning of land to industrial land use, which will maximise the use of the existing infrastructure surrounding the site, including the Western Sydney Airport and Aerotropolis. The rezoning of the site will enable business growth and employment opportunities in the area, which will be supported by existing and future infrastructure.
W7 - Establishing the land use and transport structure to deliver a liveable, productive and sustainable Western Parkland City	The proposal will promote employment opportunities and complement the existing industrial precincts as well as providing good access to jobs around the Western Sydney Airport and Aerotropolis.
W8 – Leveraging industry opportunities from the Western Sydney Airport and Badgerys Creek Aerotropolis	The planning proposal will promote the establishment of new industrial businesses in the area, providing opportunities to complement existing surrounding industrial precincts including the Western Sydney Airport and Aerotropolis, which will support the need for industry in those areas.

W10 – Maximising freight and logistics opportunities and planning and managing industrial and urban services land	The proposal will maximise industrial and urban services land within Fairfield LGA which responds to the need of additional industrial and urban services development in the area. The rezoning of the land to industrial use will maximise opportunities for industrial businesses to established themselves in this area.
W11 – Growing investment, business opportunities and jobs in strategic centres	The proposal will provide new jobs opportunities whilst also proposing upgrades to existing infrastructure and roads in the area. This will attract investment and business and will enable employment growth.
W14. Protecting and enhancing bushland and biodiversity.	Remnant native vegetation within the subject site represents a relatively small extent, which comprises scattered patches and isolated paddock trees. Avoidance through design is constrained due to the need to provide appropriate access, provision of level land surfaces for industrial purposes, maintenance of easements, and the required widening of existing roads. The proposal has indicated an intent to undertake further investigations to support the proposal post-Gateway to protect remnant vegetation and for it to be incorporated into the planning and design of future development and landscaping opportunities. Hence, meeting the imperatives of siting development to avoid (as far as practical) better condition remnant vegetation and concentrating impacts on biodiversity values to those areas of lower condition remnant vegetation.
W17. Better managing rural areas	The subject site is located within the Metropolitan Rural Area (MRA). The District Plan encourages design-led-place based planning in the MRA to help manage environmental, social and economic values, maximise the productive use of rural areas, and incentivise biodiversity protection for remnant bushland vegetation. Urban Investigation Areas (UIAs) have been identified to take a structured approach to managing the long-term growth of Greater Sydney. A key action of this priority is to limit urban development to within the urban area, except for the UIAs at Horsley Park, Orchard Hills, and east of the Northern Road, Luddenham. As mentioned previously, the subject site is identified as part of the Horsley Park and Cecil Park Urban Investigation Area draft structure plan which identifies the site for future employment uses. Consultation with the GCC in relation to the proposal's consistency with this priority is required as part of the public exhibition.

3.2 Local

The proposal is consistent with the following local plans and endorsed strategies. It is also consistent with the strategic direction and objectives, as stated in the table below:

Table 6 Local strategic planning assessment

Local Strategies	Justification
Local Strategic Planning Statement (LSPS)	The proposal aligns with the following priorities of the LSPS: - Priority 3: Plan for and manage areas identified for future urban development. - Priority 6: Ensure infrastructure is aligned to accommodate planned growth and community needs. - Priority 11: Promote robust economy which generates diverse services and job opportunities. - Priority 12: Plan for and manage urban services land.
Fairfield Business & Employment Lands Economic Report	Demand for Western Sydney Employment Lands The planning proposal can meet the demand of employment land in Western Sydney, given its proximity to existing and future major transport roads and infrastructure. The subject site is in proximity to existing employment lands, providing opportunities for additional logistics and industrial development to support the regional economy. Western Sydney Freight Line Project (WSFL) The potential WSFL route that traverses the northern section of the Smithfield/Wetherill Park industrial area is in close proximity (within 500m) of the subject site, providing opportunities for future industrial development to access the WSFL facility. The proposed future Southern Link Road will provide direct access to future Mamre Road Intermodal Terminals (IMT) located 5km to the west of the site, providing attractive opportunities for new and future businesses on the subject site.
Horsley Park and Cecil Park Urban Investigation Area (UIA)	The draft UIA Structure Plan (**Figure 8**) identifies the subject site to facilitate employment generating land uses to compliment the adjoining farming precincts and reduce potential land use conflicts. The preferred character of the employment zones is to maintain a rural and industrial style. Development of new buildings will be provided through modern technology and uses incorporating an agricultural environment. This is of relevance for the keyhole lands.

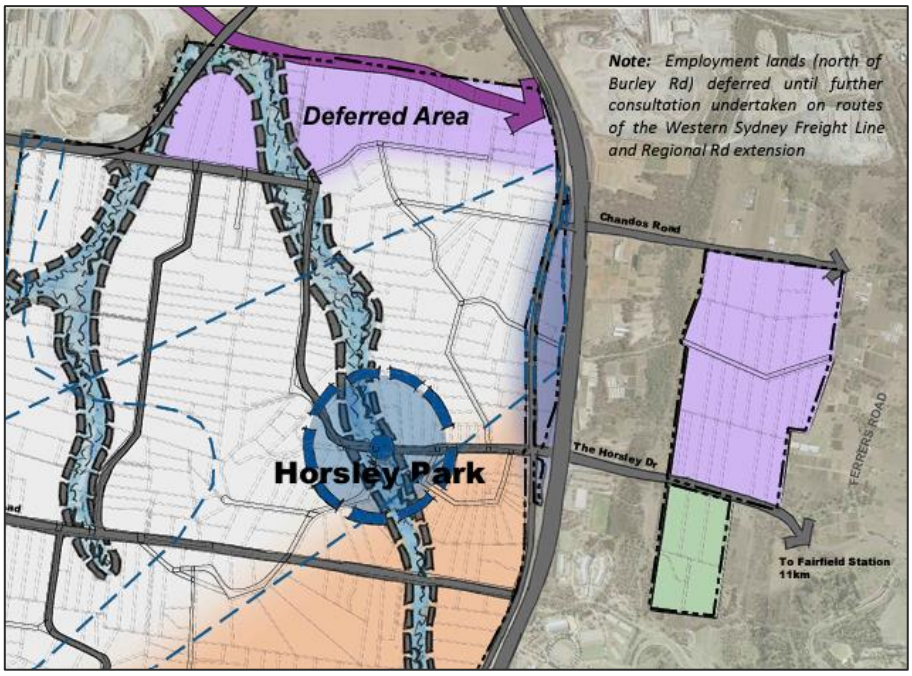


Figure 8 Horsley Park and Cecil Park Urban Investigation Area – Draft Structure Plan (Fairfield City Council, 2018)

3.3 Fairfield Local planning panel (LPP) recommendation

The Fairfield LPP concluded that the planning proposal has sufficient strategic merit, being consistent with the Greater Sydney Region Plan, Western City District Plan and Fairfield LSPS 2020.

The Fairfield LPP provided support for the rezoning, subject to recommendations. The proponent provided responses satisfying all recommendations, as discussed below.

1. Preparation of a Staging Plan:
    - A Staging Plan has been provided specifying a 2-stage approach. Land to the north of Redmayne Road is identified to be provided in stage 1 whilst land to the south of Redmayne Road is to be provided as part of stage 2.
2. Provide formal advice on a mechanism to pay for the upgrade of local infrastructure and roads required to service the proposal:
    - A letter was prepared by the applicant indicating a willingness to enter into a VPA.
3. Amendments to draft Concept Master Plan, Site Landscape Master Plan and Site Specific Development Control Plan (SSDCP), to be consistent with relevant benchmarks:
    - Concept Master Plan was amended to include landscape setbacks and building line setbacks. A 22% canopy coverage was included within the Landscape Plan.
4. Confirm appropriate FSR, subject to compliance with DPE benchmarks:
    - The proponent proposed an FSR of 0.55:1, which is considered consistent with the proposed traffic management measures.
5. Investigate the need for any restrictions required for retail floor space development on site:
    - Since the LPP's review of the proposal, the proposed access arrangements have been amended with primary ingress/egress to the site to be provided on Chandos Road, thus reducing traffic generation concerns for The Horsley Drive. Consequently, no retail GFA control has been included in the planning proposal.

3.4 Section 9.1 Ministerial Directions

The planning proposal's consistency with relevant section 9.1 Directions is discussed below:

Table 7 9.1 Ministerial Direction assessment

Directions	Consistent/ Not Applicable	Reasons for Consistency or Inconsistency
1.1 Implementation of Regional Plans	Consistent	The objective of this direction is to give legal effect to the vision, land use strategy, goals, directions and actions contained in Regional Plans. The planning proposal is considered to be consistent with Greater Sydney Region Plan, as follows: - The proposal will promote new employment opportunities for the City. - The proposal will support local economy through the distribution of new warehouse/industrial development in the area. This reinforces its consistency with the Region Plan directions including: ▪ A city supported by infrastructure. ▪ Jobs and skill for the city.
1.10 Implementation of the Western Sydney Aerotropolis Plan	Consistent	The objective of this direction is to ensure development in and around the Western Sydney Aerotropolis is consistent with the Western Sydney Aerotropolis Plan 2020. The proposal is consistent with this direction as it seeks to provide industrial land uses that compliment and support the Western Sydney Aerotropolis Plan 2020.
3.2 Heritage Conservation	Consistent	The objective of this direction is to conserve items, areas, objects and places of environmental heritage significance and indigenous heritage significance. An Aboriginal Archaeological Heritage Report (AHR) and an Aboriginal Cultural Heritage Assessment (ACHA) has been prepared by Biosis, which recommend further investigation, consultation and amendments to the AHR and ACHA at the development application stage to determine the nature and extent of potential areas of Aboriginal cultural value.
4.1 Flooding	Consistent	The objective of this Direction is to ensure development is consistent with the principles of the Floodplain Development Manual 2005 and provisions of the LEP are commensurate with flood behaviour both on and off the site. The subject site has been identified in Council's Rural Area Flood Study Ropes, Reedy & Eastern Creeks Final Report 2013, as being affected by overland flow from localised

		gullies within the site and the adjacent Eastern Creek to the west. A supporting Civil Engineering Report has assessed the flooding conditions of the subject site. The report confirms the proposal meets Councils flooding policy and NSW Floodplain Manual Recommendations and no upstream, downstream or adjacent properties are adversely affected as a result of the proposal. The report also confirms the modelling indicates acceptable flood management for the site. Further discussion on this matter is in Section 4.1 of this report. Flood evacuation routes have not been provided at this time. It is recommended that this form part of any future development application for the site.
4.3 Planning for bushfire protection	Minor inconsistency	The objectives of this direction are to protect life, property and environment from bush fire hazards, by discouraging the establishment of incompatible and uses in bush fire prone areas and encourage sound management of bush fire prone areas. The subject site is identified as being bushfire prone land on the Fairfield City Council Bushfire Prone Land Map. The hazard consists predominantly of forest within the Eastern Creek riparian corridor to the west of the subject site, and scattered woodland remnants and grassland located to the north, east and south. The current risk rating for the subject site is 'medium' (Cumberland Zone Bushfire Risk Management Committee 2010). The proponent prepared a Bushfire Risk Assessment Report, which was referred to the NSW Rural Fire Service. The proposal has been identified as being of bushfire prone land given the nature of the vegetation, the topography and the bushfire risks across the site. The report recommends bushfire protection measures which appear adequate for the proposal. Consequently, to satisfy the Direction, consultation is required with the NSW Rural Fire Service. A Gateway condition is recommended.
4.4 Remediation of contaminated land	Consistent	The objective of this direction is to reduce the risk of harm to human health and the environment by ensuring that contamination and remediation are considered by planning proposal authorities. The proposal is accompanied by a Preliminary Site Investigation (PSI) which concluded that potential contamination impacting the site is unlikely and

		management measures could be undertaken to render the site suitable for the proposed development. A Detailed Site Investigation (DSI) would be required as part of any future development application for the site.
5.1 Integrated land use and transport	Minor inconsistency	The objective of this direction is to ensure that new land use locations achieve efficient movement of freight. The proposed development will rely heavily on private vehicle use. Warehouse distribution by its nature is serviced by freight vehicles including B-Doubles and a range of other heavy freight and light vehicles. The proponent is proposing to undertake upgrades to facilitate the proposed development including widening of Chandos Road and signalisation of the intersection of Chandos and Ferrers Road which will facilitate greater capacity for vehicle movement. Further technical and upgrade requirements including mitigation measures and funding of upgrades are to be determined through a planning agreement which the proponent has indicated a willingness to enter with Council. Further discussion on this matter is in Section 4.2 of this report. Consequently, to satisfy the Direction, consultation is required with the Transport for NSW. A Gateway condition is recommended.
5.2 Reserving land for Public Purposes	Consistent	The objective of this direction is to facilitate the provision of public services and facilities by reserving land for public purposes. An approximately 3-metre wide State arterial road widening corridor applies to 8 lots within the site between 1617 to 1681 The Horsley Drive, Horsley Park. Under the Fairfield LEP 2013 this corridor is currently zoned SP2 – Infrastructure and will not be affected by the planning proposal that proposes to rezone the remainder of the above sites north of The Horsley Drive outside the SP2 corridor from RU2 Rural Landscape to IN1 General Industrial.
5.3 Development Near Regulated Airports and Defence Airfields	Consistent	This direction seeks to ensure the safe and effective operation of regulated airports and to ensure that their operation is not compromised by development that constitutes an obstruction or hazard. The subject land is located outside the 20 ANEC contour of the Western Sydney Airport but is located under the

		Obstacle Limitation Surface (222metres) and partially under the Wildlife Buffer Zone (13km). Whilst no maximum building height control is proposed for the subject site, the maximum building height of future development is identified within the planning proposal as being approximately 25m, which would not impact the Obstacle Limitation Surface. The primary intention of the planning proposal to establish a logistics warehouse and industrial uses on the site. These uses are not identified 'as relevant development' under cl.4.19 Wildlife Hazards of the Western Parkland City SEPP. Notwithstanding, in the instance that future development is identified as 'relevant development', it would trigger consultation with the relevant State agencies.
7.1 Business and Industrial Zones	Consistent	This direction seeks to encourage employment growth in suitable locations and protect land in business and employment zones. The proposal is consistent with this direction as it has the capacity to deliver over 3000 new jobs in an area identified as suitable for employment land uses. The subject site is located between the existing Western Sydney Employment Area (WSEA) and the Wetherill Park Industrial Area and The Horsley Drive Business Hub. Major state and local roads are in close proximity to the subject site including the M4 and M7 Motorways, Wallgrove road, The Horsley Drive and Cowpasture Road, all providing good access to the broader metropolitan area.
9.1 Rural Zones	Minor inconsistency	This direction states that Planning Proposals must not rezone land from a rural zone to an industrial zone unless it is justified by a strategy approved by the Department or is of minor significance. The Planning Proposal is inconsistent with this Direction, but is justified for the following reasons: - Additional employment in the area which reflect priorities within the Fairfield LSPS. - Council endorsed rezoning of the Keyhole Lands for employment land uses. - It will encourage additional employment uses. - The proposal is consistent with the District Plan as it will promote employment generating activities on the site that provides jobs and services to the local population, as well as providing upgrades to the current infrastructure surrounding the subject site. Whilst the subject site is mapped as being within the MRA, it is also identified as part of the UIA draft Structure Plan referenced in the LSPS, in which land between Chandos

		Road and The Horsley Drive has been identified as future employment land. Therefore, while the planning proposal is inconsistent with this direction, the inconsistency can be justified as it is in accordance with the provisions in the District Plan, the Fairfield LSPS and the UIA draft structure plan. Consequently, to satisfy the Direction, consultation is required with the Greater Cities Commission. A Gateway condition is recommended.

3.5 State environmental planning policies (SEPPs).

The planning proposal is generally consistent with all relevant SEPPs as discussed in **Table 8** below.

Table 8 Assessment of planning proposal against relevant SEPPs

SEPPs	Consistent/ Not Applicable	Reasons for Consistency or Inconsistency
State Environmental Planning Policy (Planning System) 2021	Yes	Under Clause 12, Schedule 1 of the SEPP, development for the purposes of warehouses or distribution centres that has a capital investment value (CIV) of $50 million is declared an SSD. Future development of the site with a CIV of more than $50 million will be categorised as SSD.
State Environmental Planning Policy (Resilience and Hazards) 2021	Yes	If any future land use of the subject site comprises hazardous or offensive development, a Preliminary Risk Screening would be required as part of a future DA. The proposal is accompanied by a Preliminary Site Investigation (PSI) which concludes that the potential contamination is considered not to preclude rezoning of the site to facilitate the industrial precinct.
State Environmental Planning Policy (Biodiversity and Conservation) 2021	Yes	The SEPP applies to land within the City of Fairfield. The subject site contains approximately 4% of native remnant vegetation which is considered to be isolated and in generally poor condition. The subject site is also bordered by the Eastern Creek riparian corridor which contains extensive biodiversity values. Council has referred the BAR to the former Environment Energy and Science (EES) now Environment and Heritage Group (EHG). EHG recommended that the proposal be supported by a Biodiversity Development Application Report (BDAR) to better inform the zoning and development layout that includes areas of high environmental and biodiversity value to be avoided and conserved.

SEPPs	Consistent/ Not Applicable	Reasons for Consistency or Inconsistency
		Further investigations will be undertaken and detailed in the BDAR to support the proposal after the Gateway determination and any future development application.
State Environmental Planning Policy (Precincts – Western Parkland City) 2021	Yes	This SEPP does not apply to the proposal, however the area surrounding the site is subject to the provisions of the SEPP. The proposal is consistent with the aims of the SEPP in that it will complement existing industrial areas and infrastructure and services within the Western Parkland City. The proposal will provide for an industrial rezoning, compatible with similar uses and will provide for employment opportunities in the area.

4 Site-specific assessment

4.1 Environmental

Biodiversity

A supporting Biodiversity Assessment Report (BAR) was prepared by Ecologique for the proposal. The BAR provides details relevant to biodiversity values and mapped watercourses within the subject site. The subject site is in proximity to the Eastern Creek riparian corridor characterised by areas of dense vegetation and biodiversity significance. The BAR noted the land has potential to contain critical habitat or threatened species, population or ecological communities or their habitats and further studies are necessary to confirm the presence of these species or habitats and their significance.

Remnant native vegetation within the subject site represents a relatively small extent, which comprises scattered patches and isolated paddock trees. The proposal indicates conservation of remnant vegetation within patches that are in proximity to the Eastern Creek riparian corridor and restoration of areas adjacent to these patches. Any future development of the subject site should concentrate any unavoidable impacts on biodiversity values to those areas of lower condition remnant vegetation.

Council has referred the BAR to EHG. EHG recommended that the proposal be supported by a Biodiversity Development Application Report (BDAR) to better inform the zoning and development layout that includes areas of high environmental and biodiversity value to be avoided and conserved. Further investigations will be undertaken and detailed in the BDAR to support the proposal after the Gateway determination and any future development application.

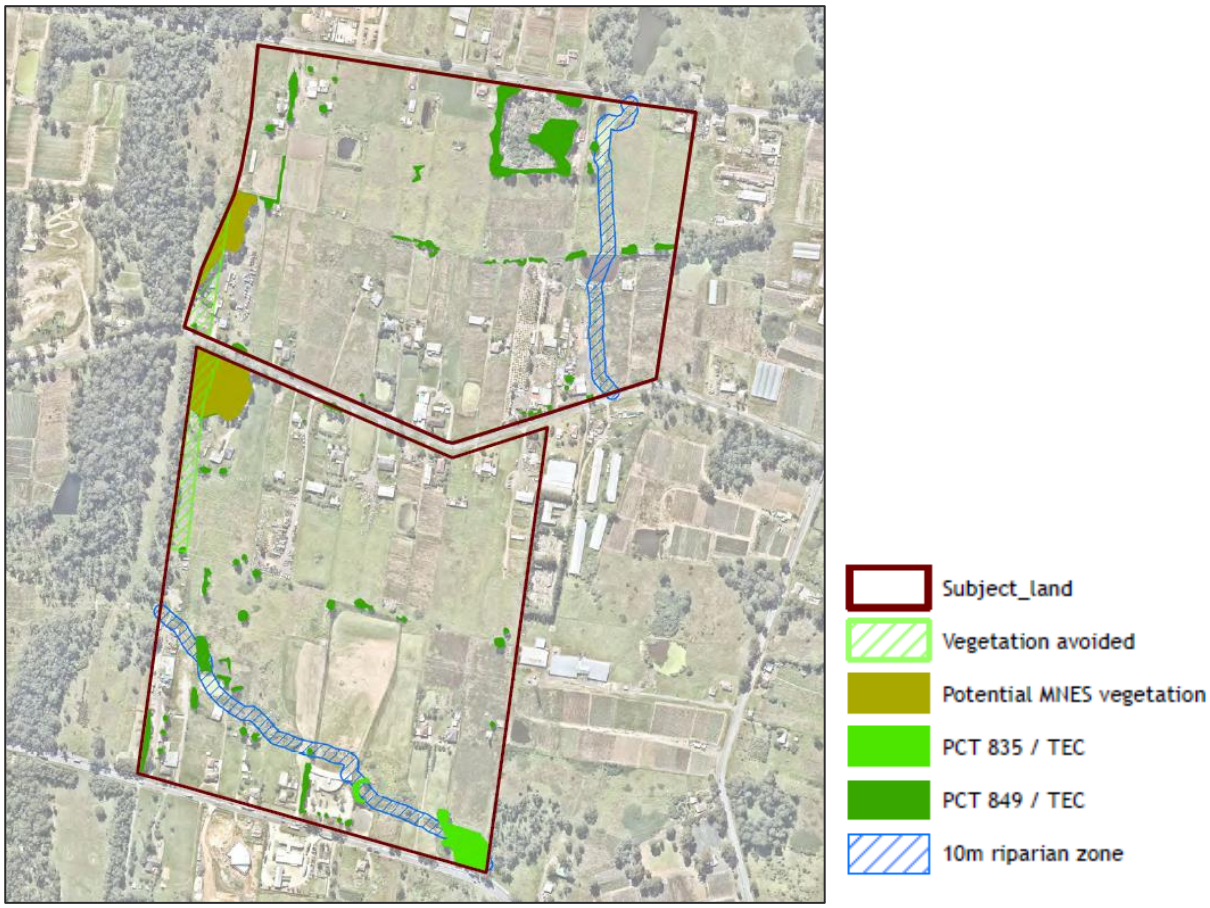


Figure 9 Environmental land development considerations (Source: Biodiversity Assessment by Ecologique)

Heritage

The subject site does not contain any heritage items nor is it within an identified heritage conservation area. The site is located within an Aboriginal Potential Investigation Area (PIA) which identifies the site as containing potential Aboriginal artefacts and means that the site has the potential to contain sites of Aboriginal Archaeological Significance.

Accordingly, the proposal is supported with an Aboriginal Archaeological Heritage Report (AHR) and an Aboriginal Cultural Heritage Assessment (ACHA) prepared by Biosis, which was peer reviewed by Coast History and Heritage on behalf of Council.

The AHR notes that potential physical impacts might occur, which would require further detailed investigation. It is also noted that if heritage conservation is not practical, management options would be available.

The ACHA outlines that the Aboriginal Community has been consulted regarding heritage management throughout the project's lifespan, meeting with 18 different organisations. Field investigations were undertaken with a site officer present from Deerubbin Local Aboriginal Land Council (LALC).

The ACHA also identified the subject site as having high cultural significance to the Dharug Aboriginal Community. It outlined that the Aboriginal Community has been consulted regarding heritage management throughout the project's lifespan.

Due to vegetation cover on site, there was limited ground visibility and no Aboriginal sites were identified. However, based on the background research it is understood low, moderate and high

archaeological potential areas may exist across the site (**Figure 10** overleaf). Consequently, consultation should be undertaken with Heritage NSW and a Gateway condition is recommended.

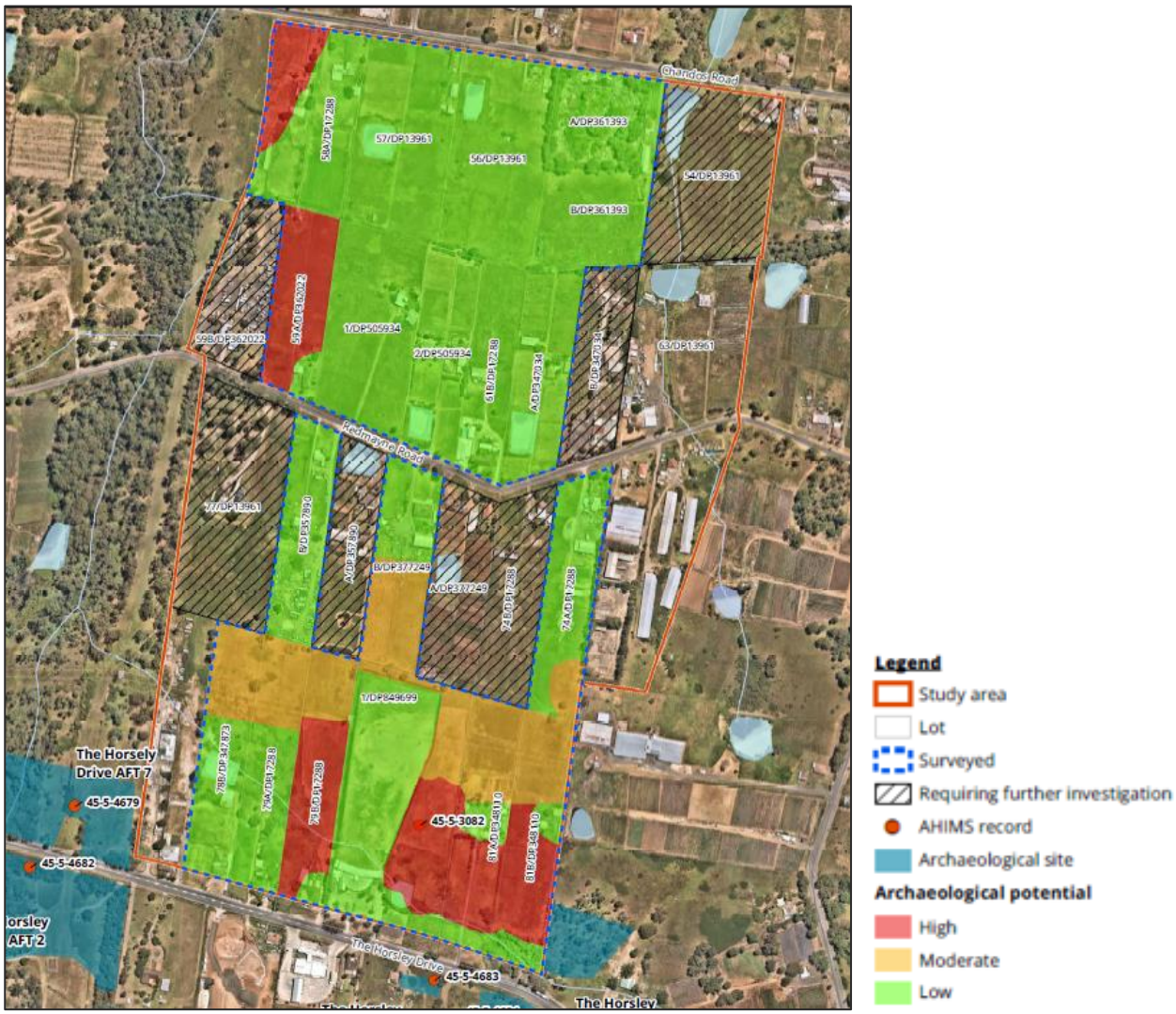


Figure 10 Survey results (Source: Aboriginal Cultural Heritage Assessment by Biosis)

Flooding

The site is subject to overland and mainstream flooding as a result of the site's sloping topography and proximity to Eastern Creek. The subject site is within Eastern Creek catchment, which is formed from a single creek system. While the creek alignment is relatively well vegetated, the surrounding floodplain has been extensively cleared. The creek itself is well defined and located in the base of the valley.

The proposal is supported by a Council commissioned flood study and a civil engineering report prepared by Costin Roe Consulting.

Fairfield City Council commissioned a flood study of three catchments (Reedy Creek, Ropes Creek and Eastern Creek) as part of the Rural Area Flood Study (2013). The study was consistent with the requirements of the NSW's Government's Floodplain Development Manual (NSW Government, 2005) and State Government's Flood Prone Land Policy.

Flood modelling was undertaken for a number of Annual Exceedance Probability (AEP) flood events, including the 5% AEP, 2% AEP, 1% AEP, 0.2% AEP and 0.05% AEP and the Probable Maximum Flood (PMF). Modelling of these flood events is generally consistent with Flood Inquiry

Recommendation 18 (Risk Based Approach to Calculating Flood Planning Levels) that suggests 1% AEP, 0.02% AEP and PMF events should be considered.

Council's flood study found that flooding in the Eastern Creek catchment is relatively well confined, except for over-bank flooding downstream of Chandos Road in all modelled flood events. The two main roads through the catchment, Chandos Road and The Horsley Drive, remain flooding free for all events up to and including the 1 in 100 year AEP flood event. Overbank flooding between The Horsley Drive and Chandos Road is evident in the 1 in 100 year AEP flood event.

In addition, the Flood Study contains High Flood Risk Precinct maps to identify regions of excessively high flood depth, flow velocity, or some combination of both. **Figure 11** illustrates the flood risk based on the 1% and PMF peak depth and velocity outputs from the hydraulic model. This risk-based approach is consistent with Flood Inquiry Recommendation 18, to understand the behaviour and risks of floodwater on site.

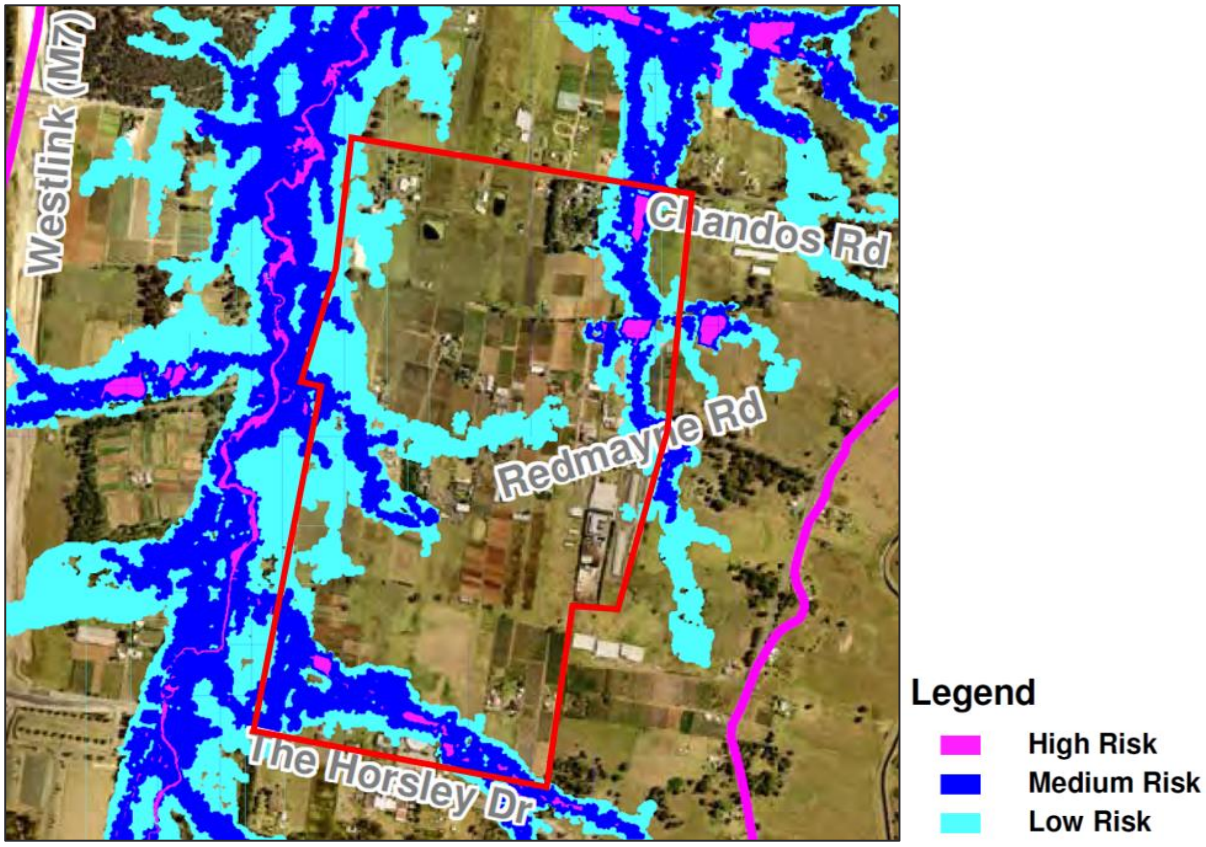


Figure 11 Flood Risk Precincts (Source: Rural Area Flood Study)

The supporting civil engineering report incorporates a stormwater management and a water cycle management strategy (WCMS). The report proposes a number of watercourses on the subject site to be channelled and piped including redirection. Council considered this unacceptable and not in line with the Western Parkland City vision. This approach is also inconsistent with Flood Inquiry Recommendation 20 (Floodplains as Assets), which suggests principles should be adopted for floodplain management that allows watercourses to largely flow naturally rather than implementing engineering solutions.

Council's preference is for the proposal to be more sympathetic to the existing waterways on the subject site. The 3 main waterways on the site should be enhanced, allowing room for natural waterway processes. Council has requested that prior to public exhibition, a revised civil engineering report should be provided to address these concerns. A Gateway condition is recommended to address Council's concerns.

Bushfire

A supporting Bushfire Risk Assessment was prepared by Peterson Bushfire, as the subject site is identified as medium risk within Council's Bush Fire Prone Land Map. The assessment concluded that the proposal is not considered incompatible with the surrounding environment and bushfire risk. identified protections measures which will required at the development application stage.

The Bushfire Risk Assessment has also been referred to NSW Rural Fire Service. The proposal is considered satisfactory given that no concerns were raised subject to the inclusion of Planning for Bush Fire Protection (PBP) controls and access road requirements in the site-specific DCP.

Consequently, to address and satisfy the requirements of Direction 4.3, it is recommended that consultation be undertaken with the NSW Rural Fire Service as a condition of the Gateway determination.

Noise and Vibration

An Acoustic Report was prepared by Acousticworks assessing noise impacts resulting from the rezoning of the future industrial development. The site is affected by road traffic noise from The Horsley Drive, the M7 Motorway and nearby industrial activities. The report recommends the inclusion of the following for 24-hour operation of the site:

- Construction of acoustic barriers.
- The on-site mechanical plant shall be designed to comply with the relevant noise criteria.
- Applicable noise criteria for sleep disturbance shall be implemented.
- The predicted traffic volume is not predicted to exceed the criteria of NSW Road Noise Policy 2008. Any further increase in traffic volume would require assessment under the criteria of NSW Road Noise Policy 2008.

It is recommended that a site-specific DCP should include provisions that address the recommendations above.

Built Form

A Visual Impact Analysis (VIA) was prepared by Hatch Roberts Day. The report considered that removal of building height controls and reduction of minimum lot size would facilitate appropriate development outcomes for the site. It is understood that the proposal can facilitate appropriate street setback as well as cycle and pedestrian connections within the development.

The proposed land use and scale of the development are considered more urban than the existing rural character of the subject site and therefore retaining the rural character of Chandos Road and Redmayne Road might not be a feasible outcome.

It is recommended that the site-specific DCP include provisions which further identify future built form controls on site.

Figure 12 Artist impression of built form and public space

Contamination

A supporting Preliminary Site Investigation (PSI) was prepared by JBS&G which noted that the site has previously been used for rural residential purposes with some areas possibly subject to ground disturbance.

The PSI concluded that the potential contamination is considered not to preclude the proposed rezoning of the site to facilitate an industrial estate.

The recommendations of the PSI state that further intrusive testing can be undertaken during any detailed development application stage to ensure consistency with relevant planning instruments and SEPP (Resilience and Hazards) 2021.

The Department is satisfied that the subject site can be made suitable for future development subject to the further sampling as outlined in the PSI recommendations.

4.2 Social and economic

Job creation

A supporting Economic Assessment Report was prepared by Macroplan for the proposed rezoning and subsequent industrial development. The report concluded that the rezoning could support local employment by increasing employment/industrial land stocks. The employment outcome from the proposal surpasses the traditional light industrial uses with an estimated additional 1,700 direct jobs per annum that could be generated on site once the development is fully completed. This will also generate an estimated additional1,900 indirect jobs outside the proposed industrial precinct.

Traffic

The proposal proposes road and infrastructure upgrades to facilitate the delivery of the proposed future development on the site.

The applicant provided a Traffic Impact Assessment (TIA) and Traffic Model prepared by Ason Group. The report concluded that the existing road network can accommodate the additional trip generation arising from the proposal and future uplift subject to road upgrades.

The report was referred to Transport for NSW (TfNSW) for comment. The initial concept design provided only one primary point of access to the entire site from The Horsley Drive. TfNSW raised concerns related to access, traffic modelling and contributions arrangement, which the applicant was required to further address.

As a result of advice from TfNSW, the access approach was revised to include left in only for The Horsley Drive, with primary ingress/egress to the site to be provided on Chandos Road via a roundabout to be constructed on Chandos Road.

Council's independent traffic consultants (Stantec) concluded that the revised traffic modelling provided by Ason Group is fit for purpose subject to upgrades to local road infrastructure, as well as updating the transport model to address previous advice from TfNSW regarding the extent of State arterial roads and intersections included in the traffic model. Subsequently, a revised TIA (dated 22/12/2022) has been prepared to address Stantec's comments. However, TfNSW has not provided formal feedback on the revised TIA.

The proponent has indicated a willingness to enter into a Voluntary Planning Agreement (VPA) to address local infrastructure needs required for the proposed development of the subject site.

It is recommended that the revised TIA is referred to TfNSW for further consideration and comment. This should occur concurrently to the required agency consultation with TfNSW as specified in the Gateway determination.

Social impact

A supporting Social Impact Assessment (SIA) was prepared by SLR Consulting to address matters raised by Council in relation to the potential social impacts of the proposed development. The SIA concludes that the potential negative social impacts identified can be adequately managed and mitigated.

Mitigation and enhancement measures proposed as part of the SIA could be incorporated at future development application stage.

4.3 Infrastructure

A supporting Service Infrastructure Assessment of public utility services was prepared by LandPartners. The assessment concluded that the subject site would require studies to be undertaken of adjacent water assets and capacity of the Wetherill Park waste water system. These studies will require direct consultation with Sydney Water who will need to provide consent to the consultants to undertake a modelling program to Sydney Water's requirements.

Existing infrastructure

There are existing high pressure trunk gas mains in easements through the eastern part of the site. A primary main and secondary main is constructed within Chandos Road. Consultation with Jemena will be required.

There is also an existing major high voltage transmission system controlled by Transgrid that crosses the site to the north of The Horsley Drive and south of Redmayne Road. Consultation with Transgrid will be required and recommended on this basis.

The Sydney Water capacity issues can be appropriately dealt with as part of the agency consultation.

Planned infrastructure

The subject site benefits from being in proximity to existing and future major roads and infrastructure. The supporting Transport Assessment identified the existing infrastructure capacity of the surrounding road network as currently operating poorly. Feedback from TfNSW during initial notification indicated that the proposal could not be supported and further amendments were required. The proponent prepared a revised Traffic Model and Traffic Impact Assessment, responding to TfNSW comments.

The proposal will also benefit from The Horsley Drive upgrades proposed by TfNSW including:

- Widening of The Horsley Drive between Wallgrove Road and Cowpasture Road to 4 lanes (2 lanes per direction) with a central median capable of accommodating 2 additional lanes (1 lane per direction) in the future.
- An additional eastbound lane from east of Ferrers Road to Cowpasture Road.
- Upgrades to intersections with The Horsley Drive and Ferrers Road intersection, Cowpasture Road, Wallgrove Road and the M7 Motorway.

Further discussions and consultation with TfNSW and relevant utility providers (Endeavour Energy and Jemena) are required to ensure appropriate infrastructure levels are provided and mitigation measures can be undertaken.

5 Consultation

5.1 Community

Council proposes a community consultation period of 28 days.

The exhibition period proposed is considered appropriate, and forms to the conditions of the Gateway determination.

5.2 Agencies

It is recommended the following agencies be consulted on the planning proposal and given 30 days to comment:

- Greater Cities Commission (GCC)
- Transport for NSW (TfNSW)
- NSW State Emergency Service (SES)
- NSW Rural Fire Service (RFS)
- NSW Environment and Heritage Group (EHG)
- Heritage NSW
- Sydney Water
- Natural Resource Access Regulator (NRAR)
- Western Sydney Parklands Trust
- Jemena
- TransGrid
- Endeavour Energy
- Relevant infrastructure providers for telephone and NBN.

6 Timeframe

Council proposes an 11 month time frame to complete the LEP.

The Department recommends a time frame of 12 months to ensure it is completed in line with its commitment to reduce processing times. It is recommended that if the gateway is supported it also includes conditions requiring council to exhibit and report on the proposal by specified milestone dates.

A condition to the above effect is recommended in the Gateway determination.

7 Local plan-making authority

Given the general consistency with local and regional strategic projects, and the relatively straightforward nature of the rezoning, the Department recommends Fairfield City Council be given plan-making authority delegation under the Act.

Any outstanding issues and further consultation requirements have been appropriately conditioned, with Fairfield City Council being best placed to finalise the proposal within the timeframe given in the Gateway determination.

8 Assessment summary

The planning proposal is supported to proceed with conditions for the following reasons:

- Aligns with the Western City District Plan.
- Aligns with the LSPS and Fairfield Business & Employment Lands Economic Report in terms of supporting job creation, economic growth.
- Will provide in-demand industrial zoned land and associated employment opportunities to Greater Sydney.
- Will include a site specific DCP to facilitate appropriate development outcomes for the site.
- Seeks to deliver upgrades to roads and infrastructure at no cost to government.

As discussed in the previous sections 3 and 4, the proposal should be updated to:

- Address Ministerial Direction 4.3 – Planning for Bushfire Protection, including comments from the NSW Rural Fire Service.
- Address Ministerial 9.1 Direction 5.1 Integrating Land Use and Transport, including comments from Transport for NSW.
- Update proposal to including an employment zones transition table.
- All LEP Map Sheets should be updated to be consistent with the Standard Technical Requirements for Spatial Datasets and Maps.
- Provide a revised civil engineering report that allows watercourses to largely flow naturally rather than implementing engineering solutions.

9 Recommendation

It is recommended the delegate of the Minister:

- Agree that any inconsistency with section 9.1 Direction 4.3 Planning for Bushfire Protection is unresolved until comments from the NSW Rural Fire Service are considered.
- Agree that any inconsistency with section 9.1 Direction 5.1 Integrating Land Use and Transport is unresolved until comments from Transport for NSW are considered.
- Agree that any inconsistency with section 9.1 Direction 9.1 Rural Zone is justified.

It is recommended the delegate of the Minister determine that the planning proposal should proceed subject to the following conditions:

1. The planning proposal is to be updated prior to exhibition, as follows:
    a) Amend the planning proposal to including an employment zones transition table; and
    b) Update all maps to be consistent with the Standard Technical Requirements for Spatial Datasets and Maps.

2. Prior to exhibition, prepare a revised civil engineering report that allows watercourses to largely flow naturally rather than implementing engineering solutions.
3. Public exhibition is required under section 3.34(2)(c) and clause 4 of Schedule 1 to the Act as follows:

   (a) the planning proposal is categorised as standard as described in the *Local Environmental Plan Making Guidelines* (Department of Planning and Environment, 2021) and must be made publicly available for a minimum of 30 days; and

   (b) the planning proposal authority must comply with the notice requirements for public exhibition of planning proposals and the specifications for material that must be made publicly available along with planning proposals as identified in Local Environmental Plan Making Guidelines (Department of Planning and Environment, 2021).

   Exhibition must commence within 4 months following the date of the gateway determination.

   The draft Development Control Plan and Voluntary Planning Agreement (VPA) Letter of Offer should be exhibited concurrently with the planning proposal.

4. Consultation is required with the following public authorities and government agencies under section 3.34(2)(d) of the Act and/or to comply with the requirements of applicable directions of the Minister under section 9 of the EP&A Act:
   - Greater City Commission (GCC)
   - Transport for NSW (TfNSW)
   - NSW State Emergency Service (SES)
   - NSW Rural Fire Service (RFS)
   - NSW Environment and Heritage Group (EHG)
   - Heritage NSW
   - Sydney Water
   - Natural Resource Access Regulator (NRAR)
   - Western Sydney Parklands Trust
   - Jemena
   - TransGrid
   - Endeavour Energy
   - Relevant infrastructure providers for telephone and NBN.

   Each public authority is to be provided with a copy of the planning proposal and any relevant supporting material via the NSW Planning Portal and given at least 30 days to comment on the proposal.
5. A public hearing is not required to be held into the matter by any person or body under section 3.34(2)(e) of the EP&A Act. This does not discharge Council from any obligation it may otherwise have to conduct a public hearing (for example, in response to a submission or if reclassifying land).
6. The Council as planning proposal authority is authorised to exercise the functions of the local plan-making authority under section 3.36(2) of the EP&A Act subject to the following:

   (a) the planning proposal authority has satisfied all the conditions of the gateway determination;

   (b) the planning proposal is consistent with applicable directions of the Minister under section 9.1 of the EP&A Act or the Secretary has agreed that any inconsistencies are justified; and

(c) there are no outstanding written objections from public authorities.

7. The timeframe for completing the LEP is to be 12 months from the date of the Gateway determination.

11/4/2023

Murray Jay

Manager, Metro West

15 May 2023

Adrian Hohenzollern

Director, Metro West

Assessment officer

Wayne Williamson

Specialist Planning Officer, Agile Planning

9860 1532

Appendix D

Servicing Report SY73931

Landpartners Built Environment Consultants

Sydney
"Parklands Estate"
Level 2, 23-29 South Street
RYDALMERE NSW 2116
PO Box 1144
DUNDAS NSW 2117
T: 61 2 9685 2000
F: 61 2 9685 2001

INFRASTRUCTURE SERVICE ASSESSMENT

KEYHOLE SITE
THE HORSLEY DRIVE
HORSLEY PARK

PREPARED BY: LANDPARTNERS LIMITED
DATE: 13 APRIL, 2016
REF: 73931

Planning Titling Surveying Mapping & GIS Landscape Architecture Environmental Urban Design

ABN 19 118 146 008 | s

TABLE OF CONTENTS

APPENDICES

"A"
"B"
"C"

PREPARED BY:	G. OXLEY
DATE:	APRIL, 2016
REVISION	"A" – FOR CLIENT COMMENT

1. INTRODUCTION

Frasers Property Australia have requested an assessment of existing service infrastructure for a potential development area known as the "Keyhole Site" (the site)".

The purpose of the assessment is to consider the impact of service asset capacity on future possible development of the site for industrial purposes. The particular industrial uses of the site is assumed to be for warehouse/logistics facilities.

1.1 THE SITE

The site is bounded by The Horsley Drive to the south, Chandos Road to the north and small lot acreage land on the east and west of the site. The site is bisected by Redmayne Road. See figure 1 below.

The site is near the M7 Motorway. Access to the motorway is facilitated by The Horsley Drive, M7 Interchange.

The subject site is approximately 66ha in area and 1km to the west of the Wetherill Park industrial precinct.

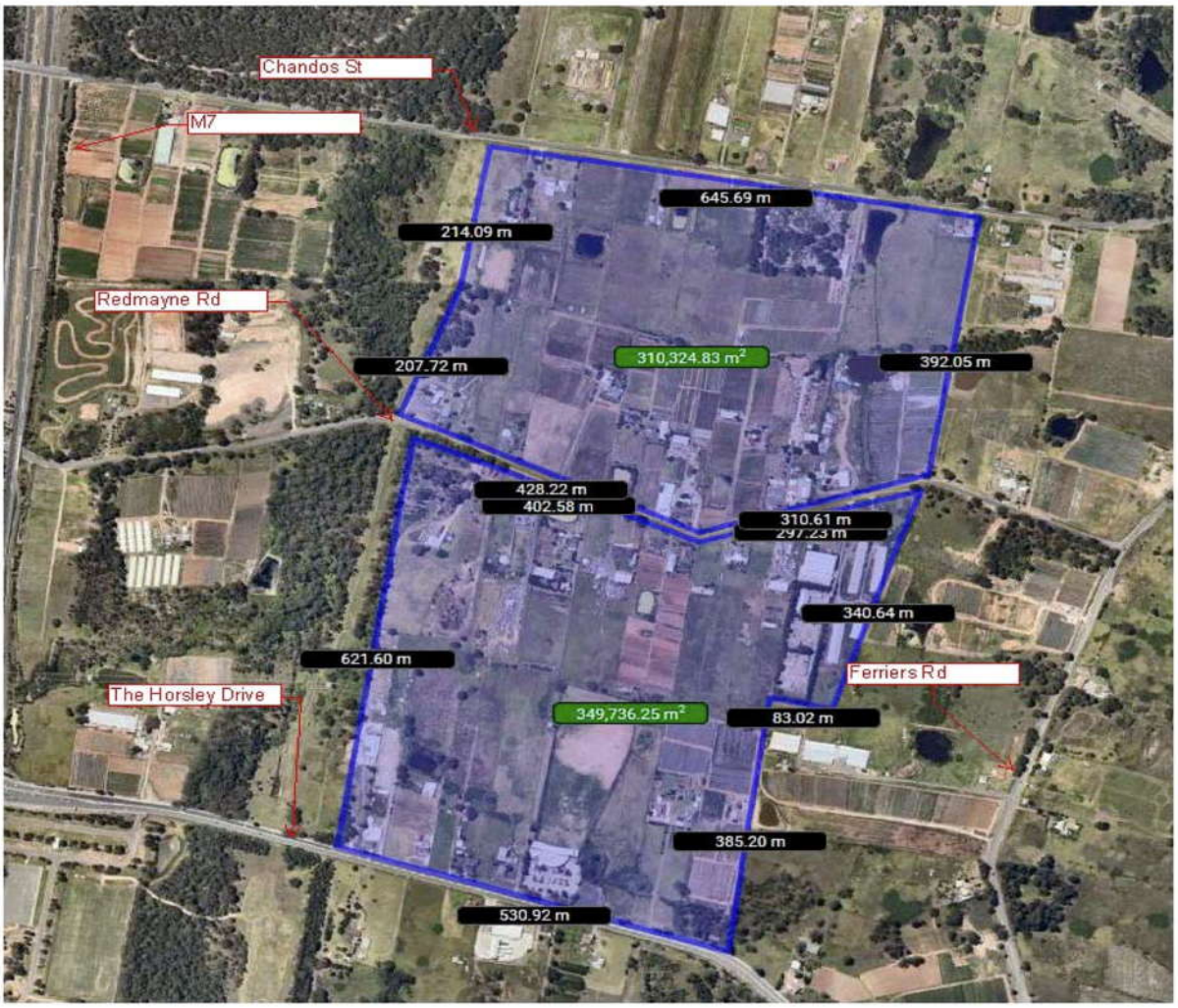


Figure 1:

2. SERVICE PROVISION

I understand Frasers are discussing electrical service provision for this site with Connect Infrastructure, therefore, this assessment makes no comment concerning electrical service issues to the site.

2.1 SYDNEY WATER

The site falls within the Cecil Park potable water system area. Significant trunk water main exist in The Horsley Drive (3 X 375mm and 1 X 250mm – trunk water mains), in Ferrers Road (1 X 450mm trunk main and a 150mm reticulation main). Smaller reticulation mains exist in Redmayne Road (1 X 100mm main) and Chandos Road (1 X 100mm main).

No waste water reticulation systems exist in the area.

2.2 TELECOMMUNICATIONS

Substantial fibre-optic systems exist in The Horsley Drive with further minor fibre-optic cabling in Redmayne Road and Ferrers Road. Copper pair systems exist in Chandos Road.

2.3 GAS

High Pressure trunk gas main exists in easements through the eastern part of the subject site. Development around this main would require consultation with Jemena. A 3500 kPa primary main and a 1050 kPa secondary main is constructed within Chandos Road. Connection to the secondary main by installation of a regulator valve set would provide gas service to the proposed site.

3.0 REQUIRED INFRASTRUCTURE

3.1 POTABLE WATER

The presence of substantial trunk water mains adjacent to or close to the subject site provides an opportunity to provide reticulation systems to serve potential development of the site.

Trunk water mains are a means of transferring water to other Sydney Water assets such as reservoirs and water pumping stations to facilitate service to other areas. A study of each of the trunk water mains would need to be undertaken to determine the current and future supply requirements for the areas that these trunk mains service.

Whilst the presence of trunk water mains may indicate the potential for servicing an area, it may not necessarily mean that there is spare capacity to service development adjacent to a trunk main.

A significant study comprising a substantial modelling of the current system incorporating future demand requirements would need to be undertaken. These modelling processes are expensive and take considerable time to negotiate with Sydney Water and then undertake the required modelling.

The 150mm reticulation main in Ferrers Road is cross-connected to the 450mm trunk water main in Ferrers Road and one of the 375mm trunk water mains in The Horsley Drive. This main MAY have the potential to provide reticulation services to some or all of the subject site but modelling would need to be undertaken to confirm the requisite pressure and flow capacity from this main for industrial development within the subject site.

3.2 WASTE WATER

As stated previously, no waste water systems exist in or near the subject area.

The only viable option would be the provision of a Sewer Pump Station (SPS) and appropriate rising main to a receiving system – probably within the Wetherill Park industrial precinct. The waste water system in this area is the Wetherill Park system.

A 300mm/375mm sewer reticulation system exists at the corner of Victoria Street and Cowpasture Road, Wetherill Park and that system may have the capacity to receive pump flows from an SPS system within the subject area, subject to a modelling study.

3.3 TELECOMMUNICATIONS

Substantial fibre-optic service is available in The Horsley Drive. Fibre-optic cabling exists in Redmayne Road. Connection from Redmayne Road with the installation of further fibre-optic cable run would provide service to the proposed site. A majority of the fibre-optic cables in The Horsley Drive are trunk carriers although some cables would allow connection to a development of the site.

3.4 GAS

Insertion of a regulator valve set in the 1050 kPa secondary main would supply the subject site. Jemena required a known end user with defined demand requirements before they supply gas reticulation to a development. Depending on the quantity of gas to be delivered to the proposed site, cost sharing arrangements would need to be discussed with Jemena.

4. DEMAND ESTIMATES

Demand estimates provide guidance on the potable water use and waste water discharge that would eventuate from future development of the site.

No comment is made on demand estimates for telecommunications or gas facilities.

4.1 POTABLE WATER

As noted previously, the subject site is approximately 66 ha in size. No information is available to determine if the area is affected by any known flood impacts or loss of developable area due to future flood studies. Therefore, the whole 66 ha less 15% for roads, is considered to be the net development area, i.e., 66 ha – 15% = 56 ha.

A Gross Floor Area (GFA) yield of 60% is assumed from the net developable area, i.e., 56 ha X 0.6 = 34 ha approx.

A further assumption of 10%/90% split of the GFA for office/warehouse yields the following areas:

Office area = 35,000 m^2 approx.
Warehouse area = 305,000 m^2 approx.

The Sydney Water publication "Average Daily Water use by Property Type" provides information to determine potential demand from the site.

DEVELOPMENT TYPE	AVE. DAY DEMAND (l/m²/day)	AREA	DEMAND kl/day
OFFICE	2.27	35,000	79 kl/day
WAREHOUSE	2.82	305,000	860 kl/day
		TOTAL:	**939 kl/day**

Max Day Demand would, therefore, equate to 1,690 kl/day which provides a peak demand estimate for the development.

4.2 WASTE WATER

The Sewage Code of Australia (Sydney Water edition) provide guidance in calculating waste water demand estimates. Utilising the figures in that publication would provide a demand estimate of:

AREA (Net developable area)	Estimated EP/ net developable area	Usage L/EP	DEMAND
56 ha	140	180	1,410 kl/day (16 l/s)

However, these figures are based on "traditional" industrial uses. The density of development, based on technologies utilised in warehouse/logistics facilities, indicates that the EP value is significantly lower than outlined in the Sewerage Code of Australia.

A more practical approach is to utilise a demand based on 90% of the potable water use of the site for waste water discharge calculation. This would result in a discharge of 1,270 kl/day (14 l/s).

Even this figure is an over-estimate based on stormwater harvesting/water re-use that occurs in these types of developments.

5. DELIVERY INFRASTRUCTURE

5.1 POTABLE WATER

Should modelling of the relevant trunk water mains prove that capacity exists within those systems, then the potential to connect to the trunk mains in The Horsley Drive, connection to the 450mm trunk main in Ferrers Road or amplification of the 150mm reticulation main in Ferrers Road to a 200mm-250mm main exists – this later option can be achieved via an under-pressure cutin to the 450mm trunk main without disrupting supply along that 450mm main.

Reticulation mains can then be provided for development within the subject site.

5.2 WASTE WATER

A sewer pump station (SPS) and rising main needs to be constructed to serve the subject site.

A large SPS facility, with significant capacity for storage, emergency overflow storage, dual pumps, chemical dosing to ensure water quality at the receiving manhole (if capacity exists) and a 1.5 km rising main (possibly through privately or government-owned land) would need to be provided. Given the topography and conflicts with existing assets along the rising main route, an allowance of greater than $2 million should be made.

Modelling of the receiving system would need to be carried out to see if pump flows of 14 l/s can be accommodated at the receiving manhole and downstream system however given the size of the receiving waste water system that level of pump flow should be capable of being accommodated in the system. If not then further costs may be incurred if upgrades/amplifications of existing assets are required however the likelihood of this occurring is low.

6. CONCLUSION

Development of the subject site will require significant studies to be undertaken of adjacent water assets and capacity of the Wetherill Park waste water system. These studies take considerable time to organise with Sydney Water. Sydney Water is the owner and custodian of the potable water and waste water models of their system areas. They require significant internal stakeholder engagement to outline an initial scoping strategy before consent is given to allow consultants to undertake a modelling program to Sydney Water requirements.

As a number of the adjacent trunk water supply mains supply significant system areas which are undergoing substantial growth, the ability to connect to some of these trunk water mains remains problematic.

Other services (telecommunications and gas) can be made available to the site.

Gregory K Oxley
Registered Land Surveyor/Project Director

A0

PROSPECT RESE

PR

FERRIERS

MYVY

M7

CHANDOS

RD

REDMAYNE

RD

RD

RD

THE HORSLEY

DR

THE HORSLEY

DR

SKITTONS TUNNEL

FERRIERS

DBYD Address:
n/a Redmayne Road
Horsley Park NSW 2175

DBYD Job No: 10483832

DBYD Sequence No: 51827806

SYDNEY WATER CORPORATION

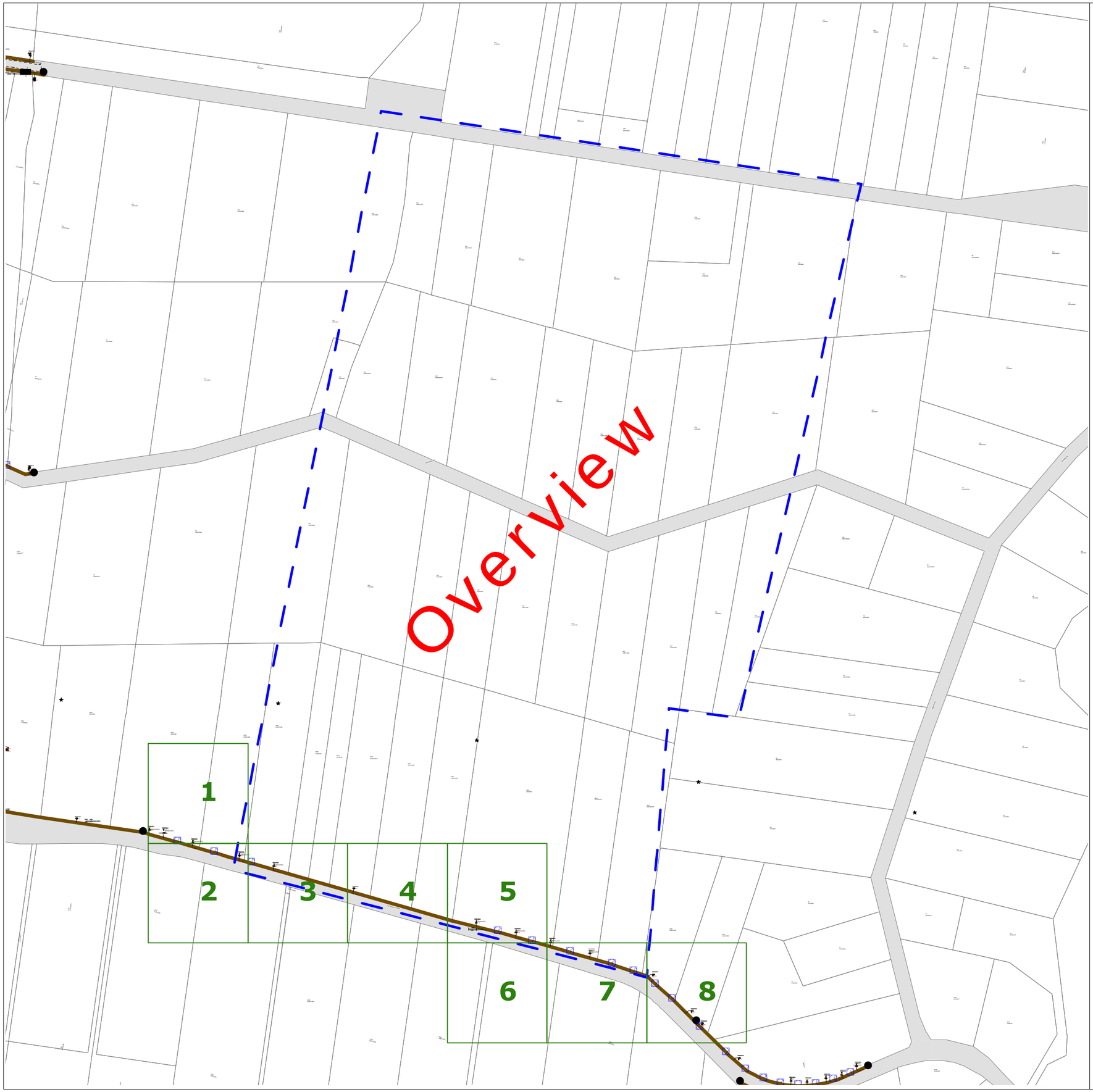
Scale: 1:2000

Date of Production: 30/03/2016

Plan 1 of 1

N

0m 30m 60m 90m 120m 150m



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WARNING

- **All electrical apparatus shall be regarded as live until proved de-energised.** Contact with live electrical apparatus will cause severe injury or death.
- In accordance with the *Electricity Supply Act 1995*, you are obliged to report any damage to Endeavour Energy Assets immediately by calling **131 003**.
- The customer must obtain a new set of plans from Endeavour Energy if work has not been started or completed within twenty **(20)** working days of the original plan issue date.
- The customer must contact Endeavour Energy if any of the plans provided have blank pages, as some underground asset information may be incomplete.
- Endeavour Energy underground earth grids may exist and their location **may not** be shown on plans. Persons excavating are expected to exercise all due care, especially in the vicinity of padmount substations, pole mounted substations, pole mounted switches, transmission poles and towers.
- Endeavour Energy plans **do not** show any underground customer service mains or information relating to service mains within private property.
- Asbestos or asbestos-containing material may be present on or near Endeavour Energy's underground assets.
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- Such plans have been prepared solely for use by Endeavour Energy staff for design, construction and maintenance purposes.
- All enquiry details and results are kept in a register.

DISCLAIMER

Whilst Endeavour Energy has taken all reasonable steps to ensure that the information contained in the plans is as accurate as possible it will accept no liability for inaccuracies in the information shown on such plans.

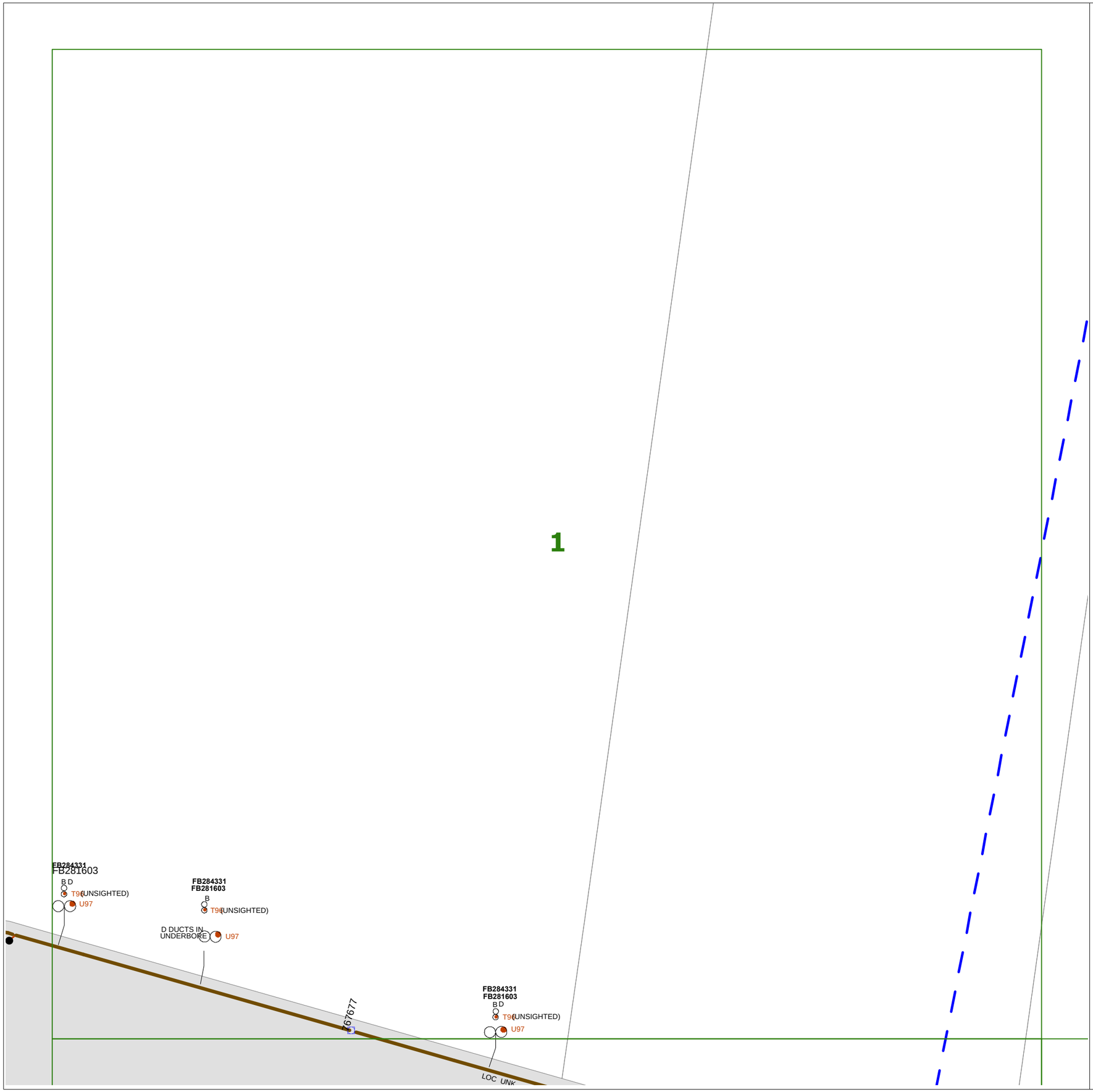
LEGEND

- Street light column (or)
- Padmount substation
- Overground pillar (O.G.Box) (or)
- Underground pit
- Duct run
- Cable run
- Typical duct section
- Asbestos warning

N

NOT TO SCALE

DBYD Sequence No.:	51827801
Issued Date:	30/03/2016



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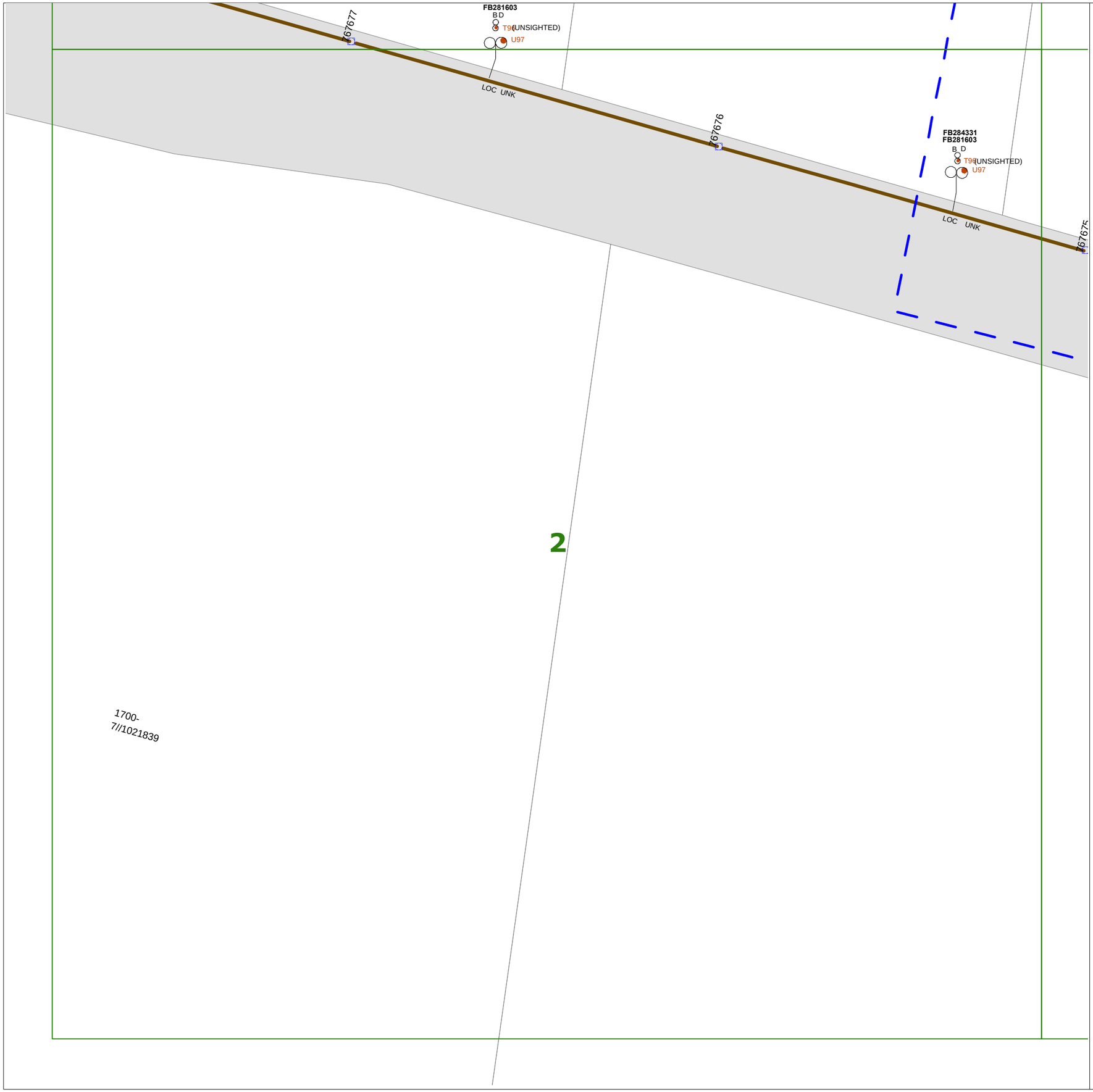

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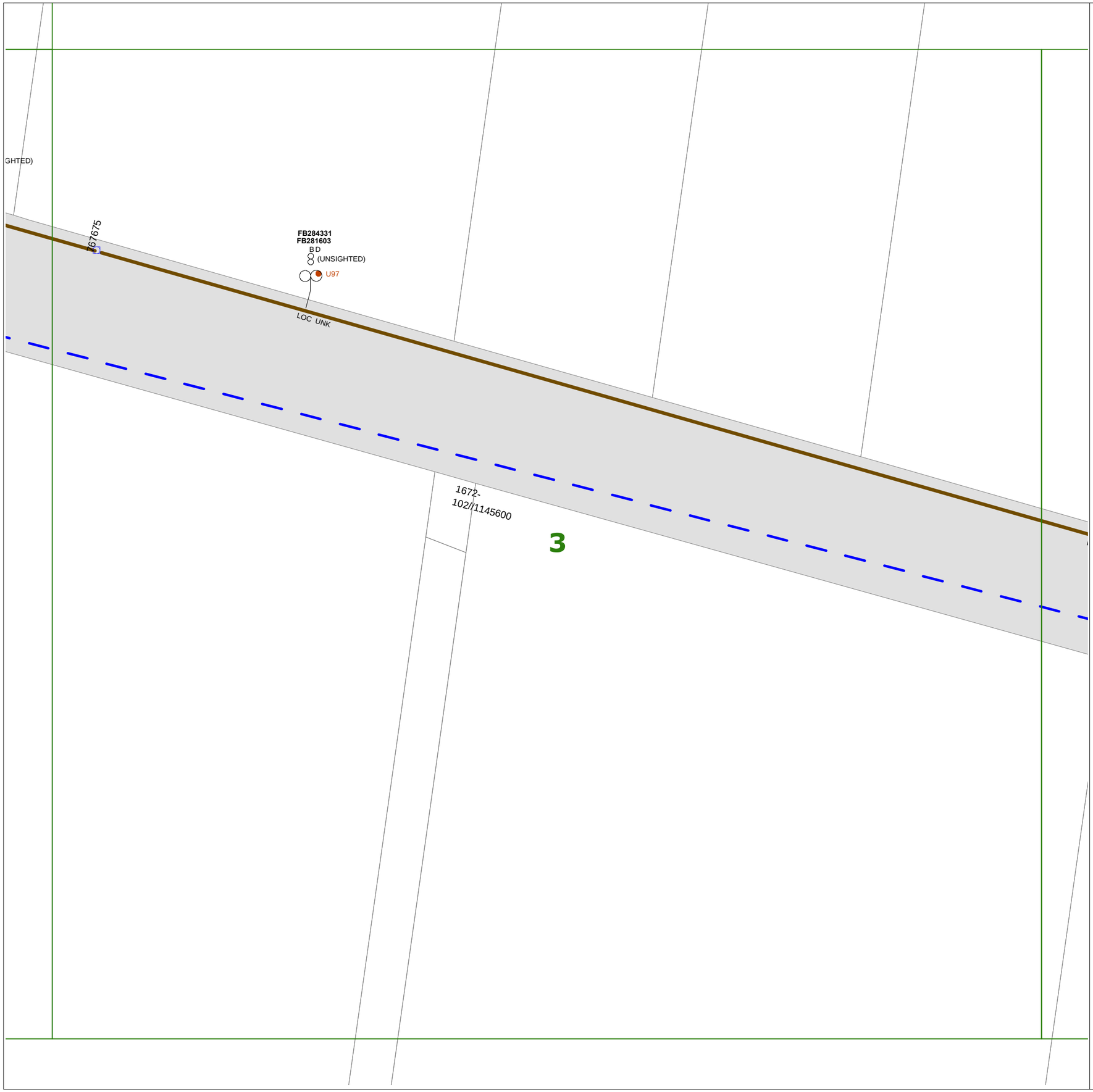

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- The customer must contact Endeavour Energy if any of the plans provided have blank pages, as some underground asset information may be incomplete.
- Endeavour Energy underground earth grids may exist and their location **may not** be shown on plans. Persons excavating are expected to exercise all due care, especially in the vicinity of padmount substations, pole mounted substations, pole mounted switches, transmission poles and towers.
- Endeavour Energy plans **do not** show any underground customer service mains or information relating to service mains within private property.
- Asbestos or asbestos-containing material may be present on or near Endeavour Energy's underground assets.
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LEGEND

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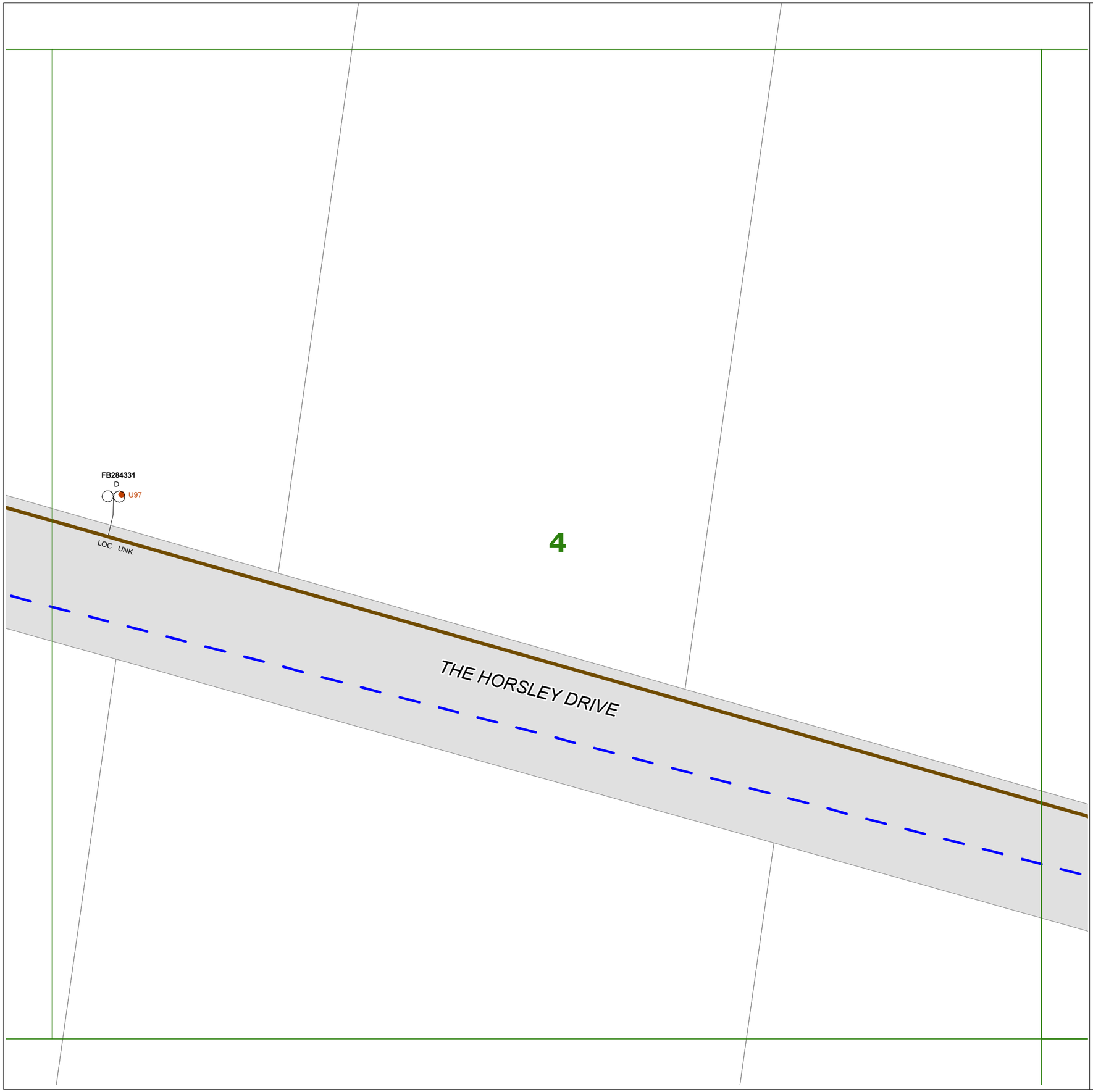
- Padmount substation
- Overground pillar (O.G.Box) (or)
- Underground pit
- Duct run
- Cable run
- Typical duct section
- Asbestos warning

N

NOT TO SCALE

DBYD Sequence No.:	51827801
Issued Date:	30/03/2016



Endeavour Energy

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N

NOT TO SCALE

DBYD Sequence No.:	51827801
Issued Date:	30/03/2016

5

FB284331
FB281603
BD
(UNSIGHTED)
U97

FOR SURVEY DETAILS
OF DUCT INSTALLATION
REFER FB284331 SHT9 & 10

767674

FB284331
FB281603
BD
T96
(UNSIGHTED)
U97

LOC UNK

767673

FB284:
FB28
BD
T
(

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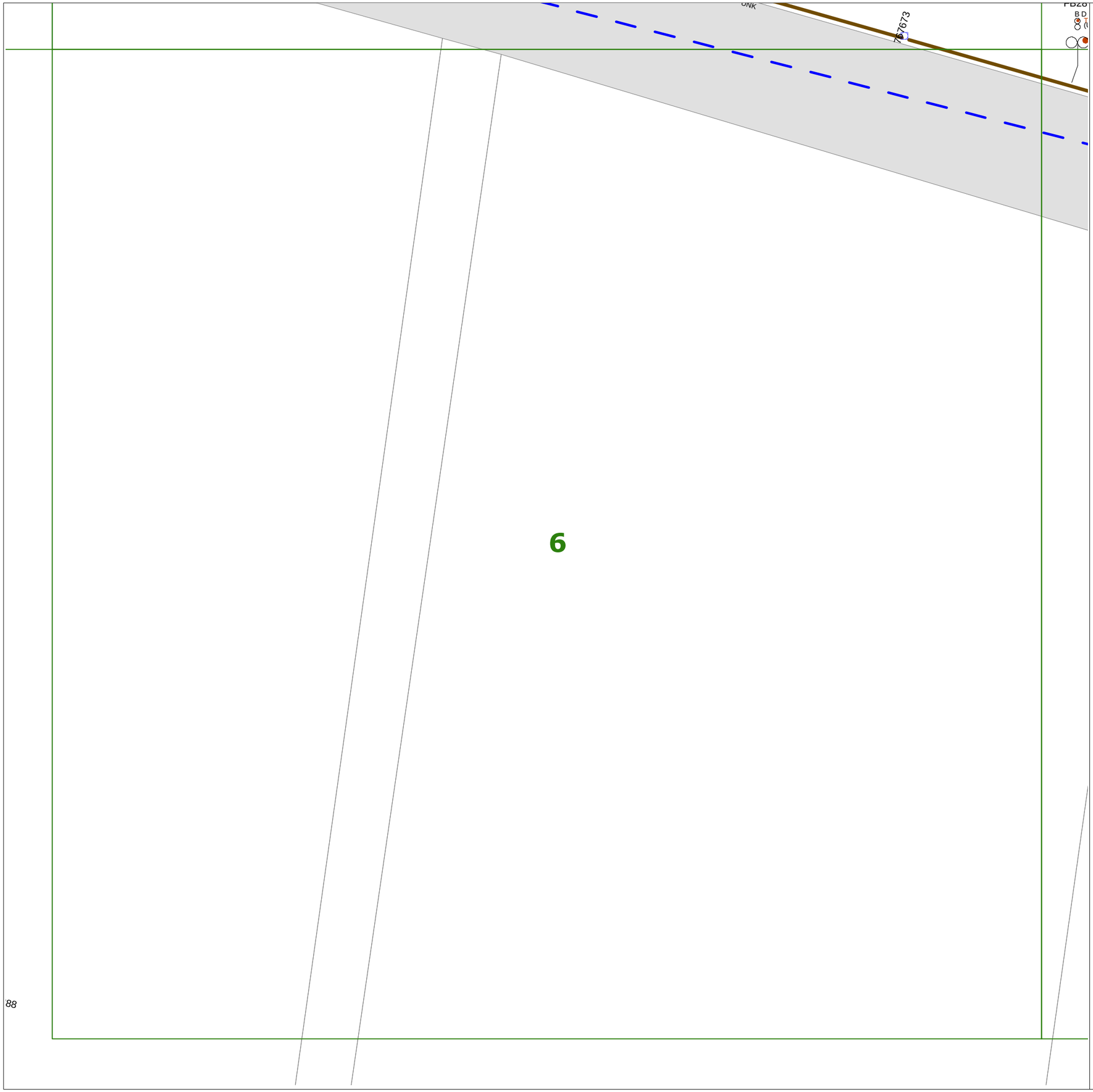

88

Endeavour Energy

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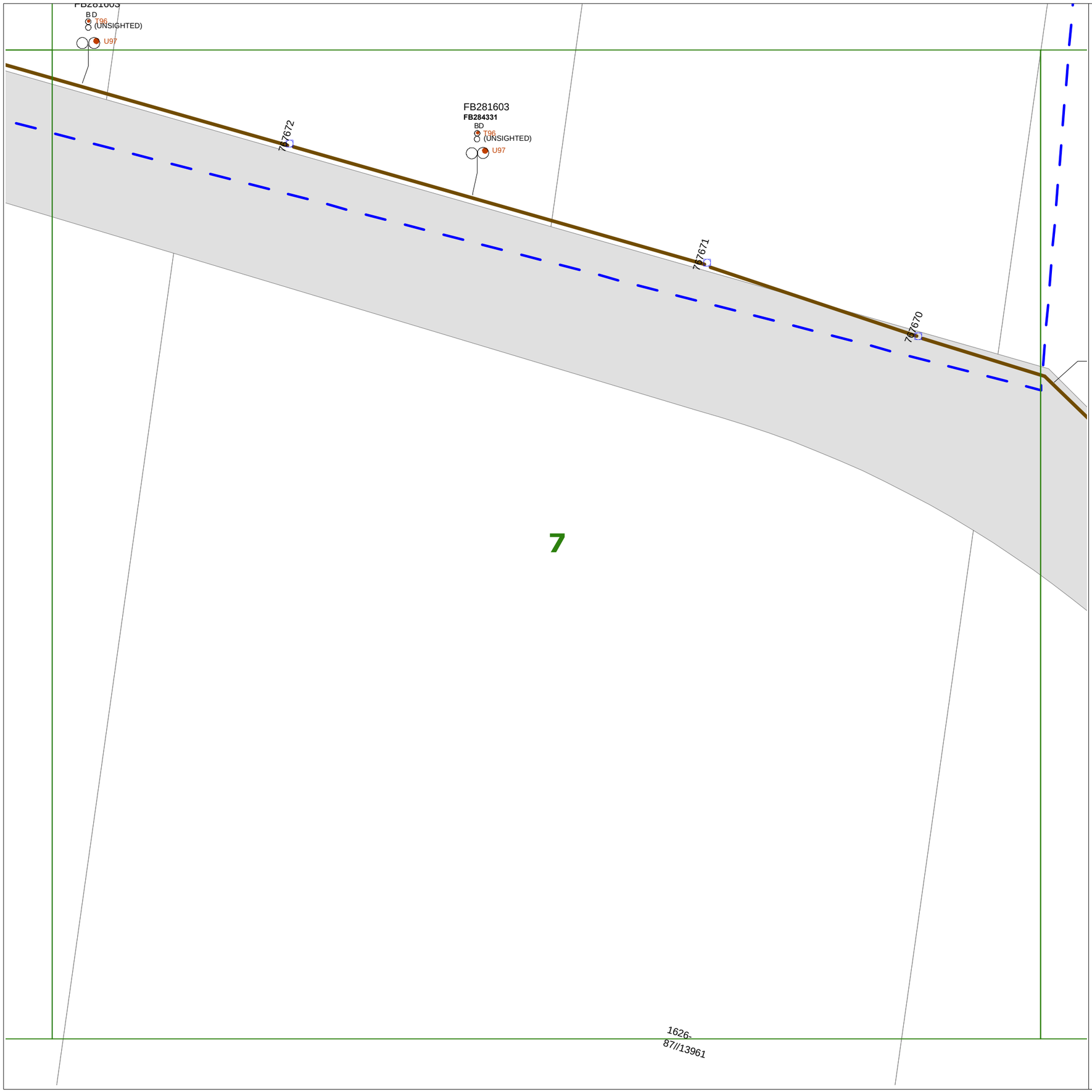

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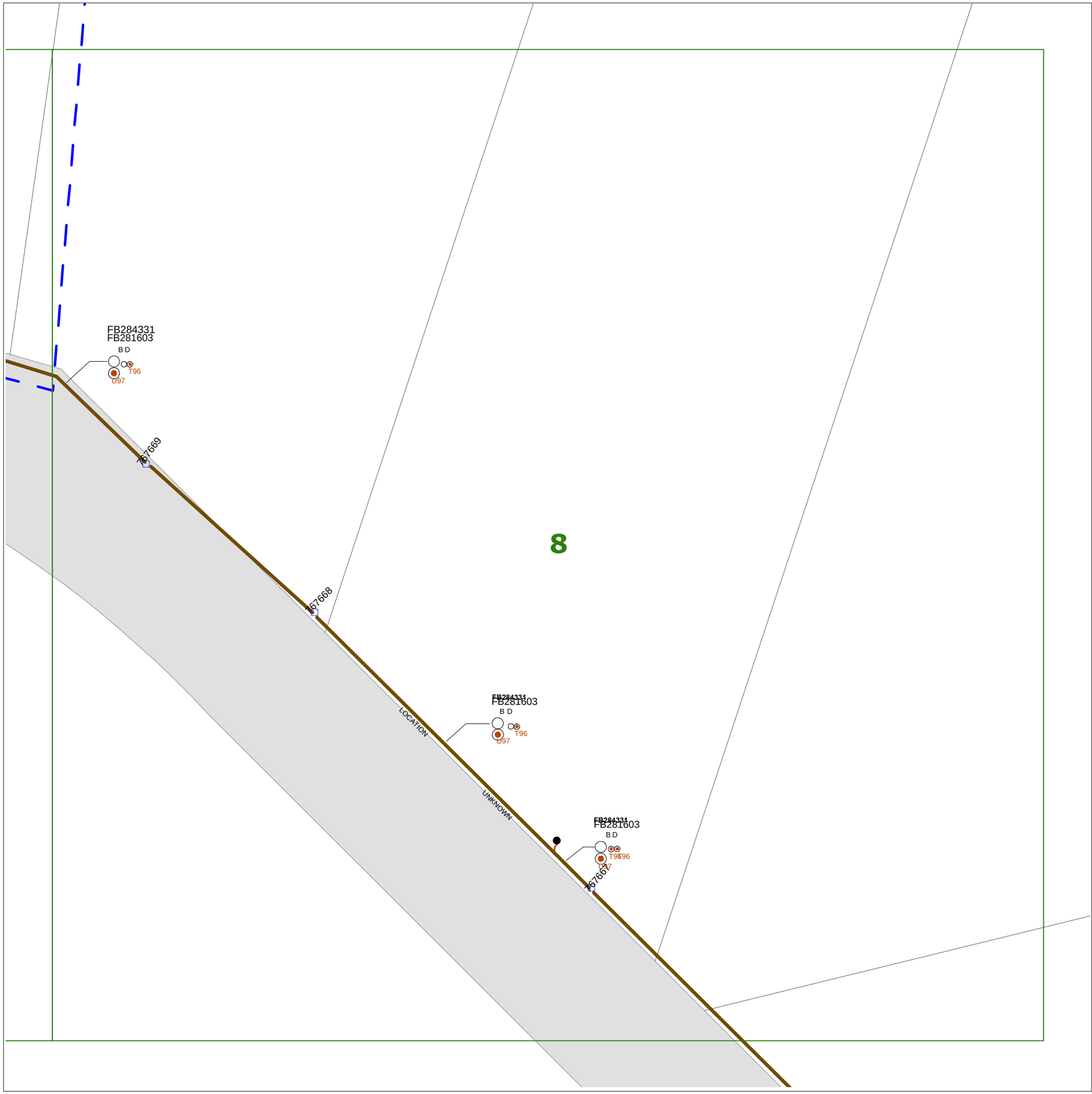

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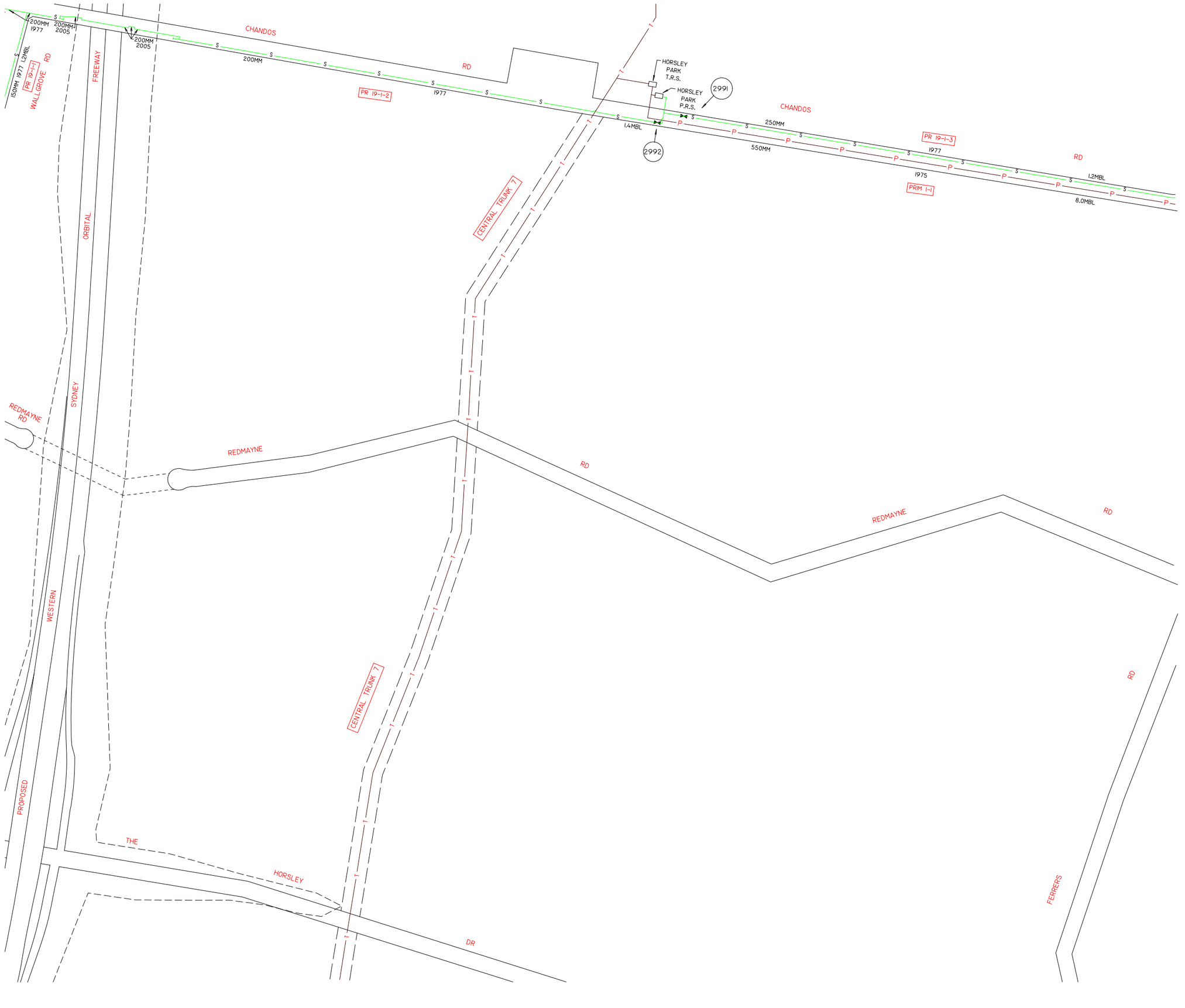


HORSLEY PARK 8B

SCALE 1:2000

50 0 50 100 150 200

THIS MAP UPDATED ON 11/01/05
THIS PLAN IS DIAGRAMATIC ONLY. DISTANCES SCALED FROM THIS PLAN MAY NOT BE ACCURATE.

HP5C	HP5D	HP6C
HP8A	HP8B	HP9A
HP8C	HP8D	HP9C

ADJOINING MAPS

	FAIRFIELD

NETWORK AREA | MUNICIPALITY AREA

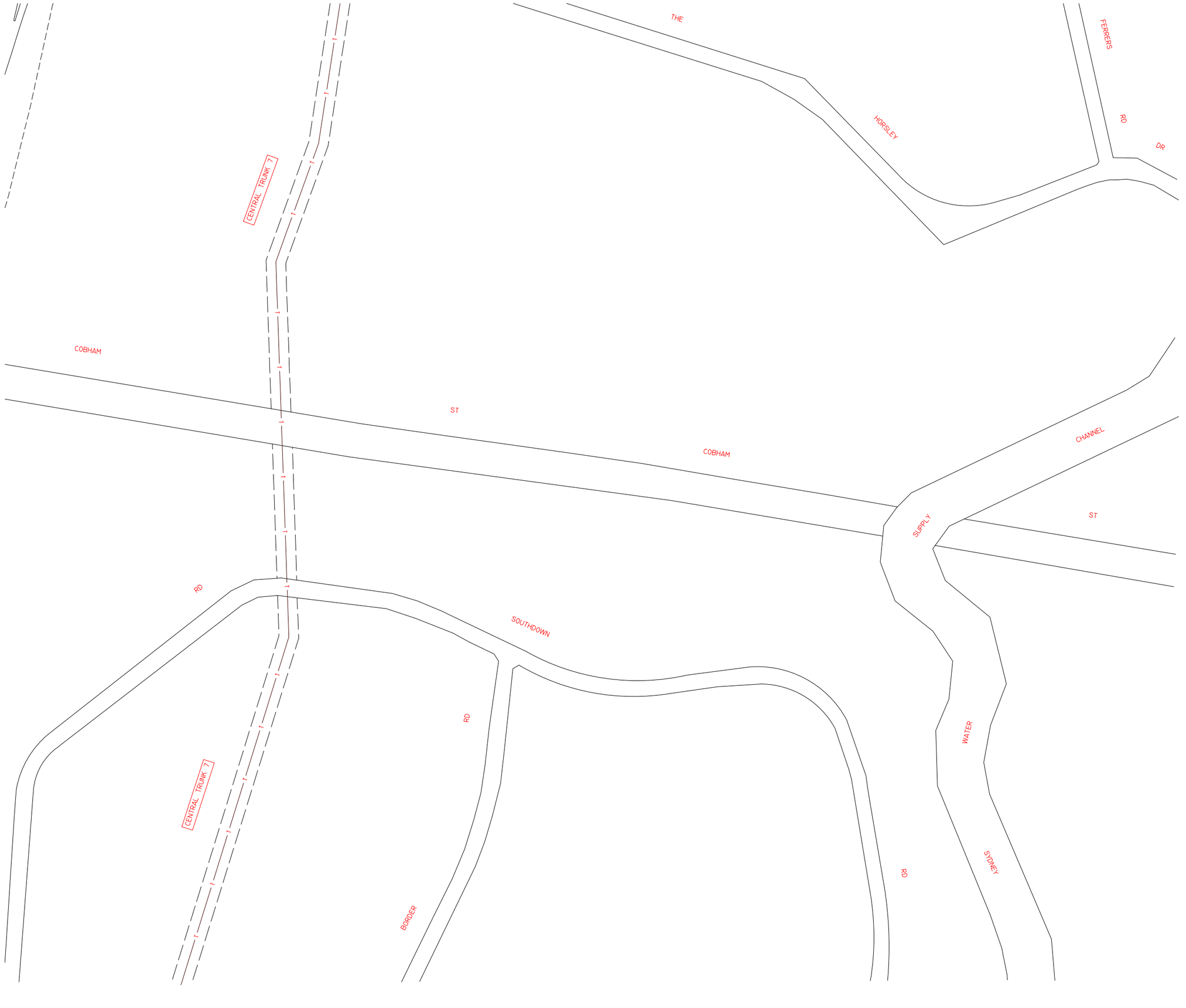
Jemena

KEY

		MAX ALLOWABLE OPERATING PRESSURE
T	TRUNK PIPELINE	7000 kPa
P	PRIMARY MAIN	3500 kPa
S	SECONDARY MAIN	1050 kPa
400	NETWORK MAIN	400 kPa
	NETWORK MAIN	300 kPa
	NETWORK MAIN	210 kPa
100	NETWORK MAIN	100 kPa
30	NETWORK MAIN	30 kPa
	NETWORK MAIN	7 kPa
	NETWORK MAIN	2 kPa
	PROPOSED MAINS	

PR 11-2 3	STEEL MAIN PROJECT NUMBER
P	PRESSURE MONITORING STATION
	VALVE
	SYSTEM PRESSURE REGULATOR
S	SIPHON
123	NETWORK NODE
123S	NETWORK VALVE NODE
298	VALVE NUMBER
6NB	6 INCH CAST IRON MAIN
150MM	150MM STEEL MAIN
110MM PE/NY	110MM POLYETHYLENE/NYLON MAIN
6NB 50MM NY	50MM NYLON INSERTED INTO 6NB MAIN CAST IRON MAIN
1.2MBL	DISTANCE IN METRES OF MAIN FROM BOUNDARY LINE
1957	YEAR LAID
	MUNICIPALITY BOUNDARY
	NETWORK BOUNDARY
123	HOUSE NUMBER

HORSLEY PARK 8B



HORSLEY PARK 8D

SCALE 1:2000

50 0 50 100 150 200

THIS MAP UPDATED ON 01/08/05
THIS PLAN IS DIAGRAMATIC ONLY. DISTANCES SCALED FROM THIS PLAN MAY NOT BE ACCURATE.

HP8A	HP8B	HP9A
HP8C	HP8D	HP9C
CP2A	CP2B	CP3A

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NETWORK AREA | MUNICIPALITY AREA

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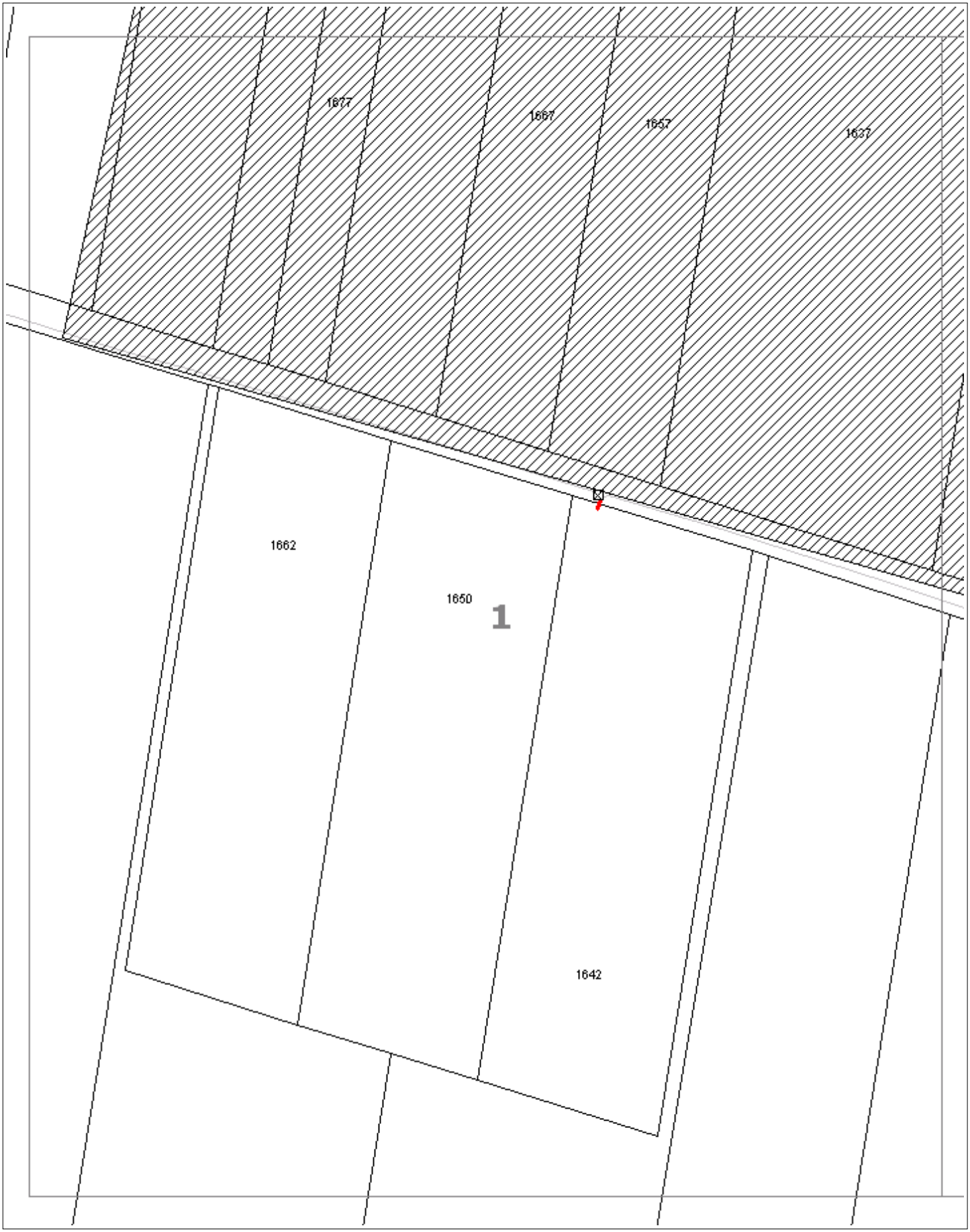
1.2MBL	DISTANCE IN METRES OF MAIN FROM BOUNDARY LINE
1957	YEAR LAID
	MUNICIPALITY BOUNDARY
	NETWORK BOUNDARY
123	HOUSE NUMBER

HORSLEY PARK 8D

Sequence Number: 51827803

Date Generated: 30/03/2016

For all Optus DBYD plan enquiries –
Email: Fibre.Locations@optus.net.au
For urgent onsite assistance contact 1800 505 777
Optus Limited ACN 052 833 208



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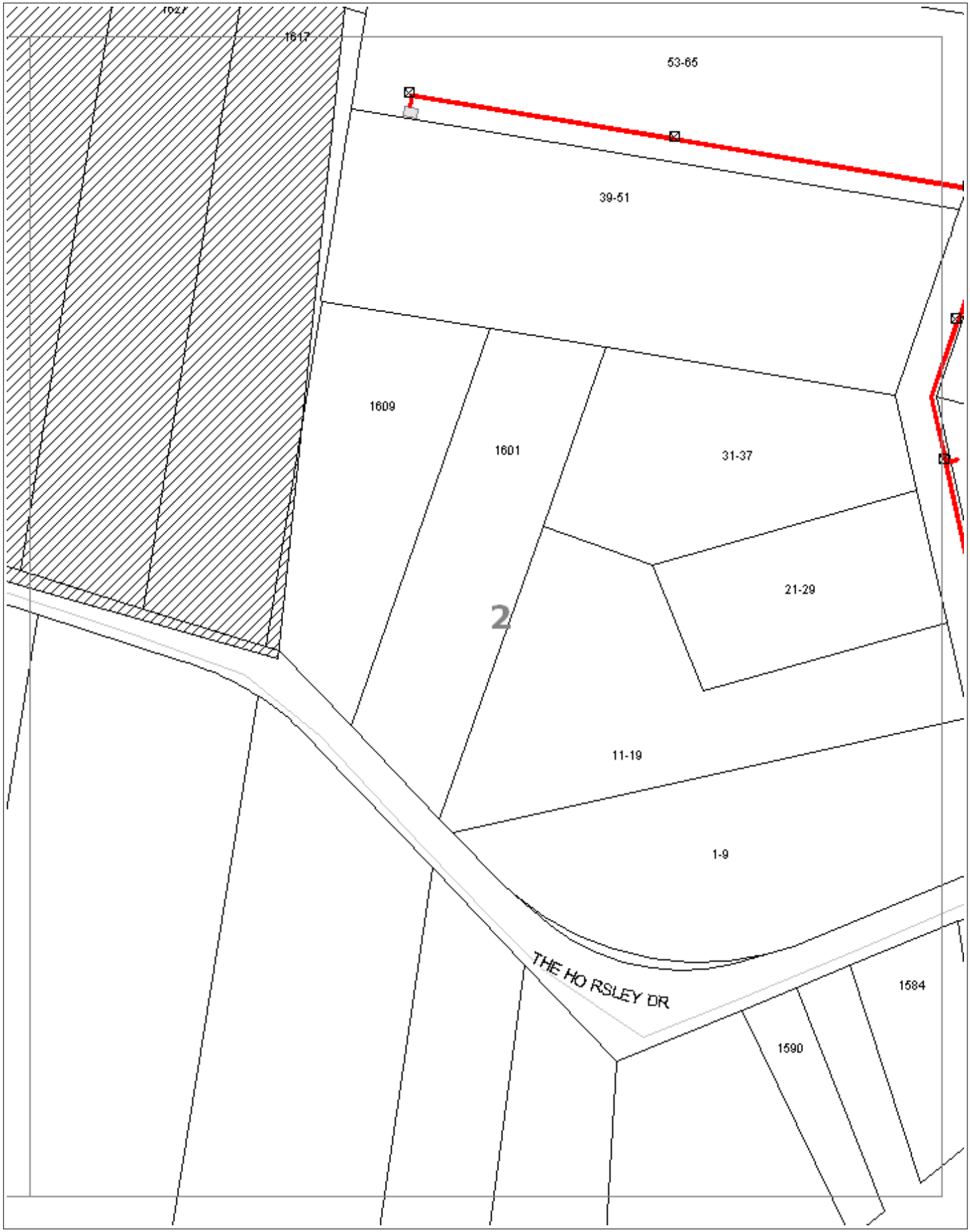

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AARNet

Sequence Number: 51827807

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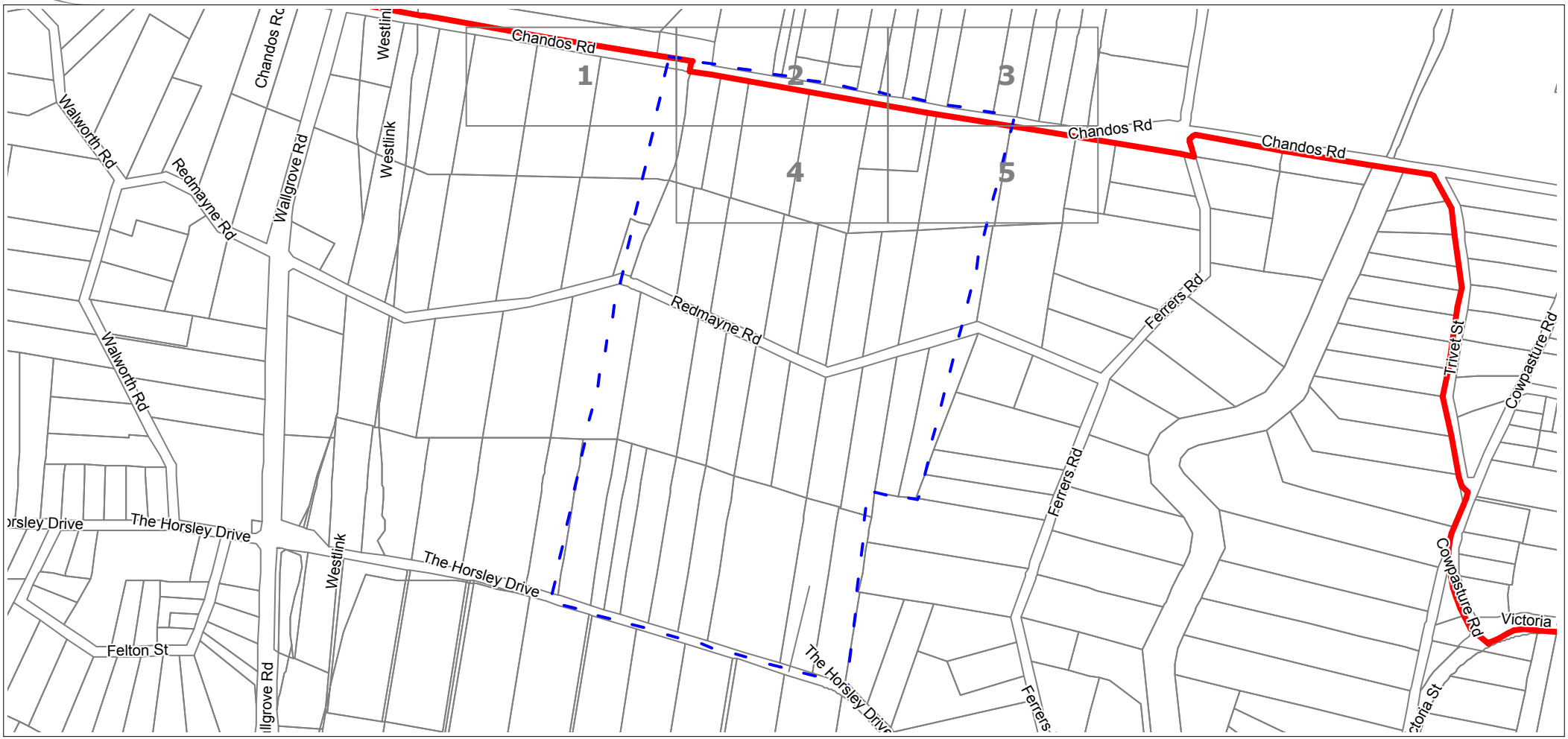

Create Date: 30/03/2016

Scale 1:1500

N

Enquiry Area

AARNet Assets

Cadastre

AARNet

Sequence Number: 51827807

Address:Redmayne Road, Horsley Park, NSW, 2175

Create Date: 30/03/2016

Scale 1:1500

N

Enquiry Area

AARNet Assets

Cadastre

AARNet

Sequence Number: 51827807

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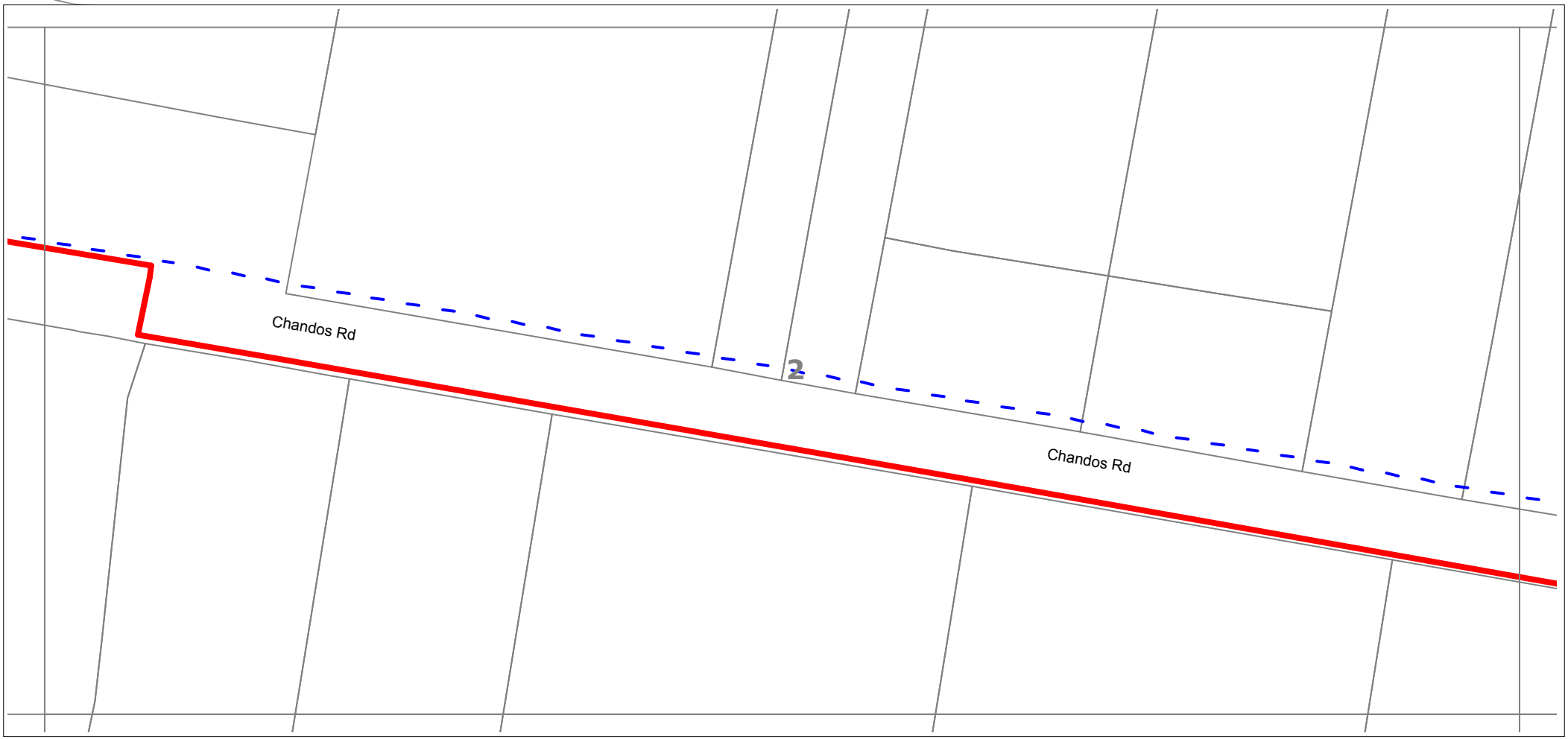

Create Date: 30/03/2016

Scale 1:1500

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Enquiry Area

AARNet Assets

Cadastre

AARNet

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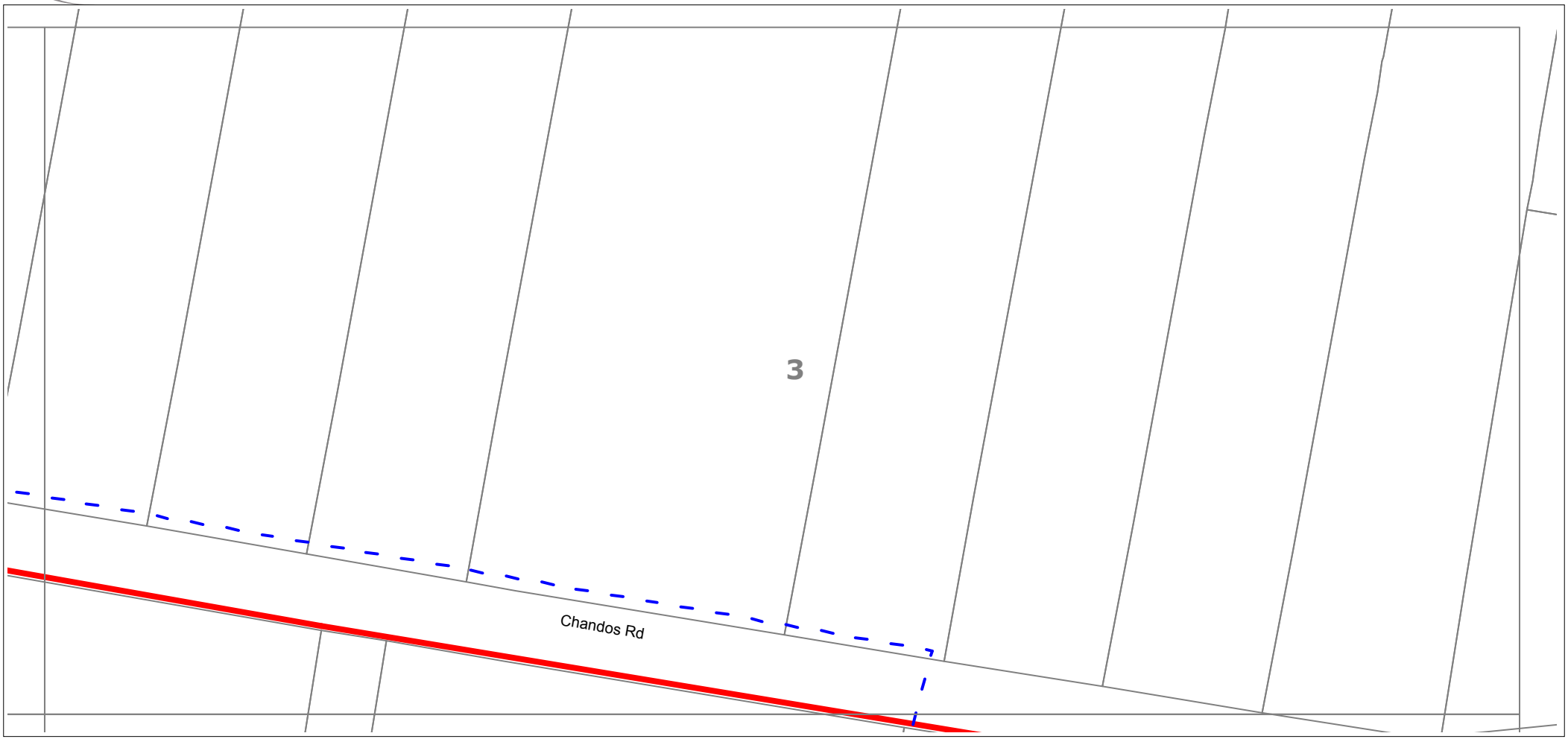

Create Date: 30/03/2016 **Scale** 1:1500

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AARNet Assets

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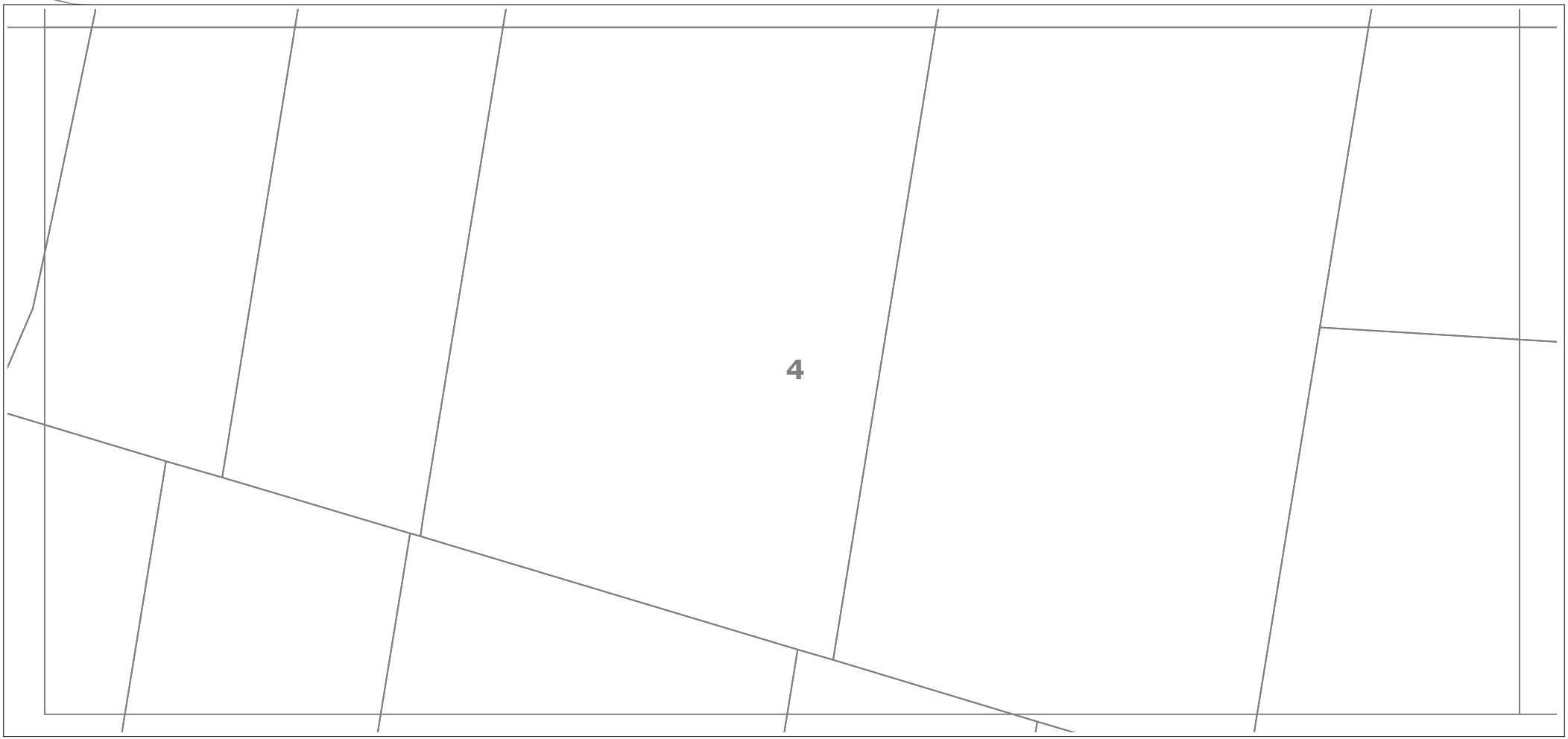

Create Date: 30/03/2016 **Scale** 1:1500

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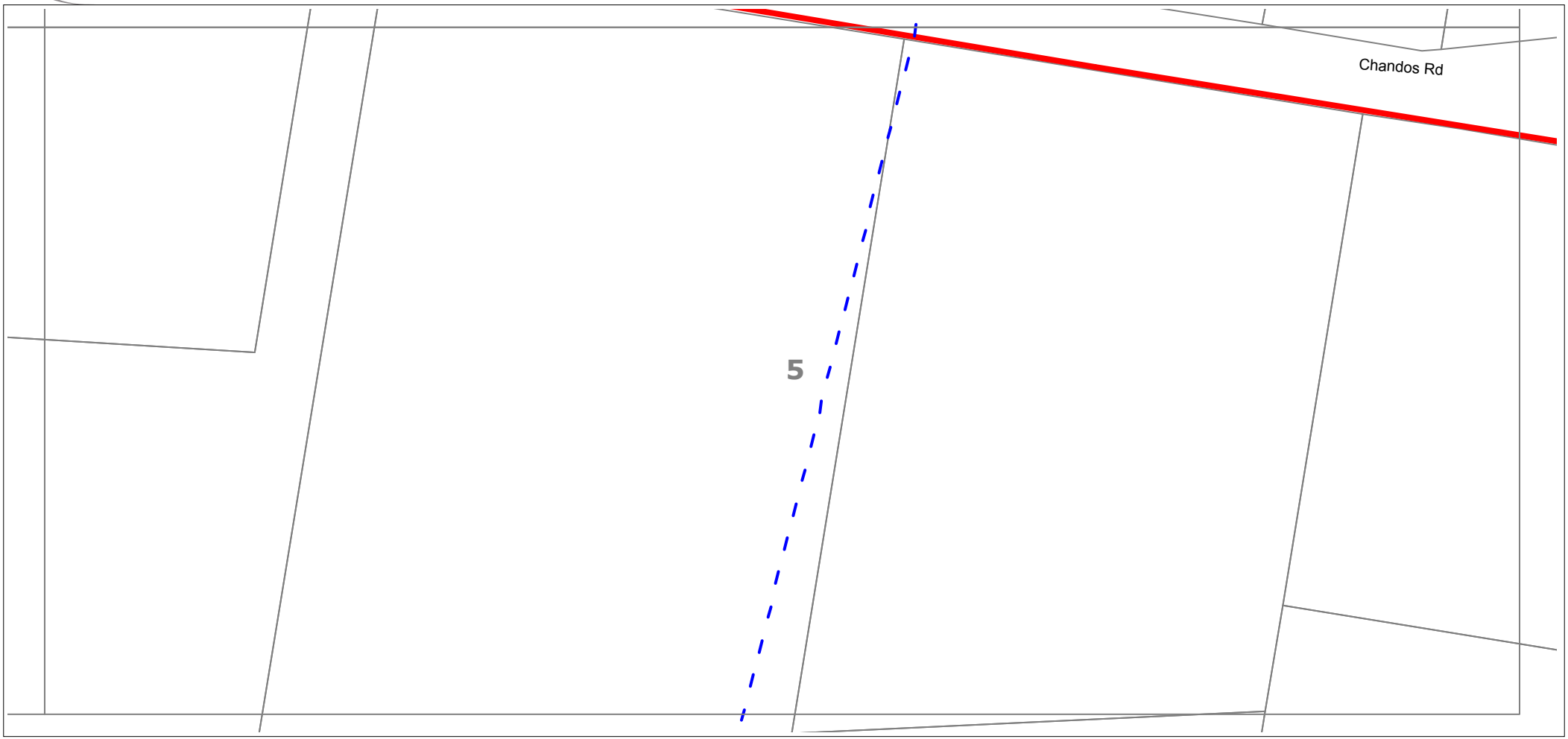

Create Date: 30/03/2016 **Scale** 1:1500

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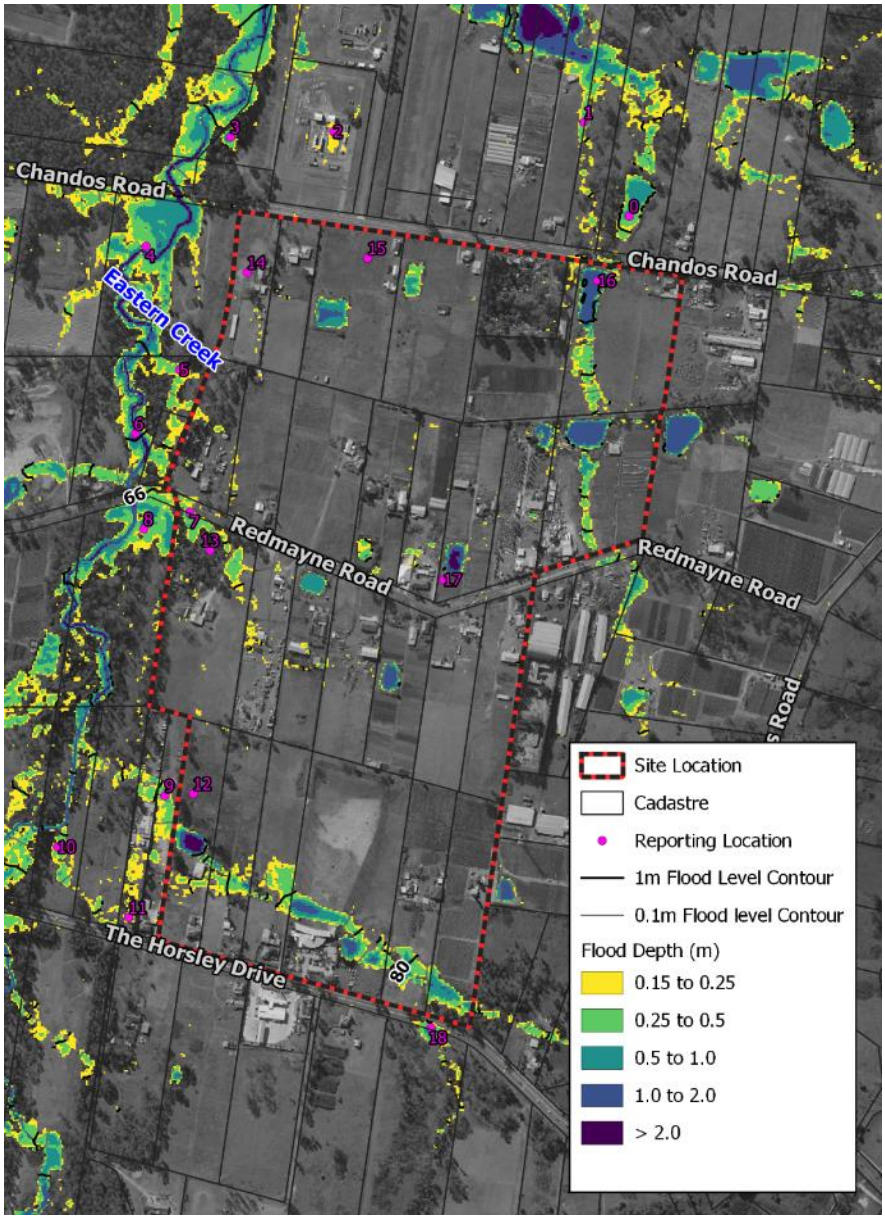
Enquiry Area

AARNet Assets

Cadastre

Appendix E
Flood Information
Catchment Simulation Solutions

Existing Flood Output



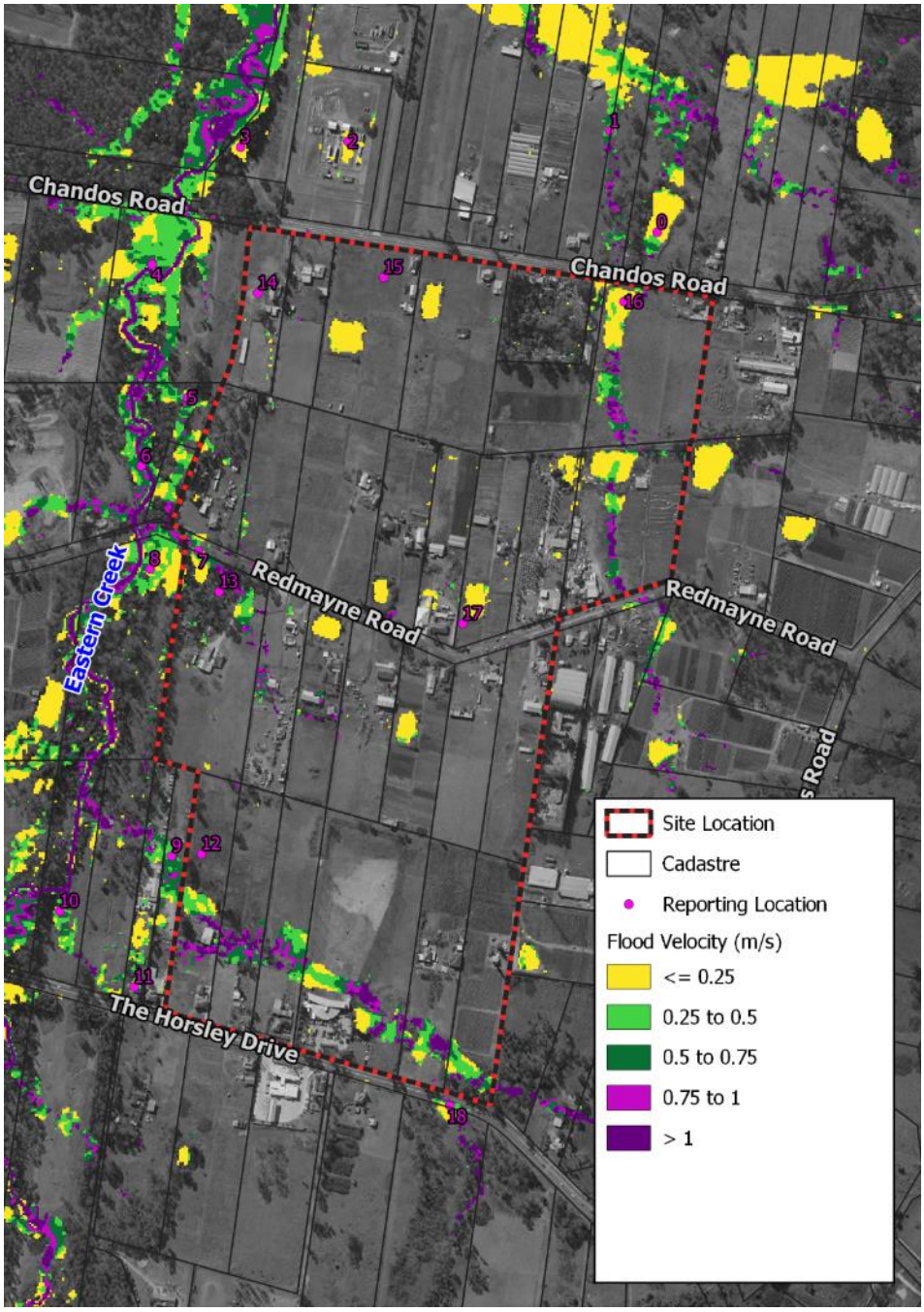


Figure E2- 5% AEP Flood Velocity (Existing)

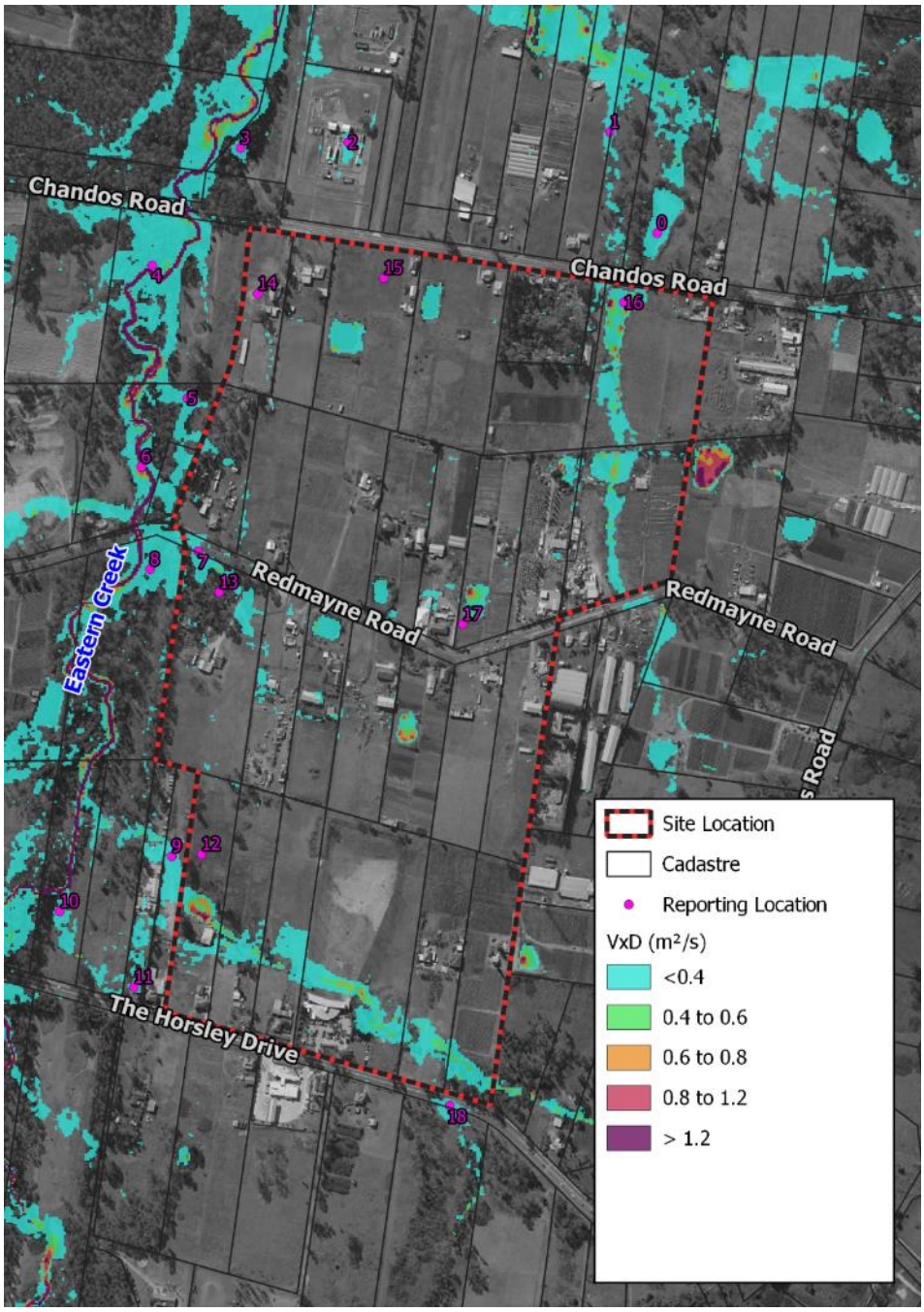


Figure E3- 5% AEP Velocity Depth (Existing)

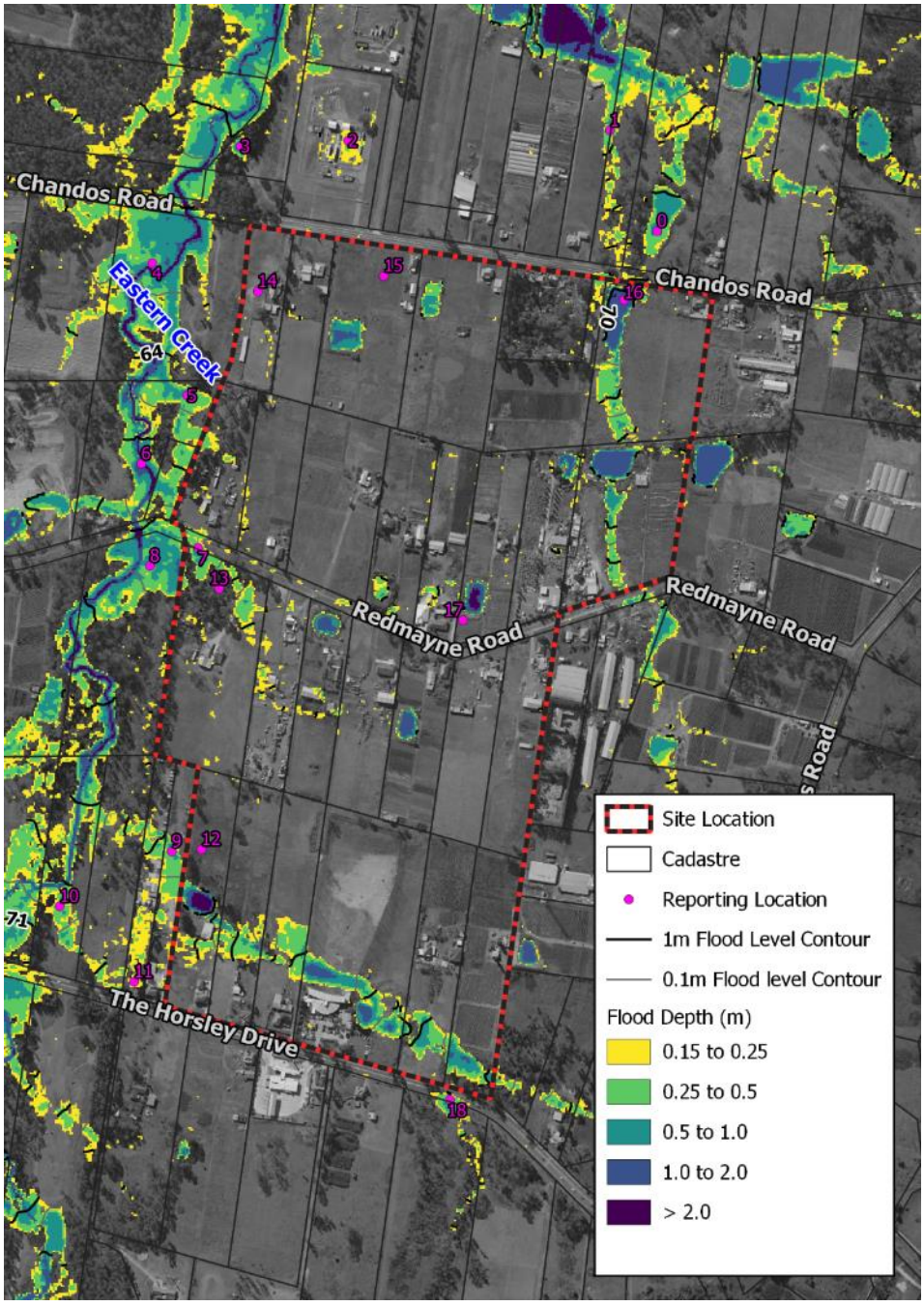
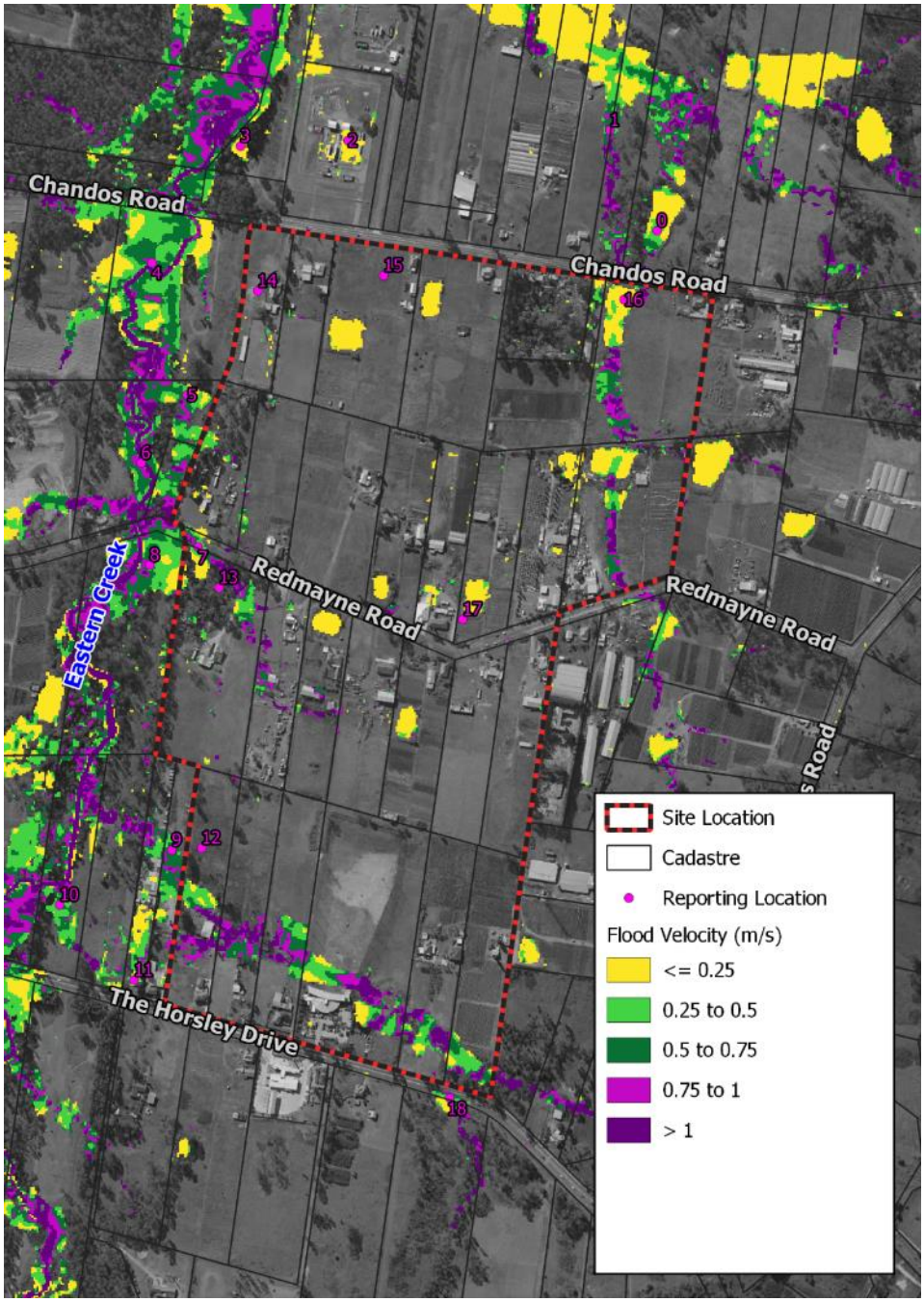
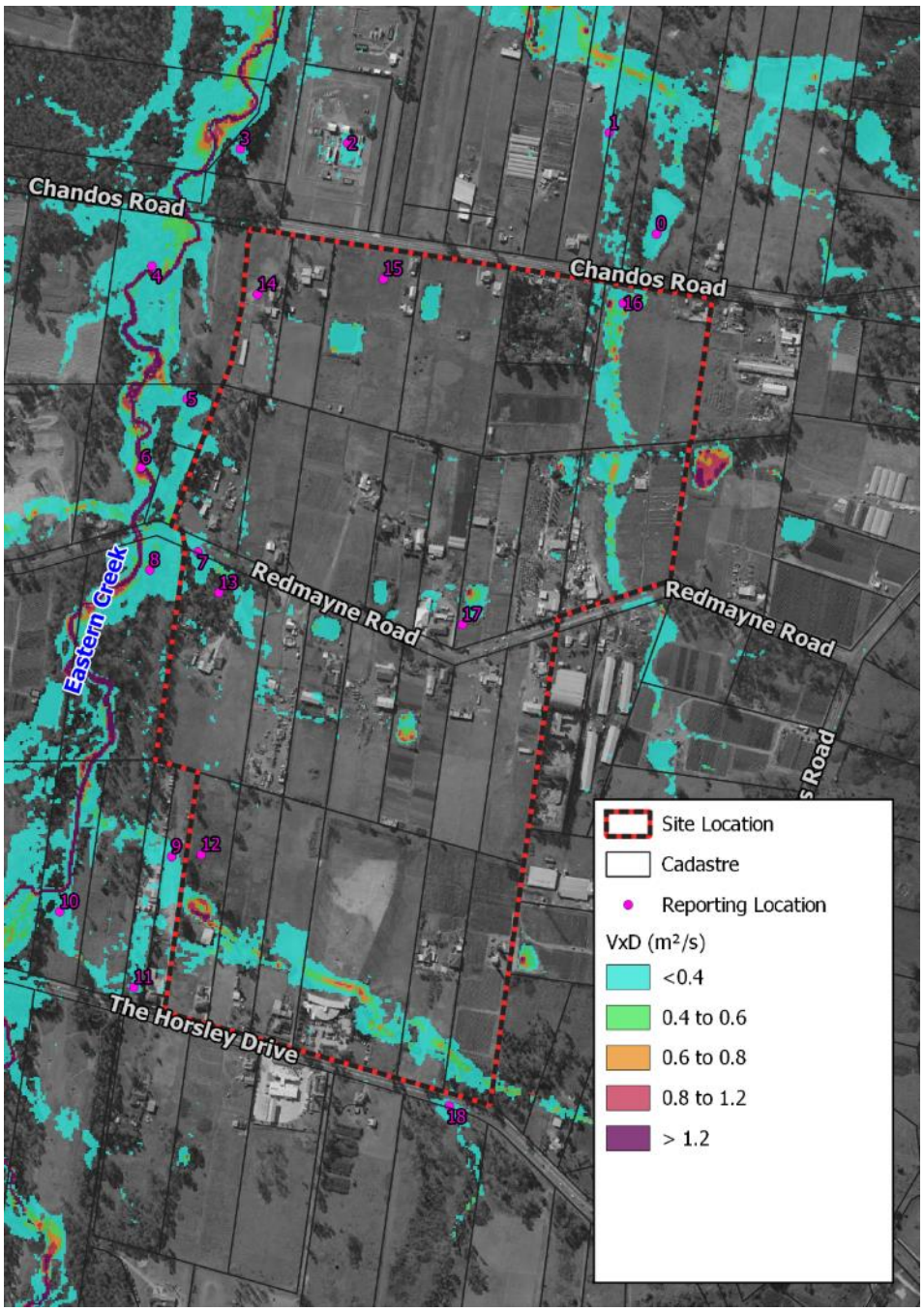
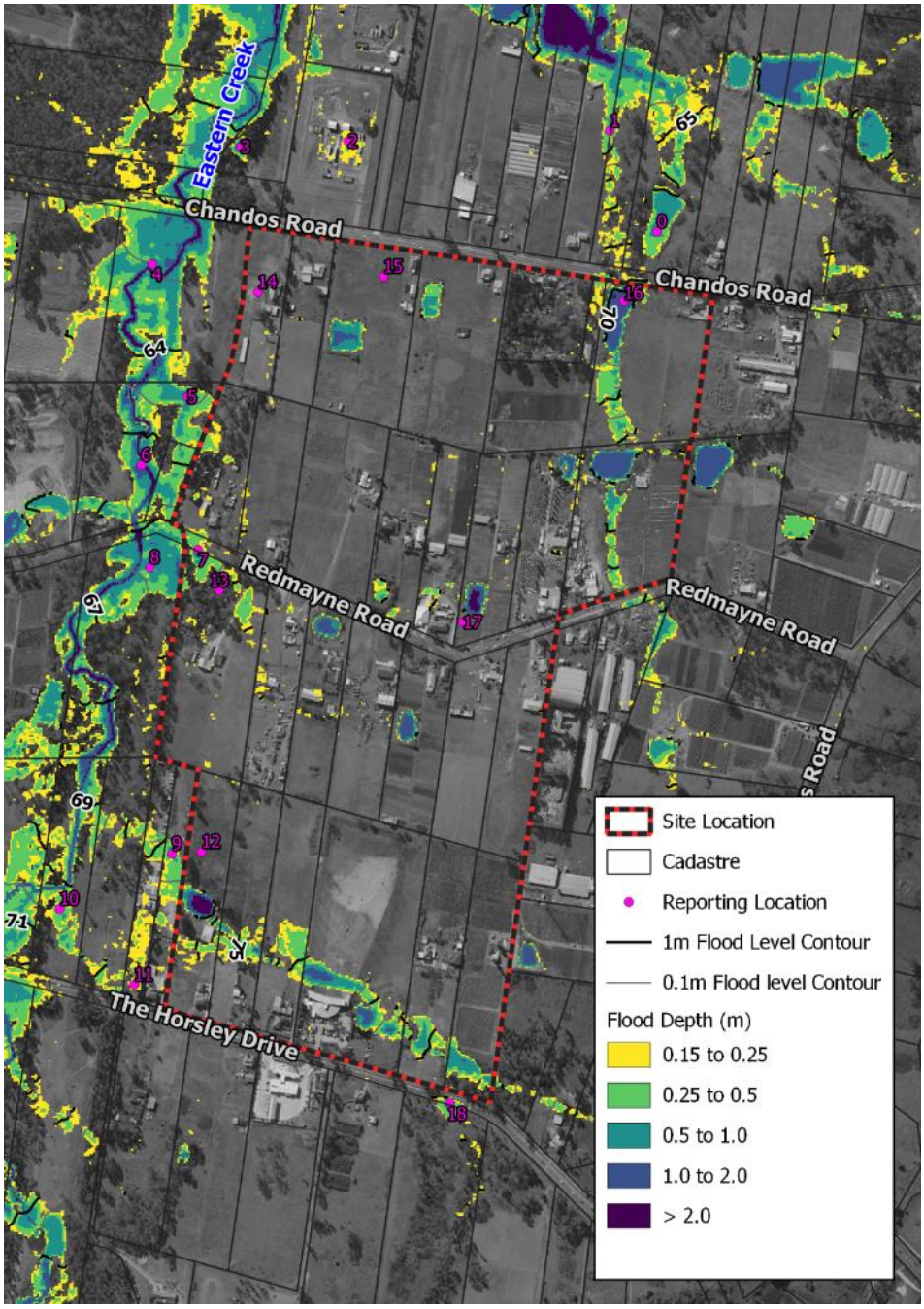
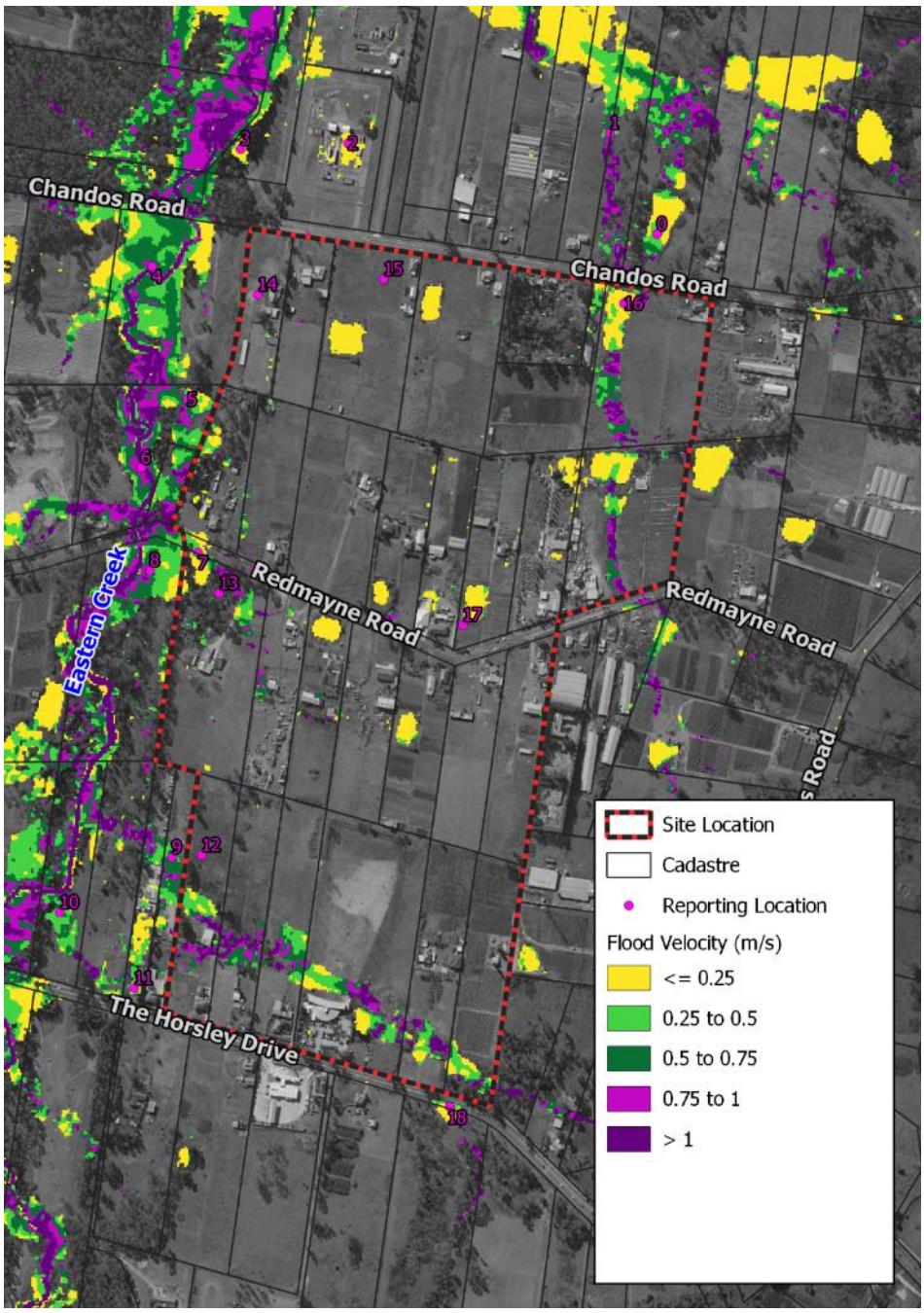


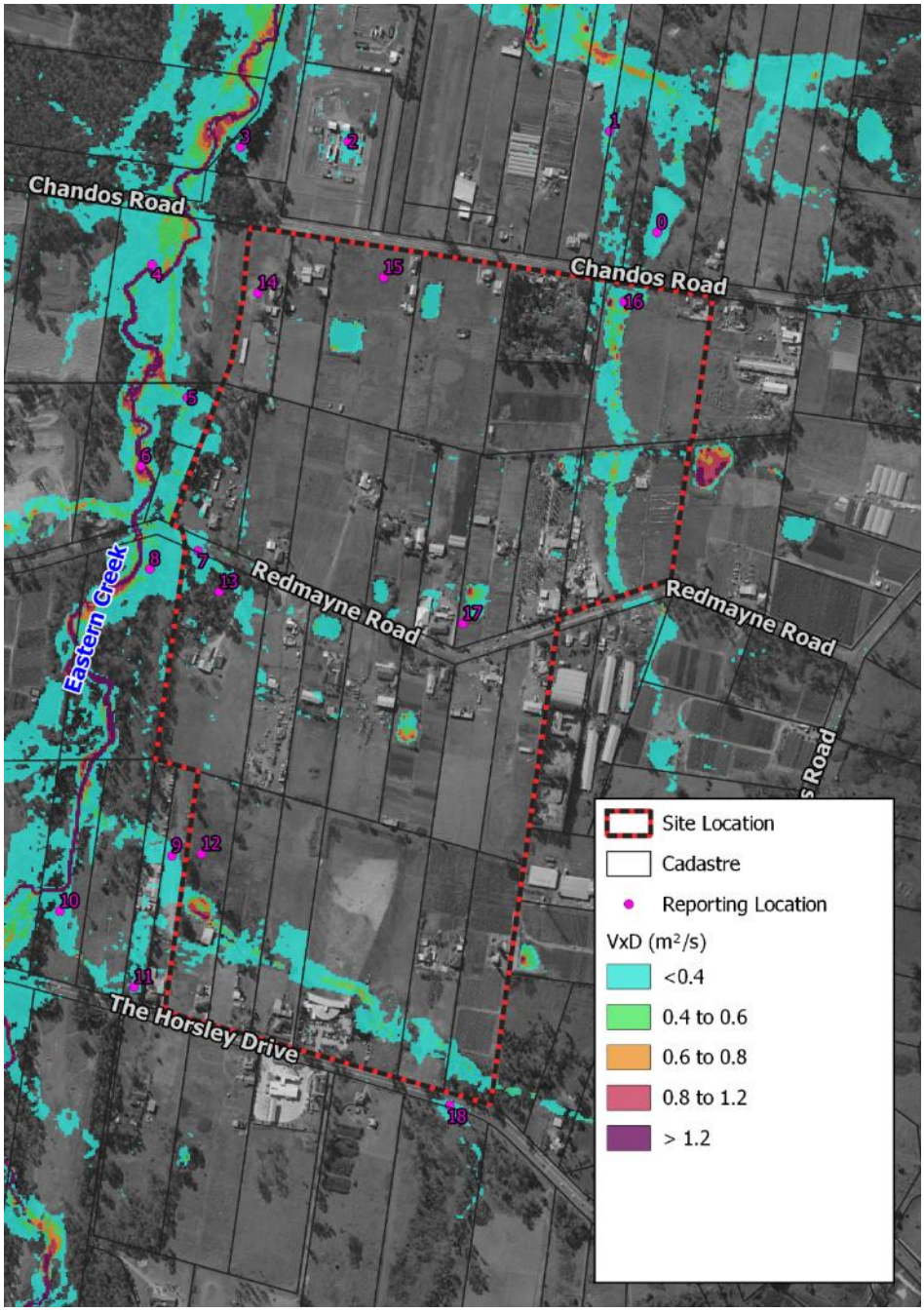
Figure E4- 1% AEP Flood Depth (Existing)

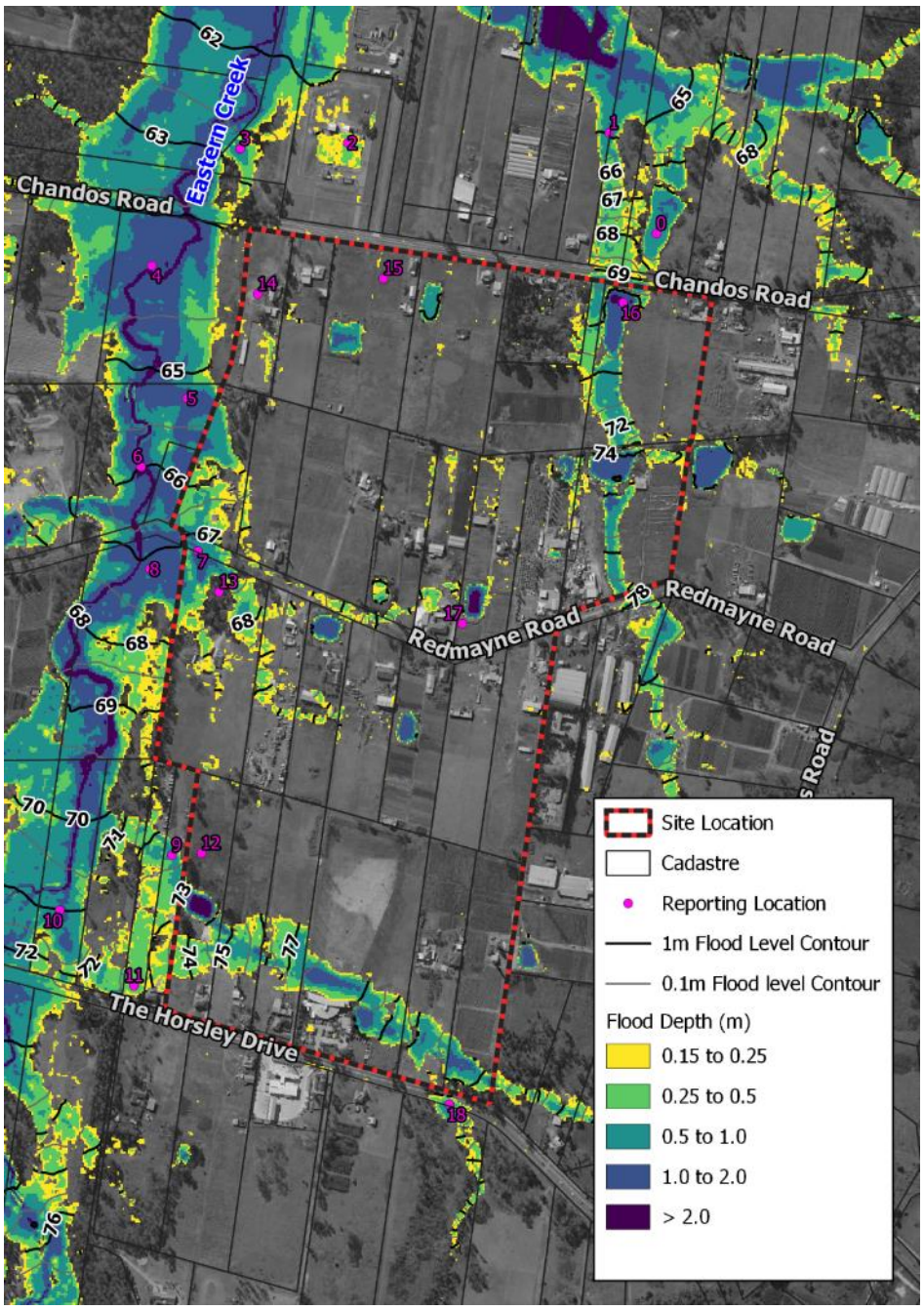

Chandos Road
Chandos Road
Redmayne Road
Redmayne Road
Eastern Creek
The Horsley Drive
Site Location
Cadastre
Reporting Location
Flood Velocity (m/s)
<= 0.25
0.25 to 0.5
0.5 to 0.75
0.75 to 1
> 1

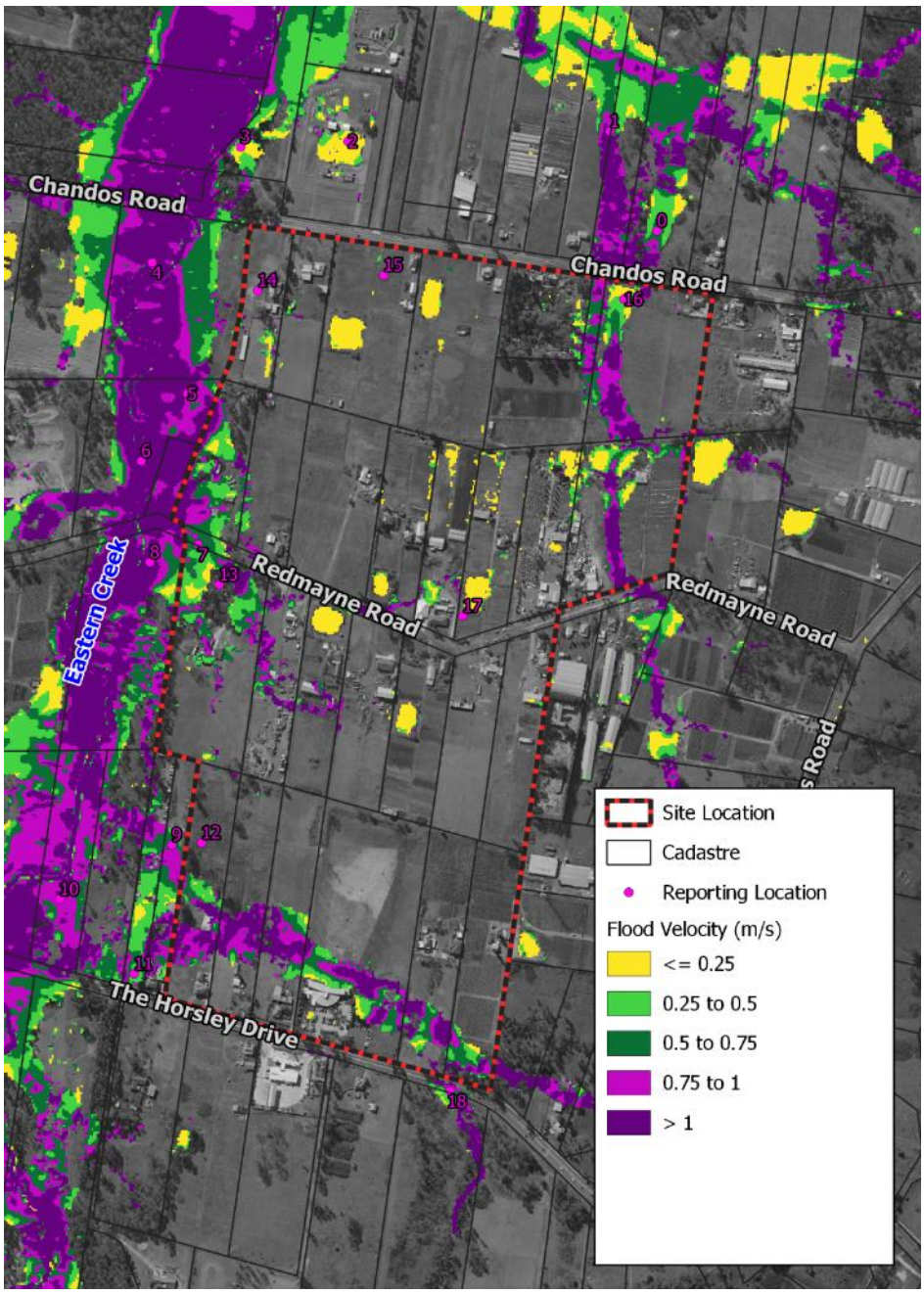

Chandos Road
Chandos Road
Redmayne Road
Redmayne Road
Eastern Creek
The Horsley Drive
Site Location
Cadastre
Reporting Location
VxD (m²/s)
<0.4
0.4 to 0.6
0.6 to 0.8
0.8 to 1.2
> 1.2

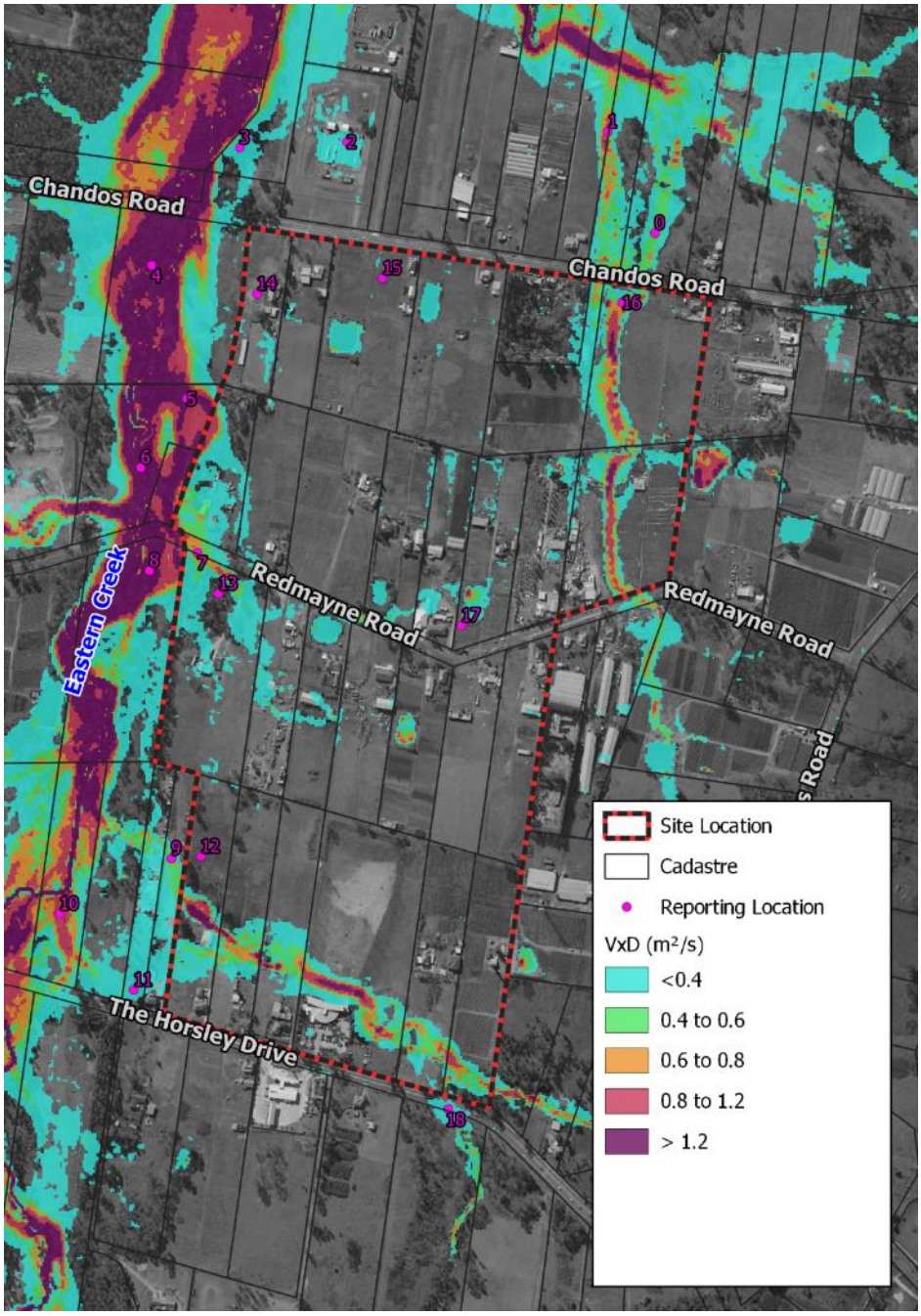

Eastern Creek
Chandos Road
Chandos Road
Redmayne Road
Redmayne Road
The Horsley Drive
Site Location
Cadastre
Reporting Location
1m Flood Level Contour
0.1m Flood level Contour
Flood Depth (m)
0.15 to 0.25
0.25 to 0.5
0.5 to 1.0
1.0 to 2.0
> 2.0


Chandos Road
Chandos Road
Redmayne Road
Redmayne Road
Eastern Creek
The Horsley Drive
Site Location
Cadastre
Reporting Location
Flood Velocity (m/s)
<= 0.25
0.25 to 0.5
0.5 to 0.75
0.75 to 1
> 1

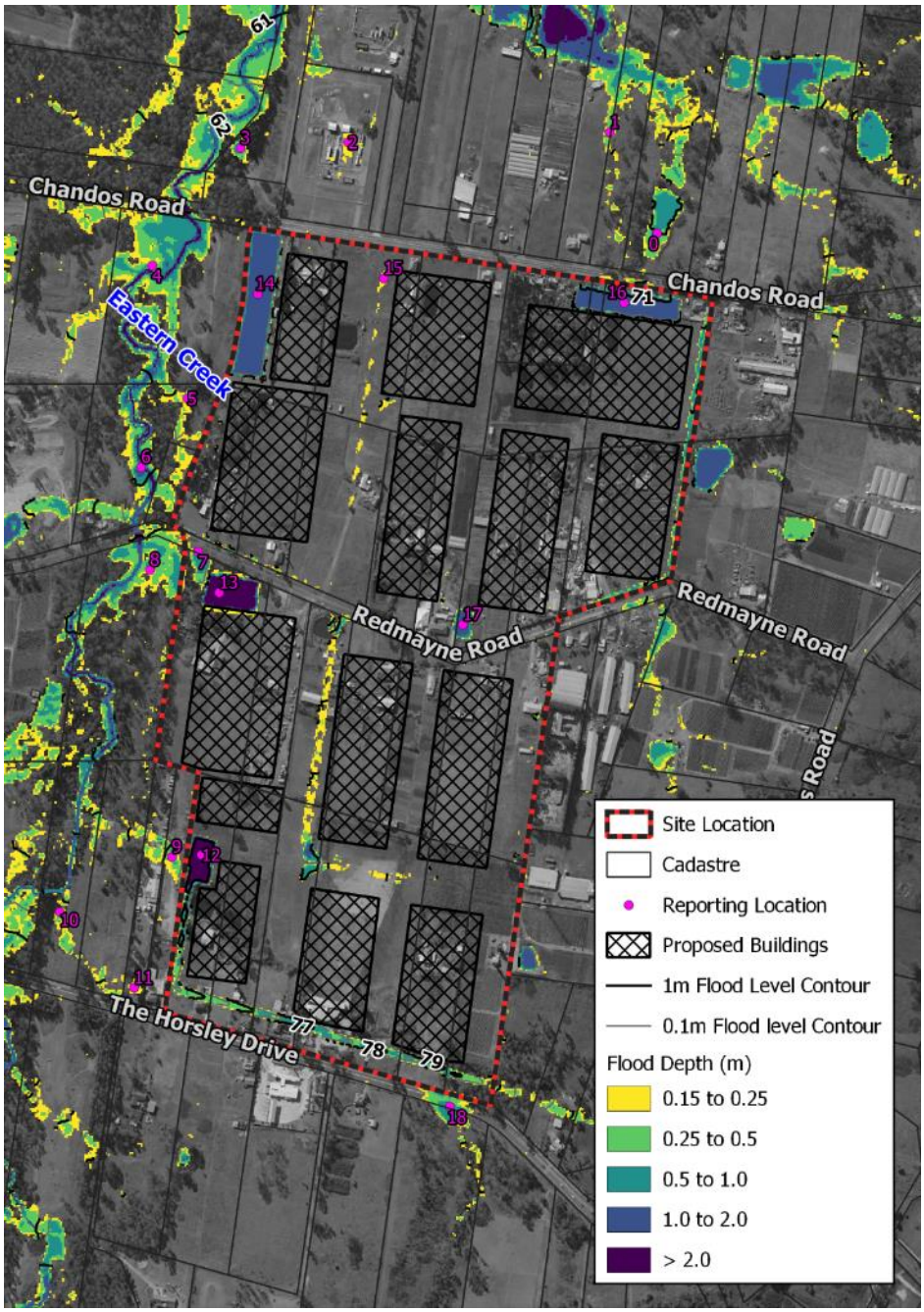

Chandos Road
Chandos Road
Redmayne Road
Redmayne Road
Eastern Creek
The Horsley Drive
Site Location
Cadastre
Reporting Location
VxD (m²/s)
<0.4
0.4 to 0.6
0.6 to 0.8
0.8 to 1.2
> 1.2


Eastern Creek
Chandos Road
Chandos Road
Redmayne Road
Redmayne Road
The Horsley Drive
Site Location
Cadastre
Reporting Location
1m Flood Level Contour
0.1m Flood level Contour
Flood Depth (m)
0.15 to 0.25
0.25 to 0.5
0.5 to 1.0
1.0 to 2.0
> 2.0


Chandos Road
Chandos Road
Redmayne Road
Redmayne Road
Eastern Creek
The Horsley Drive
Site Location
Cadastre
Reporting Location
Flood Velocity (m/s)
<= 0.25
0.25 to 0.5
0.5 to 0.75
0.75 to 1
> 1


Chandos Road
Chandos Road
Redmayne Road
Redmayne Road
Eastern Creek
The Horsley Drive
Site Location
Cadastre
Reporting Location
VxD (m²/s)
<0.4
0.4 to 0.6
0.6 to 0.8
0.8 to 1.2
> 1.2

P OST DEVELOPMENT FLOOD OUTPUT



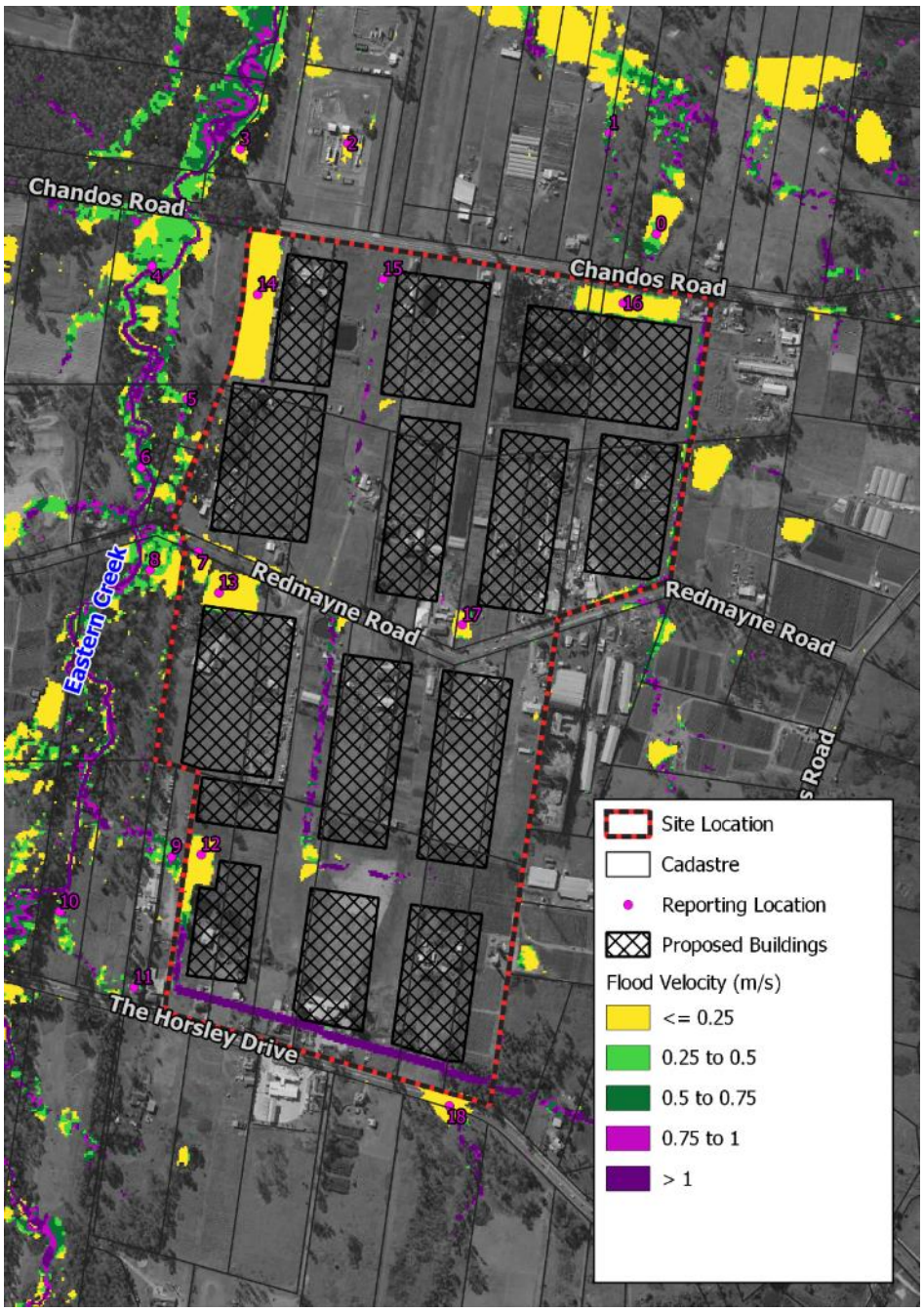


Figure E14- 5% AEP Flood Velocity (Post Development)

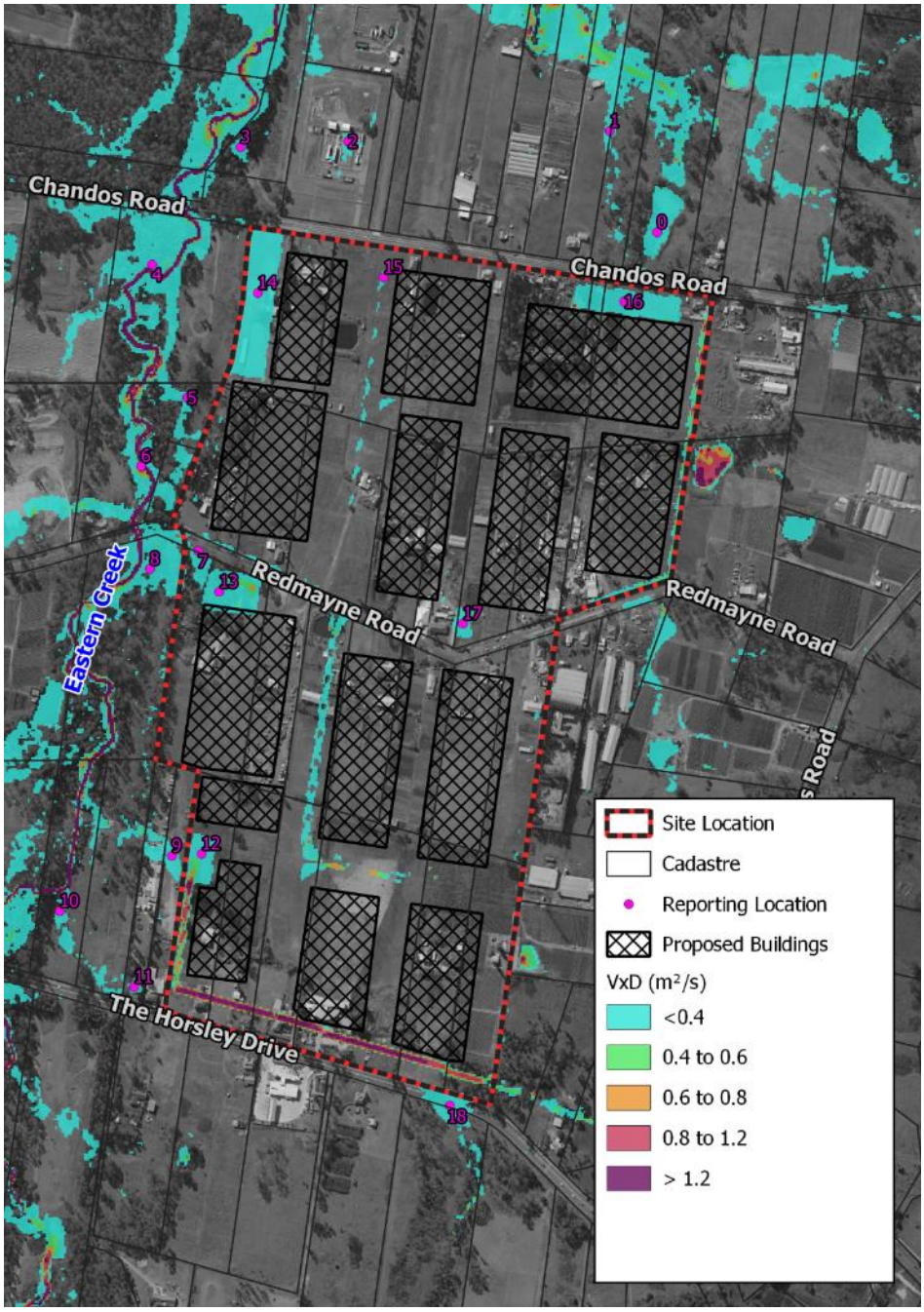


Figure E15- 5% AEP Velocity Depth (Post Development)

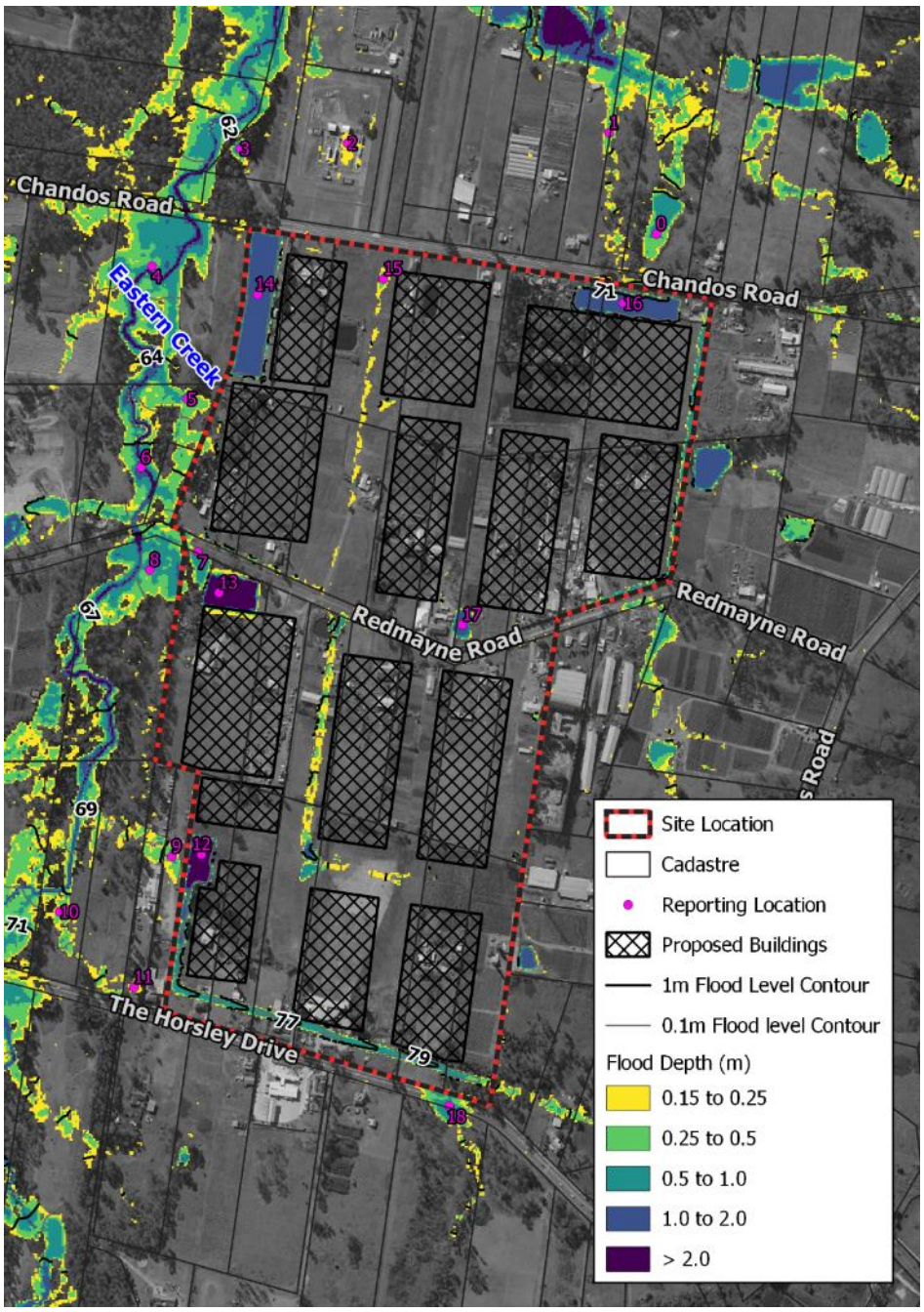


Figure E16-1% AEP Flood Depth (Post Development)

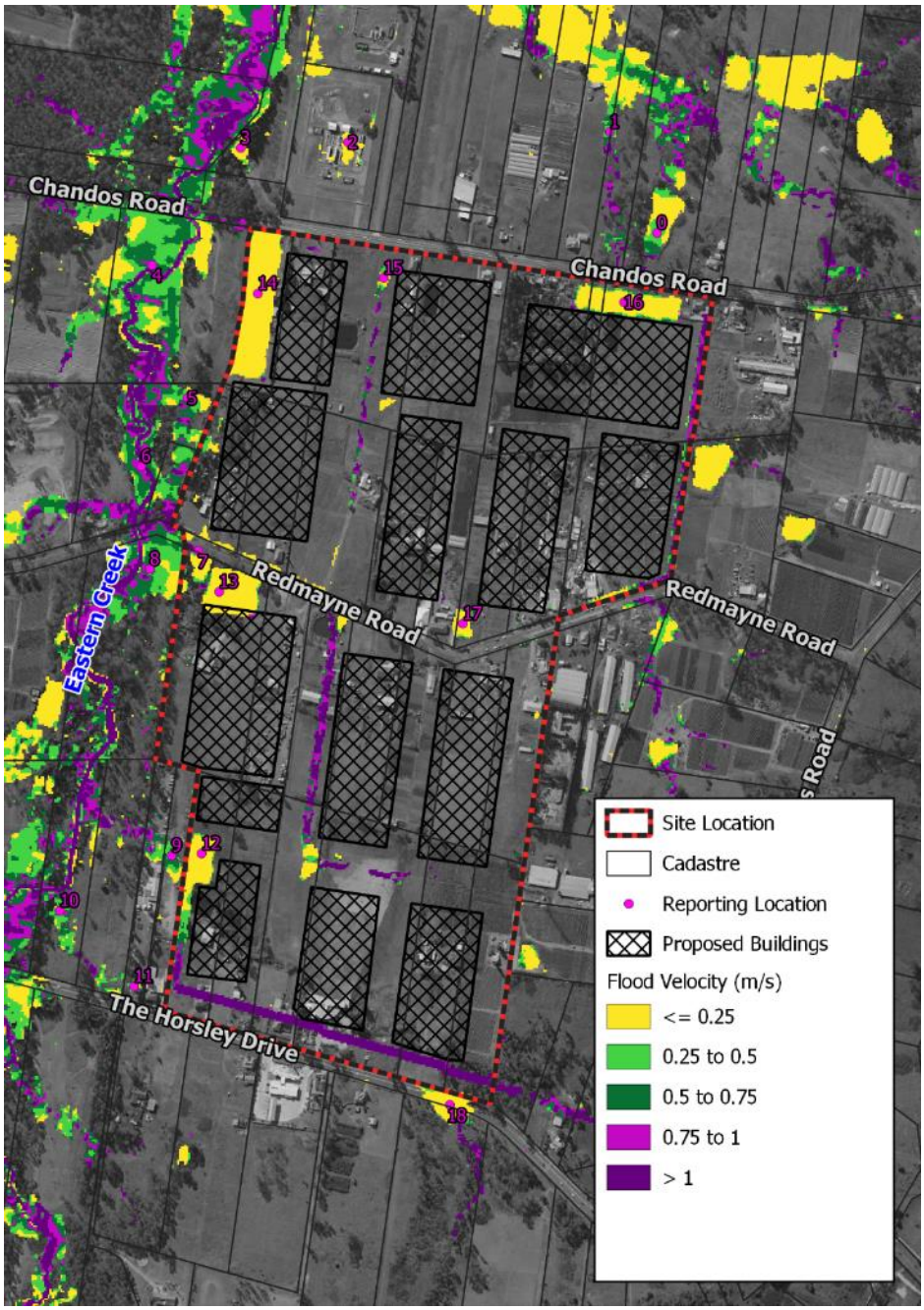


Figure E17- 1% AEP Flood Velocity (Post Development)

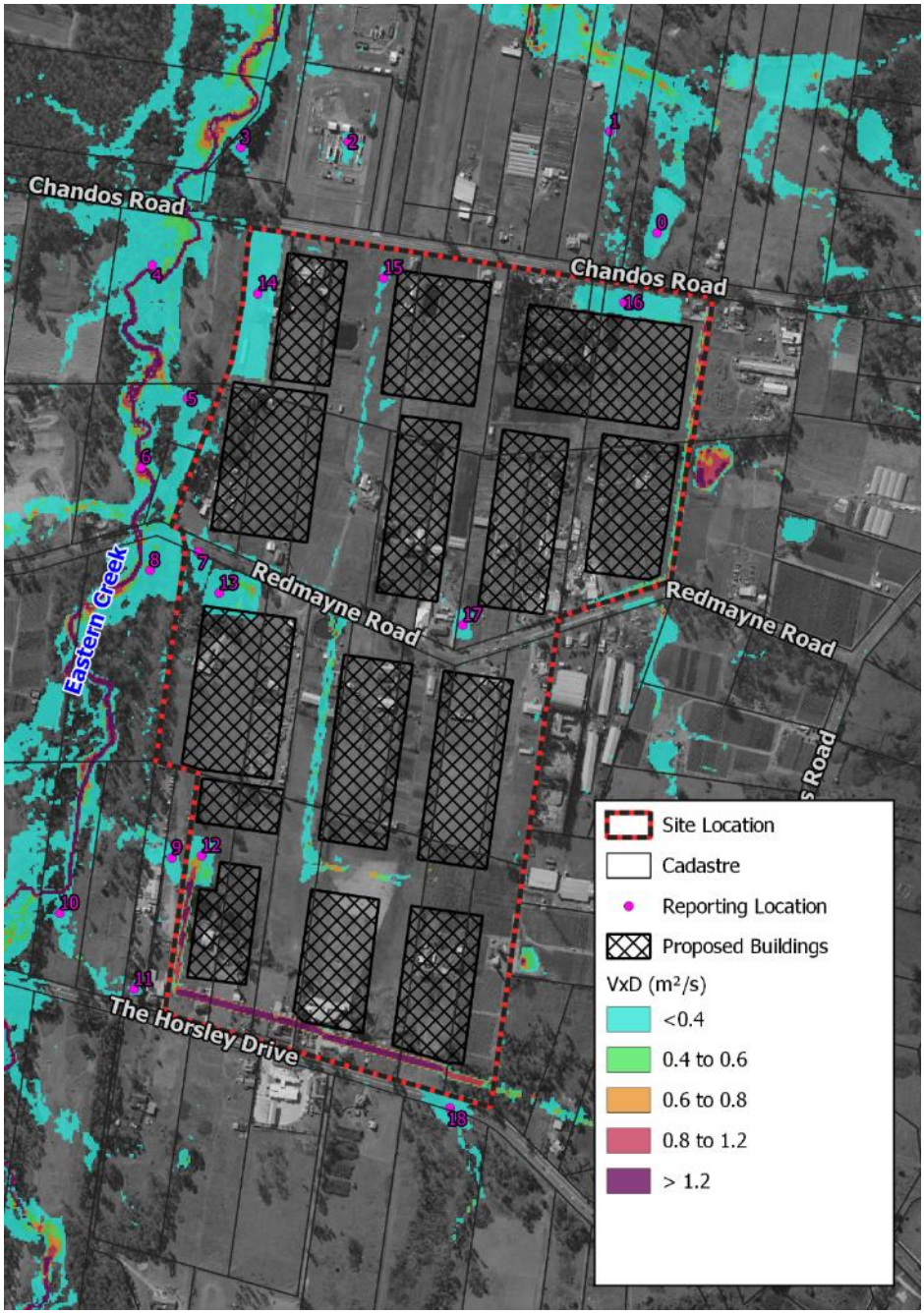


Figure E18- 1% AEP Velocity Depth (Post Development)

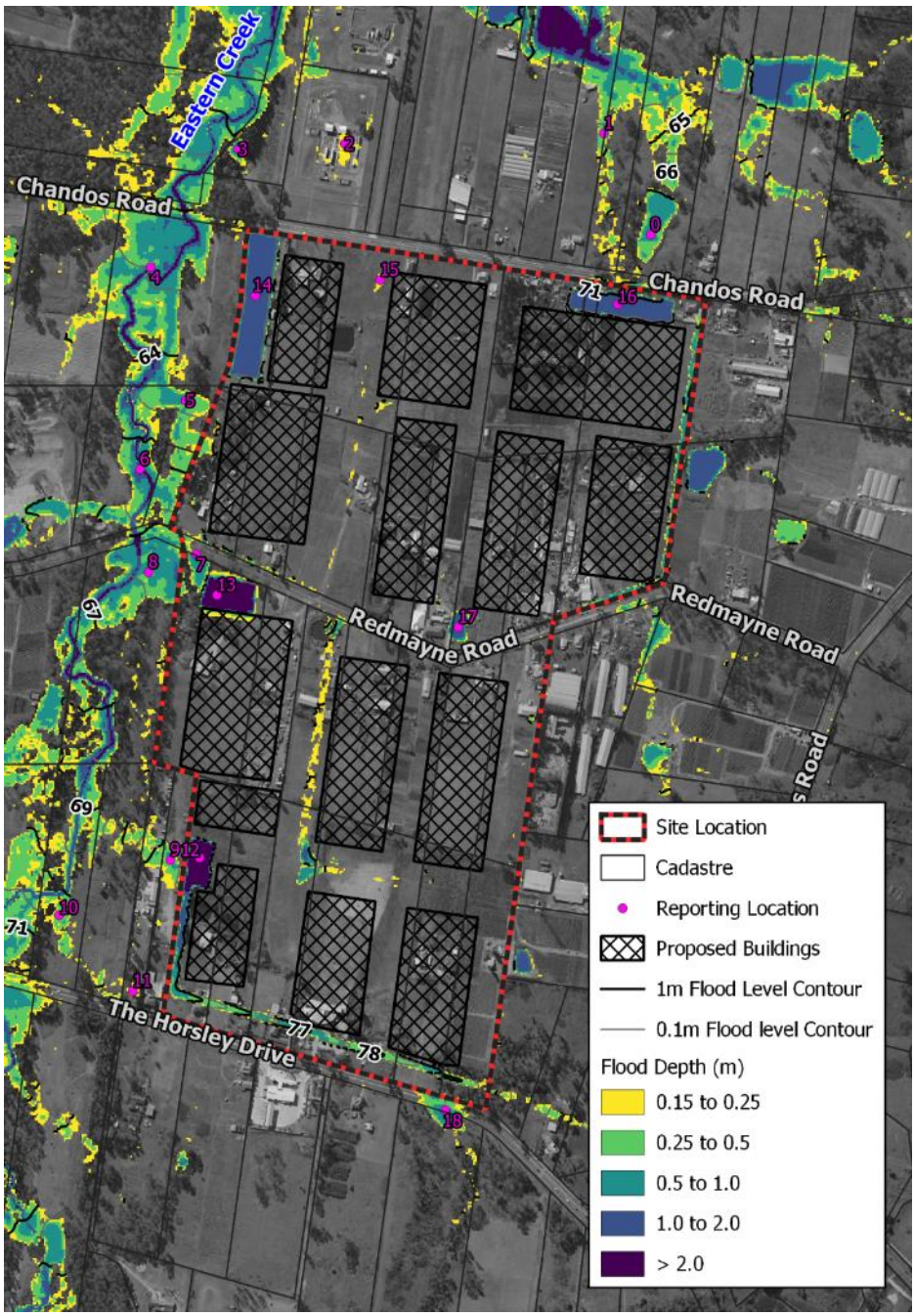


Figure E19- 0.2% AEP Flood Depth (Post Development)

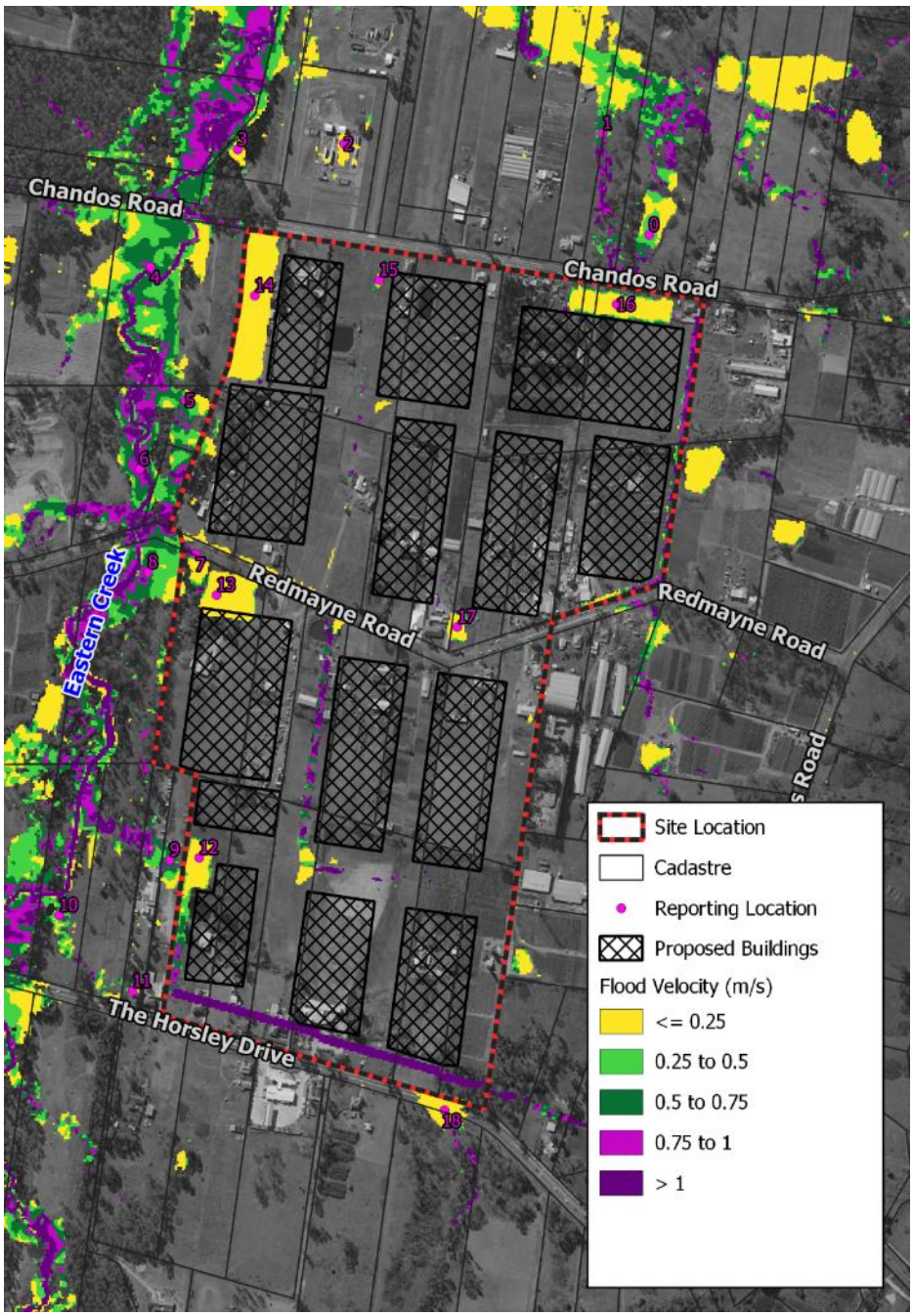


Figure E20- 0.2% AEP Flood Velocity (Post Development)

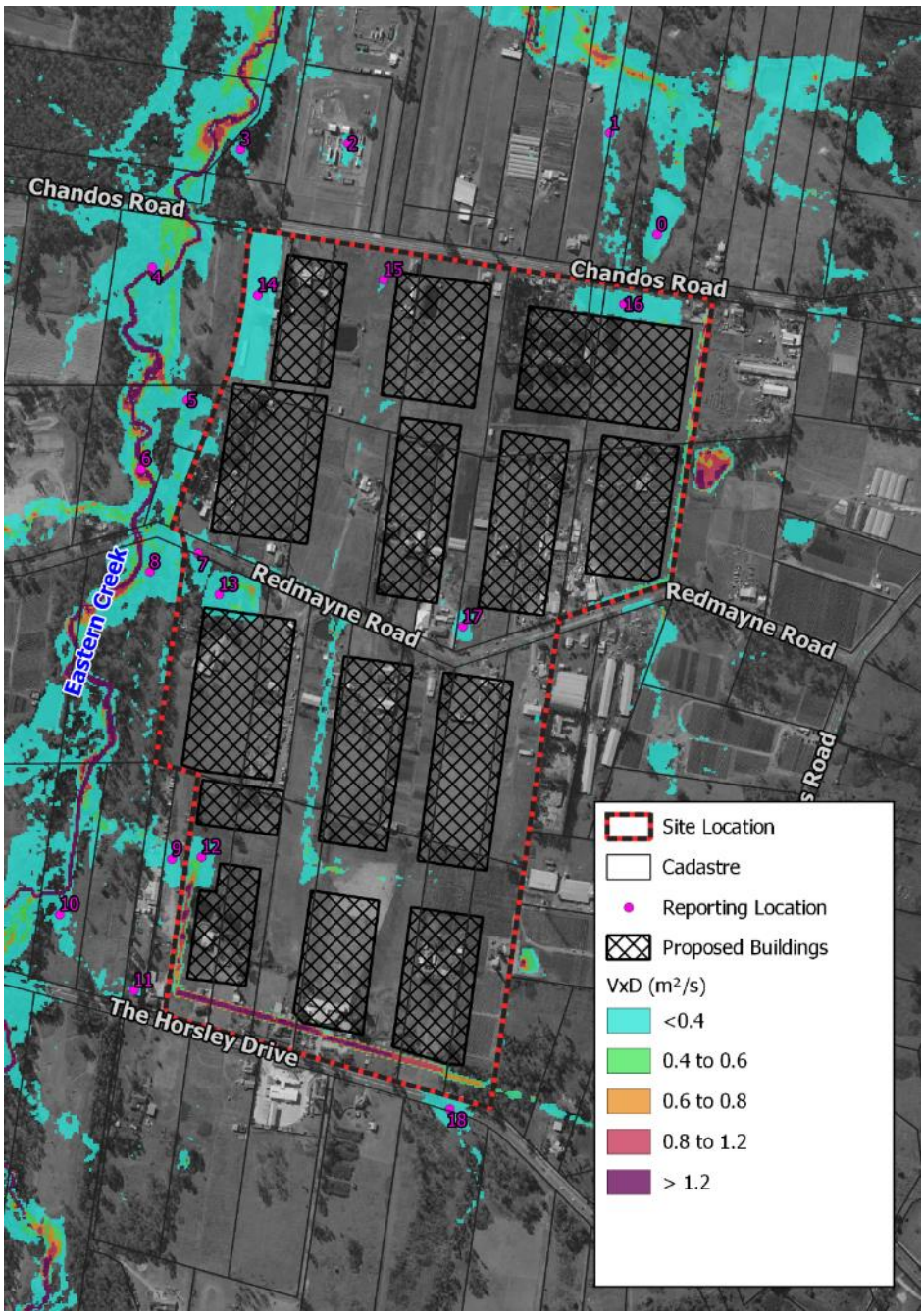


Figure E21- 0.2% AEP Velocity Depth (Post Development)

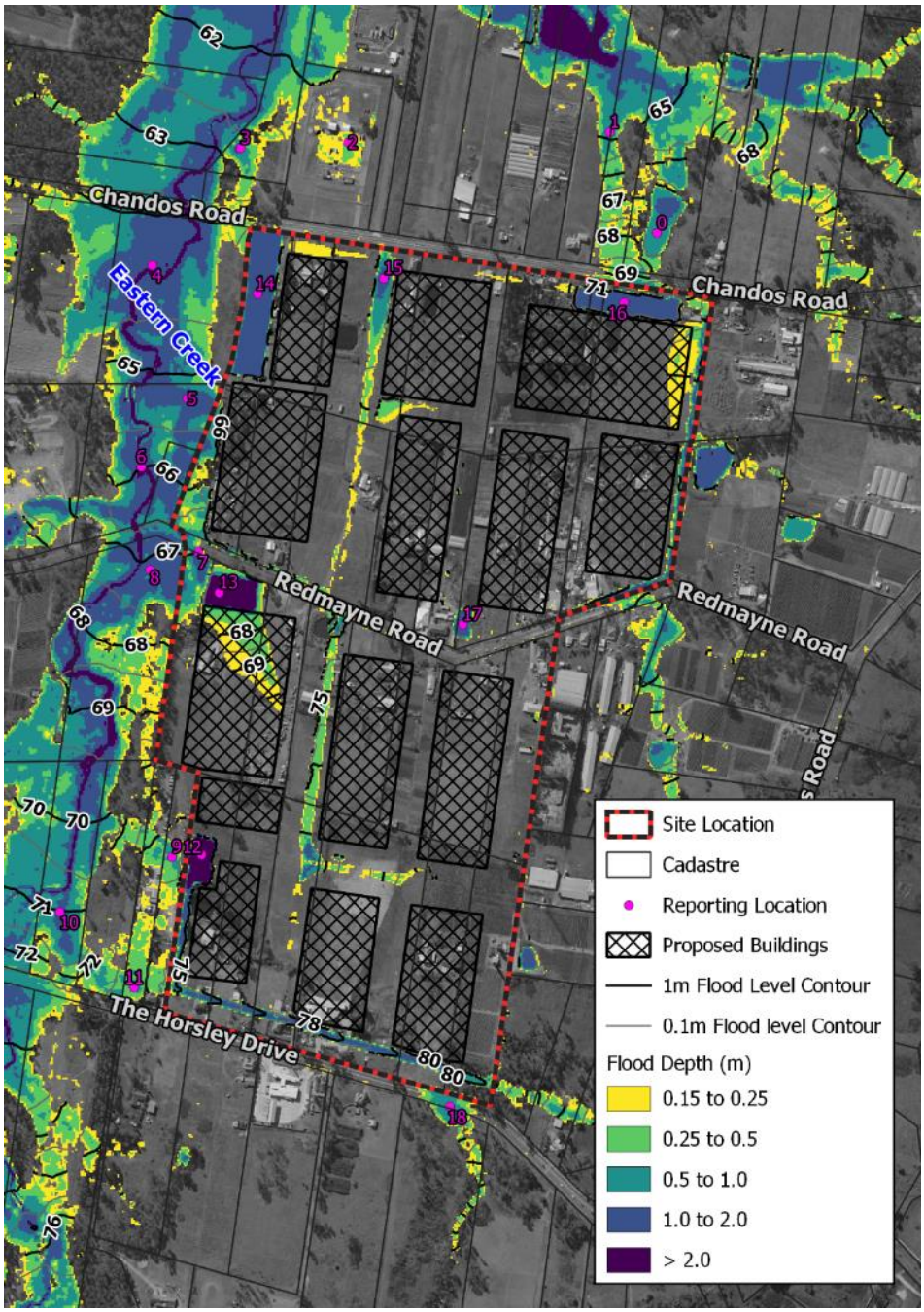


Figure E22- PMF AEP Flood Depth (Post Development)

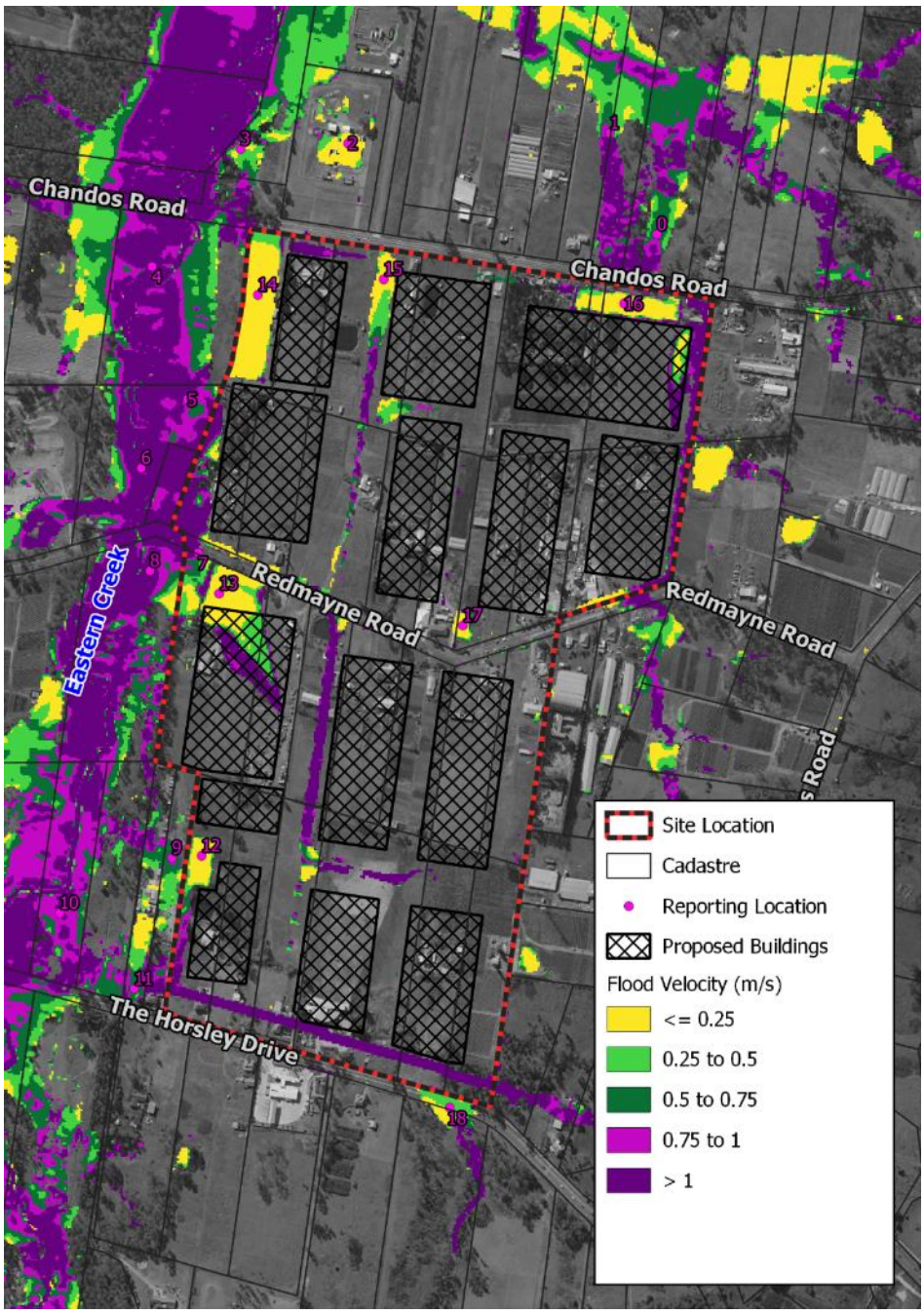


Figure E23- PMF AEP Flood Velocity (Post Development)

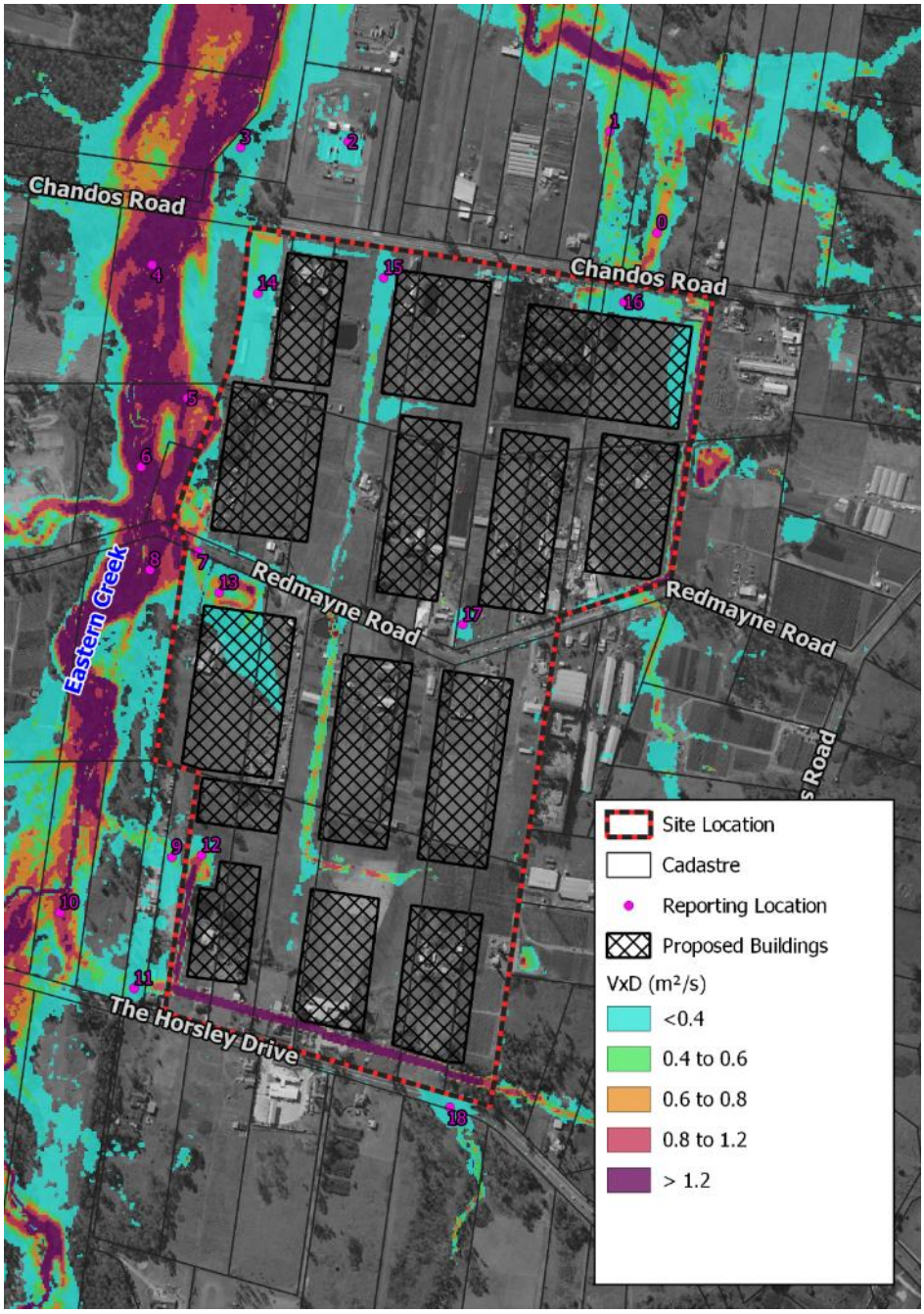


Figure E23- PMF AEP Velocity Depth (Post Development)

PRE AND POST DEVELOPMENT COMPARISONS

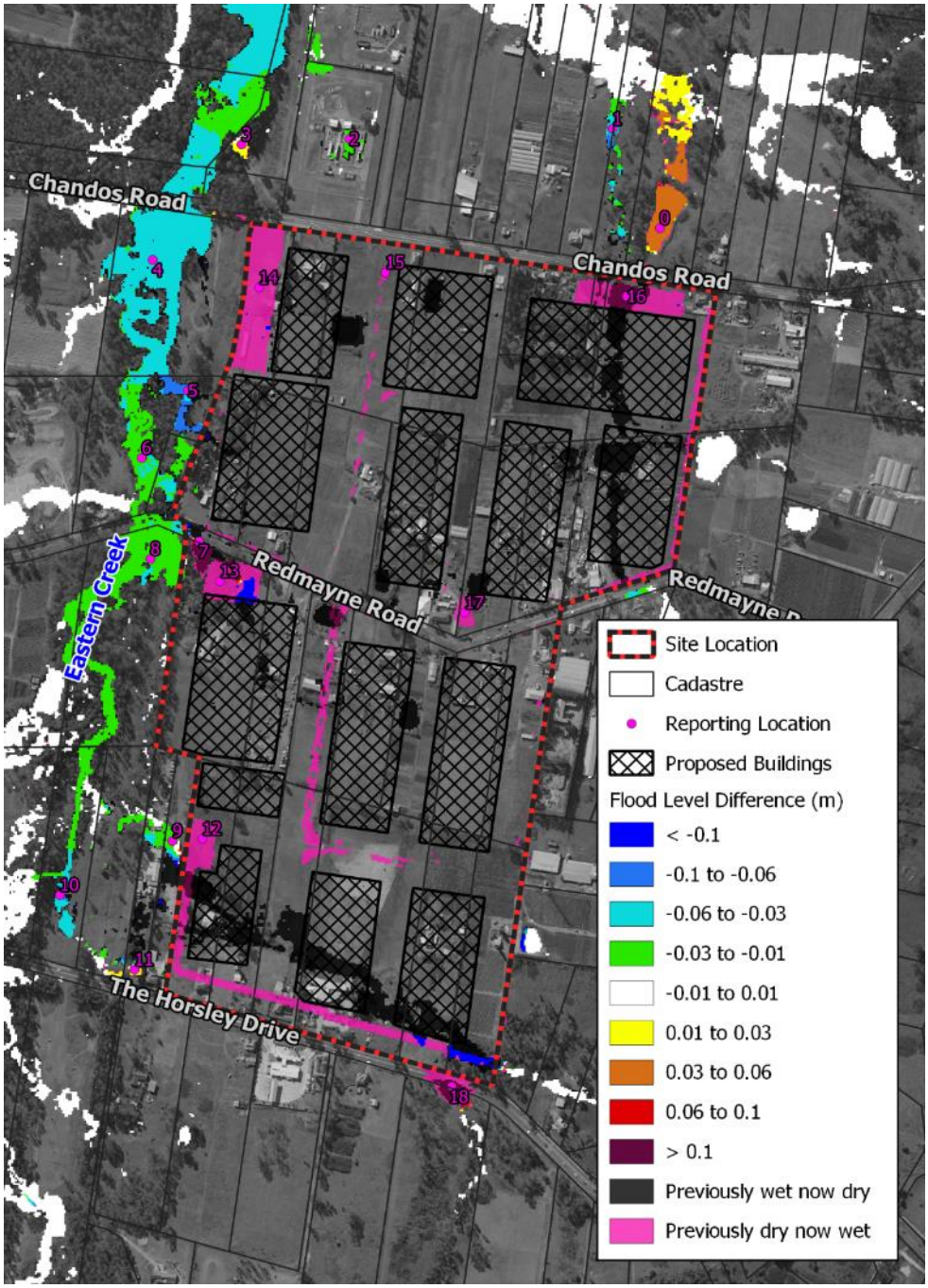


Figure E24- 5% AEP Flood Depth (Differences)

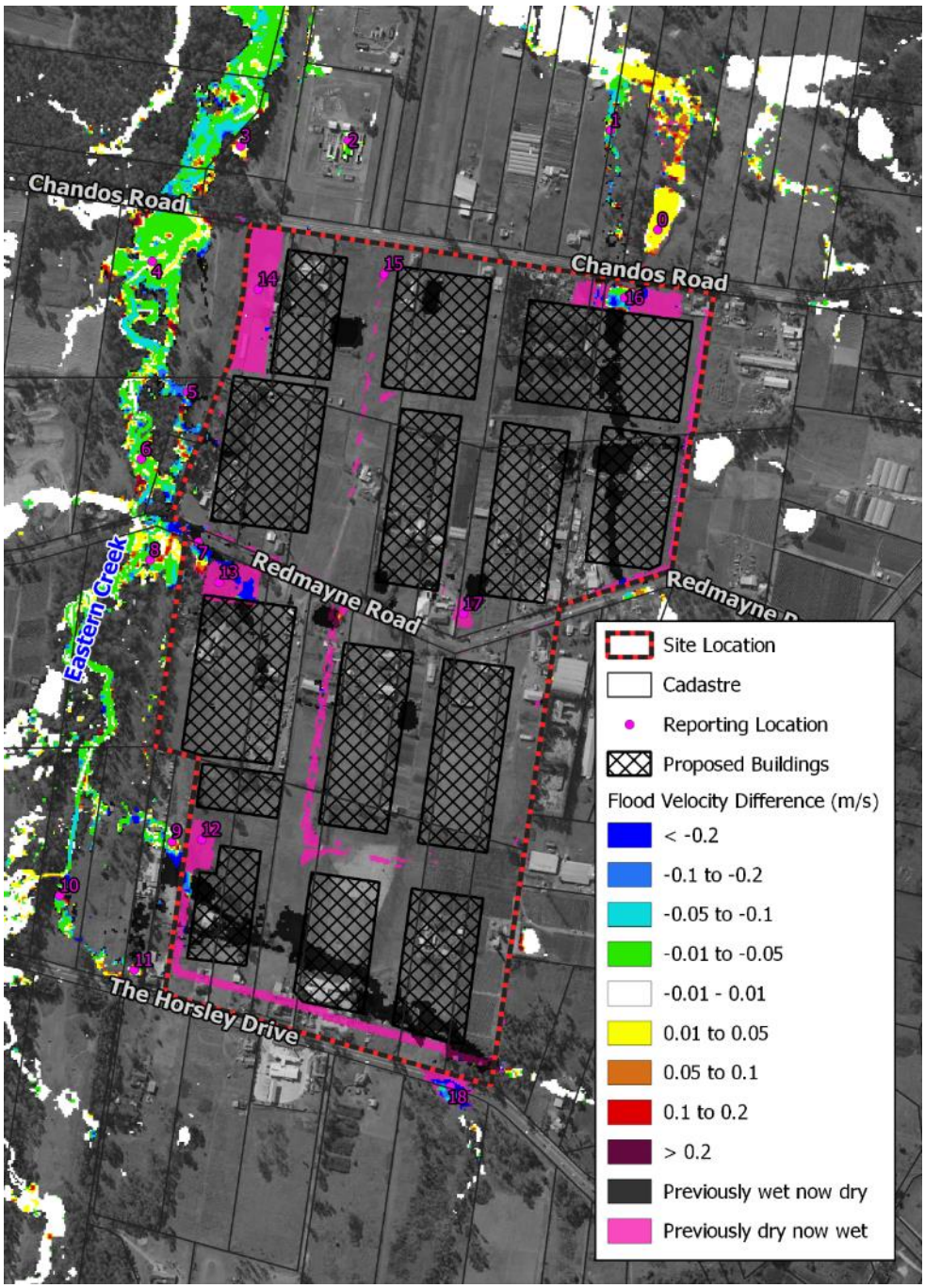


Figure E25- 5% AEP Flood Velocity (Differences)

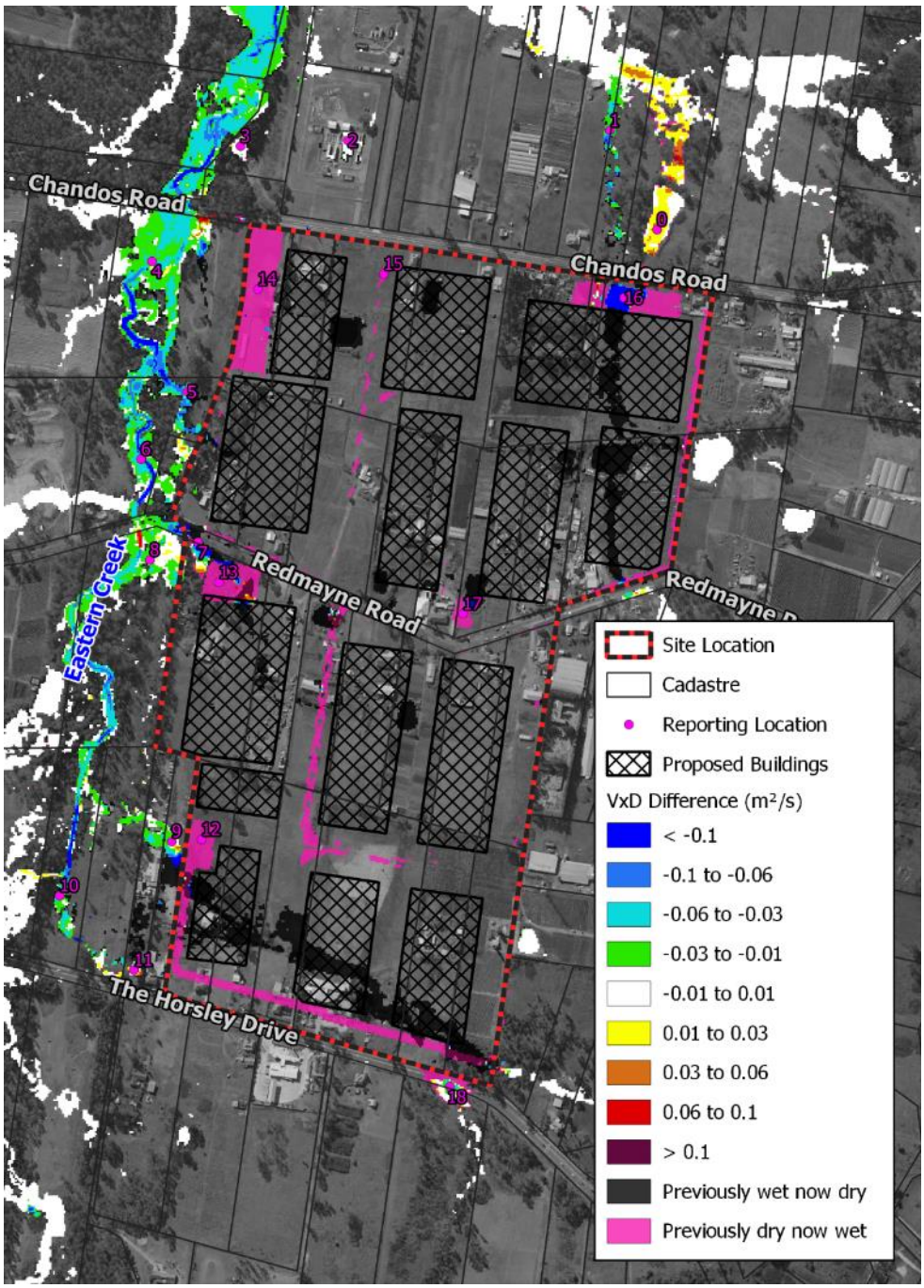
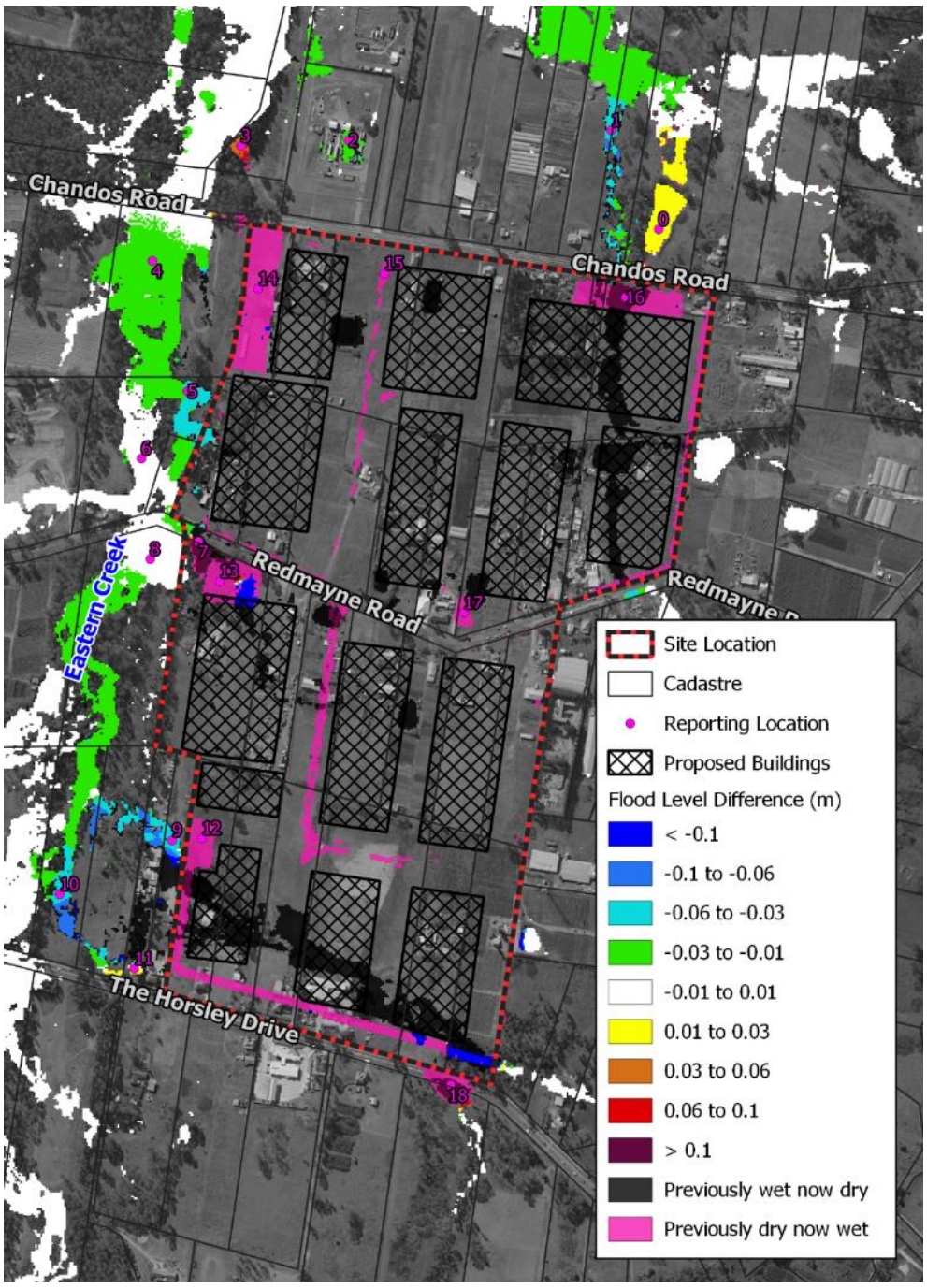
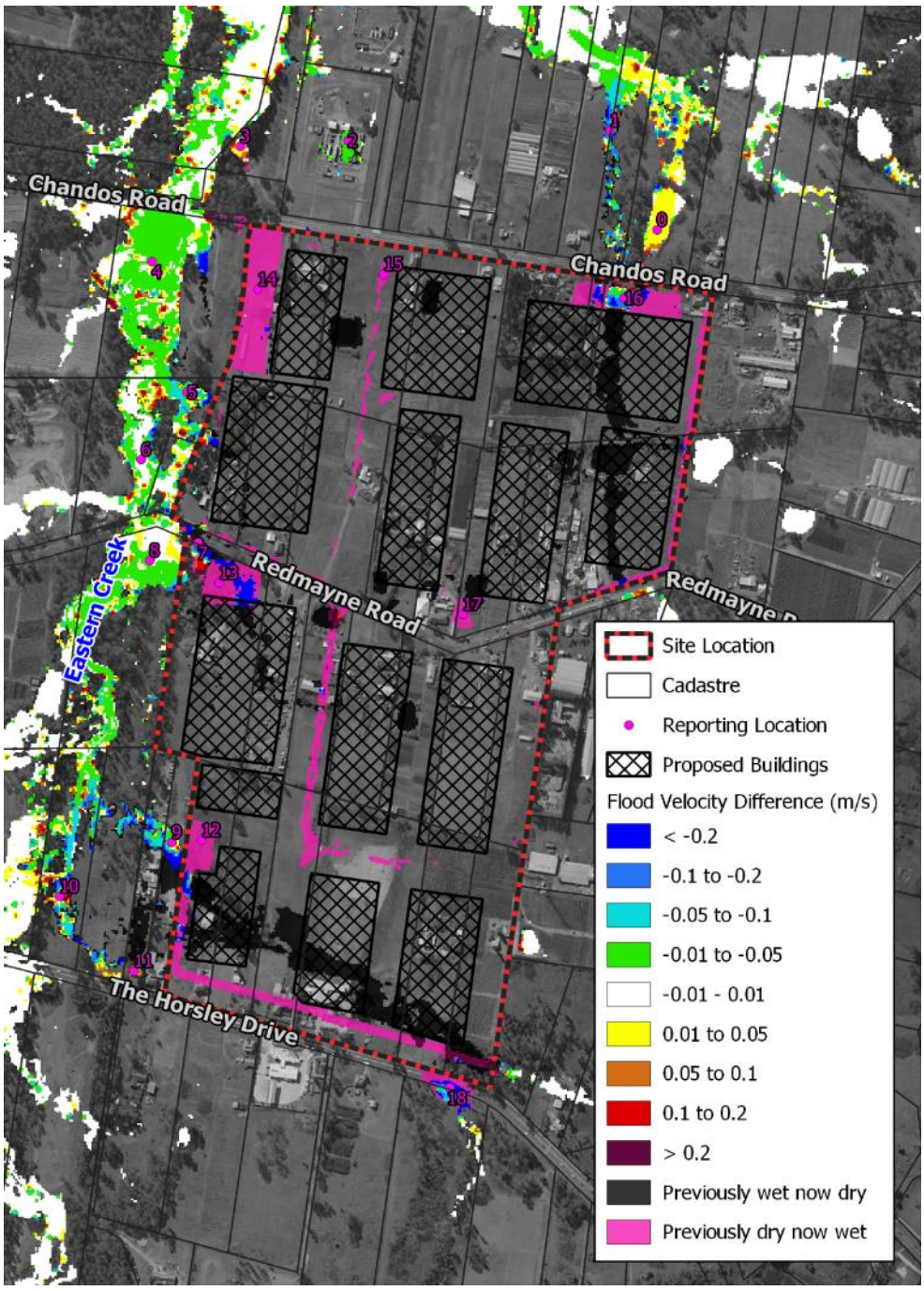
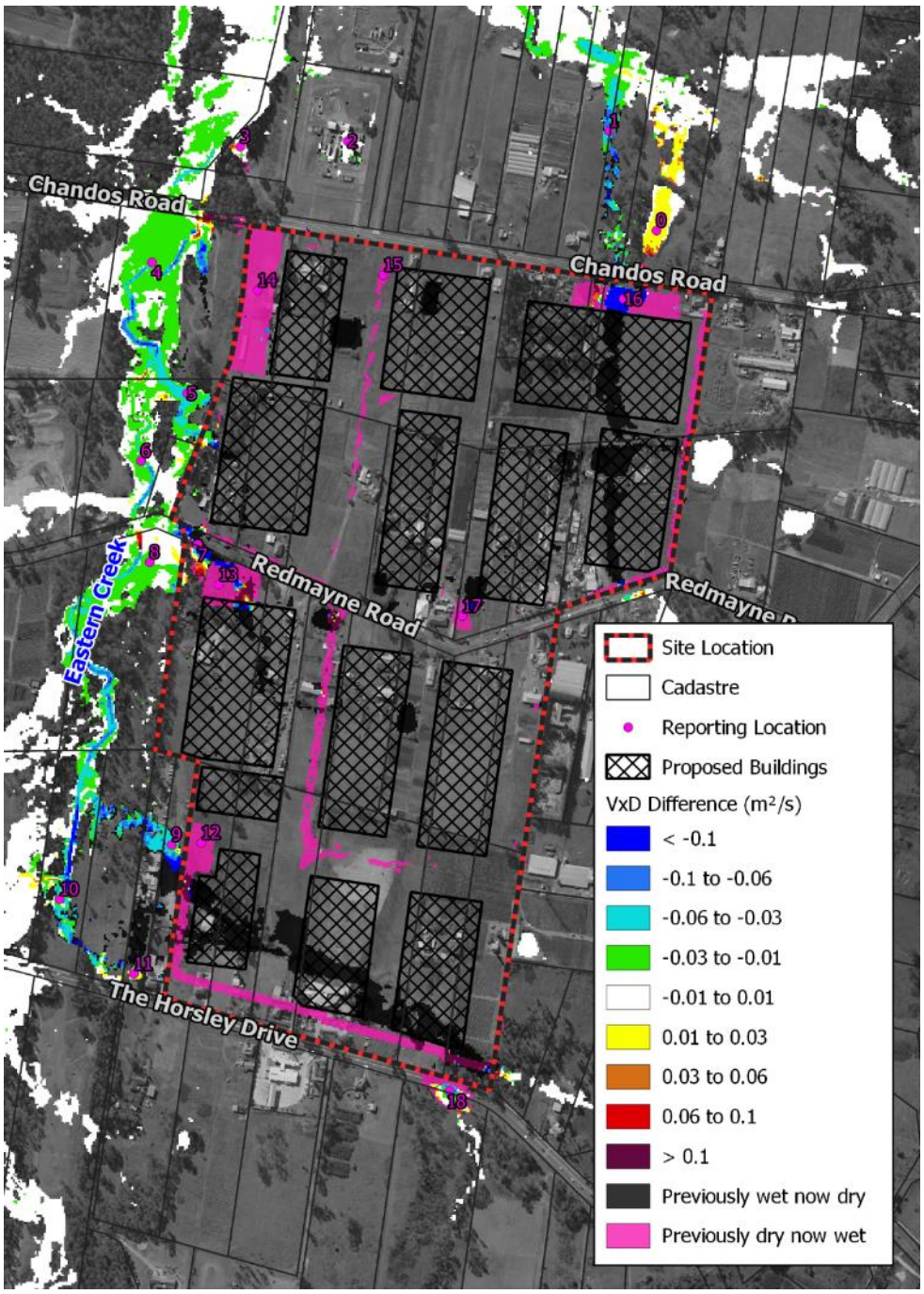


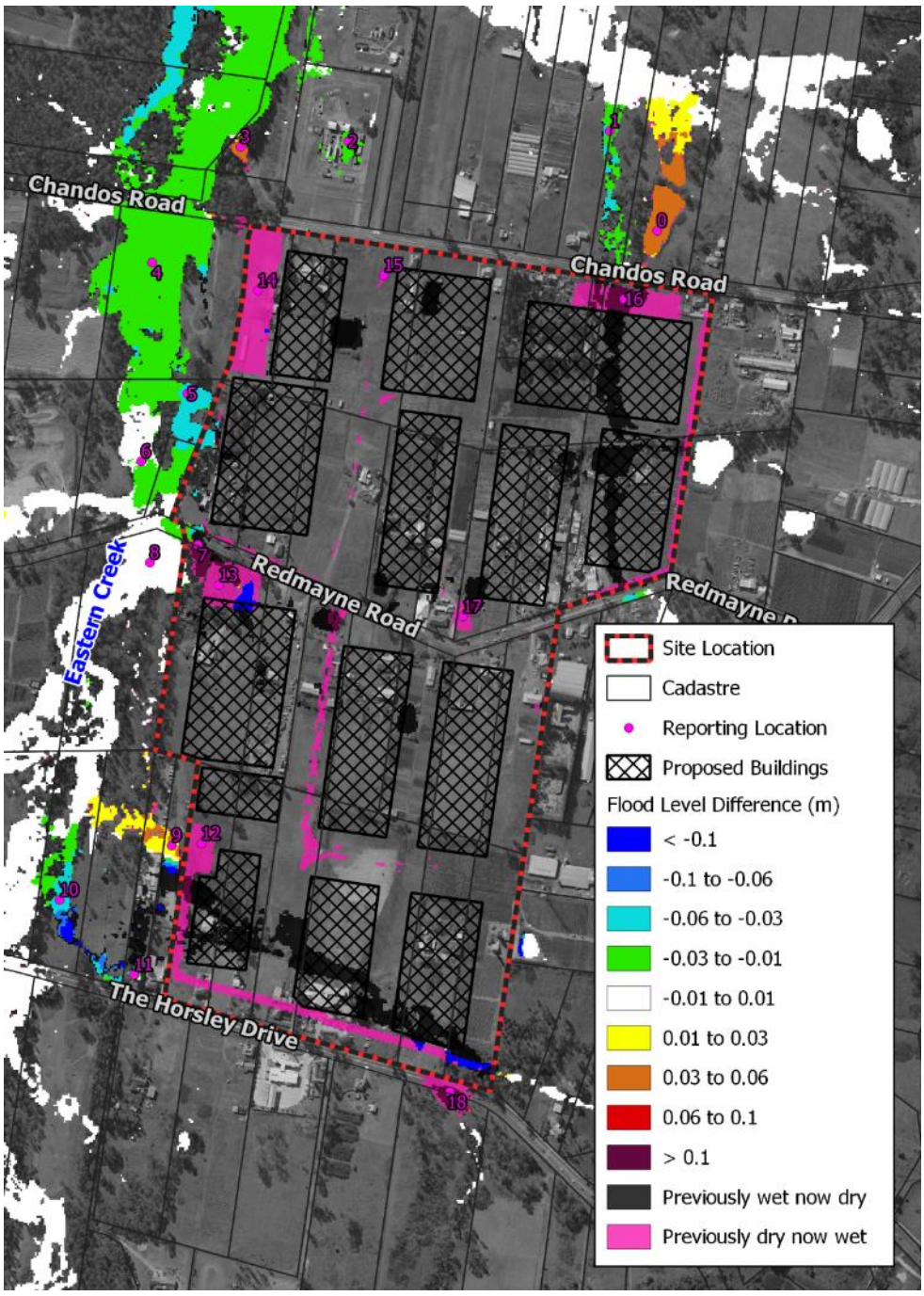
Figure E26- 5% AEP Velocity Depth (Differences)

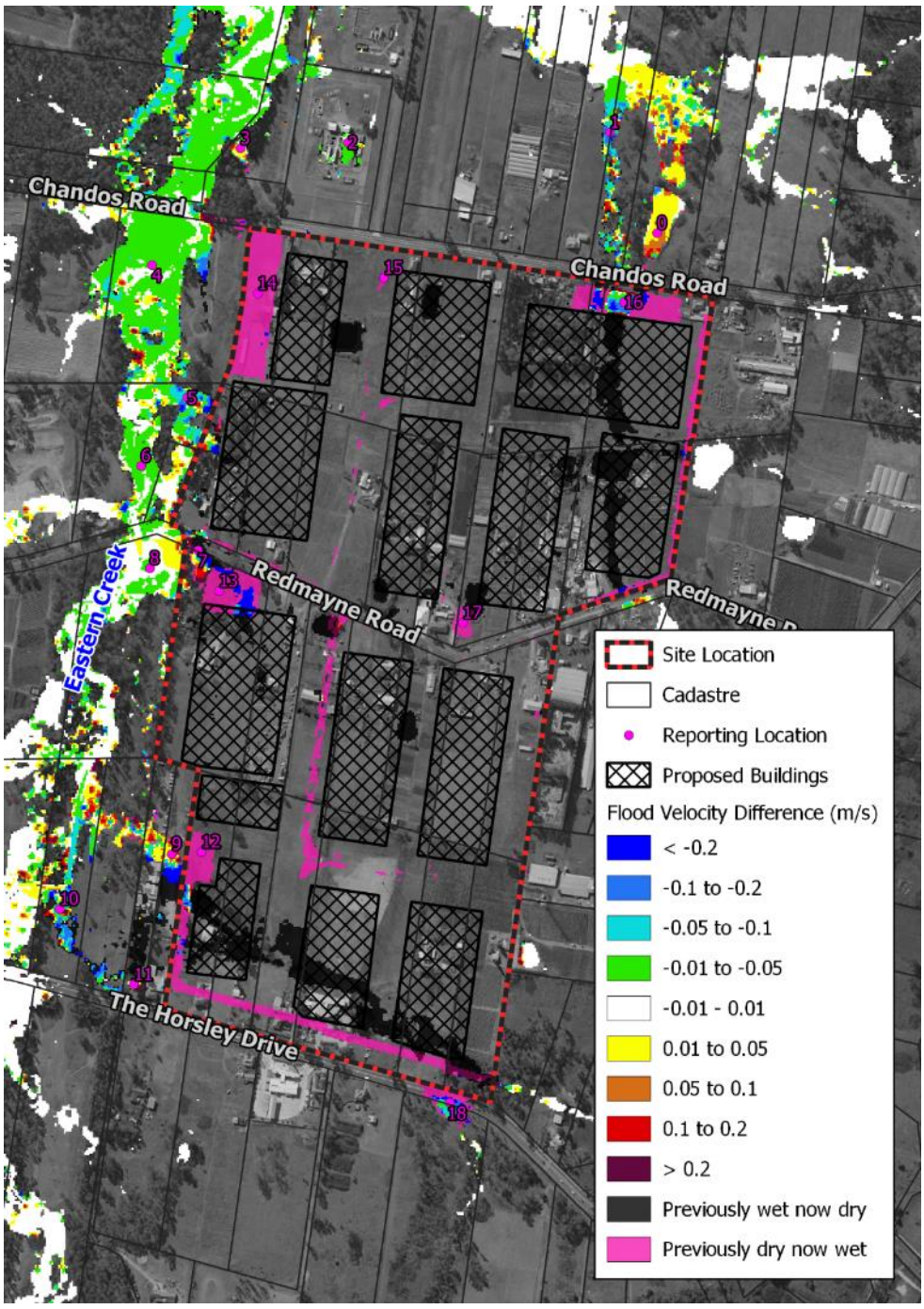


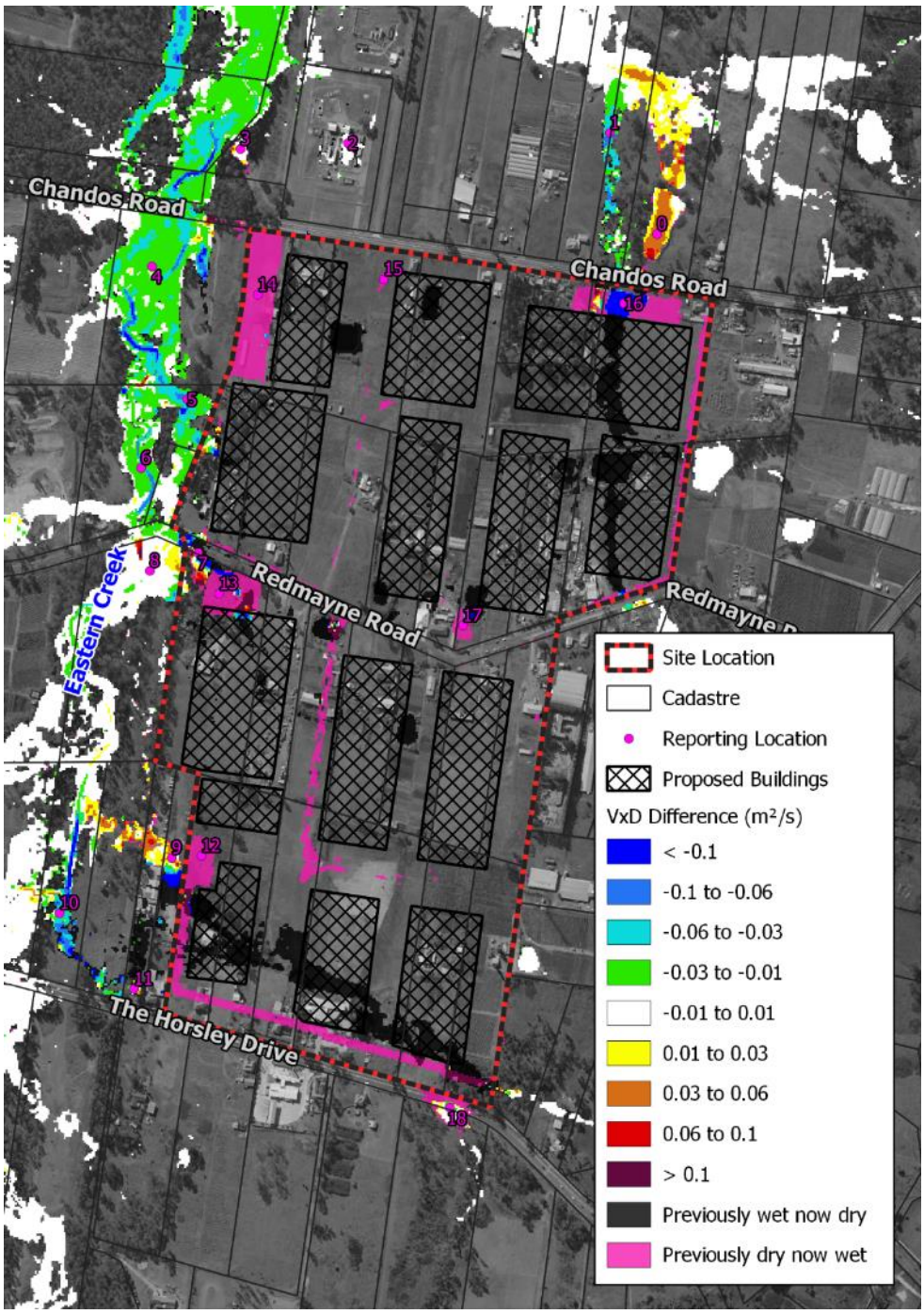
E27-1% AEP Flood Depth (Differences)


Chandos Road
Chandos Road
Redmayne Road
Redmayne R
Eastern Creek
The Horsley Drive
Site Location
Cadastre
Reporting Location
Proposed Buildings
Flood Velocity Difference (m/s)
< -0.2
-0.1 to -0.2
-0.05 to -0.1
-0.01 to -0.05
-0.01 - 0.01
0.01 to 0.05
0.05 to 0.1
0.1 to 0.2
> 0.2
Previously wet now dry
Previously dry now wet


Chandos Road
Chandos Road
Redmayne Road
Redmayne R
Eastern Creek
The Horsley Drive
Site Location
Cadastre
Reporting Location
Proposed Buildings
VxD Difference (m²/s)
< -0.1
-0.1 to -0.06
-0.06 to -0.03
-0.03 to -0.01
-0.01 to 0.01
0.01 to 0.03
0.03 to 0.06
0.06 to 0.1
> 0.1
Previously wet now dry
Previously dry now wet


Chandos Road
Chandos Road
Redmayne Road
Redmayne R
Eastern Creek
The Horsley Drive
Site Location
Cadastre
Reporting Location
Proposed Buildings
Flood Level Difference (m)
< -0.1
-0.1 to -0.06
-0.06 to -0.03
-0.03 to -0.01
-0.01 to 0.01
0.01 to 0.03
0.03 to 0.06
0.06 to 0.1
> 0.1
Previously wet now dry
Previously dry now wet


Chandos Road
Chandos Road
Redmayne Road
Redmayne R
Eastern Creek
The Horsley Drive
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
Site Location
Cadastre
Reporting Location
Proposed Buildings
Flood Velocity Difference (m/s)
< -0.2
-0.1 to -0.2
-0.05 to -0.1
-0.01 to -0.05
-0.01 - 0.01
0.01 to 0.05
0.05 to 0.1
0.1 to 0.2
> 0.2
Previously wet now dry
Previously dry now wet


Chandos Road
Chandos Road
Redmayne Road
Redmayne R
Eastern Creek
The Horsley Drive
Site Location
Cadastre
Reporting Location
Proposed Buildings
VxD Difference (m²/s)
< -0.1
-0.1 to -0.06
-0.06 to -0.03
-0.03 to -0.01
-0.01 to 0.01
0.01 to 0.03
0.03 to 0.06
0.06 to 0.1
> 0.1
Previously wet now dry
Previously dry now wet

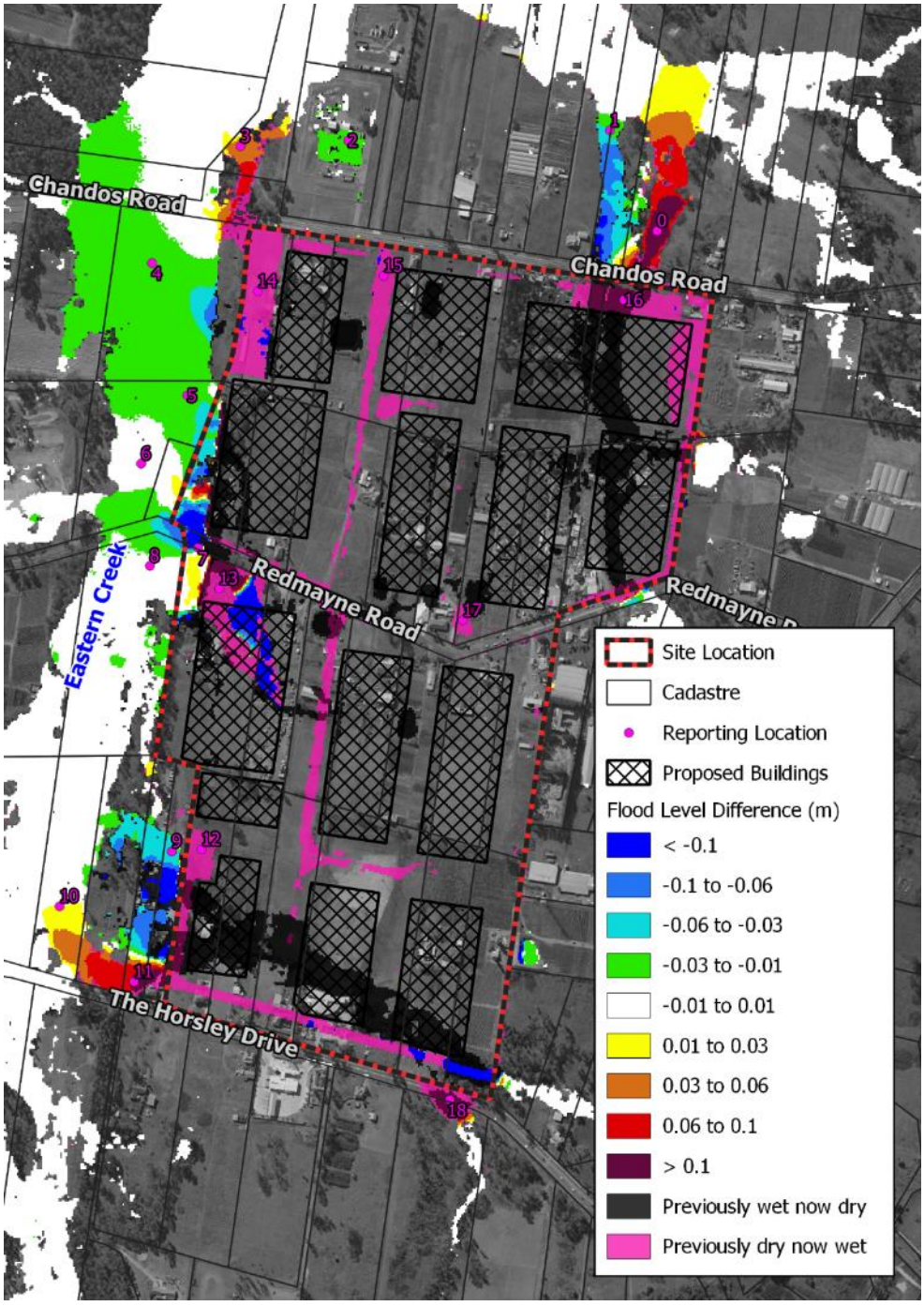


Figure E33- PMF AEP Flood Depth (Differences)

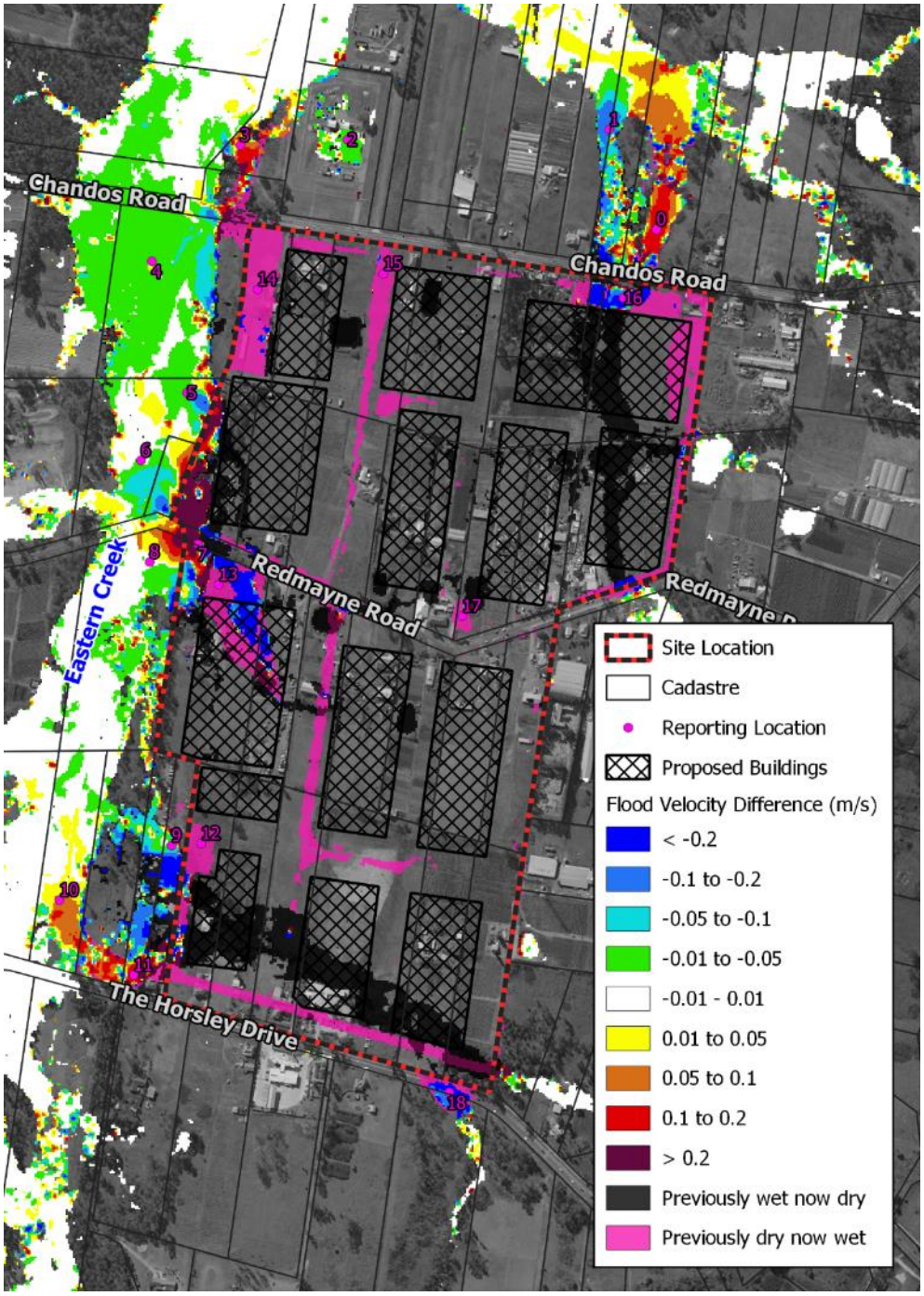


Figure E34- PMF AEP Flood Velocity (Differences)

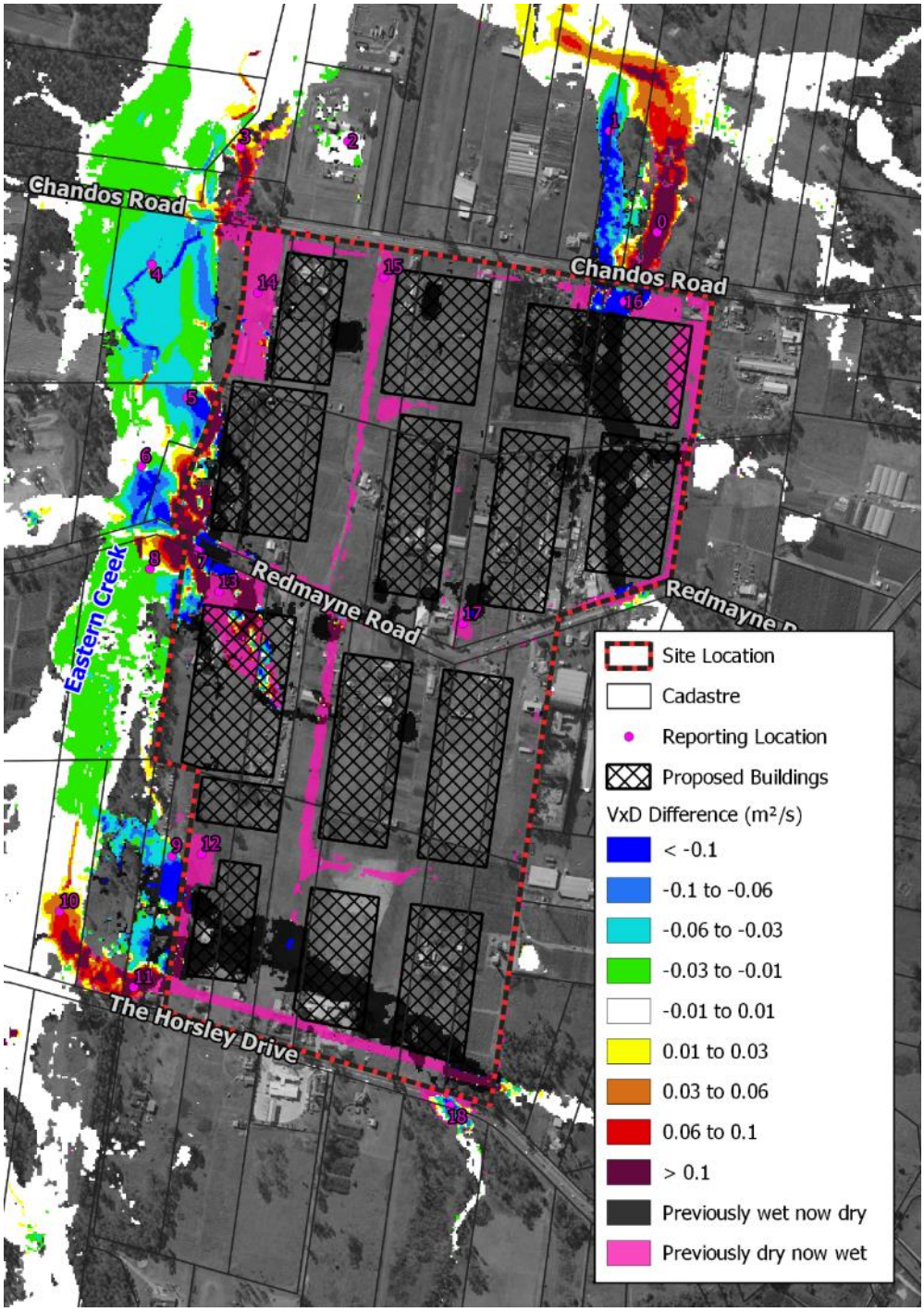


Figure E35- PMF AEP Velocity Depth (Differences)

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