Westlink Industrial Estate, Kemps Creek

Civil Infrastructure Report
Stage 2

ESR Development (Australia) Pty Ltd

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Commercial in Confidence

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Contents

Figures

Tables

1. Introduction

This report has been prepared by AT&L on behalf of ESR Australia in support of a State Significant Development Application (SSD-46983729) for the proposed development of the site located at 1030-1064 Mamre Road Aldington Road and 59-63 Abbotts Road, Kemps Creek (the Site). This SSD builds on the Stage 1 approval SSD-9138102. Combined both these SSD's form the entire Westlink Industry Park.

1.1. Site Description

The extent of the site is presented in Figure 1.

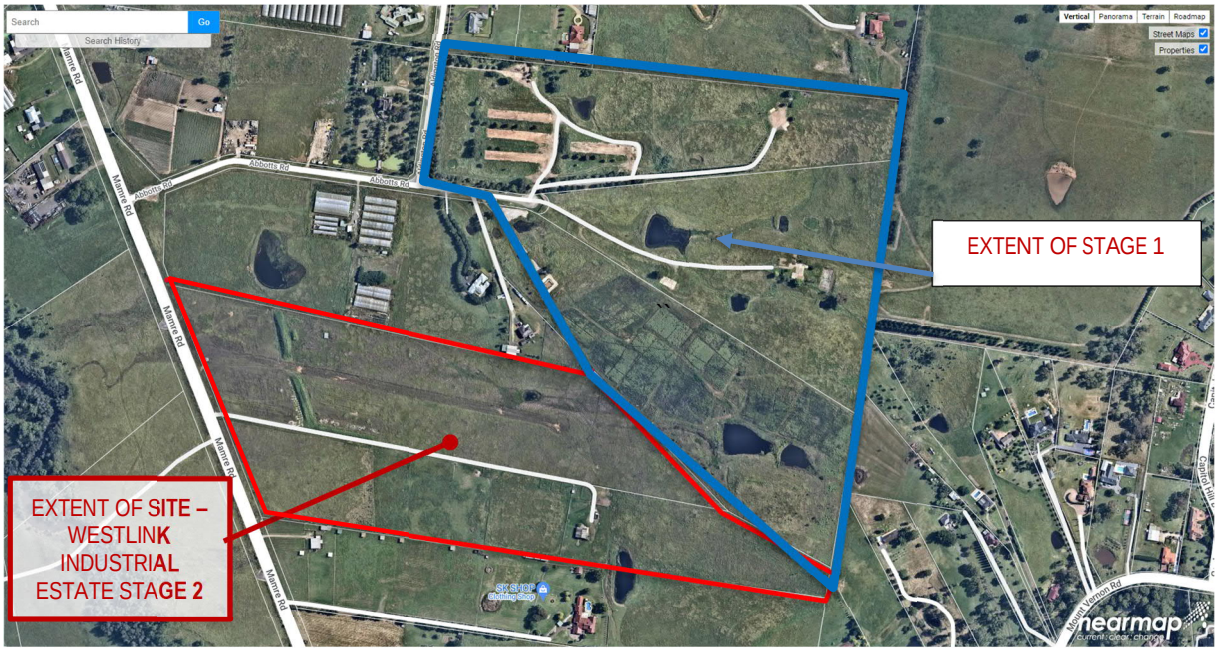

Figure 1: Site Extent (imagery from nearmap, dated 17 February 2022)

The site is located in the suburb of Kemps Creek, within the Penrith Local Government Area (LGA), and approximately 15 km south-east of the Penrith CBD and 5 km north-east of the under-construction Western Sydney Airport. The site is made up of the following allotments:

- Lots 3 and 4 DP250002 (1030-1064 Mamre Road, Kemps Creek)
- Lots 11 and 13 DP253503 (59-63 Abbotts Road, Kemps Creek)

The total area of the site is approximately 52 hectares.

Stage 1 SSD approval contains bulk earthworks, servicing and construction of Warehouse 1 and 4. Total work area is approximately 11.72Ha.

The proposed works associated for this Stage 2 SSD application is as follows and referenced in Figure 2:

- Construction of extension of Abbots Road from Stage 1 extents to southern boundary
- Construction of Aldington Road extension to southern boundary
- Construction of private road north of Lot 6 linking Aldington Road with Abbotts Road extension
- Development of Lot 2
- Bulk earthworks and associated retaining walls within Lots 3, 5 and Lot 6

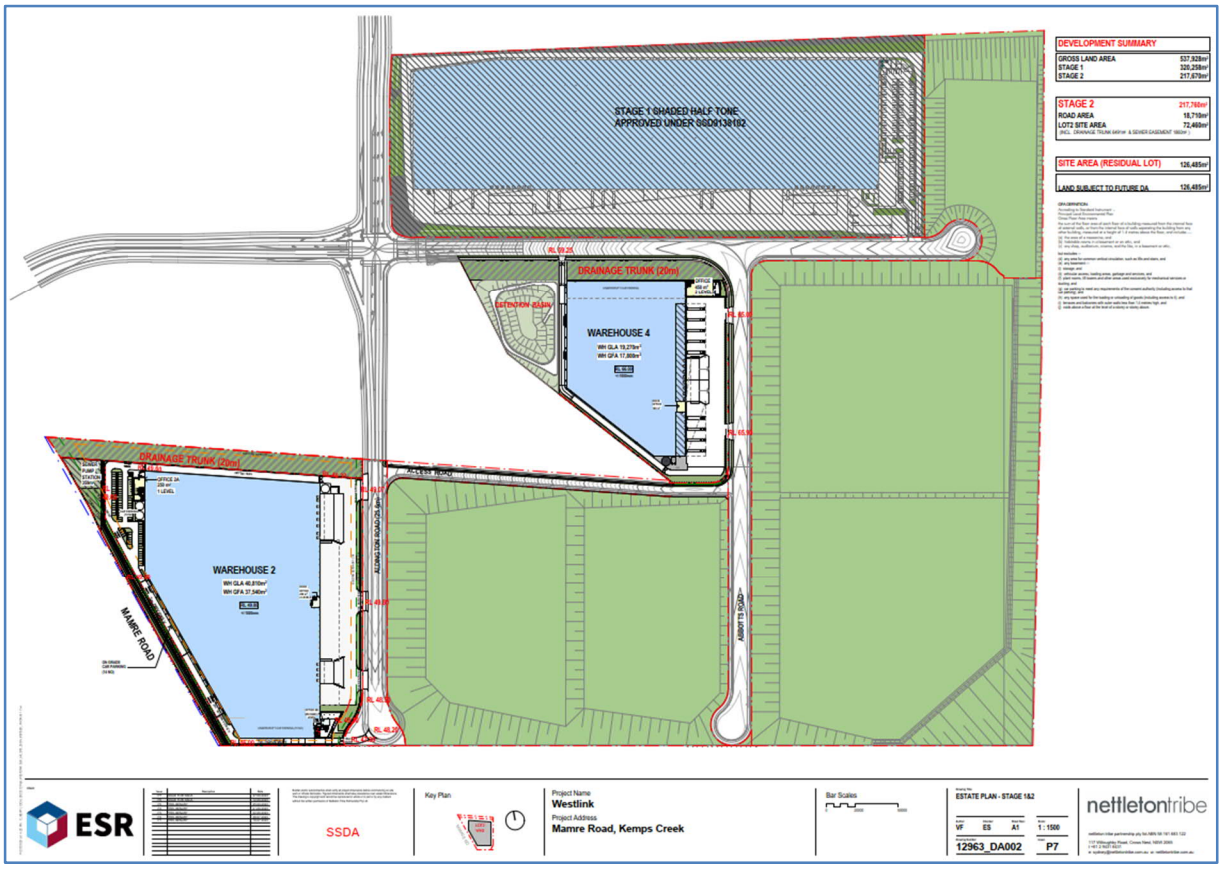

Figure 2 - Estate Plan Stage 2

The site is currently characterised as rural land and comprises residential dwellings, agricultural areas, sheds, greenhouses and some farm dams.

In June 2020, the site was rezoned *IN1 – General Industrial* under the *State Environmental Planning Policy (Western Sydney Employment Area) 2009*. The site is also located in the Mamre Road Precinct and is therefore subject to controls outlined in the *Mamre Road Precinct Development Control Plan 2021*.

1.2. Supporting Documentation

The following documentation is referred to throughout and should be read in conjunction with this report:

- Civil Drawings (AT&L), 20-748-C5000 (Infrastructure) and C6000 (on-lot) series – refer to Appendix 1.

2. Compliance with SEARs

This report responds to the NSW Planning Secretary's Environmental Assessment Requirements (SEARs) issued by the NSW Department of Planning, Industry and Environment (DPIE) on 10th August 2022. Table 1 below summaries all key civil infrastructure and water management issues raised in the SEARs and how they have been addressed in this report.

Table 1: Planning Secretary's Environmental Assessment Requirements addressed in this report

Key Issue listed in the SEARs	Response
6. Traffic and Transport	
Swept path analysis for the largest vehicle requiring access to the development	For internal lot turning manoeuvres, refer to the traffic engineering report prepared by ASON.
Details and plans of any proposed internal road network, loading dock provision and servicing, on-site parking provisions and sufficient pedestrian and cyclist facilities, in accordance with the relevant Australian Standards	Refer Roadworks and Stormwater Drainage Plans 20-748–C5041 to C5046 prepared by AT&L indicating site access along with the proposed road layouts. Note also pedestrian footpath included within the plans. Refer to Architectural plans prepared by NETTLETON TRIBE for internal parking layouts.
Details of road upgrades, infrastructure works, or new roads or access points required for the development if necessary	Refer to Roadworks and Stormwater Drainage Plans 20-748-C5041 to C5046. Refer to Ason Traffic Report.
12. Ground and Water Conditions	
Assess potential impacts on soil resources and related infrastructure and riparian lands on and near the site, including soil erosion, salinity and acid sulfate soils	Refer to Geotechnical Reports for Site which includes discussion on potential for Acid Sulphate Soils and Salinity
Provide a Surface and Groundwater Impact Assessment that assesses potential impacts on: • Surface water resources (quality and quantity) including related infrastructure, hydrology dependant ecosystems, drainage lines, downstream assets and watercourses • Groundwater resources in accordance with the Groundwater Guidelines	Refer to Water and Stormwater Management Report R009-01-20-748 for an overview of site water requirements, water sources and measures to minimise potable water use.
13. Water Management	
Provide an Integrated Water Management Plan for the development that: • Is prepared in consultation with the local council and any other relevant drainage or water authority. • Outlines the water-related servicing infrastructure required by the development (informed by the anticipated annual and ultimate increase in servicing demand) and evaluates opportunities to reduce water demand (such as recycled water provision) • Details the proposed drainage design (stormwater and wastewater) for the site including any on-site detention facilities,	Refer to Water and Stormwater Management Report R009-02-20-748 for details of the performance of the proposed stormwater quality management measures against the controls in the Mamre Road Precinct DCP.

Key Issue listed in the SEARs	Response
water quality management measures and nominated discharge points, on-site sewage management, and measures to treat, reuse or dispose of water • Demonstrates compliance with the local council or other drainage or water authority requirements and avoids adverse downstream impacts	
Where water and drainage infrastructure works are required that would be handed over to the local council, or other drainage or water authority, provide full hydraulic details and detailed plans and specification of proposed works that have been prepared in consultation with, and comply with the relevant standards of, the local council or other drainage or water authority	Refer to Water and Stormwater Management Report R009-01-20-748 and Civil Drawings prepared by AT&L.
14. Flooding Risk	
Identify any flood risk on-site having regards to adopted flood studies, the potential effects of climate change, and any relevant provisions of the NSW Floodplain Development Manual	Refer to Stantec Flood Risk Assessment Report
Assesses the impacts of the development, including any changes to flood risk on-site or off-site, and detail design solutions and operational procedures to mitigate flood risk where required	Refer to Stantec Flood Risk Assessment Report
Infrastructure Requirements and Utilities	
In consultation with relevant service providers: • Assess the impacts of the development on existing utility infrastructure and service provider assets surrounding the site • Identify any infrastructure required on-site to facilitate the development any arrangements to ensure that the upgrades will be implemented on time and be maintained. • provide an infrastructure delivery and staging plan, including a description of how infrastructure requirements would be co-ordinated, funded and delivered to facilitate the development	Infrastructure requirements for the site have been documented in the Services and Utilities Coordination Plans prepared by AT&L (drawings 20-748-C5151 to C5159 inclusive) and are also described in Section 6. Continued coordination with utility infrastructure providers will be undertaken concurrent to exhibition and assessment of SSD-9138102 to ensure that adequate arrangements are made for the provision of infrastructure when required. Refer to Section 6 for an overview of infrastructure upgrade works required to service the proposed development. Note all these works will need to be confirmed with the relevant service Authority during detailed design stages. Consultation with each of these Authorities has commenced as part of this SSD process and will continue during detailed design.

3. Site Characteristics

3.1. Existing Topography and Catchments

The Site in its existing condition is characterised by undulating topography. The ground slope across most of the site has a general fall from the east to west towards Mamre Road with existing levels ranging from RL98 in the south-east, RL 93 in the north-east, RL 42.5 in the south and west adjacent Mamre Road.

The eastern portion of the site consists of four ridgelines that are generally aligned in an east-west direction. Ground slopes off these ridgelines towards local gullies within the site are typically between 10% and 15%. The western portion of the site adjacent to Aldington Road and Abbotts Road is generally flatter than the eastern portion, with ground slopes typically in the range of between 2% and 8%.

Most of the site in its existing condition is pervious, other than some residential dwellings, sheds and access driveways.

Delineation of the existing internal drainage catchments and external catchment that drain through the site is presented as Figure 3. Note that this includes the existing conditions before the commencement of Stage 1 works.

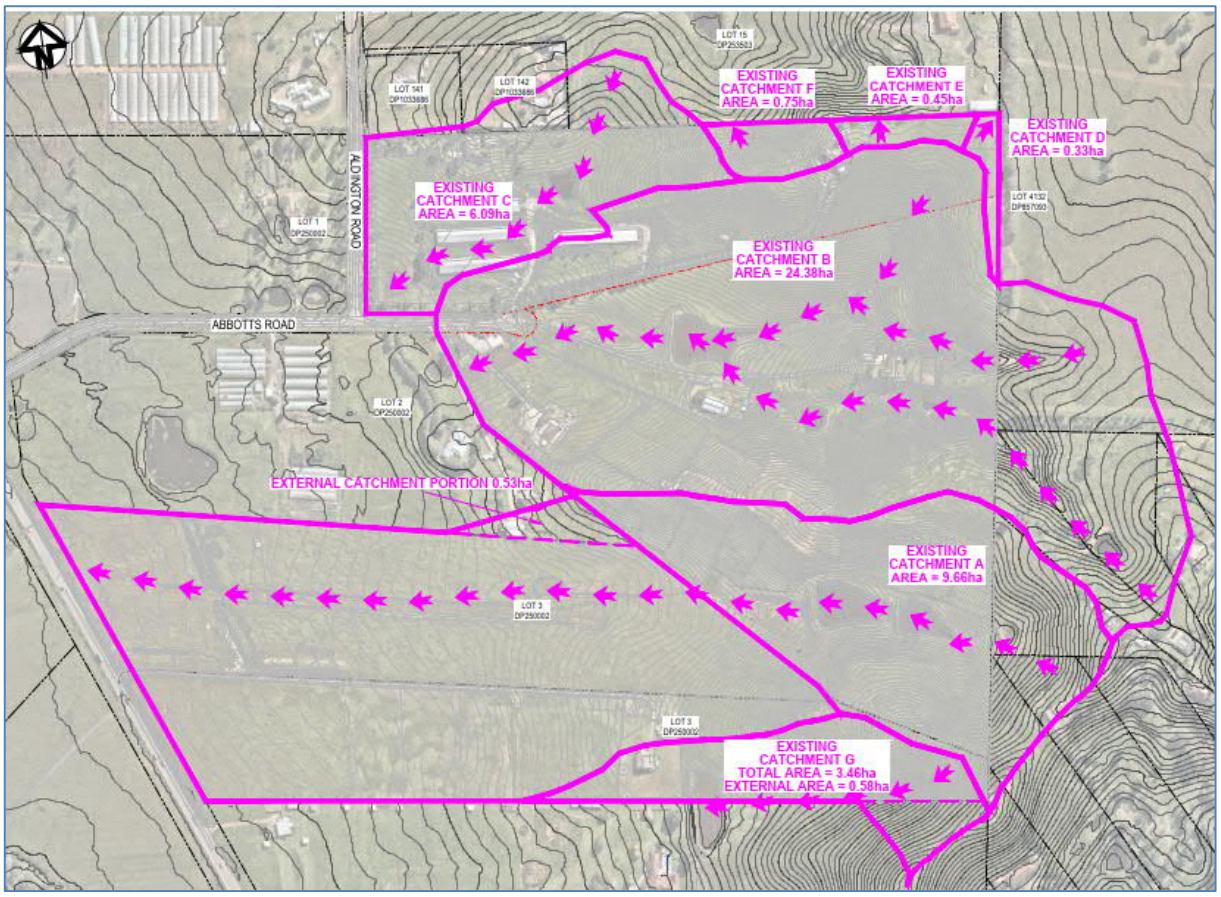

Figure 3: Catchment extents under existing conditions

A summary of the internal catchments under existing conditions is presented in Table 2.

Table 2: Description of internal and external catchments under existing conditions

Catchment ID	Area (ha)	Description
A	28.82	Discharges towards Mamre Road at the north west corner of stage 2. Concentrates mildly through a farm channel & existing embankment.
B	24.38	Discharges towards the eastern boundary of 1016-1028 Mamre Road (Lot 2 DP250002) and ultimately into a catch drain that runs along the southern edge of Abbotts Road.
C	6.09	Discharges towards the intersection of Abbotts Road and Aldington Road.
D	0.33	Discharges in a north-easterly direction towards 19-105 Capitol Hill Drive Mount Vernon (Lot 4132 DP857093)
E	0.45	Discharges in a northerly direction towards 272 Aldington Road (Lot 15 DP253053)
F	0.75	
G	3.46	Discharges along the southern boundary into an existing dam crossing the lot boundary.

There is currently no formal trunk stormwater infrastructure within the site.

3.2. Existing Drainage Lines

Based on large-scale topographic mapping (1:25,000 from NSW Six Maps), there is one mapped overland drainage lines within the site, refer to Figure 4.

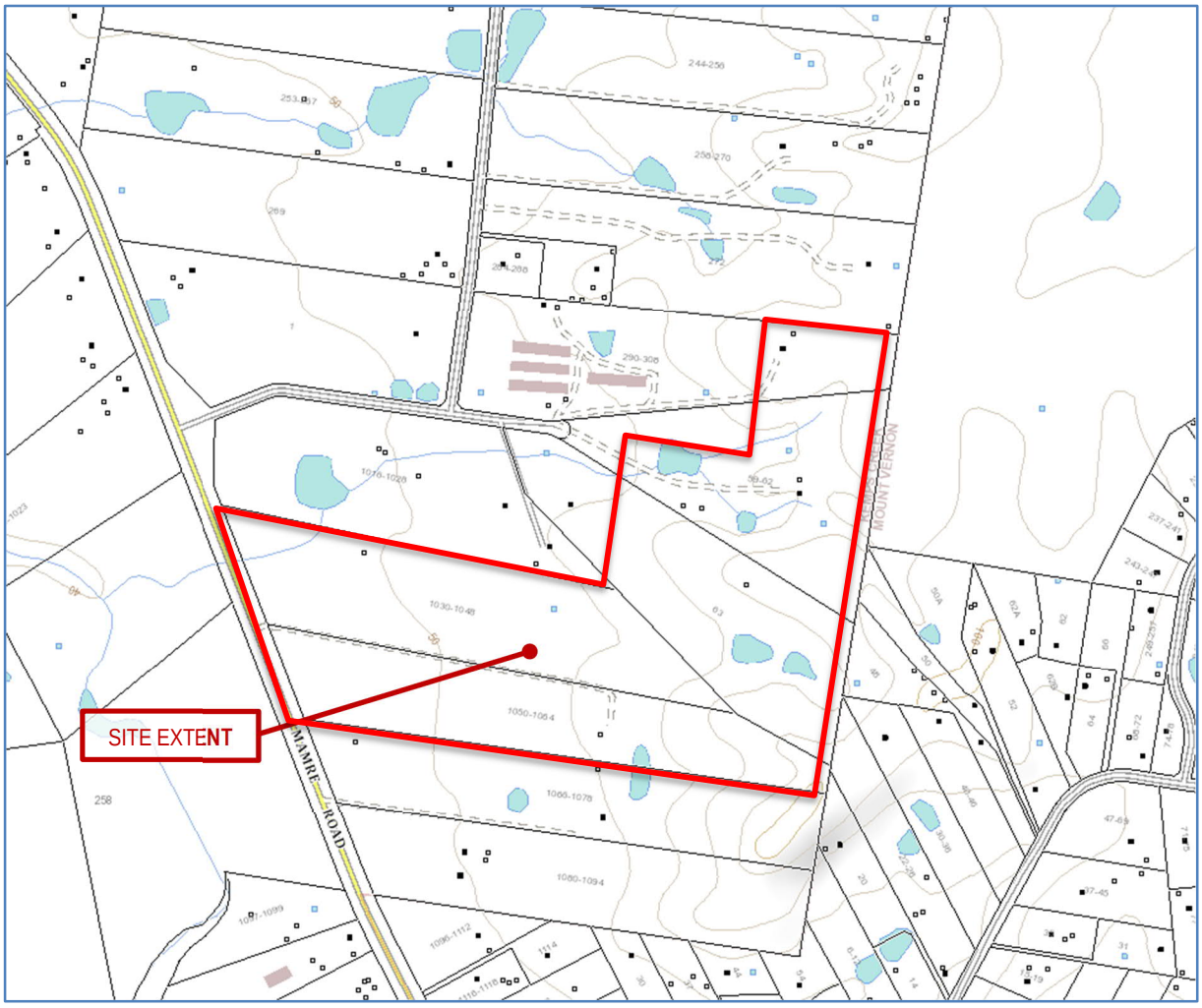

Figure 4: Topographic mapping showing drainage lines in the vicinity of the site (Source: NSW SIX Maps)

The *Mamre Road Precinct Waterway Assessment* (CT Environmental, April 2020), contained in the *Mamre Road Flood, Riparian Corridor, and Integrated Water Cycle Management Strategy* (Sydney Water, October 2020) presents the extents of waterways in the Mamre Road Precinct that have been the subject of a desktop review and field assessment to confirm the presence of mapped and unmapped waterways. An extract of mapping showing the extents of waterways in the Mamre Road Precinct is presented as Figure 5. This shows an unnamed tributary of Kemps Creek passing through the site.

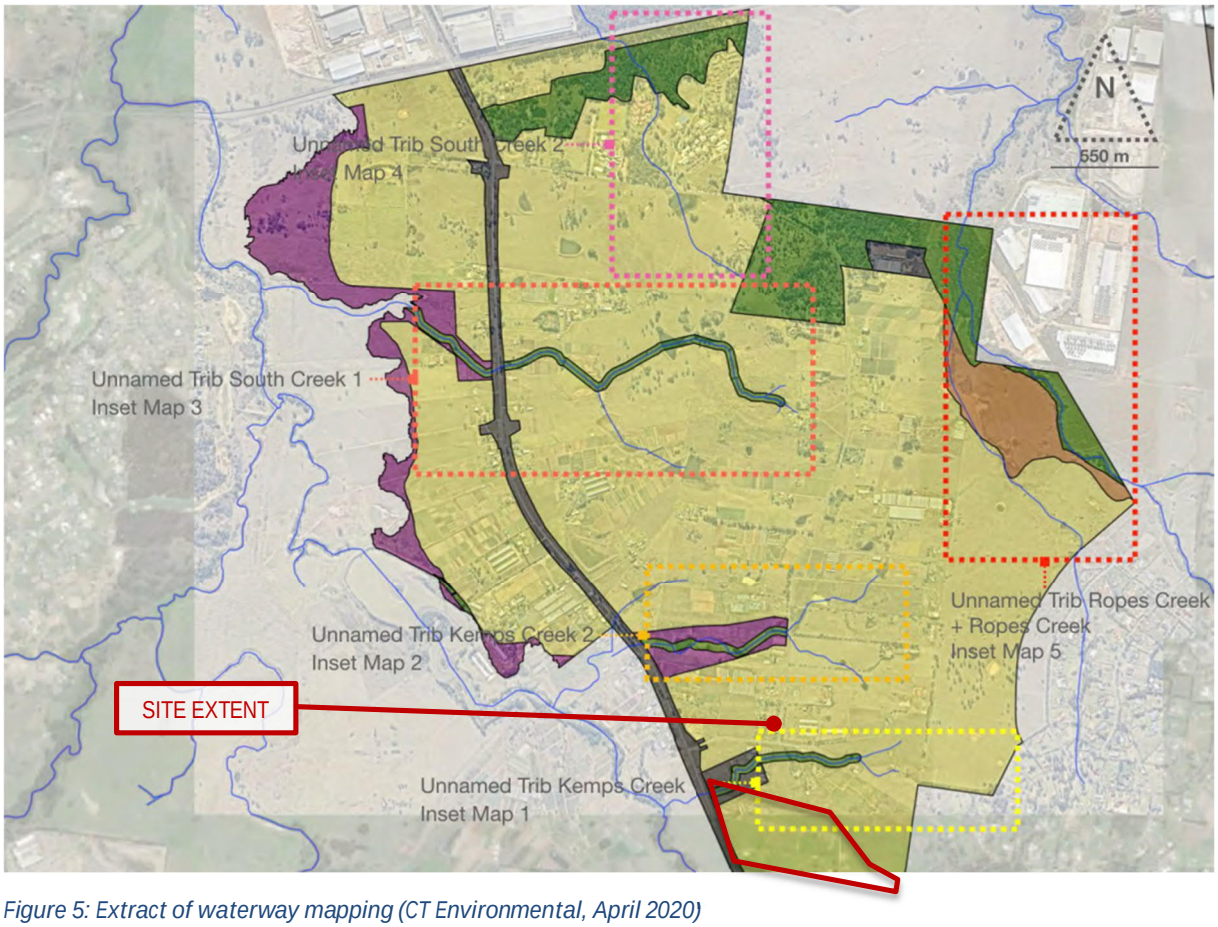

Figure 5: Extract of waterway mapping (CT Environmental, April 2020)

Results of the inspection of the unnamed tributary of Kemps Creek are described in the *Mamre Road Precinct Waterway Assessment* (CT Environmental, April 2020), and are summarised below:

- Two first order watercourses were evident in the headwaters which run to the north and south of the recently demolished house on 59-62 Abbotts Road.
- A clear flow path was evident below the confluence of the two first order watercourses, which validated the presence of a second order watercourse.
- The flow path did not have defined bed and banks, likely due to the presence of three upstream farm dams.
- From a point approximately 200 metres downstream (west) of the confluence of the first order watercourses, the flow path was observed to be heavily modified and formed into a drainage channel that runs parallel to and on the southern side of Abbotts Road. The flow path continues to Mamre Road.
- The section of mapped watercourse downstream of the West link Industrial Estate Stage 1, and passing through Stage 2, was not present, refer to Figure 6.
- Due to the lack of vegetation along the upper section of the headwater and significant modification to the drainage channel in the lower section, the watercourse had minimal ecological value.

Figure 6: Field validated flow paths and watercourses within and downstream of the site

3.3. Existing Geology

Based on the Preliminary Geotechnical Investigation undertaken by Douglas Partners (reference: 92352.00, dated August 2019) for 59-63 Abbotts Road and the Geotechnical Investigation Report prepared by Alliance Geotechnical (reference: 9687-GR-1-1, dated October 2019) for 290-308 Aldington Road, the following inferred sub surface soils were encountered across the site:

- TOPSOIL / topsoil filling to depths of 0.1 - 0.6m
- FILL to depths of 2.3m over parts of the site
- Residual Soil – variably stiff to hard silty clay, to depths in the range 2.5-3.5m
- BEDROCK - initially extremely low to very low strength shale or sandstone at first contact at depths of 0.7

4. Earthworks and Retaining Walls

4.1. Proposed Earthworks Strategy

The site in its existing condition is characterised by undulating topography. It is the intent of the proposed development to produce several "flat" pads to facilitate the development of large-scale industrial lots. This will require earthworks across the site to achieve a benched site, refer to drawing 20-748-C5030 and C5033 for a bulk earthworks cut/fill plan showing the proposed extent of earthworks within the site.

The cut / fill requirements within the site have been defined through multiple iterations and careful consideration of the following:

- Undulating topography within the Precinct resulting in the requirement for extensive cut and fill operations to allow Westlink to facilitate economic development and provide flexibility to cater for the range of industrial customer requirements.
- Provisioning for connectivity to adjoining lands and managing existing upstream catchment flows.
- Minimising retaining walls fronting Aldington Road and mitigating retaining walls fronting internal public road reserves.
- Mitigate extensive cut in bedrock sub-surface units.
- Meet the requirements for the site to cater for *IN1 – General Industrial* employment which requires large flexible allotments.

It is recommended that the proposed earthworks design contained within the AT&L documentation provides the most contextually and economically appropriate design in consideration of the above requirements.

Bulk earthworks cut / fill plans have been prepared for two scenarios:

1. Earthworks and site grading within the Westlink Industrial Estate Stage 2 only.
2. Earthworks and site grading within the entire Westlink Industrial Estate (Stage 1 and 2)

A summary of the proposed cut and fill volumes across the site is presented below in Table 3.

Table 3: Summary of proposed cut and fill volumes across the site

Item	Westlink Industrial Estate (Stage 2)
	Volume (m^3)
Stripping of existing topsoil (to be blended with general Fill)	- 73,060
Excavation of existing creeks and dams (to be exported from site)	- 10,467
Net Cut	- 713,430
Net Fill	+ 1,161,680
Balance	+ 448,250 (import)*

Earthwork volumes for Stage 2 are calculated using the Stage 1 design bulk earthwork levels and existing site levels within Stage 2. These volumes will need to be confirmed once Stage 1 earthworks are completed and Work as Executed documentation is provided.

* Note this import volume does not take into the account the following:

- Bulking factors of removed cut
- Removal of existing building slabs and pavements
- Removal and/or remediation of any existing uncontrolled fill

- Landscaping
- Stormwater and utility trenching
- Erosion and sediment control swale and basins
- Engineering fill required behind retaining walls.

Whilst exact cut volumes for these items have not been determined at this stage, it is assumed when included into the overall earthworks cut/fill analysis that the net import into site will be close to zero and as such the site will be a net cut to fill balance as per the requirements of the Mamre Road DCP.

It is assumed that all topsoil from the site will be re-used on site as per the specification of the Geotechnical Engineer.

All import materials will comply with the requirements of the requirements of the Import Fill Protocol and Geotechnical Specifications for the Development. Topsoil stripping, blending and placement will be completed in accordance with the Geotechnical Engineering Specifications for the project.

4.2. Retaining Walls

Where possible, batter slopes will be provided to accommodate level changes. Where this is not possible retaining walls will be constructed adjacent to the road reserve, in between allotments and adjacent to the proposed detention basin. The extent and height of each wall will be based on the current civil and earthworks design. All retaining walls will generally be designed in accordance with the Mamre Road DCP.

A keystone product or other similar face block will be adopted for all retaining walls and will be detailed on the civil drawings. Refer to Figure 7 and Figure 8 for examples of keystone walls.

Figure 7: Example of retaining wall in location of fill adjacent to road reserve.

Figure 8: Example of retaining wall in location of cut

'Boulder' retaining walls are considered another potential retaining wall option for the site. Potential locations of 'boulder' walls will be identified during the detailed design. The walls will be designed and constructed to the structural engineer's specification. Refer to Figure 9 for an example of the potential "boulder" retaining wall.

Figure 9: Tiered boulder retaining wall

The proposed retaining walls will be built to the manufacturers design guideline requirements and verified by a structural engineer prior to construction. This practice has previously been adopted other developments within the Penrith City Council LGA and considered input from the geotechnical engineer, utility coordination as well as entry and exit points from proposed lots.

Retaining is required along the north, east, and southern site boundary where the proposed building pad levels will be altered from existing levels. Refer to Drawing 20-748-C5080 to C5085 for cut and fill wall locations. Retaining walls will be designed and constructed using standard industry practices.

All retaining walls will be constructed on a staged basis and as required to suit the development earthworks and stormwater basin works. Where the walls are not constructed a batter of 1 in 4 will be maintained for stability purposes.

All retaining walls will be located within private property and not within the road reserve areas, unless within drainage easements.

All retaining walls will have pedestrian and vehicular safety barriers (if required) in accordance with Austroads Guidelines as required.

4.3. Post-Development Catchment Extents

A post-development catchment plan based on the proposed site grading is presented as Figure 10.

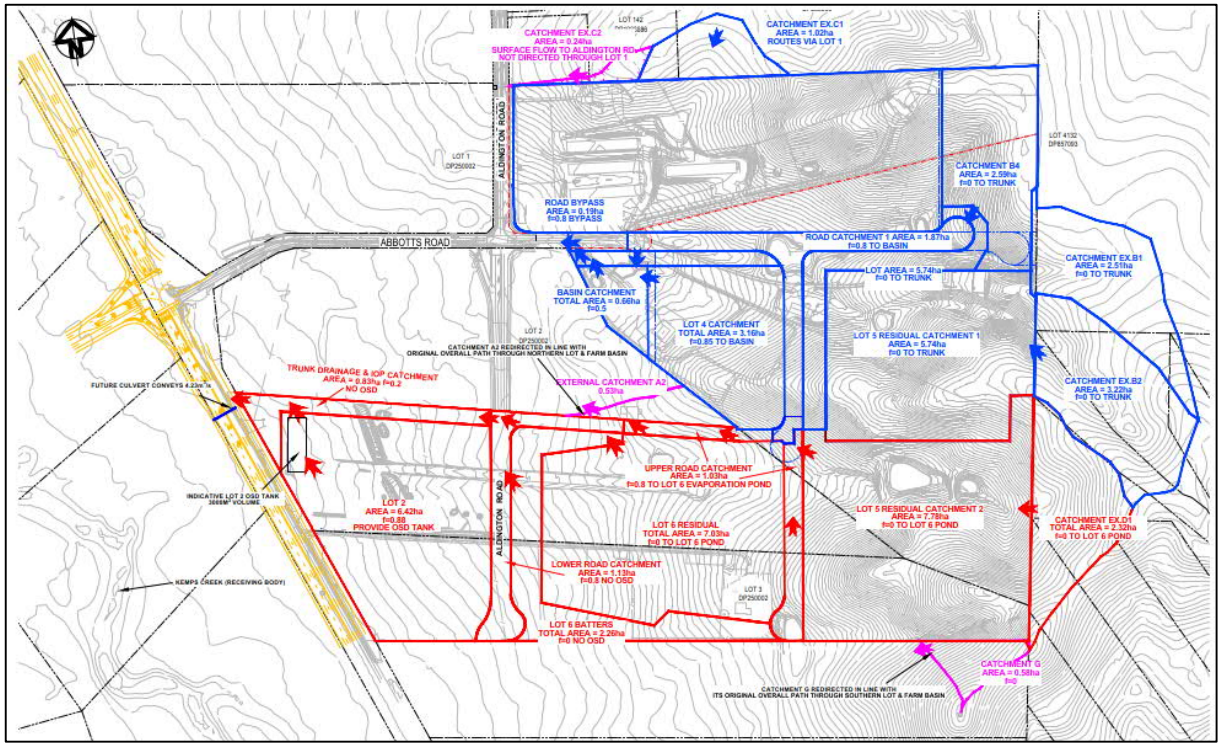

Figure 10: Catchment extents under proposed conditions

The post developed catchment extents are proposed to drain to the existing culvert beneath Mamre Road in the northwest corner of Stage 2 site as per Figure 10. It is noted the existing culverts beneath Mamre Road are scheduled to be upgraded in approximately the same timeline as the Westlink development.

Prior to draining through the culvert beneath Mamre Road, the Stage 2 catchment is proposed as such:

- Abbotts Road, private road north of Lot 5 and Aldington Road extension to drain into the proposed 20m open trunk drainage channel north of Lot 2
- Proposed Lots 6 and southern half of Lot 5 to drain into Aldington Road and private road drainage network to then drain into the 20m open trunk drainage channel

- Proposed Lot 3 and northern portion of Lot 5 to drain into Stage 1 basin.
- Undeveloped External catchment to east to drain into Lot 5 and Abbotts Road drainage.
- Developed Lot 2 (western Lot) – drains via a proposed underground OSD tank with orifice outlet within the western portion of the lot to drain into the 20m open trunk drainage channel along the north of Lot 2

Once Lot 5, Lot 6 and eastern external catchments are developed, detention measures within future allotments will be required to be implemented to ensure peak post flows into the open channel do not exceed the pre-developed flows. This will need to be determined as part of the Development Applications on each of these lots. As such the open trunk drainage channel is designed to compensate for pre-developed flow rates.

5. Road Design

5.1. External Road Network

Access to the site is to be via extension of Abbotts Road constructed as part of SSD Stage 1 from the north. A private road is proposed along the northern boundary of the site to connect to Aldington Road extension within the western portion of the site. As future external works, Aldington Road will connect directly to Abbotts Road, minimising the use of the private road in the long term.

Refer to Drawings 20-748-C5005 for proposed internal road drawings for the site.

5.2. Internal Road Network

The proposed internal road network has been designed to service the intended land use within the site, being large-format industrial lots. A large proportion of the traffic within the site will be heavy vehicles, including semi-trailers (typically up to 19m long) and B-Doubles (up to 30m long). These vehicles are on average 2.5m wide and when navigating the local road network, can regularly consume all the travel lane and more so around corners where the swept path can extend beyond the average travel lane width.

A summary of the general design criteria adopted for the internal estate roads, which is consistent with the *Mamre Road Precinct Development Control Plan*, is summarised in Table 4-6.

Table 4: Industrial Road (24m) design criteria

Road Type	Industrial Road (24.0m)
Roads within the estate	Road 01
Design Speed	60 km/h (signposted 50 km/h)
Design Vehicle	30m long Performance Based Standards (PBS) Level 2 Type B vehicle (Type 2B), refer to example below from the National Heavy Vehicle Regulator approved PBS vehicle combinations:  3-axle prime mover B-double (3-3)
Check Vehicle	36.5m long Performance Based Standards (PBS) Level 3 Type A vehicle (Type 3A), refer to example below from the National Heavy Vehicle Regulator approved PBS vehicle combinations:  3-axle prime mover A-double (3-3-3)
Pedestrian and cycle path (within verge width)	Verge 1 – 1.5m Verge 2 – 2.5m
Through traffic lanes	2 x 3.5m
Kerbside lanes	2 x 4.0m
Median width	N/A
Road carriageway width (kerb to kerb)	15.0m
Verge width	Verge 1 – 4.0m Verge 2 – 5.0m
Road Reserve	24.0m

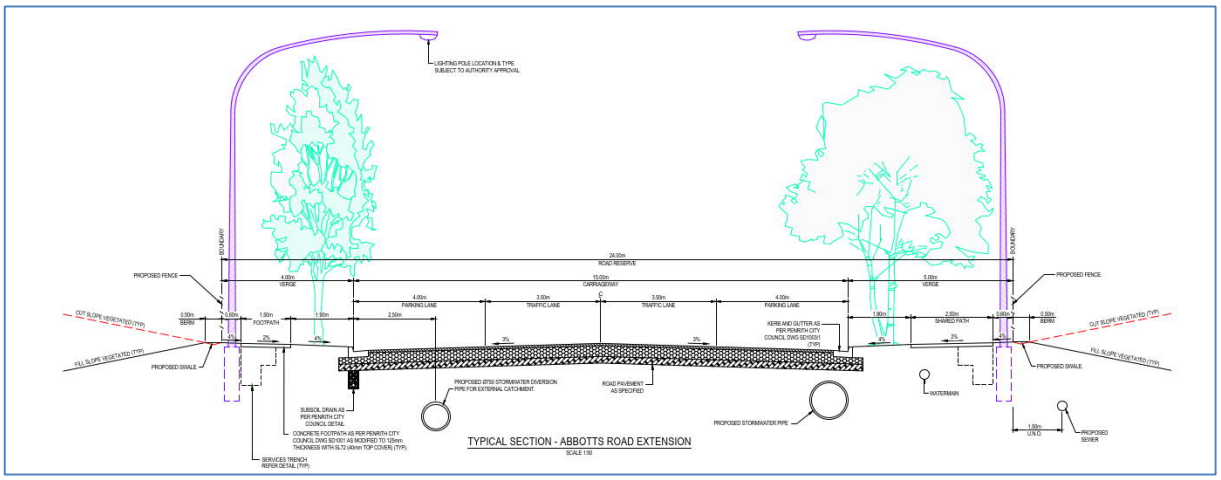

Figure 11: Typical section of the proposed Estate Road (Abbotts Road extension)

Table 5: Industrial Road (25.6m) Design Criteria

Road Type	Industrial Road (25.6m)
Roads within the estate	Aldington Road
Design Speed	60 km/h (signposted 50 km/h)
Design Vehicle	30m long Performance Based Standards (PBS) Level 2 Type B vehicle (Type 2B), refer to example below from the National Heavy Vehicle Regulator approved PBS vehicle combinations:  3-axle prime mover B-double (3-3)
Check Vehicle	36.5m long Performance Based Standards (PBS) Level 3 Type A vehicle (Type 3A), refer to example below from the National Heavy Vehicle Regulator approved PBS vehicle combinations:  3-axle prime mover A-double (3-3-3)
Pedestrian and cycle path (within verge width)	Verge 1 – 1.5m Verge 2 – 2.5m
Through traffic lanes	2 x 3.5m
Kerbside lanes	2 x 4.2m
Median width	N/A
Road carriageway width (kerb to kerb)	15.4m
Verge width	Verge 1 – 4.6m Verge 2 – 5.6m
Road Reserve	25.6m

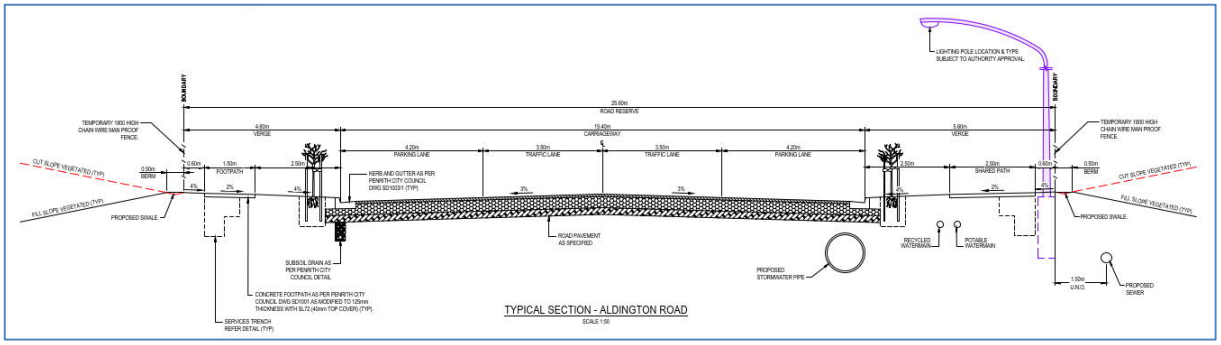

Figure 12: Typical section of the proposed Estate Road (Aldington Road)

Table 6 Industrial Private Road (13.6m) Design Criteria

Road Type	Industrial Private Road (13.6m)
Roads within the estate	Private Road
Design Speed	60 km/h (signposted 50 km/h)
Design Vehicle	30m long Performance Based Standards (PBS) Level 2 Type B vehicle (Type 2B), refer to example below from the National Heavy Vehicle Regulator approved PBS vehicle combinations:  3-axle prime mover B-double (3-3)
Check Vehicle	36.5m long Performance Based Standards (PBS) Level 3 Type A vehicle (Type 3A), refer to example below from the National Heavy Vehicle Regulator approved PBS vehicle combinations:  3-axle prime mover A-double (3-3-3)
Pedestrian and cycle path (within verge width)	Verge 1 – 1.5m Verge 2 – N/A
Through traffic lanes	2 x 3.5m
Kerbside lanes	2 x 4.2m
Median width	N/A
Road carriageway width (kerb to kerb)	8.0m
Verge width	Verge 1 – 3.1m Verge 2 – 2.5m
Road Reserve	13.6m

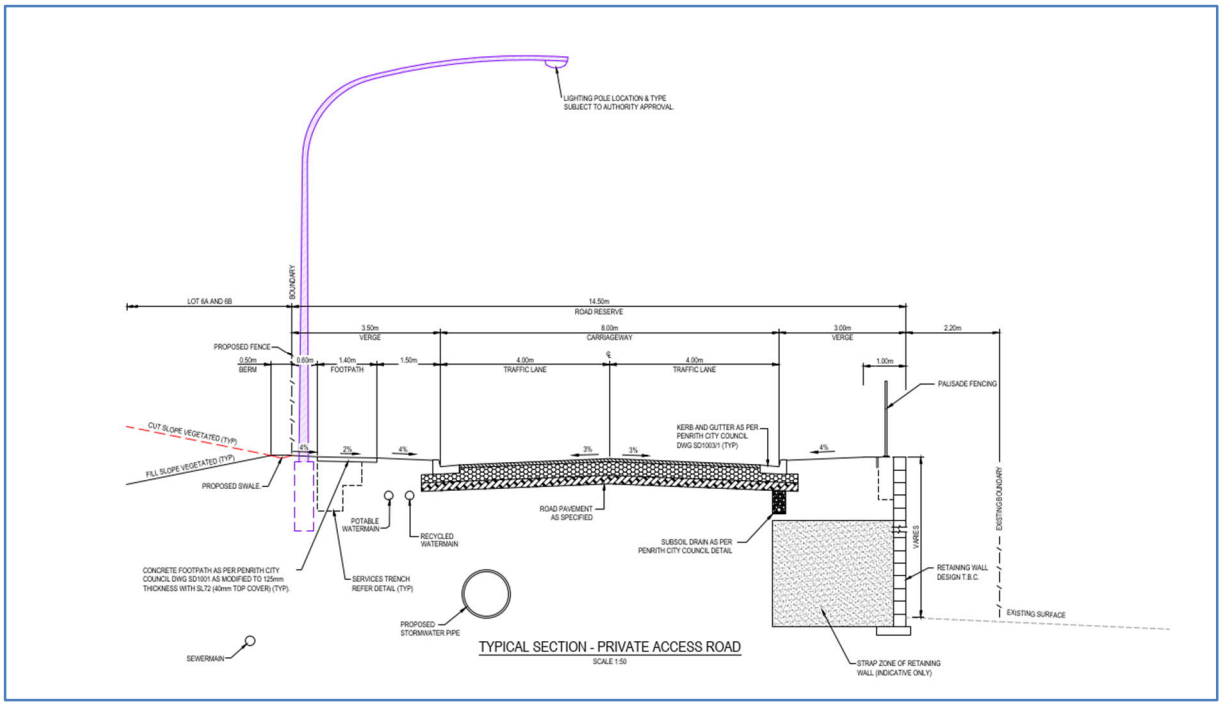

Figure 13: Typical section of the private access road

The internal road network will be designed and constructed in accordance with the Penrith City Council design and construction specifications, including the private road. Public roads will comply with additional requirements as specified in the Mamre Road Precinct DCP.

Pavement Design

Pavement will be designed based on the requirements of Austroads Pavement Design Guide – A Guide to the Structural Design of Road Pavements and recommendations provided by Douglas Partners and Alliance Stage 1 Geotechnical reports submitted as part of this SSDA.

The basis of this design is:

- Design Traffic Loading: N =1x107 ESA (in accordance with Penrith City Council requirements for Heavy Industrial)
- Design subgrade CBR = 2% (based on Section 6.7.1 of the Douglas Partners and Alliance Stage 1 Geotechnical Reports)

Based on these parameters the indicative pavement design is as follows:

- 70mm AC 14 320 Bitumen
- 7mm Spray Seal
- 250mm DGB 20 (placed in two layers)
- 500mm Select Sandstone Fill with minimum CBR = 35% (placed in three layers)

If the subgrade CBR = 5% the bottom 200mm of select sandstone fill can be replaced with select fill with minimum CBR of 5%.

CBR testing is proposed to be undertaken at the subgrade level to confirm this pavement design. Polymer modified asphalt will be used within all cu-de-sacs with the asphalt concrete layer becoming a 75mm thick polymer modified AC14.

5.3. Batter Design

Any permanent batters steeper than 1 in 4 will be vegetated in accordance with the requirements of the Mamre Road Precinct DCP. All external batters to the development have been limited to 1 in 4 at steepest generally, with the maximum localised batter being 1 in 3.

Any temporary batters constructed during the works will be in accordance with the geotechnical report and ongoing advice from the Level 1 supervisor.

6. Utility Services

6.1. Existing utilities in the vicinity of the site

Based on an initial desktop study conducted from information obtained from Dial Before You Dig (DBYD) records, the following utility services are located within the vicinity of the Site:

- Potable water – Sydney Water
- Electrical – Endeavour Energy
- Telecommunications – Telstra

No sewer or gas was noted to be located within the vicinity of the Site.

Investigations of the Site were carried out based on:

- Site inspection
- Dial Before You Dig (DBYD) search
- Sydney Water Hydra System
- LIDAR Survey information
- Sydney Water South West Growth Servicing Plan 2017-2022
- Current case numbers for applications with various Authority Agencies (refer below)

6.2. Potable Water

6.2.1. Existing Services

Dial Before You Dig (DBYD) indicates the following water services within the area:

- 100mm diameter CICL potable watermain on the southern side of Abbotts Road
- 150mm diameter DICL potable watermain on the northern side of Abbotts Road
- 180mm diameter uPVC PE on eastern side of Aldington Road.

6.2.2. Proposed Services

Based on our investigations and ongoing discussions with Sydney Water (SWC), connection to the Oakdale West infrastructure will be utilised to provide water services to the site is proposed.

As part of the Oakdale West Development (north of the site), a Local Area Servicing Plan (LASP) was prepared and endorsed by Sydney Water that will provide additional trunk water infrastructure for the area. Included within these works is an extension of a 300mm diameter main from Lenore Drive through to Bakers Lane.

Subject to Sydney Water approval and further modelling, it is proposed to extend the above-mentioned 300mm main along Aldington Road to service the Site. The main will be cross connected to the existing water mains and through connected to the existing 2 x 150mm diameter main within Mamre Road. This main will be fully reimbursable subject to Sydney Water approval. An application for these works has been submitted to SWC as part of the Stage 1 SSD application under case number 200902PW.

The internal reticulation will consist of a DN200 main within the Westlink Industrial Estate with potable water design drawings submitted and approved to SWC under case number 191544PW.

Refer to Figure 14 below for the proposed potable water services to the site.

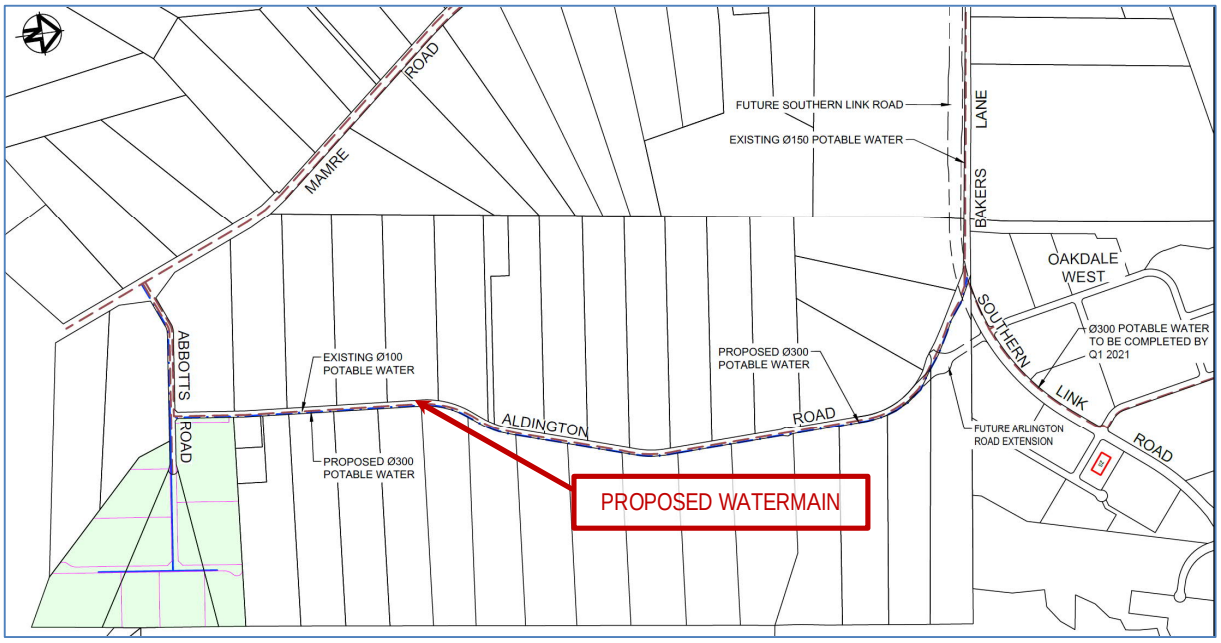

Figure 14 - Proposed potable water supply strategy

6.3. Wastewater

6.3.1. Existing Services

Dial Before You Dig (DBYD) indicates there is no existing sewer infrastructure located at or adjacent to the Site.

6.3.2. Proposed Services

The Site is located within the western catchment of the Mamre Road Precinct that drains to a proposed wastewater pumping station via proposed trunk wastewater carriers. The pumping station will be required to transfer flows to St Marys wastewater network for interim servicing to 2026 and after this time it is intended for the pumping station to transfer flows south to the proposed Upper South Creek Advanced Water Recycling Centre.

Sydney Water started concept design in November 2020, for the wastewater pumping station and carriers servicing the western catchment. Concept design will include environmental approvals, geotechnical investigations, survey, etc.

An indicative wastewater servicing plan is presented below as Figure 15.

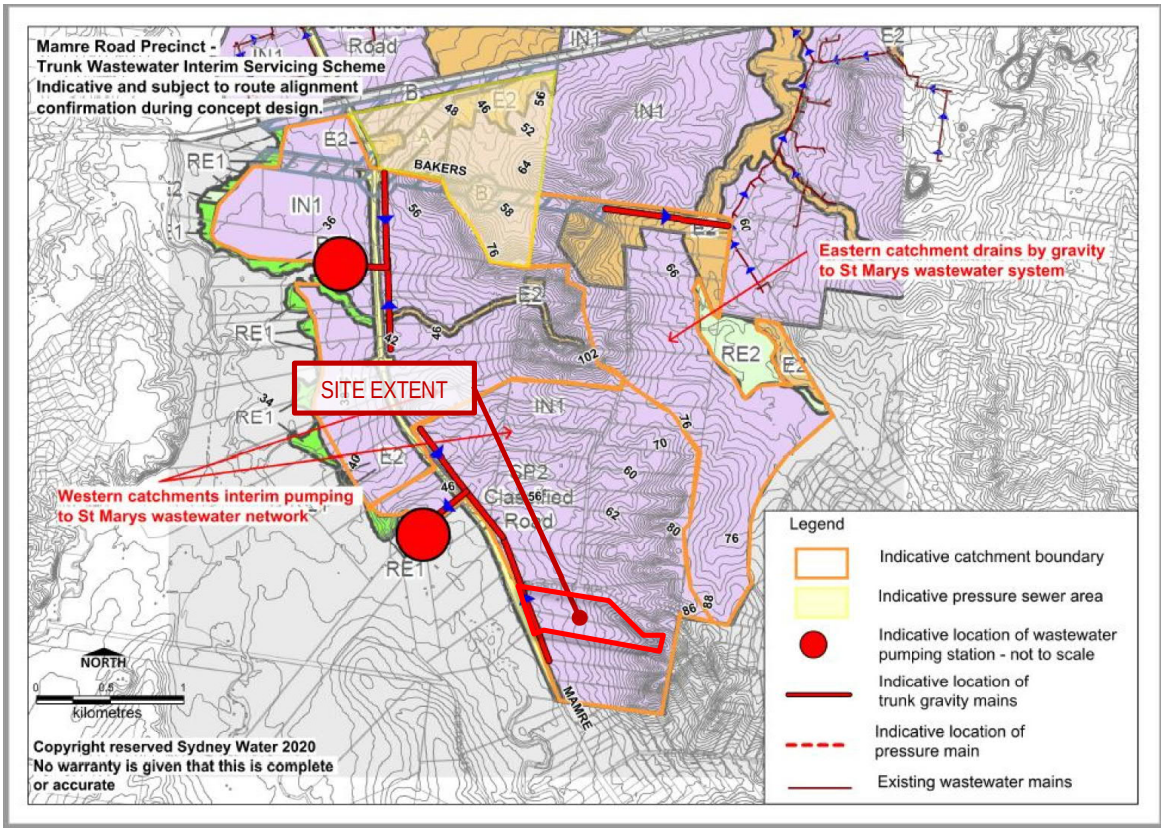

Figure 15: Indicative wastewater servicing plan (Sydney Water)

Note - all the assets are in planning stage, indicative and subjected to route alignment confirmation during concept and detailed design. Additional reticulation mains are required to service the development and are required to be sized to service the natural catchment as per the WSAA Code.

If the site is developed in advanced of Sydney Water's proposed works and sufficient infrastructure is not available, an Interim Operating Procedure (IOP)will need to be developed to allow for wastewater to be constructed to service the site. The IOP will need to be raised and will be subject to approval from Sydney Water. It has been indicated that there will be an IOP site within north west corner of the site. Refer to Drawing 20-748 – C5005 for location. Sewer case number 191544WW has been raised with SWC for this IOP design and documentation.

6.4. Recycled Water

6.4.1. Existing Infrastructure

There is no existing recycled (non-potable) water infrastructure within or in the vicinity of the site.

6.4.2. Proposed Infrastructure

The Mamre Road Precinct Flood, Riparian Corridor and Integrated Water Cycle Management Strategy (2020) documents Sydney Water's commitment to the provision of recycled water to the Mamre Road Precinct from the Upper South Creek AWRC.

In their submission to SSD-9138102 dated 6 August 2021, Sydney Water confirmed that recycled water for non-drinking purposes will be provided in the Mamre Road Precinct. The Integrated Water Servicing Options analysis is currently underway and will determine the extent to which recycled stormwater is integrated with recycled wastewater. Sydney Water is currently preparing a Development Servicing Plan (DSP) for the Mamre Road Precinct. This will include Developer Charges for the provision of recycled water services to the Precinct.

Sydney Water's draft recycled water scheme plan for the Mamre Road Precinct is reproduced below as Figure 16. It is subject to change depending on the outcome of the Integrated Water Servicing options analysis. Sydney Water will confirm the requirement for recycled water connections on finalisation of the scheme plan for the Precinct. It is likely that the requirements will be a combination of the following:

- Each lot in the subdivision must have a frontage to a recycled water main that is the right size and can be used for connection of the lot to the recycled water main.
- The proponent must construct a recycled water main extension to serve the lots appropriately. The extension must comply with the standards for Dual Water Reticulation Systems.

The internal recycled reticulation will consist of a DN150 main within the Westlink Industrial Estate with potable water design drawings submitted and approved to SWC under case number 202795RW.

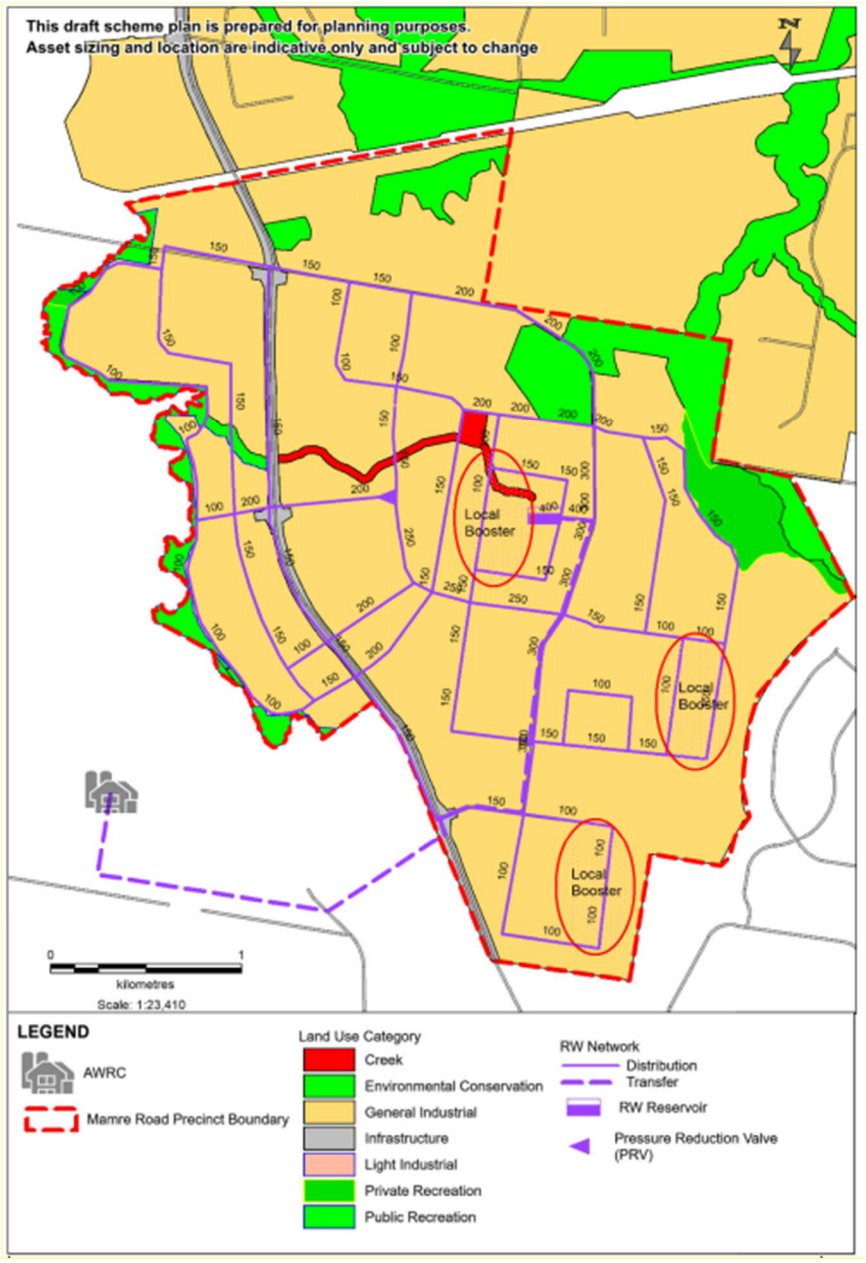

Figure 16: Draft Mamre Road Recycled Water Scheme Plan

6.5. Electrical

6.5.1. Existing Services

Recent site inspection indicates that there is an overhead power line (11kV and 240v) on the eastern side of Aldington Road reserve parallel to the boundary. Dial Before You Dig (DBYD) indicates that there are no underground services within the vicinity of the Site.

6.5.2. Proposed Services

Consultation has been undertaken with Endeavour Energy regarding electrical servicing strategies for the Broader Western Sydney Employment Area (BWSEA), which includes the wider Mamre Road Precinct.

Current designs for both Stage 1 and Stage SSD are being prepared by Edgewater Connections under case numbers AXXX_UIS0958 (Stage 1) and AXXX_UIS_1007 (Stage 2).

The Endeavour Energy 'Western Sydney Priority Growth Area – Area Plan April 2018' indicates the proposed high voltage network to be delivered as part of the wider Endeavour Energy electrical network required to service the Aerotropolis.

Endeavour Energy's Asset Planning & Performance Branch has provided the following advice:

- Asset Planning & Performance have met with consultants for ESR Westlink and discussed power servicing requirements at an early high-level stage.
- Based on standard warehousing load estimations, the client was advised that a new 11 kV feeder would be required to be established from Kemps Creek Zone Substation located at 120 Cross Street Kemps Creek (Lot 1 DP 532554) to the site to provide the required capacity. This is due to the existing electrical infrastructure in the vicinity having insufficient capacity to support the proposed large-scale development along Mamre Road and Aldington Road with several partial developments involving a number of warehouses which have been processed and allowed to connect.
- This has subsequently resulted in no further spare capacity being available without extensive new capital investment required to provide new capacity in addition to and in advance of the proposed new 132kV / 22 kV zone substation within the Oakdale West Precinct known as South Erskine Park Zone Substation by the current expected commissioning date of October 2022. This substation will service both the Oakdale West and Mamre Precincts and limited parts of the Oakdale South Precinct.
- Developments which are running ahead of Endeavour Energy's infrastructure delivery timeline are being advised to make alternative arrangements to access spare capacity from either Kemps Creek Zone Substation or Mamre Zone Substation located at 8 John Morphett Place Erskine Park (Lot 9 DP 1097134) depending on where they are located until supply can be redirected from the new South Erskine Park Zone Substation. Some warehousing has been accommodated where possible on an interim basis until the new zone substation is available.
- Asset Planning & Performance are happy to meet with ESR to continue conversations regarding the provision of capacity ahead of South Erskine Park Zone Substation which may entertain connection of one or two warehouses dependent on the load requirement, some infrastructure augmentation is still likely to be required due to the rural construction type of existing infrastructure.

In the submission to Stage 1 SSD-9138102 dated 18 July 2021, Endeavour Energy advised that the proponent should reticulate the estate with 22 kV cable and commence preparations for a new 22 kV feeder from the South Erskine Park Zone Substation, which will be required to supply the full extent of development.

The method of supply will require the establishment of a new 1000 kVA pad mount substation within the estate.

6.6. Gas

6.6.1. Existing Services

There are no existing Jemena gas mains located within the vicinity of the Site.

6.6.2. Future Services

No contact has been made with Jemena to determine if there are plans to service the area in future. Any possible future upgrades would need to be assessed for capacity and commercial viability.

6.7. Telecommunications

6.7.1. Existing Services

Dial Before You Dig (DBYD) indicates that Telstra below-ground conduits are located within the Aldington Road Reserve parallel to the boundary.

Site inspection has identified there are aboveground assets along the western side of Aldington Road.

6.7.2. Proposed Services

It is expected connection could be made from the existing infrastructure located within Abbots Road upgrade as part of Stage 1 of this development.

A NBN design for Stage 1 has been prepared by Edgewater Connections Project No. STG-W000186129 and submitted to NBN for approval. Another NBN design for Stage 2 has also been lodged with NBN as Project No. STG-M000104643.

7. Infrastructure Delivery and Staging

7.1. Staging

The estate wide civil infrastructure works will be undertaken within Stage 2 of the development of the site. The infrastructure works will include, but are not limited to:

- Extension of Abbotts Road, construction of private road along southern boundary and extension of Aldington Road within the development site.
- Earthworks and retaining walls / structures.
- Stormwater drainage systems, including diversion of external catchments through the site.
- Stormwater management measures, including on-site detention and any interim measures that may be required to satisfy the stormwater quality and flow targets for the estate.
- Utility services (water, sewerage, power, communications), including lead-in works as required.

The delivery of construction will be undertaken progressively to meet end user requirements.

APPENDIX 1 – CIVIL DRAWINGS

- 20-748-C5000 SERIES (INFRASTRUCTURE)
- 20-748-C6000 SERIES (ON-LOT)