WSU Milperra – DA Civil Engineering Design Report

2 and 2A Bullecourt Avenue, Milperra

Client
Mirvac Residential (NSW) Developments Pty Ltd

Issued
14/11/2025

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A	Draft for Internal Review	30/07/2025	JG
B	Draft for Client Review	18/08/2025	SG
C	Issue for DA	27/08/2025	SG
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E	Issue for Formal SSDA Lodgment	14/11/2025	SG

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1. EXECUTIVE SUMMARY

This Engineering Report is submitted to the Department of Planning, Housing and Infrastructure (the Department) on behalf of Mirvac Residential (NSW) Pty Ltd (the Applicant) in support of a State Significant Development Application (SSDA) for a staged residential development at the former Western Sydney University (WSU) Milperra Campus located at 2 and 2A Bullecourt Avenue (the site).

The Western Sydney University (WSU) Milperra Campus was gazetted in June 2024 and is being developed in multiple Stages by Mirvac through a Project Delivery Agreement (PDA)with WSU.

This report details the design criteria used in developing general civil engineering designs for the overall staged residential subdivision within the proposed development. The report covers the civil engineering works required including:

- Demolition and Remediation,
- Erosion and Sediment Control,
- Site grading and earthworks,
- General road works, and
- Stormwater management.

The findings from the report conclude that the proposed residential subdivision design achieves the criteria outlined in City of Canterbury/Bankstown Development Engineering Standards.

The engineering design plans are consistent with Council's policies including:

- Canterbury-Bankstown Development Control Plan 2023,
- CBDCP2023 Chapter 11 Key Development Sites – 11.13 Former WSU Campus, Milperra (August, 2024),
- Canterbury-Bankstown Development Engineering Standards Adopted June 2006, Amended June 2009,
- Canterbury-Bankstown Council Standard Drawings.

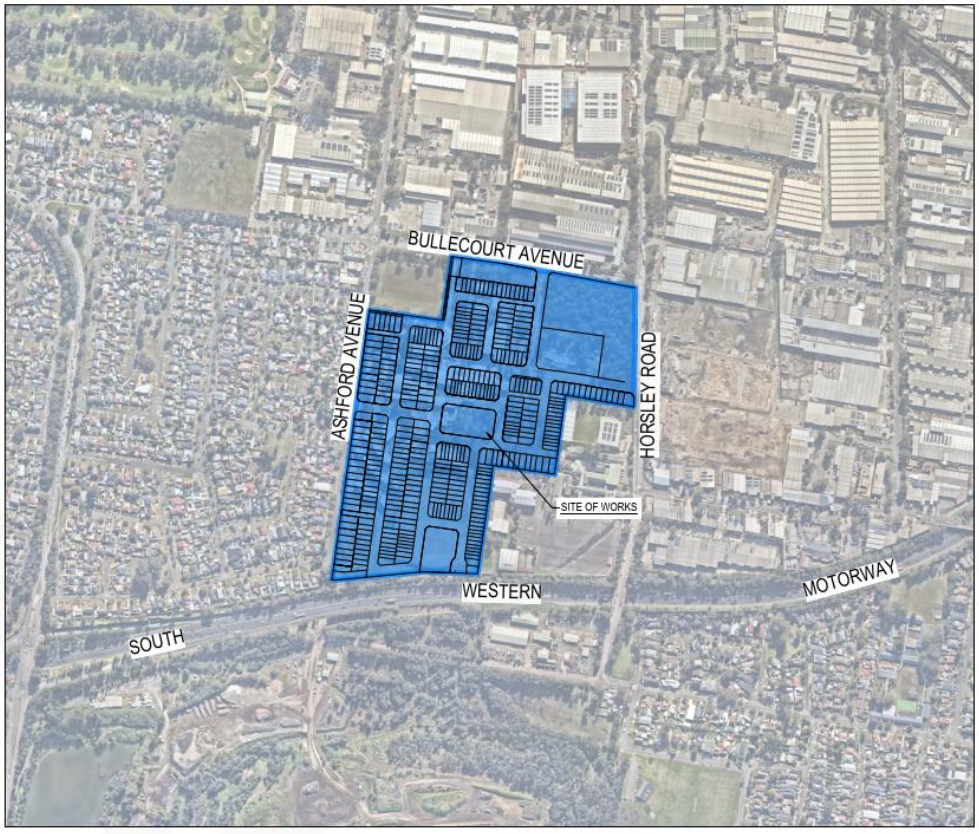


Figure 1: Subject Site Location

2. THE SITE

The site is currently owned by Western Sydney University and is located within the Canterbury Bankstown LGA at 2 and 2A Bullecourt Avenue, Milperra, being legally described as Lot 2 in DP1291984 and Lot 1 in DP101147 (refer to Figure 1).

The total site has an area of approximately 19.64ha and is the subject of numerous easements affecting the site, including two easements to drain water, easements for electricity and other purposes, and a right of carriageway.

Since the demolition of the previous buildings on the site, the site currently comprises:

- Existing at-grade car park (within Zone 4) repurposed as parking and hardstand area for the temporary sales office.
- Existing at-grade car park for the Childcare Centre (generally within the location of the future Road 2B).
- At-grade roads off Bullecourt Avenue.
- A large oval to the south.
- The Western Sydney University Early Learning Centre (Child-care centre).
- Vegetation of varying significance, including Cumberland Plain Woodland.

The site is bound by the M5 Motorway to the south, Ashford Avenue / existing residential dwellings to the west, Bullecourt Avenue / existing industrial development to the north, and Horsley Road / existing industrial development to the east. Adjoining the site along the southeastern boundary is Mount St Joseph Catholic College.

A substantial number of bus stops are located along Bullecourt Avenue and Horsley Road, servicing routes that connect passengers both within and beyond the LGA, including direct links to Bankstown Central (approximately 8.5km drive from the site), Westfield Burwood, and Westfield Miranda. While the nearest train line is the T8, accessible via East Hills, Panania, and Revesby stations, the T6 line at Bankstown Station can also be reached via bus services operating near the site.

3. THE PROPOSED DEVELOPMENT

The project will be delivered in stages and across two separate SSDA Projects, and comprises the construction of up to 430 dwellings, three (3) public parks, new roads and shared paths, civil infrastructure, a car park, and the management of conservation land.
Specifically, across the two SSDAs, consent is sought for:

- Tree removal
- Site remediation (excluding works carried out as category 2 remediation works)
- Construction of bulk earthworks, public roads and landscaping, and services
- Augmentation of existing services and road infrastructure
- Construction of three (3) public parks
- Construction of up to 430 dwelling houses
- Construction of a carpark to service the existing childcare centre and E1 Local Centre zoned land
- Subdivision resulting in up to 430 residential lots, infrastructure lots, and the creation of a community title lot for land zoned C2 Environmental Conservation and E1 Local Centre
- Conservation works including the management of >2Ha Cumberland Plain Woodland Species.

This SSDA comprises of all Civil works across the entirety of the site as well as the construction of all 62 dwellings in Stages 1 and 2 only, which are as follows:

- Stage 1 – Commencement of site-wide tree removal and land remediation, creation of two (2) super lots and total of 22 residential lots, and construction of 22 dwelling houses fronting Ashford Avenue. This will be the first stage to be delivered and will connect into the existing infrastructure that located within Ashford Avenue.
- Stage 2 – Creation of four (4) super lots, a new lot (Lot 25) across the RE1 Public Recreation zoned land, and 40 residential lots. This stage also involves the construction of 40 dwellings within Stage 2, and the construction of new roads and the new public park referred to in the Civil Plans as the 'Central Park'.
- Stage 3a – Creation of a new super lot, and the construction of perimeter roads surrounding the existing childcare centre, construction of a new car park to service the childcare centre and C2 Environmental Conservation zoned land. It is proposed all associated civil works required to enable the operation of the existing

childcare centre will be delivered under this stage. The new traffic intersections at both Bullecourt Avenue and Horsley Road will be constructed.

- Stage 3b – Creation of three (3) lots to be delivered under a Community Title Scheme for the E1 Local Centre zoned land.
- Stage 4 – Creation of eight (8) super lots, a new lot (Lot 50) across the RE1 Public Recreation zoned land, and a new lot (Lot 49) across the SP2 Infrastructure zoned land. This stage also involves the construction of new roads, the stormwater infrastructure Basin 1 and Basin 2, and the new public park referred to in the Civil Plans as the 'Southern Park', all to be dedicated to Council.
- Stage 5 – Creation of six (6) super lots and construction of new roads and civil works.
- Stage 6 – Creation of nine (9) super lots and a new lot (70) across the RE1 Public Recreation zoned land. This stage also involves the construction of new roads and civil works, and the new public park referred to in the Civil Plans as the 'Northern Park', all to be dedicated to Council.
- Stage 7 – Creation of six (6) super lots and construction of road and civil works.

The second SSDA will seek consent for all outstanding works in stages 3 to 7, which are as follows:

- Stage 3 – Construction of the Childcare Alterations and Additions and Construction of a permanent structure for Commercial use.
- Stage 4, 5, 6 & 7 – Creation of the subsequent subdivision into residential lots and construction of dwellings.

4. OVERVIEW – DEVELOPMENT AND STAGING

4.1. Land Zoning / Map

The Western Sydney University (WSU) Milperra Campus Planning Proposal PP-2021-5837 was gazetted in June 2024 and is being developed via this Development Application in multiple Stages by Mirvac through a Project Delivery Agreement (PDA) with WSU.

The subject site is bound by Bullecourt Avenue to the north, the M5 South Western Motorway to the south, Horsley Road and Mount St Joseph High School to the east, Ashford Avenue to the west and Milperra Reserve in the northwest.

The subject site has the following zones:

- RE1 – Public Recreation,
- SP2 Drainage – Infrastructure (Drainage),
- R1 – General Residential,
- E1 – Local Centre
- C2 – Environmental Conservation

Furthermore, the subject site adjoins R2 - Low Density Residential zone to the west, SP2 – Educational Establishment zone to the east, E4 – General Industrial zone to the north and east as well as the RE1 – Public Recreation zone to the north west (Milperra Reserve).

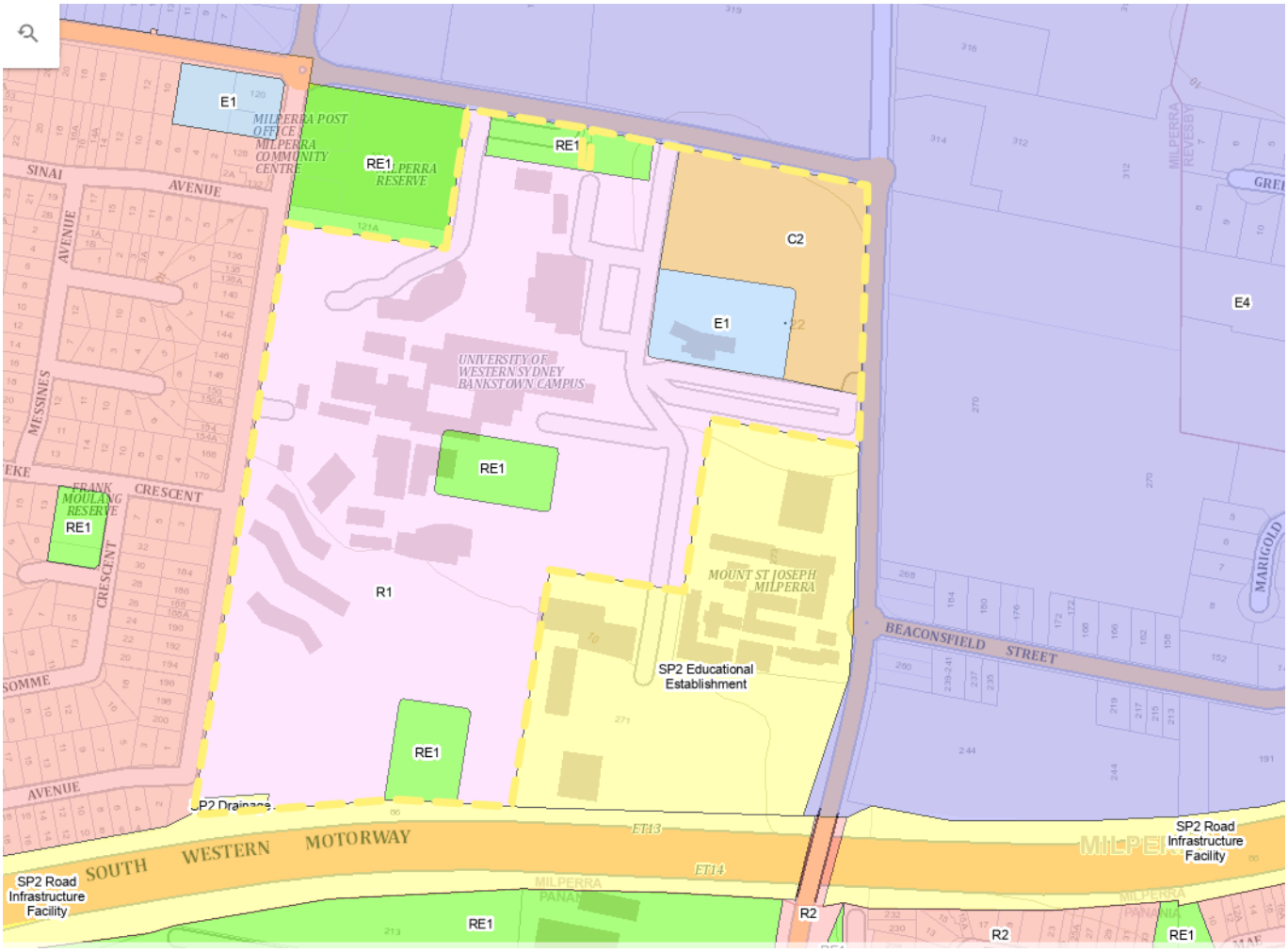


Figure 2: Subject Site and current zoning

4.2. Existing Conditions

The existing site is approximately 19.64ha and once contained educational buildings, private roads, carparks, footpaths and ancillary structures to facilitate the University campus. A development consent 1512/2023 was issued on 31 May 2024 which permitted the demolition of the majority of structures and most hardstand area. Most of the demolition DA has been completed and Practical Completion was issued on the 18th July 2025. The only item not completed yet from DA1512/2023 is a portion of the P1 carpark which is to remain in-place to be used to support Mirvac's temporary sales office which is being completed under a separate DA. The existing childcare building, and the P2 carpark were not included in DA 1512/2023 as the childcare was still operating at the time. Under this DA it is proposed that the P2 carpark, fire tanks and pump house building be removed in the demolition phase of the DA. The childcare which currently still has an operating DA is to be retained and will restart operations once carparking and services are reestablished.

The site under existing conditions was split into three (3) catchments with the largest catchment falling towards the M5 Motorway in the south. Smaller catchments draining to the northwest and northeast drain the remaining part of the site. Stormwater overland flow ultimately travels south through a combination of several piped drainage systems and overland flow towards the outlets. Under existing conditions the southern catchment drains to three pipe outlets that then drain into the existing swale within the M5 Motorway corridor which then drain through 4 x 1500mm pipe culverts that cross south underneath the M5 Motorway. The vegetated area of the northeastern catchment drains overland to the kerb in Bullecourt Avenue and Horsley Road while the carpark is captured in a pit and pipes system that discharges to kerb outlets in Horsley Road. The northwestern catchment is captured by a pit and pipe system and connects to the existing drainage pipe systems in Ashford Avenue and Bullecourt Avenue.

Along the M5 Motorway corridor, several constraints have been identified which include trees located along the boundary as well as a chain link wire fence. A 450mm dia. Sydney Water sewer main extending from the west (Ashford Ave) into the site conveys wastewater from the existing residential subdivision and other areas to the west. A 225mm dia. Sydney Water sewer main extending from the east conveys wastewater from the existing St Mount Joseph's school. Both mains cris-cross the M5 motorway boundary several times before combining and extending south under the M5 motorway.

Additionally, the development site adjoins Mount St Joseph Catholic College located along the eastern boundary. Interface works are proposed along this boundary and will be required to deliver the construction works.

4.3. Existing Development Applications

The following Development Applications have been lodged recently over the subject land to support the residential development of the land:

- **Demolition DA** - Development Consent (DA1512/2023) issued on 31/05/2024 permitting the demolition of all structures from the existing WSU campus
- **Temporary Sales Office** - Development Application (DA 526/2025) was lodged 14/05/2025 for the use of a temporary sales office utilising the existing temporary builder's structure from Bullecourt Avenue.

4.4. DCP Structure Plan

The CBDCP2023 Chapter 11 Key Development Sites – 11.13 Former WSU Campus, Milperra (August, 2024) contains a structure plan which illustrates the road network and hierarchy throughout the site. This structure plan for the subject site was developed throughout the Master planning phase of the rezoning. It incorporated dozens of iterations to reflect non-statutory consultation with the public, community groups and Council elected representatives. Considerations of the road network to ensure compliance with AustRoads, Australian Standards and Council Specifications were crucial in developing the structure plan.

The structure plan has been developed with careful consideration of constraints imposed by specific fixed points within the site. These include:

- Retention of High Quality vegetation within the site
- Levels along the Milperra Reserve Boundary incl. tree retention
- Intersections with Horsley Road, Bullecourt Avenue, and Ashford Avenue.

- RE1 zoned land (i.e. Northern Park, Central Park and Southern Park)
- Basin No.2 location
- 1%AEP Flood Level of the Georges River and Compensatory Storage
- Existing Ashford Avenue kerb levels
- Existing Child Care Building Floor Levels
- Stormwater Catchment Boundaries
- Maximum and Minimum Road grades taking into account:
    - Stormwater overflow routes in case of a blockage
    - Housing product connecting to the roads
    - Maximum level difference between roads to avoid large retaining walls in lots
    - Maximum Retaining Wall height along the M5 South Western Motorway

Therefore, in accordance with the DCP, the civil engineering design has been developed based on the overarching structure plan. Refer to Figure 3 below.

Figure 3: Structure Plan (Canterbury-Bankstown DCP, 2022)

Stage No.	No. of Superlots Lots	No. of Residential Lots	No. of Public/Drainage Reserve Lots	Stage Area (m²)
Stage 1	2	22	0	8435
Stage 2	4	40	0	29526
Stage 3A & 3B	1	0	1	35658
Stage 4	8	107	2	44398
Stage 5	6	63	0	20734
Stage 6	9	92	1	35400
Stage 7	6	59	0	22247

Figure 4: Proposed Staging of Development

4.5. Tree Retention

As mentioned above the rezoning and production of the structure plan considered avoid, minimise and mitigate options. Below is a summary of further amendments made to the development to further avoid, minimise and mitigate tree removal within the site noting that the site is zoned for residential development.

Option 1 - Rezoning	Option 2 - Initial site wide BEW Concept	Option 3 - Current DA - minimisation / mitigation strategies implemented
Development of all roads detailed in the structure plan of the DCP (incl. standard splays and kerb returns), up to 430 dwellings within the remaining R1 zone and Employment zone E1- Local Centre containing 8,335 square metres of Employment Area. The Residential Area facing Ashford Avenue has a FSR of 0.5:1, the Residential Area facing the Northern Park has a RSR of 1.4:1 while the E1-Local Centre Zone has a FSR of 1:1. Other areas of the R1 zone aren't mapped with a maximum FSR. These are in line with the objectives of the individual zonings and DCP.	Development of all public roads detailed in the structure plan of the DCP (incl. standard splays and kerb returns), noting the following changes: - adjustment of roads along the existing hockey field by creating a larger verge to limit the impact to existing trees along the common boundary. This resulted in loss of Residential area for dwellings but ensures the retention of trees 208 to 211, - Reduction to the amount of Employment land being developed which ensures the retention of trees 62 to 72, 74 to 76, 81 to 83 When compared to the rezoning, proposed dwellings envisaged for the DA is now: - up to 400 dwellings within the remaining R1 zone Area of built form in the Employment zone E1- Local Centre has been reduced to: - less than 4,000 square metres of Hardstand Area The Residential Area facing Ashford Avenue proposed to maintain the FSR of 0.5:1 (100% of the originally approved FSR), the Residential Area facing the Northern Park has a reduced FSR of 0.85:1 (61% of the originally approved FSR) while the E1-Local Centre Zone has a reduced FSR of less than 0.48:1 (48% of the originally approved FSR). Other areas of the R1 zone aren't mapped with a maximum FSR but the FSR compared to Option 1 has reduced because the number of lots has reduced.	Development of all public roads detailed in the structure plan of the DCP noting the following changes: - amended kerb returns are proposed around the Central Park. This reduces the amount of pavement and introduces retaining walls which ensures the retention of trees 356 to 362, 365, 366 and 371 to 375. - adjustment to the Horsley Road Intersection which ensures the retention of tree 19, - adjustment of the north south road to Bullecourt Ave to move it away from the C2 zone. This reduces the amount of pavement and a small loss of residential area for dwellings which ensures the retention of trees 427-433 When compared to the BEW concept, proposed dwellings envisaged for the DA is now: - up to 390 dwellings within the remaining R1 zone and Area of built form in the Employment zone E1- Local Centre has been reduced to: - less than 4,000 square metres of Hardstand Area The Residential Area facing Ashford Avenue proposed to maintain the FSR of 0.5:1 (100% of the originally approved FSR), the Residential Area facing the Northern Park has a reduced FSR of 0.85:1 (61% of the originally approved FSR) while the E1-Local Centre Zone has a reduced FSR of less than 0.48:1 (48% of the originally approved FSR). Other areas of the R1 zone aren't mapped with an FSR but the FSR compared to Option 1 has reduced because the number of lots has reduced.

Table 1 - Tree Retention Options

5. DEMOLITION AND REMEDIATION

5.1. Demolition of existing structures

One of the previous applications approved by Canterbury-Bankstown Council is Development Consent (DA1512/2023) issued on 31 May 2024 permitting the demolition of all structures from the existing WSU campus.

Practical Completion for the Demolition DA was achieved on 18th July 2025.

5.2. Site Remediation

Prior to the commencement of civil works, remediation works will be required in accordance with the following reports:

- Remedial Action Plan prepared by Environmental Group Australia, report reference 2300-ARAP-01-300924.v3d dated 08 August 2025.

The remediation work proposed involves the removal of asbestos fibres/fibrous asbestos and does not relate to any lead, cadium and zinc-based contamination. The proposed remediation works notably do not include any remediation works on land that is zoned C2 Environmental Conservation under the Canterbury-Bankstown Local Environmental Plan 2023 (CBLEP).

Development consent will be sought for any remaining remediation required on the site, including the land within the site that is zoned E2 Environmental Conservation and land around existing trees, as part of the future development application for the comprehensive redevelopment of the site.

As outlined in the RAP, the remedial goal for this site is to remediate potential contamination (where identified) to a level that does not present an unacceptable human health exposure and environmental risks, based on the proposed land use setting. Based on the information presented in the historical contamination assessment reports, SEG concludes that the remedial goal can be achieved, and the site made suitable for the proposed land use setting, subject to:

- *Implementation of the strategies, methodologies and measures set out in this remedial action plan;*
- *Should newly identified unacceptable land contamination risks be identified during the supplementary assessment and/or remediation works, a revision to this RAP may be required. The revision should be prepared by a suitably experienced environmental consultant;*
- *Prior to any removal of soils from site for offsite disposal during remedial works, a waste classification for those soils should be prepared by a suitably experienced environmental consultant;*
- *Future remedial works should be monitored and validated by a suitably experienced environmental consultant; and*
- *Following the completion of the remediation and validation work, the environmental consultant needs to prepare a site remediation and validation report that documents both the remediation and validation work as required by the EPA (2020) reporting guidelines.*

6. EROSION AND SEDIMENT CONTROL

The erosion and sediment controls for the development aim to provide the following:

- Adequate erosion and sediment control measures are implemented before construction begins and maintained throughout the construction period, and
- Construction site runoff is treated appropriately in accordance with Canterbury-Bankstown Council requirements.

Erosion and sediment controls will be constructed in line with the Soil and Water Management Plan and details, Canterbury-Bankstown Council's requirements, and Landcom's "Blue Book" - Managing Urban Stormwater: Soils and Construction.

As the site has recently completed demolition works (DA 1512/2023), erosion and sediment controls have been installed throughout the development and approved by Council. These controls will remain in place and are to be maintained and replaced as necessary prior to the commencement of any further construction works, including remediation, civil infrastructure or civil construction works.

6.1. Controls during construction

Prior to any earthworks commencing on site, all erosion and sediment control measures will be implemented and maintained generally in accordance with the above specifications. Specifically, the construction team is expected to provide the following, however not limited to:

- A perimeter fence around the site securing the site;
- Installation of sediment fencing around disturbed areas, including any stockpiles and remediation zones;
- Placement of straw bales around and along proposed catch drains and around stormwater drainage pits;
- Installation and maintenance of a stabilised access point at each site exit to avoid trailing of sediment onto the surrounding road network; and
- Installation of silt arrestors to collect site runoff and retain suspended particles;
- Construction of sediment basins including security fencing around the basins.
- Construction of diversion swales to divert upstream clean water around the construction zone and divert dirty water into the sediment basins;
- Maintenance of all sediment control measures including the sediment basins. Flocculation of the sediment basins and testing of the water will be required prior to pump out.

All sediment controls will be maintained during civil construction to control soil loss. Controls will be checked weekly and after each rain event.

6.2. Sediment basin delivery

As part of both Stage 1 & 2 civil works, the existing sediment basin used for the construction phase of demolition works will be repurposed as both the sediment basin during construction and converted to a temporary rain garden at the delivery of the aforementioned civil stages.

During Stage 4 civil works, the existing basin will be filled and decommissioned. This will not be completed until the proposed basins 1 and 2 are constructed as part of the Stage 4 civil works. Initially, these basins will be used as sediment basins during construction and will be flocculated and clean water pumped in accordance with the blue book. These basins provide sediment control for all stages within the southern catchment of the site including Stage 5 and part of Stage 7. Ultimately, at the end of construction works or prior to 80% housing construction for each catchment, the sediment basins will be converted to permanent detention / bioretention basins.

Stages 3, 6 and 7 are located within the northern catchment of the site and therefore require separate sediment controls. It is proposed during Stage 3 civil works that a temporary sediment basin will be constructed within the future Stage 6. This basin will be converted to a temporary rain garden at the delivery of the Stage 3 civil works and will remain in place until Stage 6 civil works commence. During Stage 6, permanent basin 3 will be constructed and the temporary basin constructed in Stage 3 will be filled and decommissioned.

7. SITE GRADING AND EARTHWORKS

7.1. Site grading and levels

The internal road pattern within the development site is generally fixed by structure plan in the DCP. This is illustrated in the layout plan shown in Figure 3 above. Stages 1, 2, 4 and 5 in their entirety and part of 7, fall to the southern portion of the site. The grading of these stages shifts the crest separating the north and south catchments further north resulting in more stormwater discharging to the south, which is consistent with the original grading concepts and stormwater management of the site identified in the rezoning. Stages 3, 6 and part of 7 fall towards the north west. Only a small portion of Stage 3 falls to the north east.

The roads and residential land levels are required to be located above the flood planning level (FLP) which is 0.5m above the 1% AEP Flood level of the Georges River which has a level of RL5.55. As such, the roads and lots long side the M5 motorway boundary are proposed to be filled up to 3.5m above the existing levels along the M5 motorway boundary.

For the most part, the road grading has been designed to match the existing topography of the site. The design intention of the lot grading is to provide uniform fall across the development with grades varying from 1% to 3% maximum. This is achieved by incorporating retaining walls along the internal lot boundaries where required as well as the along the adjoining common boundaries along neighbouring properties.

Retaining walls will be constructed to support the future residential dwellings proposed on each lot. Larger retaining walls will be constructed along the South Western M5 Corridor and along Mount St. Joseph's High School. The retaining wall along the South Western M5 Corridor also doubles as the wall of Basins 1 and 2 and has been design for multiple flooding scenarios.

Preliminary earthworks modelling indicates that approximately ~6,000m^3 of excess fill material will be required. Currently, the intention is for excess fill material to be stockpiled within the broader development for use on future stages.

7.2. Benching for Housing Construction

The DA Residential Subdivision proposes to create roads and "Superlots" for further residential subdivision. Because of the density requirements of the development, this DA proposes to create the final roads and services as well as the first 62 final residential lots. The proposed final residential lots include Superlots 11, 12 (Stage 1) and Superlots 21, 22, 23, 24 (Stage 2). The remaining final residential lot subdivision will be an integrated development application with the houses.

Separate integrated housing and subdivision DA's will be lodged for each of the remaining Superlots as the housing is proposed to start immediately upon completion of the civil works, benching has been provided to prepare level platforms for the construction of houses. The flat platforms are generally the full width of the lot and set back 4m from both the rear and front boundaries. The setbacks generally have a maximum 10% batter on the driveway side of the lot. For all lots, we have made sure that the benching levels are above the 1%AEP Flood Level which in turn with a 385mm slab will ensure that all house floor levels will be above the Flood Planning Level (FPL) which is 500mm above the 1% AEP Flood Level.

8. PROPOSED DESIGN

The proposed design of the DA includes but is not limited to the following:

- Construction of Local and Minor Local Roads 1 – 10
- Construction of Laneways 1 – 4
- Construction of Pedestrian Links which provide access to the Southern Park
- Construction of Ashford Avenue, Bullecourt Avenue and Horsley Road intersections
- Construction of two (2) Pedestrian blister crossings at both Ashford Avenue and Horsley Road
- Construction of three (3) stormwater basins addressing on-site detention and/or water quality
- Construction of retaining walls within internal lot layout
- Construction of retaining walls along the eastern and southern boundaries which adjoin neighbouring properties
- Landscape and embellishment works for the Northern, Central and Southern Parks
- Subdivision of development to create forty (40) super lots
- Subdivision of development to create sixty-two (62) final residential lots
- Subdivision of development to create approximate three hundred and eighty one (381) future residential lots (subject to future DA's)
- Community Title Scheme subdivision of the E1: Local Centre which will contain the Childcare, Retail and C2 Conservation Area

Figure 5: Proposed development layout plan

8.1. Internal Lot Layout

This DA proposes 62 final residential lots located in Stage 1 and Stage 2. The remaining lots are proposed to be delivered as Super Lots which are subject to further Development Applications. For the purposes of this DA, an indicative final lot layout has been adopted which provides a total dwelling of up to 430 residential lots.

All Super lots that are delivered under this DA are subject to further Development Applications and therefore are subject to changes to the final lot layout.

8.2. Road cross section

The proposed roads are generally consistent with the Local and Minor Local Road cross sections specified in Figure 3 and 4 of Canterbury-Bankstown Council's Development Control Plan. Generally, the cross sections are as follows:

- 18m wide road reserve with a 11m wide carriageway (local road)
- 17.2m wide road reserve with a 10.2m wide carriageway (minor local road)

Typical road cross sections are shown in Figure 4 below.

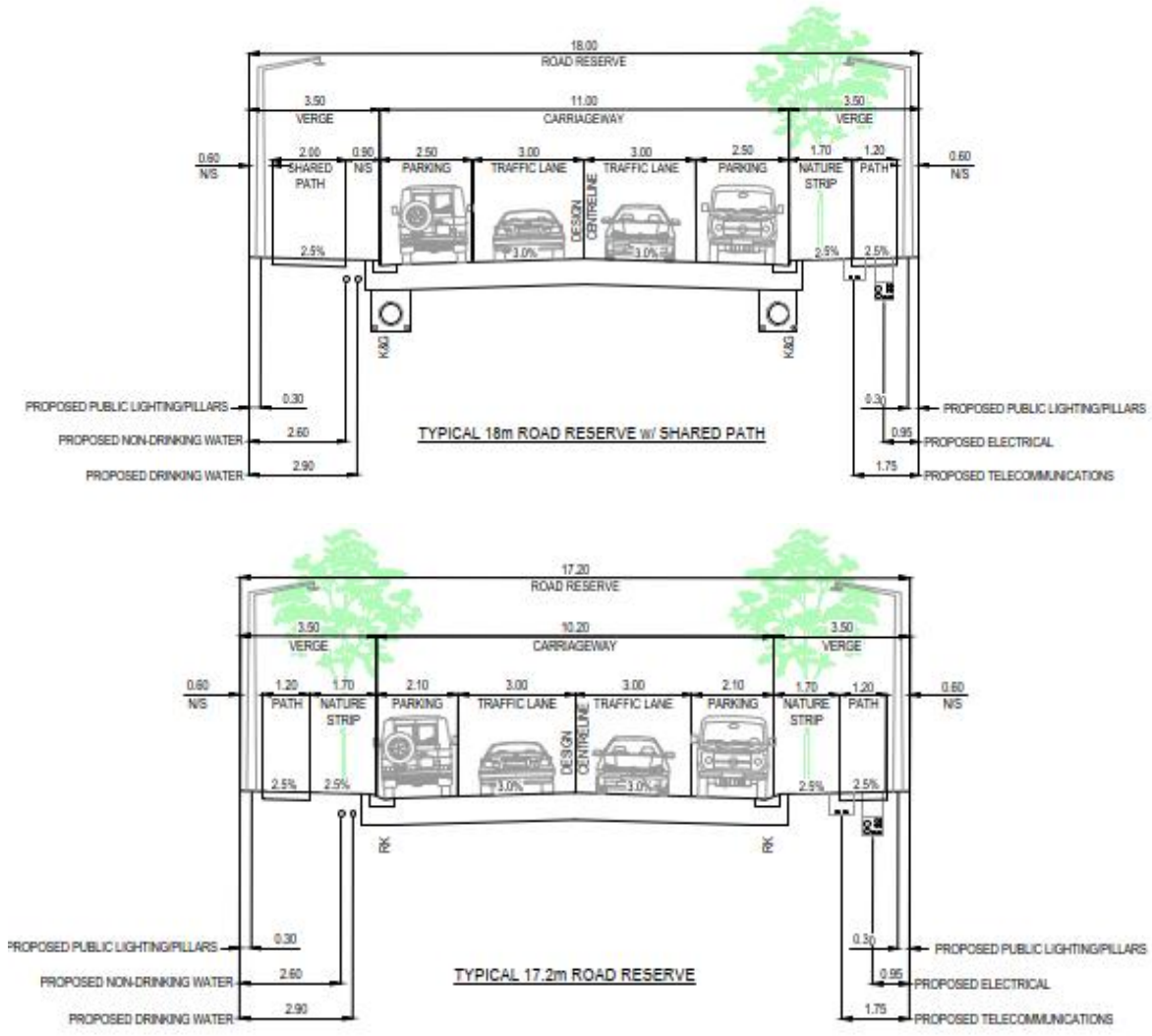


Figure 6: Typical 18m and 17.2m Road Reserve Sections

8.3. Proposed kerb type

It is proposed that for the majority of the development, Council's Standard Vehicular Crossing Roll Kerb and Gutter be adopted. For areas which do not require driveway access, Kerb and Gutter profile is proposed, this includes all RE1 Public Reserve lots, roads that front the side boundaries of corner lots and roads that front adjoining property boundaries. Proposed Roll Kerb and Gutter and Kerb and Gutter profiles are shown in Figure 5 and Figure 6.

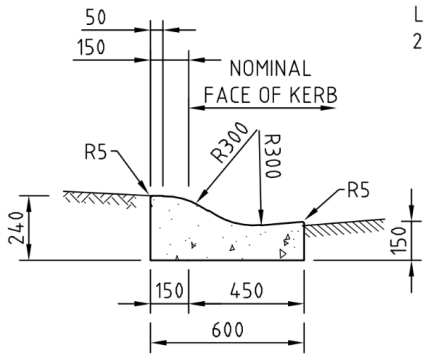
Key design criteria's that have been considered include the following:

- Kerbs to capture Stormwater runoff and conveyance to a pit or outlet
- Kerbs to provide physical separation in height between the vehicle paths and pedestrian areas
- Kerbs to provide a boundary defining the edge of the road which also structurally supports the pavement

Roll kerbs in essence are designed to allow mounting while still providing adequate separation from the verge and still capturing stormwater and conveying it downstream via pits.

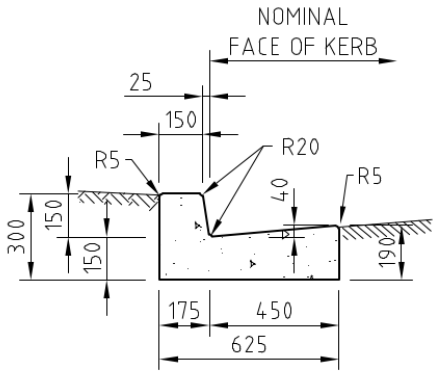
In the case of the WSU development, the road stormwater drainage network allows for sufficient capacity to convey the 1% AEP storm event through the underground pipe system to the OSD Basins / discharge outlets. Consequently, the maximum capacity of the kerb / road carriageway is not being used to convey stormwater. As such, the height of the roll kerb is not a concern for the conveyance of stormwater and therefore the vehicular type roll kerb can be adopted.

Additionally, the function of the vehicle type roll kerb remains unchanged as it acts as a physical barrier providing a height separation between the vehicular paths and the pedestrian areas. The proposed vehicular type roll kerb can be mounted by a range of vehicles and does not require additional ramps installed within the driveway. By adopting vehicular type roll kerbs throughout the development, there will be no requirement to adjust/remove/replace kerbs later should driveway locations require a change.



ROLL KERB AND GUTTER

Figure 7: Proposed Roll Kerb and Gutter Profile



150mm KERB & GUTTER

Figure 8: Proposed Kerb and Gutter Profile

8.4. Cul-de-Sac design and temporary turning heads

As part of the Stage 4 development, it is proposed to incorporate a cul-de-sac design at Road 5. This design will facilitate Council service vehicles (10.04m long) completing a continuous swept path movement without any need for reversing. This is compliant with the DCP and engineering specifications, specifically, manoeuvrability has been considered for service vehicles to enter and exit in a forward direction.

A temporary turning head is also proposed within the Stage 2 development at the end of Road 2. The temporary turning heads will incorporate the same design as the previously mentioned cul-de-sac. Additionally, reflectorised guideposts at 1.5m spacing to ensure no access is provided to future stages within the development. Temporary Turning Heads are not required at any other end roads as they will be delivered as short stubs that do not support residential lots or require access. Temporary traffic measures and signage will be in place to ensure road users cannot enter dead end roads.

8.5. Cool / Porous Pavement

Section 4.7 Sustainability of the site-specific section of the DCP identifies the following objectives:

- Increase the efficiency of energy use across the site.
- To reduce the reliance on potable water sources.
- To be climatically responsive and maximise opportunities for water sensitive design and passive cooling.
- To improve the resilience of development to the effects of urban heat.

Section 4.7 Sustainability includes the following controls:

- **C3** All new developments must incorporate cool pavement solutions with a three-year Solar Reflectance Index (SRI) greater than 50 across at least 75% of street carriageways and footpaths.
- **C4** All new development must incorporate porous pavement solutions across at least 75% of street carriageways and footpaths.

Porous pavement details are provided within the concept engineering plans. The details illustrate the pavement layer types, geofabric and subsoil drainage. The porous pavement has only been provided around parks and in on-street parking bays. While this reduced amount provides less than the 75% identified in the Control, these areas are proposed in low speed and low use areas,

A number of porous pavement solutions have been considered including:

- Porous pavers
- Gravel contained in recycled plastic cells
- Porous asphalt

Ultimately, with the advice of Council, the porous asphalt was adopted. This option provides better longevity and reduced maintenance cost to Council over the other two options. However, on higher trafficable roads and along the main trafficable lanes it is proposed to use standard pavement designs as there is reduced lifetime maintenance cost to Council when compared to the porous pavement. The standard pavement doesn't clog and need to be washed out occasionally reducing Council's maintenance. The location of porous pavement here ensures water reuse is maximized.

Oxide additives can be added to the asphalt to lighten the colour and improve the Solar Reflectance Index.

Ultimately, an agreement has been reached with Council from the Council meeting on the 9th September 2024. One of the outcomes of the meeting were Mirvac to provide a reduction in porous pavement across the development on the provision that other infrastructure would be provided which achieves the same objectives. Alternate infrastructure agreed with Council and demonstration of the proposed development design has been summarised below.

- Porous pavement has only been provided around parks and in on-street parking bays. This is so that the porous pavement is in low speed and low use areas, to ensure longevity and reduce the ongoing maintenance cost. The location of porous pavement here ensures water reuse is maximized.
- In Street Tree and verge tree planting has been provided to maximize the quantum of trees and canopy cover located over roads and footpaths, which will greatly assist in the reduction of urban heat once the trees are mature.
- The quantum of hardstand areas has been reduced where feasible, through the introduction of landscape blisters on road and intersection corners, to minimize hardstand areas and maximize landscaped areas to encourage water retention.
- Strata Cells or an equivalent have been provided within the proposed roads, which encourages a large growth zone for the root system of the trees, ensuring they are viable and thrive, resulting in long term viability, maximizing stormwater reuse and canopy cover.

8.6. Street Trees

In pavement Street Trees are proposed within the on-street parking bays to maximize the quantum of trees and canopy cover located over roads and footpaths. The in pavement Street Trees are further used to break up parking spaces, provide good amenity and help with traffic calming.

Verge tree planting is generally proposed in the verge immediately behind the kerb in every lot. The location of proposed trees have been selected to consider future driveways, services, garbage trucks and kerbside pickup. For this DA, it is proposed that the street trees will be located behind the kerb providing the maximum opportunity for the tree canopy to extend over the road pavement.

All street trees will greatly assist in the reduction of urban heat once the trees are mature, as their branches and leaves will overgrow the roadway shading the road and helping achieve the Section 4.7 Sustainability objectives and control C3 as the trees will improve the solar reflectivity.

Street trees will be passively watered through passive in-verge street tree irrigation gravel trench to help improve the trees growth, help water retention and improve water quality.

8.7. Kerb Blisters

Landscape blisters are proposed on road and intersection corners. The design intent is to:

- minimize hardstand areas (helping achieve the Section 4.7 Sustainability objectives),
- maximise landscaped areas,
- encourage water retention, and
- help with traffic calming.

Additionally, the landscape blisters provide perimeter features to delineate the porous pavement located within the on-street parking bays.

9. INTERFACE TO EXISTING DEVELOPMENTS

9.1. Retaining Wall Installation

Due to the varying constraints of the site and undulating topography and conditions along the area of assessment, the development team have assessed various retaining wall options in response with the overall objective being to minimize impact/encroachment on adjoining land.

Retaining walls have been proposed along internal lot boundaries to ensure the lot grading is minimised to comply with Council's engineering specification. The design intention of the lot grading is to provide uniform fall across the residential sites with grades varying from 1% to 10% maximum.

Additionally, retaining walls will be required along the eastern and southern site boundaries that adjoin neighbouring properties including Mount St Joseph Catholic College and the M5 Motorway. As the cut and fill conditions continuously change depending on the requirements of the site, the proposed retaining walls will ensure the levels of the adjoining properties remain the same as existing.

9.2. Coordination works with adjoining properties

When into construction, the construction team will aim to coordinate all proposed civil construction work adjacent or nearby neighbouring properties with the relevant stakeholders in accordance with the landowner's consent documentation. Coordination with the Mt St Joseph Catholic College as well as the M5 Motorway representatives will be required for the construction of the following:

Mt St Joseph Catholic College proposed boundary interface works:

- Installation of temporary perimeter fence within the school land to ensure construction works can be carried out safely;
- Construction of new retaining walls along the boundary. It is proposed that all new retaining walls are located within the boundary of the subject site resulting in no portion of the wall being located within the school site; and
- The existing fence will be replaced with a new permanent timber lapped and capped fencing along the boundary under the Dividing Fences Act 1991. The fence will vary between 1.8m high and 2.4m depending on what part of the school and it adjoins and what housing product is used.
- Retaining Wall sections and plan along the common WSU / Mt St Joseph Catholic College boundary prepared by Beveridge Williams is provided in the DA.

In summary, the new retaining wall will be located entirely within the subject site, ensuring that no physical structures are constructed on the School land. The fence replacement will be undertaken in accordance with the Dividing Fences Act and will be managed separately from this DA.

M5 Motorway proposed boundary interface works:

- Removal of the existing chain link wire fence along the boundary
- Removal of a number of trees along the boundary as the root zones of the trees will be impacted by the internal works within the WSU site
- Removal of the existing stormwater outlets
- Removal of a number of portions of the existing sewer which impacts the retaining walls
- Installation of new headwalls and small lengths of pipe which discharge stormwater from the basins to the existing swale and regrade tail-out as required (note that stormwater quality has been improved, and the quantity has been reduced to pre-development levels)
- Construction of new retaining walls along the boundary. It is proposed that all new retaining walls are located entirely within the WSU boundary. It is noted that the types of walls for different sections of the wall may vary and may include reinforced earth walls as well as cantilevered walls and pile walls.

Through the various meetings, emails and discussions held to date, TfNSW and TransUrban have advised it is not their policy to provide owners consent for Development Applications, rather they use the referral system under the SEPP

(Transport and Infrastructure) 2021 to review and provide design advice, then if satisfactory, a condition is recommended requiring an "Interface Agreement" which authorises the works.
Therefore, TfNSW do not provide owners consent at the Development Application stage, as the referral system and imposing conditions of consent is a suitable mechanism to ensure TfNSW is satisfied with the impact to their land resulting from the proposed development.

Mirvac and their consultant team have reviewed previous TfNSW comments on the previous DAs to inform the preparation of a consolidated DA. A summary of key matters raised by TfNSW on 31 March 2025 are provided below.

TfNSW Comment	**Response**
TfNSW is unable to confirm the impact of discharge onto the M5 stormwater drainage basins from the submitted information. Specifically, TfNSW raises concerns with the developer's hydraulic loading onto the M5 stormwater drainage basins.	The proposed WSU drainage system has been design to ensure no adverse impacts to the M5 motorway. A DRAINS model was prepared to analyse the hydraulic peak flows of the pre and post developed conditions. The Stage 2 development results in less peak flows than under existing conditions. The Stage 2 development results in less peak flows than under existing conditions. This is because there is a reduction in impervious surfaces from the "Demolition" stage. Therefore, there will be no adverse impacts to the M5 stormwater drainage basins downstream of the WSU site. Evidence to this effect will be submitted within a WCMP with the DA.
Section 1 of the WCMP (Revision 1, Dated 26/09/2024) states that the southern part of the site discharges to an existing vegetated swale within the M5 via multiple headwalls or overland. The swale runs parallel to the southern boundary which conveys flows to the existing culverts (4 x 1500mm dia. RCP) under the freeway and ultimately into the downstream watercourse on the southern side of the M5. It needs to be confirmed that any overland flows are captured by the Detention Basin post development and discharged to the swale via the existing pit and pipe as shown on Drawing 301.	The proposed basin is not a detention basin since on-site detention is not required under Stage 2. Post development once the site is stabilised and 80% of the houses are built, the temporary sediment basin will be converted to a bioretention (raingarden) basin which will treat flows prior to discharging to the M5 land. The Stage 1 and 2 catchment area is picked up by a series of pit, pipes and overland flows which are captured by the proposed basin. Water quality modelling has been conducted to determine the WSUD requirements and will be addressed within a WCMP with the DA.
It needs to be confirmed that the detention basin is only expected to overflow in extreme flooding conditions. It needs to be confirmed if any retaining walls are planned to be installed along the M5 Motorway boundary. TfNSW advises that there are a number of M5 services located between the existing noise wall and the property boundary. The discharge of water onto the M5 land is to be contaminant free. If the water is contaminated it shall be treated before discharge on M5 land. Additional details on the above are required.	This is confirmed. The proposed basin is not a detention basin since on-site detention is not required under Stage 2. Instead, the basin will be a temporary sediment basin during construction and has been designed as per the blue book requirements. Once the site is stabilised and 80% of the houses are built, the temporary sediment basin will be converted to a bioretention (raingarden) basin which will treat flows prior to discharging to the M5 land. No retaining walls are proposed to be installed along the M5 Motorway boundary under this DA. As above, water quality modelling has been conducted to determine the WSUD requirements and will be documented within a WCMP to be submitted with the DA. This will outline that water shall be treated before any discharge on M5 land.

Table 2 Response to TfNSW Comments

10. STORMWATER MANAGEMENT AND ASSESSMENT

10.1. Stormwater Management

A separate Water Cycle Management Plan (WCMP) has been prepared for the overall WSU Milperra development which details all design parameters and constraints adopted. This report is to be read in conjunction with:

- **Water Cycle Management Strategy**, 2 Bullecourt Avenue Milperra, Beveridge Williams, Rev 5, 17/10/2025;
- **Flood Impact Assessment**, 2 Bullecourt Avenue Milperra, Beveridge Williams, Rev C, 15/10/2025.

Overall, stormwater management for the development has been designed in line with the overall Water Cycle Management Plan (WCMP). Additionally, compliance with relevant Stormwater DCP controls as it relates to the stormwater design of the development has been complied with and detailed in the mentioned reports.

10.2. Water Quantity Management

Stormwater drainage will be designed in accordance with Council's stormwater design manual and the major (1% AEP) – minor (10% AEP) approach recommended in Australian Rainfall and Runoff 2019 (ARR 2019). The pipe networks will be upsized as required to ensure the pipes and overflow routes within roads have capacity to convey all storms up to the 1%AEP stormwater flows safely to the OSD basins.

The drainage infrastructure is aligned with the Water Cycle Management Plan (WCMP) prepared for the ultimate Development. In summary, Stage 4 development will consist of the construction of Basin 1 and 2. Stage 6 will consist of the construction of Basin 3. In the developed catchment scenario, more catchment area is directed to the Southern boundary where Basins 1 and 2 which provides onsite detention and discharge stormwater to the existing table drain in the M5 motorway at rates below those under existing conditions. By reducing the catchment area in the north which drains to Bullecourt Ave, no OSD is required in the northern half of the site. Therefore, Basins 1 & 2 are proposed to be both detention and bio-retention basins whilst Basin 3 is proposed to be bio-retention only.

Figure 8: Existing Catchments

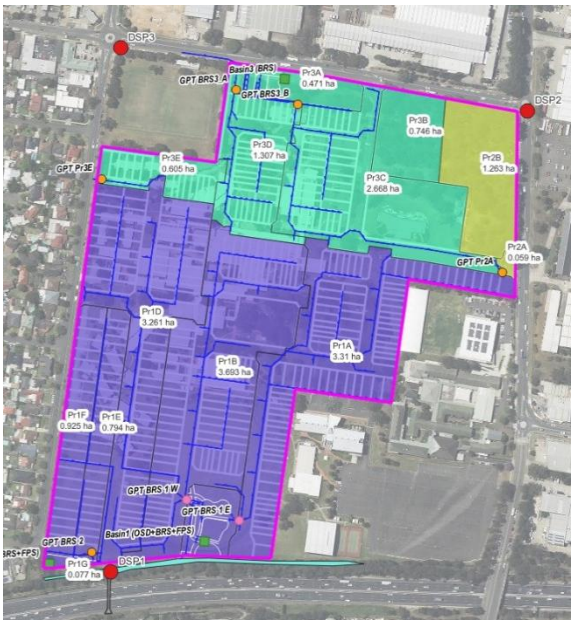


Figure 9: Developed Catchments

Figures 8 and 9 above show the existing and proposed developed catchments.

Additional consideration will be given to extreme events in the design of major overland flow routes through the subdivision. The concept stormwater layout is detailed in the civil DA drawings. The stormwater layout is indicative only and will be designed in detail at the subdivision works certificate phase when the design levels of the subdivision are finalised.

A conservative approach was taken when sizing the OSD basins. It was assumed that the OSD basins were required to operate in a 1% AEP local storm during a 1% AEP regional flood event of the Georges River. This results in the storage volume in the basins being above the 1%AEP Flood level RL 5.55 resulting in higher ground levels around the basins to ensure that the house levels are above the top of water level in the basins.

The stormwater drainage network was modelled for the overall site using DRAINS. Please refer to Water Cycle Management Plan (WCMP) prepared for the ultimate Development for the model setup and data inputs respectively.

10.2.1.Stage 1 and 2 Stormwater Management

Stages 1 and 2 are anticipated to be constructed first. As outlined within the WCMP, the demolition of the site under DA1512/2023 significantly reduces the amount of impervious area on site. Resulting in less stormwater runoff from Stages 1 and 2 than under existing conditions. As such, no OSD is required.

However, to address water quality, a temporary raingarden (68sqm in area) together with a 675sqm surface area is to be constructed within the existing temporary sediment basin under the demolition DA. Stormwater from the temporary basin/raingarden will be discharged to the M5 via the existing pipe and headwall. No work is required to be completed within the M5 land.

10.2.2.Stage 4 tie in works to Stages 1 & 2

Permanent Basins 1 & 2 are proposed to be constructed as part of Stage 4, as such, the existing temporary basin/raingarden servicing Stages 1 & 2 will be filled and decommissioned. Permanent Basins 1 & 2 provide detention and bio-retention for the entire southern catchment which includes Stage 1, 2, 4, 5 and partially Stage 7.

10.2.3.Stage 3 and 6 Stormwater Management

It is proposed that a temporary basin will be constructed as part of the Stage 3 civil works. As previously mentioned, no OSD is required for the northern catchment, however, to address water quality, a temporary raingarden (169sqm in area) is to be constructed. This basin will be located within the future Stage 6 and will be in place until the permanent Basin 3 is ultimately constructed.

10.3. Flood Compensatory Storage

Under existing conditions, the bottom portion of the site is below RL5.55 (1%AEP of the Georges River). The regrading of the site does result in the majority of this area being filled. To provide the compensatory flood volume storage the two basins have been modelled and compensatory flood volume calculated. This is detailed in Appendix B.

10.4. Flood Impact Assessment

A separate Flood Impact Assessment has been prepared for the development by Beveridge Williams. The background and objectives of the Flood Impact Assessment are outlined below.

As part of the original Development Applications lodged for Stages 1 and 2, a flood verification letter prepared by BW was lodged which supported the development. The letter referred to the original J. Wyndham Prince flood and risk impact assessment 2023 (JWP report) that was accepted by Council/DPIE in support of the rezoning of the site. The JWP report identifies that there will be no detrimental offsite impacts as a result from the proposed development.

The JWP report calculated a regional 1%AEP flood level for the site of RL5.55m which is more conservative than Council's adopted 1%AEP flood levels from the Brewsher 2004 report or from the Kelso Park/Swamp report. The flood verification letter assessed the proposed development against the conservative 1%AEP flood level of RL5.55 and verified that the future finished floor levels of the houses would be above the Flood Planning Level based on the JWP Report (i.e. 5.55m+0.5m=6.15m).

In addition, the flood verification letter also verified that the change in landform in the southern area of the site as a result of proposed cut and fill operations to support the future residential development provided additional flood storage than what was available under existing conditions in both the temporary and ultimate scenarios. The temporary scenario being the temporary sediment basin/temporary raingarden (in stage 1) and the permanent basins 1 and 2 along the southern boundary.

As part of further requests for information for the previous Development Applications, Council requested that a Stormwater Systems Report is to be provided. An original Stormwater System Report (SSR) for the site was issued by Council on 22/04/2025. This SSR identified that a Flood Study is Required.

During a meeting with Council staff on 18/06/2025 following the withdrawal of the original Development Applications lodged for Stages 1 and 2, Council requested a Flood Impact Assessment be submitted with any future Development Applications. Council advised that the flood impact assessment is required to investigate:

- the flood behaviour in the southern portion of Ashford Avenue and how any change to the overland flow from Ashford Avenue and Flanders Avenue into the site may impact adjacent residential properties;
- any increase in flows into the M5 culverts, and;
- any adverse flood impacts on downstream floodplain i.e. Kelso Park / Swamp.

Council confirmed within the meeting that they are not concerned with compensatory storage during flood events or overland flows internally to the site as the Water Cycle Management Plan and Flood verification letter previously supplied were adequate to show that the proposed development mitigates these issues. Council also confirmed that they accept the more conservative flood planning level of 0.5m above the regional Flood level RL5.55m identified in the JWP Report.

A new Stormwater Systems Report issued by Council for the site dated 09/07/2025 revised the original conclusion and confirmed that a Flood Impact Assessment is **not** required. Despite this, in further discussions with Council, Council requested that a Flood Impact Assessment still be completed to address the items above which relate to areas external to the development.

On the 29/07/2025 BW received the '**Kelso Stormwater catchment flood modelling**' from Council. The model was created by BMT WBM Pty Ltd dated 2009,

Council confirmed on 31/07/2025 that "*the 2020 model referred to by JWP in their report is the 2020 Georges River Flood Study not the Kelso Swamp Flood Study*" and the 2009 BMT Flood Study Model provided by Council is "*the one used by Council for its mapping for the Kelso Swamp catchment*" and should be used. During the meeting with Council, Council asked that we use Council's Tuflow model so that any amendments can be integrated back into Council's model at a later date.

BW has utilised this model with minor refinements to assess the flooding affectation under and existing and proposed scenarios to the:

- western existing residential area,
- M5 culverts, and
- downstream area of the Kelso Swamp Catchment for the 1% AEP and PMF Flood Events.

Furthermore, it is noted that the Kelso Park/Swamp has a significantly smaller 1%AEP Flood Level. As such, a sensitivity analysis has also been completed. For the sensitivity analysis, the model was updated with a tailwater condition of 5.55 m AHD for both the existing and proposed scenarios, as to align with the JWP report.

10.5. Water Quality Management

A combination of Rainwater Tanks, Gross Pollutant Traps, Filter Pits and Raingardens will be used to improve the quality of the stormwater leaving the site. All Water Quality assessments have been completed using MUSIC and the proposed combination of assets within the treatment train have been selected and sized to meet the targets specified in Canterbury-Bankstown DCP 2023, specifically:

- 85% reduction in the post-development mean annual load of Total Suspended Solids (TSS)
- 45% reduction in the post-development mean annual load of Total Nitrogen (TN)
- 65% reduction in the post-development mean annual load of Total Phosphorous (TP)
- 90% reduction in the post-development mean annual load of Gross Pollutants (GP)

The proposed treatment train consists of lot scale rainwater tanks (2 kL RWTs), end of line gross pollutant traps (GPTs) for primary treatment, and a bioretention basin as the secondary treatment. Stage 3 proposes 2 bioretention basins, basin 1 is located in the southeast RE1 zoned land and basin 2 is located in the southwest corner of the development site.

Where practical, stormwater management has been integrated into the landform in an unobtrusive way. Many of the proposed OSD/WSUD assets will be incorporated into public space, be landscaped in a way to create a positive public space, and utilise plants selected from local ecological communities. This will also enhance the liveability of the proposed development and provide opportunities for passive recreation.

The preliminary basin designs for the ultimate basins have been designed with a combination of vertical retaining walls and various embankment grades. Final configuration of walls and embankments will be designed in conjunction with Council. Various opportunities are available to manage the steep terrain, avoid excessive impact on both existing vegetation and future revegetation works, and allow for safe and easy access to the invert of each basin.

10.5.1. GPT Locations

The GPT configurations proposed as part of basin 1 and 2 designs are illustrated in Figure 8 below and summarised as follows:

- Basin 1 (BRS 1) - 2 GPT's.
- Basin 2 (BRS 2) - 1 GPT
- Basin 3 (BRS 3) - 1 GPT
- Northeast Catchment (PR2A) - 1 GPT
- Northwest Catchment (PR3E) - 1 GPT

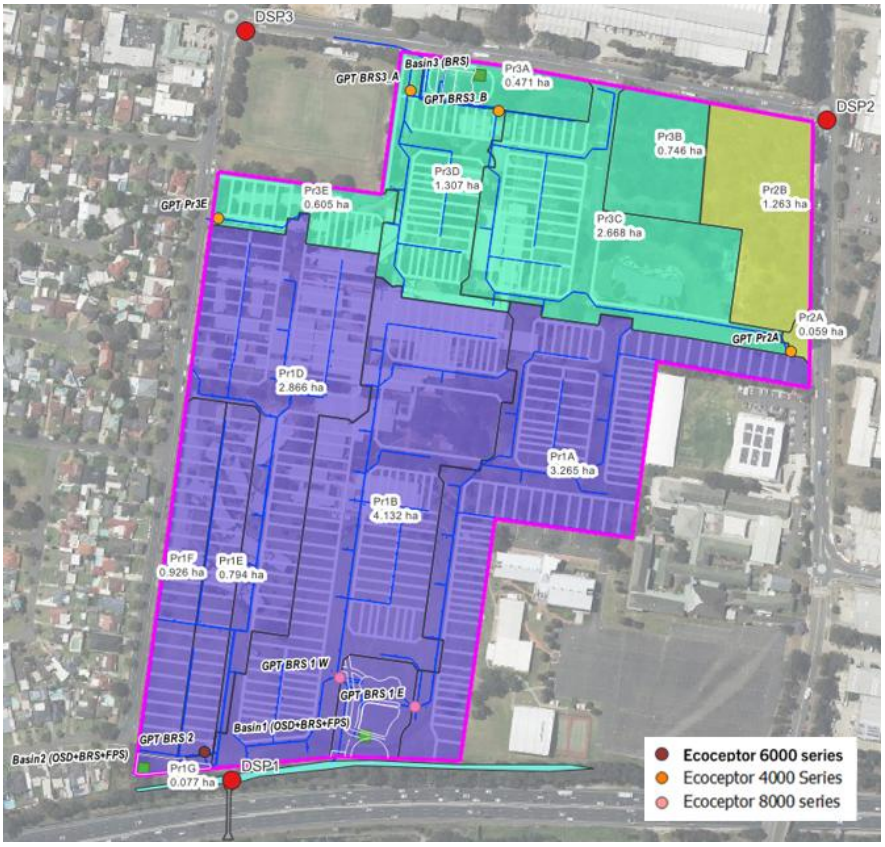


Figure 10: MUSIC Catchments

A separate operation and maintenance manual will be prepared relating to the maintenance of the following drainage and water quality treatment devices proposed to be constructed within the development:

- Road kerbs and pavements;
- Road drainage pits and pipes;
- Gross Pollutant Traps; and
- Rain Garden / temporary OSD Basins.

11. SERVICES AND UTILITIES

An initial desktop study was conducted through Dial Before You Dig (DBYD) to identify existing utilities. As the site was previously a University Campus, most of the affected existing services were internal to the existing buildings located within the development site. Existing services within the DA extents included:

- Internal sewer lines to service University Campus buildings,
- Internal potable water lines to service University Campus buildings,
- Underground electrical which powered the University sporting oval flood lights, and
- Internal stormwater drainage.

It is proposed that as part of the civil works, any existing redundant services will be removed as part of the demolition works prior to commencement of works.

A detailed survey was undertaken which identified the location of most existing utilities internal to the site including existing retaining walls which are to be removed as part of these works.

The design of potable water, sewer, electrical, gas and telecommunications will be completed as part of the detailed design prior to the issue of Subdivision Works Certificate and will seek approval from the relevant authorities.

11.1. Electrical / Telecommunications

Existing overhead Ausgrid electrical and NBN/Telstra communication cables in Ashford Avenue will be augmented and new NBN pit and pipe will be installed underground, to service each new residence along Ashford Avenue.

Reticulation of new electrical services throughout the site including streetlights, pillars and substations will occur on a stage-by-stage basis. PV charging provisions are proposed to be provided within the central and southern parks adjoining the on street parking. To help support this, electrical substations are proposed within the open space. A supporting letter has been provided by Edgewater to confirm the proposed design. The landscape design will consider these locations to ensure that they flow with the park but screened where possible. Additional substations are proposed to be located in the Local Centre adjoining Road No.9 and in a residential lot in the northern portion of Ashford Avenue.

NBN pit and pipe reticulation will be extended throughout the site on a stage-by-stage basis. NBN will pull fibre through the pit and pipe following completion of the works and prior to housing being completed. NBN provisions will be provided to the Northern, Central and Southern parks.

All new electrical service designs will be submitted to Ausgrid for approval while NBN service designs will be submitted to NBN for approval.

New residential lot service connections will be provided for each future residential lot as part of the Road and Drainage construction.

11.2. Gas

It is **not** proposed to install Gas under the residential development. This choice helps the sustainability of the development.

11.3. Watermain

Existing Sydney Water watermains exist within the Ashford Avenue verge and Horsley Road verge along the site. Watermain also exists in the verge on the opposite side of Bullecourt Avenue. New watermain reticulation will occur on a stage-by-stage basis as required. As part of Stage 2 works, a new watermain will be extended from Ashford Avenue into the site while as part of Stage 3 a new watermain will be extended from both Bullecourt Avenue and Horsley Road into the site.

Main to Meter service connections will be provided for each future residential lot as part of the Road and Drainage construction.

11.4. Sewer

An existing sewer main is located within the site along the M5 boundary. This is being adjusted to ensure it does not criss cross the boundary and is not impacted by the southern retaining wall being constructed along the southern boundary.

New Sewer mains will be reticulated throughout the site and connect to the adjusted main along the southern boundary of the site. Each new lot will have a house service connection to the new sewermain. The sewer will be the deepest service when crossing other services.

Sewer will be extended into the residue lot where required to allow the future extension of the sewer main where required.

12. CONCLUSION

In conclusion, this report outlines the key engineering design considerations for the development. The Development Application documentation has been designed and developed generally in accordance with the requirements of Canterbury-Bankstown Council.

Upon receiving a Development Consent, further detailed design documentation will be developed to ensure that all works comply with project specifications, relevant Australian Standards and the requirements of The City of Canterbury Bankstown.

APPENDIX A - Engineering Plans

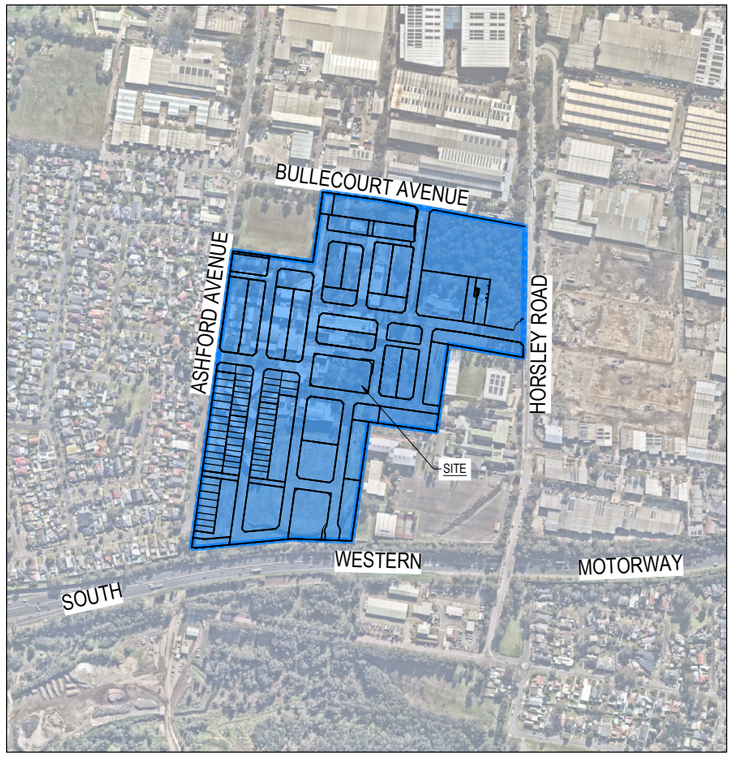
WSU MILPERRA PROPOSED SUBDIVISON

CIVIL ENGINEERING PLANS ISSUED FOR DEVELOPMENT APPLICATION

2A BULLECOURT AVENUE, MILPERRA (LOT 1 IN DP101147 AND LOT 2 IN DP1291984)

CANTERBURY-BANKSTOWN COUNCIL

MIRVAC RESIDENTIAL (NSW) DEVELOPMENTS PTY LTD



SITE PLAN

NOT TO SCALE

DRAWING INDEX

DRAWING No.	TITLE	REVISION
2301879-320-001	COVER SHEET	C
2301879-320-002	GENERAL ARRANGEMENT & STAGING PLAN	B
2301879-320-003	TYPICAL ROAD CROSS SECTIONS SHEET 1 OF 4	B
2301879-320-004	TYPICAL ROAD CROSS SECTIONS SHEET 2 OF 4	B
2301879-320-005	TYPICAL ROAD CROSS SECTIONS SHEET 3 OF 4	B
2301879-320-006	TYPICAL ROAD CROSS SECTIONS SHEET 4 OF 4	B
2301879-320-007	TYPICAL DETAILS SHEET 1 OF 2	B
2301879-320-008	TYPICAL DETAILS SHEET 2 OF 2	B
2301879-320-009	RETAINING WALL DETAILS	B
2301879-320-030	OVERALL DEMOLITION PLAN	B
2301879-320-031	DEMOLITION PLAN SHEET 1 OF 6	B
2301879-320-032	DEMOLITION PLAN SHEET 2 OF 6	B
2301879-320-033	DEMOLITION PLAN SHEET 3 OF 6	B
2301879-320-034	DEMOLITION PLAN SHEET 4 OF 6	B
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2301879-320-053	LAYOUT PLAN STAGE 2 SHEET 2 OF 2	B
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2301879-320-055	LAYOUT PLAN STAGE 3A SHEET 2 OF 2	C
2301879-320-056	LAYOUT PLAN STAGE 4 SHEET 1 OF 2	B
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2301879-320-058	LAYOUT PLAN STAGE 5	B
2301879-320-059	LAYOUT PLAN STAGE 6 SHEET 1 OF 2	B
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2301879-320-061	LAYOUT PLAN STAGE 7	B
2301879-320-070	BULK EARTHWORKS OVERALL PLAN	B
2301879-320-071	BULK EARTHWORKS SECTION A	B
2301879-320-072	BULK EARTHWORKS SECTION B	B
2301879-320-073	BULK EARTHWORKS SECTIONS C, D & E	B
2301879-320-074	BULK EARTHWORKS SECTION F	B
2301879-320-101	ROAD LONGITUDINAL SECTIONS	B
2301879-320-102	ROAD LONGITUDINAL SECTIONS	B
2301879-320-103	ROAD LONGITUDINAL SECTIONS	B
2301879-320-104	ROAD LONGITUDINAL SECTIONS	B
2301879-320-105	ROAD LONGITUDINAL SECTIONS	B
2301879-320-106	ROAD LONGITUDINAL SECTIONS	B
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2301879-320-201	ROAD CROSS SECTIONS STAGE 1 - ASHFORD AVENUE (SHEET 2 OF 6)	B
2301879-320-202	ROAD CROSS SECTIONS STAGE 1 - ASHFORD AVENUE (SHEET 3 OF 6)	B
2301879-320-203	ROAD CROSS SECTIONS STAGE 1 - ASHFORD AVENUE (SHEET 4 OF 6)	B
2301879-320-204	ROAD CROSS SECTIONS STAGE 1 - ASHFORD AVENUE (SHEET 5 OF 6)	B
2301879-320-205	ROAD CROSS SECTIONS STAGE 1 - ASHFORD AVENUE (SHEET 6 OF 6)	B
2301879-320-206	ROAD CROSS SECTIONS STAGE 2 - ROAD 1	B
2301879-320-207	ROAD CROSS SECTIONS STAGE 2 - ROAD 2A (SHEET 1 OF 3)	B
2301879-320-208	ROAD CROSS SECTIONS STAGE 2 - ROAD 2A (SHEET 2 OF 3)	B
2301879-320-209	ROAD CROSS SECTIONS STAGE 2 - ROAD 2A (SHEET 3 OF 3)	B
2301879-320-210	ROAD CROSS SECTIONS STAGE 2 - ROAD 3	B

DRAWING INDEX

DRAWING No.	TITLE	REVISION
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2301879-320-212	ROAD CROSS SECTIONS STAGE 2 - ROAD 6	B
2301879-320-213	ROAD CROSS SECTIONS STAGE 2 - ROAD 7	B
2301879-320-214	ROAD CROSS SECTIONS STAGE 2 - ROAD 10	B
2301879-320-215	ROAD CROSS SECTIONS STAGE 3 - ROAD 2B (SHEET 1 OF 2)	B
2301879-320-216	ROAD CROSS SECTIONS STAGE 3 - ROAD 2B (SHEET 2 OF 2)	B
2301879-320-217	ROAD CROSS SECTIONS STAGE 3 - ROAD 3	B
2301879-320-218	ROAD CROSS SECTIONS STAGE 3- LANE 5	B
2301879-320-219	ROAD CROSS SECTIONS STAGE 3 - ROAD 9 (SHEET 1 OF 2)	B
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2301879-320-221	ROAD CROSS SECTIONS STAGE 4 - ROAD 2A (SHEET 1 OF 4)	B
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2301879-320-224	ROAD CROSS SECTIONS STAGE 4 - ROAD 2A (SHEET 4 OF 4)	B
2301879-320-225	ROAD CROSS SECTIONS STAGE 4 - ROAD 4	B
2301879-320-226	ROAD CROSS SECTIONS STAGE 4 - ROAD 5 (SHEET 1 OF 3)	B
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2301879-320-230	ROAD CROSS SECTIONS STAGE 5 - ROAD 3 (SHEET 1 OF 2)	B
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2301879-320-234	ROAD CROSS SECTIONS STAGE 6 - ROAD 2A	B
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2301879-320-236	ROAD CROSS SECTIONS STAGE 6 - ROAD 8 (SHEET 1 OF 3)	B
2301879-320-237	ROAD CROSS SECTIONS STAGE 6 - ROAD 8 (SHEET 2 OF 3)	B
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2301879-320-239	ROAD CROSS SECTIONS STAGE 6 - ROAD 10	B
2301879-320-240	ROAD CROSS SECTIONS STAGE 6 - LANE 5	B
2301879-320-241	ROAD CROSS SECTIONS STAGE 7 - ROAD 10	B
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2301879-320-243	ROAD CROSS SECTIONS STAGE 7 - LANE 3	B
2301879-320-250	OVERALL SIGNAGE & LINE MARKING PLAN	B
2301879-320-251	SIGNAGE & LINE MARKING PLANS SHEET 1 OF 5	B
2301879-320-252	SIGNAGE & LINE MARKING PLANS SHEET 2 OF 5	B
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2301879-320-300	INTERSECTION DETAILS SHEET 1 OF 3	B
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2301879-320-302	INTERSECTION DETAILS SHEET 3 OF 3	B
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2301879-320-400	OVERALL RETAINING WALLS	B
2301879-320-401	RETAINING WALL ALONG SOUTH WESTERN MORTORWAY LAYOUT & LONG-SECTION	B
2301879-320-402	RETAINING WALL CROSS SECTIONS	B
2301879-320-500	TEMPORARY OSD BASIN 1 SHEET 1 OF 2	B
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DRAWING No.	TITLE	REVISION
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2301879-320-508	OSD BASIN	B
2301879-320-509	OSD BASIN	B
2301879-320-510	OSD BASIN	B
2301879-320-511	OSD BASIN	B
2301879-320-550	OVERALL CATCHMENT PLAN	B
2301879-320-600	OVERALL TRUNK DRAINAGE LAYOUT PLAN	B
2301879-320-601	DRAINAGE LONGITUDINAL SECTIONS SHEET 1 OF 6	B
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2301879-320-603	DRAINAGE LONGITUDINAL SECTIONS SHEET 3 OF 6	B
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2301879-320-606	DRAINAGE LONGITUDINAL SECTIONS SHEET 6 OF 6	B
2301879-320-700	TURNING MOVEMENTS SHEET 1 OF18	B
2301879-320-701	TURNING MOVEMENTS SHEET 2 OF 18	B
2301879-320-702	TURNING MOVEMENTS SHEET 3 OF 18	B
2301879-320-703	TURNING MOVEMENTS SHEET 4 OF 18	B
2301879-320-704	TURNING MOVEMENTS SHEET 5 OF 18	B
2301879-320-705	TURNING MOVEMENTS SHEET 6 OF 18	B
2301879-320-706	TURNING MOVEMENTS SHEET 7 OF 18	B
2301879-320-707	TURNING MOVEMENTS SHEET 8 OF 18	C
2301879-320-708	TURNING MOVEMENTS SHEET 9 OF 18	B
2301879-320-709	TURNING MOVEMENTS SHEET 10 OF 18	B
2301879-320-710	TURNING MOVEMENTS SHEET 11 OF 18	B
2301879-320-711	TURNING MOVEMENTS SHEET 12 OF 18	B
2301879-320-712	TURNING MOVEMENTS SHEET 13 OF 18	B
2301879-320-713	TURNING MOVEMENTS SHEET 14 OF 18	B
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2301879-320-715	TURNING MOVEMENTS SHEET 16 OF 18	B
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2301879-320-800	OVERALL SOIL & WATER MANAGEMENT PLAN	B
2301879-320-801	SOIL & WATER MANAGEMENT PLAN STAGE 1	B
2301879-320-802	SOIL & WATER MANAGEMENT PLAN STAGE 2 SHEET 1 OF 2	B
2301879-320-803	SOIL & WATER MANAGEMENT PLAN STAGE 2 SHEET 2 OF 2	B
2301879-320-804	SOIL & WATER MANAGEMENT PLAN STAGE 3	B
2301879-320-806	SOIL & WATER MANAGEMENT PLAN STAGE 4 SHEET 1 OF 2	B
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C	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
B	CARPARK & SIGNAGE AMENDMENTS	23.10.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

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Designed	R. GOVENDER
Date	23.06.2025
Drawn	G.N.
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
PS Number	-

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Project Details	WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA
Drawing Title	COVER SHEET

Sheet	1 of 145		
Scale	AS SHOWN		
Project Ref	Stage No	Drawing No	Rev
2301879	321	001	C

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LEGEND - FUNCTIONAL LAYOUT PLAN

- PROPOSED SUPER LOTS
- PROPOSED HOUSING LOTS
- DENOTES COMMUNITY TITLE SCHEME LOTS
- ROADS DEDICATED TO COUNCIL
- DENOTES PUBLIC OPEN SPACE OR DRAINAGE RESERVE TO BE CONSTRUCTED AND DEDICATED TO COUNCIL UNDER THIS STAGE

WARNING

BEWARE OF UNDERGROUND SERVICES

The locations of underground services are approximate only and their exact position should be proven on site.
No guarantee is given that all existing services are shown.
Locate all underground services before commencement of works

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B	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

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0 12.5 25 50 75 100
SCALE 1:1250 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	G.N.
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Reg. No.	PE0008347
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DA Number	-

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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: GENERAL ARRANGEMENT & STAGING PLAN

Sheet 2 of 145

Scale 1:1250 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	002	B

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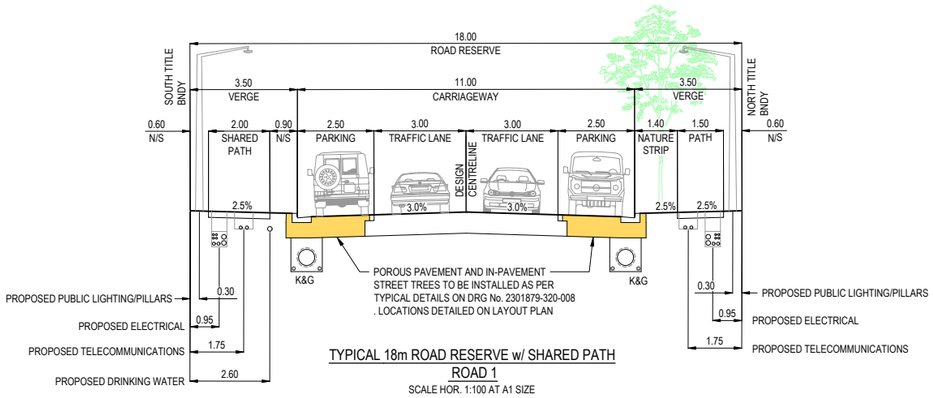

TYPICAL 18m ROAD RESERVE w/ SHARED PATH
ROAD 1
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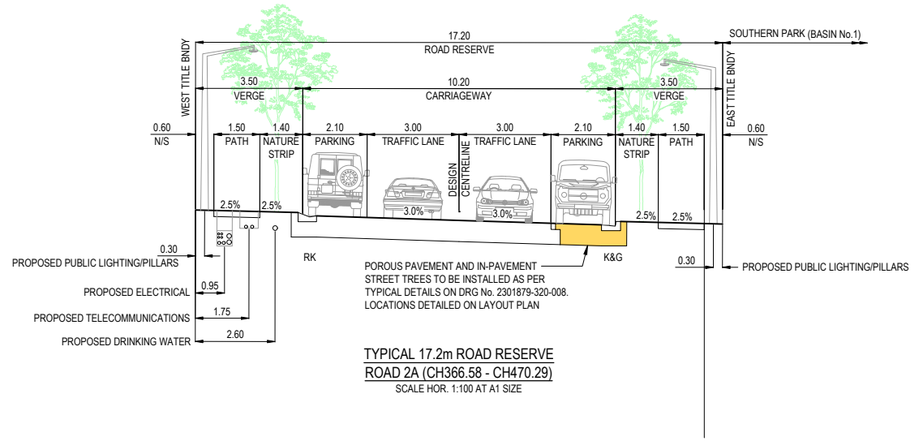

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ROAD 2A (CH366.58 - CH470.29)
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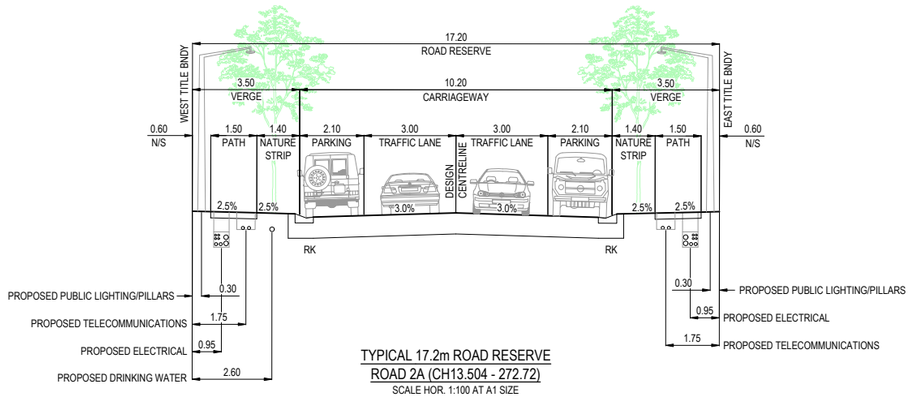

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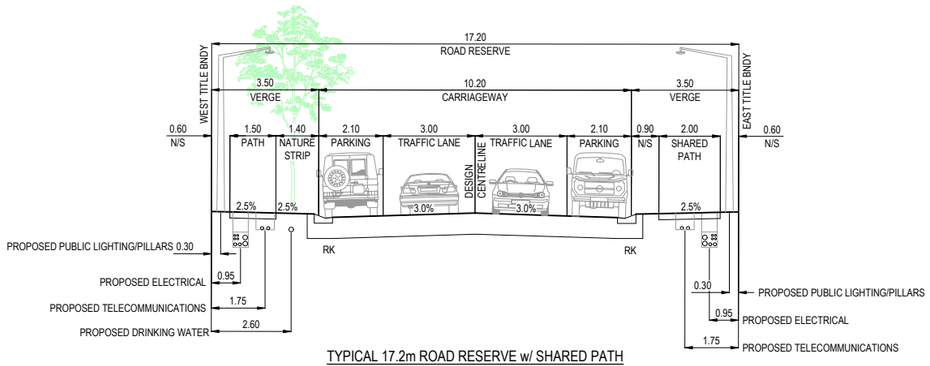

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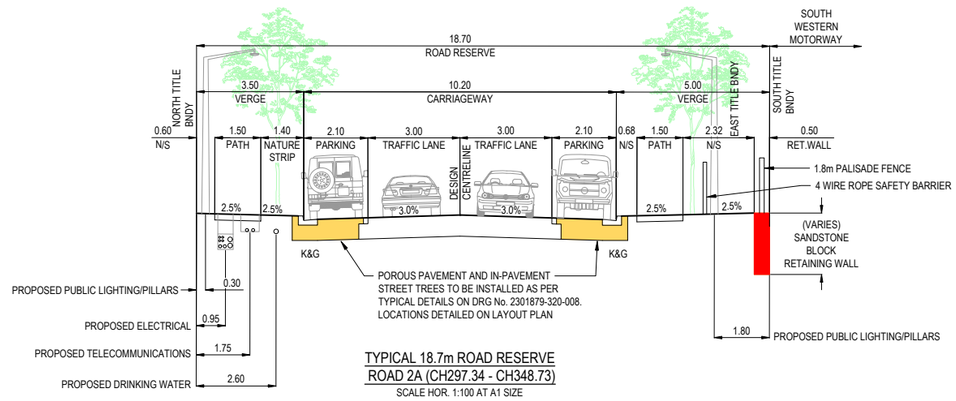

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ROAD 2A (CH297.34 - CH348.73)
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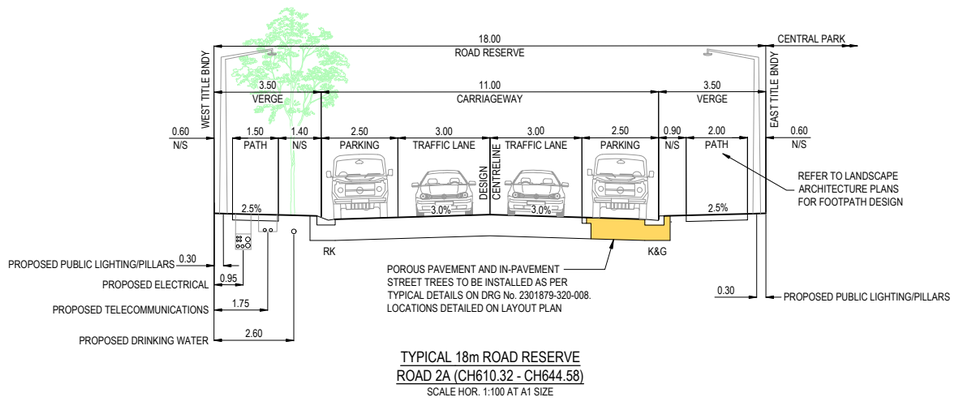

TYPICAL 18m ROAD RESERVE
ROAD 2A (CH610.32 - CH644.58)
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Designed	R. GOVENDER
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: TYPICAL ROAD CROSS SECTIONS
SHEET 1 OF 4

Sheet 3 of 145
Scale 1:100 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	003	B

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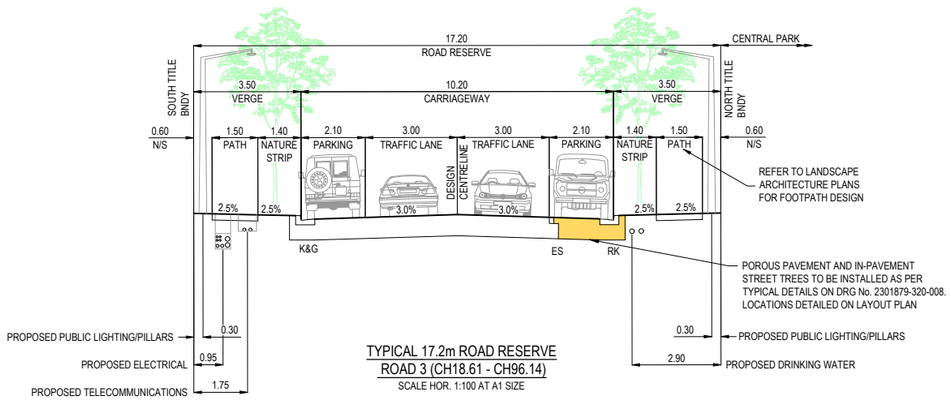

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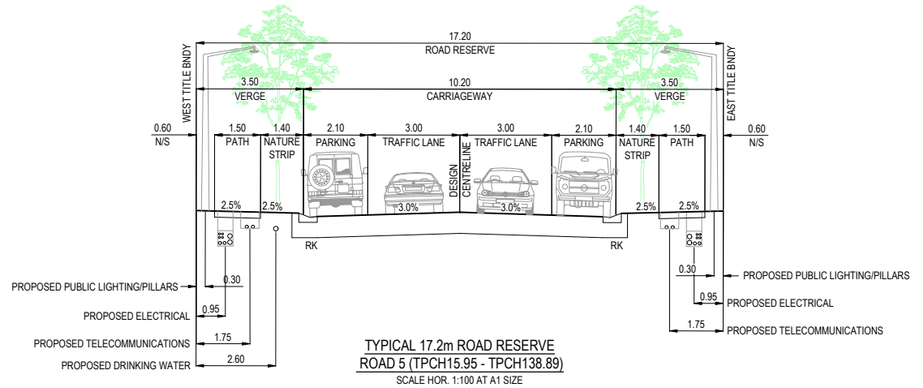

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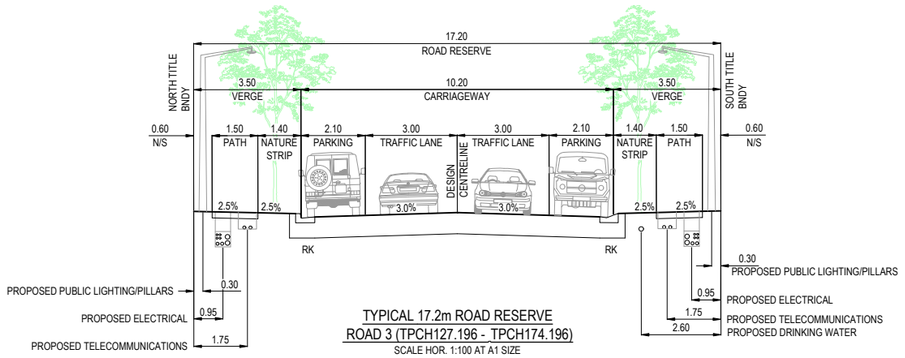

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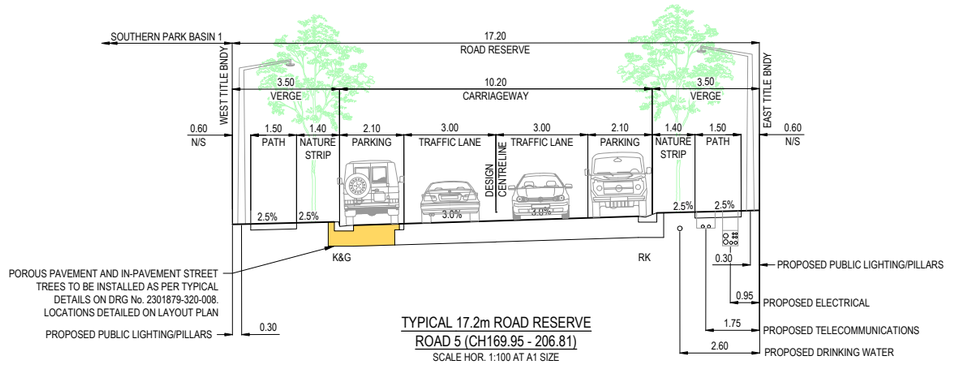

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ROAD 5 (CH169.95 - 206.81)
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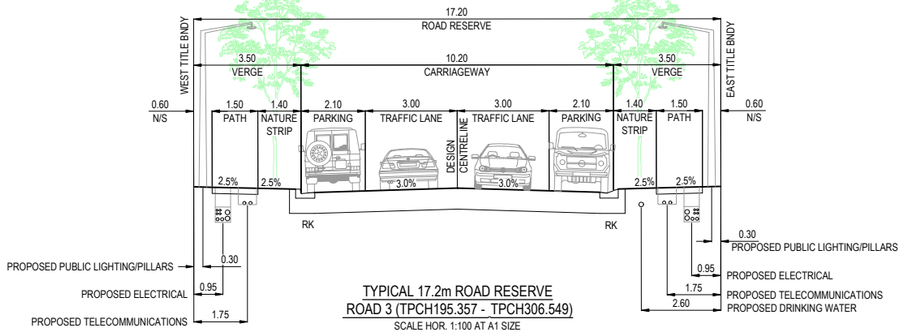

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ROAD 3 (TPCH195.357 - TPCH306.549)
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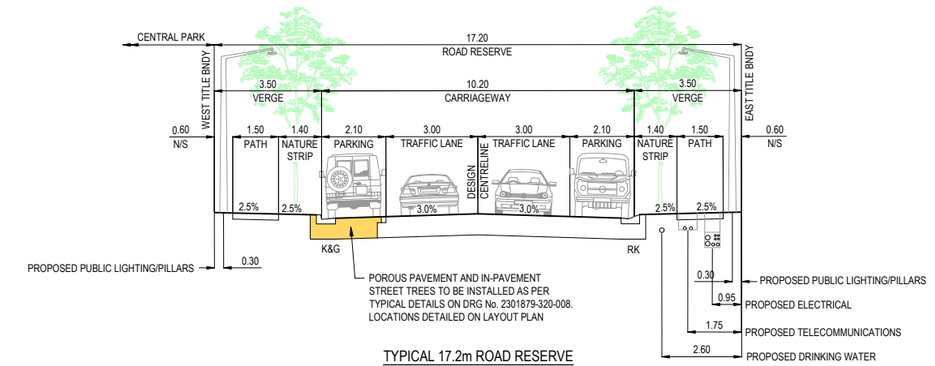

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ROAD 6 (CH18.10 - TPCH37.04)
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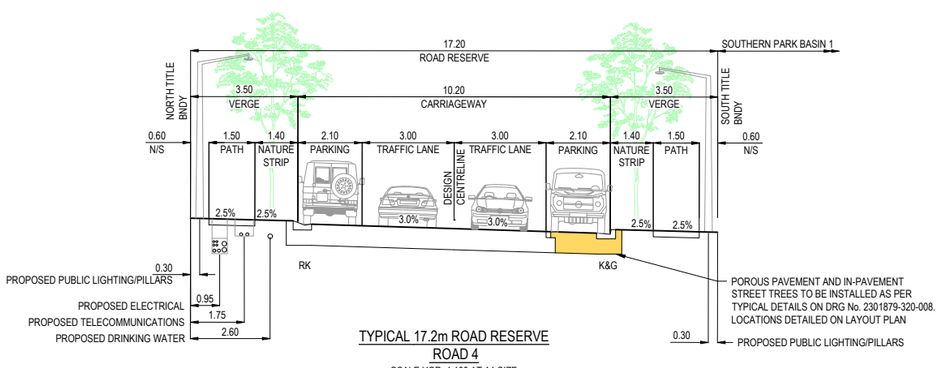

TYPICAL 17.2m ROAD RESERVE
ROAD 4
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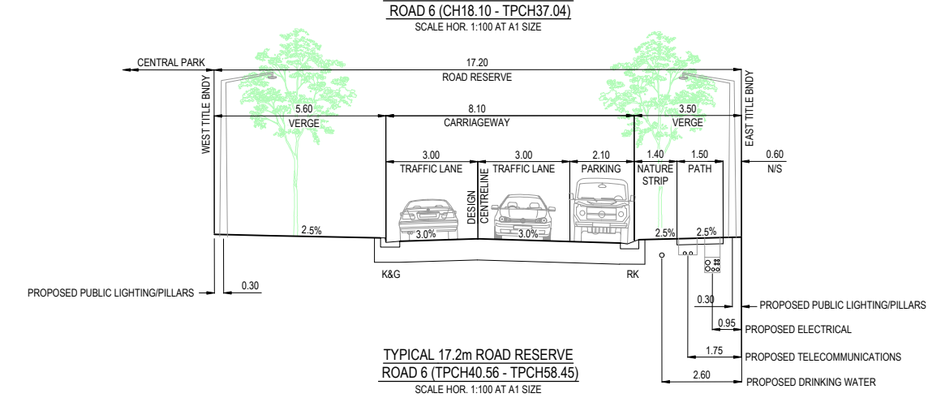

TYPICAL 17.2m ROAD RESERVE
ROAD 6 (TPCH40.56 - TPCH58.45)
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: TYPICAL ROAD CROSS SECTIONS
SHEET 2 OF 4

Sheet 4 of145
Scale 1:100 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	004	B

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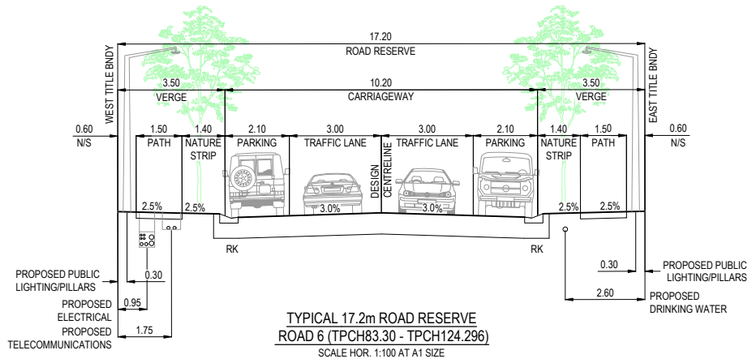
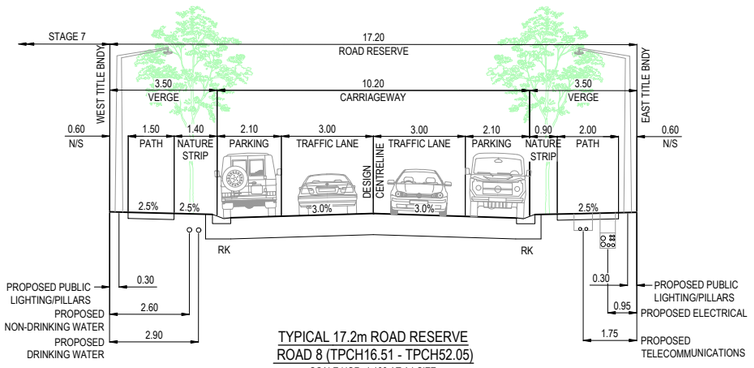
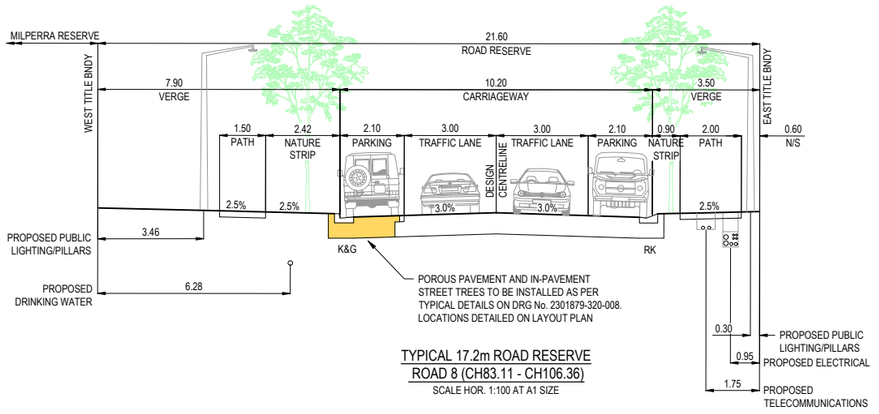


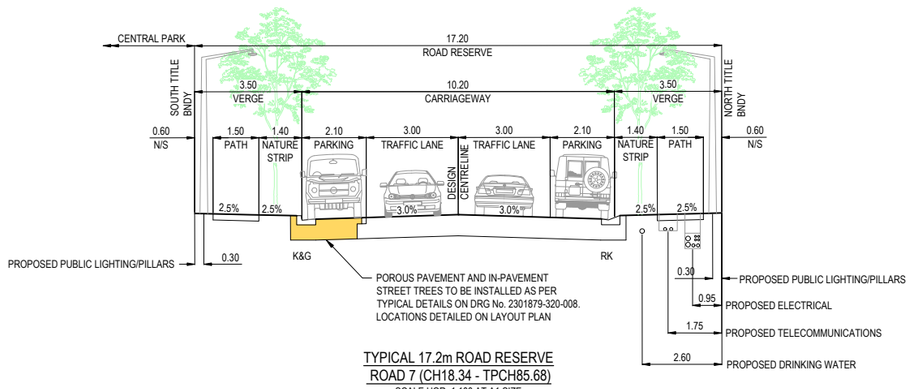
TYPICAL 17.2m ROAD RESERVE
ROAD 6 (TPCH83.30 - TPCH124.296)
SCALE HOR. 1:100 AT A1 SIZE



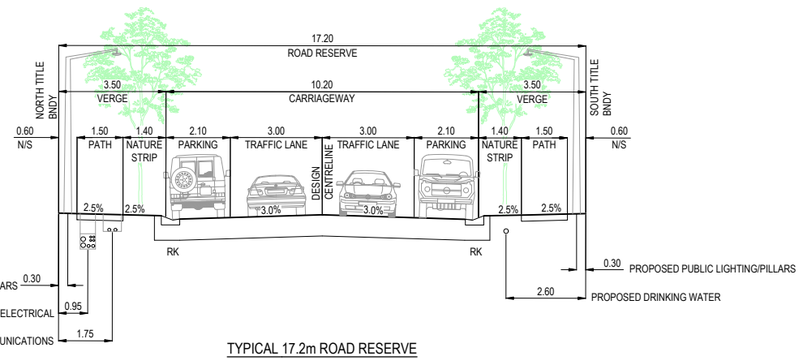
TYPICAL 17.2m ROAD RESERVE
ROAD 8 (TPCH16.51 - TPCH52.05)
SCALE HOR. 1:100 AT A1 SIZE



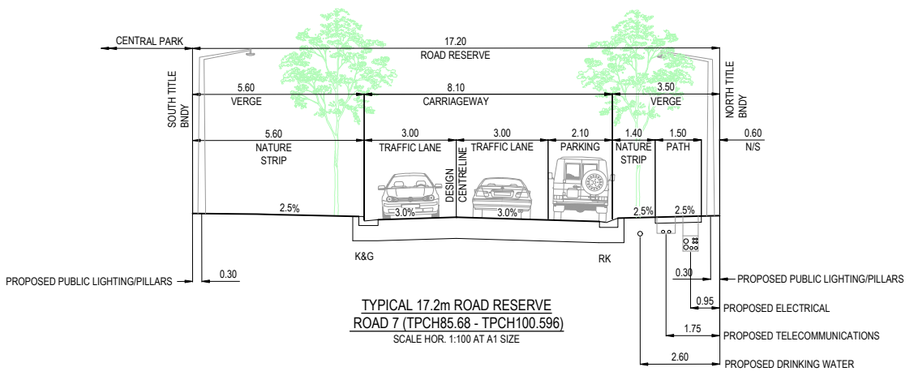
TYPICAL 17.2m ROAD RESERVE
ROAD 8 (CH83.11 - CH106.36)
SCALE HOR. 1:100 AT A1 SIZE



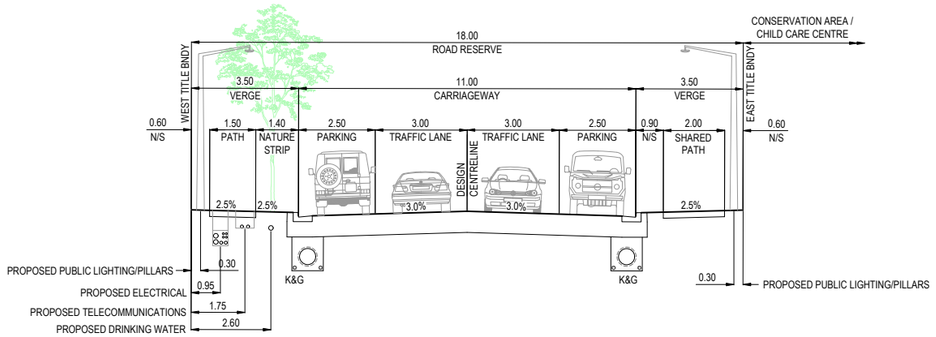
TYPICAL 17.2m ROAD RESERVE
ROAD 7 (CH18.34 - TPCH85.68)
SCALE HOR. 1:100 AT A1 SIZE



TYPICAL 17.2m ROAD RESERVE
ROAD 8 (CH128.67 - CH176.48 &
CH197.64 - CH288.64)
SCALE HOR. 1:100 AT A1 SIZE



TYPICAL 17.2m ROAD RESERVE
ROAD 7 (TPCH85.68 - TPCH100.596)
SCALE HOR. 1:100 AT A1 SIZE



TYPICAL 18m ROAD RESERVE w/ SHARED PATH
ROAD 9 (CH13.50 - CH123.44)
SCALE HOR. 1:100 AT A1 SIZE

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SCALE 1:100 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	G.N.
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Date	07.11.25
Approved	S. FERGUSON
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: TYPICAL ROAD CROSS SECTIONS
SHEET 3 OF 4

Sheet 5 of145
Scale 1:100 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	005	B

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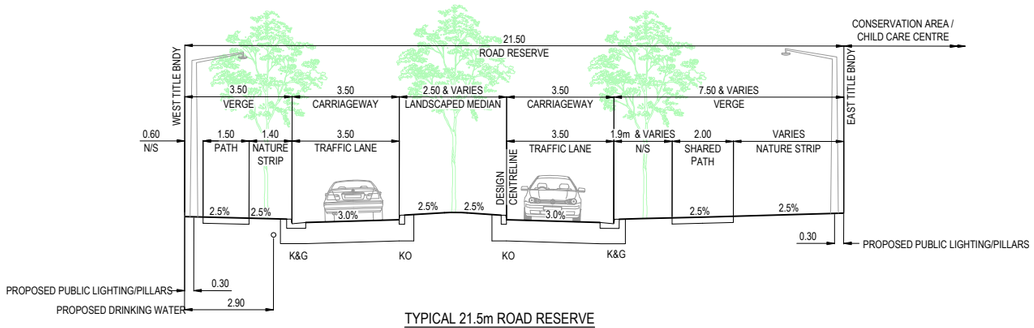
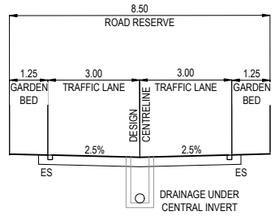
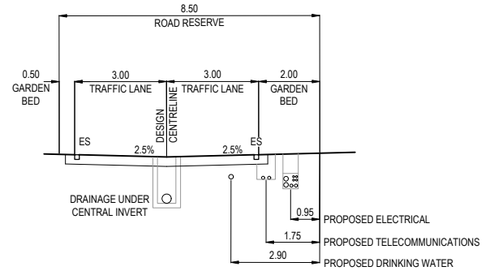


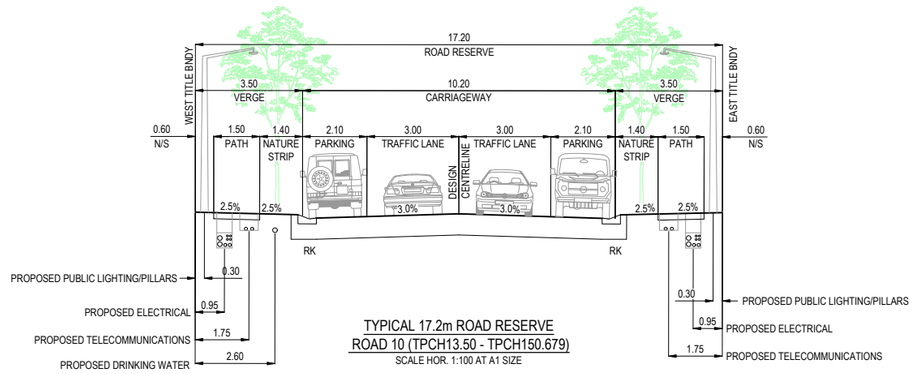
TYPICAL 21.5m ROAD RESERVE
ROAD 9 (CH123.44 & CH178.88)
SCALE HOR. 1:100 AT A1 SIZE



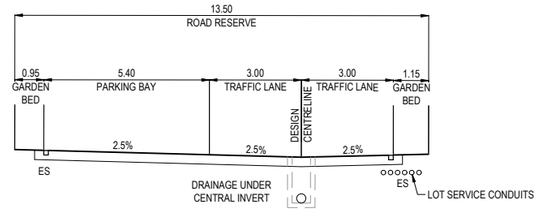
TYPICAL 8.5m ROAD RESERVE
LANE 1 & 3
SCALE HOR. 1:100 AT A1 SIZE



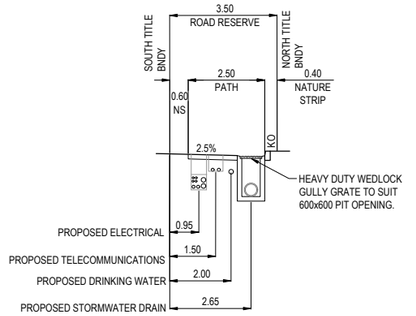
TYPICAL 8.5m ROAD RESERVE
LANE 5
SCALE HOR. 1:100 AT A1 SIZE



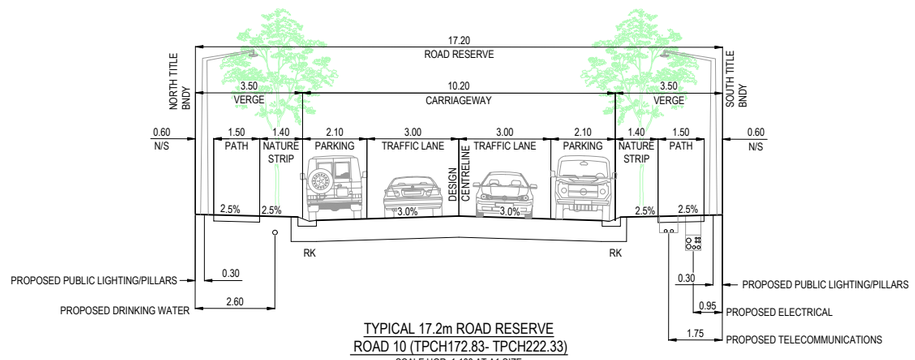
TYPICAL 17.2m ROAD RESERVE
ROAD 10 (TPCH13.50 - TPCH150.679)
SCALE HOR. 1:100 AT A1 SIZE



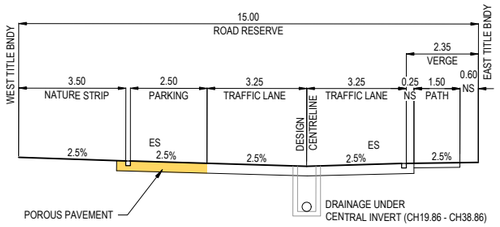
TYPICAL 13.5m ROAD RESERVE
LANE 2
SCALE HOR. 1:100 AT A1 SIZE



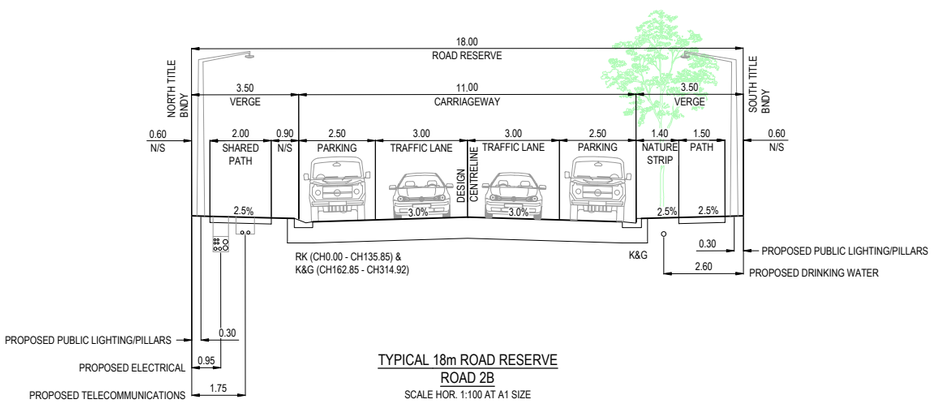
TYPICAL 3.5m
WALK 1
SCALE HOR. 1:100 AT A1 SIZE



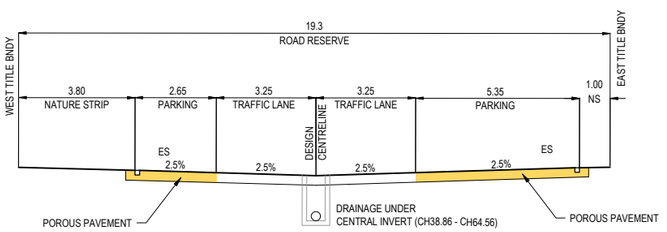
TYPICAL 17.2m ROAD RESERVE
ROAD 10 (TPCH172.83- TPCH222.33)
SCALE HOR. 1:100 AT A1 SIZE



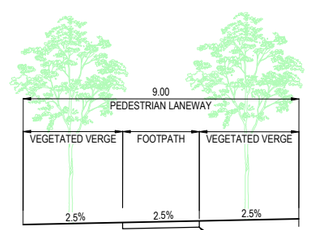
TYPICAL 15m ROAD RESERVE
LANE 4 (CH16.44 - CH38.86)
SCALE HOR. 1:100 AT A1 SIZE



TYPICAL 18m ROAD RESERVE
ROAD 2B
SCALE HOR. 1:100 AT A1 SIZE



TYPICAL 19.3m ROAD RESERVE
LANE 4 (CH38.86 - CH72.858)
SCALE HOR. 1:100 AT A1 SIZE



TYPICAL 9.0m PEDESTRIAN LINK
SCALE HOR. 1:100 AT A1 SIZE

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SCALE 1:100 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	G.N.
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
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PS Number	PS

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Oran Park NSW 2570
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www.beveridgewilliams.com.au

Project Details	WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA
Drawing Title	TYPICAL ROAD CROSS SECTIONS SHEET 4 OF 4

Sheet 6 of145
Scale 1:100 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	006	B

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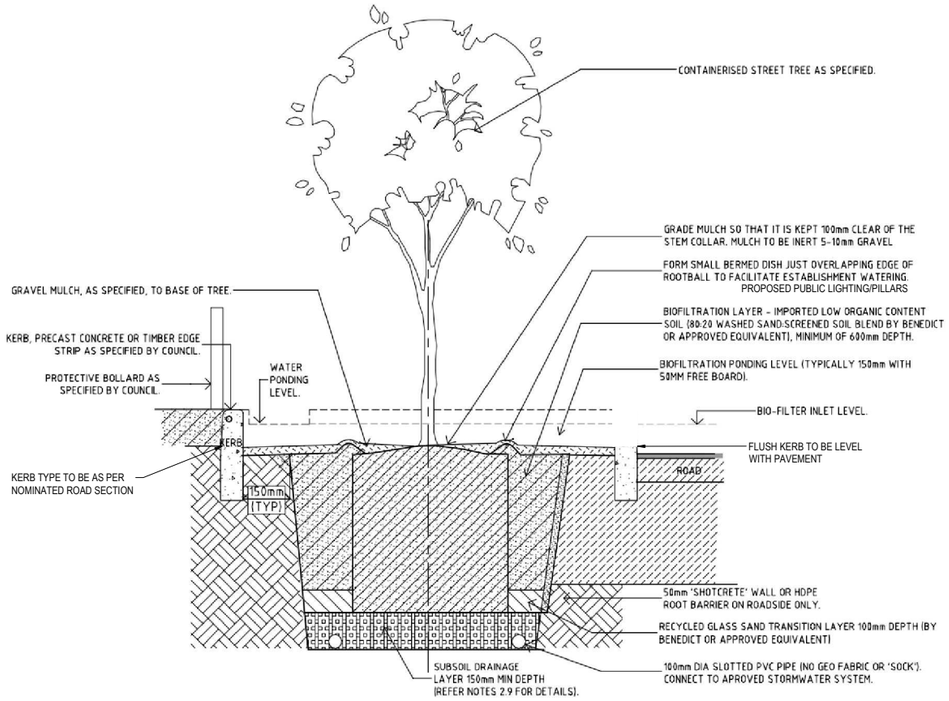
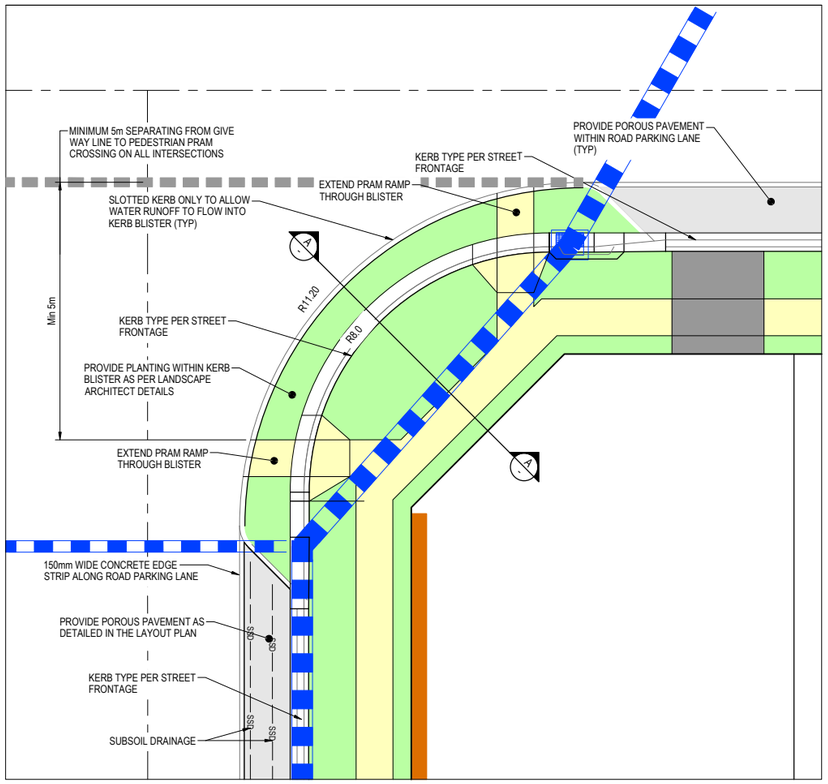


SECTION SCALE: NTS

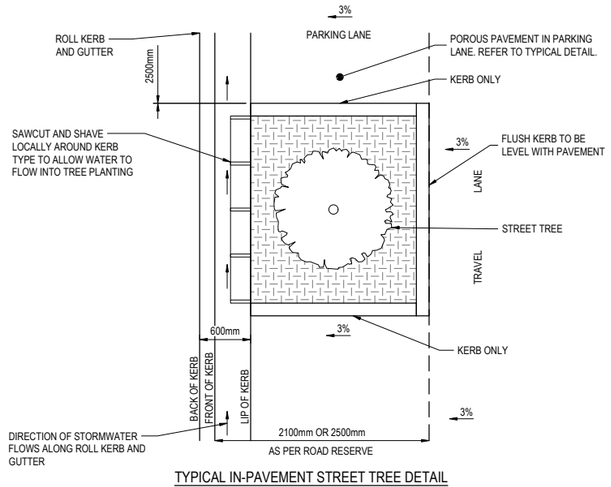
HOLD POINTS:

1. COUNCIL TO INSPECT AT COMPLETION OF CONCRETE KERB TO ALLOW CONFIRMATION OF CORRECT LEVELS/DEPTH.
2. COUNCIL TO INSPECT AT COMPLETION OF ALL LAYERS-DRAINAGE, TRANSITION OF BIOFILTER & DEPTH OF GRAVEL MULCH
3. COUNCIL TO INSPECT THE POSITIONING & COVERING OF SUB-SOIL DRAINAGE

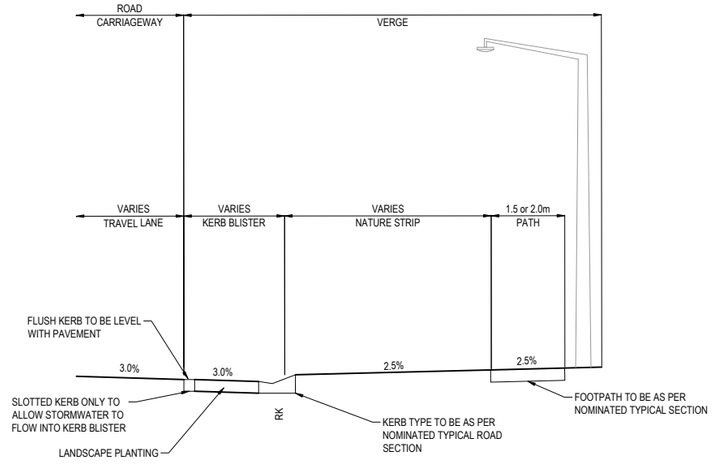
TYPICAL IN-PAVEMENT STREET TREE DETAIL
N.T.S



TYPICAL KERB BLISTER PLAN AND DETAILS
N.T.S



TYPICAL IN-PAVEMENT STREET TREE DETAIL
N.T.S



SECTION A: KERB BLISTER AT INTERSECTION
N.T.S

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Project Details	WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA
Drawing Title	TYPICAL DETAILS SHEET 1 OF 2

Sheet 7 of145
Scale AS SHOWN

Project Ref	Stage No	Drawing No	Rev
2301879	321	007	B

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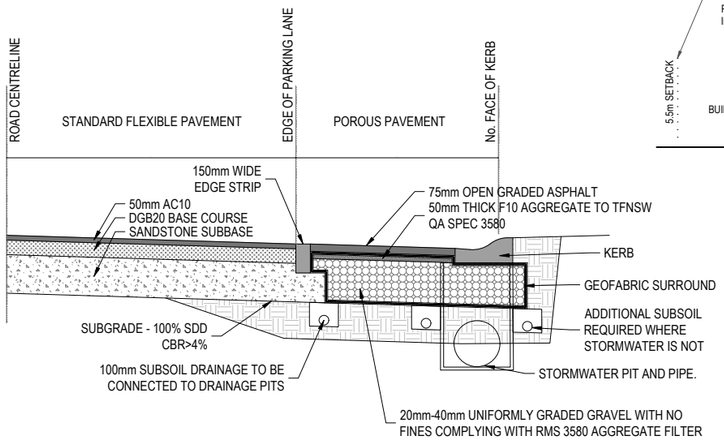
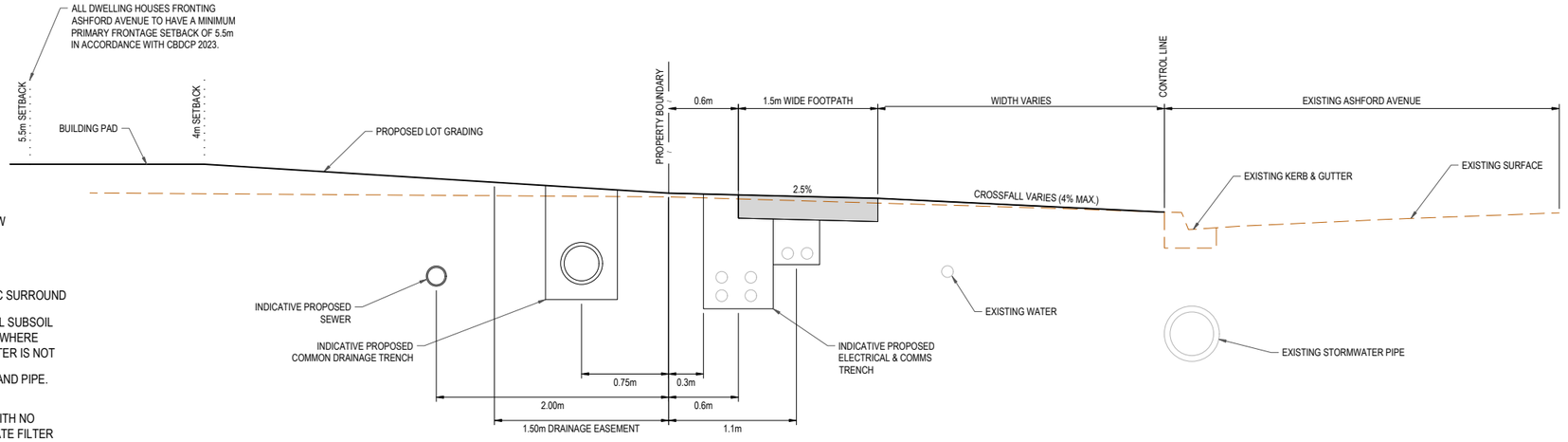
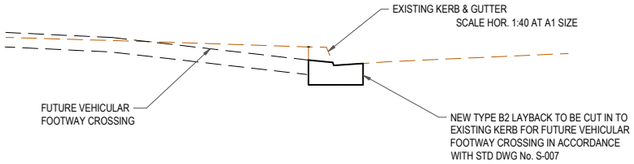


TYPICAL POROUS PAVEMENT DETAIL IN PARKING LANE
N.T.S



ASHFORD AVENUE TYPICAL CROSS SECTION



LAYBACK FOR VEHICULAR CROSSING TYPICAL SECTION
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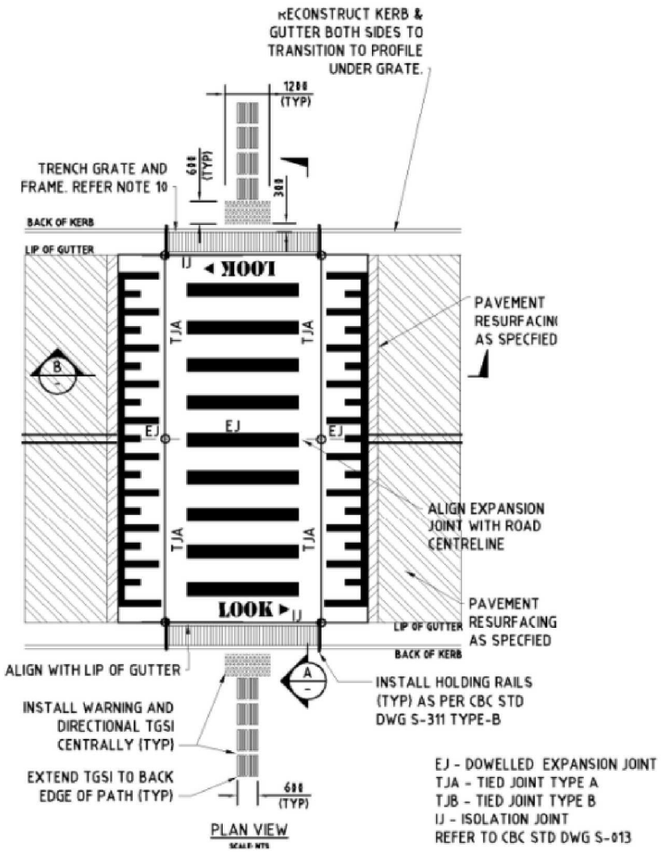
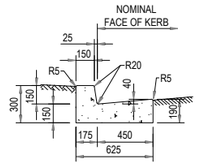
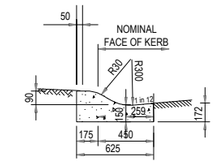


FOR DETAILS REFER TO CITY OF CANTERBURY BANKSTOWN STANDARD DWG No. S-306

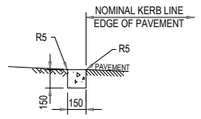
STANDARD RAISED PEDESTRIAN THRESHOLD WITH GRATED GUTTER BRIDGE: TYPE 1
N.T.S



TYPICAL KERB & GUTTER (K&G)
N.T.S

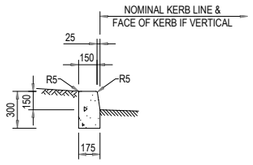


TYPICAL ROLL KERB AND GUTTER (RK)
N.T.S



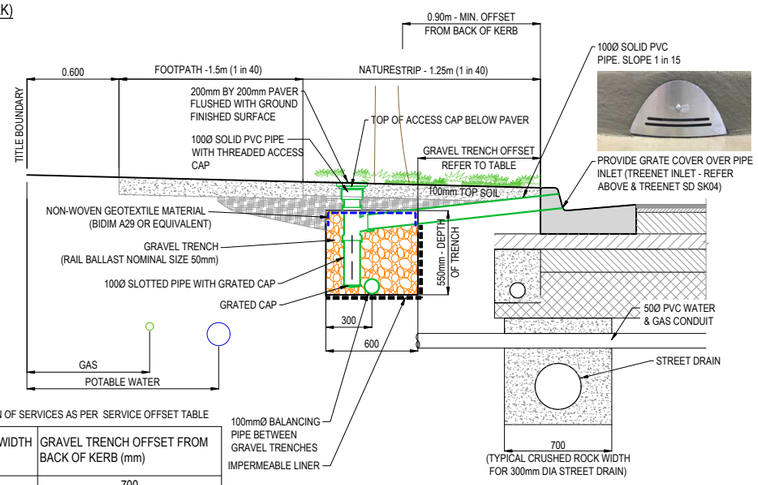
150mm EDGE STRIP

TYPICAL 150mm EDGE STRIP (ES)
N.T.S



KERB ONLY

TYPICAL KERB ONLY (KO)
N.T.S



NOTE: LOCATION OF SERVICES AS PER SERVICE OFFSET TABLE

NATURESTRIP WIDTH (m)	GRAVEL TRENCH OFFSET FROM BACK OF KERB (mm)
≤ 2.50	700
2.80	800

ACCESS STREET LEVEL 1
SECTION A-A

PASSIVE IN-VERGE STREET TREE IRRIGATION GRAVEL TRENCH (KERB INLET DIVERSION)

NOT TO SCALE

NOTES:

1. AT HIGHLY CONSTRAINED SITES, GRAVEL TRENCHES CAN BE MODIFIED IN THE FOLLOWING WAYS:
   - REDUCED OFFSET OF 0.75m FROM TREE CENTRELINE
   - DIMENSION 1.0m LONG x 0.6m WIDE x 0.75m DEEP
   - NATURESTRIP ≤ 2.5m DIMENSION CAN BE 1.5m LONG x 0.4m WIDE x 0.75m DEEP
2. PASSIVE IRRIGATION PLANS TO BE READ IN CONJUNCTION WITH LANDSCAPE PLANS.

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Project Details	WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA
Drawing Title	TYPICAL DETAILS SHEET 2 OF 2

Sheet	8 of145		
Scale	AS SHOWN		
Project Ref	Stage No	Drawing No	Rev
2301879	321	008	B

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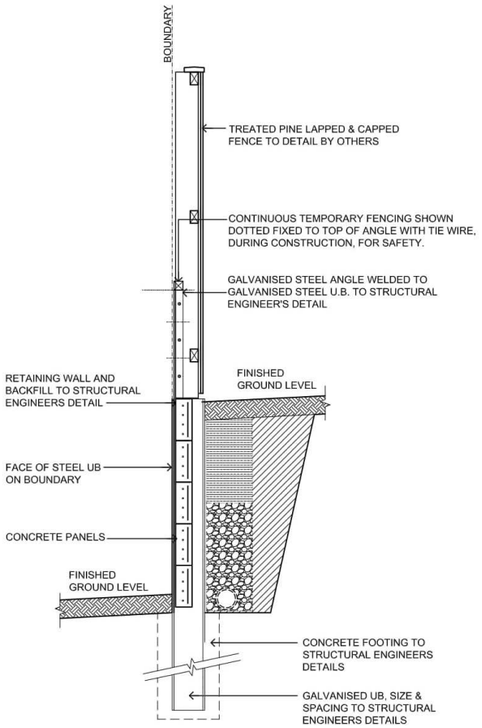
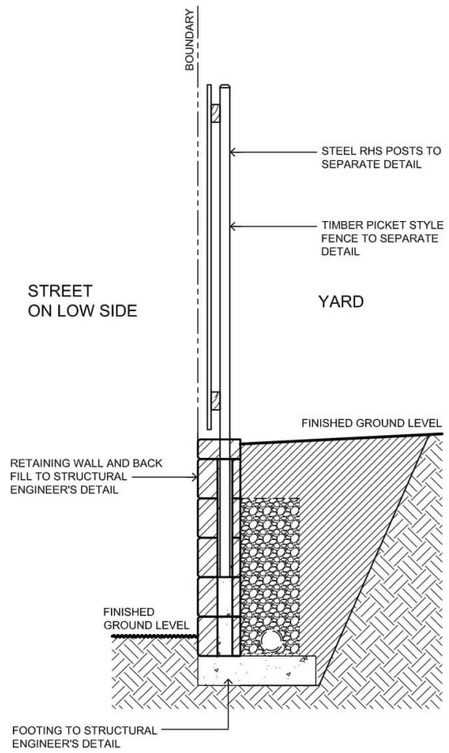
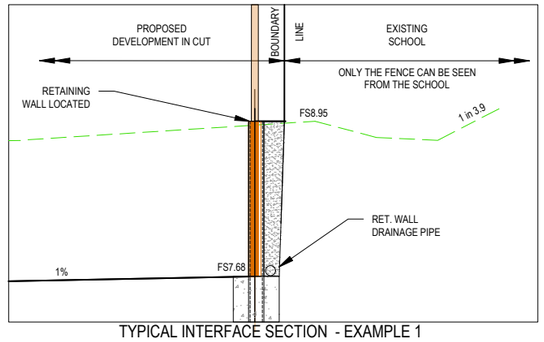


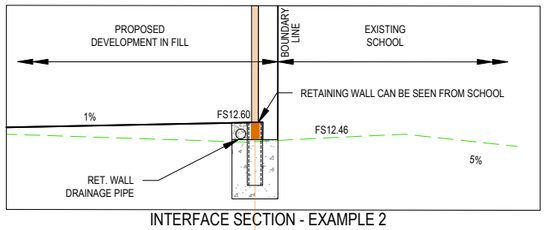
5.1 (a) RETAINING WALL STANDARD DETAIL:
POST AND CONCRETE SLEEPER WALL



5.1 (c) RETAINING WALL STANDARD DETAIL:
MASONRY BLOCK - STREET LOW SIDE



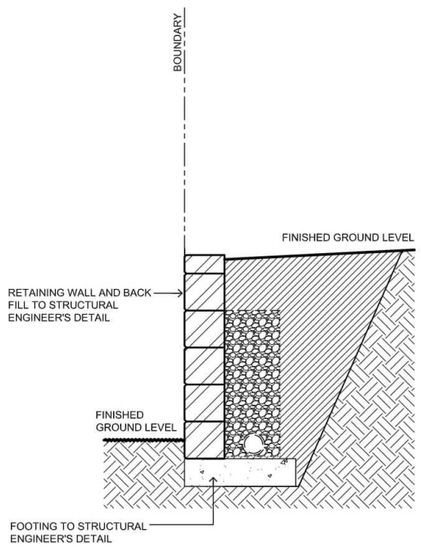
TYPICAL INTERFACE SECTION - EXAMPLE 1



INTERFACE SECTION - EXAMPLE 2

EXAMPLE 1: LAPPED AND CAPPED FENCE ON TOP OF POST AND SLEEPER MASONRY RETAINING WALL - VIEW FROM THE SCHOOL WHEN THE SITE IS IN CUT

EXAMPLE 2: LAPPED AND CAPPED FENCE ON TOP OF A POST AND SLEEPER MASONRY RETAINING WALL - VIEW FROM THE SCHOOL WHEN THE SITE IS IN FILL



5.1 (c) RETAINING WALL STANDARD DETAIL:
MASONRY BLOCK NO FENCE

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Designed	R. GOVENDER
Date	23.06.2025
Drawn	G.N.
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Date	07.11.25
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Reg. No.	PE0008347
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: RETAINING WALL DETAILS

Sheet 9 of145

Scale: AS SHOWN

Project Ref	Stage No	Drawing No	Rev
2301879	321	009	B

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LEGEND - DEMOLITION PLAN PLAN

- EXISTING TREE TO BE REMOVED
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REV	DESCRIPTION	DATE	DRN.	APP.

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0 15 30 60 90 120
SCALE 1:1500 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	G.N.
Checked	S. FERGUSON
Date	07.11.25
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: OVERALL DEMOLITION PLAN

Sheet 10 of 145
Scale 1:1500 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	030	B

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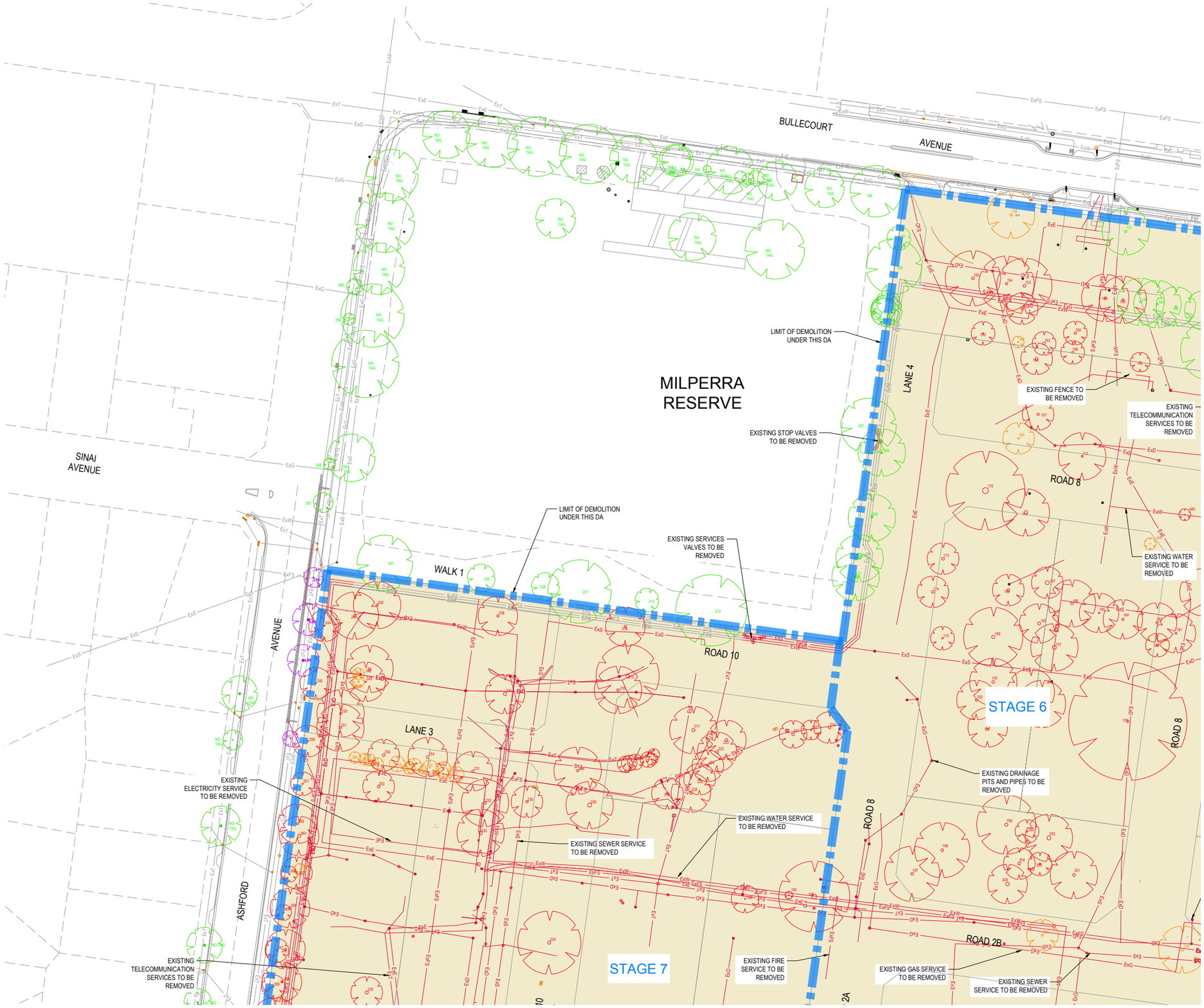

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0 5 10 20 30 40
SCALE 1:500 AT A1 SIZE

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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: DEMOLITION PLAN
SHEET 1 OF 6

Sheet 11 of 145
Scale 1:500 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	031	B

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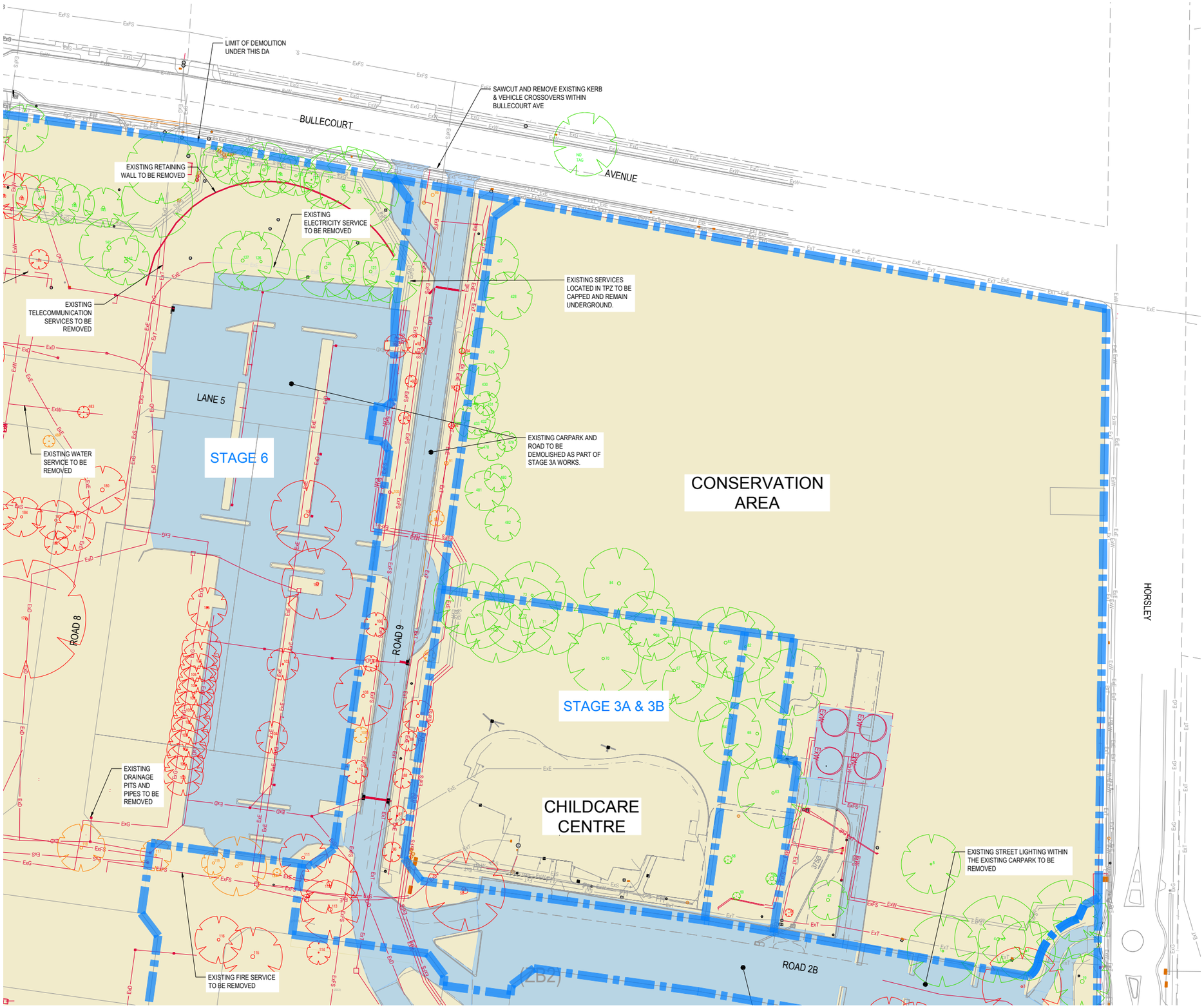

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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: DEMOLITION PLAN
SHEET 2 OF 6

Sheet 12 of 145
Scale 1:500 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	032	B

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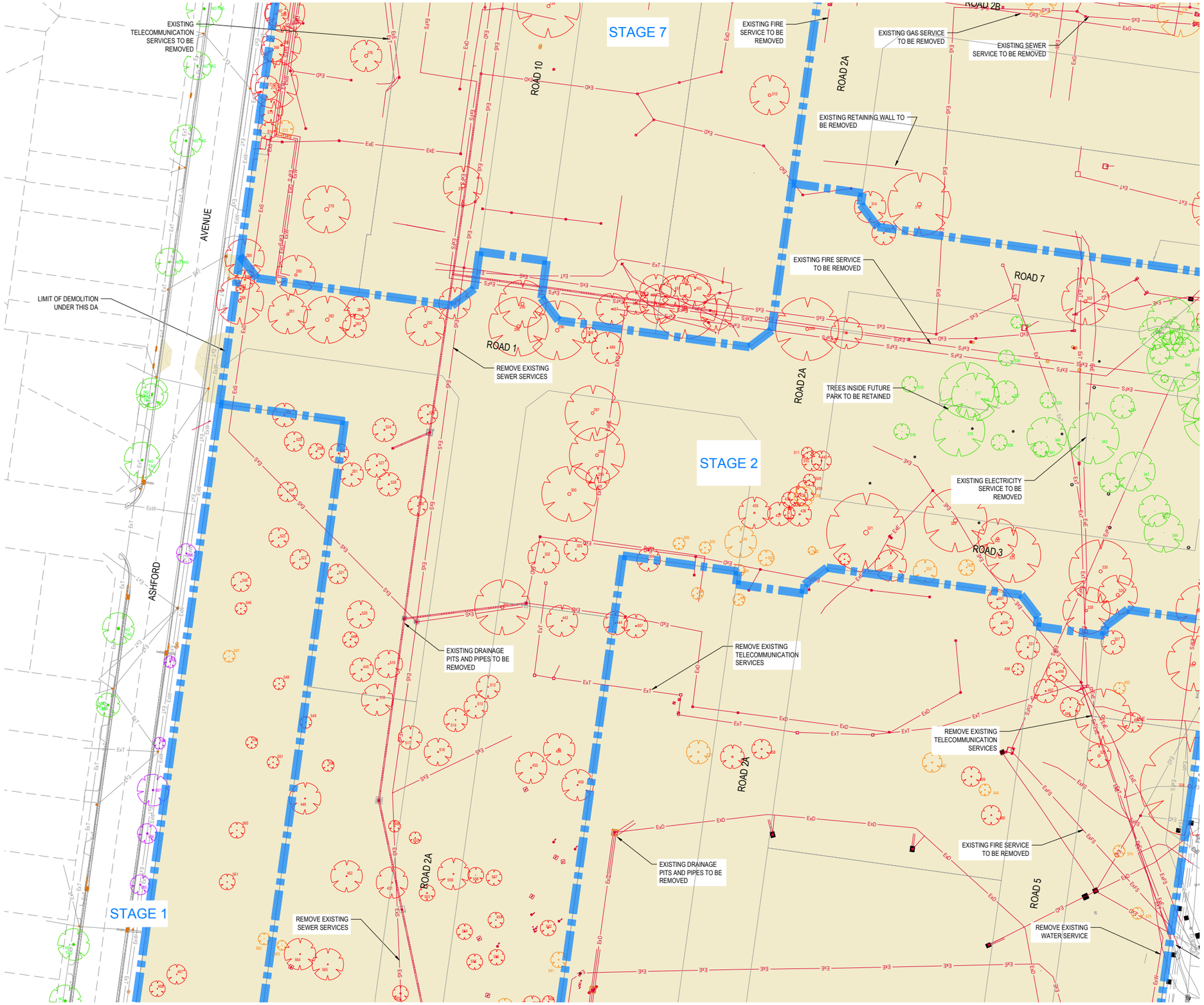

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0 5 10 20 30 40
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: DEMOLITION PLAN
SHEET 3 OF 6

Sheet 13 of 145

Scale 1:500 @ A1

N

Project Ref	Stage No	Drawing No	Rev
2301879	321	033	B

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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: DEMOLITION PLAN
SHEET 4 OF 6

Sheet 14 of 145

Scale 1:500 @ A1

N

Project Ref	Stage No	Drawing No	Rev
2301879	321	034	B

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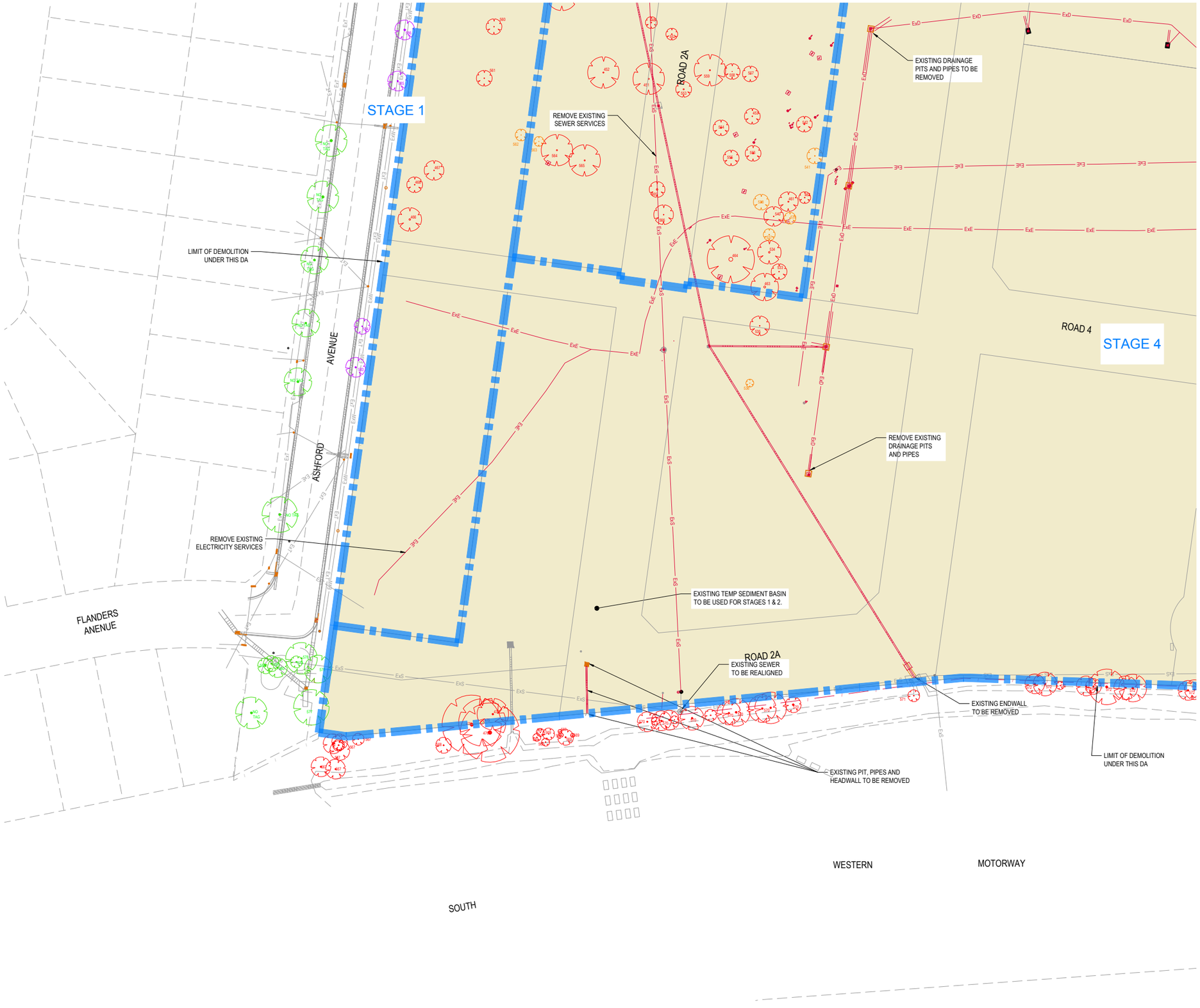

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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
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Drawing Title: DEMOLITION PLAN
SHEET 5 OF 6

Sheet 15 of 145

Scale 1:500 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	035	B

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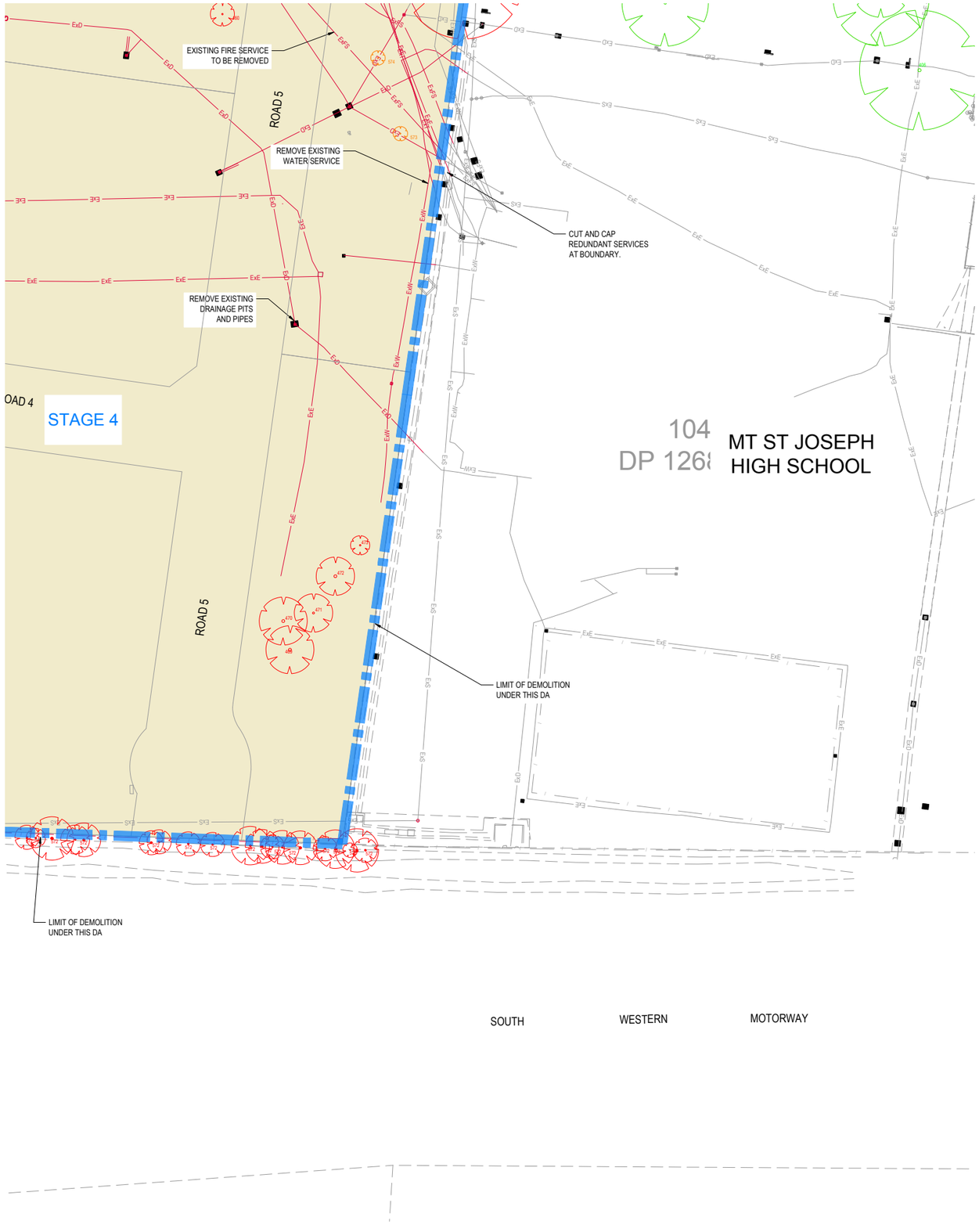

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REV	DESCRIPTION	DATE	DRN.	APP.
B	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

0 5 10 20 30 40
SCALE 1:500 AT A1 SIZE

Designed Date	R. GOVENDER 23.06.2025
Drawn	G.N.
Checked Date	S. FERGUSON 07.11.25
Approved Reg. No. Date	S. FERGUSON PE0008347 07.11.25
DA Number	-

Beveridge Williams
Development & Infrastructure Consultants
Level 4, LPC House, Suite 4.05, 3 Fordham way Oran Park NSW 2570
ph: 02 46255055
www.beveridgewilliams.com.au

Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA

Drawing Title: DEMOLITION PLAN SHEET 6 OF 6

Sheet 16 of 145
Scale 1:500 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	036	B

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LEGEND - FUNCTIONAL LAYOUT PLAN

- PROPOSED SUPER LOT BOUNDARY
- PROPOSED INTERNAL LOT BOUNDARY
- INDICATIVE RESIDENTIAL LOT BOUNDARY. SUBJECT TO FURTHER DA APPROVAL
- 11 SUPER LOT NUMBER
- *C1 INDICATES COMMUNITY TITLE SCHEME LOT NUMBER

WARNING

BEWARE OF UNDERGROUND SERVICES

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0 12.5 25 50 75 100
SCALE 1:1250 AT A1 SIZE

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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: OVERALL LOT LAYOUT PLAN

Sheet 17 of 145
Scale 1:1250 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	045	B

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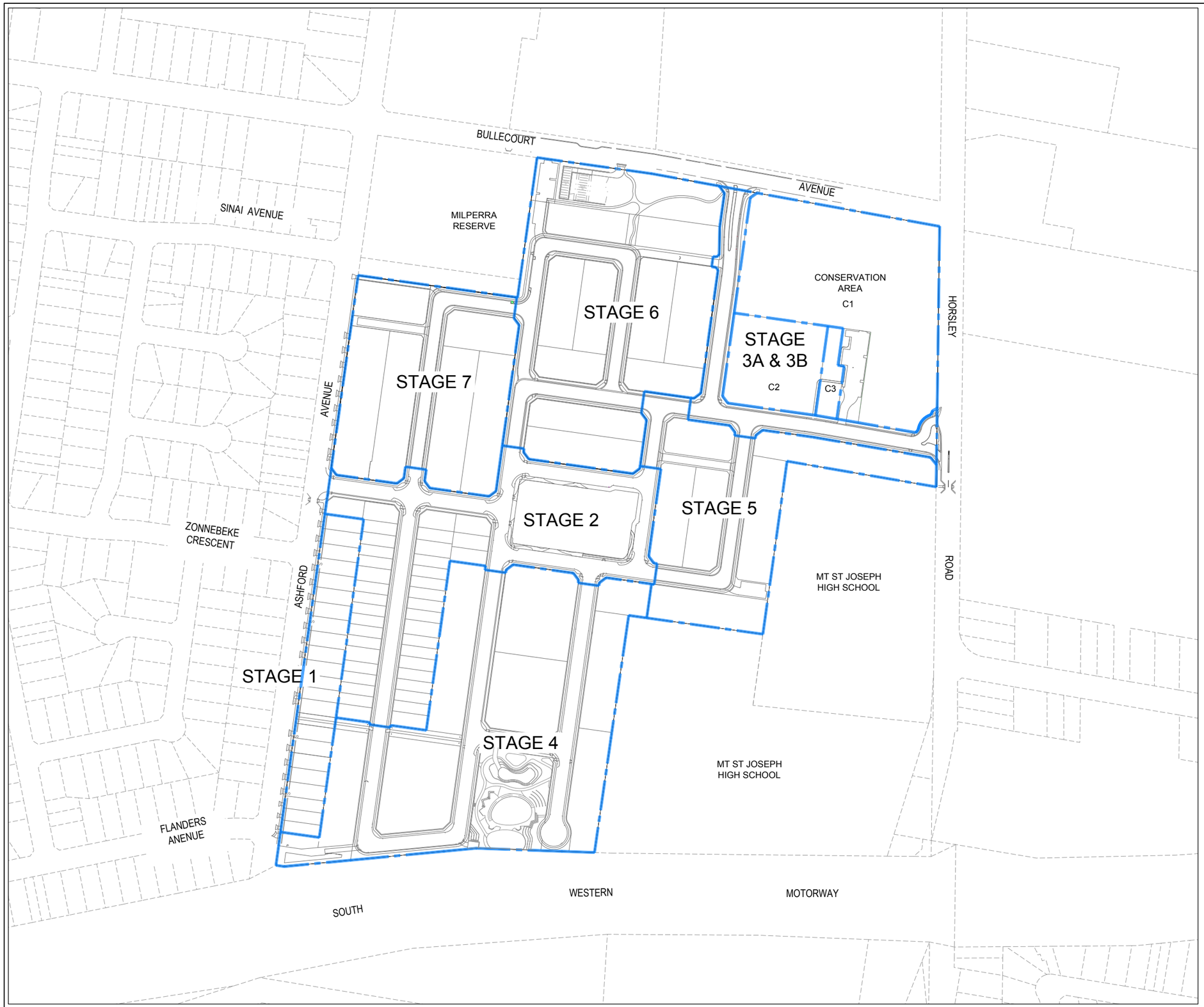

LEGEND

- ELECTRICITY (UNDERGROUND)
- OPTIC FIBRE
- TELECOMMUNICATION
- GAS
- WATER
- RECYCLED WATER
- STORMWATER DRAIN, PIT & PROPERTY INLET
- MELBOURNE WATER DRAIN & PIT
- SWALE DRAIN
- SEWER & MAINTENANCE STRUCTURES
- TACTILE PAVERS (INDICATIVE ONLY)
- EXISTING ELECTRICITY (UNDERGROUND)
- EXISTING ELECTRICITY (OVERHEAD)
- EXISTING GAS
- EXISTING TELECOMMUNICATION
- EXISTING WATER
- EXISTING RECYCLED WATER
- EXISTING STORMWATER DRAIN
- EXISTING SEWER
- EXISTING HOUSE DRAIN
- EXISTING SWALE DRAIN
- CONCRETE EDGE STRIP WITH SUBSOIL DRAIN, "NO ROAD" SIGN & BARRIER
- LIMIT OF WORKS
- EXISTING TREE TO BE REMOVED
- RIDGE LINE
- RETAINING WALL
- INDICATIVE RESIDENTIAL LOT BOUNDARY. SUBJECT TO FURTHER DA APPROVAL

SITE PLAN

NOT TO SCALE

WARNING

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REV	DESCRIPTION	DATE	DRN.	APP.

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0 20 40 80 120 160

SCALE 1:2000 AT A1 SIZE

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Project Details	WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA
Drawing Title	OVERALL LAYOUT PLAN

Sheet 18 of 145

Scale 1:2000 @ A1

N

Project Ref	Stage No	Drawing No	Rev
2301879	321	050	B

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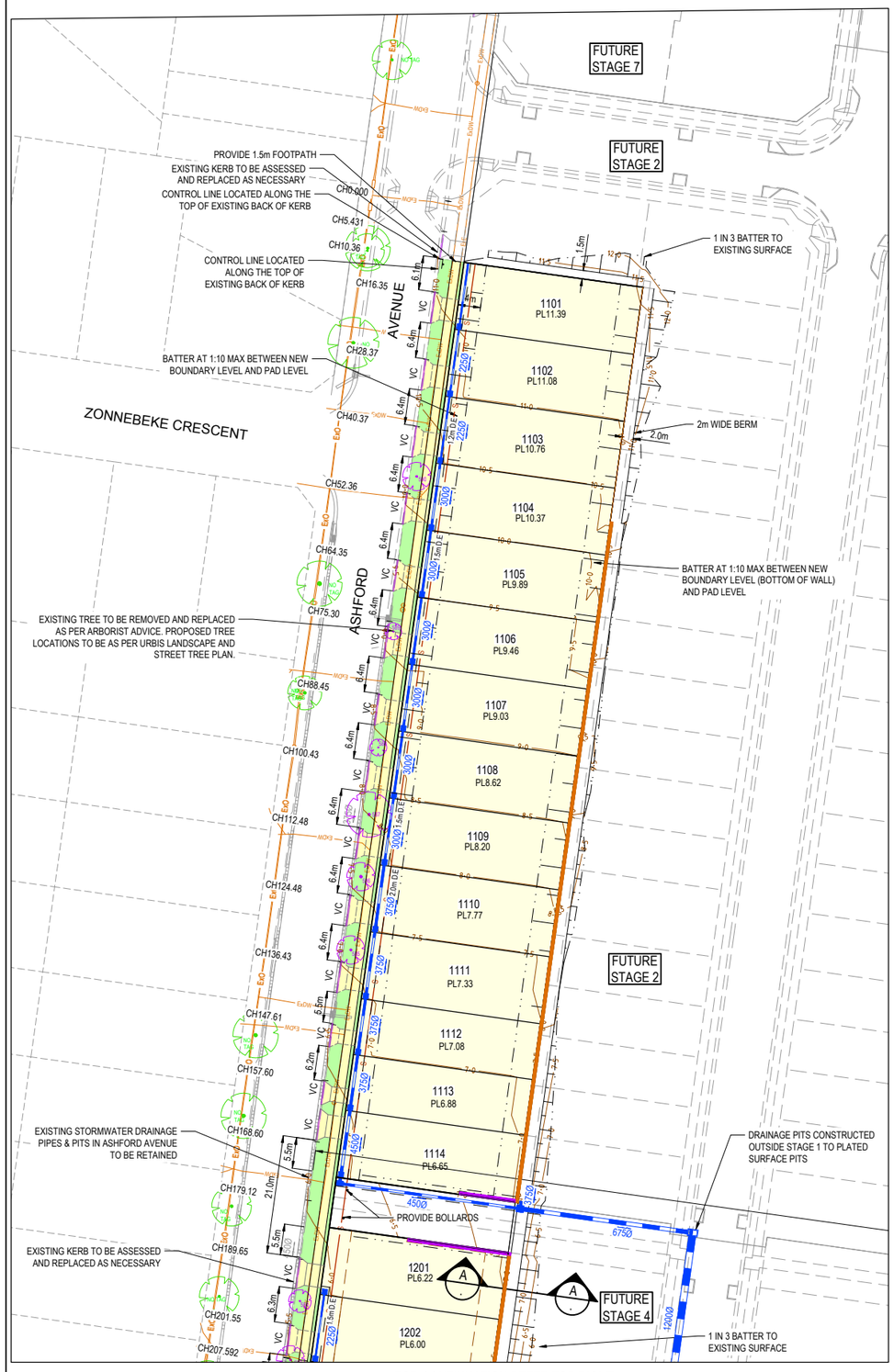
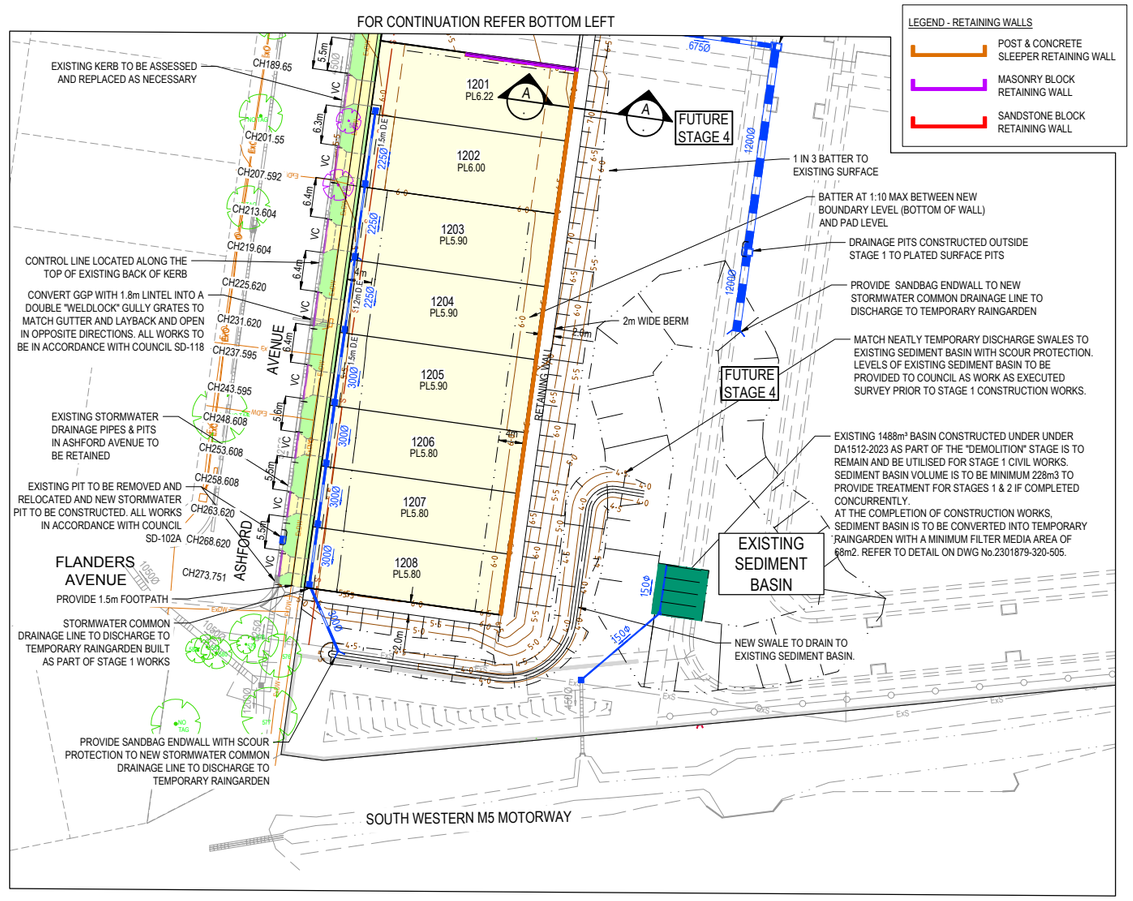


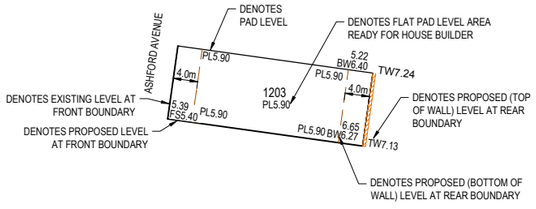


LEGEND - RETAINING WALLS

- POST & CONCRETE SLEEPER RETAINING WALL
- MASONRY BLOCK RETAINING WALL
- SANDSTONE BLOCK RETAINING WALL

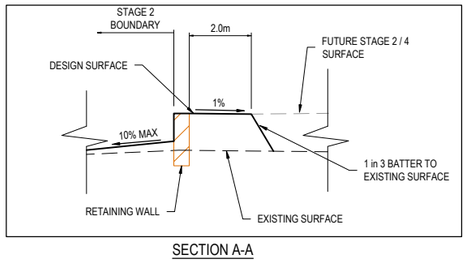
LEGEND - LAYOUT PLAN

- STORMWATER DRAIN, PIT & PROPERTY INLET
- SWALE DRAIN
- INDICATIVE SEWER ALIGNMENT
- HOUSE DRAIN
- TACTILE PAVERS (INDICATIVE ONLY)
- ELECTRICITY (UNDERGROUND)
- ELECTRICITY (OVERHEAD)
- OPTIC FIBRE
- TELECOMMUNICATIONS
- GAS
- WATER
- EXISTING ELECTRICITY (UNDERGROUND)
- EXISTING ELECTRICITY (OVERHEAD)
- EXISTING GAS
- EXISTING OPTIC FIBRE
- EXISTING TELECOMMUNICATIONS
- EXISTING WATER
- EXISTING STORMWATER DRAIN
- EXISTING SEWER
- EXISTING HOUSE DRAIN
- EXISTING SWALE DRAIN
- 141.34 EXISTING SURFACE LEVEL
- FS140.35 FINISHED BUILDING LINE LEVEL
- FR157.40 FINISHED RIDGE LINE LEVEL
- TW159.30 TOP OF RETAINING WALL
- BW159.30 BOTTOM OF RETAINING WALL
- PL11.08 PAD LEVEL
- RIDGE LINE
- RETAINING WALL
- OVERLAND FLOW
- CONCRETE EDGE STRIP WITH SUBSOIL DRAIN, "NO ROAD" SIGN & BARRIER
- LIMIT OF WORKS
- EXISTING TREE TO BE REMOVED AND REPLACED AS PER ARBORIST ADVICE DUE TO IMPACTS BY UNDERGROUND ELECTRICAL WORKS
- EXISTING TREE
- PERMANENT SURVEY MARK
- TEMPORARY BENCH MARK
- FUTURE DRIVEWAY
- VC NEW LAYBACK TO BE CUT IN TO EXISTING KERB FOR FUTURE DRIVEWAY. ALL NEW DRIVEWAYS TO BE 4m WIDE WITH EXCEPTION TO LOTS 1012 & 1013. LOTS 1012 & 1013 DRIVEWAYS TO BE 3m WIDE.
- RAINGARDEN
- SUBJECT AREA OF WORKS
- INDICATIVE RESIDENTIAL LOT BOUNDARY. SUBJECT TO FURTHER DA APPROVAL



LOT LEVEL LEGEND

NOT TO SCALE



SECTION A-A
TYPICAL REAR LOTS INTERFACE

NOT TO SCALE

SITE PLAN

NOT TO SCALE

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mirvac

0 5 10 20 30 40

SCALE 1:500 AT A1 SIZE

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Project Details	WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA
Drawing Title	LAYOUT PLAN STAGE 1

Sheet 19 of 145

Scale 1:500 @ A1

N

Project Ref	Stage No	Drawing No	Rev
2301879	321	051	B

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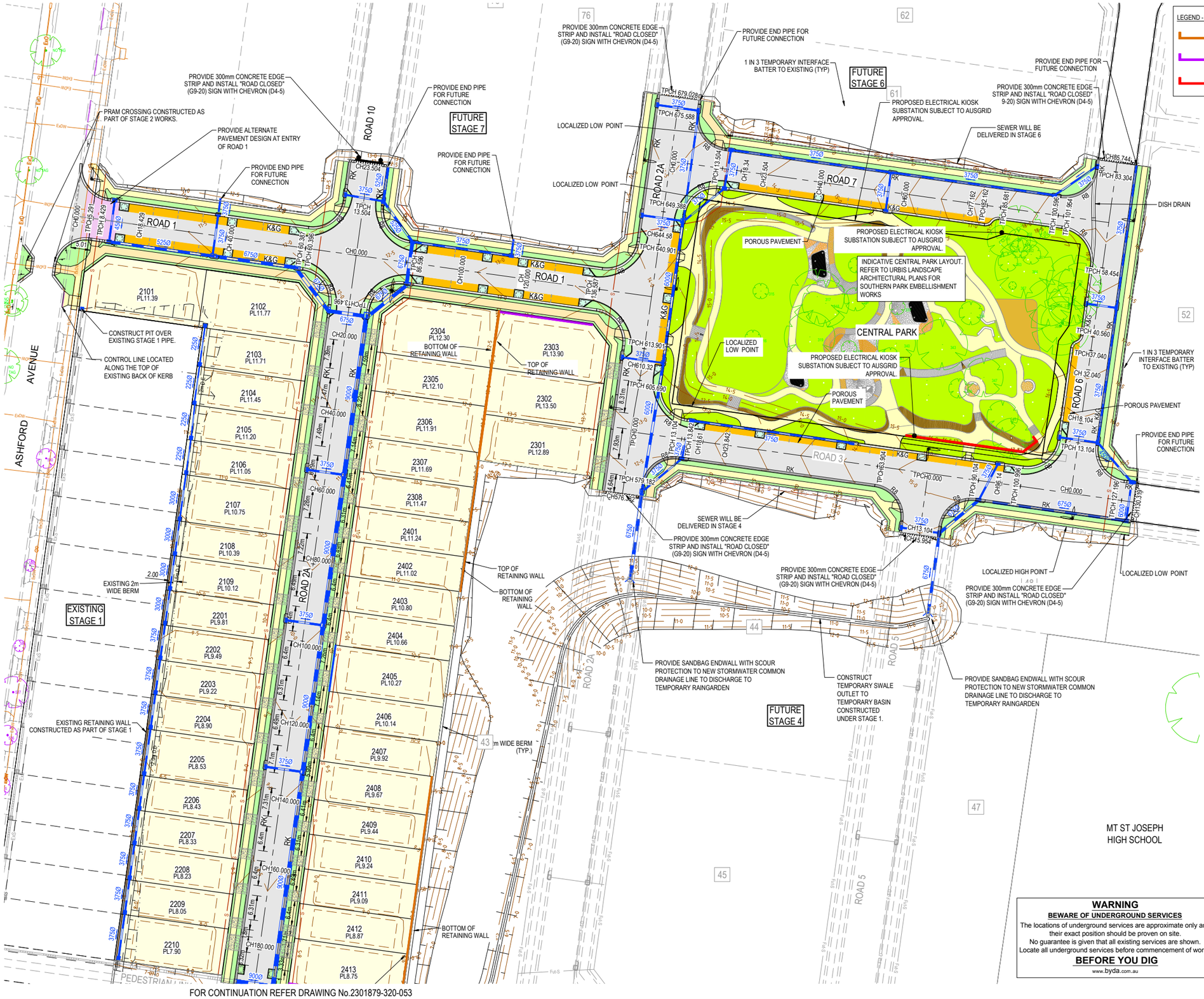

LEGEND - RETAINING WALLS

- POST & CONCRETE SLEEPER RETAINING WALL
- MASONRY BLOCK RETAINING WALL
- SANDSTONE BLOCK RETAINING WALL

LEGEND - LAYOUT PLAN

- STORMWATER DRAIN, PIT & PROPERTY INLET
- SWALE DRAIN
- INDICATIVE SEWER ALIGNMENT
- HOUSE DRAIN
- TACTILE PAVERS (INDICATIVE ONLY)
- ELECTRICITY (UNDERGROUND)
- ELECTRICITY (OVERHEAD)
- OPTIC FIBRE
- TELECOMMUNICATIONS
- GAS
- WATER
- EXISTING ELECTRICITY (UNDERGROUND)
- EXISTING ELECTRICITY (OVERHEAD)
- EXISTING GAS
- EXISTING OPTIC FIBRE
- EXISTING TELECOMMUNICATIONS
- EXISTING WATER
- EXISTING STORMWATER DRAIN
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- 141.34 EXISTING SURFACE LEVEL
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- CONCRETE EDGE STRIP WITH SUBSOIL DRAIN, "NO ROAD" SIGN & BARRIER
- LIMIT OF WORKS
- EXISTING TREE TO BE REMOVED AND REPLACED AS PER ARBORIST ADVICE DUE TO IMPACTS BY UNDERGROUND ELECTRICAL WORKS
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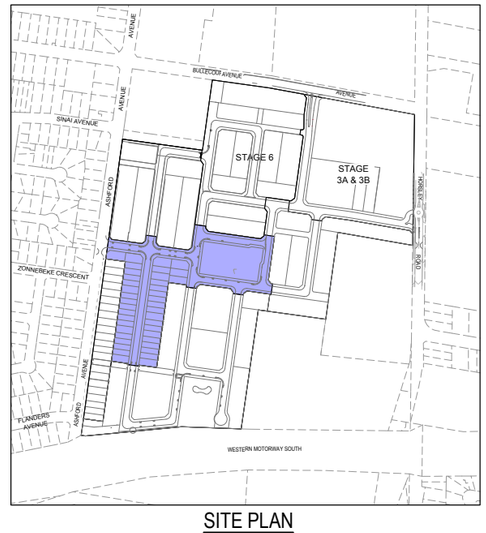
- VC — NEW LAYBACK TO BE CUT IN TO EXISTING KERB FOR FUTURE DRIVEWAY. ALL NEW DRIVEWAYS TO BE 4m WIDE WITH EXCEPTION TO LOTS 1012 & 1013. LOTS 1012 & 1013 DRIVEWAYS TO BE 3m WIDE.
- RAINGARDEN
- SUBJECT AREA OF WORKS
- INDICATIVE RESIDENTIAL LOT BOUNDARY. SUBJECT TO FURTHER DA APPROVAL



SITE PLAN
NOT TO SCALE

WARNING
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FOR CONTINUATION REFER DRAWING No.2301879-320-053

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0 5 10 20 30 40
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Drawn	G.N.
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Project Details	WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA
Drawing Title	LAYOUT PLAN STAGE 2 SHEET 1 OF 2

Sheet 20 of 145
Scale 1:500 @ A1

Project Ref	Stage No	Drawing No.	Rev
2301879	321	052	B

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FOR CONTINUATION REFER DRAWING No.2301879-320-052

LEGEND - RETAINING WALLS

- POST & CONCRETE SLEEPER RETAINING WALL
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LEGEND - LAYOUT PLAN

- STORMWATER DRAIN, PIT & PROPERTY INLET
- SWALE DRAIN
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- SUBJECT AREA OF WORKS
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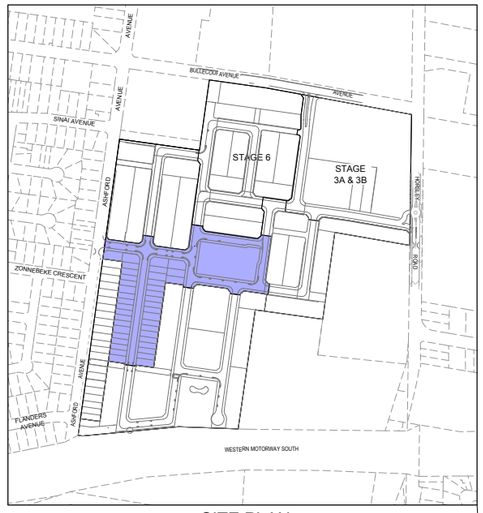

SITE PLAN
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: LAYOUT PLAN
STAGE 2
SHEET 2 OF 2

Sheet 21 of 145
Scale 1:500 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	053	B

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NORTHERN PARK (FUTURE)

BULLECOURT AVENUE

PROVIDE ALTERNATE PAVEMENT DESIGN AT ENTRY OF ROAD 9

ROAD 9

FUTURE STAGE 6

SANDBAG HEADWALL

LANE 5

CONSTRUCT HEAVY DUTY VFC TO BE IN ACCORDANCE WITH COUNCIL STANDARDS S-008

CONSERVATION AREA

HIGH POINT

FUTURE STAGE 6

MAXIMUM 1 IN 3 TEMPORARY INTERFACE BATTER TO EXISTING (TYP).

ELECTRICAL SUBSTATION. LOCATION SUBJECT TO FINAL APPROVAL

CHILDCARE STORMWATER DISCHARGE POINT INTO COUNCIL' DRAINAGE SYSTEM.

TEMPORARY SEDIMENT BASIN TO BE CONVERTED TO A TEMPORARY RAINGARDEN ONCE STAGE 3A WORKS IS COMPLETED.

LOCALIZED LOW POINT

CHILDCARE CENTRE

EXISTING FOOTPATH TO MATCH INTO PROPOSED ROAD 2 SHARED PATH WITH NO STEP. EXISTING FOOTPATH LEVELS TO BE CONFIRMED.

LOCALIZED LOW POINT

APPROX. RL21.61

PROPOSED FOOTPATH

RL21.34

RL22.1

ROAD 2B

FUTURE STAGE 5

MAXIMUM 1 IN 3 TEMPORARY INTERFACE BATTER TO EXISTING (TYP).

HIGH POINT

PROVIDE 300mm CONCRETE EDGE STRIP AND INSTALL "ROAD CLOSED" (G9-20) SIGN WITH CHEVRON (D4-5)

MAXIMUM 1 IN 3 TEMPORARY INTERFACE BATTER TO EXISTING (TYP).

PROVIDE 300mm CONCRETE EDGE STRIP AND INSTALL "ROAD CLOSED" (G9-20) SIGN WITH CHEVRON (D4-5)

POROUS PAVEMENT

POROUS PAVEMENT TO BE COLLECTED IN SUBSOIL DRAINAGE AND CONVEYED TO DRAINAGE PITS

HORSLEY ROAD

CONSTRUCTION OF VFC TO BE IN ACCORDANCE WITH COUNCIL'S STANDARD DRAWING SD-004

EXISTING CONCRETE BARRIER TO BE REMOVED

DISH DRAIN

EXISTING SERVICES AND PITS TO BE DEEPENED OR REMOVED TO SUIT INTRODUCTION OF NEW INTERSECTION DESIGN

DISH DRAIN

NEIGHBOURING DRIVEWAY TO BE REMOVED UNDER SSD-51147710

PROVIDE ALTERNATE PAVEMENT DESIGN AT ENTRY OF ROAD 2B

FOR CONTINUATION REFER DRAWING No.2301879-320-055

LEGEND - RETAINING WALLS

- POST & CONCRETE SLEEPER RETAINING WALL
- MASONRY BLOCK RETAINING WALL
- SANDSTONE BLOCK RETAINING WALL

LEGEND - LAYOUT PLAN

- STORMWATER DRAIN, PIT & PROPERTY INLET
- SWALE DRAIN
- INDICATIVE SEWER ALIGNMENT
- HOUSE DRAIN
- TACTILE PAVERS (INDICATIVE ONLY)
- ELECTRICITY (UNDERGROUND)
- ELECTRICITY (OVERHEAD)
- OPTIC FIBRE
- TELECOMMUNICATIONS
- GAS
- WATER
- EXISTING ELECTRICITY (UNDERGROUND)
- EXISTING ELECTRICITY (OVERHEAD)
- EXISTING GAS
- EXISTING OPTIC FIBRE
- EXISTING TELECOMMUNICATIONS
- EXISTING WATER
- EXISTING STORMWATER DRAIN
- EXISTING SEWER
- EXISTING HOUSE DRAIN
- EXISTING SWALE DRAIN
- EXISTING SURFACE LEVEL
- FINISHED BUILDING LINE LEVEL
- FINISHED RIDGE LINE LEVEL
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- BOTTOM OF RETAINING WALL
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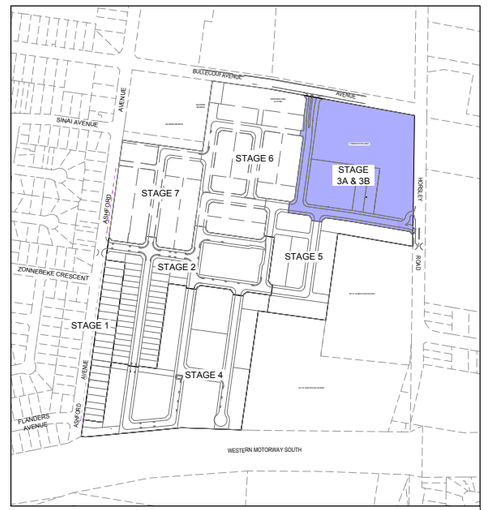
- EXISTING TREE
- PERMANENT SURVEY MARK
- TEMPORARY BENCH MARK
- FUTURE DRIVEWAY
- NEW LAYBACK TO BE CUT IN TO EXISTING KERB FOR FUTURE DRIVEWAY. ALL NEW DRIVEWAYS TO BE 4m WIDE WITH EXCEPTION TO LOTS 1012 & 1013. LOTS 1012 & 1013 DRIVEWAYS TO BE 3m WIDE.
- RAINGARDEN
- SUBJECT AREA OF WORKS
- INDICATIVE RESIDENTIAL LOT BOUNDARY. SUBJECT TO FURTHER DA APPROVAL



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SITE PLAN

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REV	DESCRIPTION	DATE	DRN.	APP.
C	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
B	CARPARK AMENDED	23.10.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

mirvac

0 5 10 20 30 40
SCALE 1:500 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	G.N.
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
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DA Number	-

Beveridge Williams
Development & Infrastructure Consultants
Level 4, LPC House, Suite 4.05, 3 Fordham way, Oran Park NSW 2570
ph: 02 46255055
www.beveridgewilliams.com.au

Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: LAYOUT PLAN
STAGE 3A
SHEET 1 OF 2

Sheet 22 of 145

Scale 1:500 @ A1

N

Project Ref	Stage No	Drawing No	Rev
2301879	321	054	C

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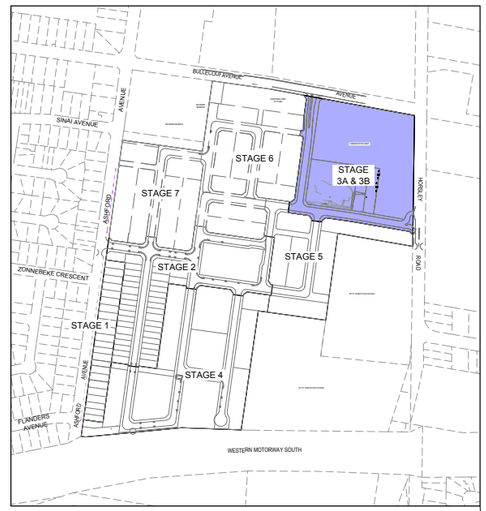
- SUBJECT AREA OF WORKS
- INDICATIVE RESIDENTIAL LOT BOUNDARY. SUBJECT TO FURTHER DA APPROVAL

MILPERRA RESERVE
NORTHERN PARK (FUTURE)
BULLECOURT AVENUE
CONSERVATION AREA
FOR CONTINUATION REFER DRAWING No.2301879-320-054
LANE 4
LANE 5
ROAD 8
ROAD 9
ROAD 2A
ROAD 2B
FUTURE STAGE 6
FUTURE STAGE 7
FUTURE STAGE 5
CHILDCARE CENTRE
PROVIDE ALTERNATE PAVEMENT DESIGN AT ENTRY OF ROAD 9
CONSTRUCT HEAVY DUTY VFC TO BE IN ACCORDANCE WITH COUNCIL STANDARDS S-008
SANDBAG HEADWALL
TEMPORARY TAIL OUT SWALE
HIGH POINT
SEDIMENT BASIN
SOLID 150mm DIA. UPVC PIPE
SOLID 150mm DIA. UPVC PIPE GRADED AT 1% TO DRAIN TO EXISTING SURFACE LEVEL
DISCHARGE CONTROL PIT
PERMANENT DRAINAGE PIT
TEMPORARY SEDIMENT BASIN TO BE CONVERTED TO A TEMPORARY RAINGARDEN ONCE STAGE 3A WORKS IS COMPLETED.
PERMANENT DRAINAGE PIT AND PIPES CONSTRUCTED OUTSIDE OF STAGE 3 TO HAVE LINTELS PLATED OFF.
PROVIDE 300mm CONCRETE EDGE STRIP AND INSTALL "ROAD CLOSED" (G9-20) SIGN WITH CHEVRON (D4-5)
MAXIMUM 1 IN 3 TEMPORARY INTERFACE BATTER TO EXISTING (TYP).
CHILDCARE STORMWATER DISCHARGE POINT INTO COUNCIL' DRAINAGE SYSTEM.
ELECTRICAL SUBSTATION. LOCATION SUBJECT TO FINAL APPROVAL
EXISTING FOOTPATH TO MATCH INTO PROPOSED ROAD 2 SHARED PATH WITH NO STEP. EXISTING FOOTPATH LEVELS TO BE CONFIRMED.
LOCALIZED LOW POINT
PROPOSED FOOTPATH
APPROX. RL21.61
RL21.34
RL22.1
RL22.4
RL22.666
RL22.696
RL22.0
RL22.6
RL22.713
RL22.602
RL22.444
CH0.000
CH17.550
CH16.504
CH20.000
CH40.000
CH60.000
CH80.000
CH97.799
CH120.000
CH140.000
CH160.000
CH175.878
CH177.361
CH172.580
CH17.739
CH9.000
CH940.000
CH960.000
CH980.000
CH1000.000
TPCH179.977
TPCH178.878
TPCH13.504
TPCH306.549
TPCH303.583
TPCH826.050
TPCH863.685
TPCH866.665
TPCH883.651
TPCH888.850
3750Ø
4500
6750
1500
2.50
5.3m E E
3.3m E E
K&G
RK
RB
18/0
21°5
20°5



SITE PLAN
NOT TO SCALE

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Project Details	WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA
Drawing Title	LAYOUT PLAN STAGE 3A SHEET 2 OF 2

Sheet 23 of 145
Scale 1:500 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	055	C

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FOR CONTINUATION REFER DRAWING No.2301879-320-057

EXISTING STAGE 2

EXISTING STAGE 1

EXISTING SWALE TO BE DE-SLUDGED AND FILLED TO LEVEL 1 SUPERVISION AS PART OF STAGE 4 WORKS.

PROPOSED STANDARD RAISED PEDESTRAIN THRESHOLD WITH GRATED GUTTER BRIDGE: TYPE 1 REFER TO DETAILS ON DWG 027.

TOP OF Ex. RETAINING WALL

BOTTOM OF Ex. RETAINING WALL

REMOVE EXISTING EDGE STRIP, NO ROAD SIGN, TEMPORARY TURNING AREA & BARRIER AND MATCH NEATLY INTO EXISTING CONSTRUCTION

PROPOSED STANDARD RAISED PEDESTRAIN THRESHOLD WITH GRATED GUTTER BRIDGE: TYPE 1 REFER TO DETAILS ON DWG 027.

PEDESTRIAN LINK 1

PEDESTRIAN LINK 2

PROVIDE BOLLARDS

PROVIDE BOLLARDS

INDICATIVE SUBSTATION LOCATION WITHIN SOUTHERN PARK. FINAL LOCATION SUBJECT TO DETAILED DESIGN.

CONSTRUCT HEAVY DUTY VFC TO BE IN ACCORDANCE WITH COUNCIL STANDARDS S-008

REMOVE EXISTING ENDWALL AND CONNECT NEW STORMWATER DRAIN.

EXISTING RETAINING WALL CONSTRUCTED AS PART OF STAGE 1.

EXISTING SEDIMENTATION BASIN TO BE DE-SLUDGED AND FILLED TO LEVEL 1 SUPERVISION AS PART OF STAGE 4 WORKS.

AVENUE

ASHFORD

ROAD 2A

ROAD 4

ROAD 5

K&G

RK

SOUTHERN PARK (BASIN No.1)

BASIN 2

BOTTOM OF RETAINING WALL (TYP)

TOP OF RETAINING WALL. (TYP.)

PROVIDE 1.8m DOUBLE LAPPED AND CAPPED FENCING ABOVE RETAINING WALL ALONGSIDE SCHOOL BOUNDARY

MT ST JOSEPH HIGH SCHOOL

BOTTOM OF RETAINING WALL

TOP OF RETAINING WALL

PROVIDE 1.8m PALISADE FENCING ABOVE RETAINING WALL ALONGSIDE M5 BOUNDARY

REFER TO URBIS LANDSCAPE ARCHITECTURAL PLANS FOR SOUTHERN PARK EMBELLISHMENT WORKS

PROVIDE 1.8m DOUBLE LAPPED AND CAPPED FENCING ABOVE RETAINING WALL

PROPOSED NEW SEWER ALIGNMENT

EXISTING SEWER TO BE REALIGNED AS PER OF SEPARATE SYDNEY WATER APPLICATION APPROVAL

PROVIDE HANDRAIL BALL FENCE ALONG THE RETAINING WALL.

CONSTRUCT HEAVY DUTY VFC TO BE IN ACCORDANCE WITH COUNCIL STANDARDS S-008

DELIVERY OF THIS LOT IS TO ENSURE RE-GRADING ALONG ASHFORD AVENUE AND CONSTRUCT VC TO EXISTING KERB AND GUTTER

EXISTING SEWER TO BE REALIGNED AS PER OF SEPARATE SYDNEY WATER APPLICATION APPROVAL

PROVIDE HANDRAIL BALL FENCE ALONG THE RETAINING WALL.

PROPOSED 4 WIRE ROPE SAFETY BARRIER SYSTEM 3m FROM BACK OF KERB

WESTERN MOTORWAY SOUTH

SOUTH WESTERN MOTORWAY

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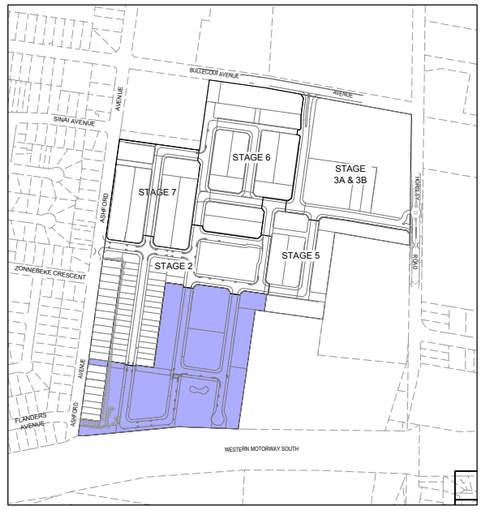

SITE PLAN
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: LAYOUT PLAN
STAGE 4
SHEET 1 OF 2

Sheet 24 of 145
Scale 1:500 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	056	B

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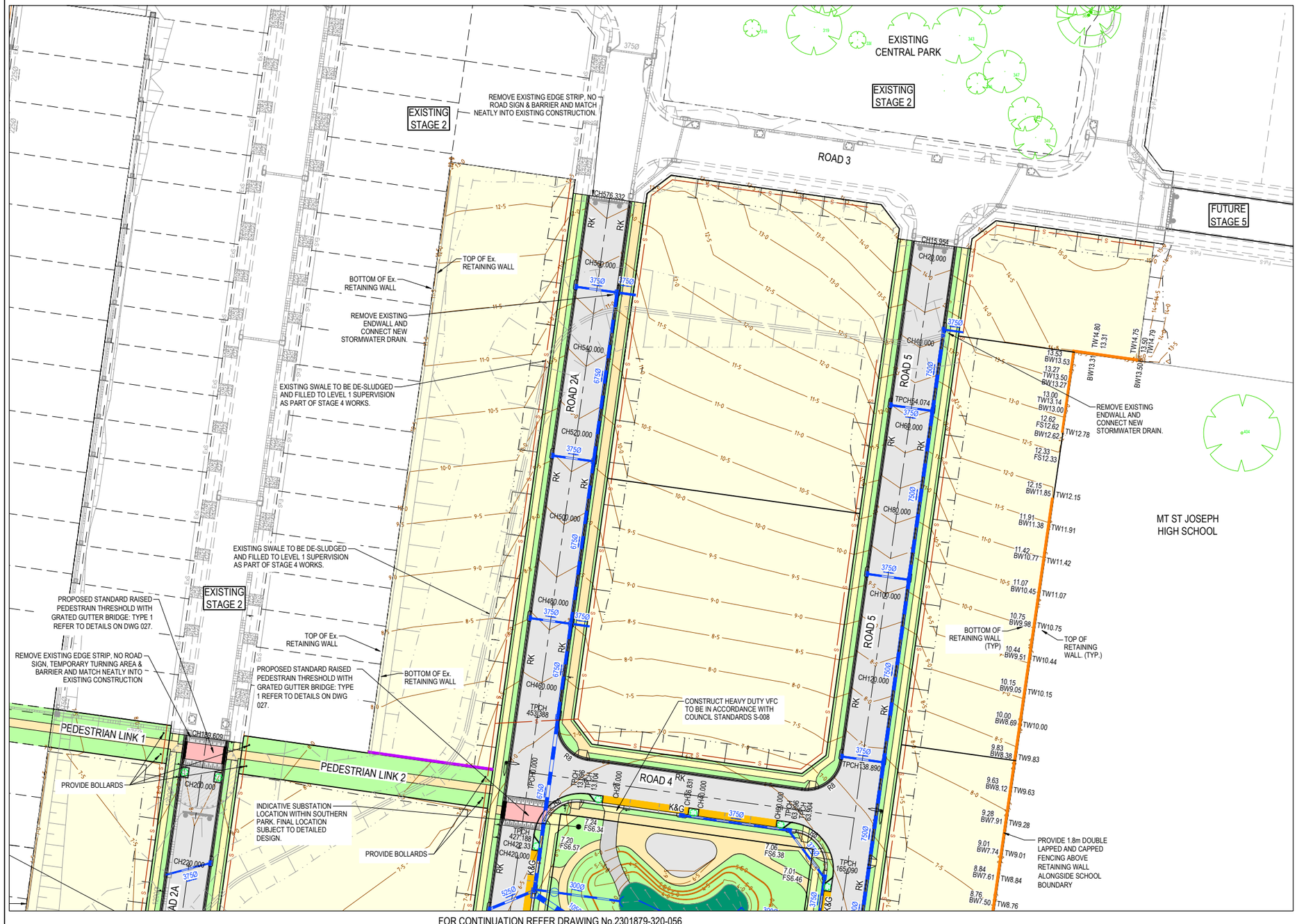

FOR CONTINUATION REFER DRAWING No.2301879-320-056

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SITE PLAN

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Project Details	WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA
Drawing Title	LAYOUT PLAN STAGE 4 SHEET 2 OF 2

Sheet 25 of 145

Scale 1:500 @ A1

N

Project Ref	Stage No	Drawing No	Rev
2301879	321	057	B

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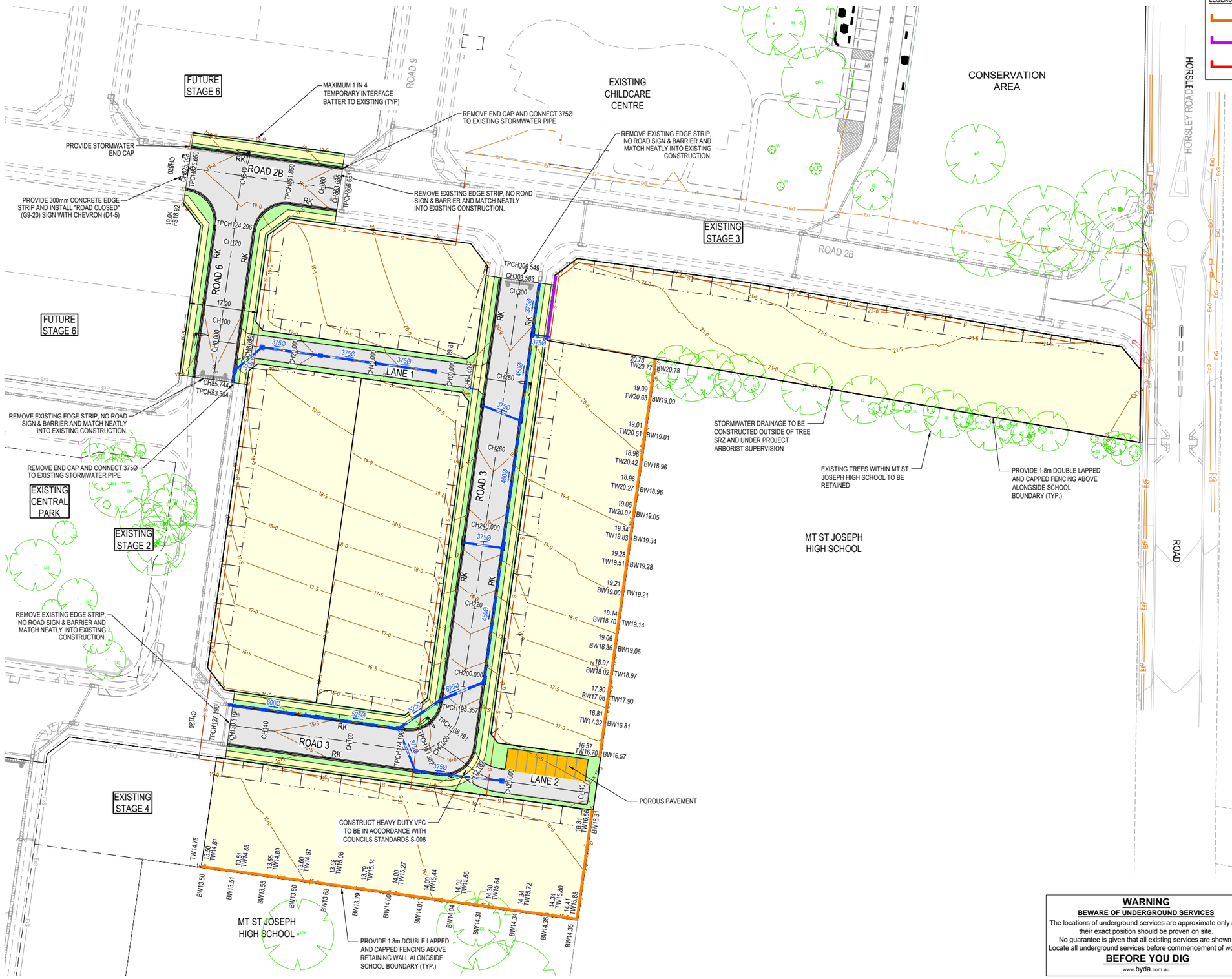

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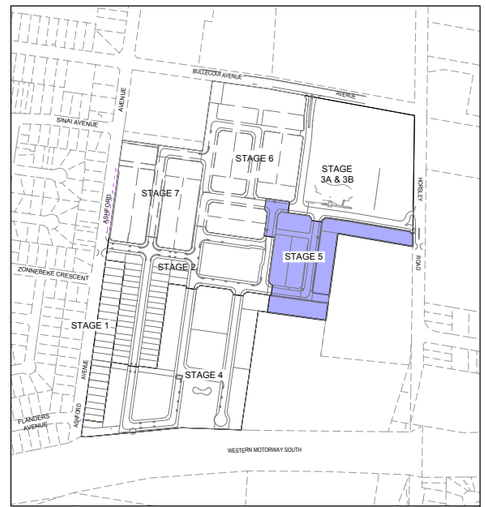

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Drawing Title	LAYOUT PLAN STAGE 5

Sheet	26 of 145		
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2301879	321	058	B

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BULLECOURT AVENUE

PROPOSED GPT

PROVIDE BOLLARDS WITH REMOVABLE CENTRE BOLLARD.

POROUS PAVEMENT

SPLITTER PIT

NORTHERN PARK

MILPERRA RESERVE

CONSTRUCT HEAVY DUTY VFC TO BE IN ACCORDANCE WITH COUNCIL STANDARDS S-008

ROAD 8

LANE 4

LANE 5

ROAD 10

ROAD 2B

ROAD 2A

CONNECT STORMWATER TO EXISTING

CONSTRUCT HEAVY DUTY VFC TO BE IN ACCORDANCE WITH COUNCIL STANDARDS S-008

CONSERVATION AREA

EXISTING SWALE TO BE DE-SLUDGED AND FILLED TO LEVEL 1 SUPERVISION AS PART OF STAGE 6 WORKS.

LOCALIZED LOW POINT

PROVIDE 300mm CONCRETE EDGE STRIP AND INSTALL "ROAD CLOSED" (G9-20) SIGN WITH CHEVRON (D4-5)

EXISTING 150Ø TEMPORARY OUTLET PIPE & HEADWALL FROM EXISTING TEMP. BASIN TO BE REMOVED AS PART OF STAGE 6 WORKS.

EXISTING SEDIMENT BASIN TO BE DE-SLUDGED AND FILLED TO LEVEL 1 SUPERVISION AS PART OF STAGE 6 WORKS.

REMOVE EXISTING 675Ø TEMPORARY PIPE & HEADWALL AND CONNECT NEW PIPE TO EXISTING PIT.

DISH DRAIN

FUTURE STAGE 7

EXISTING STAGE 3A & 3B

EXISTING CHILDCARE CENTRE

EXISTING STAGE 5

REMOVE EXISTING EDGE STRIP, NO ROAD SIGN & BARRIER AND MATCH NEATLY INTO EXISTING CONSTRUCTION.

DISH DRAIN

FOR CONTINUATION REFER DRAWING No.2301879-320-060

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- SANDSTONE BLOCK RETAINING WALL

LEGEND - LAYOUT PLAN

- STORMWATER DRAIN, PIT & PROPERTY INLET
- SWALE DRAIN
- INDICATIVE SEWER ALIGNMENT
- HOUSE DRAIN
- TACTILE PAVERS (INDICATIVE ONLY)
- ELECTRICITY (UNDERGROUND)
- ELECTRICITY (OVERHEAD)
- OPTIC FIBRE
- TELECOMMUNICATIONS
- GAS
- WATER
- EXISTING ELECTRICITY (UNDERGROUND)
- EXISTING ELECTRICITY (OVERHEAD)
- EXISTING GAS
- EXISTING OPTIC FIBRE
- EXISTING TELECOMMUNICATIONS
- EXISTING WATER
- EXISTING STORMWATER DRAIN
- EXISTING SEWER
- EXISTING HOUSE DRAIN
- EXISTING SWALE DRAIN
- 141.34 EXISTING SURFACE LEVEL
- FS140.35 FINISHED BUILDING LINE LEVEL
- FR157.40 FINISHED RIDGE LINE LEVEL
- TW159.30 TOP OF RETAINING WALL
- BW159.30 BOTTOM OF RETAINING WALL
- PL11.08 PAD LEVEL
- RIDGE LINE
- RETAINING WALL
- OVERLAND FLOW
- CONCRETE EDGE STRIP WITH SUBSOIL DRAIN, "NO ROAD" SIGN & BARRIER
- LIMIT OF WORKS
- EXISTING TREE TO BE REMOVED AND REPLACED AS PER ARBORIST ADVICE DUE TO IMPACTS BY UNDERGROUND ELECTRICAL WORKS
- EXISTING TREE
- PERMANENT SURVEY MARK
- TEMPORARY BENCH MARK
- FUTURE DRIVEWAY
- VC NEW LAYBACK TO BE CUT IN TO EXISTING KERB FOR FUTURE DRIVEWAY. ALL NEW DRIVEWAYS TO BE 4m WIDE WITH EXCEPTION TO LOTS 1012 & 1013. LOTS 1012 & 1013 DRIVEWAYS TO BE 3m WIDE.
- RAINGARDEN
- SUBJECT AREA OF WORKS
- INDICATIVE RESIDENTIAL LOT BOUNDARY. SUBJECT TO FURTHER DA APPROVAL

WARNING

BEWARE OF UNDERGROUND SERVICES

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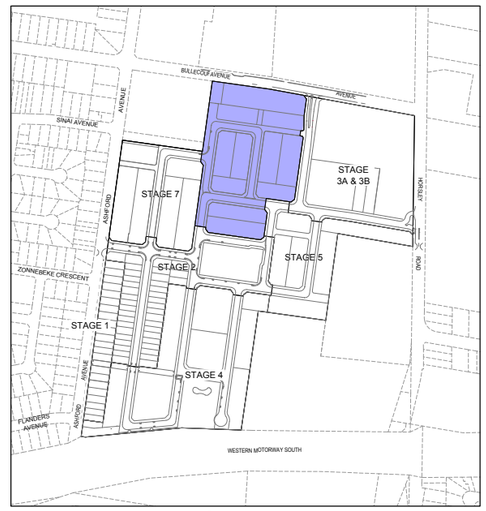

SITE PLAN

NOT TO SCALE

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REV	DESCRIPTION	DATE	DRN.	APP.
B	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

mirvac

0 5 10 20 30 40
SCALE 1:500 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	G.N.
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
DA Number	-

Beveridge Williams
Development & Infrastructure Consultants
Level 4, LPC House, Suite 4.05, 3 Fordham way
Oran Park NSW 2570
ph: 02 46255055
www.beveridgewilliams.com.au

Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: LAYOUT PLAN
STAGE 6
SHEET 1 OF 2

Sheet 27 of 145

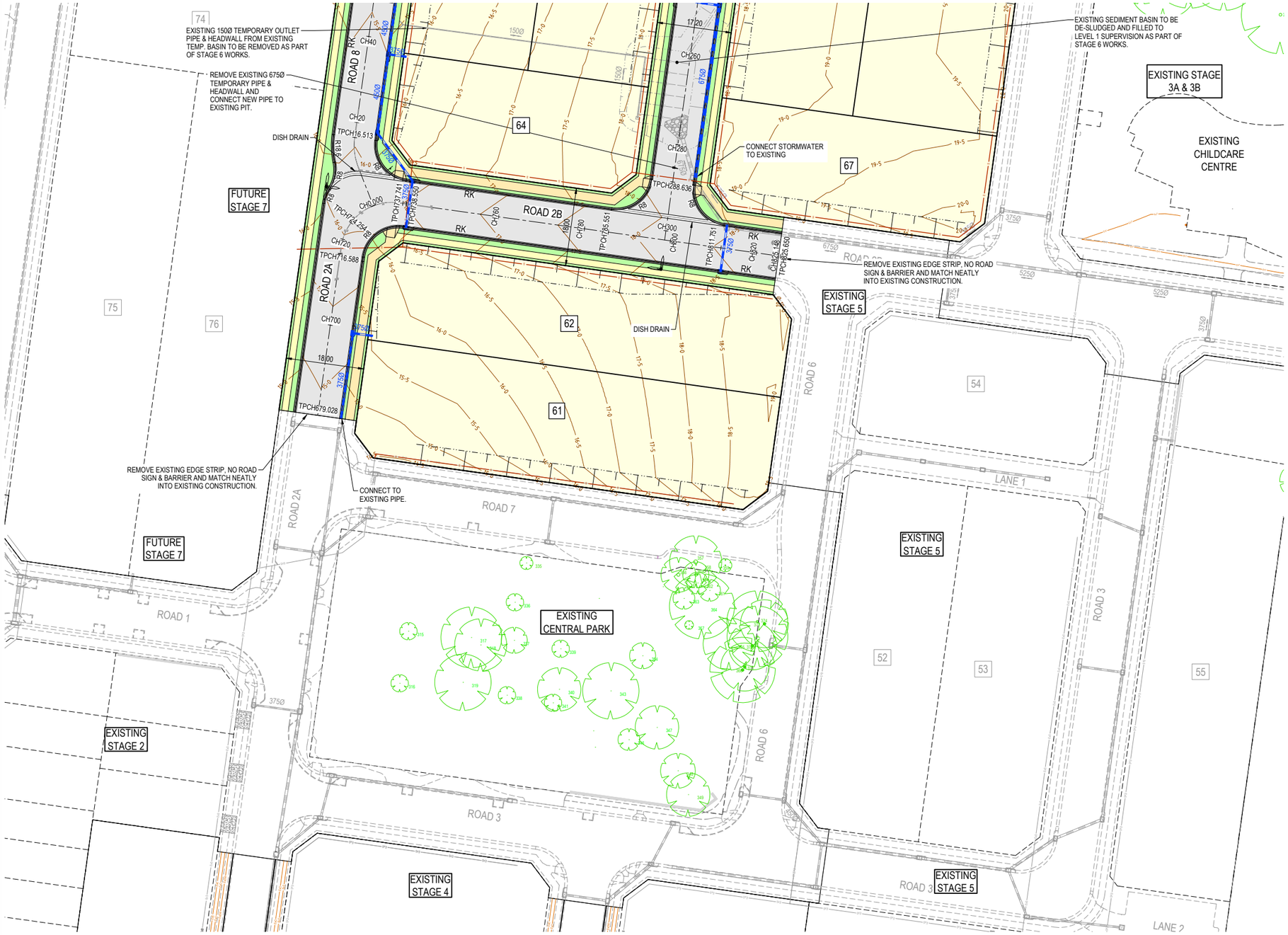
Scale 1:500 @ A1

N

Project Ref	Stage No	Drawing No	Rev
2301879	321	059	B

F:\synergytemp\12dSynergy\12dSynergyServerService\3192a0aac392-9e58-408d-ab3d-b9bfe4405e2f\2301879-321-056-LAY.dwg

FOR CONTINUATION REFER DRAWING No.2301879-320-059



LEGEND - RETAINING WALLS

- POST & CONCRETE SLEEPER RETAINING WALL
- MASONRY BLOCK RETAINING WALL
- SANDSTONE BLOCK RETAINING WALL

LEGEND - LAYOUT PLAN

- STORMWATER DRAIN, PIT & PROPERTY INLET
- SWALE DRAIN
- INDICATIVE SEWER ALIGNMENT
- HOUSE DRAIN
- TACTILE PAVERS (INDICATIVE ONLY)
- ELECTRICITY (UNDERGROUND)
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- OPTIC FIBRE
- TELECOMMUNICATIONS
- GAS
- WATER
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- EXISTING ELECTRICITY (OVERHEAD)
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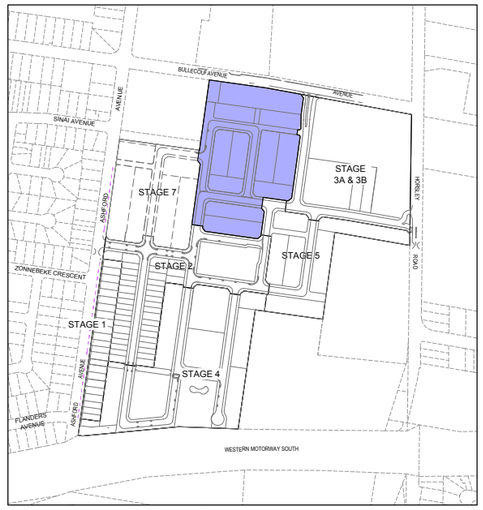
- RAINGARDEN
- SUBJECT AREA OF WORKS
- INDICATIVE RESIDENTIAL LOT BOUNDARY. SUBJECT TO FURTHER DA APPROVAL



SITE PLAN
NOT TO SCALE

WARNING
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A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

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0 5 10 20 30 40
SCALE 1:500 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	G.N.
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
DA Number	-

Beveridge Williams
Development & Infrastructure Consultants
Level 4, LPC House, Suite 4.05, 3 Fordham way
Oran Park NSW 2570
ph: 02 46255055
www.beveridgewilliams.com.au

Project Details	WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA
Drawing Title	LAYOUT PLAN STAGE 6 SHEET 2 OF 2

Sheet 28 of 145
Scale 1:500 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	060	B

F:\synergytemp\12dSynergy\12dSynergyServerService\3192a0aac392-9e58-408d-ab3d-b9bfe4405e2f\2301879-321-056-LAY.dwg

LEGEND - RETAINING WALLS

- POST & CONCRETE SLEEPER RETAINING WALL
- MASONRY BLOCK RETAINING WALL
- SANDSTONE BLOCK RETAINING WALL

LEGEND - LAYOUT PLAN

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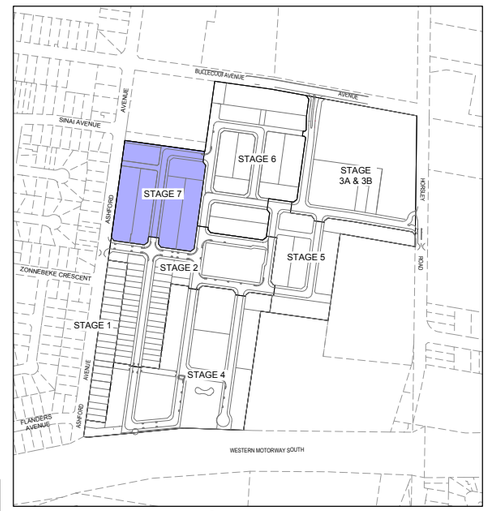

SITE PLAN

NOT TO SCALE

WARNING

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0 5 10 20 30 40
SCALE 1:500 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	G.N.
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
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DA Number	-

Beveridge Williams
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Level 4, LPC House, Suite 4.05, 3 Fordham way
Oran Park NSW 2570
ph: 02 46255055
www.beveridgewilliams.com.au

Project Details	WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA
Drawing Title	LAYOUT PLAN STAGE 7

Sheet 29 of 145

Scale 1:500 @ A1

N

Project Ref	Stage No	Drawing No	Rev
2301879	321	061	B

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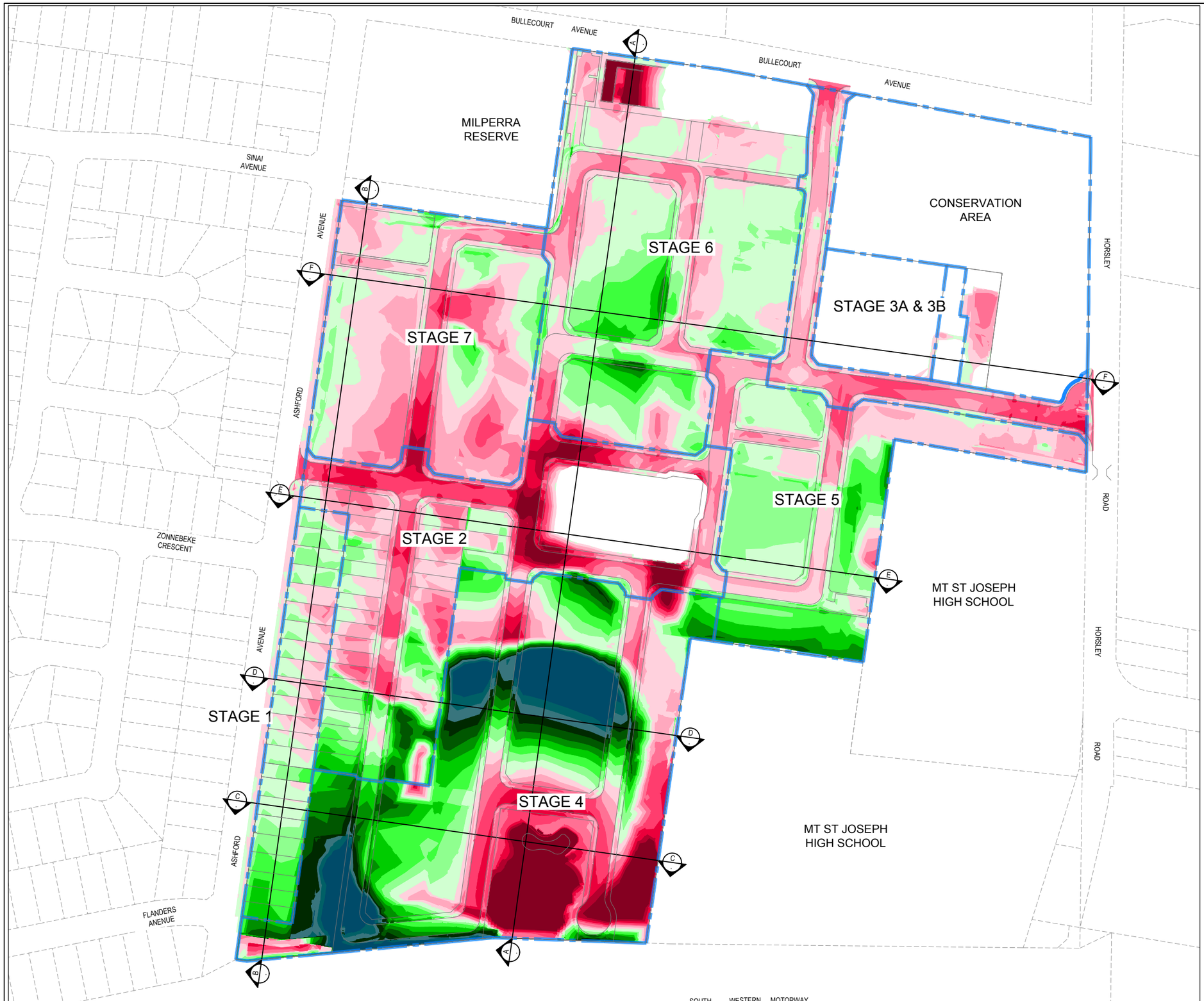

CUT AND FILL LEGEND		
DEPTH RANGE (m)		COLOUR
>1.8m CUT		
-1.8	-1.5	
-1.5	-1.2	
-1.2	-0.9	
-0.9	-0.6	
-0.6	-0.3	
-0.3	0.0	
0.0	0.3	
0.3	0.6	
0.6	0.9	
0.9	1.2	
1.2	1.5	
1.5	1.8	
1.8	2.1	
2.1	2.4	
2.4	2.7	
>2.7m FILL		

APPROXIMATE EARTHWORKS VOLUMES:

CUT - 55,868m³
FILL - 58,694m³

BALANCE - 2,826m³ OF FILL

* THIS ESTIMATE IS BASED ON POST DEMOLITION EXISTING SURFACE TO BOXING DESIGN SURFACE

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A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

0 12.5 25 50 75 100
SCALE 1:1250 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	G.N.
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
DA Number	-

Beveridge Williams
Development & Infrastructure Consultants
Level 4, LPC House, Suite 4.05, 3 Fordham way
Oran Park NSW 2570
ph: 02 46255055
www.beveridgewilliams.com.au

Project Details	WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA
Drawing Title	BULK EARTHWORKS OVERALL PLAN

Sheet 30 of 145

Scale 1:1250 @ A1

N

Project Ref	Stage No	Drawing No	Rev
2301879	321	070	B

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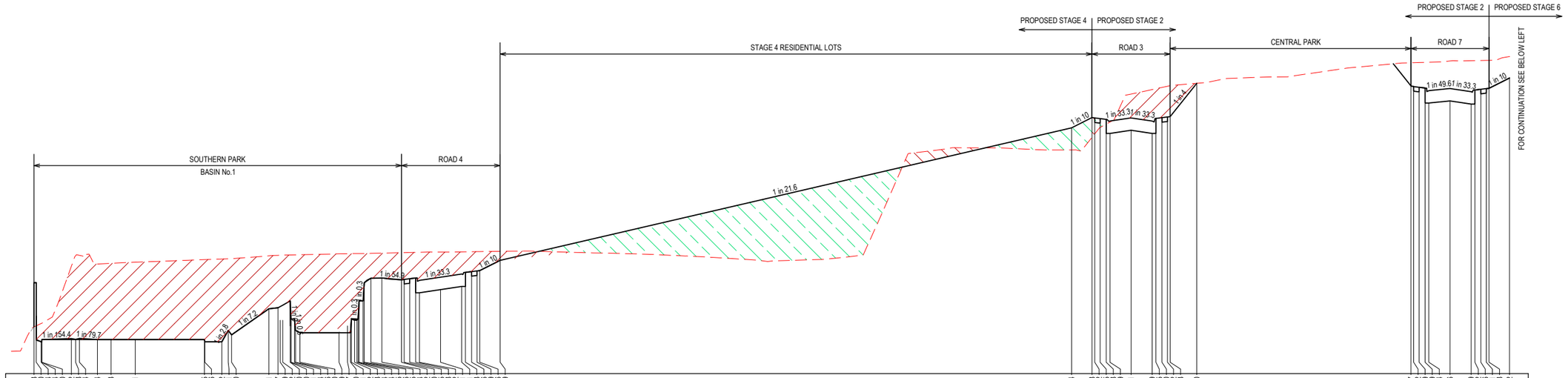
PROPOSED STAGE 4
PROPOSED STAGE 2
PROPOSED STAGE 2
PROPOSED STAGE 6
STAGE 4 RESIDENTIAL LOTS
ROAD 3
CENTRAL PARK
ROAD 7
SOUTHERN PARK
BASIN No.1
ROAD 4
FOR CONTINUATION SEE BELOW LEFT
1 in 154.4
1 in 79.7
1 in 2.8
1 in 7.2
1 in 10
1 in 54.3
1 in 33.3
1 in 10
1 in 21.6
1 in 10
1 in 33.3
1 in 33.3
1 in 49.6
1 in 33.3
1 in 10

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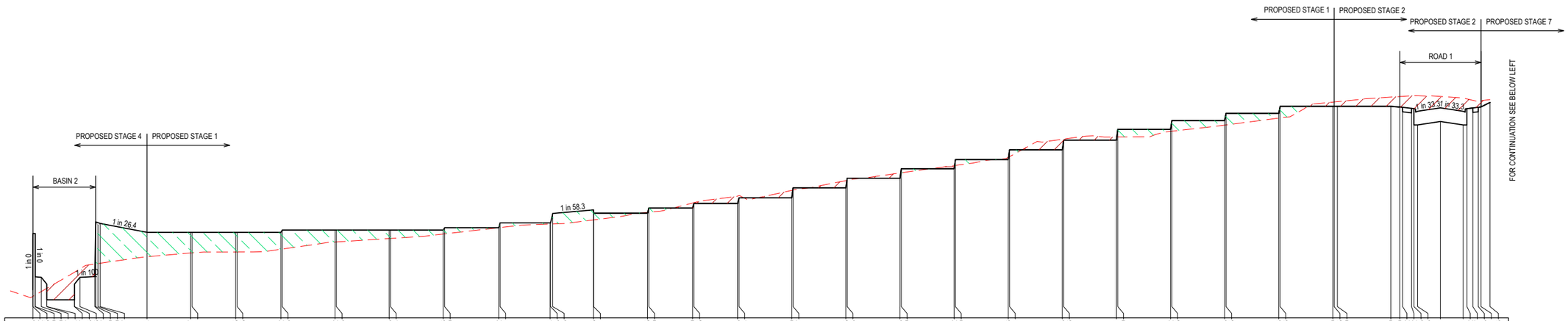

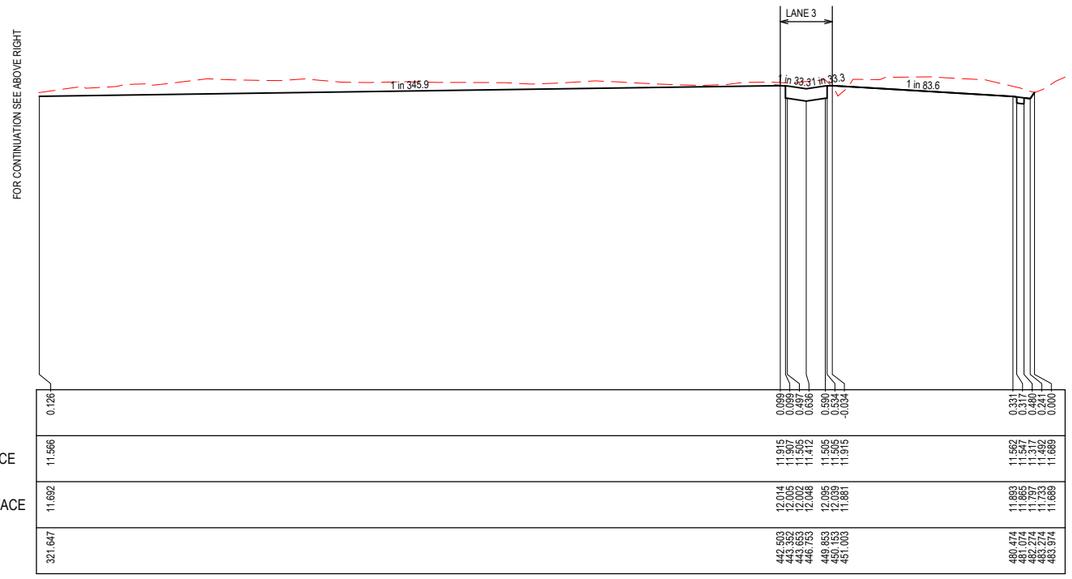

SECTION B-B
CROSS SECTIONS

LEGEND
- EXISTING SURFACE
- DESIGN LINE
- FILL HATCH
- CUT HATCH

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B	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

HORIZ 1:500 0 5 10 20 30
VERT 1:100 0 1 2 4 6
SCALE AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	G.N.
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
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Level 4, LPC House, Suite 4.05, 3 Fordham way
Oran Park NSW 2570
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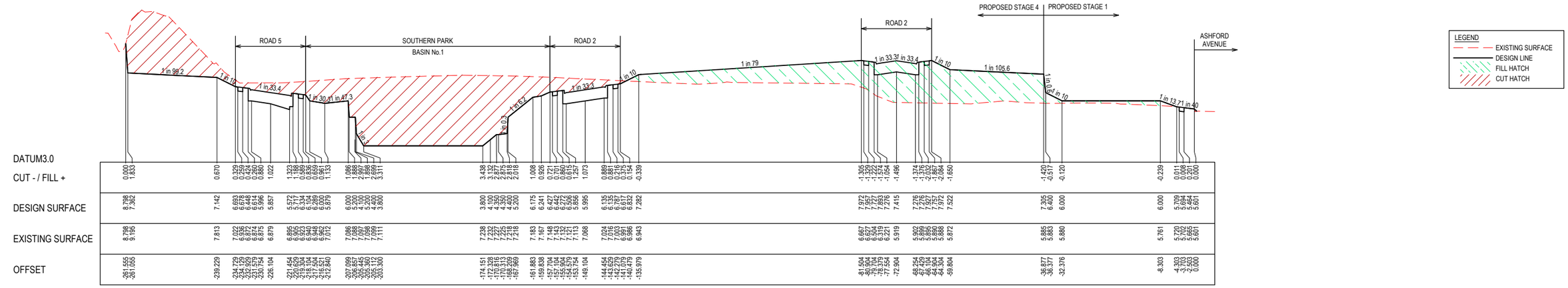
Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: BULK EARTHWORKS
SECTION B

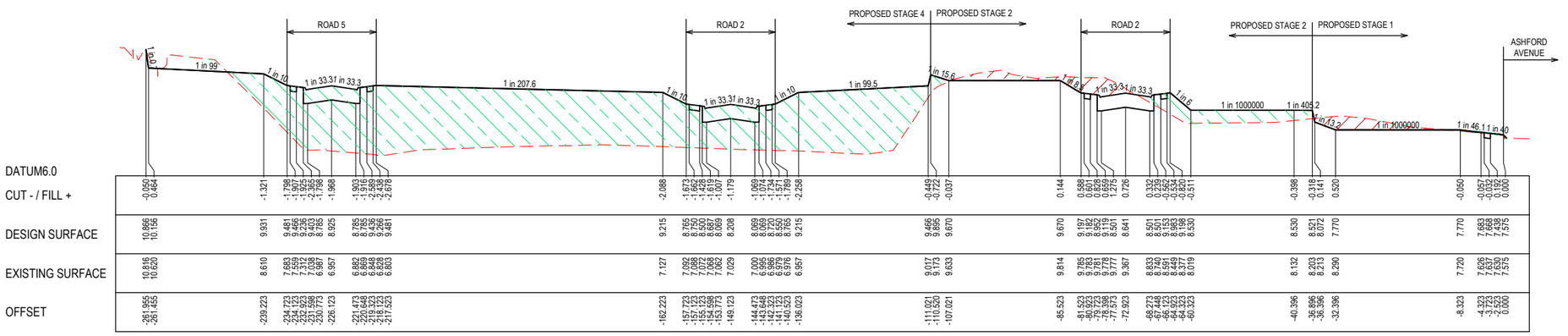
Sheet 32 of 145
Scale 1:500 H 1:100 V @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	072	B

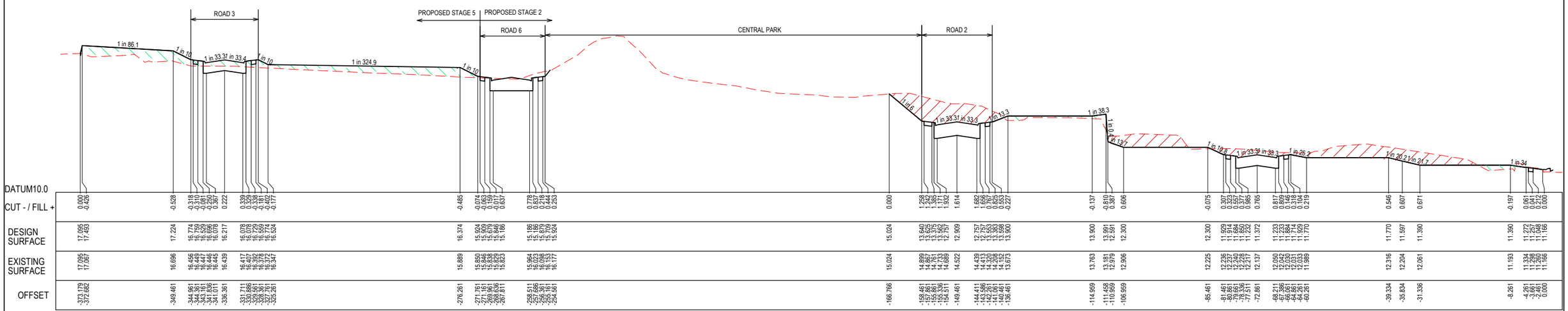
F:\synergytemp\12dSynergy\12dSynergyServerService\3192\a0aac392-9e58-408d-ab3d-b9bfe4405e2f\2301879-321-070-BULK.dwg



SECTION C-C
CROSS SECTIONS



SECTION D-D
CROSS SECTIONS



SECTION E-E
CROSS SECTIONS

WARNING
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B	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

mirvac

HORIZ 1:500 0 5 10 20 30
VERT 1:100 0 1 2 4 6
SCALE AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	G.N.
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
DA Number	-

Beveridge Williams
Development & Infrastructure Consultants
Level 4, LPC House, Suite 4.05, 3 Fordham way Oran Park NSW 2570
ph: 02 46255055
www.beveridgewilliams.com.au

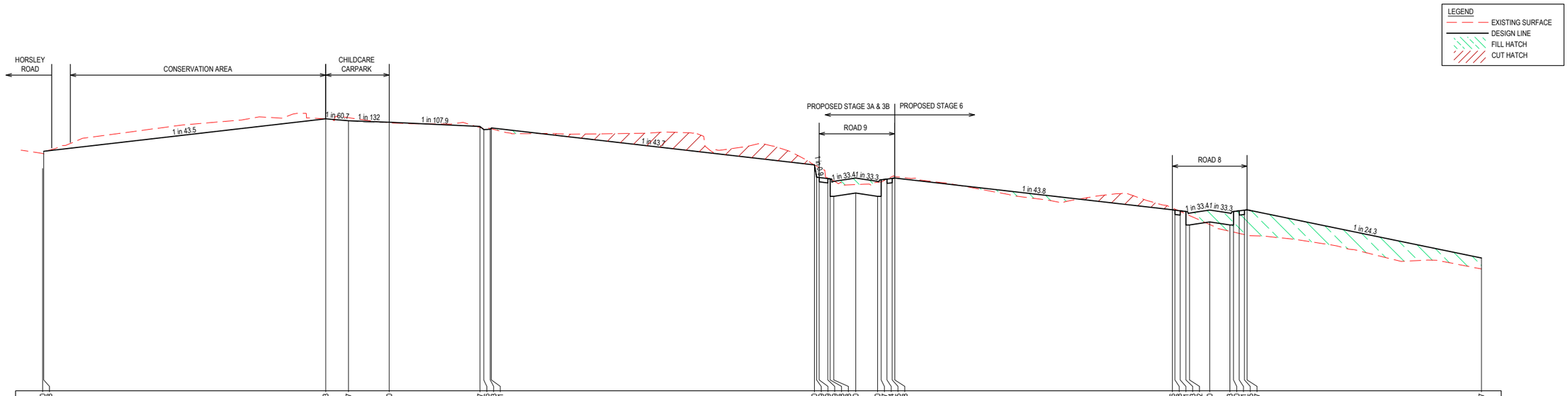
Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: BULK EARTHWORKS
SECTIONS C, D & E

Sheet 33 of 145
Scale 1:500 H 1:100 V @ A1

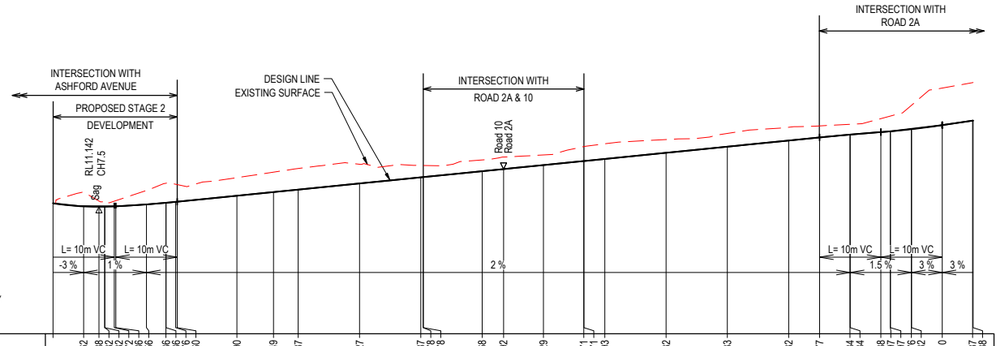
Project Ref	Stage No	Drawing No	Rev
2301879	321	073	B

F:\synergyitemp\12dSynergy\12dSynergyServerService\3192\a0aac392-9e58-408d-ab3d-b9bfe4405e2f\2301879-321-070-BULK.dwg


LEGEND
EXISTING SURFACE
DESIGN LINE
FILL HATCH
CUT HATCH
HORSLEY ROAD
CONSERVATION AREA
CHILDCARE CARPARK
PROPOSED STAGE 3A & 3B
PROPOSED STAGE 6
ROAD 9
ROAD 8
1 in 43.5
1 in 60.7
1 in 132
1 in 107.9
1 in 43.7
1 in 33.4
1 in 33.3
1 in 43.8
1 in 24.3

| | | |

LEGEND
EXISTING SURFACE
DESIGN LINE



DATUM RL7

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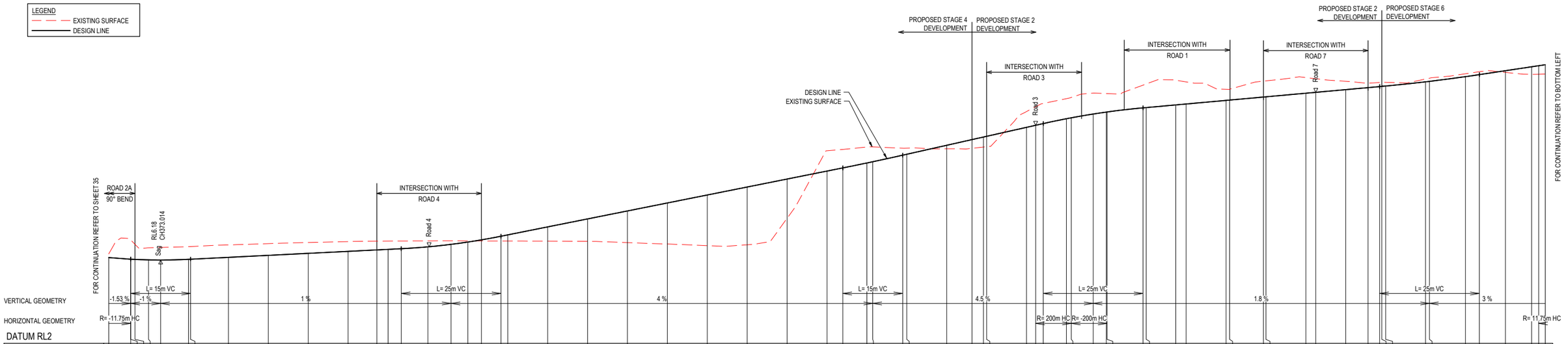
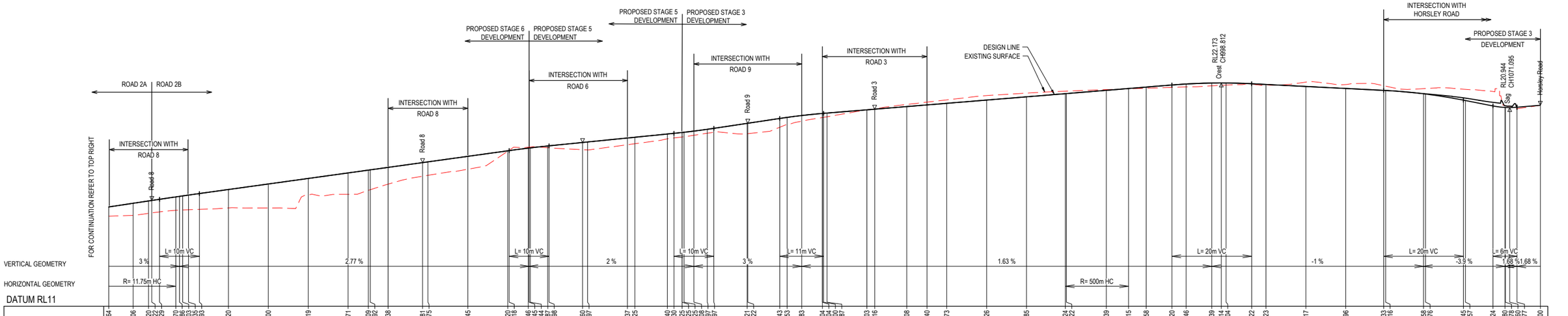


ROAD 2A LONGITUDINAL SECTION



ROAD 2A LONGITUDINAL SECTION

ROAD 2B LONGITUDINAL SECTION

ROAD 2B LONGITUDINAL SECTION

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REV	DESCRIPTION	DATE	DRN.	APP.

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0 2 4 8 12 16
SCALE 1:200 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	L.S
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
DA Number	-

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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

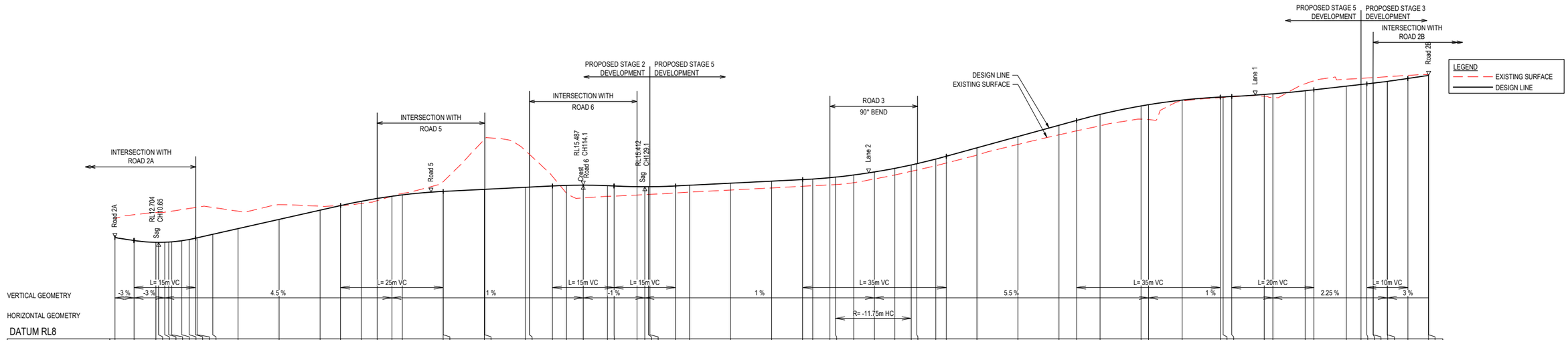
Drawing Title: ROAD LONGITUDINAL SECTIONS

Sheet 36 of 145

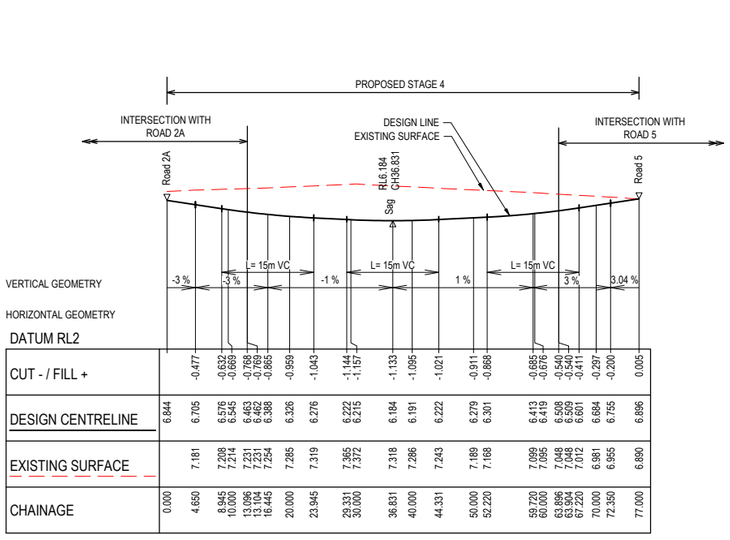
Scale 1:200 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	102	B

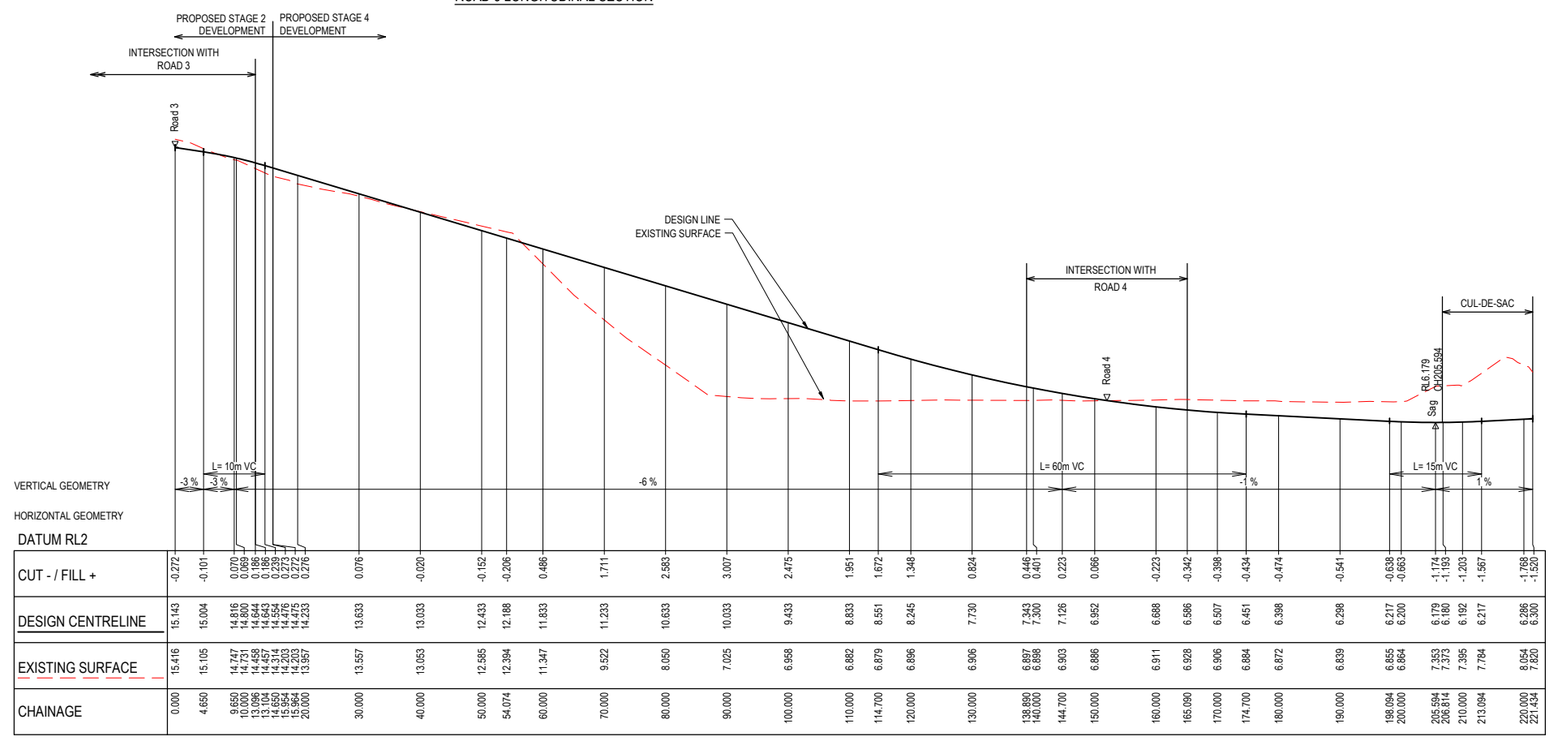
F:\synergytemp\12dSynergy\12dSynergyServerService\3192\a0aac392-9e58-408d-ab3d-b9bfe4405e2f\2301879-321-100-RLS.dwg



ROAD 3 LONGITUDINAL SECTION



ROAD 4 LONGITUDINAL SECTION



ROAD 5 LONGITUDINAL SECTION

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REV	DESCRIPTION	DATE	DRN.	APP.
B	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

mirvac

0 2 4 8 12 16
SCALE 1:200 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	L.S
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
DA Number	-

Beveridge Williams
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

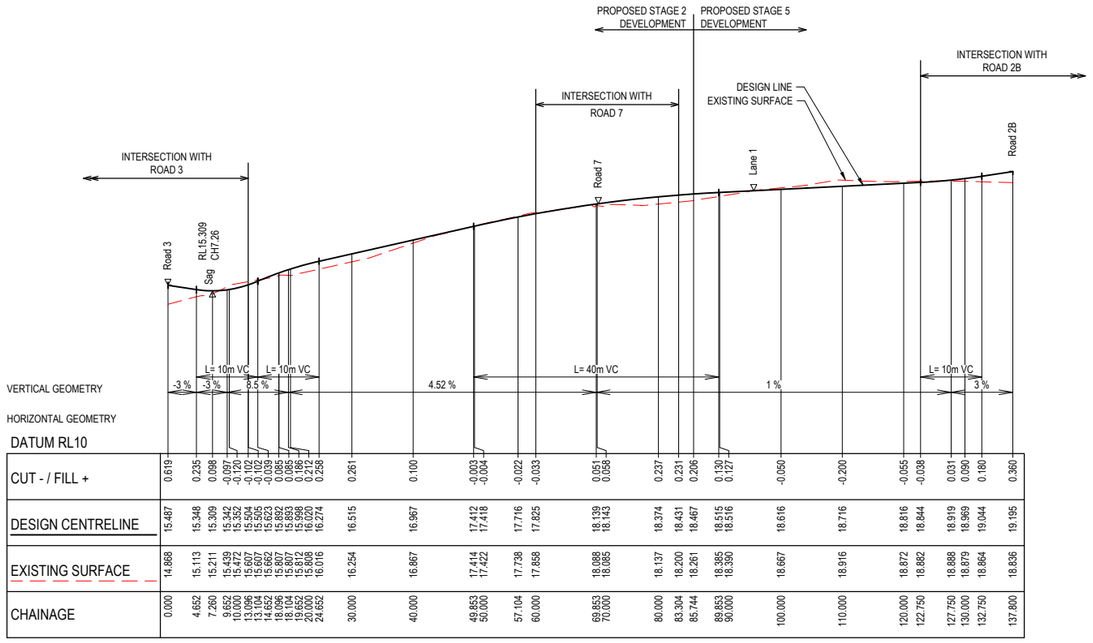
Drawing Title: ROAD LONGITUDINAL SECTIONS

Sheet 37 of 145

Scale: 1:200 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	103	B

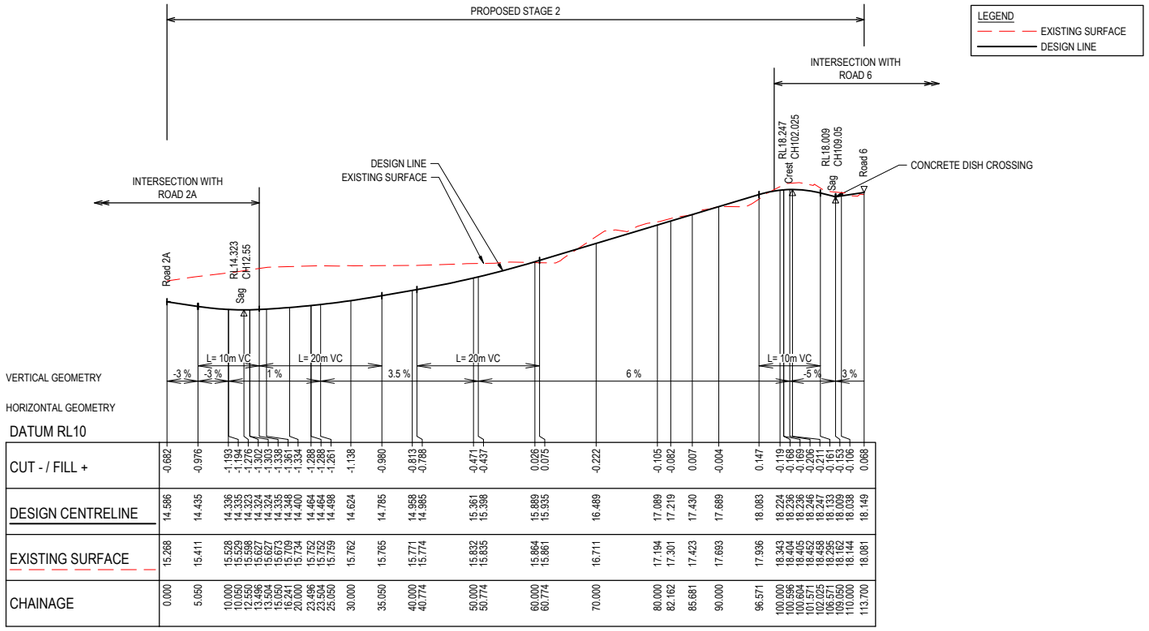
F:\esynergytemp\12dSynergy\12dSynergyServerService\3192\a0aac392-9e58-408d-ab3d-b9bfe4405e2f\2301879-321-100-RLS.dwg



DATUM RL10

CHAINAGE	EXISTING SURFACE	DESIGN CENTRELINE	CUT - / FILL +
0.000	14.868	15.487	0.619
4.652	15.113	15.348	0.235
7.260	15.211	15.309	0.098
9.652	15.439	15.342	-0.097
10.000	15.472	15.352	-0.120
11.096	15.567	15.469	-0.127
13.104	15.607	15.505	-0.102
14.652	15.662	15.623	-0.039
18.094	15.807	15.892	0.085
19.652	15.812	15.998	0.186
20.000	15.808	16.020	0.212
24.652	15.916	16.274	0.358
30.000	16.254	16.515	0.261
40.000	16.867	16.967	0.100
49.853	17.414	17.412	-0.003
50.000	17.422	17.418	-0.004
57.104	17.738	17.716	-0.022
60.000	17.858	17.825	-0.033
69.853	18.088	18.139	0.051
70.000	18.085	18.143	0.058
80.000	18.137	18.374	0.237
83.304	18.200	18.431	0.231
85.744	18.261	18.467	0.206
89.853	18.385	18.515	0.130
90.000	18.380	18.516	0.127
100.000	18.667	18.616	-0.050
110.000	18.916	18.716	-0.200
120.000	18.872	18.816	-0.055
122.750	18.882	18.844	-0.038
127.750	18.888	18.919	0.031
130.000	18.879	18.969	0.090
132.750	18.864	19.044	0.180
137.800	18.836	19.195	0.360

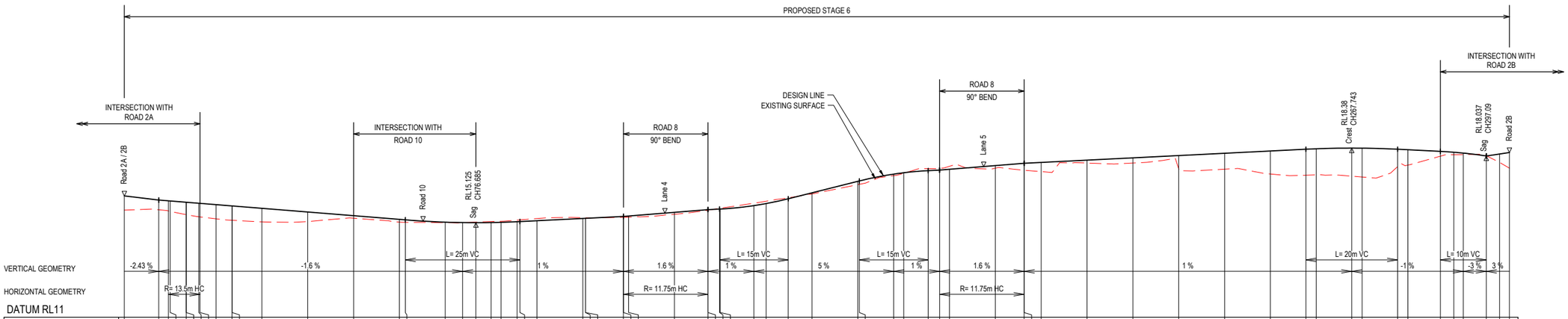
ROAD 6 LONGITUDINAL SECTION



DATUM RL10

CHAINAGE	EXISTING SURFACE	DESIGN CENTRELINE	CUT - / FILL +
0.000	15.268	14.586	-0.682
5.050	15.411	14.435	-0.976
10.000	15.528	14.336	-1.193
10.050	15.529	14.335	-1.194
12.550	15.598	14.323	-1.276
13.946	15.627	14.324	-1.302
15.050	15.673	14.335	-1.338
16.241	15.709	14.348	-1.361
20.000	15.752	14.464	-1.288
23.504	15.752	14.464	-1.288
25.050	15.759	14.498	-1.261
30.000	15.762	14.624	-1.138
35.050	15.765	14.785	-0.980
40.000	15.771	14.958	-0.813
40.774	15.774	14.965	-0.809
50.000	15.832	15.361	-0.471
50.774	15.835	15.398	-0.437
60.000	15.864	15.889	0.026
60.774	15.861	15.935	0.075
70.000	16.711	16.489	-0.222
80.000	17.194	17.089	-0.105
82.162	17.301	17.219	-0.082
85.681	17.423	17.430	0.007
90.000	17.693	17.689	-0.004
96.571	17.936	18.083	0.147
100.000	18.343	18.224	-0.119
100.596	18.404	18.236	-0.169
101.571	18.452	18.246	-0.206
102.025	18.458	18.247	-0.211
105.515	18.162	18.009	-0.153
109.050	18.162	18.038	-0.106
110.000	18.144	18.081	0.068
113.700	18.081	18.149	

ROAD 7 LONGITUDINAL SECTION



DATUM RL11

CHAINAGE	EXISTING SURFACE	DESIGN CENTRELINE	CUT - / FILL +
0.000	15.672	16.294	0.622
7.499	15.689	16.112	0.422
8.630	15.697	16.078	0.381
10.000	15.670	16.072	0.402
13.496	15.476	16.016	0.540
13.504	15.475	16.015	0.540
16.241	15.382	15.972	0.590
19.575	15.375	15.967	0.592
20.000	15.294	15.911	0.617
23.496	15.229	15.855	0.626
23.504	15.229	15.855	0.626
30.000	15.160	15.751	0.591
40.000	15.175	15.590	0.416
50.000	15.320	15.430	0.110
60.000	15.150	15.270	0.119
61.285	15.142	15.249	0.107
70.000	15.124	15.149	0.025
73.785	15.128	15.130	0.002
76.685	15.148	15.125	-0.023
80.000	15.175	15.131	-0.044
82.162	15.188	15.141	-0.047
85.681	15.238	15.168	-0.070
86.285	15.248	15.173	-0.074
90.000	15.306	15.211	-0.096
100.000	15.342	15.311	-0.032
100.596	15.340	15.317	-0.023
100.604	15.340	15.317	-0.023
108.863	15.360	15.399	0.040
108.867	15.360	15.399	0.040
110.000	15.366	15.417	0.051
120.000	15.492	15.578	0.085
127.322	15.670	15.695	0.024
127.323	15.670	15.695	0.024
128.823	15.747	15.722	-0.021
130.000	15.752	15.715	-0.037
137.323	15.976	15.870	-0.107
140.000	16.060	15.960	-0.100
144.823	16.210	16.170	-0.041
150.000	16.379	16.429	0.050
160.000	16.785	16.928	0.143
160.333	16.799	16.945	0.147
167.833	17.178	17.245	0.068
170.000	17.282	17.304	0.022
175.333	17.481	17.395	-0.086
177.833	17.489	17.420	-0.069
180.000	17.588	17.455	-0.133
190.000	17.505	17.615	0.110
196.286	17.415	17.716	0.301
196.287	17.415	17.716	0.301
200.000	17.354	17.753	0.399
210.000	17.728	17.853	0.125
220.000	17.728	17.953	0.225
230.000	17.471	18.053	0.582
240.000	17.459	18.153	0.694
250.000	17.251	18.263	1.002
257.743	17.197	18.330	1.133
260.000	17.212	18.350	1.139
267.743	17.155	18.380	1.226
270.000	17.118	18.378	1.259
277.743	17.573	18.330	0.757
280.000	17.640	18.308	0.668
287.090	18.029	18.237	0.208
290.000	18.094	18.199	0.105
292.090	18.100	18.162	0.062
297.090	18.049	18.037	-0.012
300.000	17.753	18.124	0.371
302.140	17.507	18.188	0.681

ROAD 8 LONGITUDINAL SECTION

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B	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

0 2 4 8 12 16
SCALE 1:200 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	L.S
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
DA Number	-

Beveridge Williams
Development & Infrastructure Consultants
Level 4, LPC House, Suite 4.05, 3 Fordham way
Oran Park NSW 2570
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

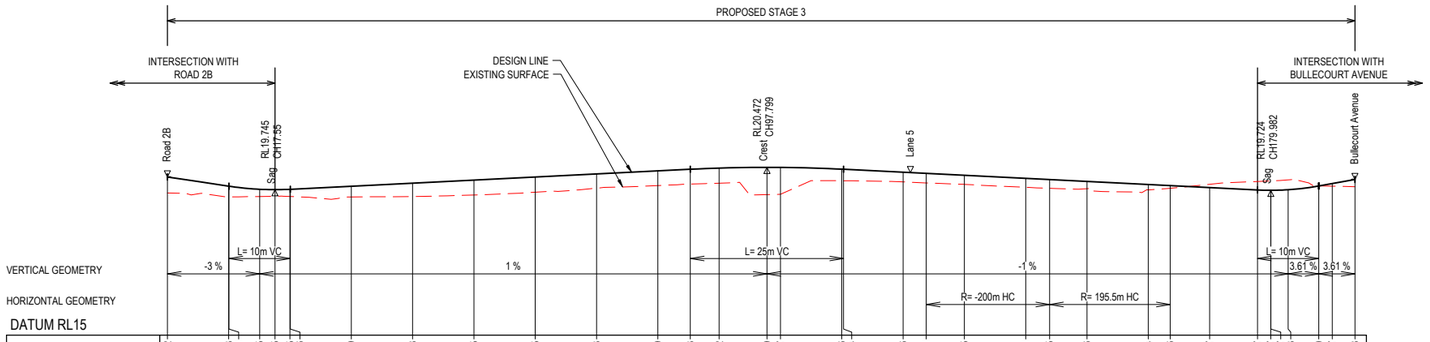
Drawing Title: ROAD LONGITUDINAL SECTIONS

Sheet 38 of 145
Scale 1:200 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	104	B

F:\aynergytemp\12dSynergy\12dSynergyServerService\3192\a0aac392-9e58-408d-ab3d-b9bfe4405e2f\2301879-321-100-RLS.dwg

LEGEND
EXISTING SURFACE
DESIGN LINE



DATUM RL15

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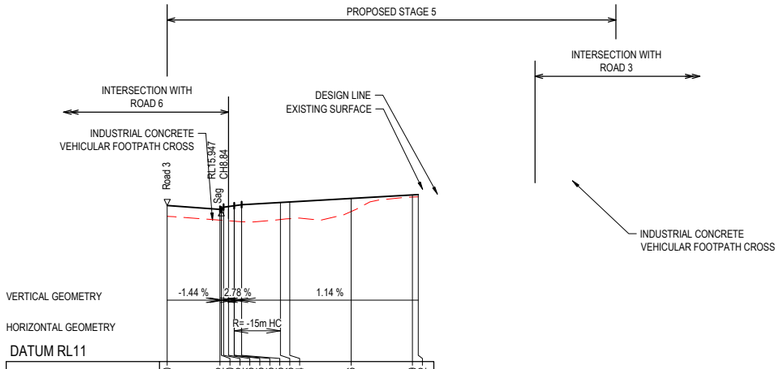

PROPOSED STAGE 5
INTERSECTION WITH ROAD 6
INTERSECTION WITH ROAD 3
DESIGN LINE
EXISTING SURFACE
INDUSTRIAL CONCRETE VEHICULAR FOOTPATH CROSS
INDUSTRIAL CONCRETE VEHICULAR FOOTPATH CROSS
Road 3
RL15.947
CH8.84
Sag
VERTICAL GEOMETRY
HORIZONTAL GEOMETRY
-1.44 %
2.78 %
1.14 %
R= -15m HC

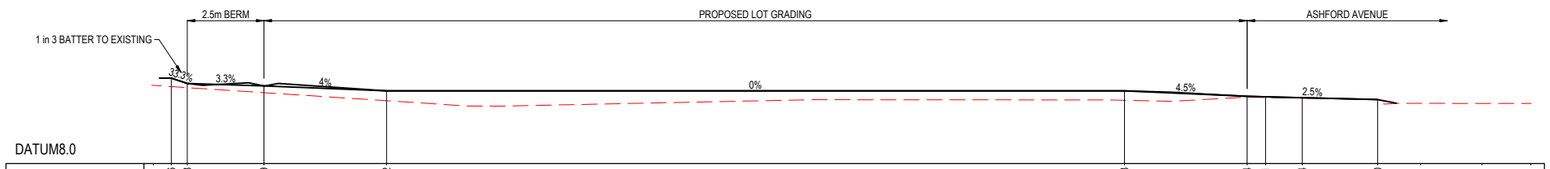
DATUM RL11

| | | |

LEGEND

EXISTING SURFACE

DESIGN SURFACE



DATUM8.0

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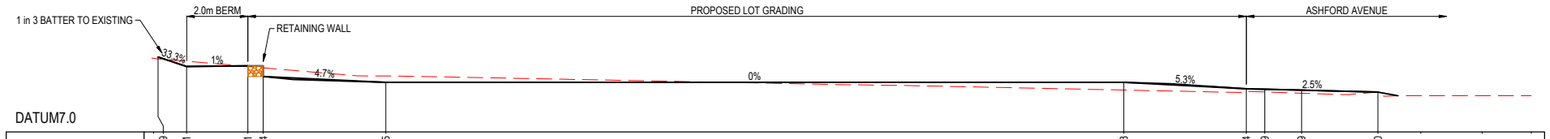
LEGEND

EXISTING SURFACE

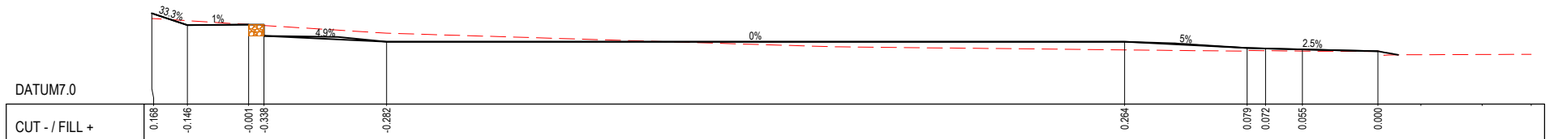
DESIGN SURFACE



DATUM7.0

CUT - / FILL +	0.059	-0.171	0.021	-0.284	-0.205	0.253	0.084	0.089	0.099	0.000														
DESIGN SURFACE	9.446	9.136	9.156	8.808	8.620	8.620	8.408	8.393	8.363	8.301														
EXISTING SURFACE	9.404	9.386	9.307	9.135	9.092	8.825	8.367	8.324	8.304	8.264	8.301	8.174	8.166	8.160										
OFFSET	-40.000	-39.793	-38.864	-36.864	-36.364	-32.364	-8.291	-4.291	-3.691	-2.491	0.000	1.400	3.400	5.000										

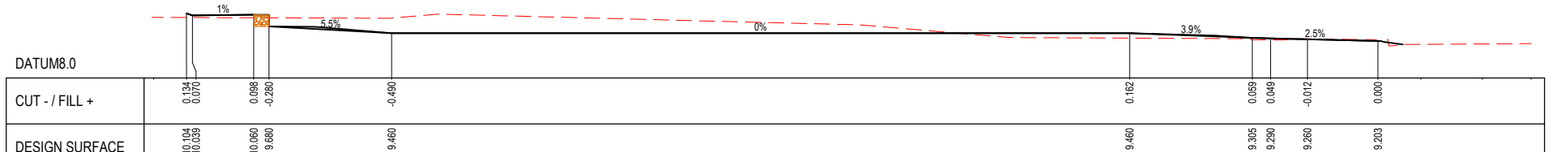
LOT 1108 CH 100.429



DATUM7.0

CUT - / FILL +	0.168	-0.146	-0.001	-0.338	-0.282	0.264	0.079	0.072	0.055	0.000														
DESIGN SURFACE	9.959	9.572	9.592	9.224	9.030	9.030	8.828	8.813	8.783	8.722														
EXISTING SURFACE	9.791	9.718	9.593	9.562	9.312	8.766	8.750	8.741	8.728	8.722	8.601	8.598	8.596											
OFFSET	-40.000	-38.839	-36.839	-36.339	-32.339	-8.266	-4.266	-3.666	-2.466	0.000	1.400	3.400	5.000											

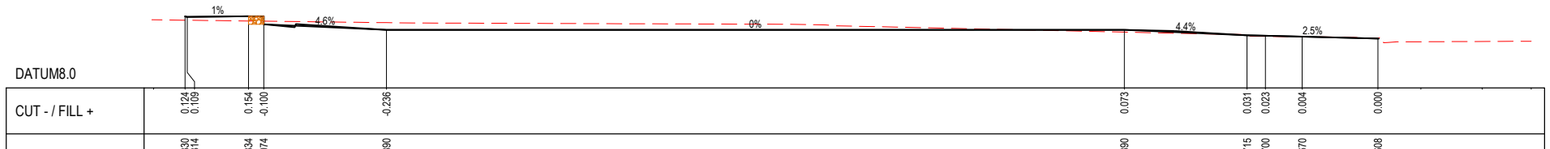
LOT 1107 CH 88.455



DATUM8.0

CUT - / FILL +	0.134	0.070	0.098	-0.280	-0.490	0.162	0.059	0.049	-0.012	0.000														
DESIGN SURFACE	10.104	10.039	10.060	9.680	9.460	9.460	9.305	9.290	9.260	9.203														
EXISTING SURFACE	9.974	9.970	9.969	9.961	9.959	9.950	9.298	9.247	9.241	9.272	9.203	9.087	9.089	9.091										
OFFSET	-40.000	-38.867	-38.673	-36.673	-36.173	-32.173	-8.099	-4.099	-3.499	-2.299	0.000	1.400	3.400	5.000										

LOT 1106 CH 75.198



DATUM8.0

CUT - / FILL +	0.124	0.109	0.154	-0.100	-0.236	0.073	0.031	0.023	0.004	0.000														
DESIGN SURFACE	10.330	10.314	10.334	10.074	9.890	9.890	9.715	9.700	9.670	9.608														
EXISTING SURFACE	10.219	10.205	10.204	10.180	10.174	10.126	9.817	9.684	9.677	9.665	9.608	9.495	9.494	9.492										
OFFSET	-40.000	-38.916	-38.844	-36.844	-36.344	-32.344	-8.271	-4.271	-3.671	-2.471	0.000	1.400	3.400	5.000										

LOT 1105 CH 64.346

ASHFORD AVENUE - ROAD CROSS SECTIONS

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A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

HORIZ. 1:100 0 1 2 4 6

VERT. 1:50 0 0.5 1 2 3

SCALE AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	L.S
Checked	S. FERGUSON
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: ROAD CROSS SECTIONS
STAGE 1 - ASHFORD AVENUE
(SHEET 2 OF 6)

Sheet 42 of 145

Scale: 1:100 H 1:50 V @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	201	B

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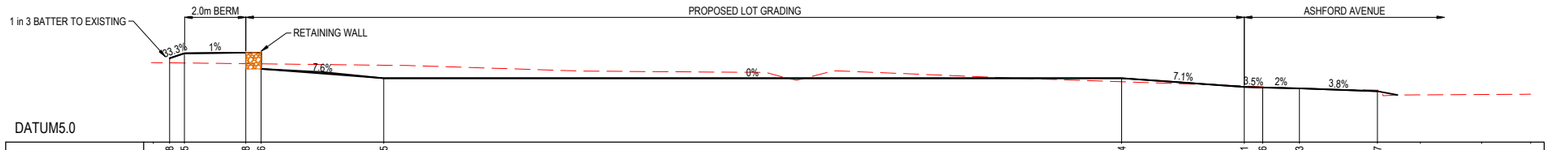
LEGEND

EXISTING SURFACE

DESIGN SURFACE



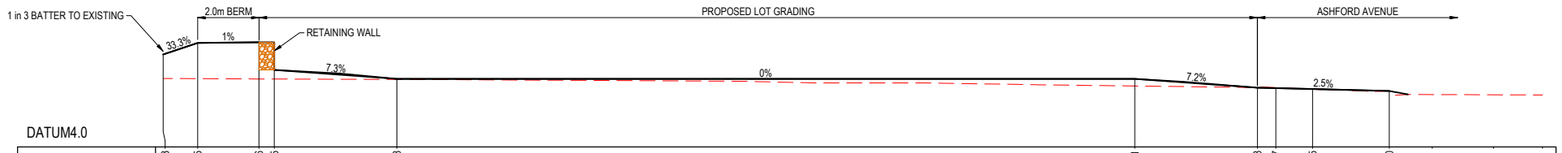
DATUM5.0

| | | |

LEGEND

EXISTING SURFACE

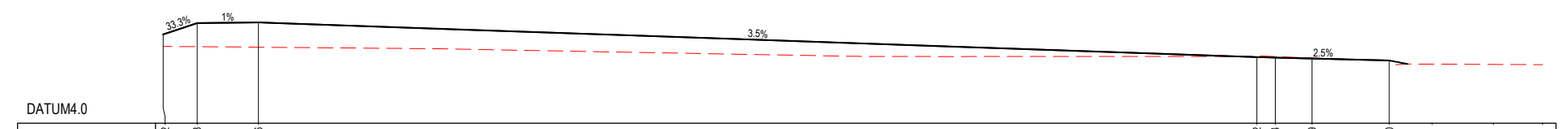
DESIGN SURFACE



DATUM4.0

CUT - / FILL +	0.783	1.165	1.196	0.295	0.018	0.231	-0.028	-0.017	0.005	0.000														
DESIGN SURFACE	7.018	7.393	7.413	6.511	6.220	6.220	5.934	5.919	5.889	5.826														
EXISTING SURFACE	6.234	6.228	6.217	6.216	6.202	5.989	5.962	5.936	5.883	5.826	5.706	5.692	5.682											
OFFSET	-40.000	-38.875	-36.875	-36.375	-32.375	-8.302	-4.302	-3.702	-2.502	0.000	1.400	3.400	5.000											

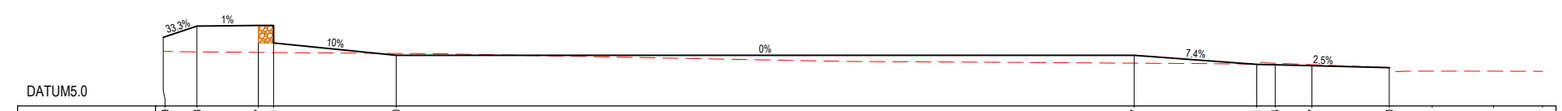
LOT 1201 CH 189.645



DATUM4.0

CUT - / FILL +	0.392	0.768	0.806							-0.042	-0.034	-0.019	0.000											
DESIGN SURFACE	6.893	7.263	7.283							6.152	6.137	6.107	6.044											
EXISTING SURFACE	6.501	6.494	6.477							6.194	6.171	6.126	6.044	5.920	5.906	5.895								
OFFSET	-40.000	-38.891	-36.891							-4.318	-3.718	-2.518	0.000	1.400	3.400	5.000								

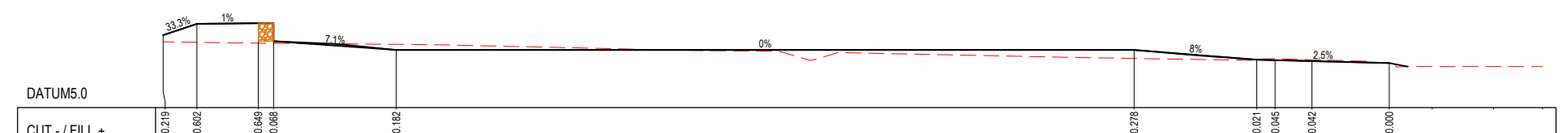
PATHWAY 1 CH 179.119



DATUM5.0

CUT - / FILL +	0.459	0.838	0.877	0.311	-0.060	0.257	-0.061	-0.054	-0.037	0.000														
DESIGN SURFACE	7.233	7.601	7.621	7.050	6.650	6.650	6.354	6.339	6.309	6.246														
EXISTING SURFACE	6.775	6.763	6.744	6.739	6.710	6.393	6.415	6.393	6.345	6.246	6.130	6.122	6.110											
OFFSET	-40.000	-38.897	-36.897	-36.397	-32.397	-8.324	-4.324	-3.724	-2.524	0.000	1.400	3.400	5.000											

LOT 1114 CH 168.605



DATUM5.0

CUT - / FILL +	0.219	0.602	0.649	0.068	-0.182	0.278	-0.021	-0.045	-0.042	0.000														
DESIGN SURFACE	7.363	7.730	7.750	7.165	6.880	6.880	6.561	6.546	6.516	6.453														
EXISTING SURFACE	7.144	7.128	7.101	7.097	7.062	6.602	6.583	6.591	6.558	6.453	6.335	6.329	6.324											
OFFSET	-40.000	-38.897	-36.897	-36.397	-32.396	-8.324	-4.324	-3.724	-2.524	0.000	1.400	3.400	5.000											

LOT 1113 CH 157.605

ASHFORD AVENUE - ROAD CROSS SECTIONS

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REV	DESCRIPTION	DATE	DRN.	APP.
B	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

HORIZ. 1:100 0 1 2 4 6

VERT. 1:50 0 0.5 1 2 3

SCALE AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	L.S
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
DA Number	-

Beveridge Williams
Development & Infrastructure Consultants
Level 4, LPC House, Suite 4.05, 3 Fordham way, Oran Park NSW 2570
ph: 02 46255055
www.beveridgewilliams.com.au

Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: ROAD CROSS SECTIONS
STAGE 1 - ASHFORD AVENUE
(SHEET 4 OF 6)

Sheet 44 of 145

Scale 1:100 H 1:50 V @ A1

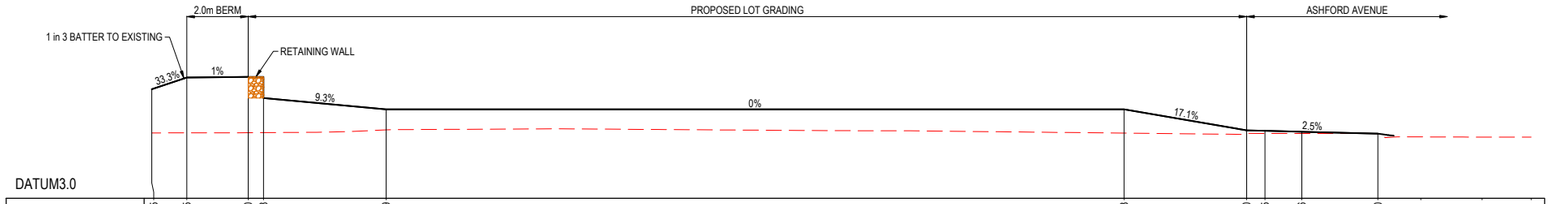
Project Ref	Stage No	Drawing No	Rev
2301879	321	203	B

F:\synergy\temp\12dSynergy\12dSynergyServerService\3192ad0aac392-9e58-408d-ab3d-b9bfe4405e2f\2301879-321-200-RXS.dwg

LEGEND

EXISTING SURFACE

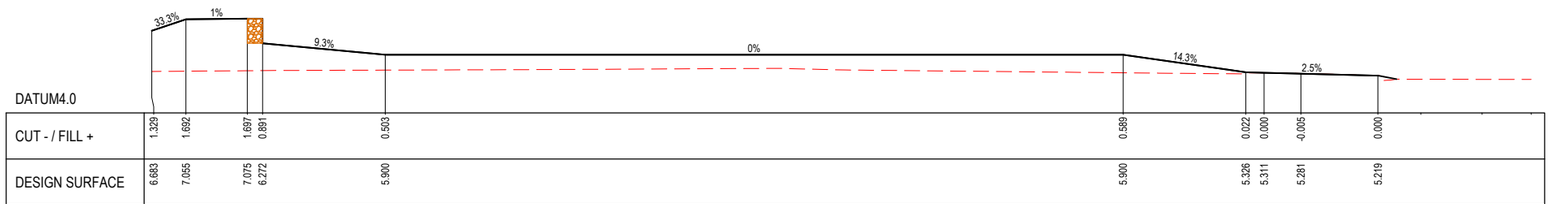
DESIGN SURFACE



DATUM3.0

CUT - / FILL +	1.425	1.805	1.820	1.128	0.669													0.773	0.100	0.085	0.056	0.000		
DESIGN SURFACE	6.658	6.940	6.960	6.271	5.900													5.900	5.216	5.201	5.171	5.109		
EXISTING SURFACE	5.133	5.135	5.140	5.143	5.231													5.127	5.117	5.116	5.115	5.109	5.002	4.994	4.991
OFFSET	-40.000	-38.855	-36.856	-36.356	-32.356													-8.283	-4.283	-3.683	-2.483	0.000	1.400	3.400	5.000

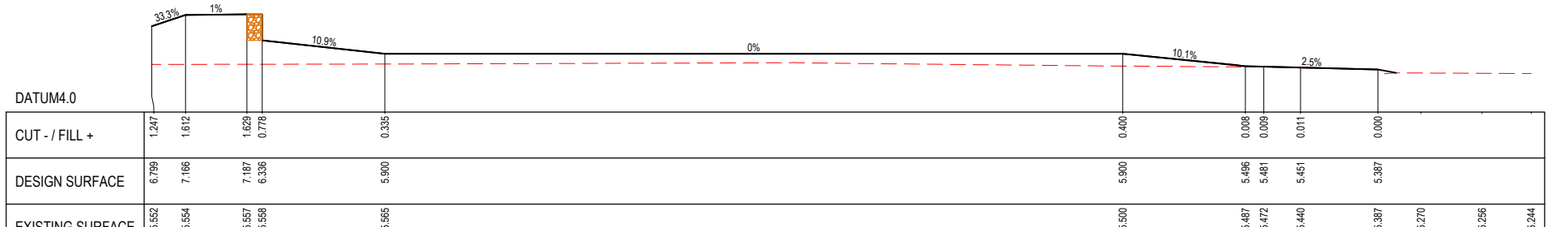
LOT 1205 CH 237.595



DATUM4.0

CUT - / FILL +	1.329	1.692	1.697	0.891	0.503													0.589	0.022	0.000	-0.005	0.000		
DESIGN SURFACE	6.683	7.055	7.075	6.272	5.900													5.900	5.326	5.311	5.281	5.219		
EXISTING SURFACE	5.354	5.363	5.377	5.381	5.397													5.311	5.304	5.311	5.287	5.219	5.097	5.090	5.084
OFFSET	-40.000	-38.865	-36.886	-36.386	-32.385													-8.312	-4.312	-3.712	-2.512	0.000	1.400	3.400	5.000

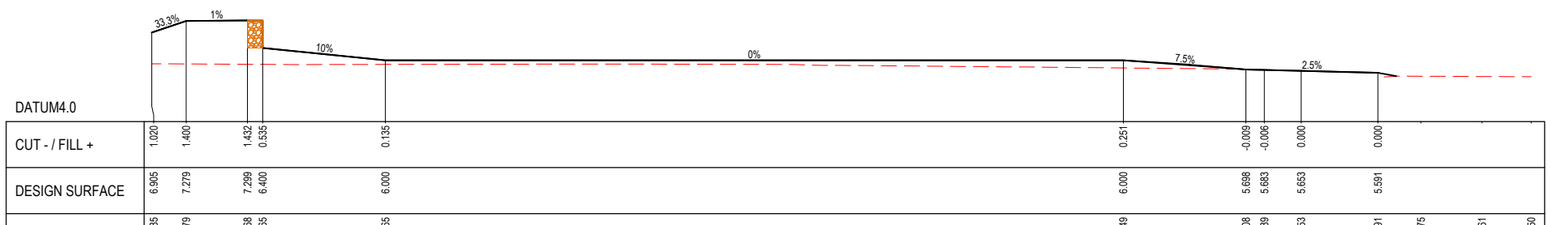
LOT 1204 CH 225.620



DATUM4.0

CUT - / FILL +	1.247	1.612	1.629	0.778	0.335													0.400	0.008	0.009	0.011	0.000		
DESIGN SURFACE	6.799	7.166	7.187	6.336	5.900													5.900	5.496	5.481	5.451	5.387		
EXISTING SURFACE	5.552	5.554	5.557	5.558	5.565													5.500	5.487	5.472	5.440	5.387	5.270	5.256	5.244
OFFSET	-40.000	-38.898	-36.898	-36.398	-32.398													-8.325	-4.325	-3.725	-2.525	0.000	1.400	3.400	5.000

LOT 1203 CH 213.604



DATUM4.0

CUT - / FILL +	1.020	1.400	1.432	0.535	0.135													0.251	-0.009	-0.006	0.000	0.000		
DESIGN SURFACE	6.905	7.279	7.299	6.400	6.000													6.000	5.698	5.683	5.653	5.591		
EXISTING SURFACE	5.885	5.879	5.868	5.865	5.865													5.749	5.708	5.689	5.653	5.591	5.475	5.461	5.450
OFFSET	-40.000	-38.878	-36.878	-36.378	-32.378													-8.305	-4.305	-3.705	-2.505	0.000	1.400	3.400	5.000

LOT 1202 CH 201.549

ASHFORD AVENUE - ROAD CROSS SECTIONS

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B	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

HORIZ. 1:100 0 1 2 4 6

VERT. 1:50 0 0.5 1 2 3

SCALE AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	L.S
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
DA Number	-

Beveridge Williams
Development & Infrastructure Consultants
Level 4, LPC House, Suite 4.05, 3 Fordham way Oran Park NSW 2570
ph: 02 46255055
www.beveridgewilliams.com.au

Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: ROAD CROSS SECTIONS
STAGE 1 - ASHFORD AVENUE
(SHEET 5 OF 6)

Sheet 45 of 145

Scale 1:100 H 1:50 V @ A1

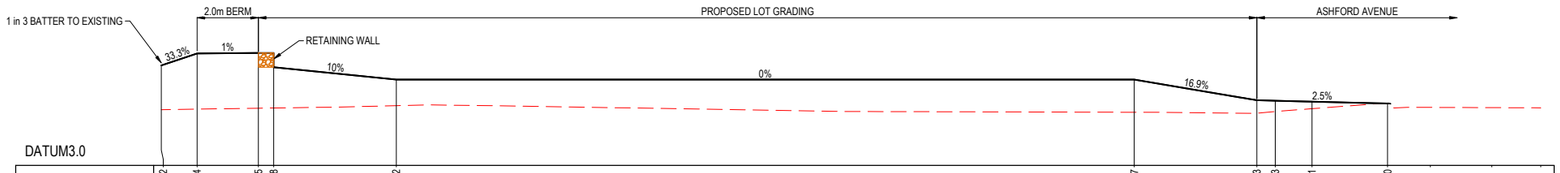
Project Ref	Stage No	Drawing No	Rev
2301879	321	204	B

F:\synergytemp\12dSynergy\12dSynergyServerService\3192a0aac392-9e58-408d-ab3d-b9bfe4405e2f\2301879-321-200-RXS.dwg

LEGEND

EXISTING SURFACE

DESIGN SURFACE



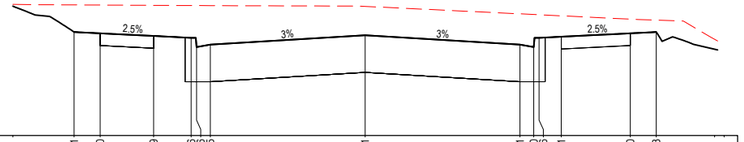
DATUM3.0

| | | |

LEGEND

EXISTING SURFACE

DESIGN SURFACE



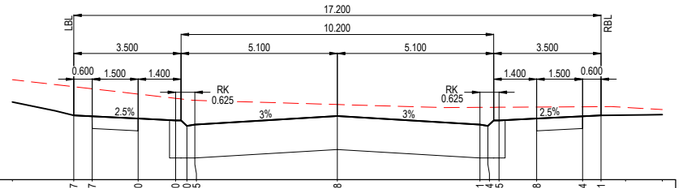
DATUM11.0

| | | |

LEGEND

EXISTING SURFACE

DESIGN SURFACE



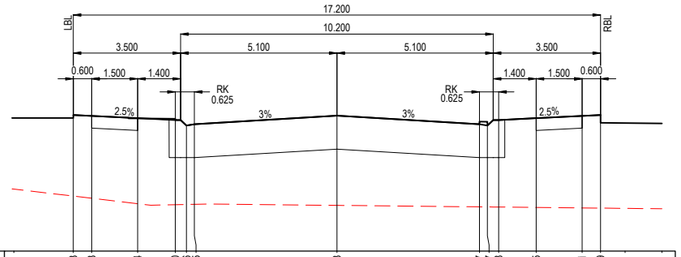
DATUM10.0

| | | |

LEGEND

EXISTING SURFACE

DESIGN SURFACE



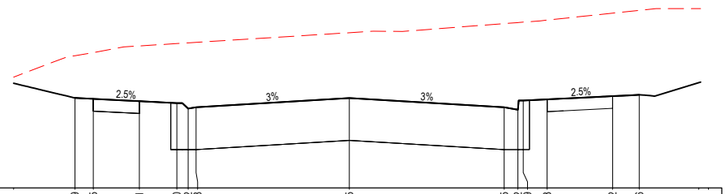
DATUM6.0

| | | |

LEGEND

EXISTING SURFACE

DESIGN SURFACE



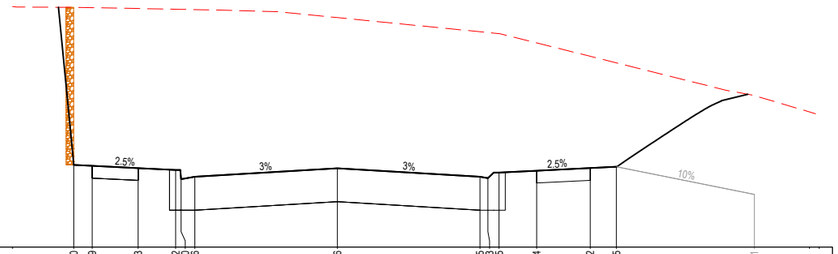
DATUM12.0

| | | |

LEGEND

EXISTING SURFACE

DESIGN SURFACE



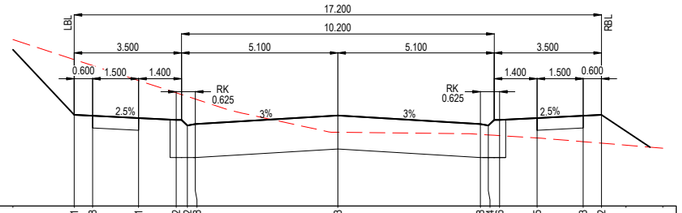
DATUM14.0

| | | |

LEGEND

EXISTING SURFACE

DESIGN SURFACE



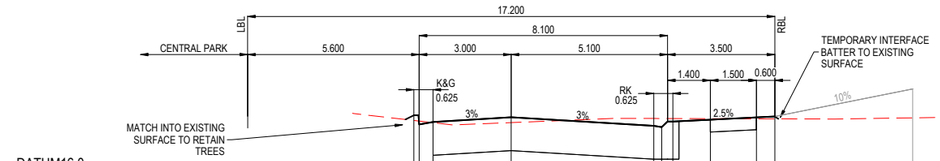
DATUM13.0

| | | |

LEGEND

EXISTING SURFACE

DESIGN SURFACE



DATUM16.0

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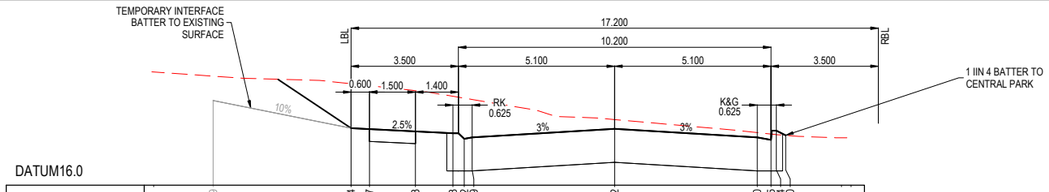

TEMPORARY INTERFACE BATTER TO EXISTING SURFACE
LBL
RBL
17.200
10.200
3.500
5.100
5.100
3.500
0.600
1.500
1.400
RK 0.625
K&G 0.625
1 IIN 4 BATTER TO CENTRAL PARK
10%
2.5%
3%
3%

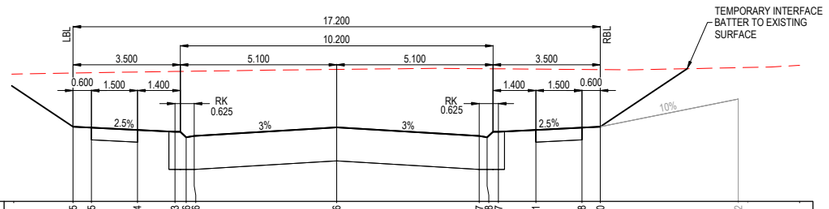
DATUM16.0

| | | |

LEGEND

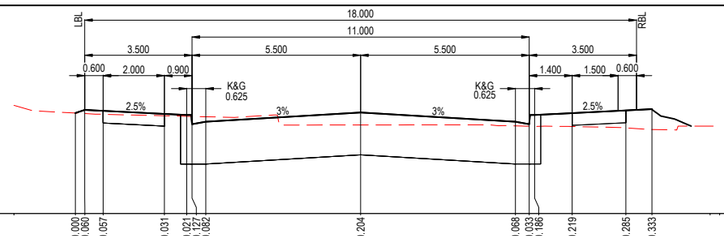
EXISTING SURFACE

DESIGN SURFACE



DATUM11.0

| | | |


LBL
RBL
18.000
11.000
3.500
5.500
5.500
3.500
0.600
2.000
0.900
1.400
1.500
0.600
K&G
0.625
K&G
0.625
2.5%
3%
3%
2.5%

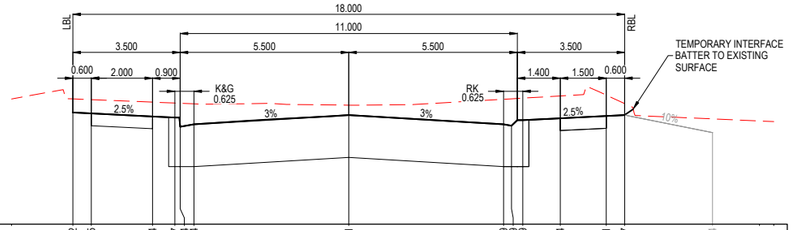
DATUM19.0

| | | |

LEGEND

EXISTING SURFACE

DESIGN SURFACE



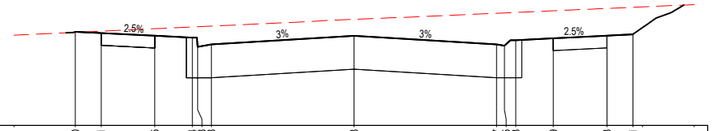
DATUM20.0

| | | |

LEGEND

EXISTING SURFACE

DESIGN SURFACE



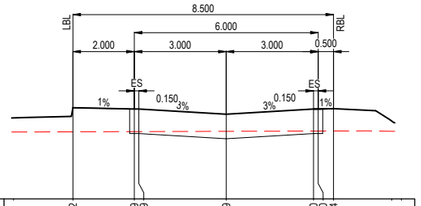
DATUM19.0

| | | |

LEGEND

EXISTING SURFACE

DESIGN SURFACE



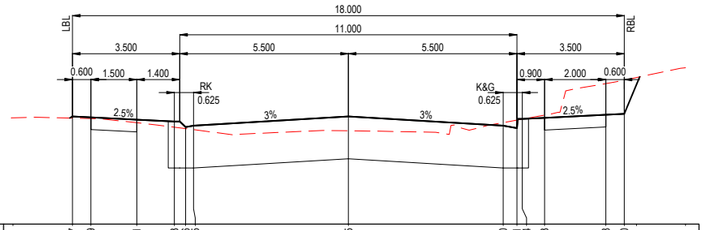
DATUM19.0

| | | |

LEGEND

EXISTING SURFACE

DESIGN SURFACE



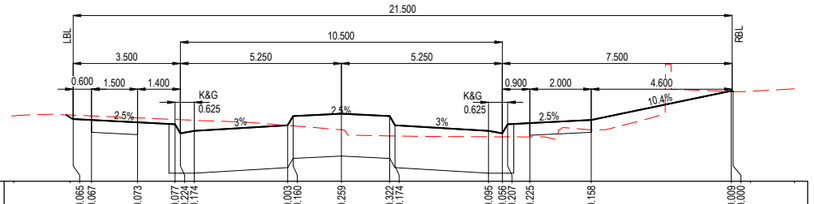
DATUM18.0

| | | |

LEGEND

EXISTING SURFACE

DESIGN SURFACE



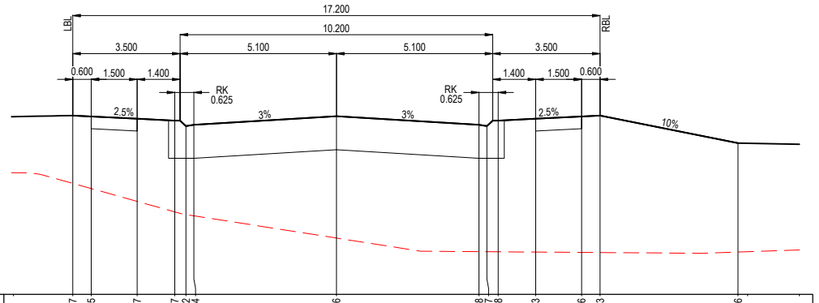
DATUM19.0

| | | |

LEGEND

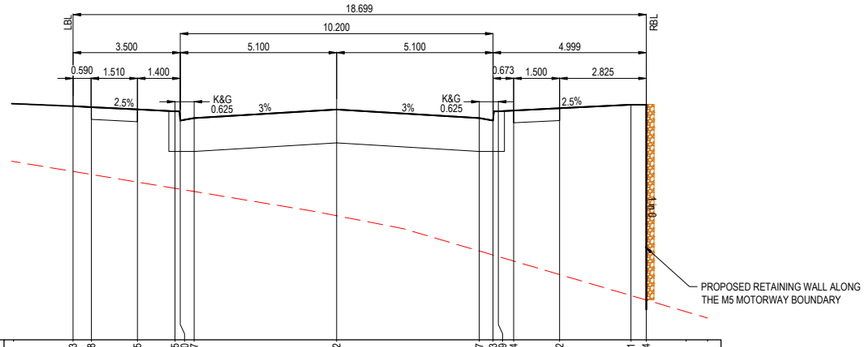
EXISTING SURFACE

DESIGN SURFACE



DATUM5.0

| | | |


LBL
RBL
18.699
10.200
3.500
5.100
5.100
4.999
0.590
1.510
1.400
0.673
1.500
2.825
2.5%
K&G
0.625
3%
3%
K&G
0.625
2.5%
1 in 0
PROPOSED RETAINING WALL ALONG
THE M5 MOTORWAY BOUNDARY

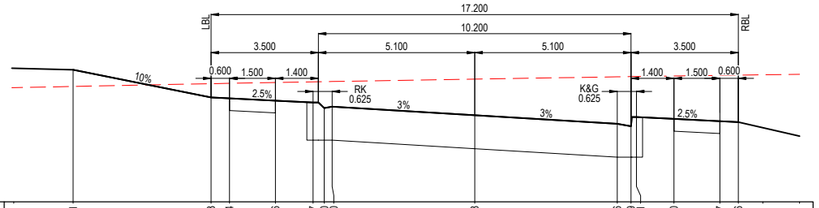
DATUM3.0

| | | |

LEGEND

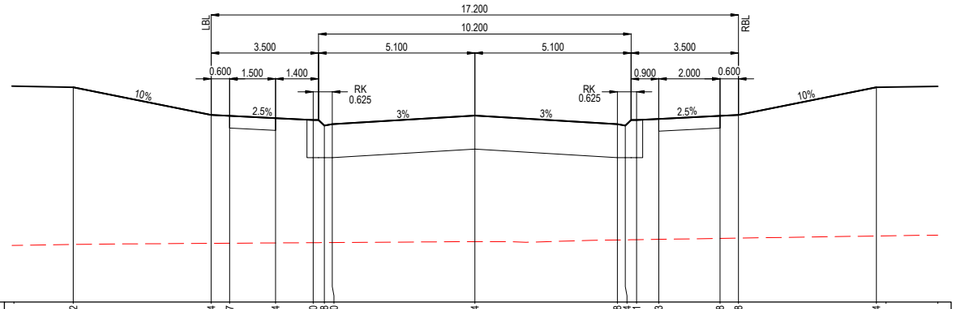
EXISTING SURFACE

DESIGN SURFACE



DATUM5.0

| | | |


LBL
RBL
17.200
10.200
3.500
5.100
5.100
3.500
0.600
1.500
1.400
0.900
2.000
0.600
RK
0.625
RK
0.625
10%
2.5%
3%
3%
2.5%
10%

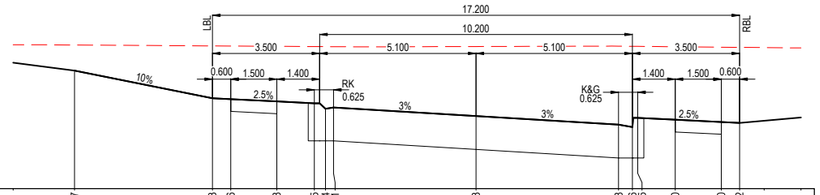
DATUM6.0

| | | |

LEGEND

EXISTING SURFACE

DESIGN SURFACE



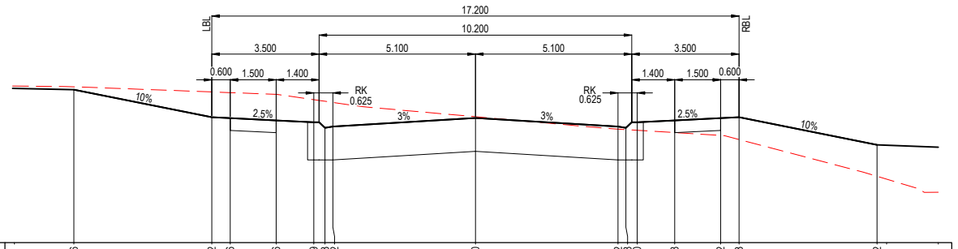
DATUM5.0

| | | |

LEGEND

EXISTING SURFACE

DESIGN SURFACE



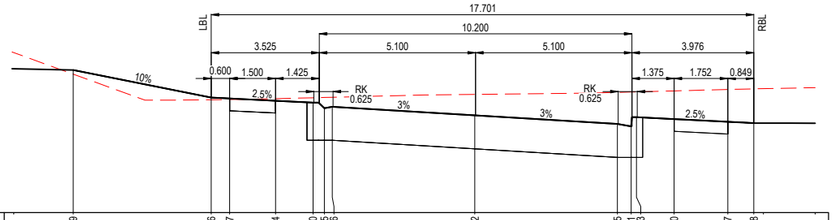
DATUM11.0

| | | |

LEGEND

EXISTING SURFACE

DESIGN SURFACE



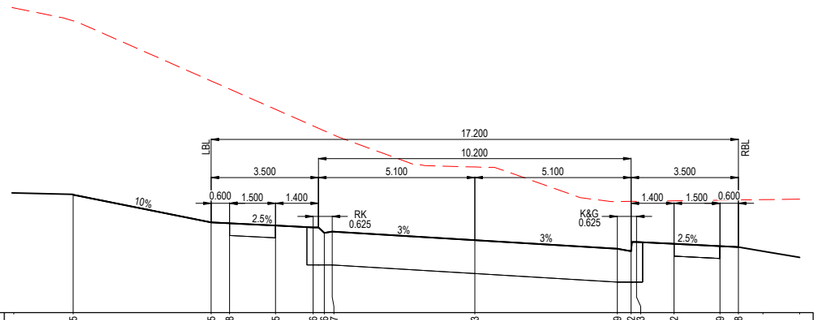
DATUM5.0

| | | |

LEGEND

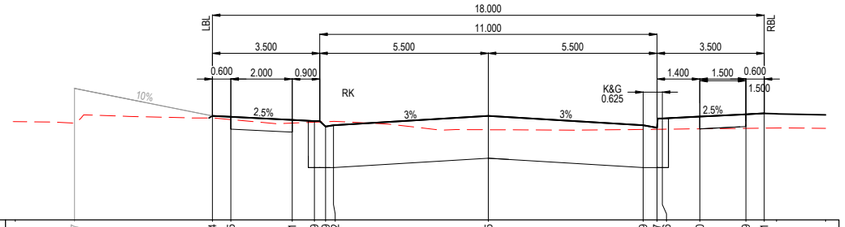
EXISTING SURFACE

DESIGN SURFACE



DATUM5.0

| | | |


LBL
RBL
18.000
11.000
3.500
5.500
5.500
3.500
0.600
2.000
0.900
RK
K&G
0.625
1.400
1.500
0.600
1.500
10%
2.5%
3%
3%
2.5%

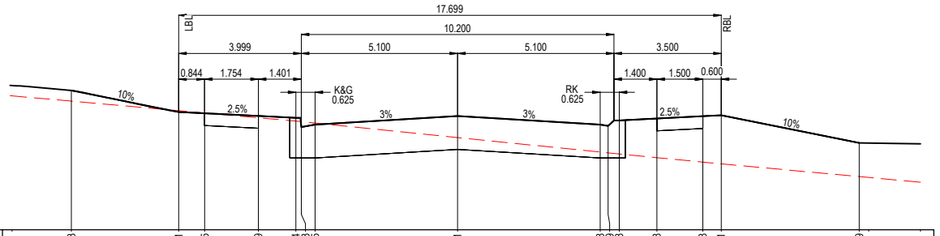
DATUM18.0

| | | |

LEGEND

EXISTING SURFACE

DESIGN SURFACE



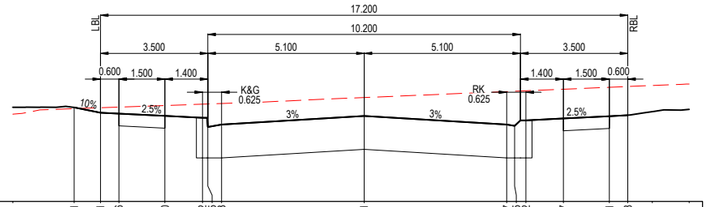
DATUM14.0

| | | |

LEGEND

EXISTING SURFACE

DESIGN SURFACE



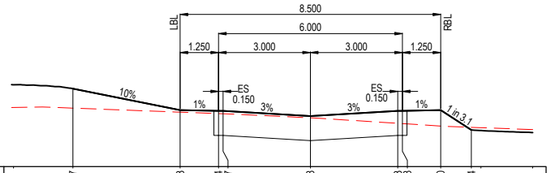
DATUM19.0

| | | |

LEGEND

EXISTING SURFACE

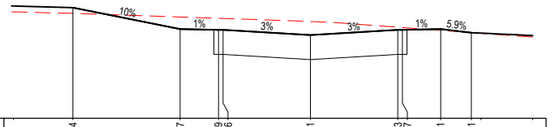
DESIGN SURFACE



DATUM19.0

CUT - / FILL +		0.317		0.033	0.044 0.047	0.028		0.203 0.208	0.260	-0.044				
DESIGN SURFACE		20.271		19.921	19.908 19.908	19.823		19.908 19.908	19.921	19.596				
EXISTING SURFACE	19.963	19.953		19.887	19.864 19.861	19.795		19.705 19.701	19.661	19.640 19.637		19.603		
OFFSET	-9.750	-7.750		-4.250	-3.000 -2.850	0.000		2.850 3.000	4.250	5.250 5.400		7.250		

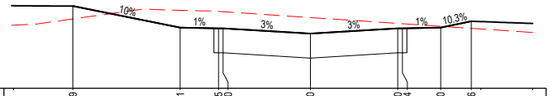
CH 60.000



DATUM18.0

CUT - / FILL +		0.094		-0.197	-0.188 -0.186	-0.221		-0.043 -0.037	0.021	-0.001				
DESIGN SURFACE		19.805		19.455	19.442 19.442	19.357		19.442 19.442	19.455	19.396				
EXISTING SURFACE	19.736	19.711		19.652	19.631 19.629	19.578		19.485 19.480	19.434	19.397 19.392		19.326		
OFFSET	-9.750	-7.750		-4.250	-3.000 -2.850	0.000		2.850 3.000	4.250	5.250 5.400		7.250		

CH 40.000



DATUM18.0

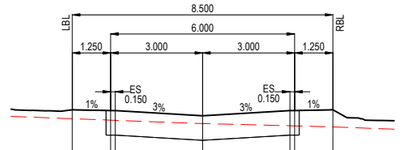
CUT - / FILL +		0.209		-0.281	-0.275 -0.270	-0.260		-0.080 -0.074	-0.020	0.116				
DESIGN SURFACE		19.339		18.989	18.977 18.977	18.891		18.977 18.977	18.989	19.092				
EXISTING SURFACE	19.027	19.130		19.270	19.252 19.247	19.152		19.056 19.051	19.009	18.976 18.971		18.907		
OFFSET	-9.750	-7.750		-4.250	-3.000 -2.850	0.000		2.850 3.000	4.250	5.250 5.400		7.250		

CH 20.000

DATUM18.0

CUT - / FILL +				0.018	0.027 0.029	-0.135		-0.110 -0.106	-0.058					
DESIGN SURFACE				18.726	18.713 18.713	18.628		18.713 18.713	18.726					
EXISTING SURFACE		18.752		18.714 18.708	18.687 18.684	18.763		18.824 18.820	18.784	18.719		18.668		
OFFSET	-6.250		-4.600 -4.250		-3.000 -2.850	0.000		2.850 3.000	4.250	5.400		6.250		

CH 8.699



DATUM19.0

CUT - / FILL +				0.145	0.156 0.159	0.126		0.248 0.250	0.279					
DESIGN SURFACE				20.026	20.013 20.013	19.928		20.013 20.013	20.026					
EXISTING SURFACE		19.918		19.887 19.880	19.857 19.854	19.801		19.765 19.763	19.746	19.725		19.710		
OFFSET	-6.250		-4.600 -4.250		-3.000 -2.850	0.000		2.850 3.000	4.250	5.400		6.250		

CH 64.499

LANE 1 - ROAD CROSS SECTIONS

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A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

HORIZ. 1:100 0 1 2 4 6

VERT. 1:50 0 0.5 1 2 3

SCALE AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	L.S
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
DA Number	-

Beveridge Williams
Development & Infrastructure Consultants
Level 4, LPC House, Suite 4.05, 3 Fordham way, Oran Park NSW 2570
ph: 02 46255055
www.beveridgewilliams.com.au

Project Details	WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA
Drawing Title	ROAD CROSS SECTIONS STAGE 5 - LANE 1

Sheet 73 of 145

Scale 1:100 H 1:50 V @ A1

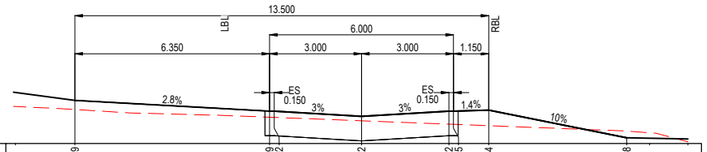
Project Ref	Stage No	Drawing No	Rev
2301879	321	232	B

F:\synergy\temp\12dSynergy\12dSynergyServerService\3192\a0aac392-9e58-408d-ab3d-b9bfe4405e2f\2301879-321-200-RXS.dwg

LEGEND

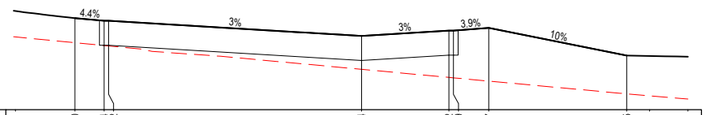
EXISTING SURFACE

DESIGN SURFACE



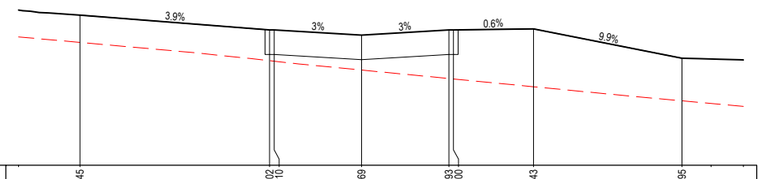
DATUM16.0																							
CUT - / FILL +		0.149			0.099 0.102		0.072		0.212 0.215		0.254				-0.108								
DESIGN SURFACE		16.702			16.527 16.527		16.441		16.527 16.527		16.543				16.093								
EXISTING SURFACE	16.604	16.554			16.428 16.425		16.370		16.315 16.312		16.290				16.202	16.174	16.027						
OFFSET	-11.352	-9.352			-3.000 -2.850		0.000		2.850 3.000		4.150				8.650	9.400	10.650						

CH 40.964



DATUM15.0																							
CUT - / FILL +		0.400		0.404 0.412			0.544		0.762 0.769		0.867				0.625								
DESIGN SURFACE		16.493		16.451 16.451			16.203		16.269 16.269		16.334				15.884								
EXISTING SURFACE	16.189	16.092		16.046 16.039			15.659		15.527 15.520		15.467				15.259	15.227	15.174						
OFFSET	-11.350	-9.350		-8.400 -8.250			0.000		2.850 3.000		4.150				8.650	9.400	10.650						

CH 20.000



DATUM14.0																							
CUT - / FILL +		0.445			0.502 0.510		0.589		0.793 0.800		0.943				0.695								
DESIGN SURFACE		16.448			16.207 16.207		16.121		16.207 16.207		16.223				15.746								
EXISTING SURFACE	16.092	16.003			15.705 15.697		15.552		15.414 15.407		15.280				15.050	15.007	14.959						
OFFSET	-11.188	-9.188			-3.000 -2.850		0.000		2.850 3.000		5.611				10.454	11.400	12.454						

CH 12.782

LANE 2 - ROAD CROSS SECTIONS

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REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

HORIZ. 1:100 0 1 2 4 6

VERT. 1:50 0 0.5 1 2 3

SCALE AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	L.S
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
DA Number	-

Beveridge Williams
Development & Infrastructure Consultants
Level 4, LPC House, Suite 4.05, 3 Fordham way
Oran Park NSW 2570
ph: 02 46255055
www.beveridgewilliams.com.au

Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: ROAD CROSS SECTIONS
STAGE 5 - LANE 2

Sheet 74 of 145

Scale 1:100 H 1:50 V @ A1

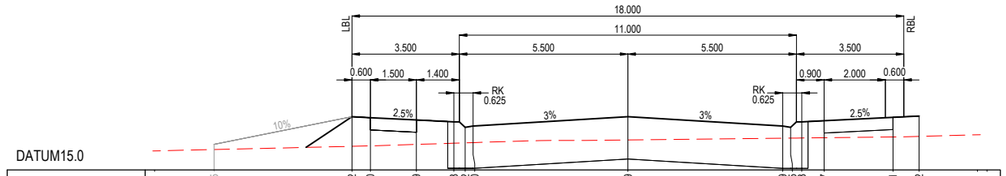
Project Ref	Stage No	Drawing No	Rev
2301879	321	233	B

F:\synergytemp\12d\Synergy\12dSynergyServerService\3192a0aac392-9e58-408d-ab3d-b9bfe4405e2f\2301879-321-200-RXS.dwg

LEGEND

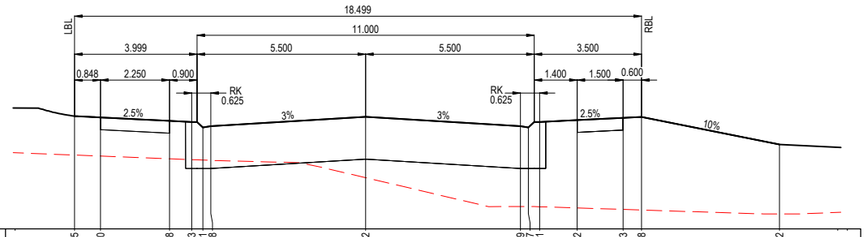
EXISTING SURFACE

DESIGN SURFACE



DATUM15.0

| | | |


18.499
11.000
LBL
RBL
3.999
5.500
5.500
3.500
0.848
2.250
0.900
1.400
1.500
0.600
RK 0.625
RK 0.625
2.5%
3%
3%
2.5%
10%

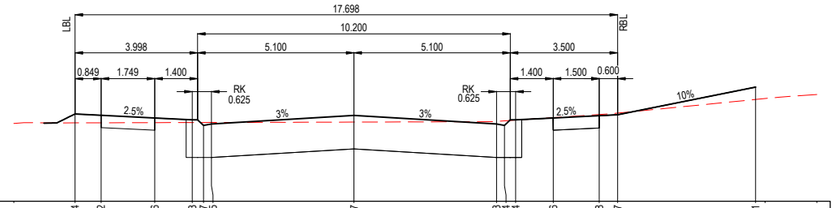
DATUM16.0

| | | |

LEGEND

EXISTING SURFACE

DESIGN SURFACE



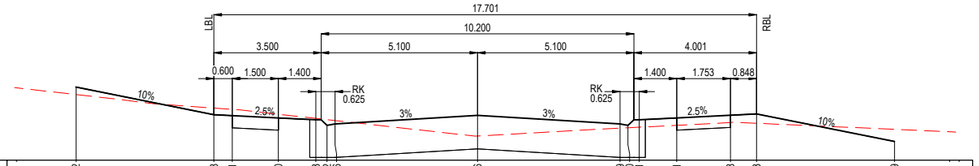
DATUM14.0

| | | |

LEGEND

EXISTING SURFACE

DESIGN SURFACE



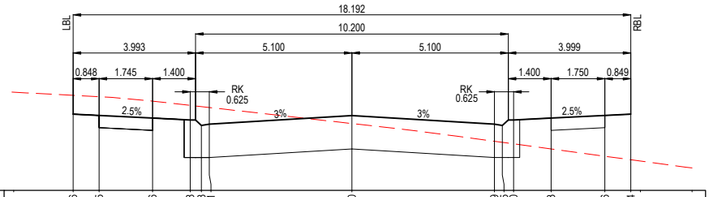
DATUM17.0

| | | |

LEGEND

EXISTING SURFACE

DESIGN SURFACE



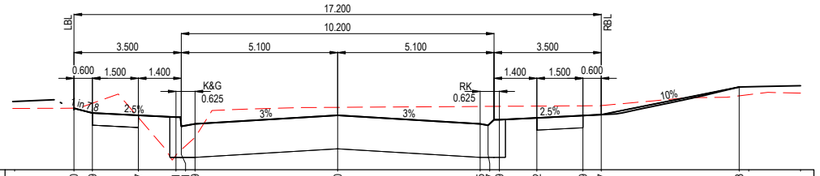
DATUM17.0

| | | |

LEGEND

EXISTING SURFACE

DESIGN SURFACE



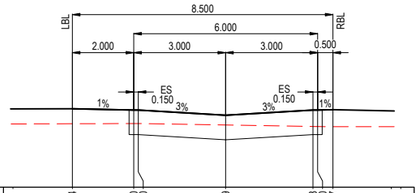
DATUM14.0

| | | |

LEGEND

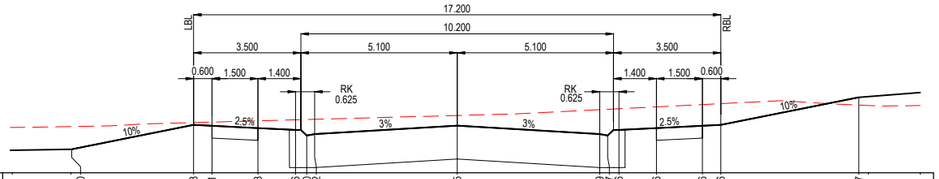
EXISTING SURFACE

DESIGN SURFACE



DATUM19.0

| | | |


LBL
RBL
17.200
10.200
3.500
5.100
5.100
3.500
0.600
1.500
1.400
1.400
1.500
0.600
RK
0.625
RK
0.625
10%
2.5%
3%
3%
2.5%
10%

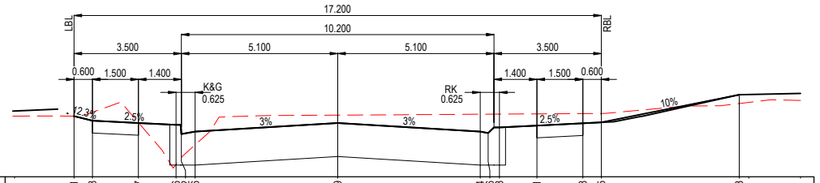
DATUM12.0

| | | |

LEGEND

EXISTING SURFACE

DESIGN SURFACE



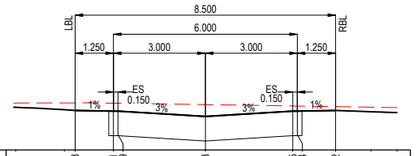
DATUM14.0

| | | |

LEGEND

EXISTING SURFACE

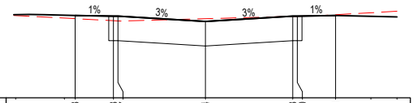
DESIGN SURFACE



DATUM11.0

CUT - / FILL +		-0.123	-0.131 -0.129		-0.193		-0.085 -0.084	-0.062	
DESIGN SURFACE		11.644	11.632 11.632		11.546		11.632 11.632	11.644	
EXISTING SURFACE	11.764	11.766 11.767	11.762 11.761		11.739		11.717 11.716	11.706	11.697	11.690
OFFSET	-6.250	-4.600 -4.250	-3.000 -2.850		0.000		2.850 3.000	4.250	5.400	6.250

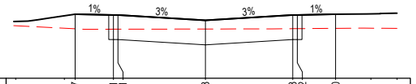
CH 60.000



DATUM11.0

CUT - / FILL +		0.053	0.073 0.077		-0.044		0.003 0.000	-0.011	
DESIGN SURFACE		12.343	12.331 12.331		12.245		12.331 12.331	12.343	
EXISTING SURFACE	12.342	12.299 12.290	12.298 12.294		12.289		12.328 12.330	12.355	12.387	12.411
OFFSET	-6.250	-4.600 -4.250	-3.000 -2.850		0.000		2.850 3.000	4.250	5.400	6.250

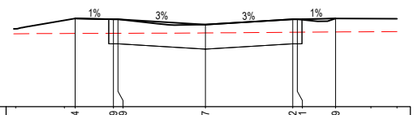
CH 40.000



DATUM12.0

CUT - / FILL +		0.237	0.231 0.231		0.143		0.223 0.222	0.230	
DESIGN SURFACE		13.042	13.030 13.030		12.944		13.030 13.030	13.042	
EXISTING SURFACE	12.856	12.814 12.805	12.798 12.799		12.802		12.807 12.807	12.812	12.815	12.811
OFFSET	-6.250	-4.600 -4.250	-3.000 -2.850		0.000		2.850 3.000	4.250	5.400	6.250

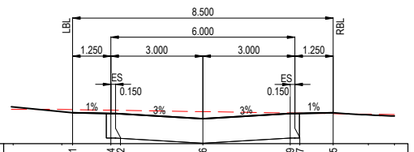
CH 20.000



DATUM12.0

CUT - / FILL +		0.244	0.229 0.229		0.137		0.212 0.211	0.219	
DESIGN SURFACE		13.437	13.425 13.425		13.339		13.425 13.425	13.437	
EXISTING SURFACE	13.189	13.193 13.193	13.196 13.196		13.202		13.213 13.213	13.218	13.222	13.224
OFFSET	-6.250	-4.600 -4.250	-3.000 -2.850		0.000		2.850 3.000	4.250	5.400	6.250

CH 8.702



DATUM11.0

CUT - / FILL +		-0.051	-0.054 -0.052		-0.116		-0.007 -0.007	0.015	
DESIGN SURFACE		11.504	11.492 11.492		11.406		11.492 11.492	11.504	
EXISTING SURFACE	11.559	11.558 11.555	11.546 11.544		11.522		11.500 11.499	11.490	11.481	11.474
OFFSET	-6.250	-4.600 -4.250	-3.000 -2.850		0.000		2.850 3.000	4.250	5.400	6.250

CH 63.995

LANE 3 - ROAD CROSS SECTIONS

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A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

HORIZ. 1:100 0 1 2 4 6

VERT. 1:50 0 0.5 1 2 3

SCALE AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	L.S
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
DA Number	-

Beveridge Williams
Development & Infrastructure Consultants
Level 4, LPC House, Suite 4.05, 3 Fordham way, Oran Park NSW 2570
ph: 02 46255055
www.beveridgewilliams.com.au

Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: ROAD CROSS SECTIONS
STAGE 7 - LANE 3

Sheet 84 of 145

Scale: 1:100 H 1:50 V @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	243	B

F:\synergy\temp\12dSynergy\12dSynergyServerService\3192\a0aac392-9e58-408d-ab3d-b9bfe4405e2f\2301879-321-200-RXS.dwg

LEGEND:

INDICATIVE RESIDENTIAL LOT BOUNDARY. SUBJECT TO FURTHER DA APPROVAL

WARNING

BEWARE OF UNDERGROUND SERVICES

The locations of underground services are approximate only and their exact position should be proven on site.
No guarantee is given that all existing services are shown.
Locate all underground services before commencement of works

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A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

0 15 30 60 90 120
SCALE 1:1500 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	L.S
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
DA Number	-

Beveridge Williams
Development & Infrastructure Consultants
Level 4, LPC House, Suite 4.05, 3 Fordham way
Oran Park NSW 2570
ph: 02 46255055
www.beveridgewilliams.com.au

Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: OVERALL SIGNAGE & LINE MARKING PLAN

Sheet 85 of 145

Scale 1:1500 @ A1

N

Project Ref	Stage No	Drawing No	Rev
2301879	321	250	B

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NOTES
1. LINEMARKING TO BE EXTENDED AT LEAST 6m FROM THE TANGENT POINT
2. LINEMARKING IN ACCORDANCE WITH AS1742.
3. ALL STREET NAME SIGNS AT INTERSECTIONS TO INCLUDE RELEVENT STREET NUMBERING.
4. ALL LINE MARKING PAINT SHALL BE LONG LIFE TYPE. LATERAL WORKS AND ARROWS BEING COLD APPLIED PLASTIC TROWELLED INTO PLACE (MATERIAL DEGADUR PLASTELINE) AND LONGITUDINAL LINES BEING EXTRUDED THERMOPLASTIC MATERIAL.
5. ROAD CLOSED SIGNS ARE TEMPORARY AND TO BE REMOVED AS NEW STAGES ARE CONSTRUCTED

LEGEND:

INDICATIVE RESIDENTIAL LOT BOUNDARY. SUBJECT TO FURTHER DA APPROVAL

BULLECOURT AVENUE

SINAI AVENUE

ASHFORD AVENUE

MILPERRA RESERVE

NORTHERN PARK

LANE 4

ROAD 8

ROAD CLOSED G9-20

D4-5

D4-1-2A

WALK 1

ROAD 10

LANE 3

W1-3(L)

W1-3(R)

G2-3 LANE 3 ROAD 10

G2-3 ROAD 8 LANE 5

G2-3 ROAD 8 ROAD 10

G2-3 ROAD 2 ROAD 2 ROAD 8

GIVE WAY R1-2A

ROAD 2B

D 2A

STAGE 6

STAGE 7

WARNING
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REV	DESCRIPTION	DATE	DRN.	APP.
B	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

0 5 10 20 30 40
SCALE 1:500 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
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DA Number	-

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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA

Drawing Title: SIGNAGE & LINE MARKING PLANS SHEET 1 OF 5

Sheet 86 of 145

Scale 1:500 @ A1

N

Project Ref	Stage No	Drawing No	Rev
2301879	321	251	B

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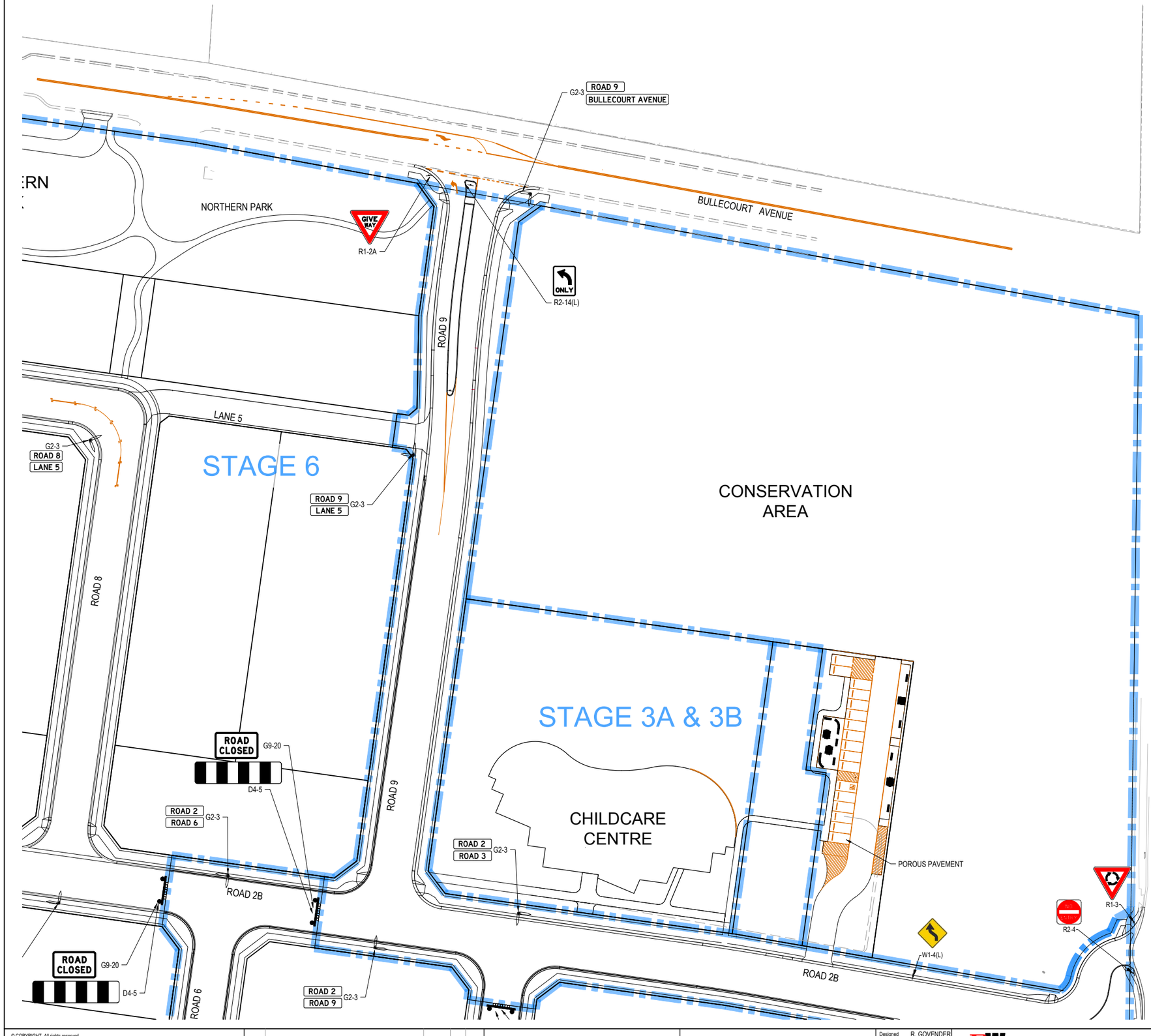

NOTES
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mirvac

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SCALE 1:500 AT A1 SIZE

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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: SIGNAGE & LINE MARKING PLANS
SHEET 2 OF 5

Sheet 87 of 145
Scale 1:500 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	252	B

N

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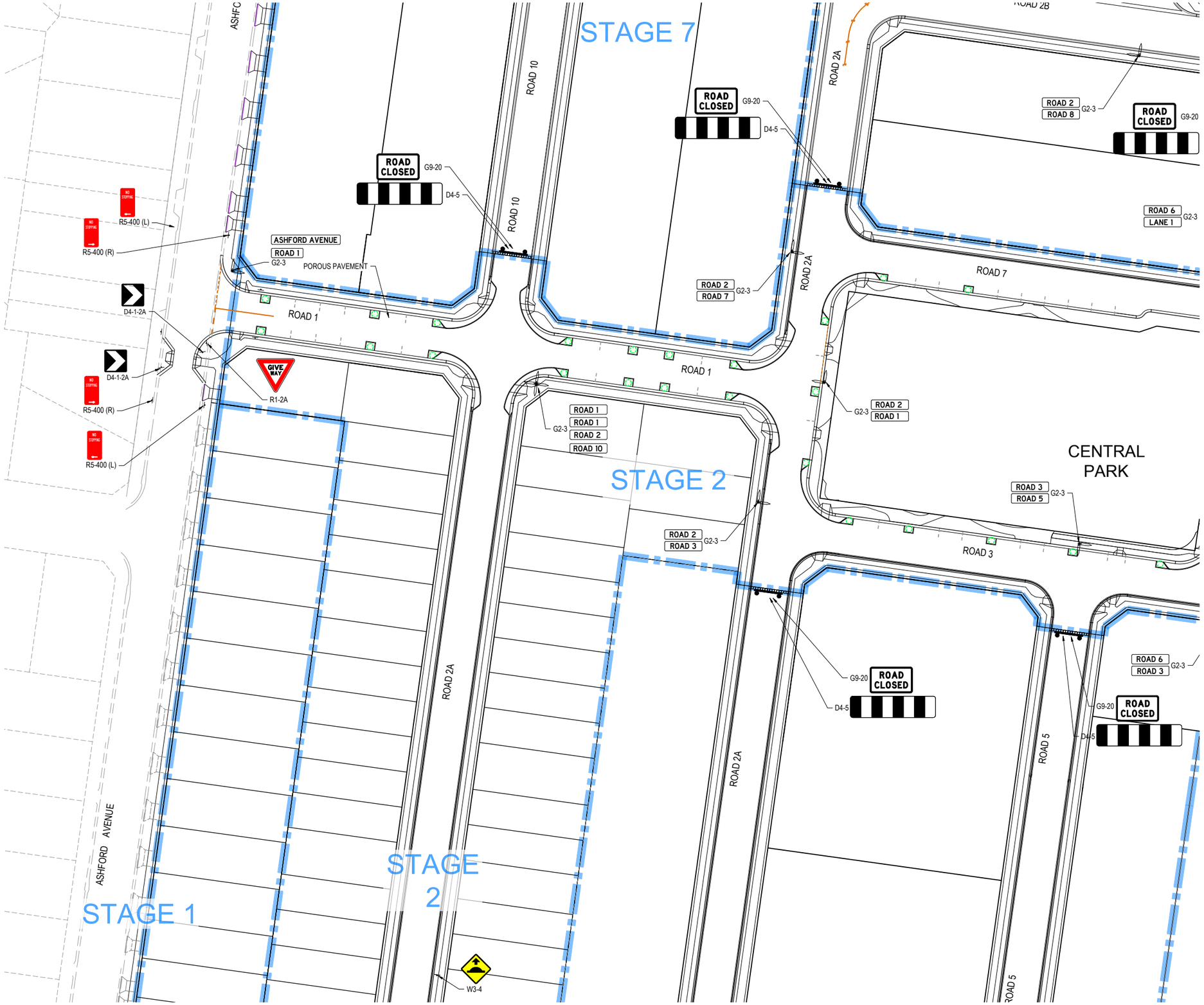

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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: SIGNAGE & LINE MARKING PLANS
SHEET 3 OF 5

Sheet 88 of 145

Scale 1:500 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	253	B

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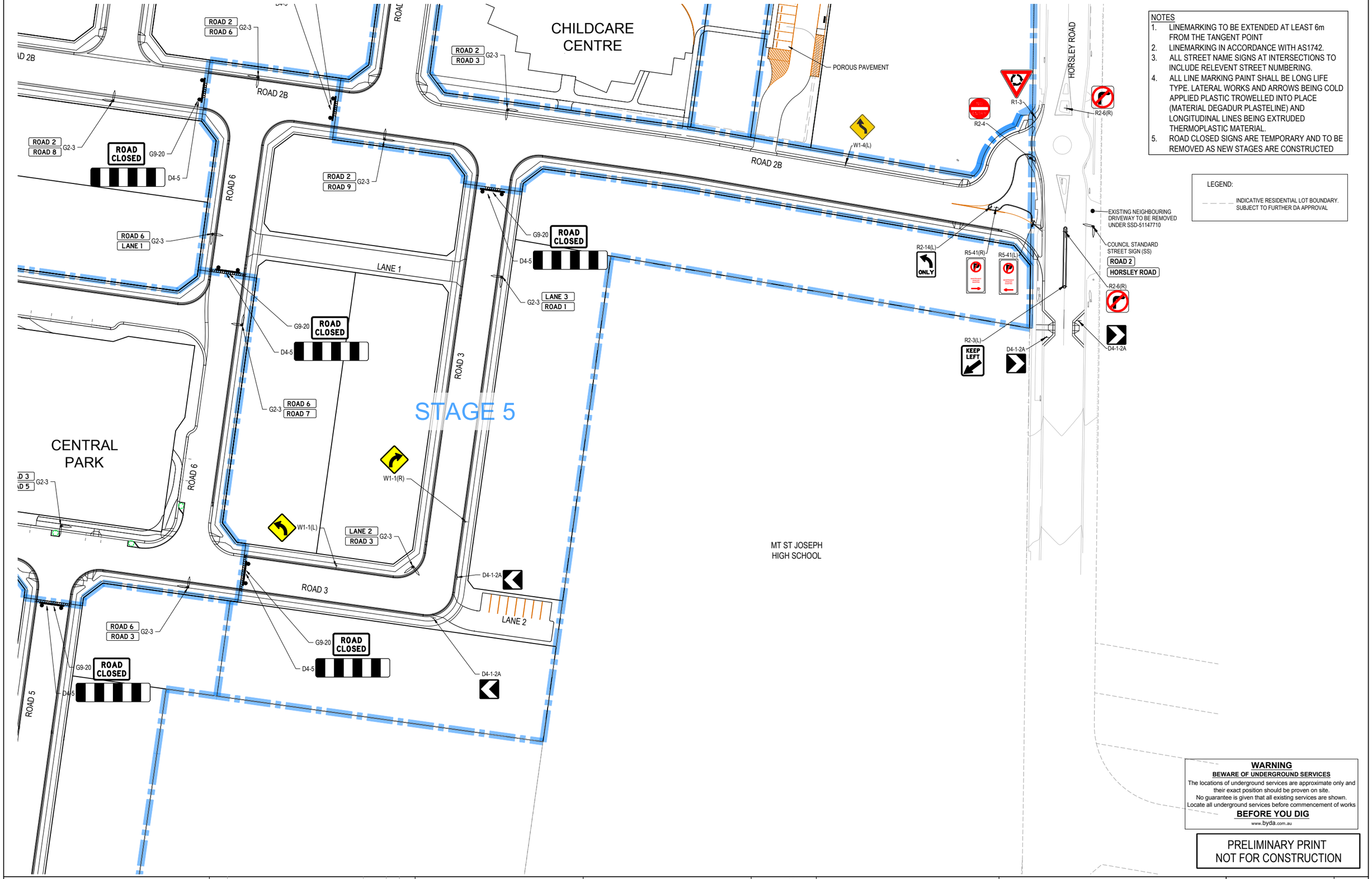

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A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

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Drawn	D.RAFTER
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: SIGNAGE & LINE MARKING PLANS
SHEET 4 OF 5

Sheet 89 of 145

Scale 1:500 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	254	B

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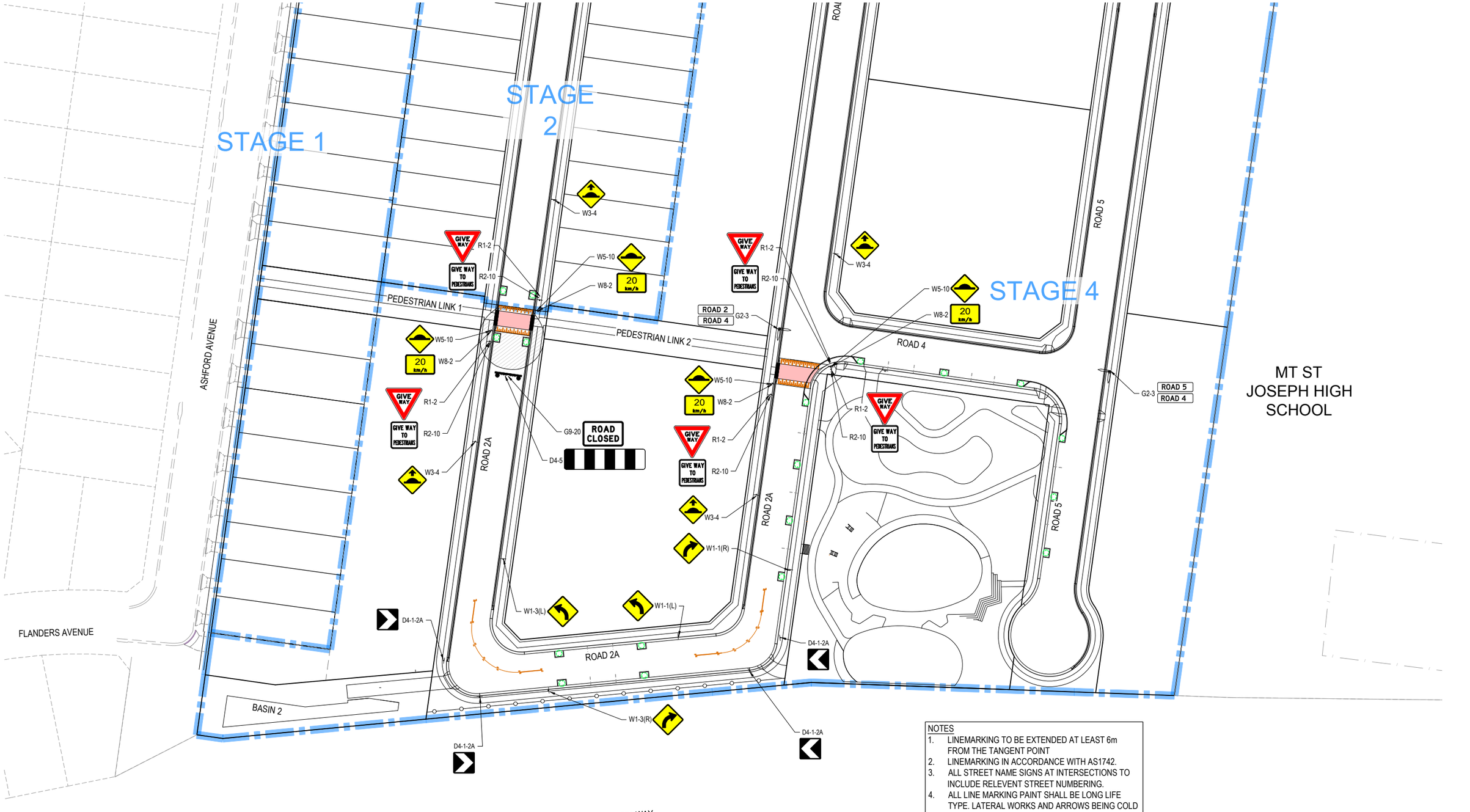

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REV	DESCRIPTION	DATE	DRN.	APP.
C	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
B	SIGNAGE ADDED	23.10.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

mirvac

0 5 10 20 30 40
SCALE 1:500 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
DA Number	-

Beveridge Williams
Development & Infrastructure Consultants
Level 4, LPC House, Suite 4.05, 3 Fordham way, Oran Park NSW 2570
ph: 02 46255055
www.beveridgewilliams.com.au

Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: SIGNAGE & LINE MARKING PLANS
SHEET 5 OF 5

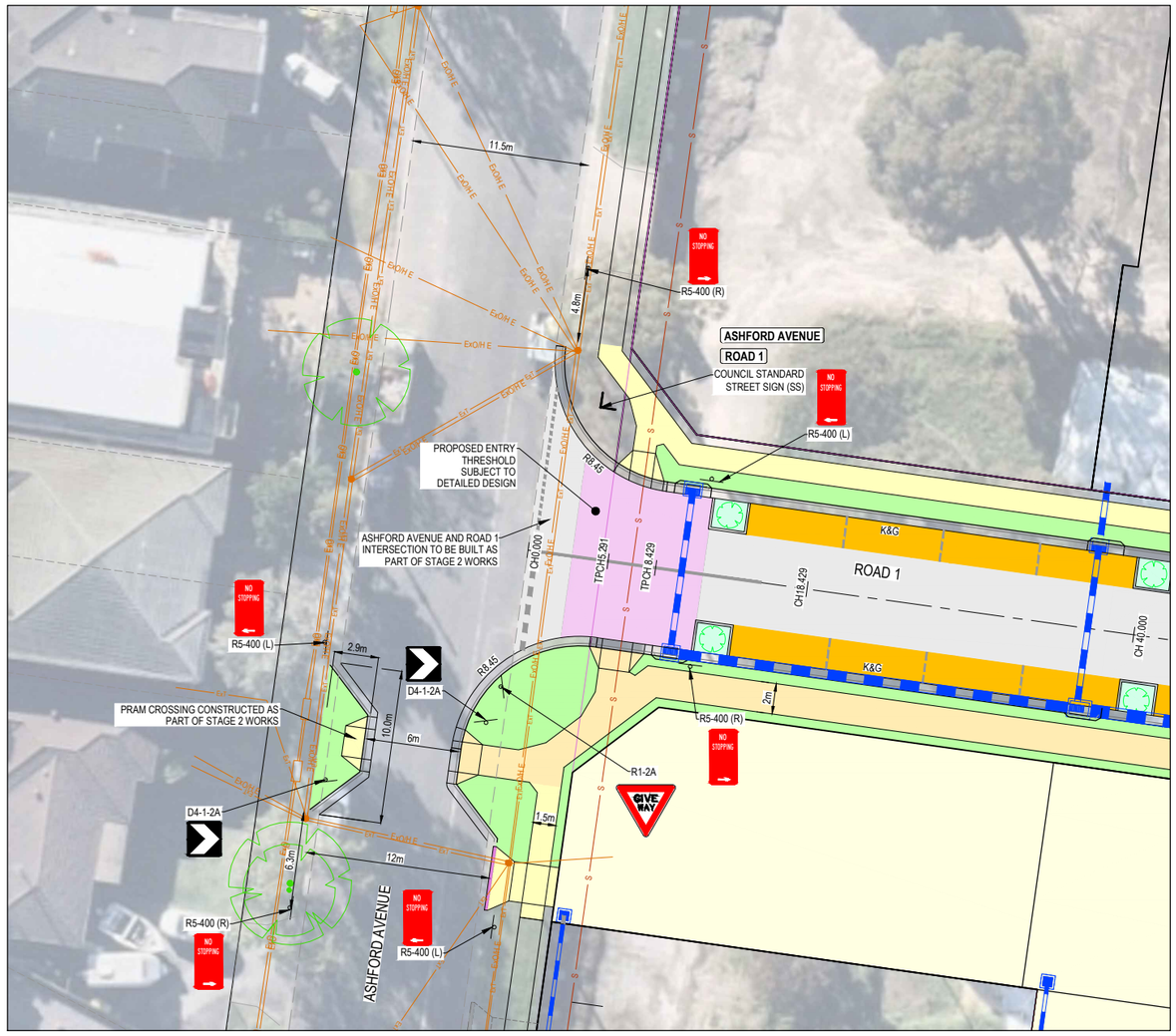
Sheet 90 of 145

Scale 1:500 @ A1

N

Project Ref	Stage No	Drawing No	Rev
2301879	321	255	C

F:\synergytemp\12dSynergy\12dSynergyServerService\3192a0aac392-9e58-408d-ab3d-b9bfe4405e2f\2301879-321-250-LMP.dwg



LEGEND

- STORMWATER PIPE & PIT
- SEWER & MAINTENANCE STRUCTURES
- EXISTING ELECTRICITY (UNDERGROUND)
- EXISTING ELECTRICITY (OVERHEAD)
- EXISTING GAS
- EXISTING OPTIC FIBRE
- EXISTING TELECOMMUNICATIONS
- EXISTING WATER
- EXISTING RECYCLED WATER
- EXISTING TREE TO BE REMOVED AND REPLACED AS PER ARBORIST ADVICE DUE TO IMPACTS BY UNDERGROUND ELECTRICAL WORKS
- EXISTING TREE
- PROPOSED FOOTPATH (1.5m)
- PROPOSED SHARED PATH (2.0m)
- PROPOSED NATURE STRIP
- ALTERNATIVE PAVEMENT DESIGN

LEGEND:

- INDICATIVE RESIDENTIAL LOT BOUNDARY. SUBJECT TO FURTHER DA APPROVAL

WARNING

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B	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

0 2 4 8 12 16

SCALE 1:200 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
DA Number	-

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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: INTERSECTION DETAILS
SHEET 1 OF 3

Sheet 91 of 145

Scale 1:200 @ A1

N

Project Ref	Stage No	Drawing No	Rev
2301879	321	300	B

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LEGEND

- STORMWATER PIPE & PIT
- SEWER & MAINTENANCE STRUCTURES
- ExE — EXISTING ELECTRICITY (UNDERGROUND)
- ExO/H E — EXISTING ELECTRICITY (OVERHEAD)
- ExG — EXISTING GAS
- ExO — EXISTING OPTIC FIBRE
- ExT — EXISTING TELECOMMUNICATIONS
- ExDW — EXISTING WATER
- ExNDW — EXISTING RECYCLED WATER
- EXISTING TREE TO BE REMOVED AND REPLACED AS PER ARBORIST ADVICE DUE TO IMPACTS BY UNDERGROUND ELECTRICAL WORKS
- EXISTING TREE
- PROPOSED FOOTPATH (1.5m)
- PROPOSED SHARED PATH (2.0m)
- PROPOSED NATURE STRIP
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LEGEND:

- INDICATIVE RESIDENTIAL LOT BOUNDARY. SUBJECT TO FURTHER DA APPROVAL

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REV	DESCRIPTION	DATE	DRN.	APP.
B	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

mirvac

0 2.5 5 10 15 20
SCALE 1:250 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
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DA Number	-

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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: INTERSECTION DETAILS
SHEET 2 OF 3

Sheet 92 of 145

Scale 1:250 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	301	B

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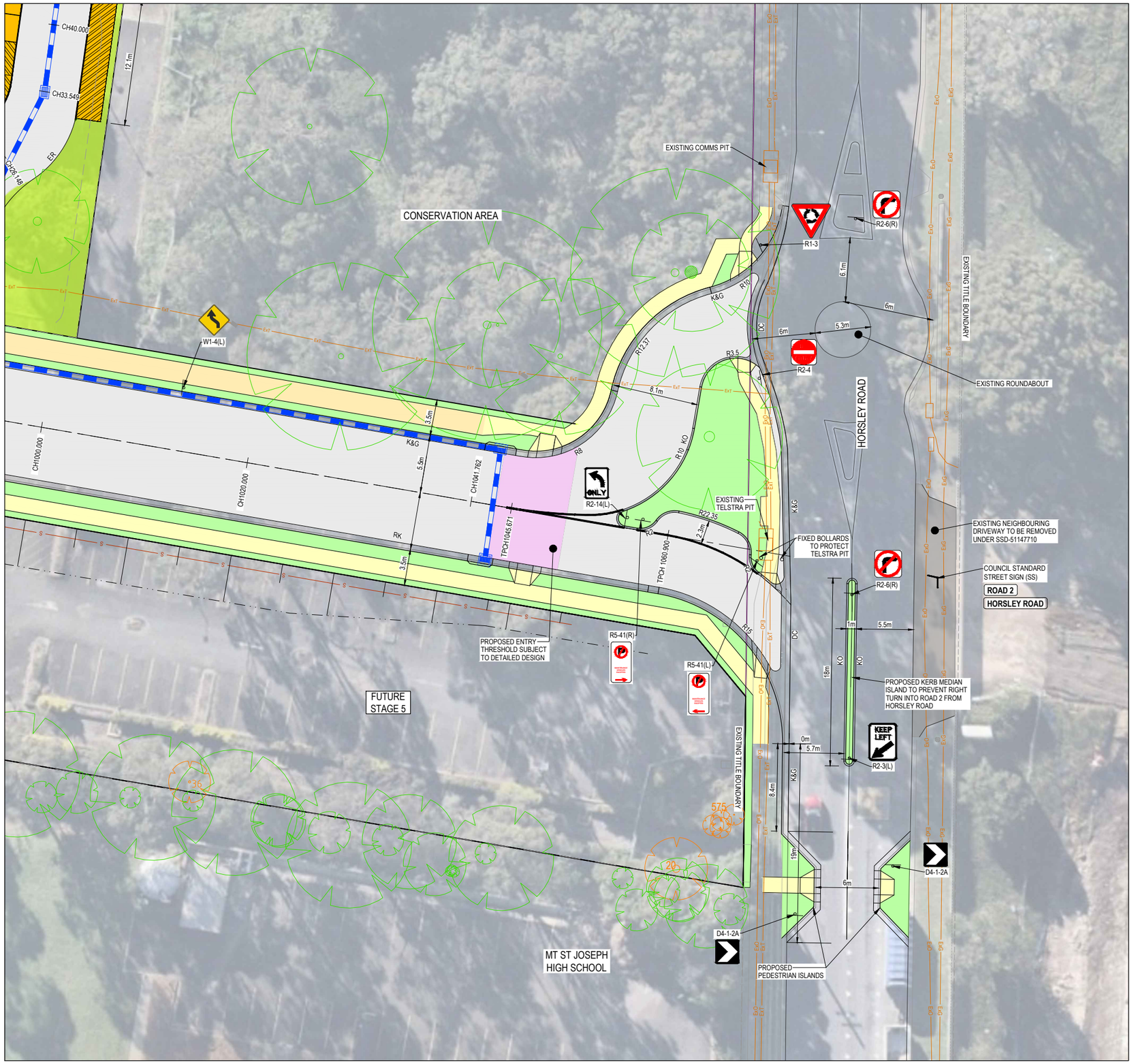

LEGEND

- STORMWATER PIPE & PIT
- SEWER & MAINTENANCE STRUCTURES
- EXISTING ELECTRICITY (UNDERGROUND)
- EXISTING ELECTRICITY (OVERHEAD)
- EXISTING GAS
- EXISTING OPTIC FIBRE
- EXISTING TELECOMMUNICATIONS
- EXISTING WATER
- EXISTING RECYCLED WATER
- EXISTING TREE TO BE REMOVED AND REPLACED AS PER ARBORIST ADVICE DUE TO IMPACTS BY UNDERGROUND ELECTRICAL WORKS
- EXISTING TREE
- PROPOSED FOOTPATH (1.5m)
- PROPOSED SHARED PATH (2.0m)
- PROPOSED NATURE STRIP
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REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

0 2 4 8 12 16
SCALE 1:200 AT A1 SIZE

Designed	R. GOVENDER
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Drawn	D.RAFTER
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: INTERSECTION DETAILS
SHEET 3 OF 3

Sheet 93 of 145

Scale 1:200 @ A1

N

Project Ref	Stage No	Drawing No	Rev
2301879	321	302	B

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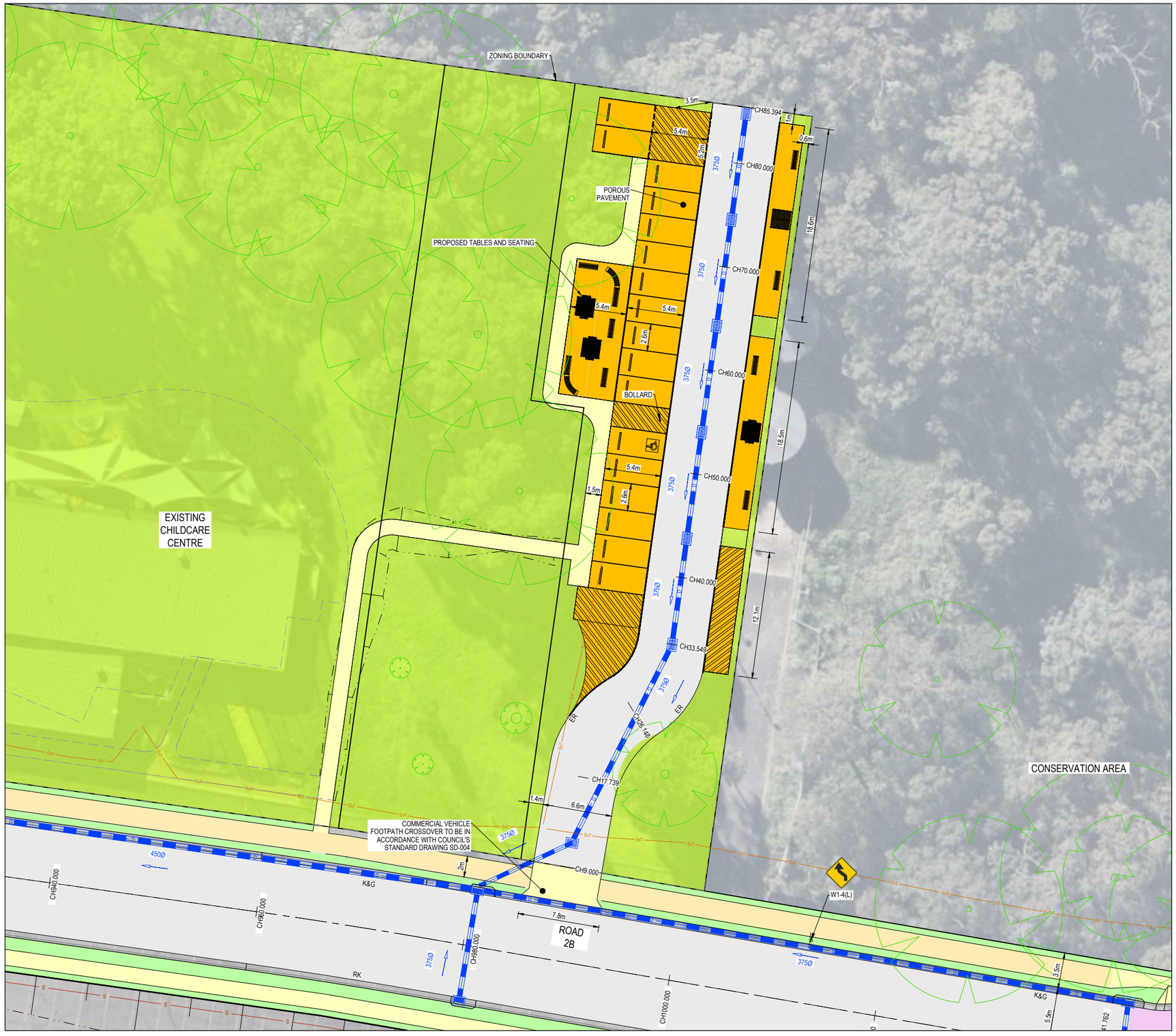

LEGEND

- STORMWATER PIPE & PIT
- SEWER & MAINTENANCE STRUCTURES
- EXISTING ELECTRICITY (UNDERGROUND)
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- EXISTING OPTIC FIBRE
- EXISTING TELECOMMUNICATIONS
- EXISTING WATER
- EXISTING RECYCLED WATER
- EXISTING TREE TO BE REMOVED AND REPLACED AS PER ARBORIST ADVICE DUE TO IMPACTS BY UNDERGROUND ELECTRICAL WORKS
- EXISTING TREE
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- PROPOSED NATURE STRIP
- ALTERNATIVE PAVEMENT DESIGN
- POROUS PAVEMENT

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C	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
B	CARPARK AMENDED	23.10.25	GN	SG
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: INTERSECTION DETAILS
CARPARK

Sheet 94 of 145

Scale 1:200 @ A1

N

Project Ref	Stage No	Drawing No	Rev
2301879	321	303	C

C:\12DWS\data\MELSQL01\Eng - 321_3578\Drawings\2301879-321-300-INT.dwg

WARNING
BEWARE OF UNDERGROUND SERVICES
The locations of underground services are approximate only and their exact position should be proven on site.
No guarantee is given that all existing services are shown.
Locate all underground services before commencement of works
BEFORE YOU DIG
www.byda.com.au

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REV	DESCRIPTION	DATE	DRN.	APP.
B	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

0 12.5 25 50 75 100
SCALE 1:1250 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
DA Number	-

Beveridge Williams
Development & Infrastructure Consultants
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA

Drawing Title: OVERALL RETAINING WALLS

Sheet 95 of 145

Scale 1:1250 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	400	B

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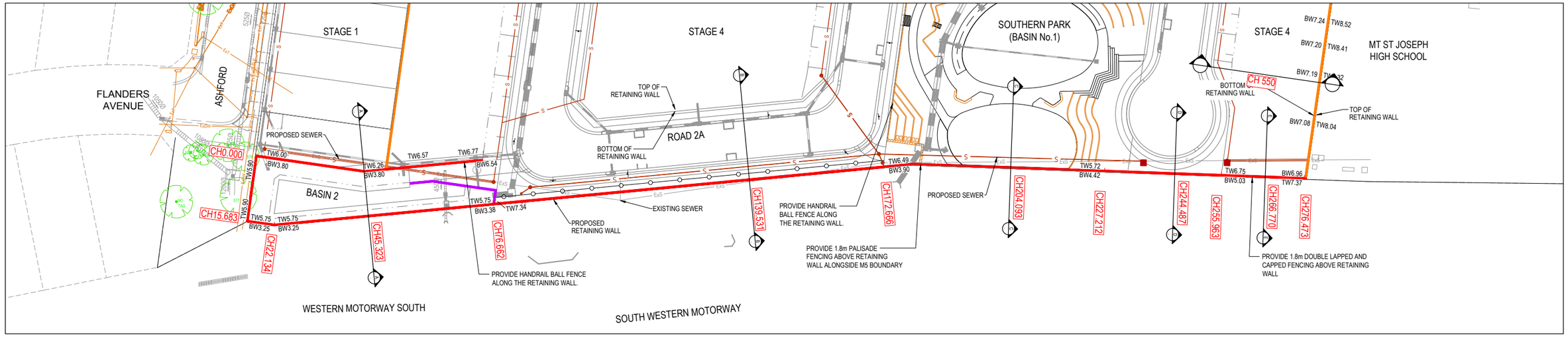
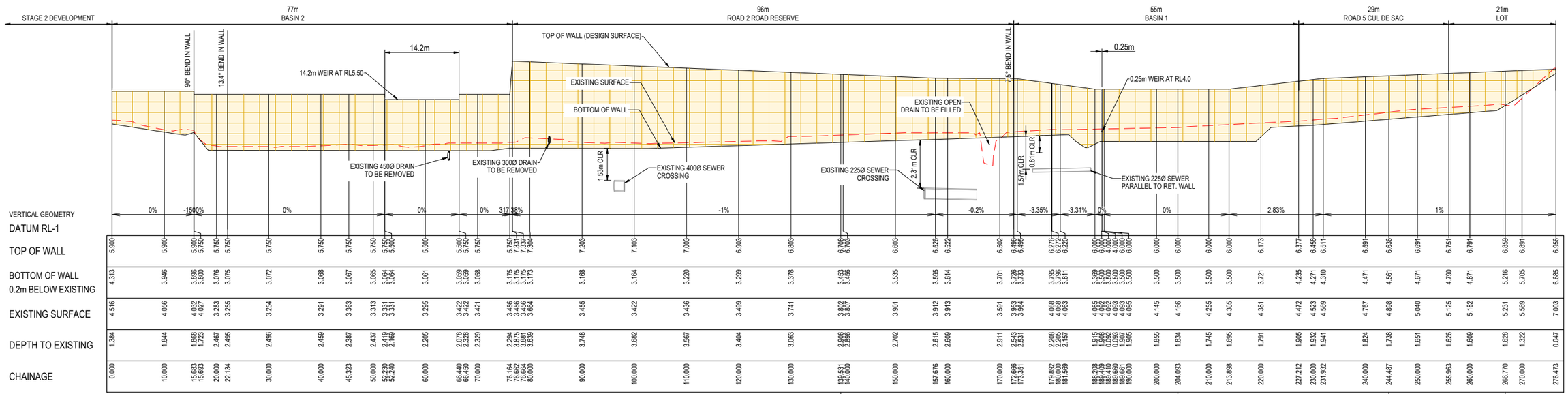


LAYOUT PLAN
SCALE 1:500 AT A1 SIZE

LEGEND - RETAINING WALLS

- POST & CONCRETE SLEEPER RETAINING WALL
- MASONRY BLOCK RETAINING WALL
- SANDSTONE BLOCK RETAINING WALL



RETAINING WALL LONGITUDINAL SECTION
SCALE H1:400 V1:100AT A1 SIZE

HORIZ. 1:400 0 4 8 16 24 32
VERT. 1:100 0 1 2 4 6 8
SCALE AT A1 SIZE

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0 5 10 20 30 40
SCALE 1:500 AT A1 SIZE

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Oran Park NSW 2570
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www.beveridgewilliams.com.au

Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: RETAINING WALL
ALONG SOUTH WESTERN MORTORWAY
LAYOUT & LONG-SECTION

Sheet 96 of 145
Scale 1:500 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	401	B

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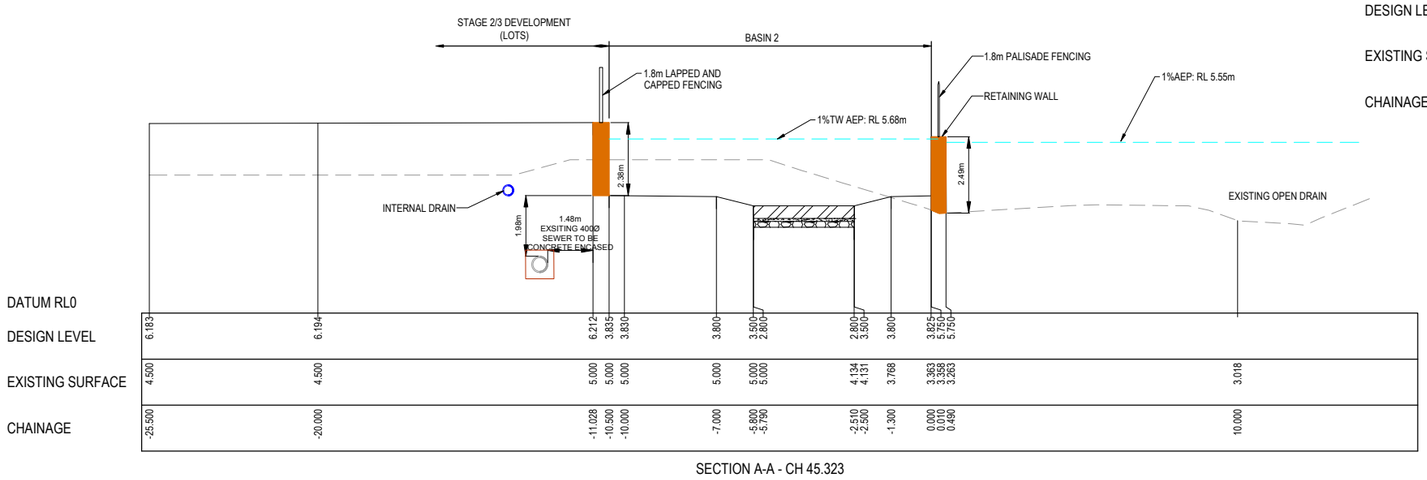
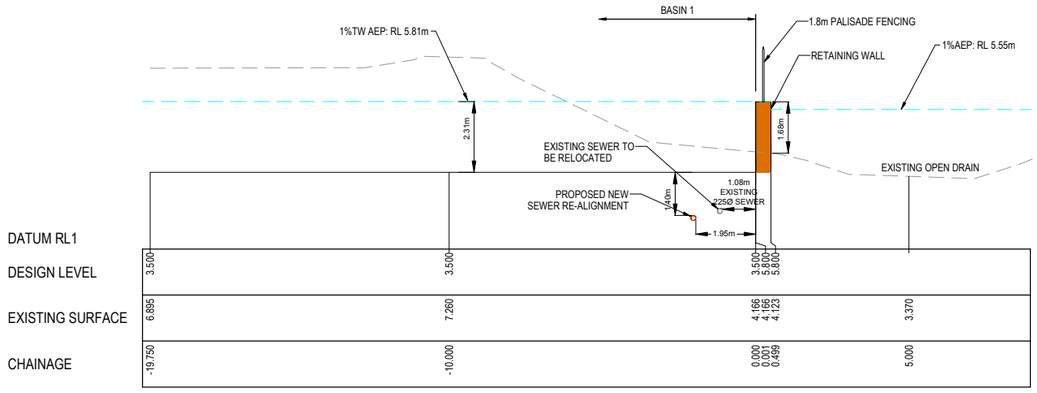
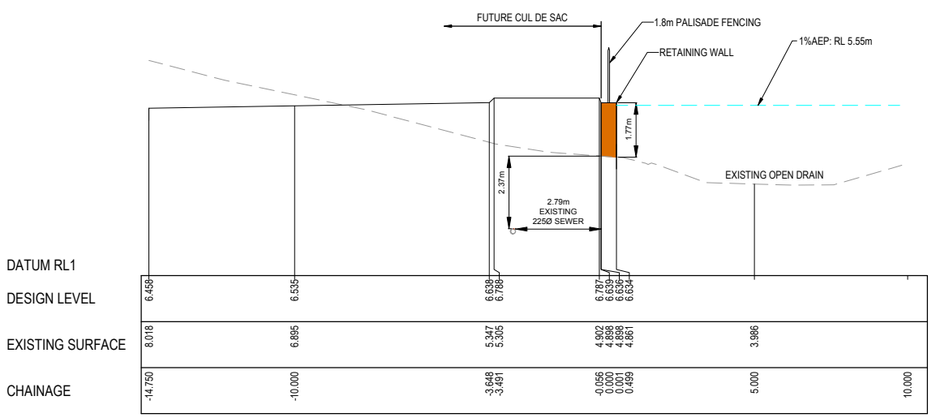


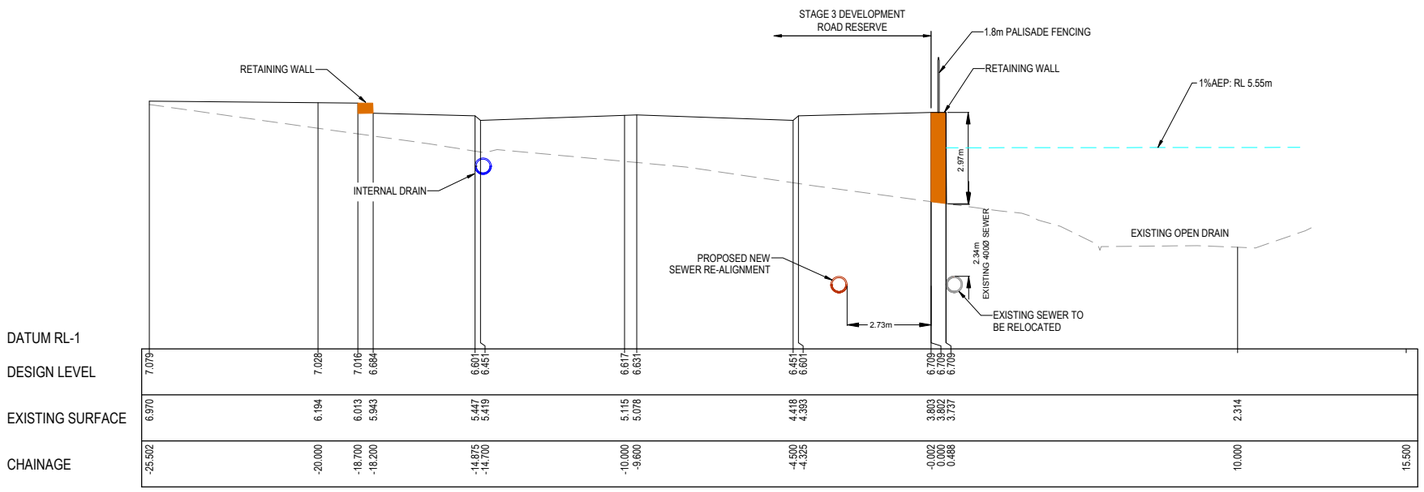
SECTION A-A - CH 45.323



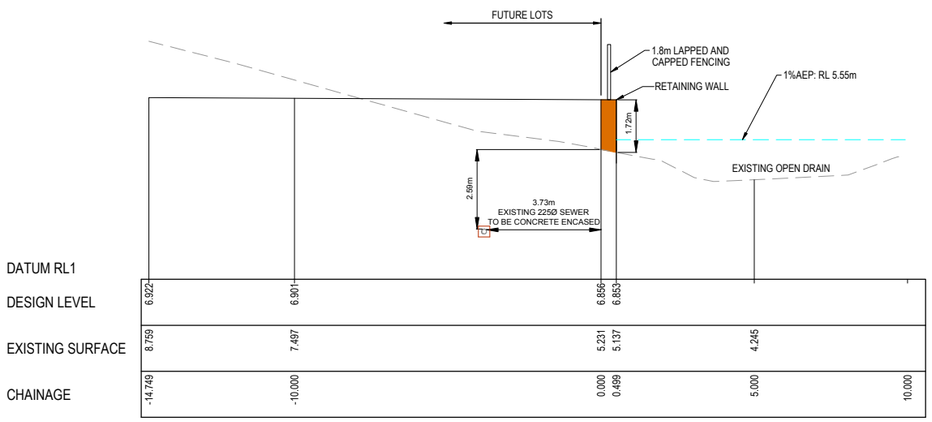
SECTION C-C - CH 204.093



SECTION D-D - CH 244.487



SECTION B-B - CH 139.531



SECTION E-E - CH 266.770

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REV	DESCRIPTION	DATE	DRN.	APP.

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0 5 10 20 30 40
SCALE 1:500 AT A1 SIZE

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Date	23.06.2025
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Date	07.11.25
Approved	S. FERGUSON
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Oran Park NSW 2570
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: RETAINING WALL CROSS SECTIONS

Sheet 97 of 145
Scale 1:500 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	402	B

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NOTE:
TEMPORARY OSD BASIN 1 TO BE CONSTRUCTED WITH STAGE 1 WORKS AND DECOMMISSIONED WITH STAGE 4 WORKS

ASHFORD AVENUE

STAGE 1

STAGE 2

FUTURE STAGE 4

1.5m D.E

1.2m D.E

1.5m D.E

900Ø

1200Ø

1200Ø

300Ø

150Ø

450Ø

TEMPORARY TURNING AREA WITH 1 IN 6 BATTERS PART OF STAGE 2 WORKS

1 IN 3 BATTER TO EXISTING

MINIMUM 500mm COVER TO PROVIDE TO PIPE

SWALE WITH 1 IN 3 BATTERS TO EXISTING PART OF STAGE 2 WORK

PROVIDE TEMPORARY SANDBAG ENDWALL TO NEW STORMWATER COMMON DRAINAGE LINE TO DISCHARGE TO TEMPORARY RAINGARDEN PART OF STAGE 1 WORKS

STAGE 1 BOUNDARY

EXISTING 1488m³ BASIN CONSTRUCTED UNDER UNDER DA1512-2023 AS PART OF THE "DEMOLITION" STAGE IS TO REMAIN AND BE UTILISED FOR STAGE 1 CIVIL WORKS. SEDIMENT BASIN VOLUME IS TO BE MINIMUM 228m3 TO PROVIDE TREATMENT FOR STAGES 1 & 2 IF COMPLETED CONCURRENTLY.

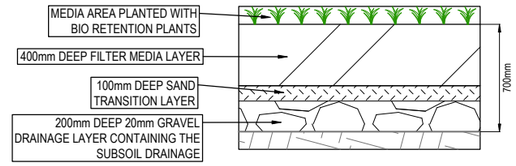
AT THE COMPLETION OF CONSTRUCTION WORKS, SEDIMENT BASIN IS TO BE CONVERTED INTO TEMPORARY RAINGARDEN WITH A MINIMUM FILTER MEDIA AREA OF 68m2. REFER TO DETAIL ON THIS SHEET.

PROPOSED RAINGARDEN

SWALE WITH 1 IN 3 BATTERS TO EXISTING PART OF STAGE 1 WORK

STAGE 4 BOUNDARY

SOUTH WESTERN M5 MOTORWAY



DETAIL B
TEMPORARY RAINGAREDEN DETAIL
NOT TO SCALE

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A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

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0 2.5 5 10 15 20
SCALE 1:250 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Checked	S. FERGUSON
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Approved	S. FERGUSON
Reg. No.	PE0008347
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Project Details	WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA
Drawing Title	TEMPORARY OSD BASIN 1 SHEET 1 OF 2

Sheet 98 of 145
Scale 1:250 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	500	B

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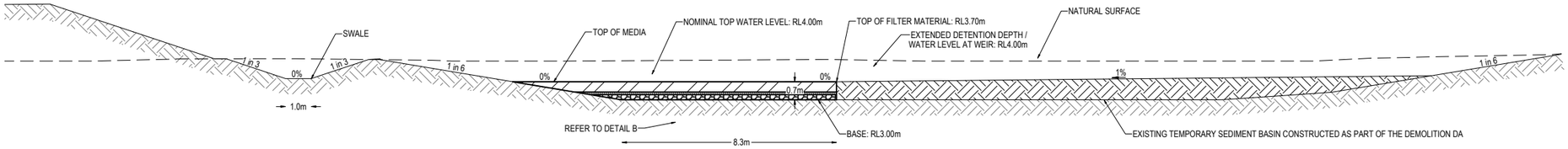
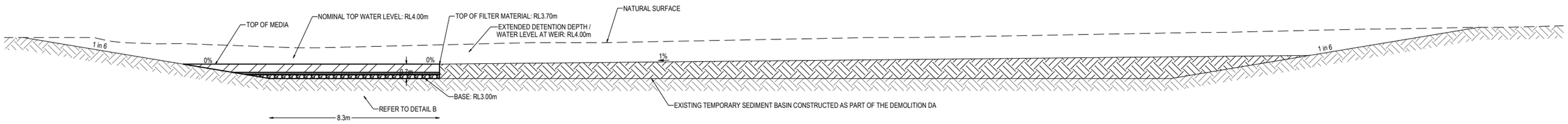
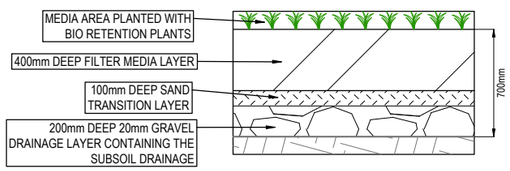


SECTION A-A
SEDIMENT BASIN TYPICAL CROSS SECTION
SCALE HOR. 1:100 AT A1 SIZE



SECTION B-B
SEDIMENT BASIN TYPICAL CROSS SECTION
SCALE HOR. 1:100 AT A1 SIZE



DETAIL B
TEMPORARY RAINGAREDEN DETAIL
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A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

0 2 4 8 12 16
SCALE 1:200 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
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www.beveridgewilliams.com.au

Project Details	WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA
Drawing Title	TEMPORARY OSD BASIN 1 SHEET 2 OF 2

Sheet 99 of 145
Scale 1:200 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	501	B

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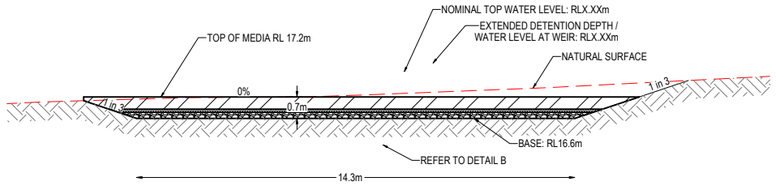


SECTION A-A
SEDIMENT BASIN TYPICAL CROSS SECTION
SCALE HOR. 1:100 AT A1 SIZE

FUTURE STAGE 6

SEDIMENT BASIN TO BE CONSTRUCTED PRIOR TO COMMENCEMENT OF WORKS AND CLEANED AS NECESSARY FOR USE. SEDIMENT BASIN VOLUME IS TO BE MINIMUM 169m³ TO PROVIDE TREATMENT FOR DEVELOPMENT

AT THE COMPLETION OF CONSTRUCTION WORKS, SEDIMENT BASIN TO BE CONVERTED INTO TEMPORARY RAINGARDEN WITH A MINIMUM FILTER AREA OF 169m². REFER TO DETAIL ON THIS SHEET

150Ø

SOLID 150mm DIA. UPVC PIPE GRADED AT 1% TO DAYLIGHT

1500

1 IN 3 BATTERS

DISCHARGE CONTROL PIT

PROVIDE TEMPORARY SANDBAG ENDWALL TO TEMPORARY STORMWATER COMMON DRAINAGE LINE TO DISCHARGE TO TEMPORARY RAINGARDEN PART OF STAGE 3 WORKS

TEMPORARY DRAINAGE PIPE INTO SEDIMENT BASIN

6750

PERMANENT DRAINAGE PIT AND PIPES CONSTRUCTED OUTSIDE OF STAGE 3 TO HAVE LINTELS PLATED OFF

ROAD 2B

PROVIDE TEMPORARY SANDBAG ENDWALL TO NEW STORMWATER COMMON DRAINAGE LINE TO DISCHARGE TO TEMPORARY RAINGARDEN PART OF STAGE 1 WORKS

TEMPORARY SWALE WITH 1 IN 3 BATTERS GRADED AT 0.5% TO BASIN

DISCHARGE CONTROL PIT

375Ø

PERMANENT DRAINAGE PIPE CONSTRUCTED OUTSIDE OF STAGE 3 TO HAVE LINTELS PLATED OFF

FUTURE STAGE 6

NOTE:
TEMPORARY OSD BASIN 2 TO BE CONSTRUCTED WITH STAGE 3 WORKS AND DECOMMISSIONED WITH STAGE 6 WORKS.

CONSERVATION AREA

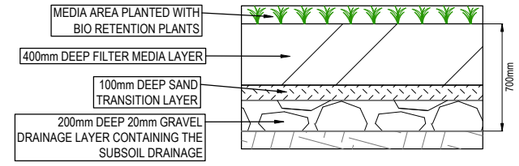
STAGE 3A & 3B

STAGE 6 BOUNDARY

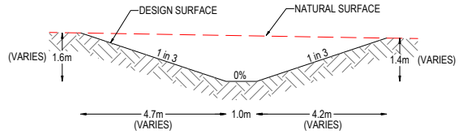
STAGE 3

ROAD 9

FUTURE STAGE 5



DETAIL B
TEMPORARY RAINGAREDEN DETAIL
NOT TO SCALE



SECTION B-B
SWALE TYPICAL CROSS SECTION
SCALE HOR. 1:100 AT A1 SIZE

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A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

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0 2.5 5 10 15 20
SCALE 1:250 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
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Date	07.11.25
Approved	S. FERGUSON
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

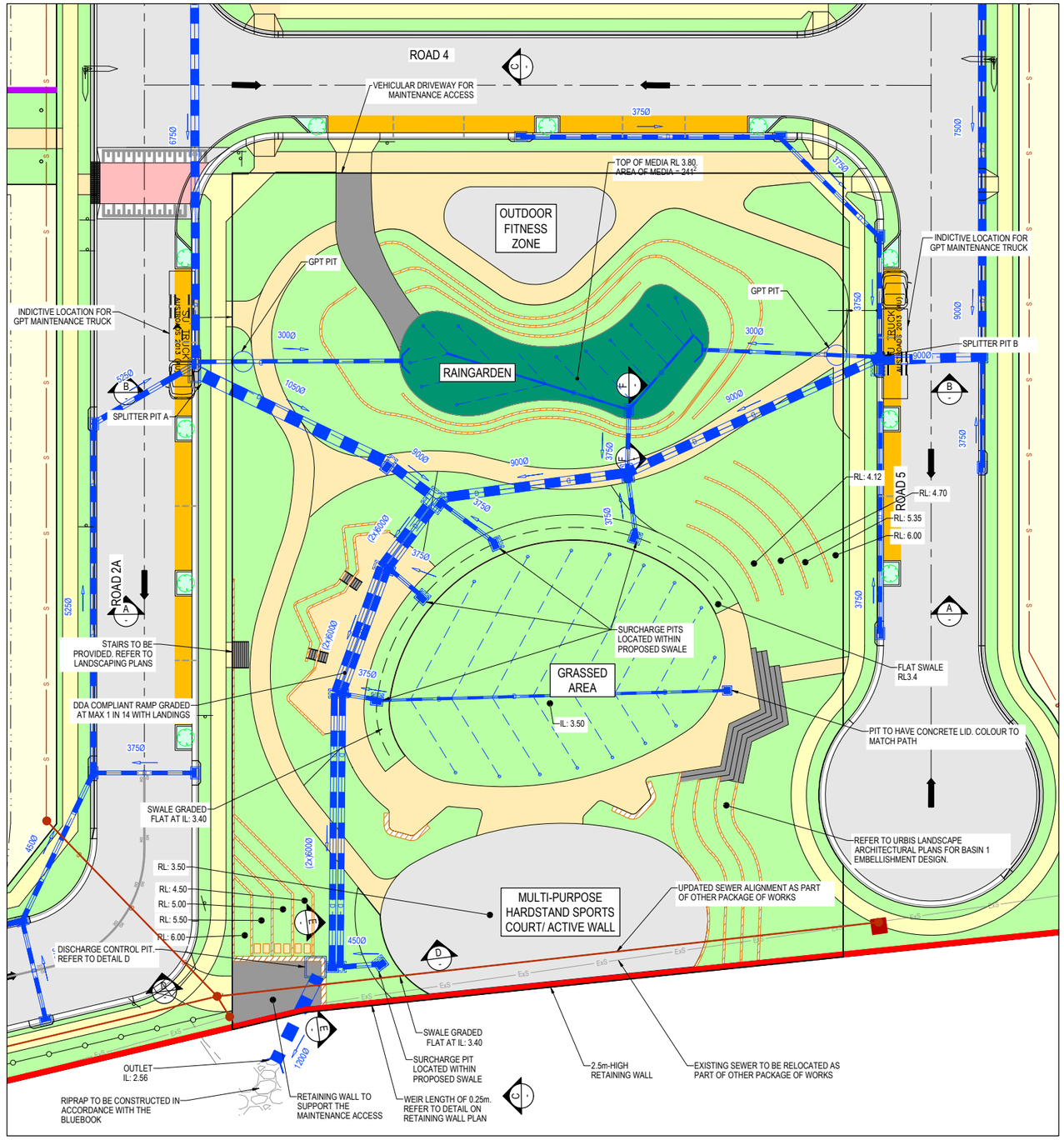
Drawing Title: TEMPORARY OSD BASIN 2

Sheet 100 of 145

Scale: 1:250 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	502	B

F:\synergy\temp\12dSynergy\12dSynergyServerService\3192a0aac392-9e58-408d-ab3d-b5bfe4405e2f\2301879-321-500-OSD.dwg

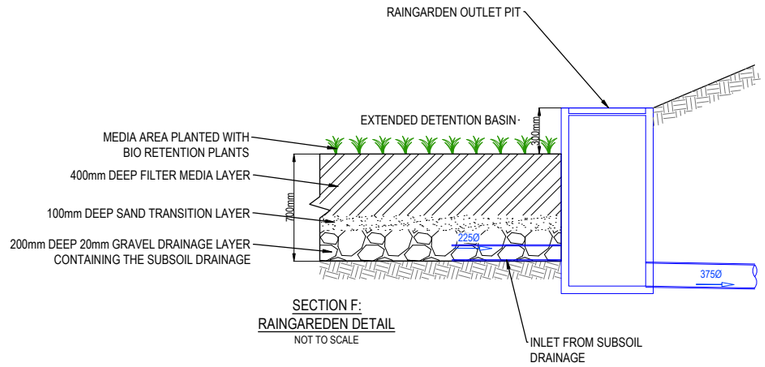


LEGEND:

INDICATIVE RESIDENTIAL LOT BOUNDARY. SUBJECT TO FURTHER DA APPROVAL

LEGEND - LAYOUT PLAN

- GRASSED AREA
- FOOTPATH
- CONCRETED AREA
- RETAINING WALL
- RAINGARDEN
- DRIVEWAY
- SUBSOIL DRAINAGE
- STORMWATER DRAIN & PIT



SECTION F:
RAINGAREDEN DETAIL
NOT TO SCALE

REFER TO URBIS LANDSCAPE ARCHITECTURAL PLANS FOR BASIN 1 EMBELLISHMENT DESIGN.

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Project Details	WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA
Drawing Title	OSD BASIN

Sheet 101 of 145

Scale 1:250 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	505	B

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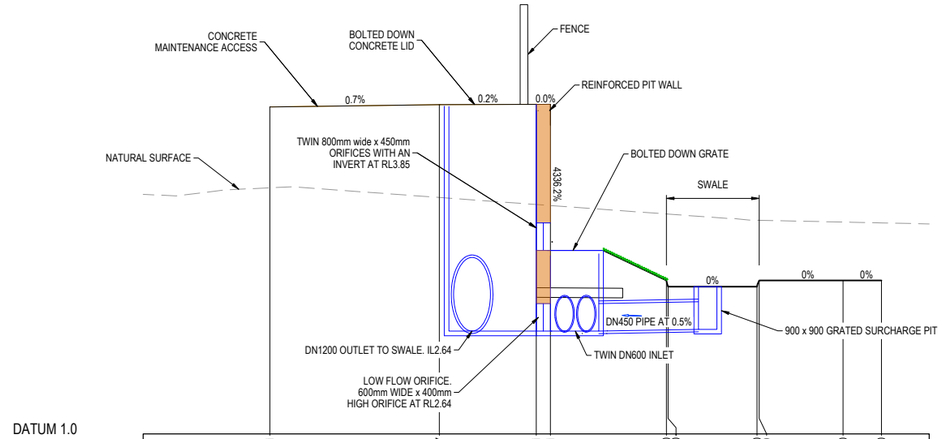

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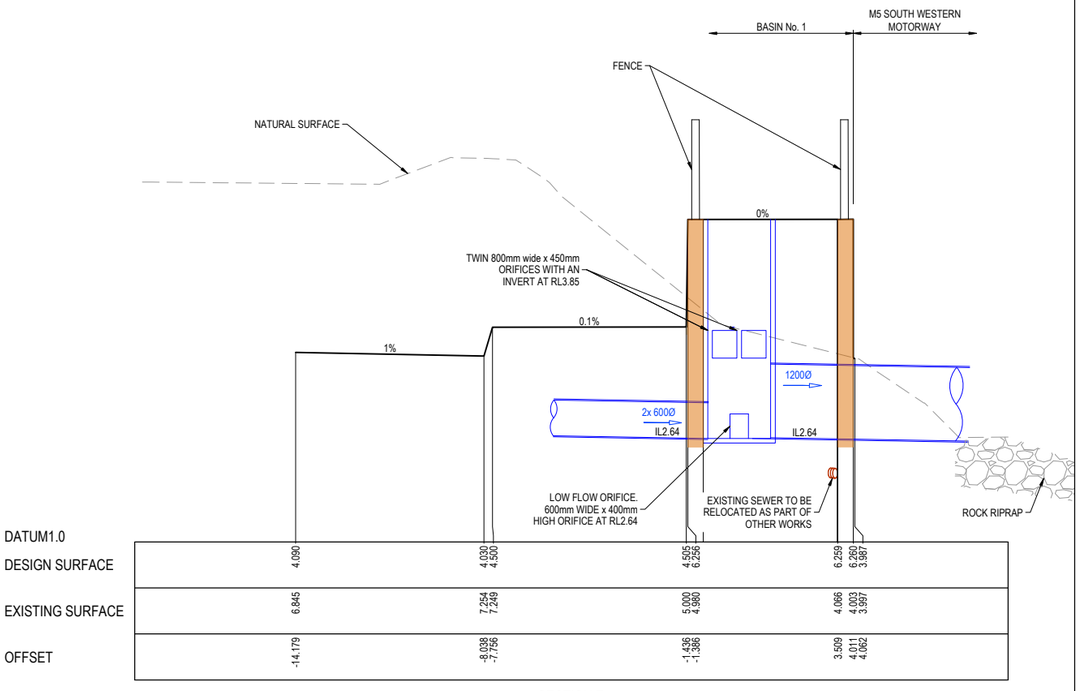

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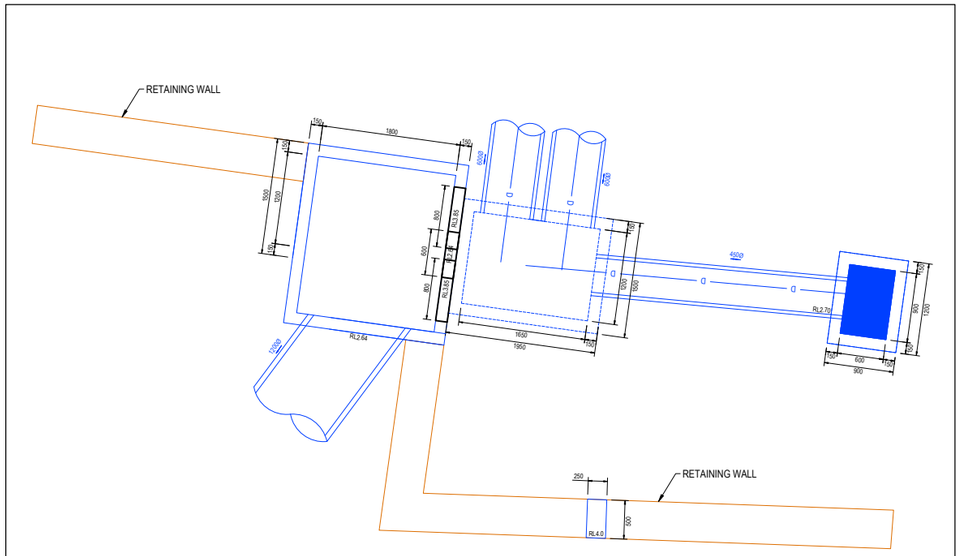
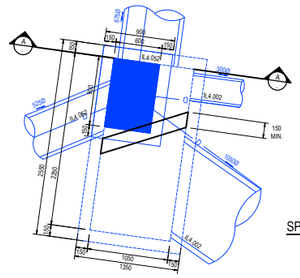
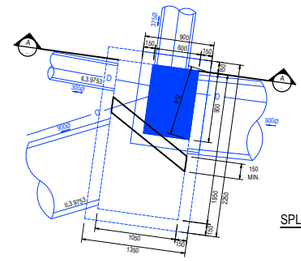


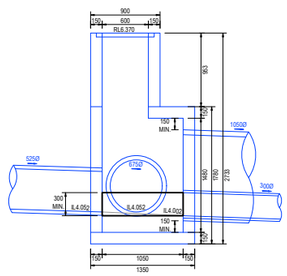
DISCHARGE CONTROL PIT D
PLAN
SCALE 1:50



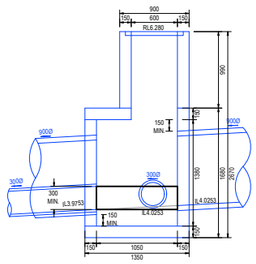
SPLITTER PIT A
PLAN
SCALE 1:50



SPLITTER PIT B
PLAN
SCALE 1:50



SPLITTER PIT A
DETAIL AA
SCALE 1:50



SPLITTER PIT B
DETAIL AA
SCALE 1:50

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REV	DESCRIPTION	DATE	DRN.	APP.
B	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

0 2 4 8 12 16
SCALE 1:200 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
DA Number	-

Beveridge Williams
Development & Infrastructure Consultants
Level 4, LPC House, Suite 4.05, 3 Fordham way
Oran Park NSW 2570
ph: 02 46255055
www.beveridgewilliams.com.au

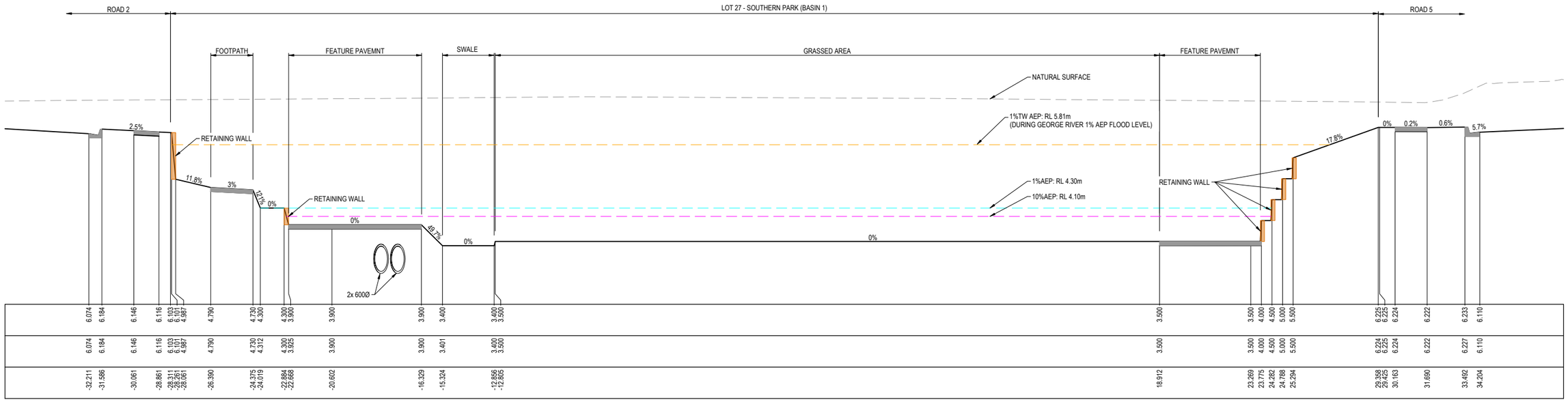
Project Details	WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA
Drawing Title	OSD BASIN

Sheet 102 of 145

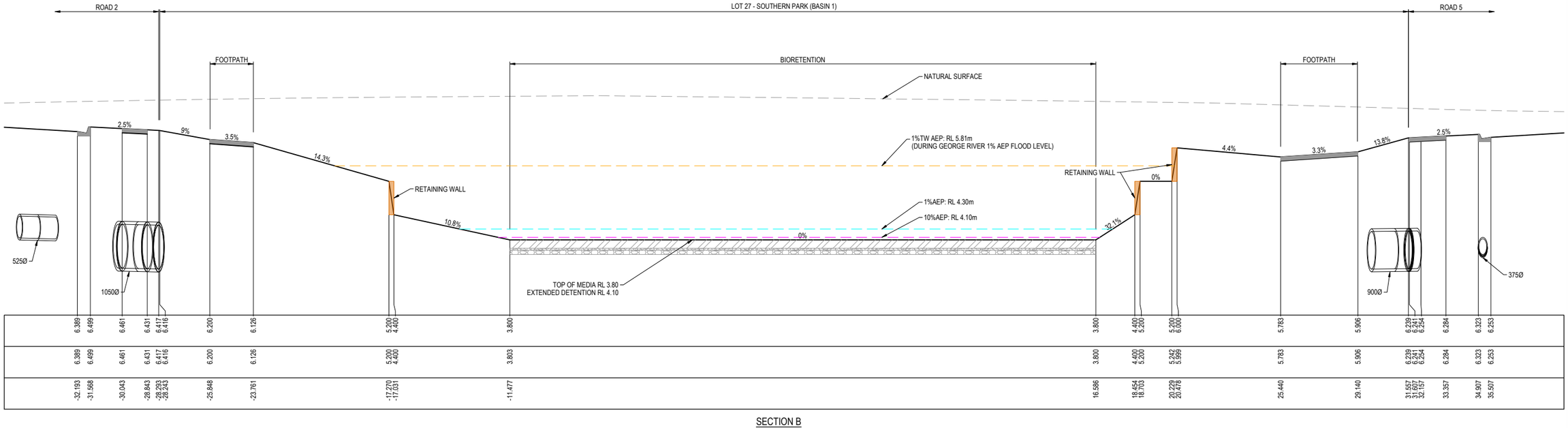
Scale 1:200 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	506	B

F:\synergytemp\12dSynergy\12dSynergyServerService\3192a0aac392-9e58-408d-ab3d-b9bfe4405e2f\2301879-321-505-OSD.dwg



SECTION A



SECTION B

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REV	DESCRIPTION	DATE	DRN.	APP.
B	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

0 2 4 8 12 16
SCALE 1:200 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
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Oran Park NSW 2570
ph: 02 46255055
www.beveridgewilliams.com.au

Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

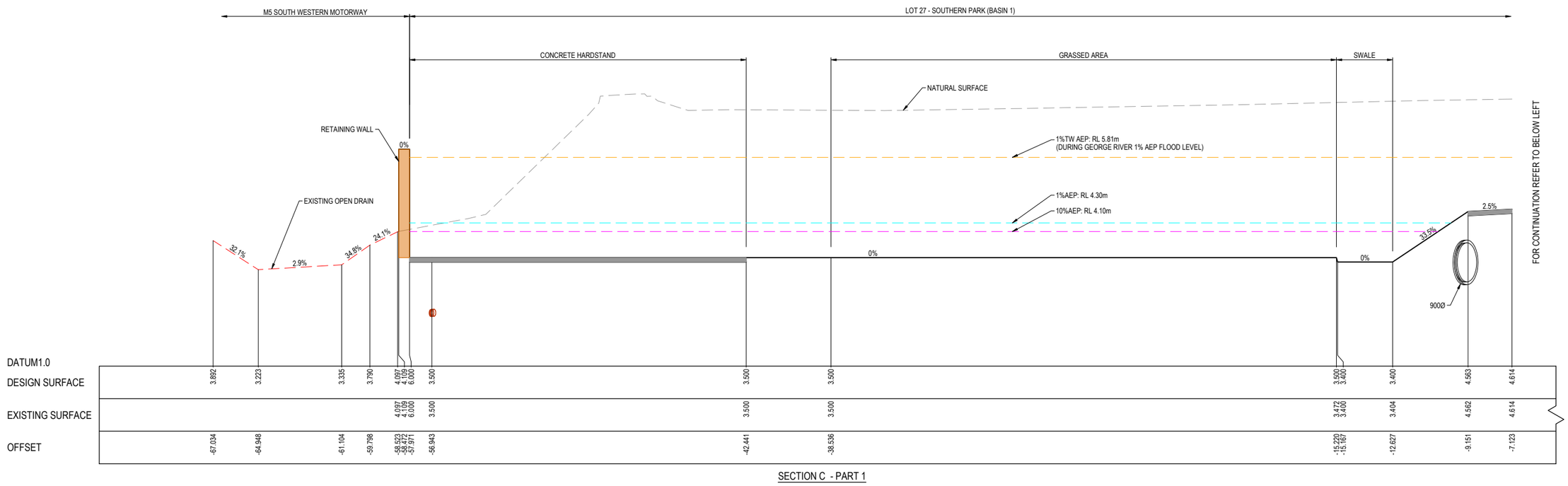
Drawing Title: OSD BASIN

Sheet 103 of 145

Scale: 1:200 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	507	B

F:\synergytemp\12dSynergy\12dSynergyServerService\3192a0aac392-9e58-408d-ab3d-b9bfe4405e2f\2301879-321-505-OSD.dwg



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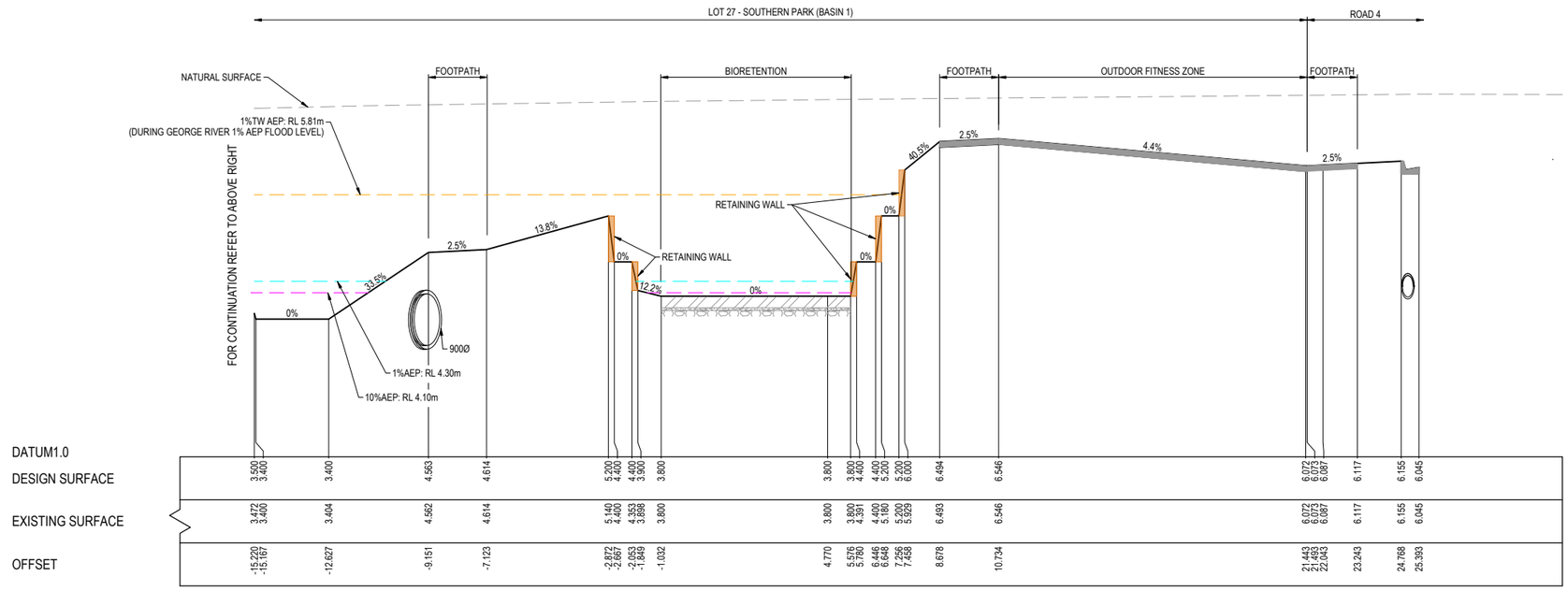

SECTION C - PART 2

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REV	DESCRIPTION	DATE	DRN.	APP.
B	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

mirvac

SCALE 1:200 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
DA Number	-

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ph: 02 46255055
www.beveridgewilliams.com.au

Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

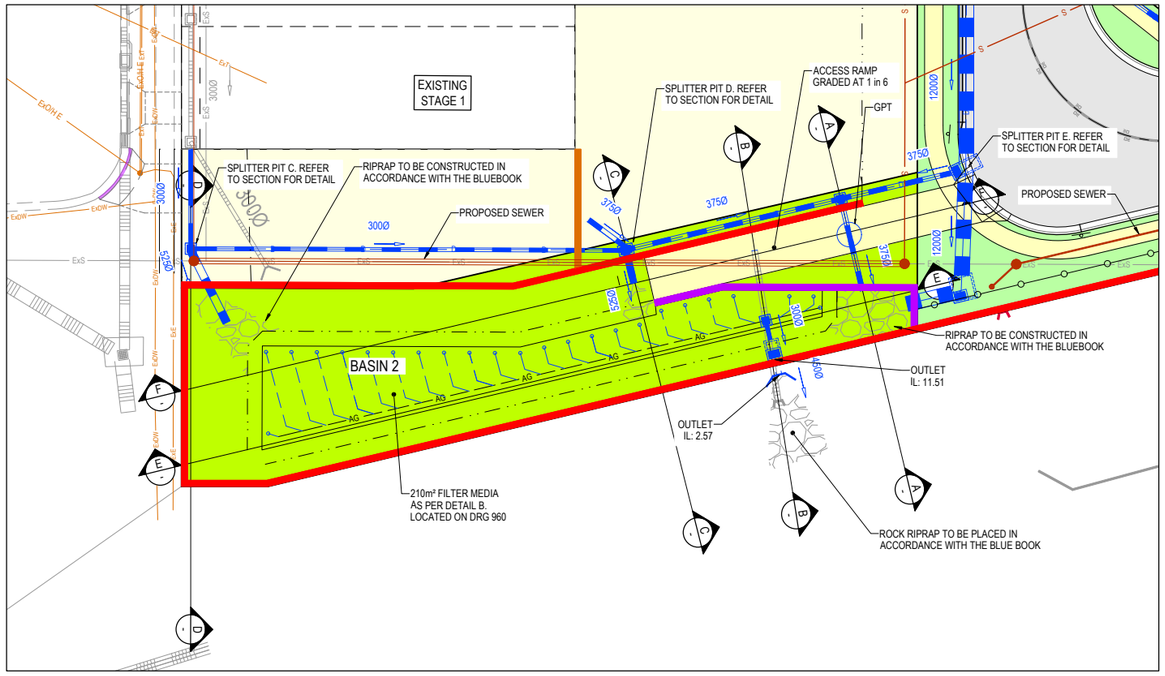
Drawing Title: OSD BASIN

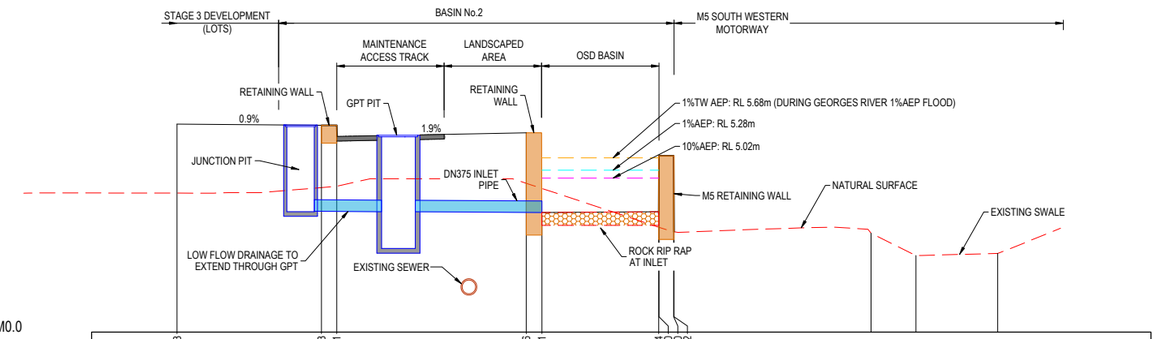
Sheet 104 of 145

Scale: 1:200 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	508	B

F:\synergytemp\12dSynergy\12dSynergyServerService\3192a0aac392-9e58-408d-ab3d-b9bfe4405e2f\2301879-321-505-OSD.dwg





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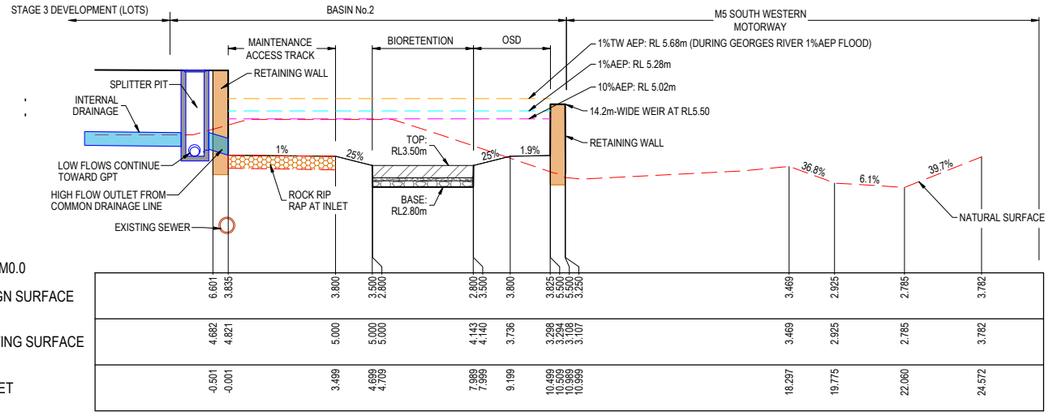

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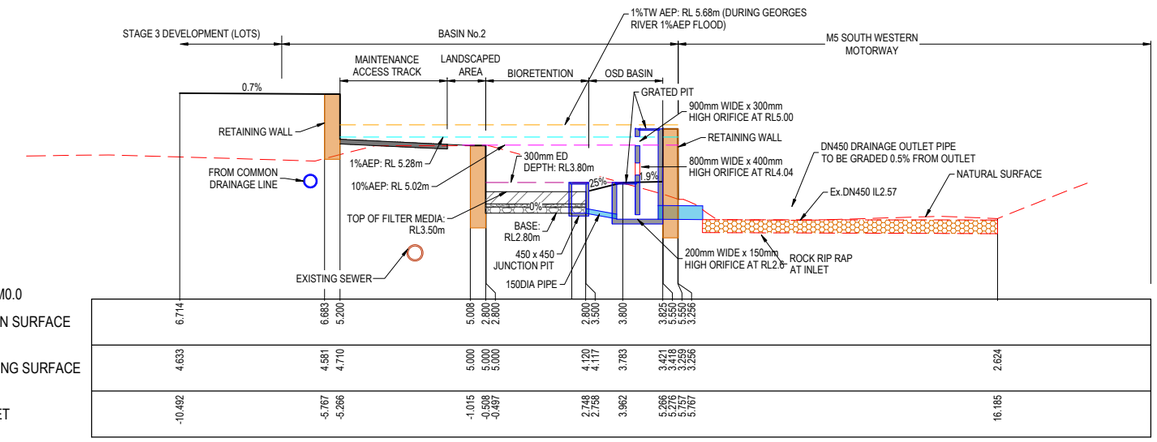
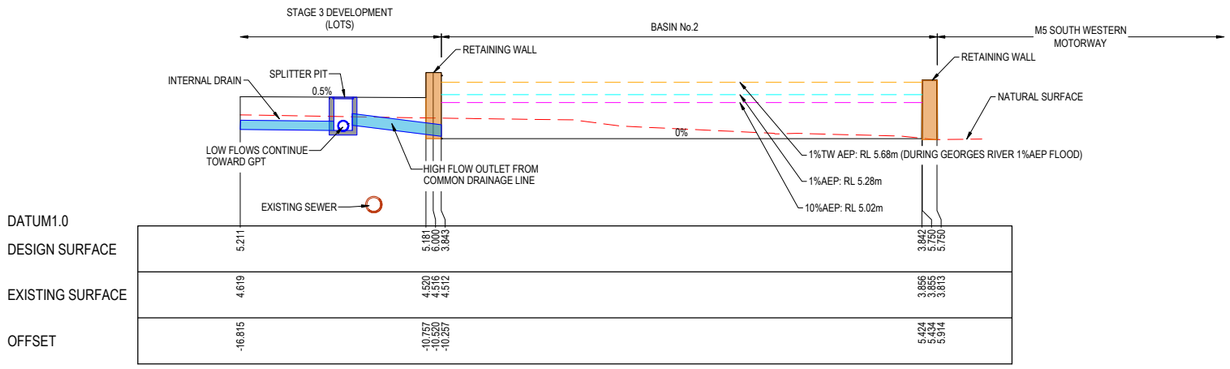


SECTION B



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B	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

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SCALE 1:200 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
DA Number	-

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www.beveridgewilliams.com.au

Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

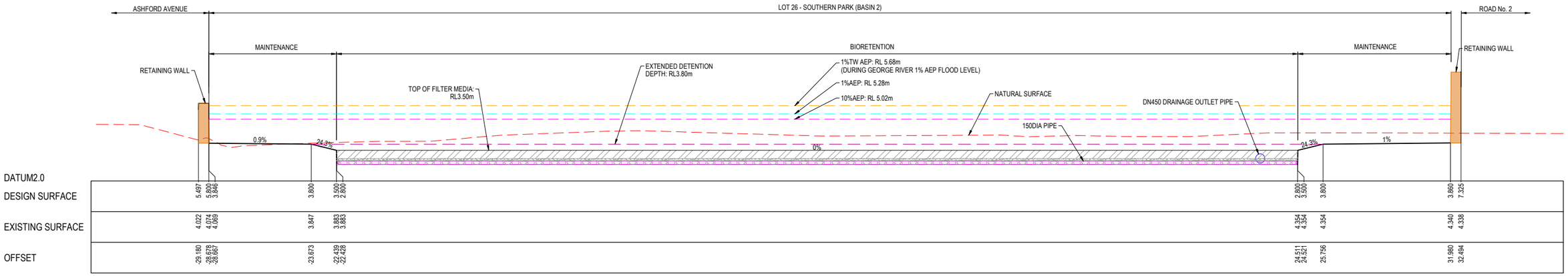
Drawing Title: OSD BASIN

Sheet 105 of 145

Scale: 1:200 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	509	B

F:\synergytemp\12dSynergy\12dSynergyServerService\3192a0aac392-9e58-408d-ab3d-b9bfe4405e2f\2301879-321-505-OSD.dwg



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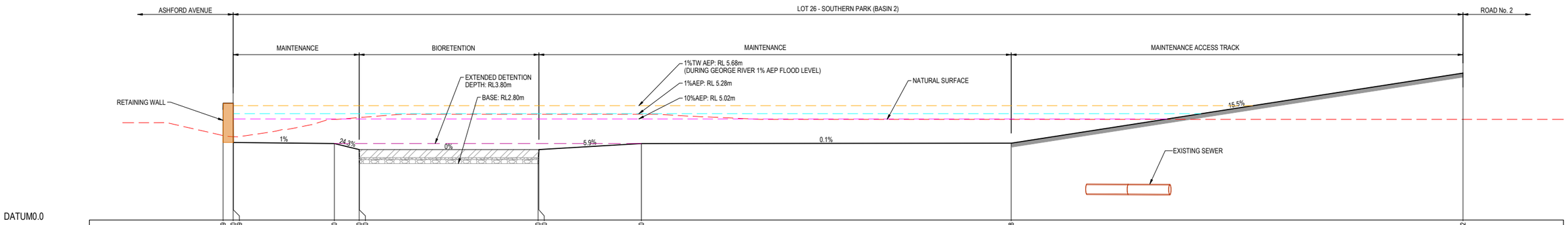

SECTION F

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B	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

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0 2 4 8 12 16
SCALE 1:200 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

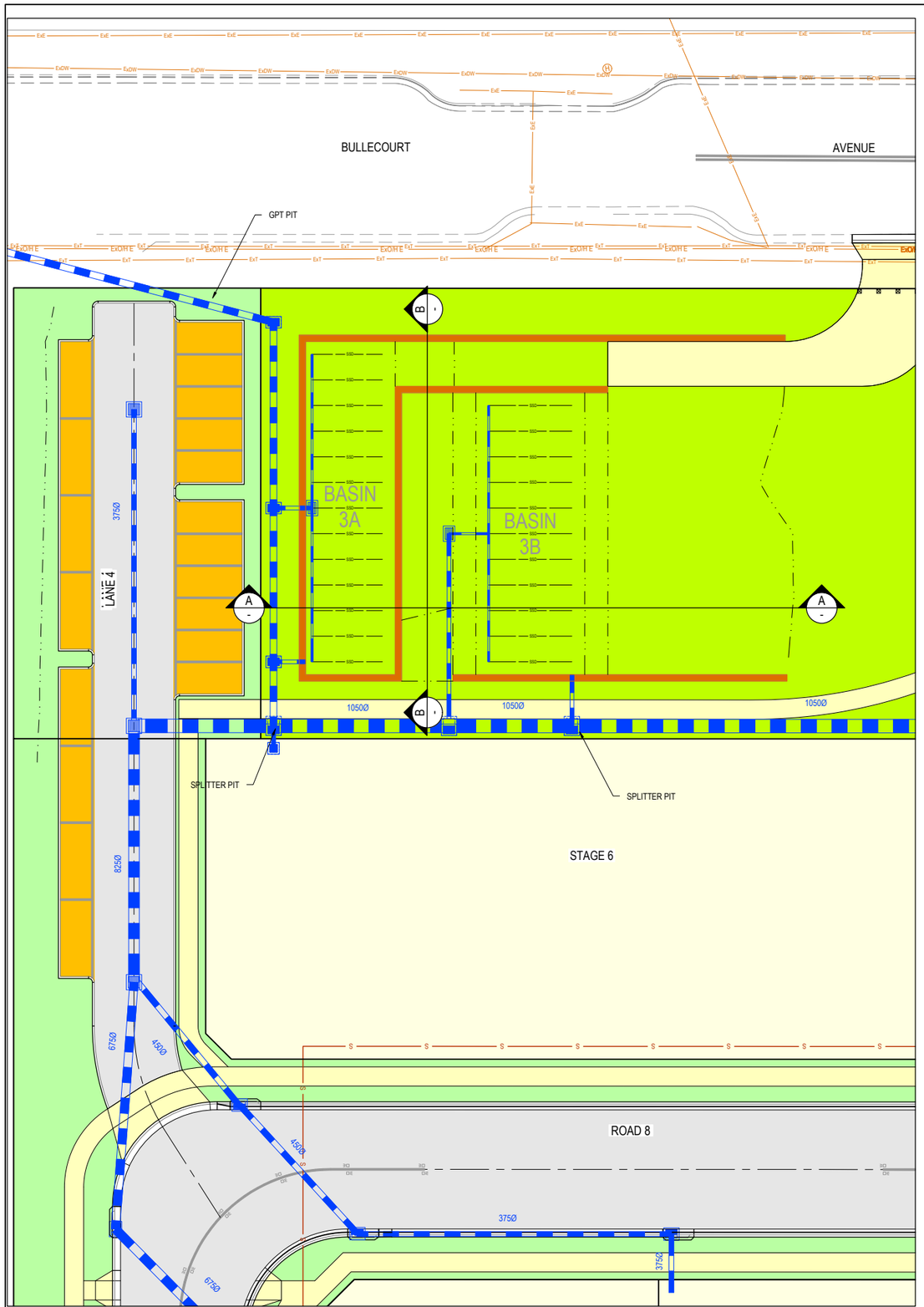
Drawing Title: OSD BASIN

Sheet 106 of 145

Scale: 1:200 @ A1

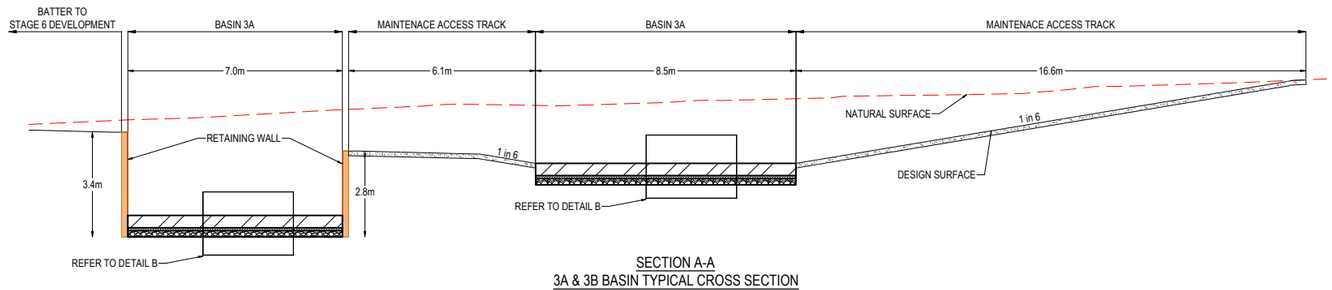
Project Ref	Stage No	Drawing No	Rev
2301879	321	510	B

F:\synergytemp\12dSynergy\12dSynergyServerService\3192a0aac392-9e58-408d-ab3d-b9bfe4405e2f\2301879-321-505-OSD.dwg

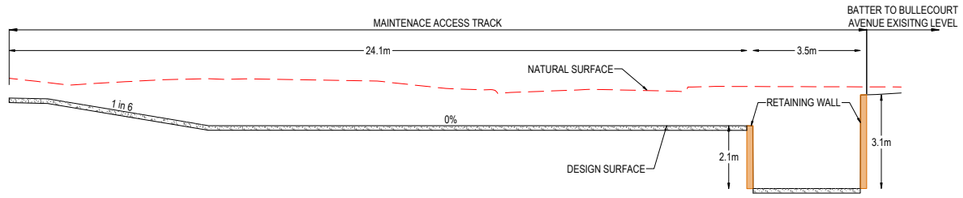


LEGEND:

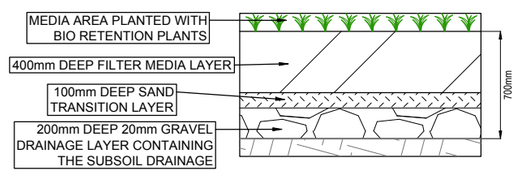
_ _ _ _ INDICATIVE RESIDENTIAL LOT BOUNDARY. SUBJECT TO FURTHER DA APPROVAL



SECTION A-A
3A & 3B BASIN TYPICAL CROSS SECTION
SCALE HOR. 1:100 AT A1 SIZE



SECTION B-B
3A & 3B BASIN TYPICAL CROSS SECTION
SCALE HOR. 1:100 AT A1 SIZE



DETAIL B
TEMPORARY RAINGAREDEN DETAIL
NOT TO SCALE

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A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

0 2 4 8 12 16
SCALE 1:200 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
DA Number	-

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Oran Park NSW 2570
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www.beveridgewilliams.com.au

Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

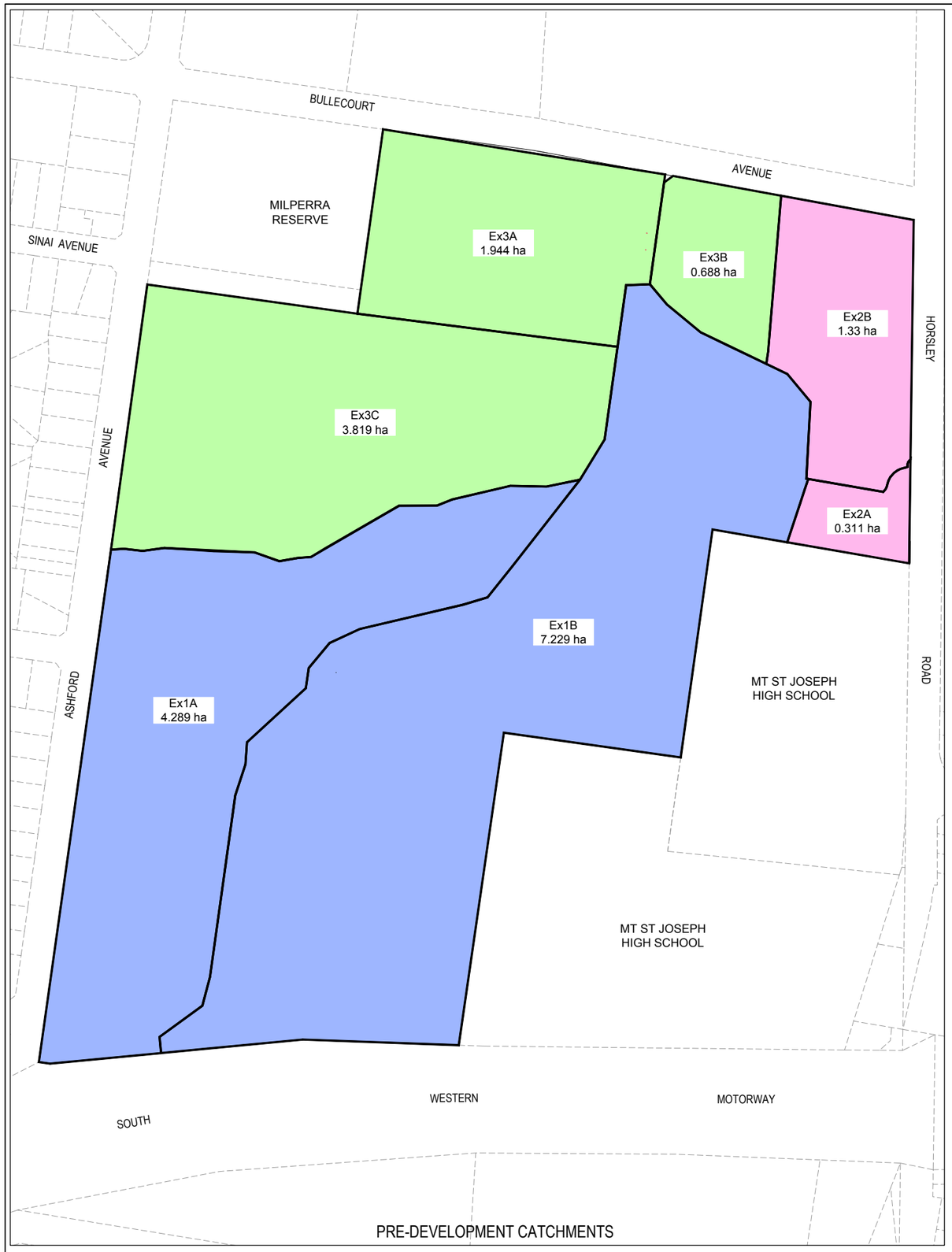
Drawing Title: OSD BASIN

Sheet 107 of 145

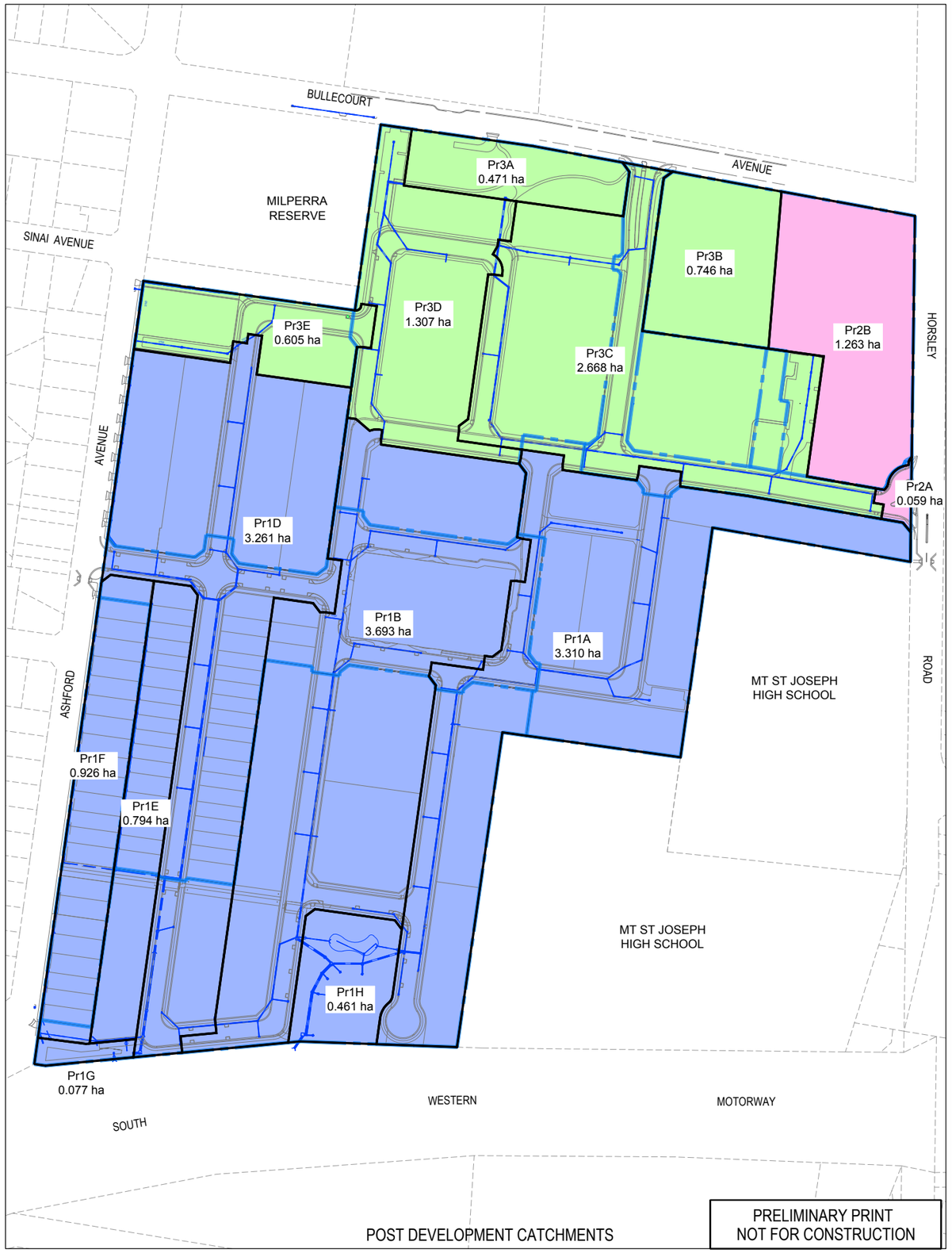
Scale: 1:200 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	511	B

F:\synergytemp\12dSynergy\12dSynergyServerService\3192a0aac392-9e58-408d-ab3d-b9bfe4405e2f\2301879-321-505-OSD.dwg



PRE-DEVELOPMENT CATCHMENTS



POST DEVELOPMENT CATCHMENTS

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A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

0 15 30 60 90 120
SCALE 1:1500 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
DA Number	-

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Oran Park NSW 2570
ph: 02 46255055
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: OVERALL CATCHMENT PLAN

Sheet 108 of 145

Scale: 1:1500 @ A1

N

Project Ref	Stage No	Drawing No	Rev
2301879	321	550	B

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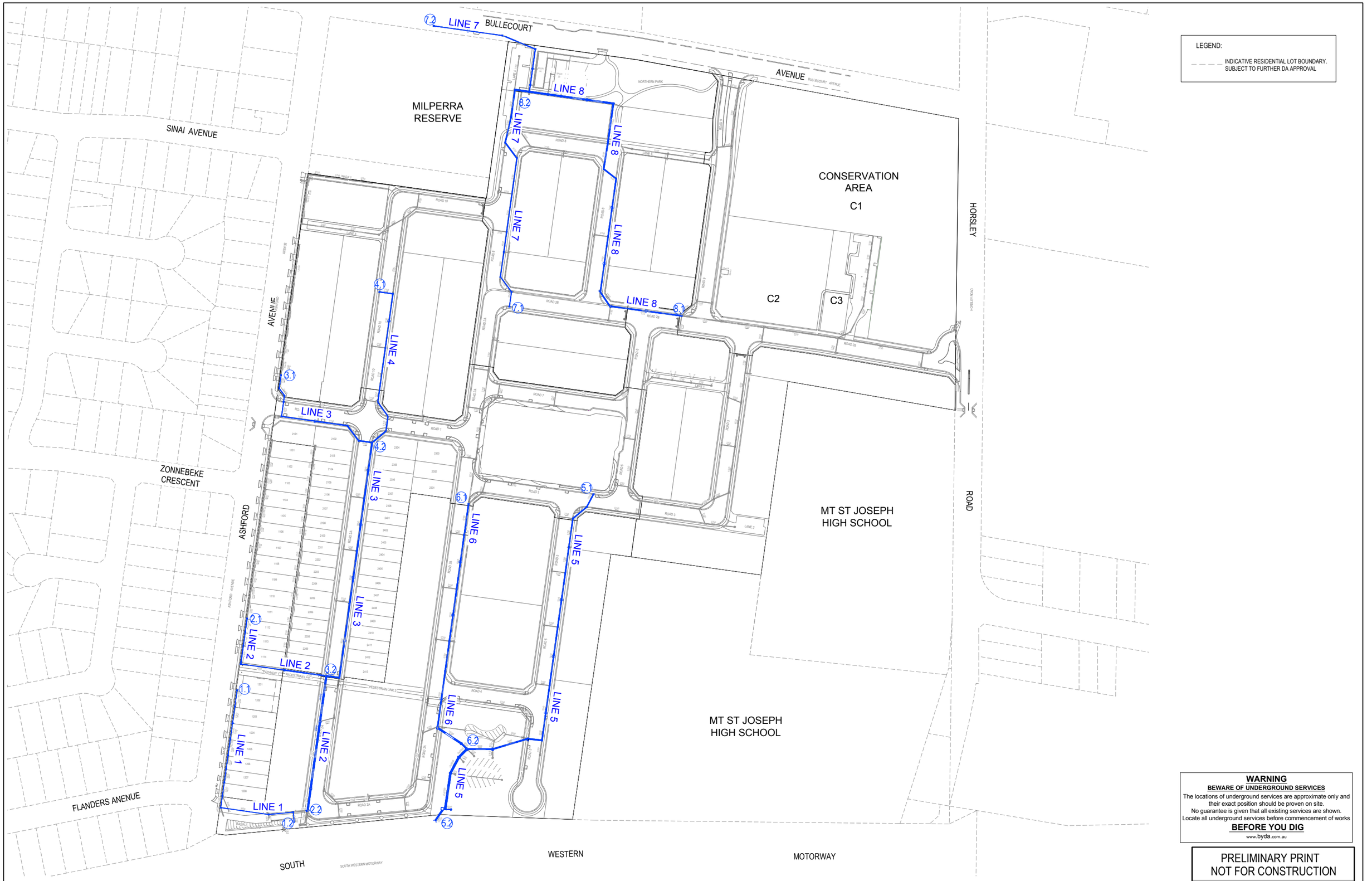

WARNING

BEWARE OF UNDERGROUND SERVICES

The locations of underground services are approximate only and their exact position should be proven on site.
No guarantee is given that all existing services are shown.
Locate all underground services before commencement of works

BEFORE YOU DIG

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A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

0 12.5 25 50 75 100
SCALE 1:1250 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
DA Number	-

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ph: 02 46255055
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: OVERALL TRUNK DRAINAGE LAYOUT PLAN

Sheet 109 of 145

Scale: 1:1250 @ A1

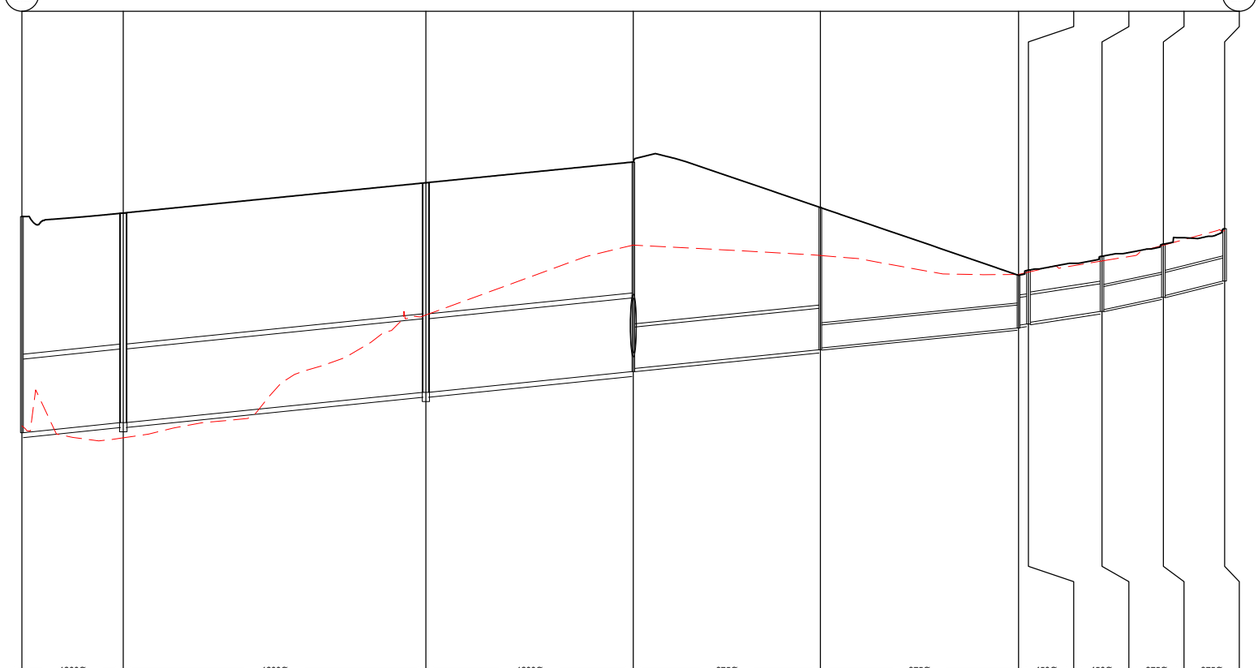
Project Ref	Stage No	Drawing No	Rev
2301879	321	600	B

F:\synergytemp\12dSynergy\12dSynergyServerService\3192a0aac392-9e58-408d-ab3d-b9bfe4405e2f\2301879-321-590-DRN.dwg

NOTES:
ALL STORMWATER DRAINS UP TO AND INCLUDING 750mm DIA. ARE TO BE CLASS 2 R.R.J. PIPES UNLESS NOTED OTHERWISE.

LEGEND
EXISTING SURFACE
DESIGN SURFACE

2.2

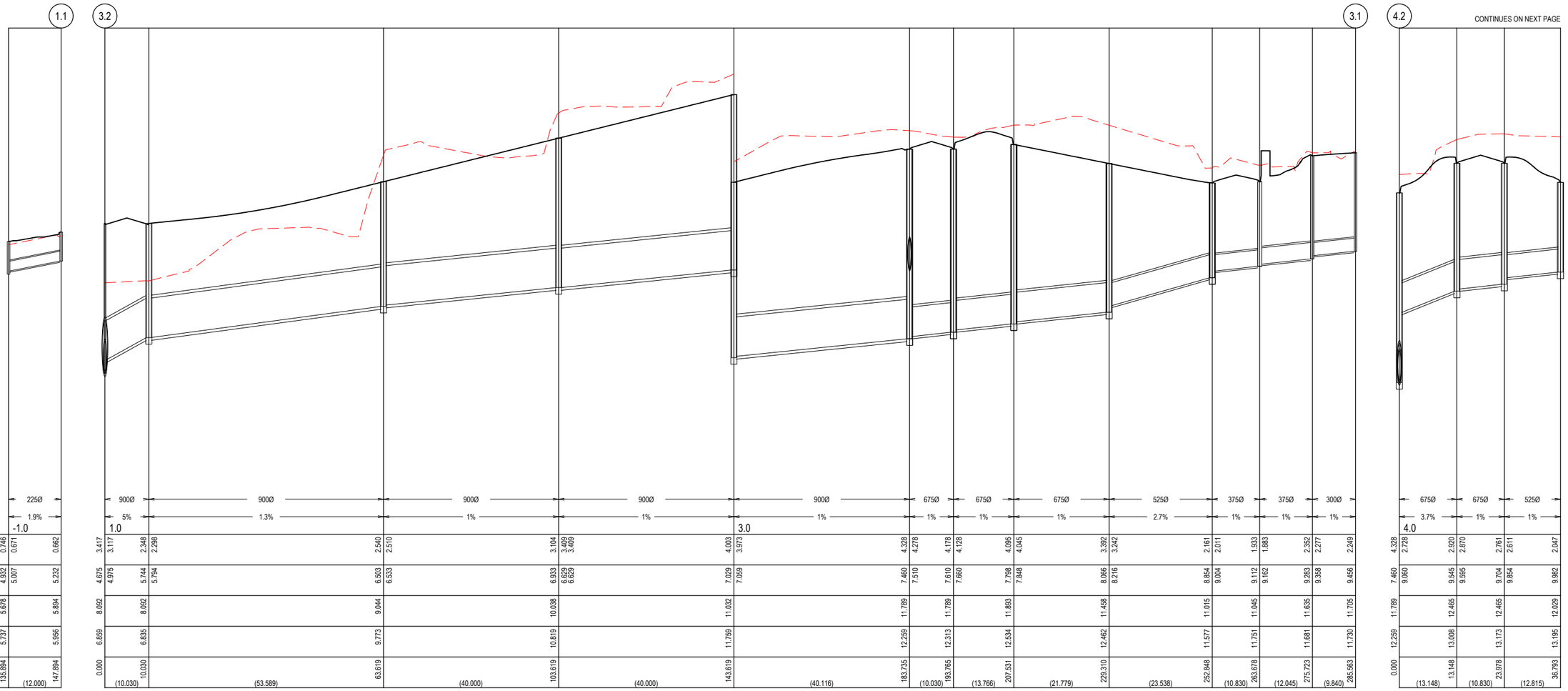


2.1

| | | |

NOTES:
ALL STORMWATER DRAINS UP TO AND INCLUDING 750mm DIA. ARE TO BE CLASS 2 R.R.J. PIPES UNLESS NOTED OTHERWISE.

LEGEND
EXISTING SURFACE
DESIGN SURFACE



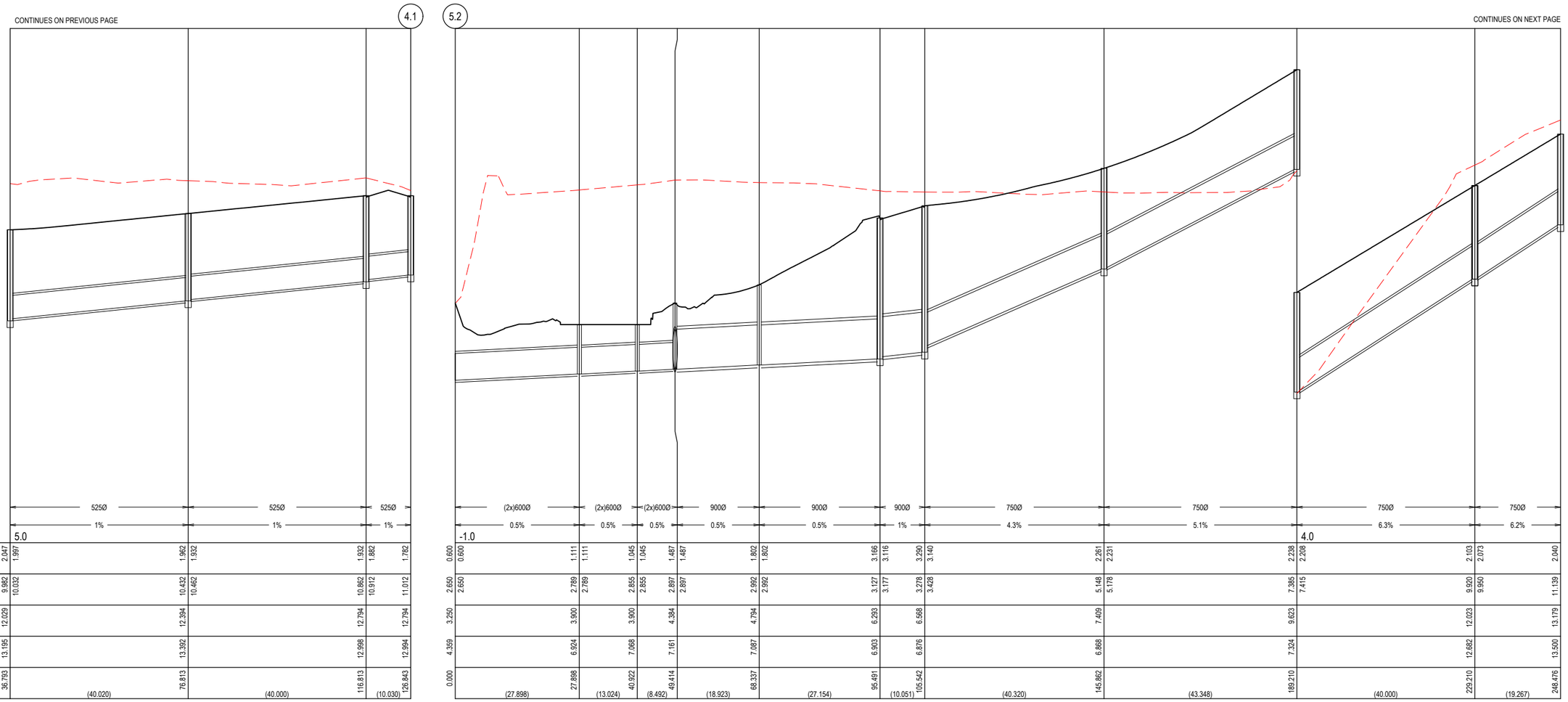
| | | |

NOTES:
ALL STORMWATER DRAINS UP TO AND INCLUDING 750mm DIA. ARE TO BE CLASS 2 R.R.J. PIPES UNLESS NOTED OTHERWISE.

LEGEND
EXISTING SURFACE
DESIGN SURFACE

CONTINUES ON PREVIOUS PAGE

CONTINUES ON NEXT PAGE



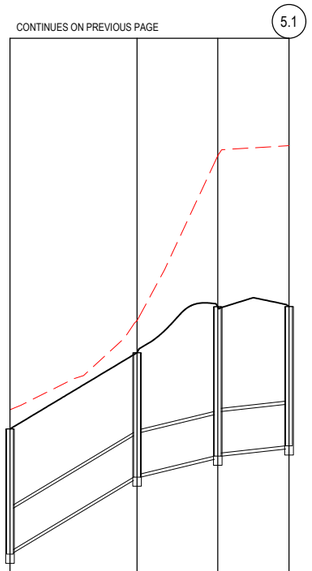
LINE 4

| | | |

NOTES:
ALL STORMWATER DRAINS UP TO AND INCLUDING 750mm DIA. ARE TO BE CLASS 2 R.R.J. PIPES UNLESS NOTED OTHERWISE.

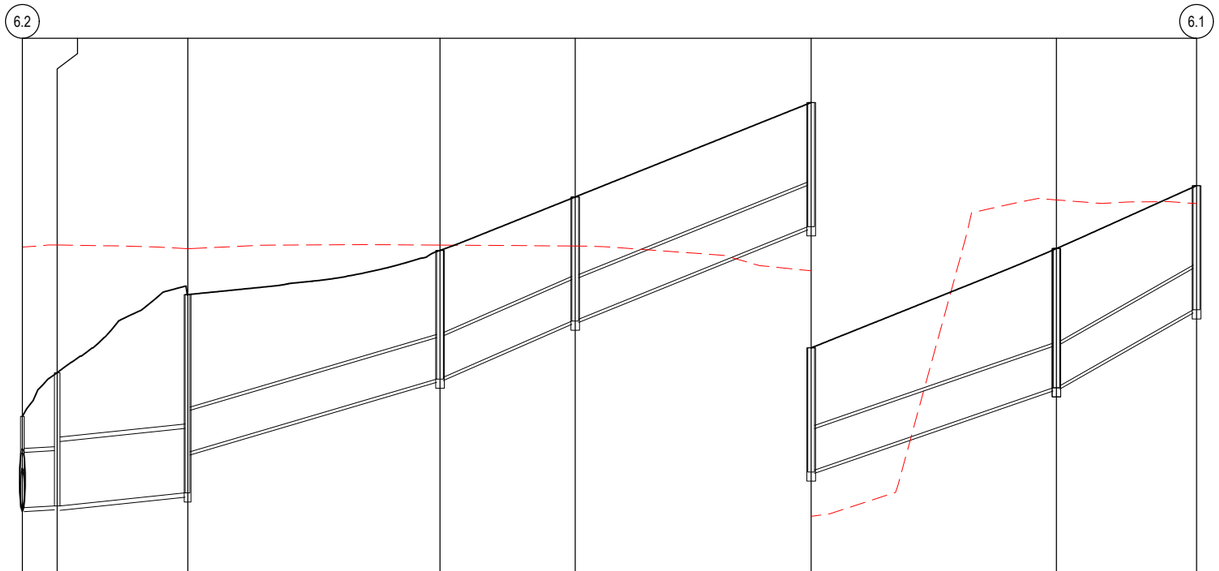
LEGEND
EXISTING SURFACE
DESIGN SURFACE

CONTINUES ON PREVIOUS PAGE



	5.1			
PIPE SIZE (mm)		675Ø	675Ø	675Ø
PIPE GRADE (%)		5.7%	2.2%	1%
DATUM	8.0			
DEPTH TO INVERT	2.040	1.965	2.028	1.978	2.436	2.386	2.272
INVERT LEVEL	11.139	11.214	12.395	12.445	12.737	12.787	12.904
FINISHED SURFACE	13.179		14.423		15.174		15.176
EXISTING SURFACE	13.500		14.945		17.633		17.798
PIPE CHAINAGE	248.476		269.210		282.358		293.997
(Reach Length)		(20.733)		(13.148)		(11.639)	

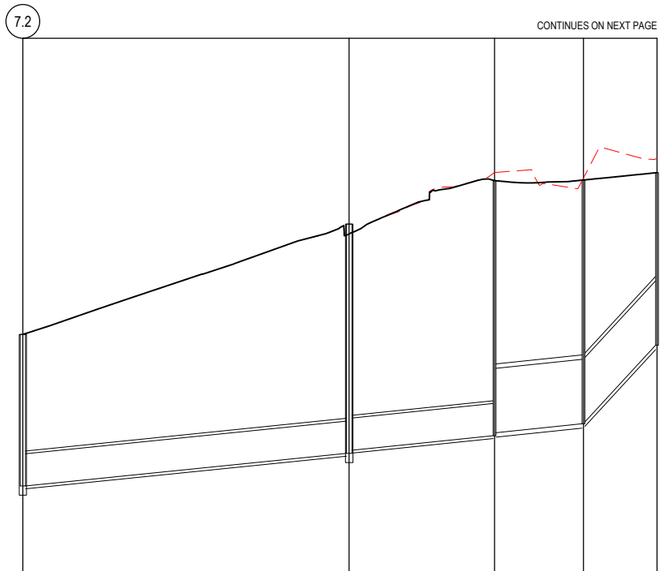
LINE 5



	6.2								6.1
PIPE SIZE (mm)		900Ø	1050Ø	675Ø	675Ø	675Ø	675Ø	675Ø	675Ø
PIPE GRADE (%)		0.5%	1%	2.9%	4.2%	3.9%	3.4%	5.4%	
DATUM	-1.0						3.0		
DEPTH TO INVERT	1.487	1.487	2.171	3.231	2.563	2.098	2.068	2.024	1.994	2.270	2.240	2.024
INVERT LEVEL	2.897	2.897	2.925	3.139	3.808	4.993	5.023	5.938	5.968	7.478	7.508	8.852	8.882	10.122
FINISHED SURFACE	4.384		5.096	6.370		7.090		7.962		9.502		11.121		12.146
EXISTING SURFACE	7.161		7.179	7.117		7.177		7.162		6.757		11.716		11.994
PIPE CHAINAGE	0.000		5.675	26.998		68.121		90.172		128.668		168.673		191.515
(Reach Length)		(5.675)		(21.323)		(41.124)		(22.050)		(38.496)		(40.005)		(22.843)	

LINE 6

CONTINUES ON NEXT PAGE



	7.2				
PIPE SIZE (mm)		525Ø	525Ø	1050Ø	1050Ø
PIPE GRADE (%)		1%	1%	1%	10.4%
DATUM	6.0				
DEPTH TO INVERT	2.471	2.471	3.738	3.688	4.160	4.110	3.974	3.944	2.813
INVERT LEVEL	10.250	10.250	10.782	10.832	11.069	11.119	11.264	11.294	12.545
FINISHED SURFACE	12.720		14.520		15.229		15.238		15.358
EXISTING SURFACE	12.720		14.359		15.449		15.382		15.596
PIPE CHAINAGE	0.000		53.223		76.945		91.445		103.445
(Reach Length)		(53.223)		(23.722)		(14.500)		(12.000)	

LINE 400

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A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

HORIZ 1:500 0 5 10 20 30
VERT 1:50 0 0.5 1 2 3
SCALE AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
DA Number	-

Beveridge Williams
Development & Infrastructure Consultants
Level 4, LPC House, Suite 4.05, 3 Fordham way, Oran Park NSW 2570
ph: 02 46255055
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Project Details	WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA
Drawing Title	DRAINAGE LONGITUDINAL SECTIONS SHEET 4 OF 6

Sheet 113 of 145

Scale: 1:500 H 1:50 V @ A1

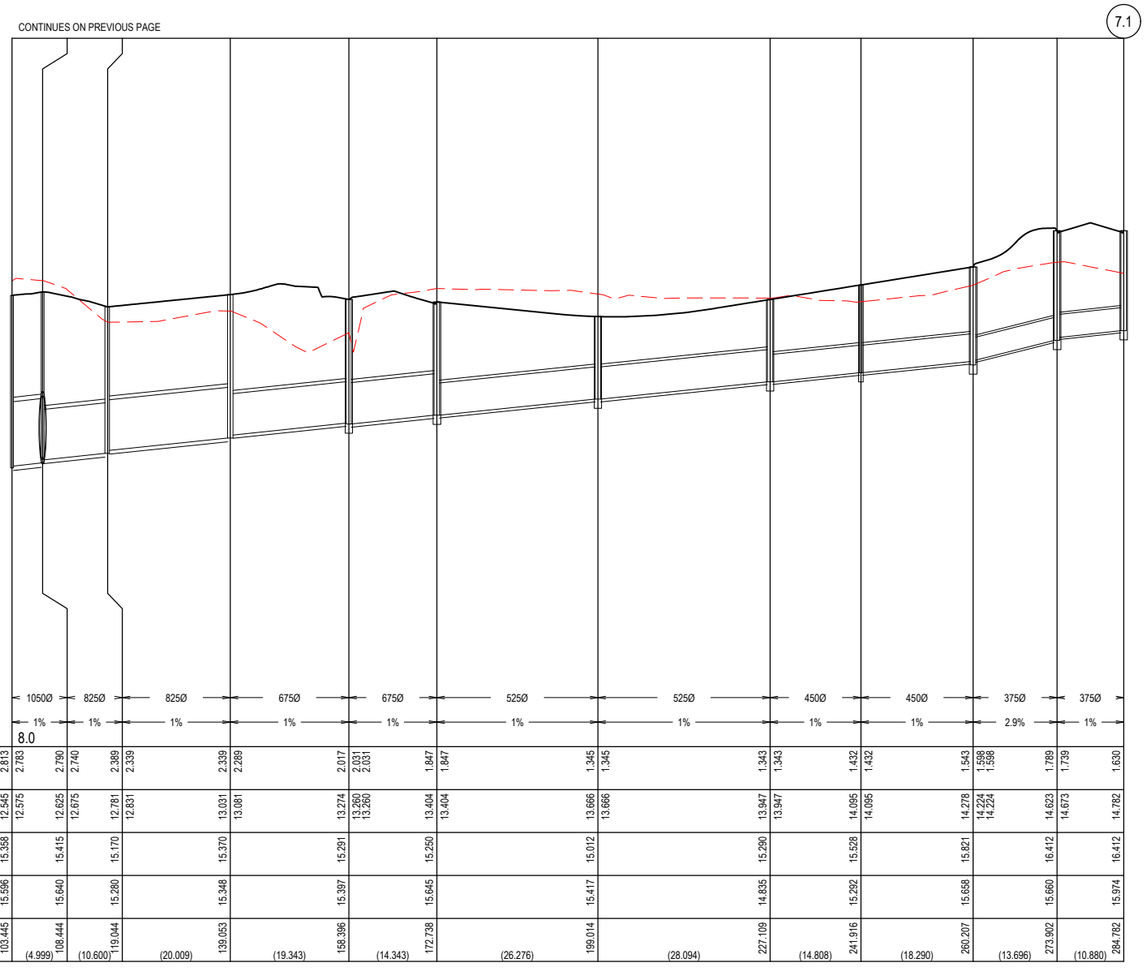
Project Ref	Stage No	Drawing No	Rev
2301879	321	604	B

F:\synergytemp\12dSynergy\12dSynergyServerService\3192\a0aac392-9e58-408d-ab3d-b9bfe4405e2f\2301879-321-600-DLS.dwg

NOTES:
ALL STORMWATER DRAINS UP TO AND INCLUDING 750mm DIA. ARE TO BE CLASS 2 R.R.J. PIPES UNLESS NOTED OTHERWISE.

LEGEND
EXISTING SURFACE
DESIGN SURFACE

CONTINUES ON PREVIOUS PAGE



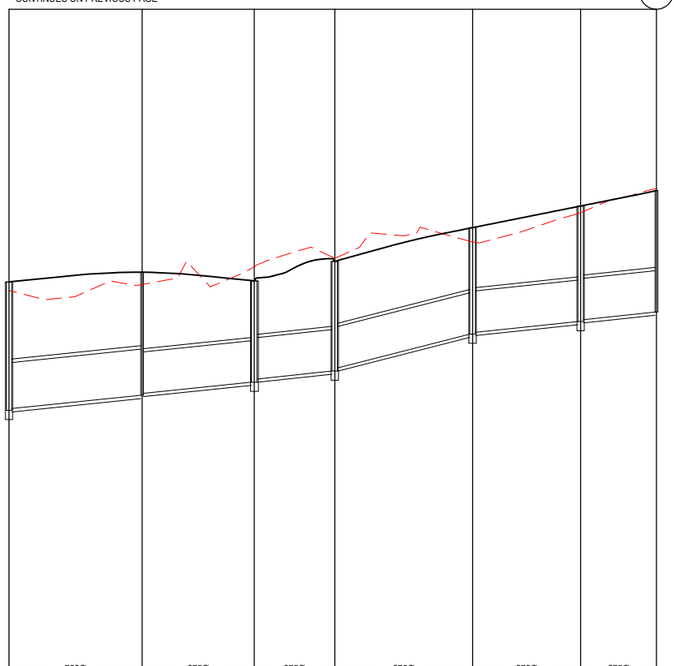
| | | |

NOTES:
ALL STORMWATER DRAINS UP TO AND INCLUDING 750mm DIA. ARE TO BE CLASS 2 R.R.J. PIPES UNLESS NOTED OTHERWISE.

LEGEND
EXISTING SURFACE
DESIGN SURFACE

CONTINUES ON PREVIOUS PAGE

8.1



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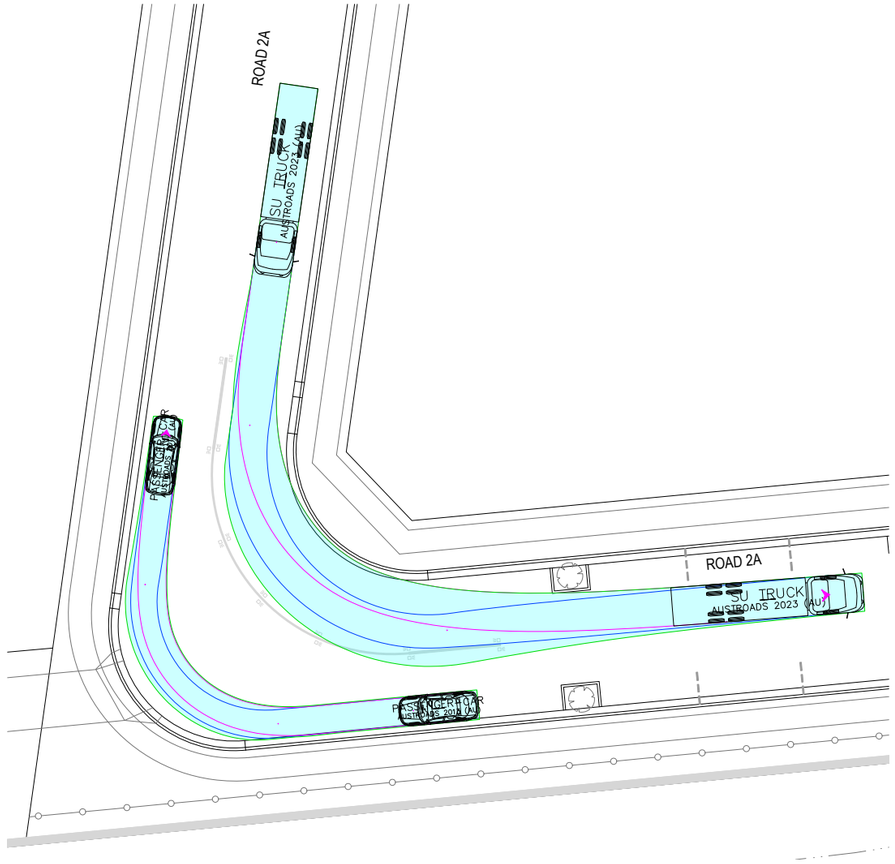
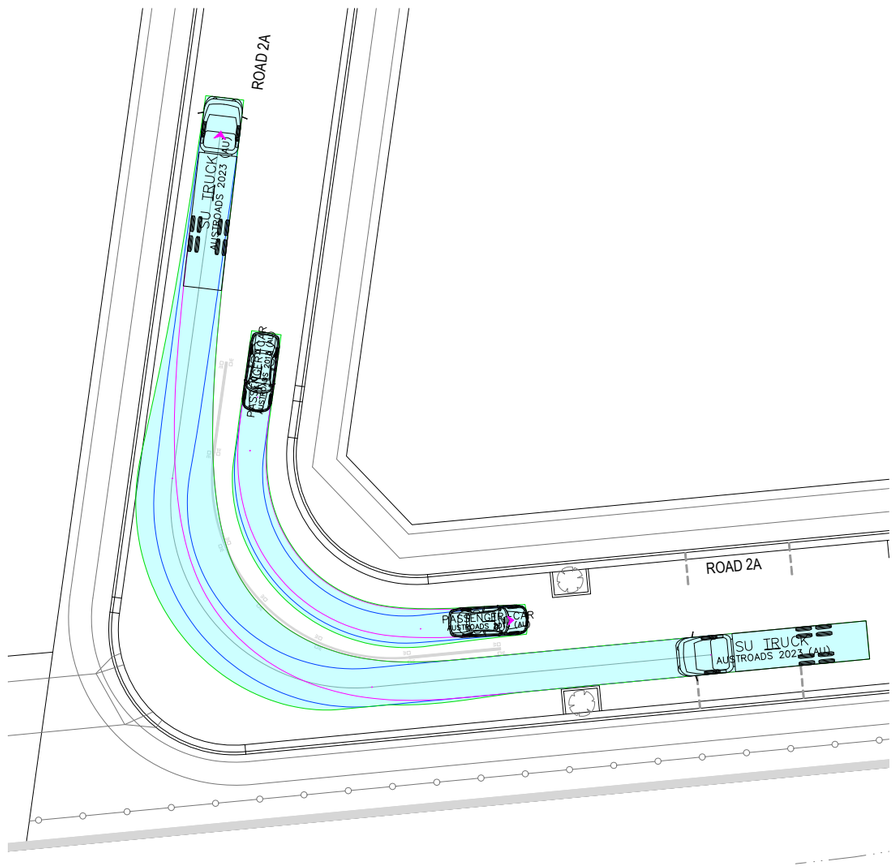


CAR OUTSIDE / SU TRUCK INSIDE



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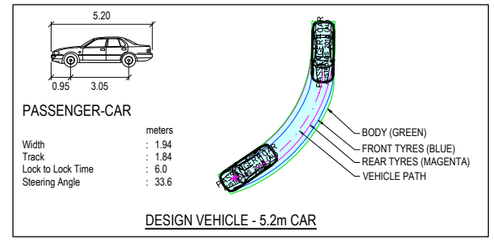
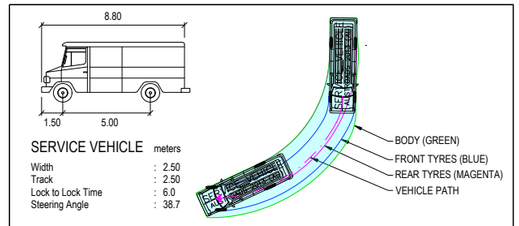
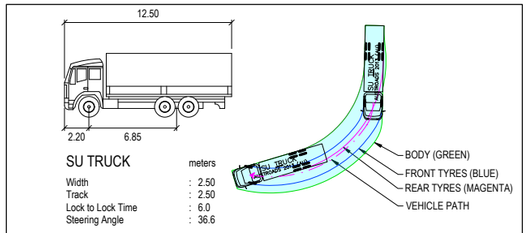


DESIGN VEHICLE - 5.2m CAR

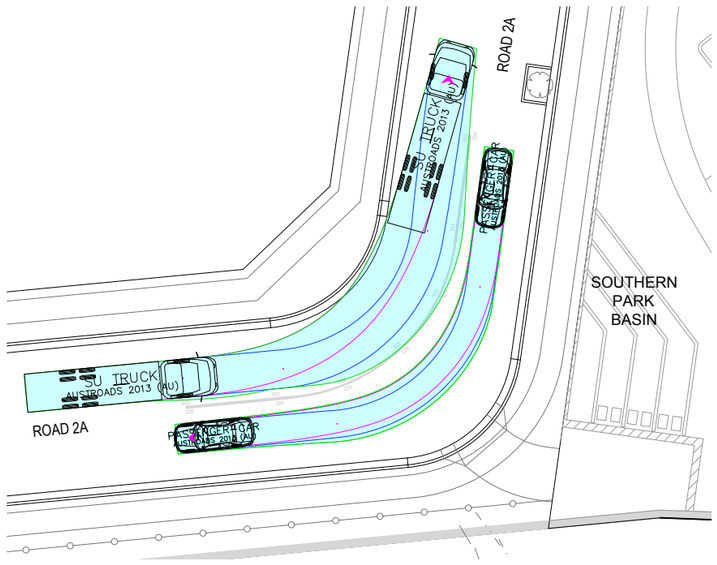


DESIGN VEHICLE - 8.8m SERVICE VEHICLE



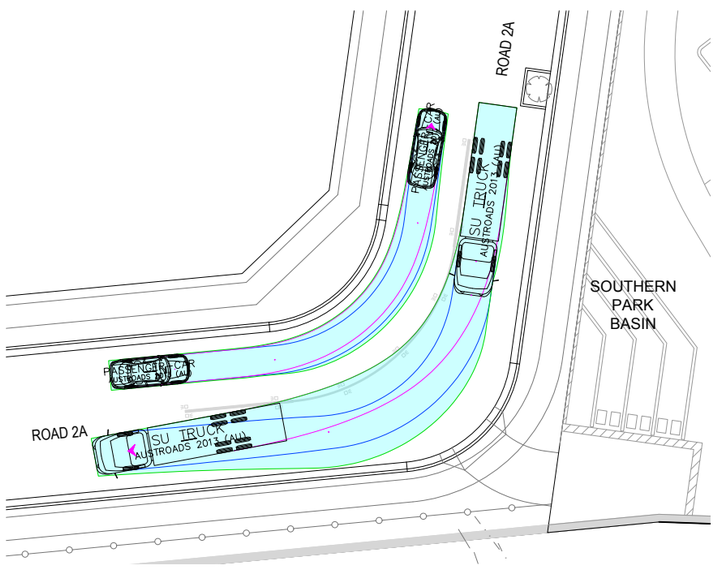
DESIGN VEHICLE - 12.5 m SERVICE VEHICLE

CAR OUTSIDE / SU TRUCK INSIDE



CAR OUTSIDE / SU TRUCK INSIDE

CAR INSIDE / SU TRUCK OUTSIDE



CAR INSIDE / SU TRUCK OUTSIDE

SERVICE VEHICLE INTO SOUTHERN BASIN

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A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

0 2 4 8 12 16
SCALE 1:200 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Approved	S. FERGUSON
Date	07.11.25
DA Number	-

Beveridge Williams
Development & Infrastructure Consultants
Level 4, LPC House, Suite 4.05, 3 Fordham way
Oran Park NSW 2570
ph: 02 46255055
www.beveridgewilliams.com.au

Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: TURNING MOVEMENTS
SHEET 1 OF1 8

Sheet 116 of145
Scale 1:200 @ A1

Project Number	Reference	Drawing No	Revision
2301879	321	700	B

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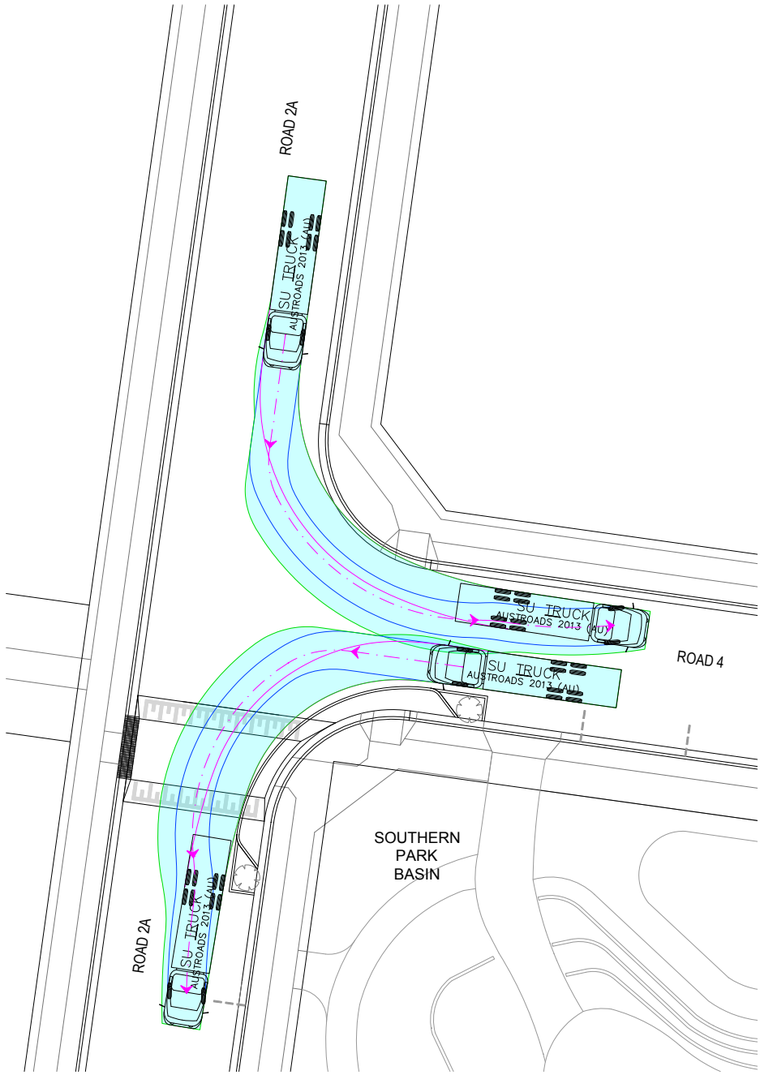

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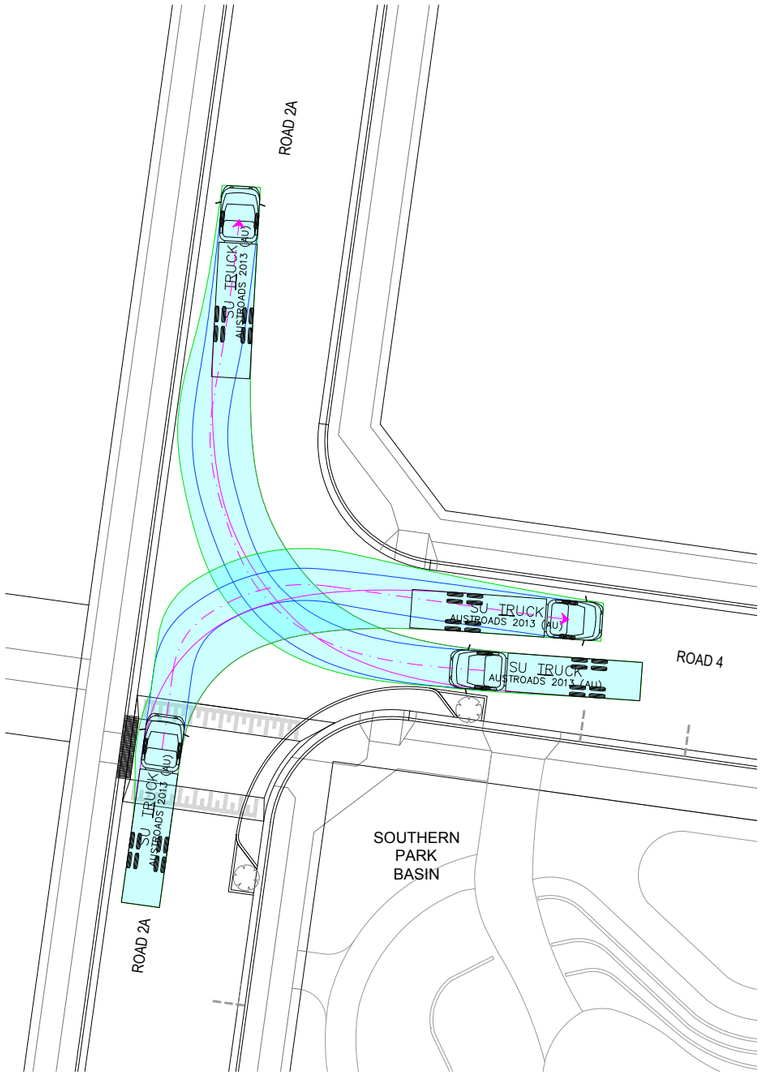

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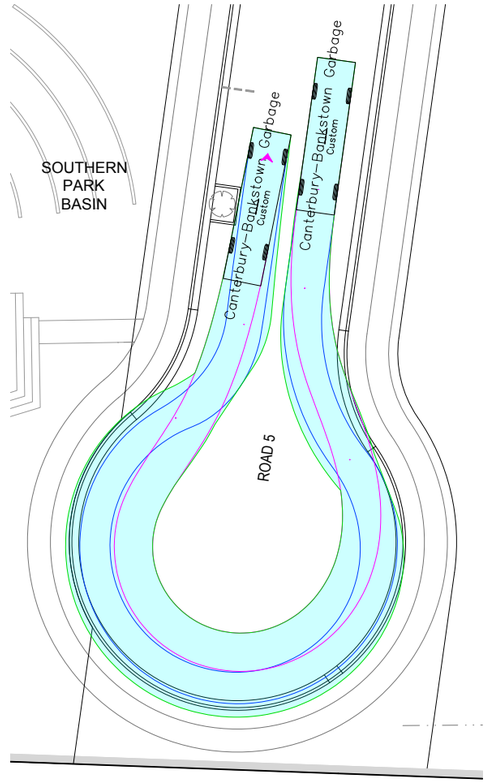
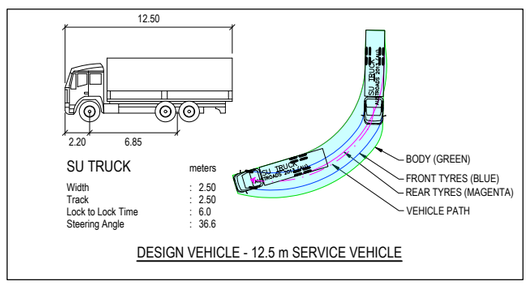
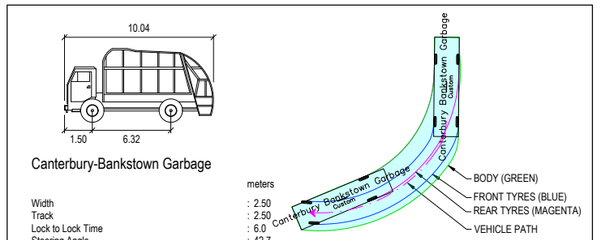


TURN AROUND AREA
(CANTERBURY-BANKSTOWN GARBAGE)



DESIGN VEHICLE - 12.5 m SERVICE VEHICLE



DESIGN VEHICLE - 10.04m CANTERBURY-BANKSTOWN GARBAGE

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REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

0 2 4 8 12 16
SCALE 1:200 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Approved	S. FERGUSON
Date	07.11.25
DA Number	-

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Development & Infrastructure Consultants
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www.beveridgewilliams.com.au

Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: TURNING MOVEMENTS
SHEET 2 OF 18

Sheet 117 of145

Scale: 1:200 @ A1

Project Number	Reference	Drawing No	Revision
2301879	321	701	B

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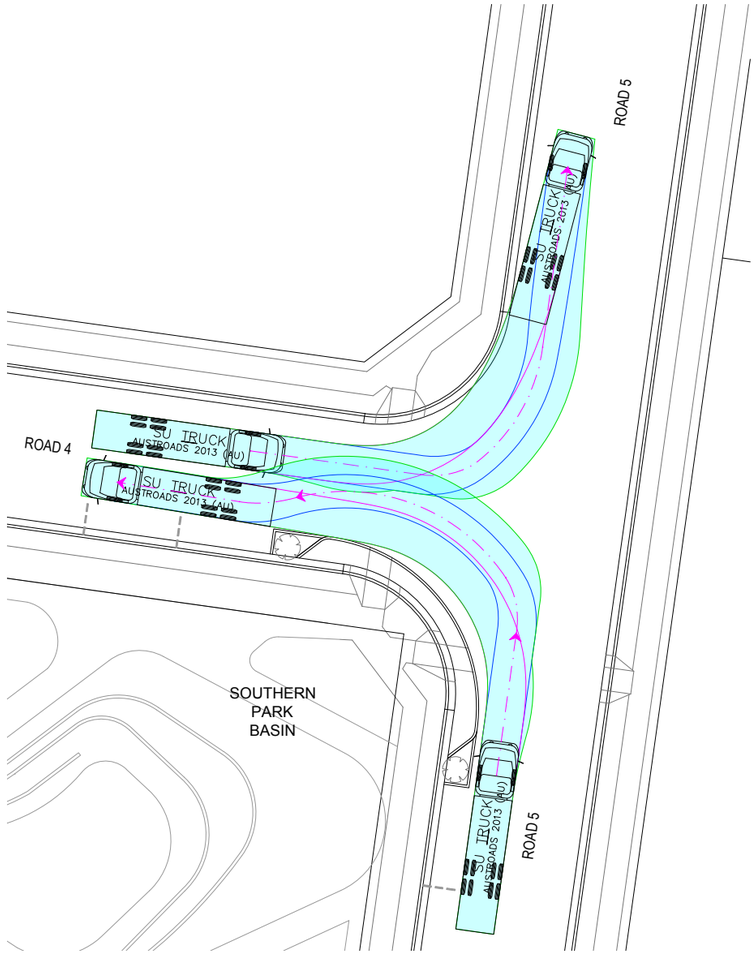

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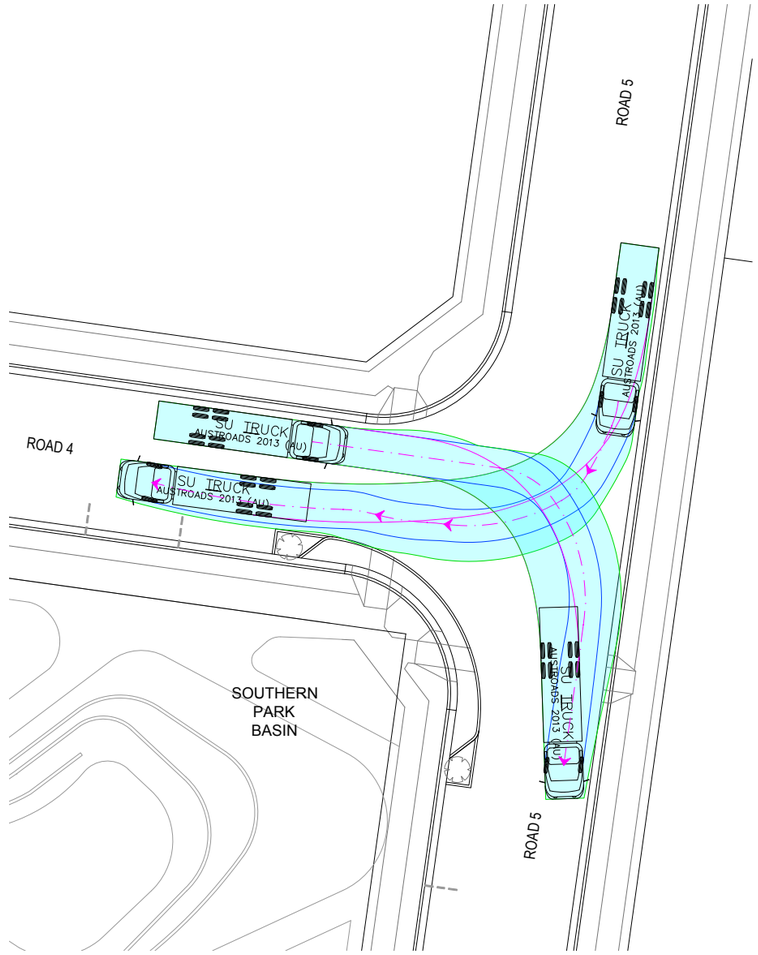
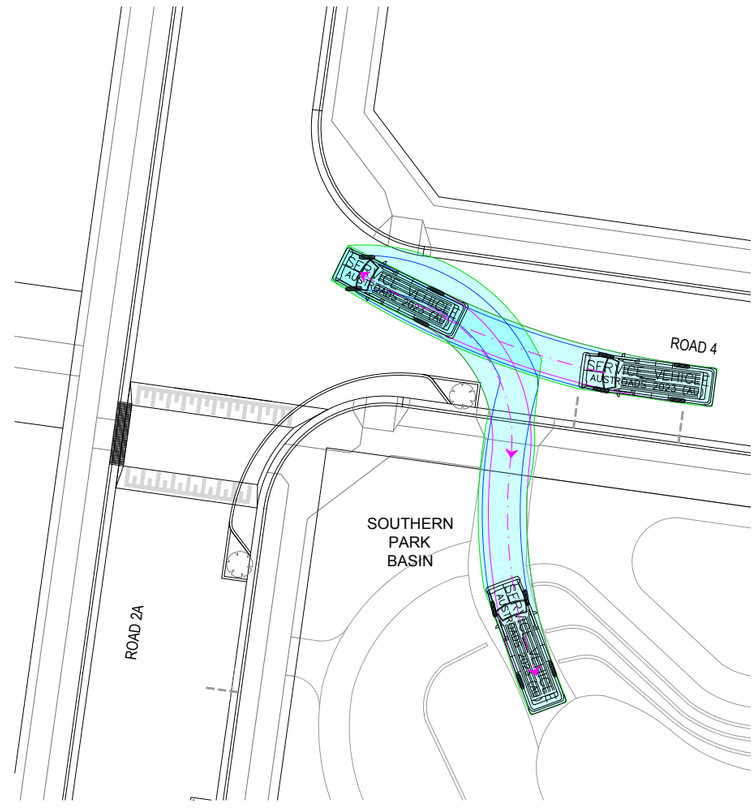
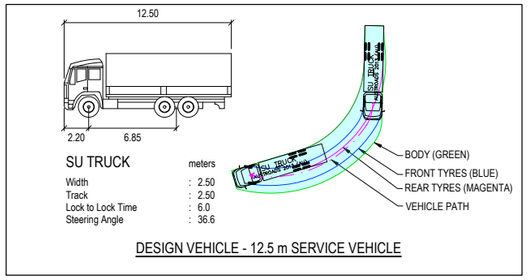


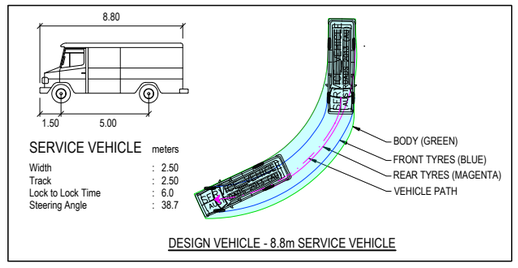
SU TRUCK - RIGHT IN / RIGHT OUT



SERVICE VEHICLE INTO SOUTHERN BASIN



DESIGN VEHICLE - 12.5 m SERVICE VEHICLE



DESIGN VEHICLE - 8.8m SERVICE VEHICLE

SERVICE VEHICLE INTO SOUTHERN BASIN

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B	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

0 2 4 8 12 16
SCALE 1:200 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Approved	S. FERGUSON
Date	07.11.25
DA Number	-

Beveridge Williams
Development & Infrastructure Consultants
Level 4, LPC House, Suite 4.05, 3 Fordham way
Oran Park NSW 2570
ph: 02 46255055
www.beveridgewilliams.com.au

Project Details	WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA
Drawing Title	TURNING MOVEMENTS SHEET 3 OF 18

Sheet 118 of145

Scale 1:200 @ A1

N

Project Number	Reference	Drawing No	Revision
2301879	321	702	B

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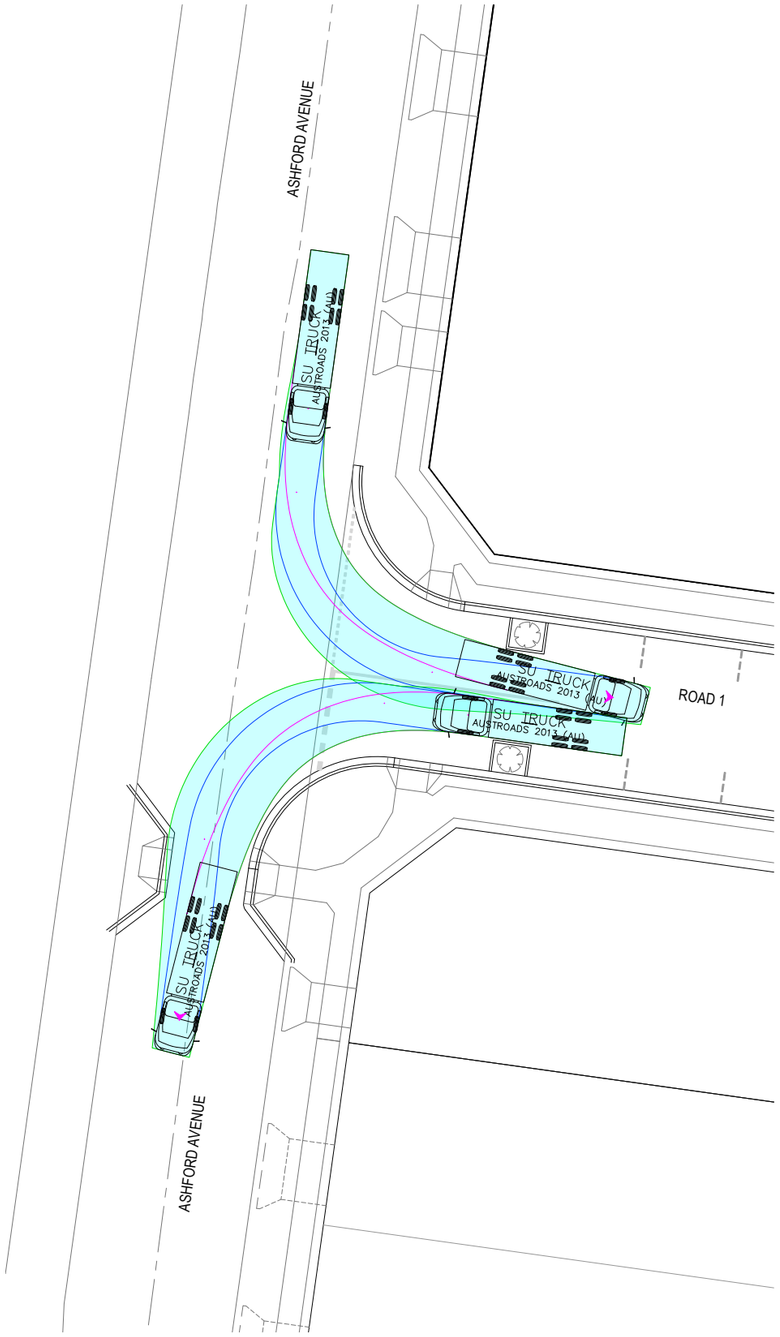

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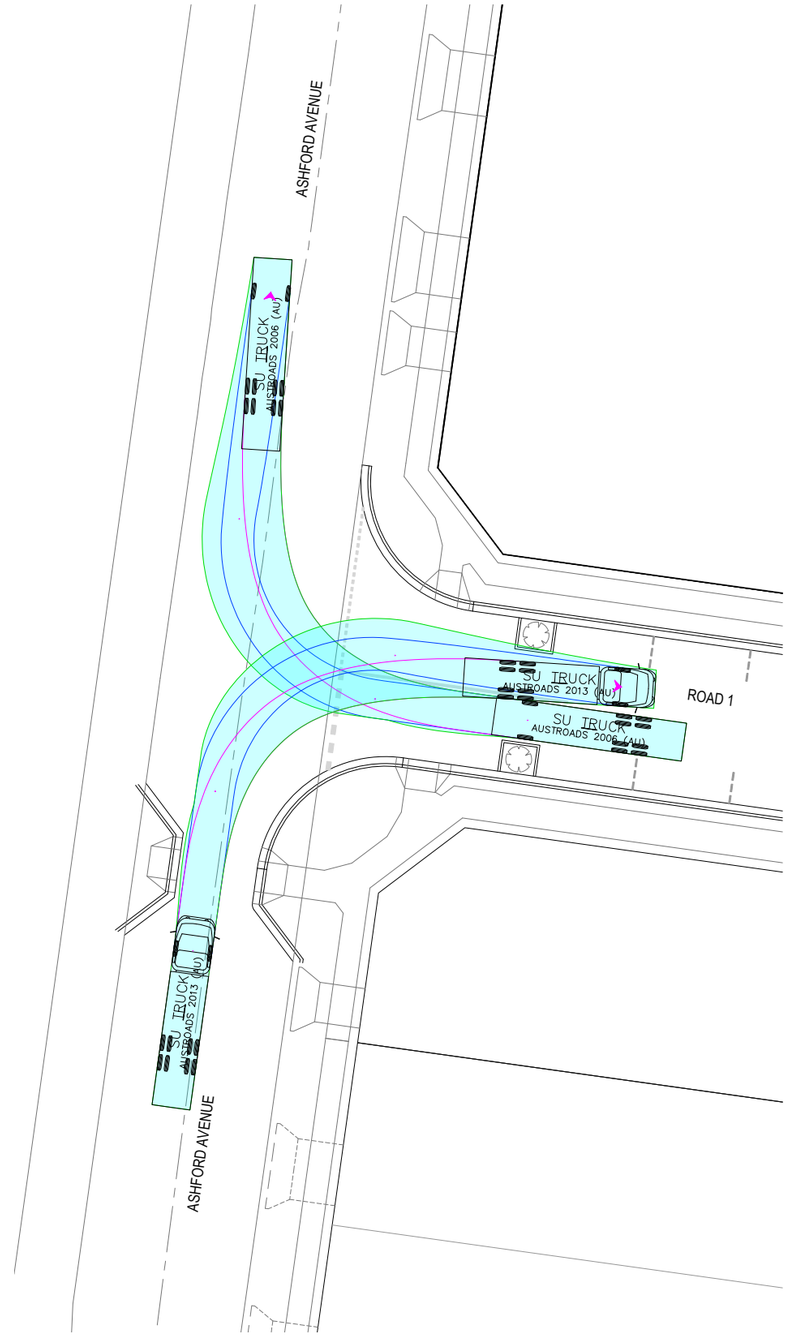

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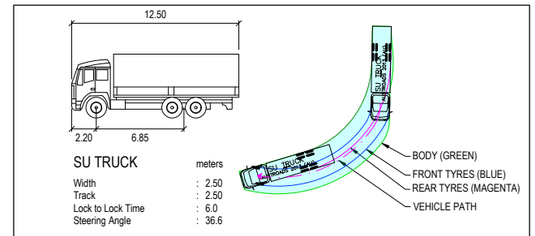

DESIGN VEHICLE - 12.5 m SERVICE VEHICLE

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B	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

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0 2 4 8 12 16
SCALE 1:200 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Approved	S. FERGUSON
Date	07.11.25
DA Number	-

Beveridge Williams
Development & Infrastructure Consultants
Level 4, LPC House, Suite 4.05, 3 Fordham way
Oran Park NSW 2570
ph: 02 46255055
www.beveridgewilliams.com.au

Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: TURNING MOVEMENTS
SHEET 4 OF 18

Sheet 119 of145
Scale 1:200 @ A1

Project Number	Reference	Drawing No	Revision
2301879	321	703	B

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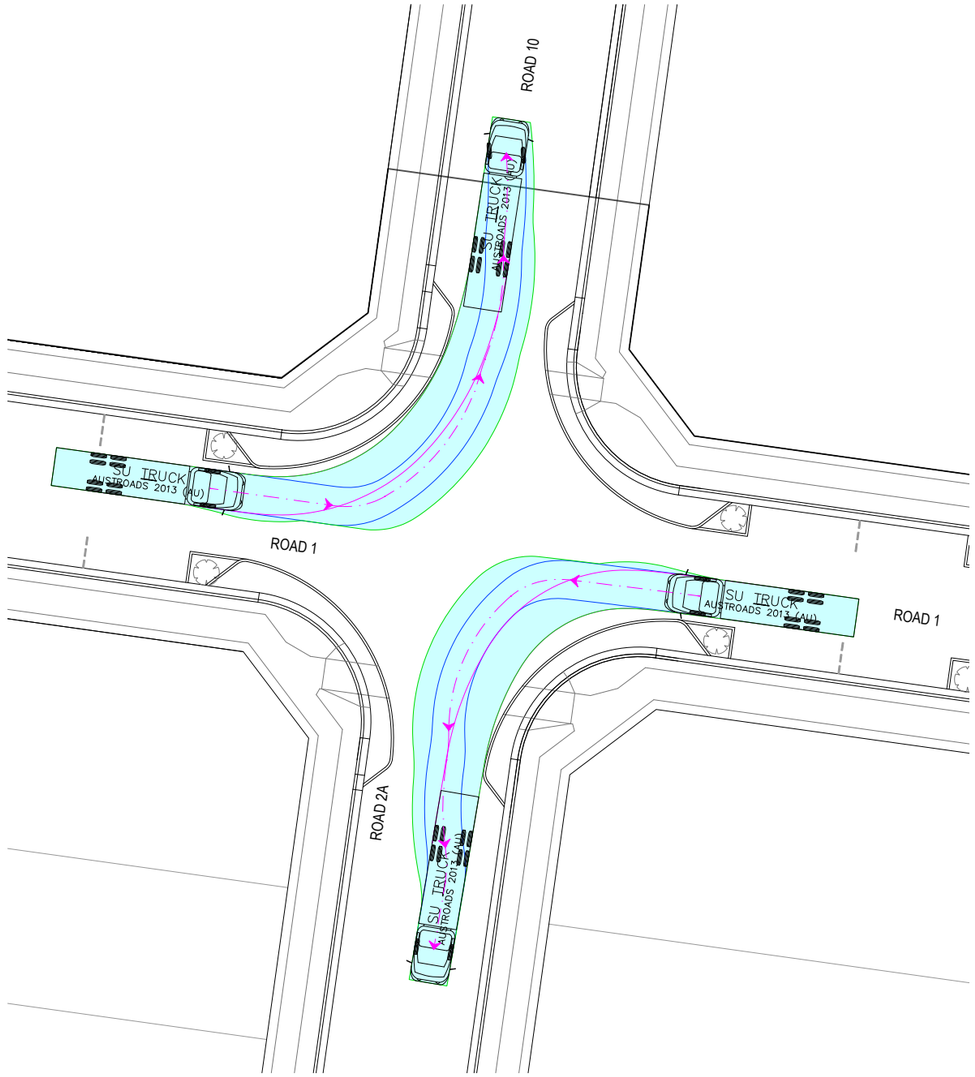

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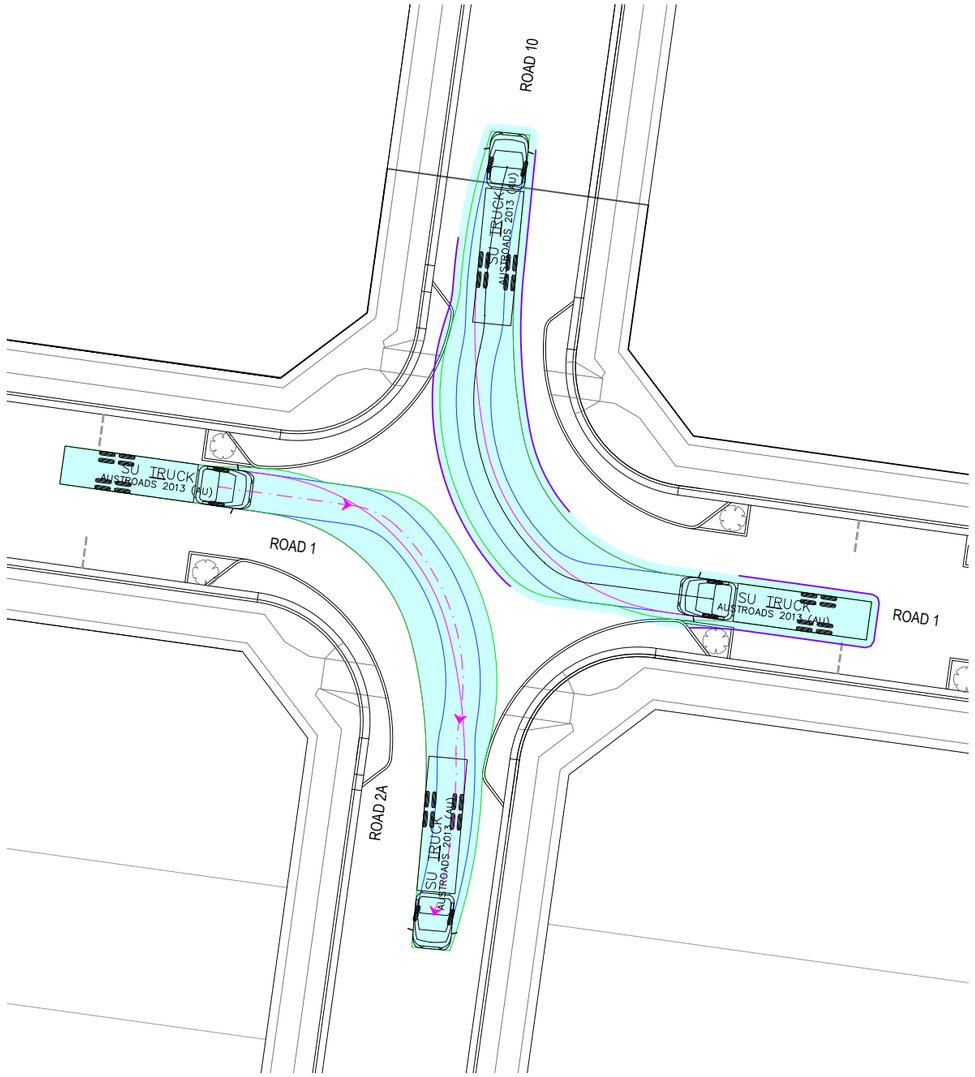

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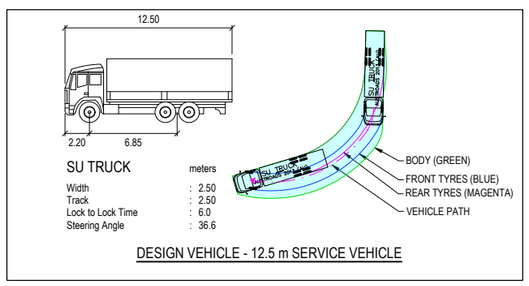

DESIGN VEHICLE - 12.5 m SERVICE VEHICLE

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A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

mirvac

0 2 4 8 12 16
SCALE 1:200 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Approved	S. FERGUSON
Date	07.11.25
DA Number	-

Beveridge Williams
Development & Infrastructure Consultants
Level 4, LPC House, Suite 4.05, 3 Fordham way
Oran Park NSW 2570
ph: 02 46255055
www.beveridgewilliams.com.au

Project Details	WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA
Drawing Title	TURNING MOVEMENTS SHEET 5 OF 18

Sheet 120 of145

Scale 1:200 @ A1

N

Project Number	Reference	Drawing No	Revision
2301879	321	704	B

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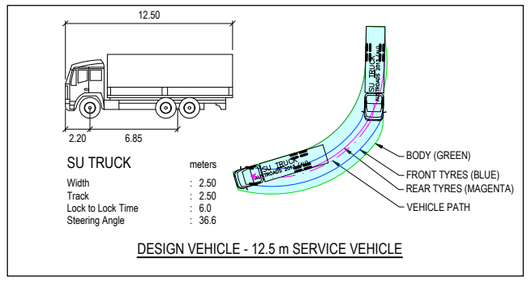
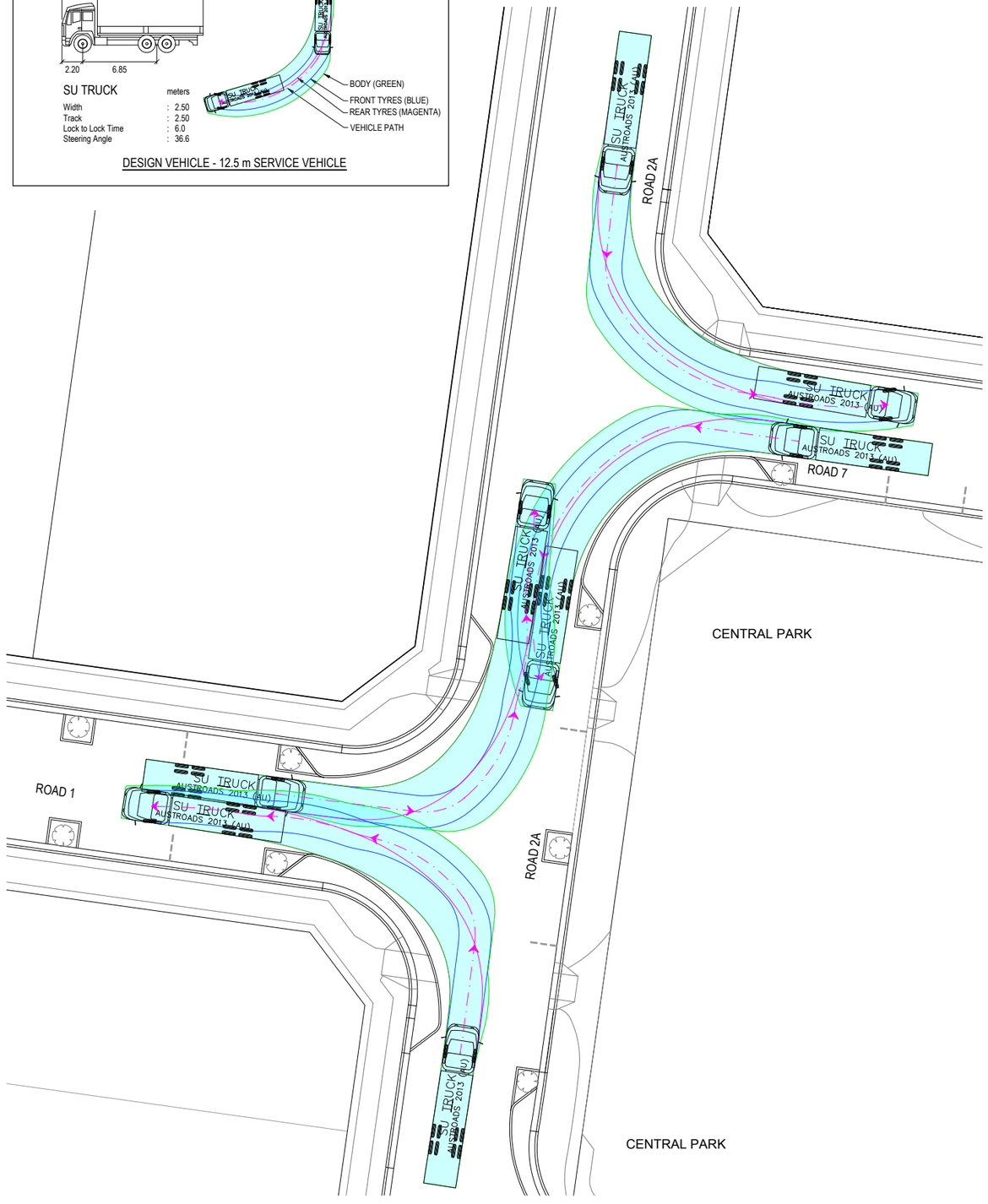


DESIGN VEHICLE - 12.5 m SERVICE VEHICLE



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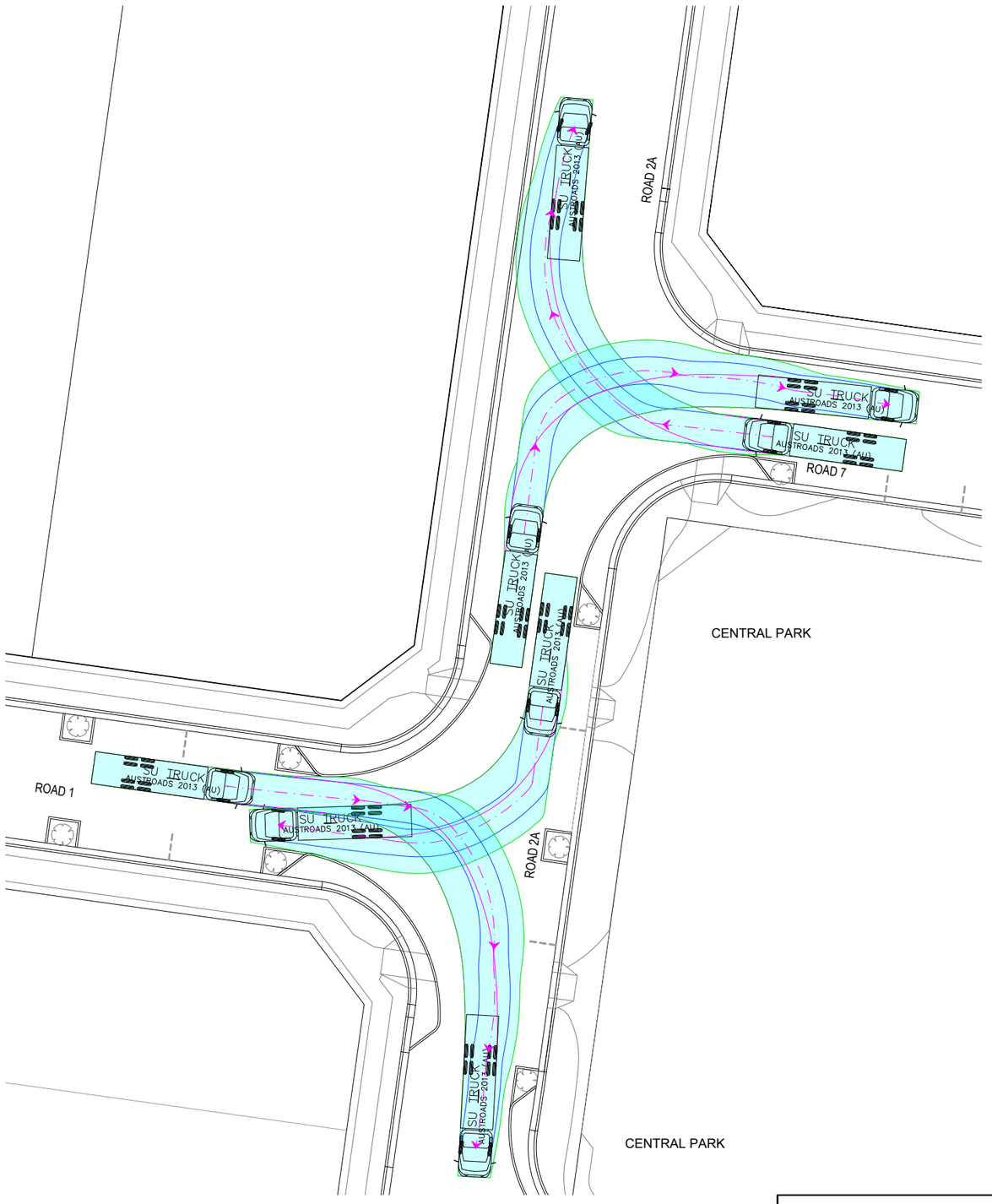

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B	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

mirvac

0 2 4 8 12 16
SCALE 1:200 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Approved	S. FERGUSON
Date	07.11.25
DA Number	-

Beveridge Williams
Development & Infrastructure Consultants
Level 4, LPC House, Suite 4.05, 3 Fordham way
Oran Park NSW 2570
ph: 02 46255055
www.beveridgewilliams.com.au

Project Details	WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA
Drawing Title	TURNING MOVEMENTS SHEET 6 OF 18

Sheet 121 of145

Scale 1:200 @ A1

N

Project Number	Reference	Drawing No	Revision
2301879	321	705	B

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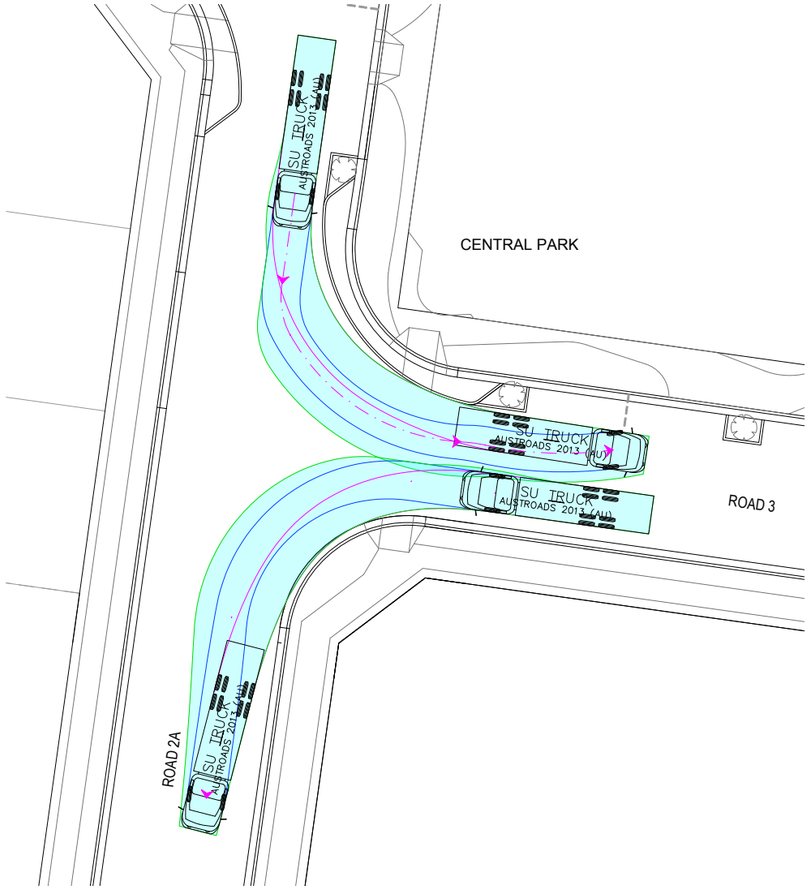

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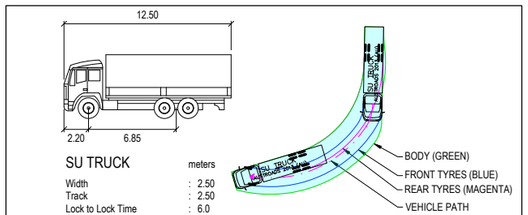
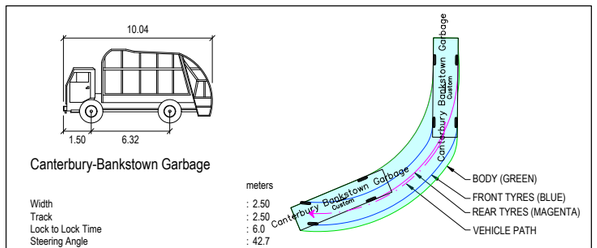


DESIGN VEHICLE - 12.5 m SERVICE VEHICLE



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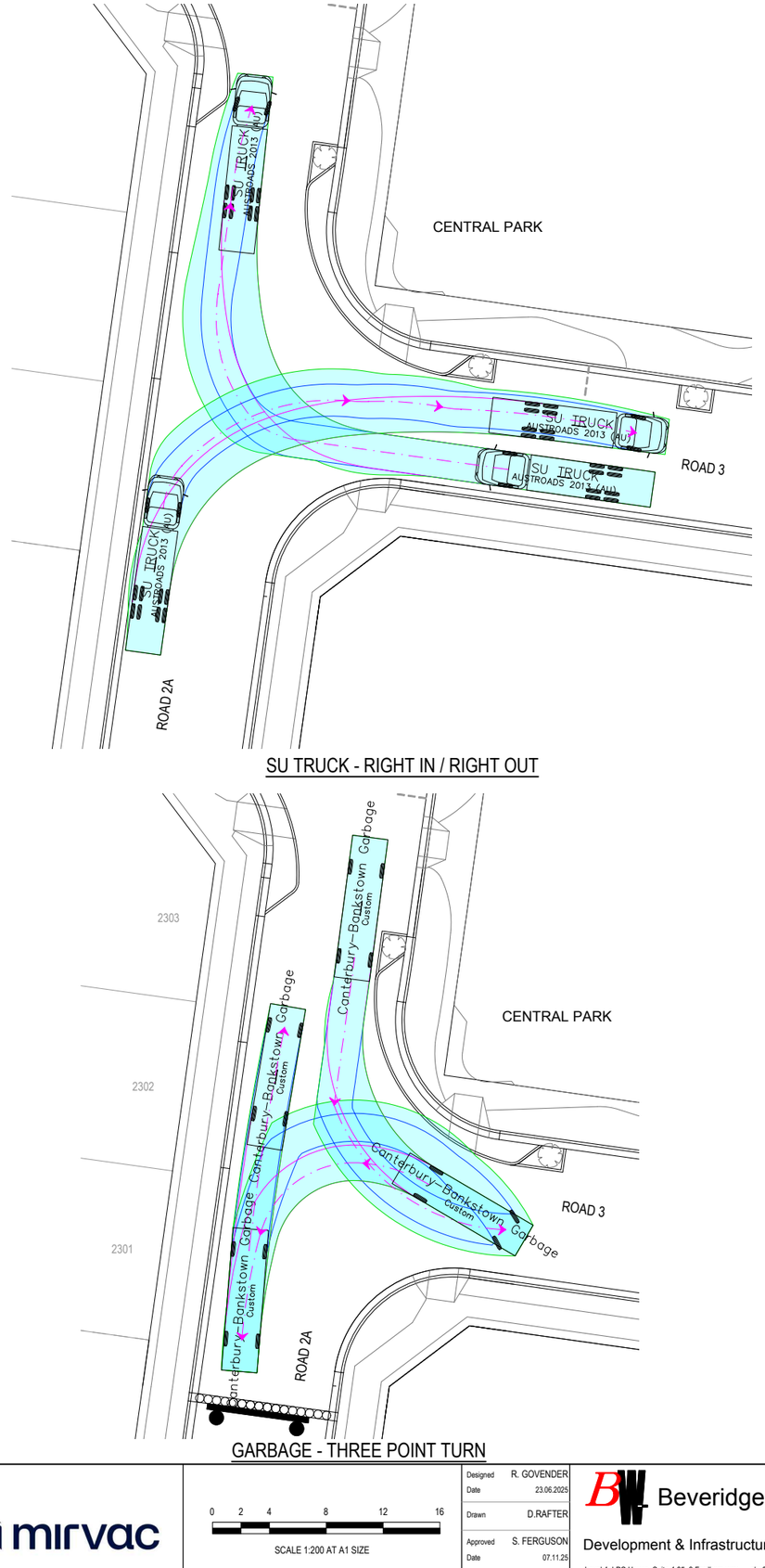
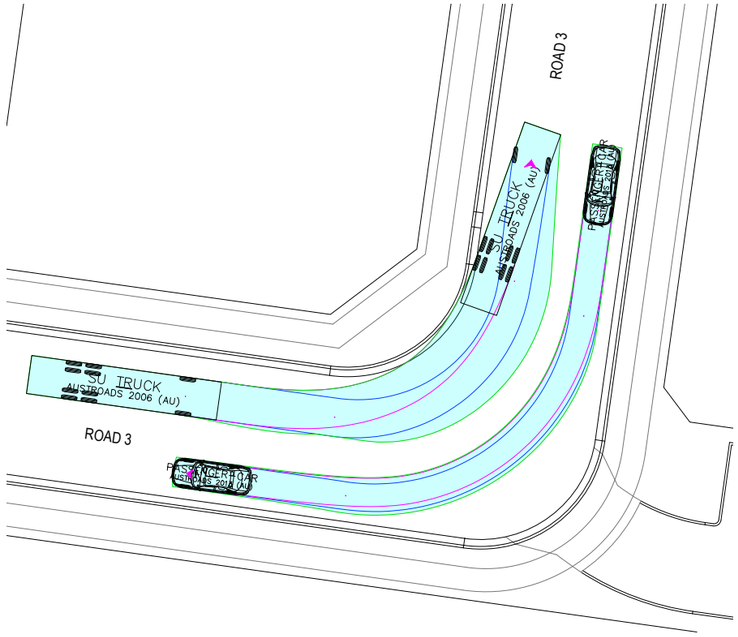
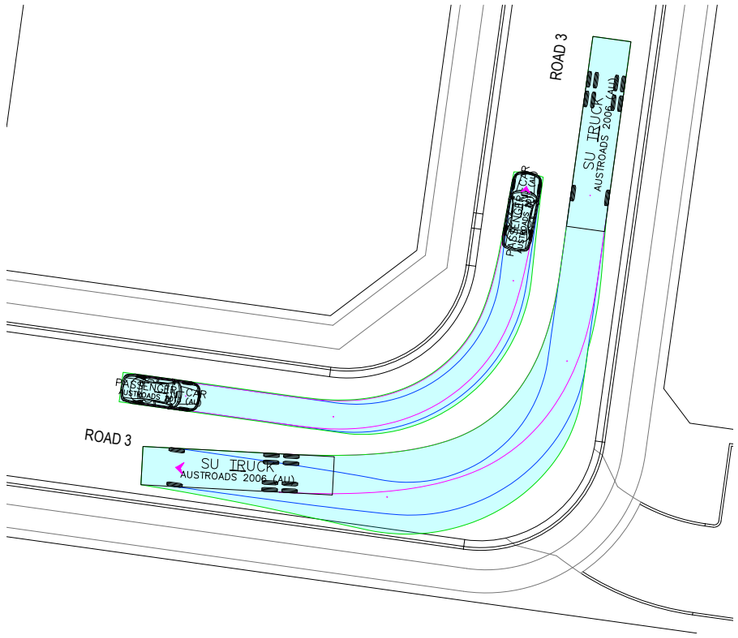


SU TRUCK - RIGHT IN / RIGHT OUT

GARBAGE - THREE POINT TURN



CAR OUTSIDE / SU TRUCK INSIDE



CAR INSIDE / SU TRUCK OUTSIDE

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B	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

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0 2 4 8 12 16
SCALE 1:200 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Approved	S. FERGUSON
Date	07.11.25
DA Number	-

Beveridge Williams
Development & Infrastructure Consultants
Level 4, LPC House, Suite 4.05, 3 Fordham way, Oran Park NSW 2570
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www.beveridgewilliams.com.au

Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: TURNING MOVEMENTS
SHEET 7 OF 18

Sheet 122 of145
Scale 1:200 @ A1

Project Number	Reference	Drawing No	Revision
2301879	321	706	B

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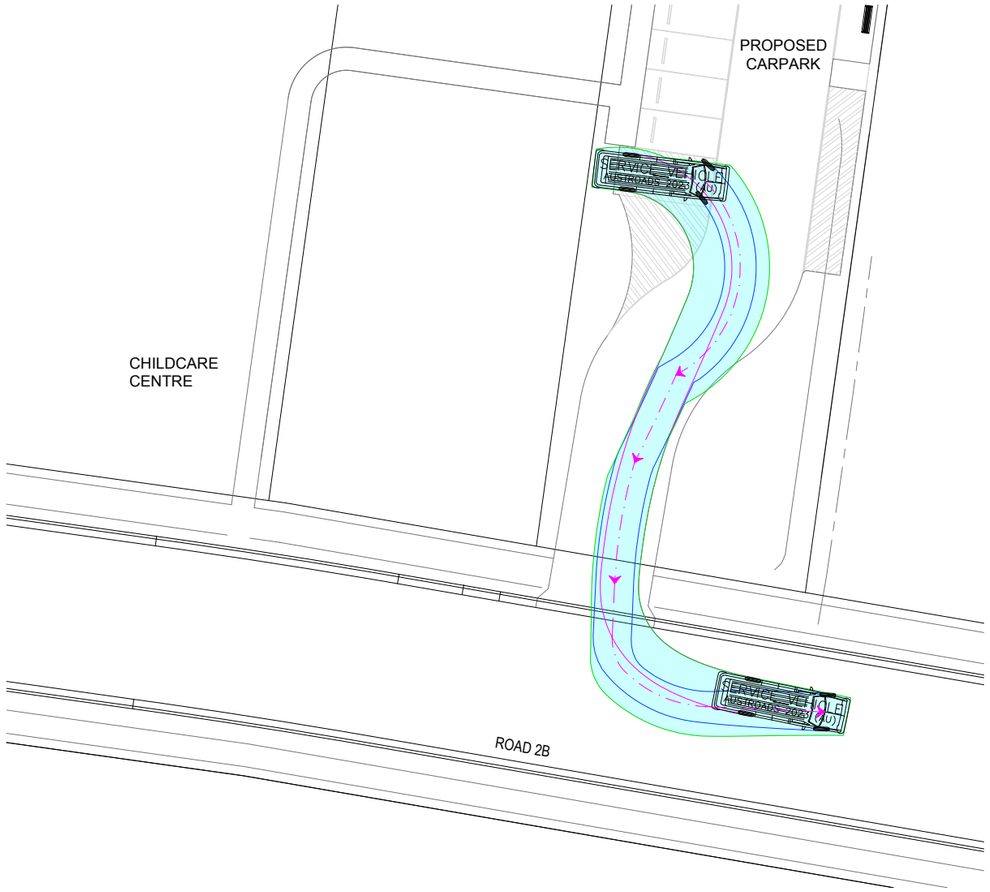
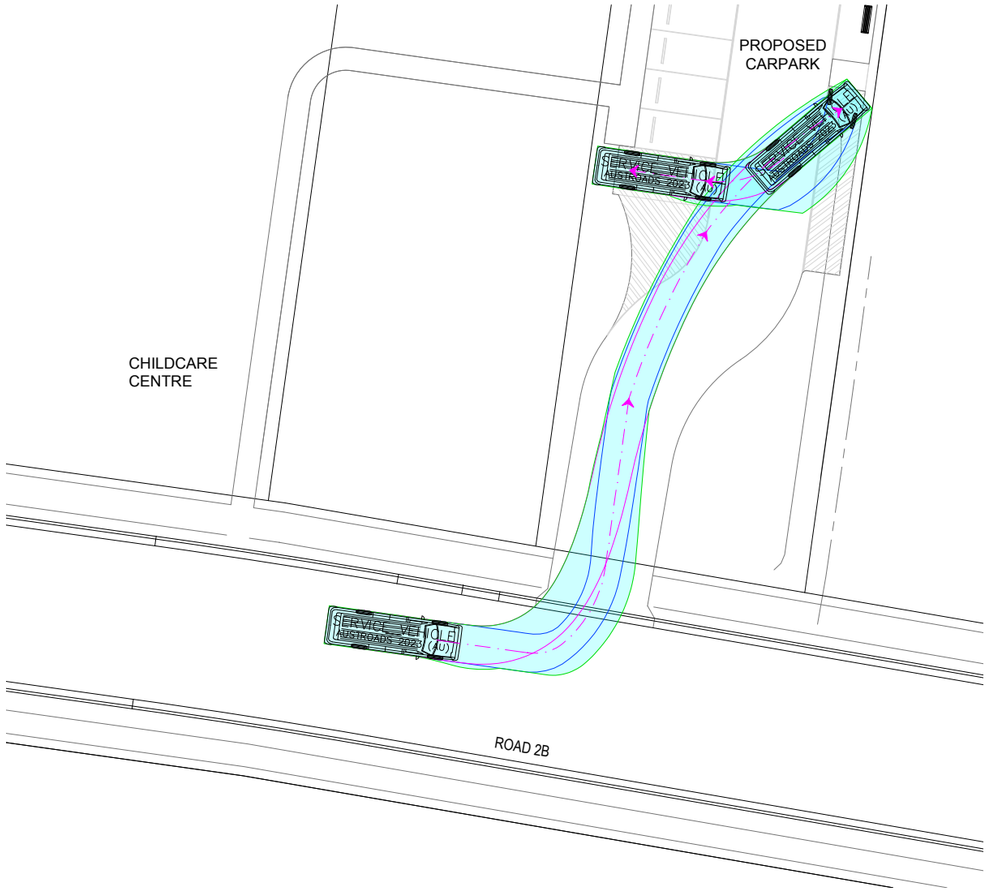


SV TRUCK - VEHICLE EXITING



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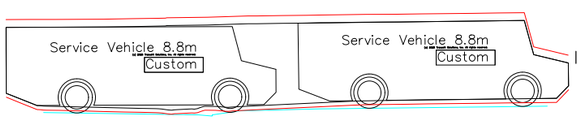
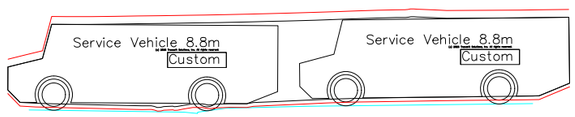


Ground Clearance (units: m)

Part #	Front	Wheelbase	Rear
#1	0.25	0.25	0.25

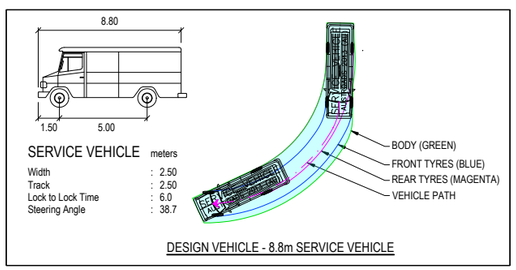
8.8m SERVICE VEHICLE - CHILDCARE CARPARK ENTRY VERTICAL CLEARANCE



Ground Clearance (units: m)

Part #	Front	Wheelbase	Rear
#1	0.25	0.25	0.25

8.8m SERVICE VEHICLE - CHILDCARE CARPARK EXIT VERTICAL CLEARANCE



DESIGN VEHICLE - 8.8m SERVICE VEHICLE

LEGEND

ROAD ALIGNMENT

BODY CLEARANCE

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C	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
B	UPDATED TURNING TEMPLATE	23.10.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

mirvac

0 2 4 8 12 16
SCALE 1:200 AT A1 SIZE

Designed R. GOVENDER
Date 23.06.2025
Drawn D.RAFTER
Approved
Date 07.11.25
DA Number -

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Development & Infrastructure Consultants
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ph: 02 46255055
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: TURNING MOVEMENTS
SHEET 8 OF 18

Sheet 123 of145
Scale 1:200 @ A1

Project Number	Reference	Drawing No	Revision
2301879	321	707	C

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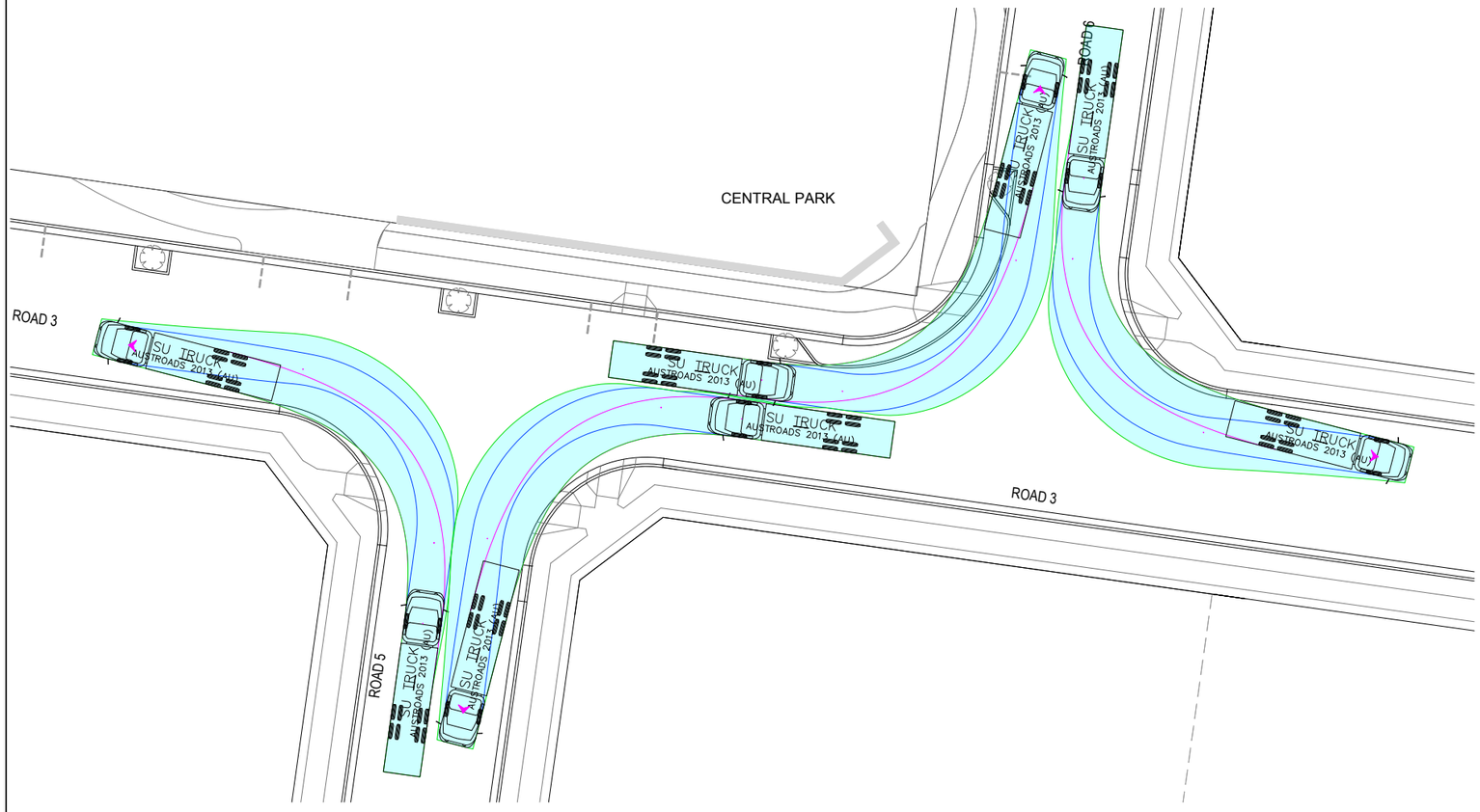

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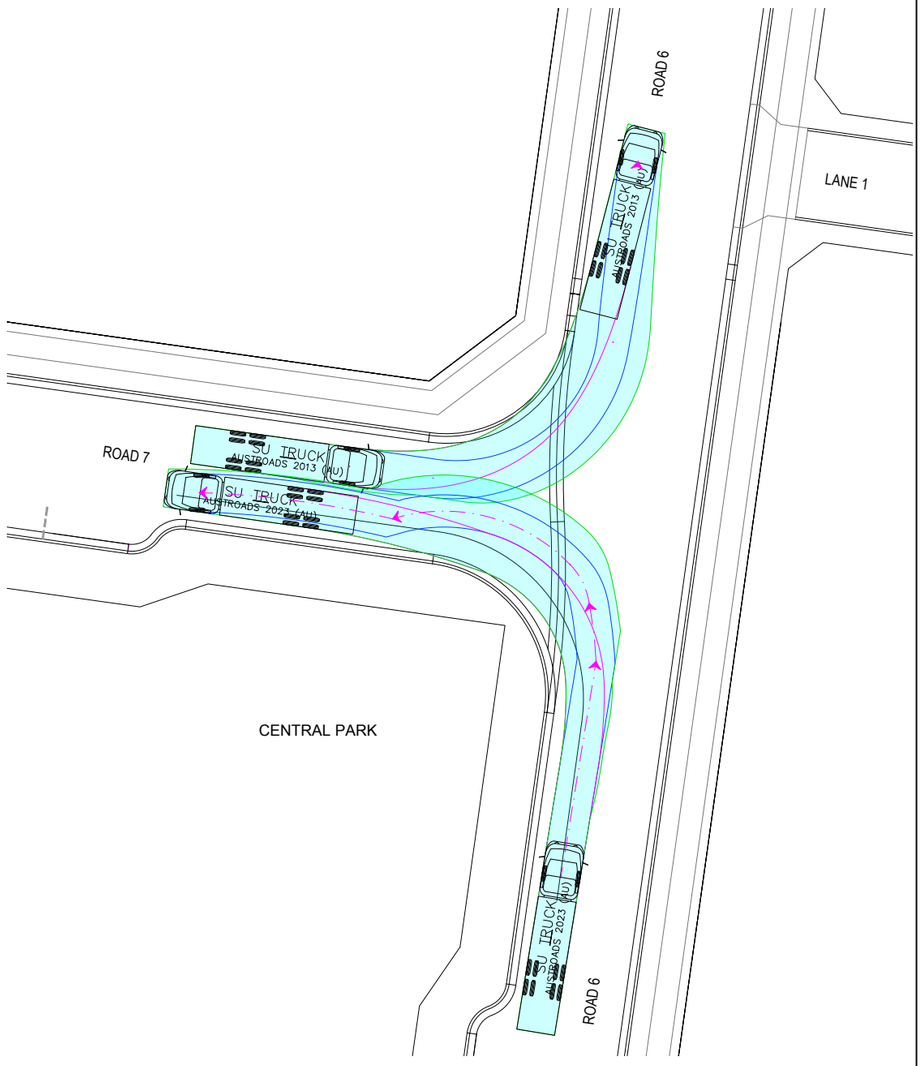

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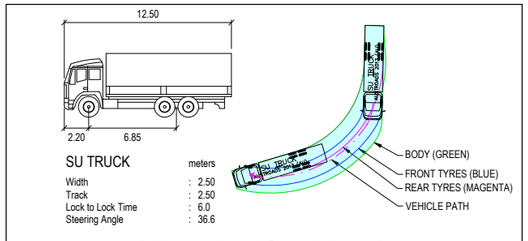

DESIGN VEHICLE - 12.5 m SERVICE VEHICLE

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A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

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0 2 4 8 12 16
SCALE 1:200 AT A1 SIZE

Designed R. GOVENDER
Date 23.06.2025
Drawn D.RAFTER
Approved
Date 07.11.25
DA Number -

Beveridge Williams
Development & Infrastructure Consultants
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: TURNING MOVEMENTS
SHEET 9 OF 18

Sheet 124 of145
Scale 1:200 @ A1

Project Number	Reference	Drawing No	Revision
2301879	321	708	B

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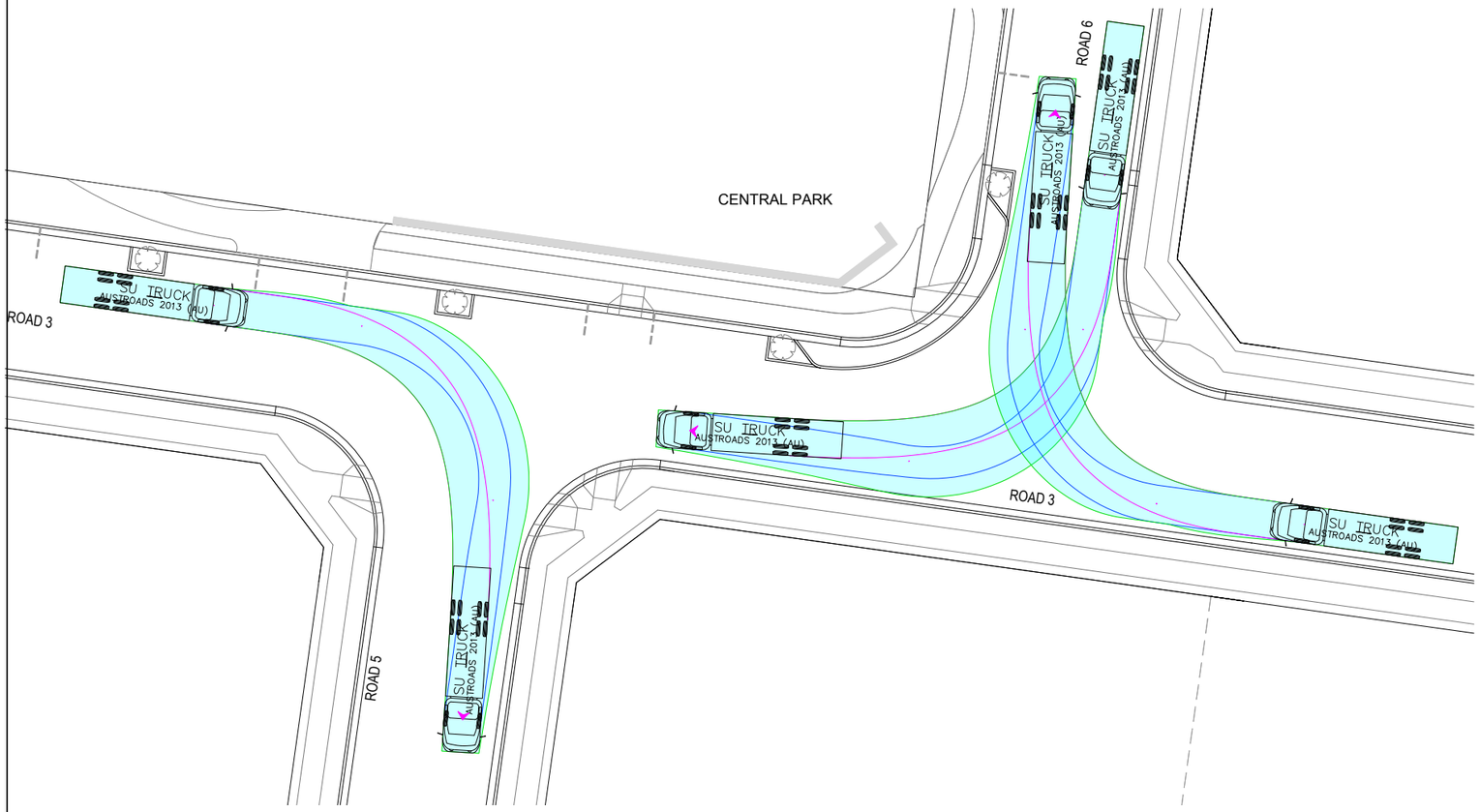

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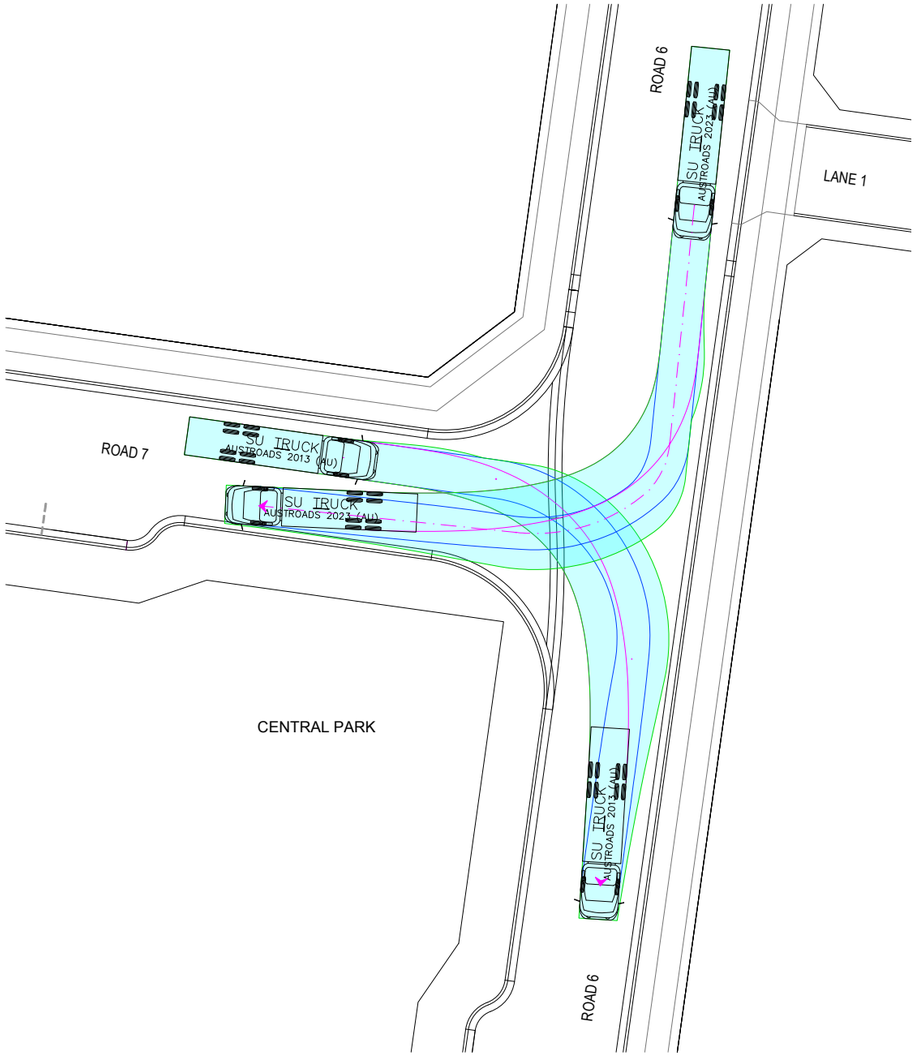

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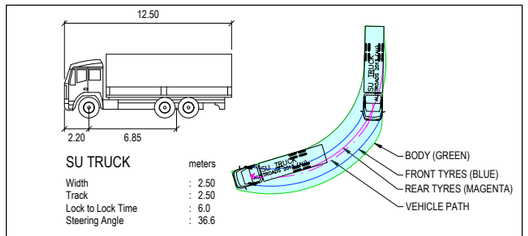

DESIGN VEHICLE - 12.5 m SERVICE VEHICLE

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A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

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0 2 4 8 12 16
SCALE 1:200 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Approved	
Date	07.11.25
DA Number	-

Beveridge Williams
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Level 4, LPC House, Suite 4.05, 3 Fordham way Oran Park NSW 2570
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA

Drawing Title: TURNING MOVEMENTS SHEET 10 OF 18

Sheet 125 of145

Scale 1:200 @ A1

Project Number	Reference	Drawing No	Revision
2301879	321	709	B

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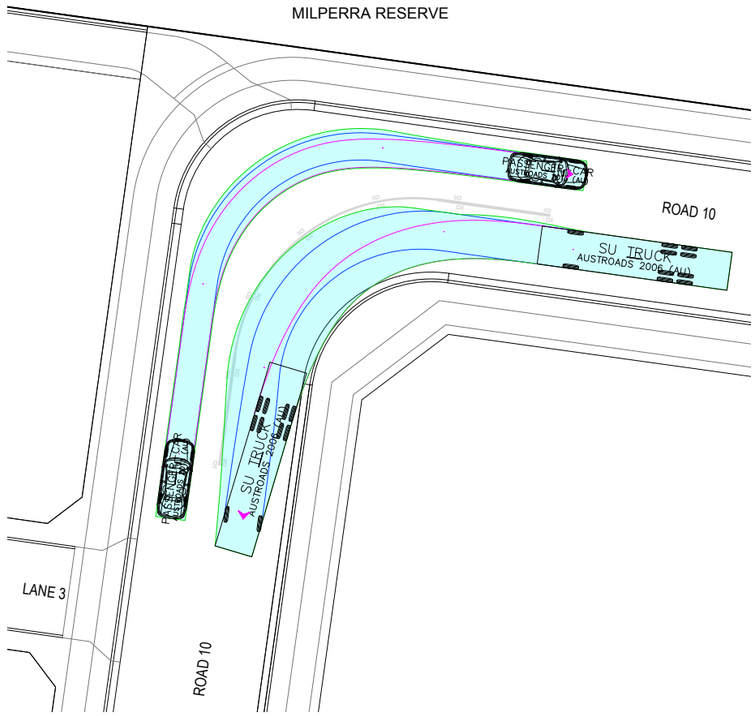

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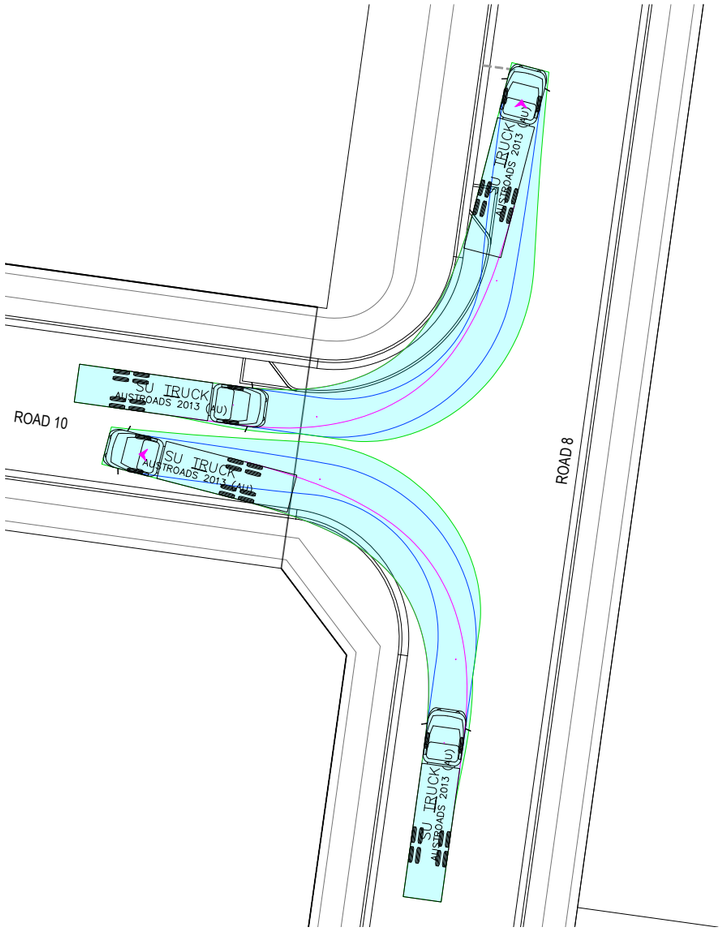

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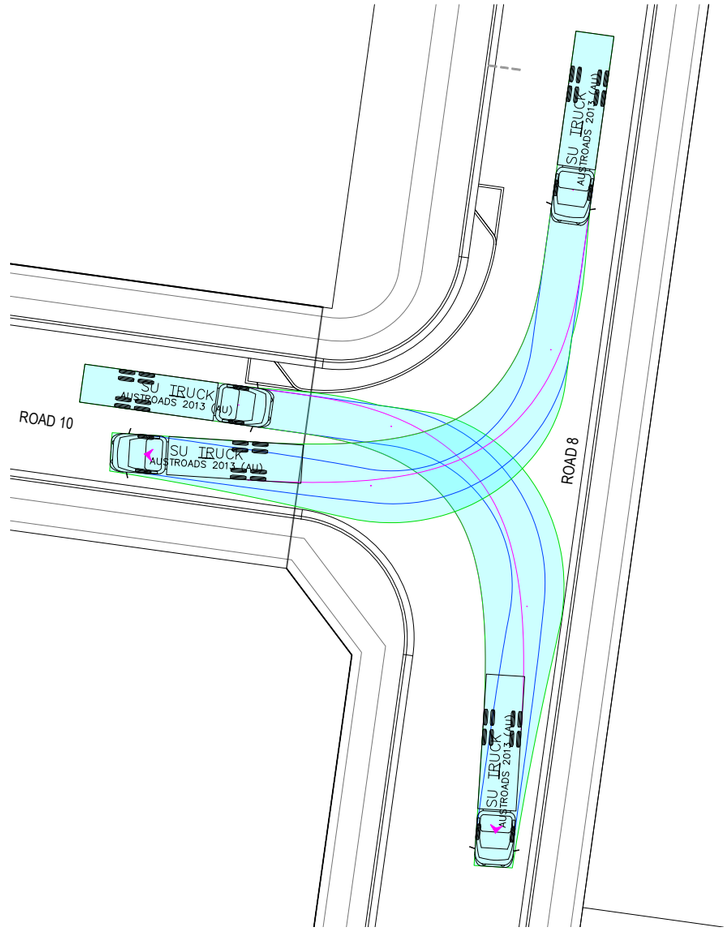

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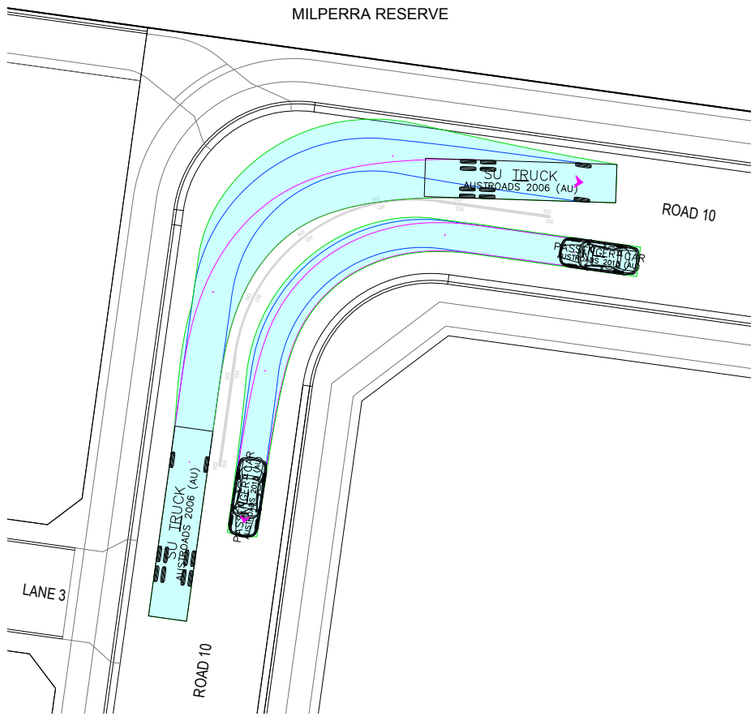

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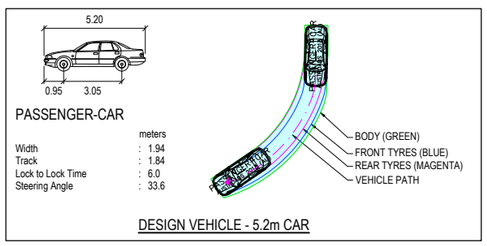
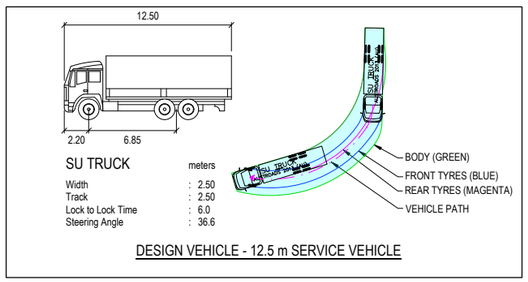


DESIGN VEHICLE - 5.2m CAR



DESIGN VEHICLE - 12.5 m SERVICE VEHICLE

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A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

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0 2 4 8 12 16
SCALE 1:200 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Approved	
Date	07.11.25
DA Number	-

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Level 4, LPC House, Suite 4.05, 3 Fordham way Oran Park NSW 2570
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA

Drawing Title: TURNING MOVEMENTS SHEET 11 OF 18

Sheet 126 of145

Scale 1:200 @ A1

N

Project Number	Reference	Drawing No	Revision
2301879	321	710	B

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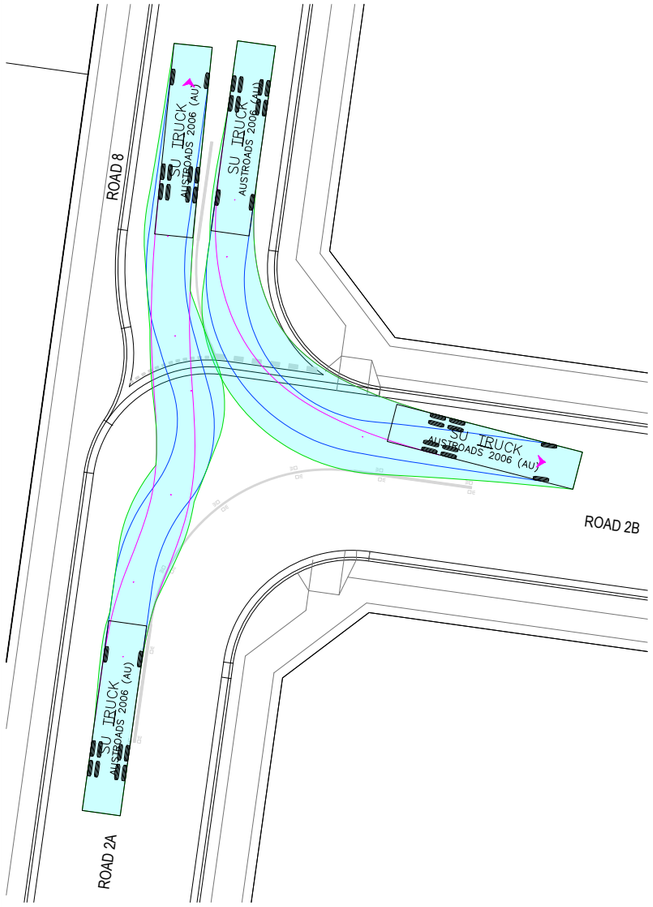

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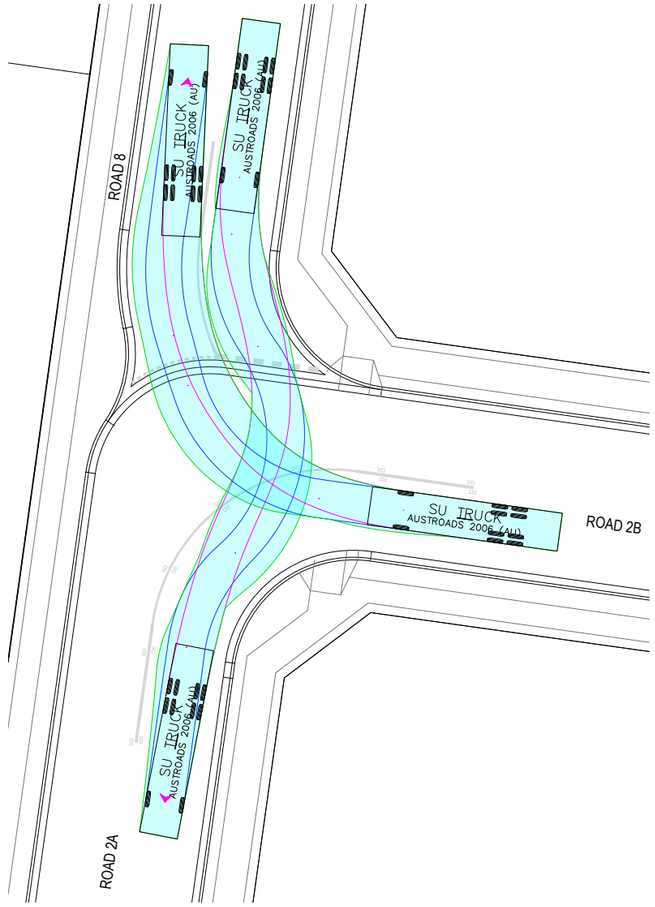

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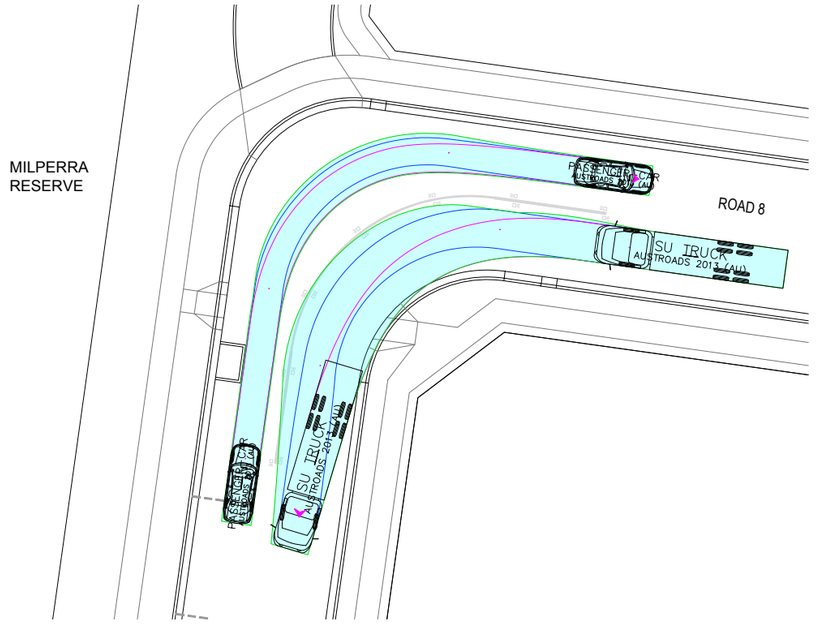
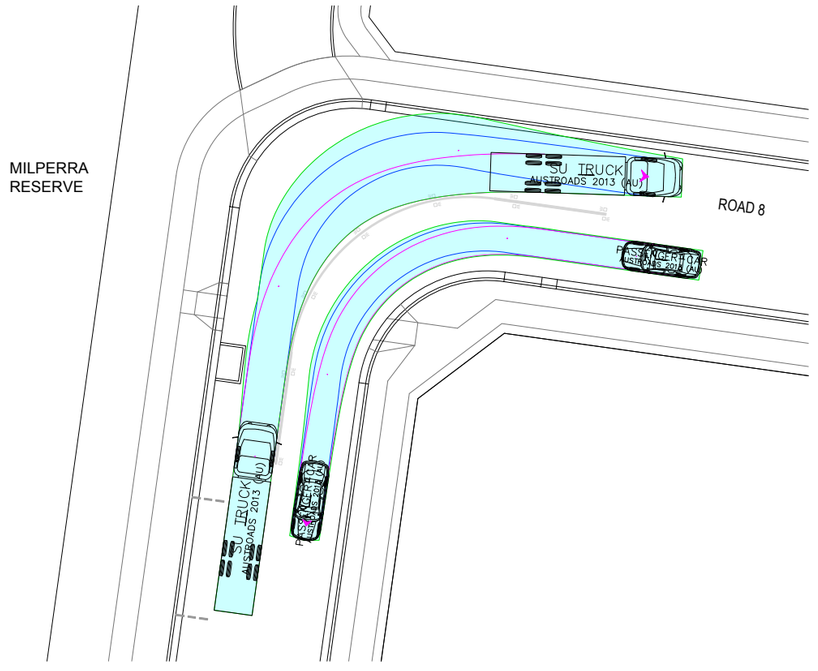
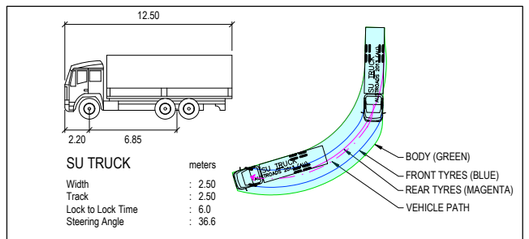


CAR OUTSIDE / SU TRUCK INSIDE



CAR INSIDE / SU TRUCK OUTSIDE



DESIGN VEHICLE - 12.5 m SERVICE VEHICLE

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A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

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0 2 4 8 12 16
SCALE 1:200 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Approved	
Date	07.11.25
DA Number	-

Beveridge Williams
Development & Infrastructure Consultants
Level 4, LPC House, Suite 4.05, 3 Fordham way
Oran Park NSW 2570
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www.beveridgewilliams.com.au

Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: TURNING MOVEMENTS
SHEET 12 OF 18

Sheet 127 of145

Scale: 1:200 @ A1

Project Number	Reference	Drawing No	Revision
2301879	321	711	B

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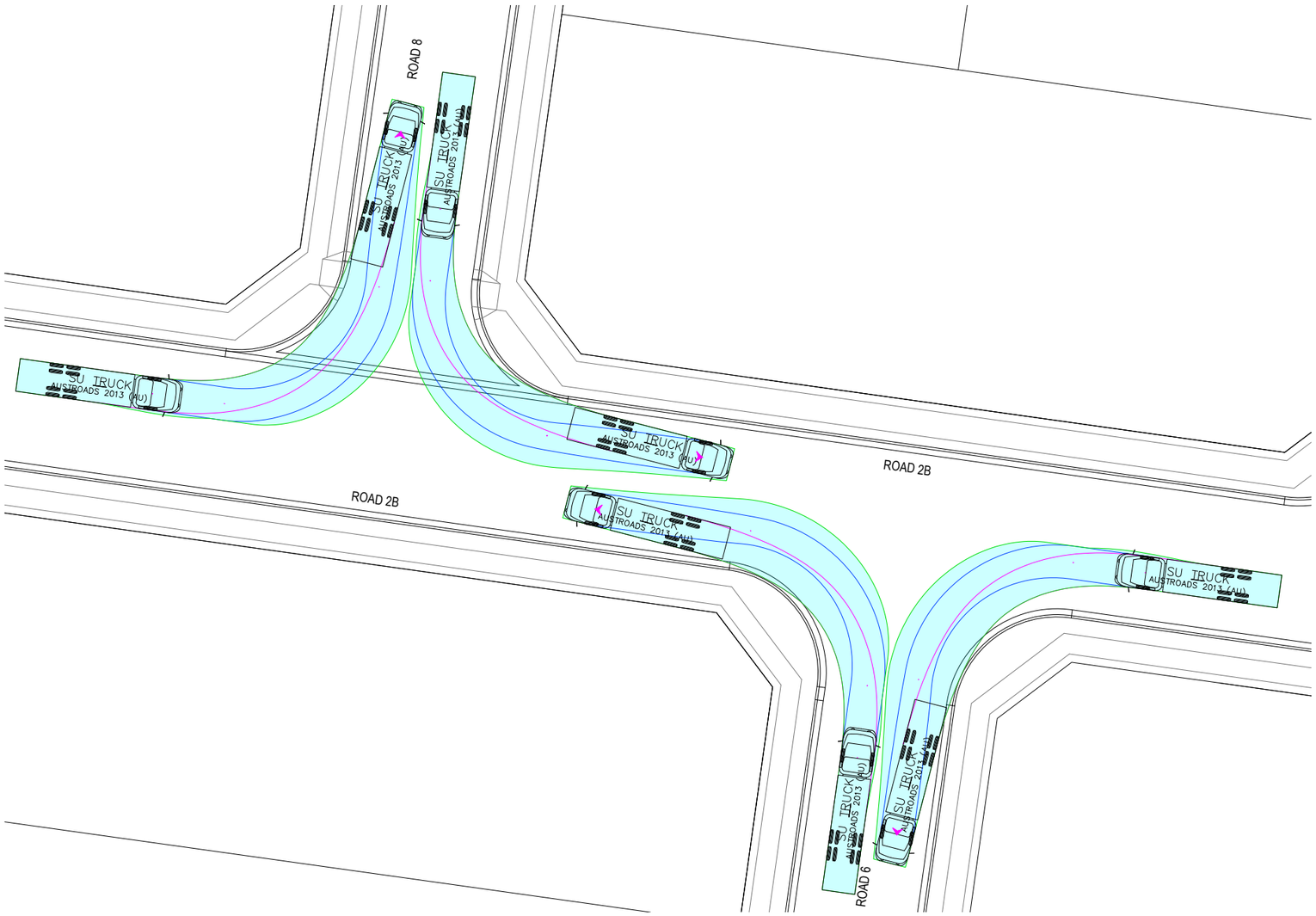
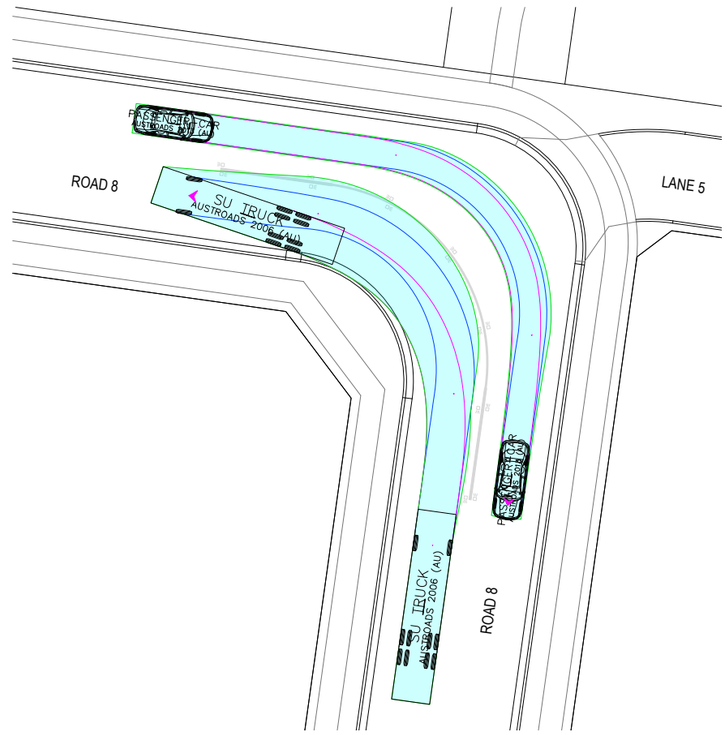
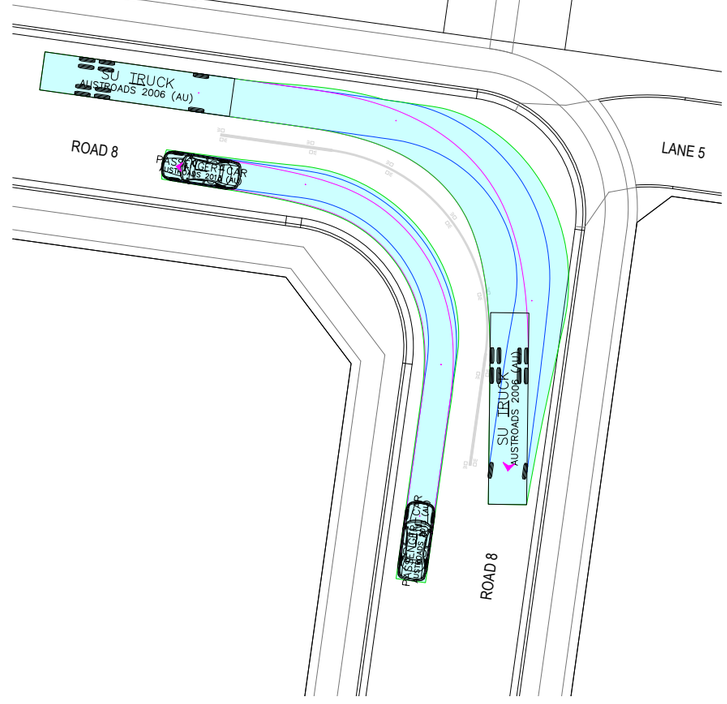


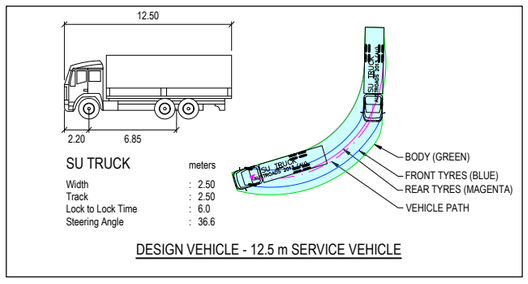
SU TRUCK - LEFT IN / LEFT OUT



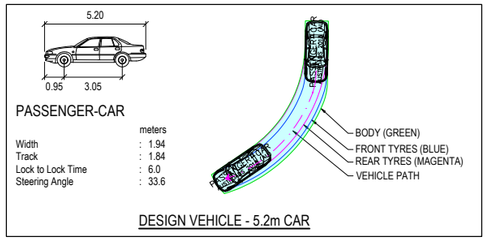
CAR OUTSIDE / SU TRUCK INSIDE



CAR INSIDE / SU TRUCK OUTSIDE



DESIGN VEHICLE - 12.5 m SERVICE VEHICLE



DESIGN VEHICLE - 5.2m CAR

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A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

REV	DESCRIPTION	DATE	DRN.	APP.

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0 2 4 8 12 16
SCALE 1:200 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Approved	
Date	07.11.25
DA Number	-

Beveridge Williams
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Oran Park NSW 2570
ph: 02 46255055
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Project Details	WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA
Drawing Title	TURNING MOVEMENTS SHEET 13 OF 18

Sheet 128 of145

Scale 1:200 @ A1

N

Project Number	Reference	Drawing No	Revision
2301879	321	712	B

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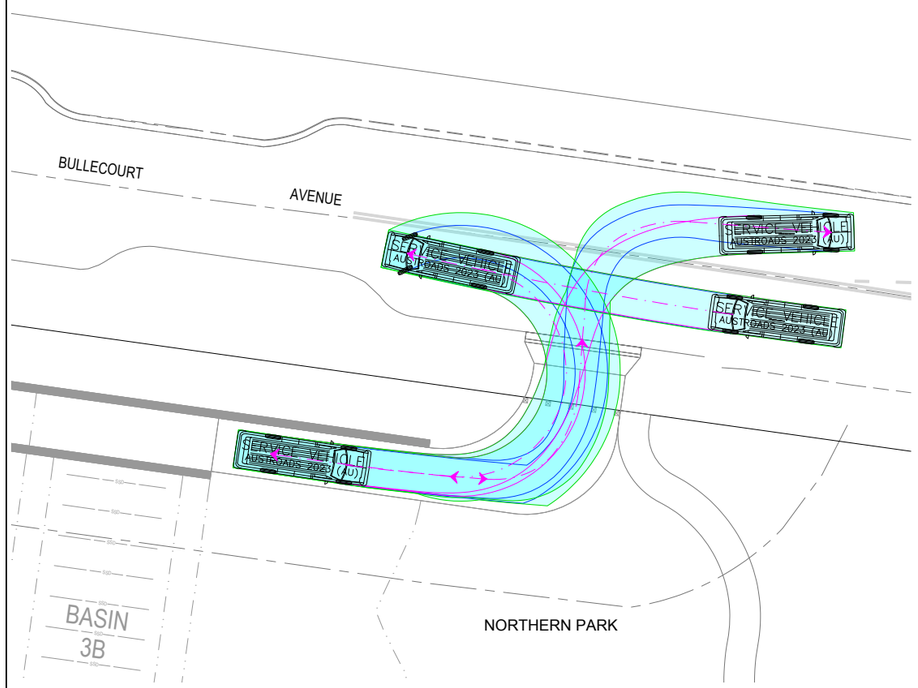
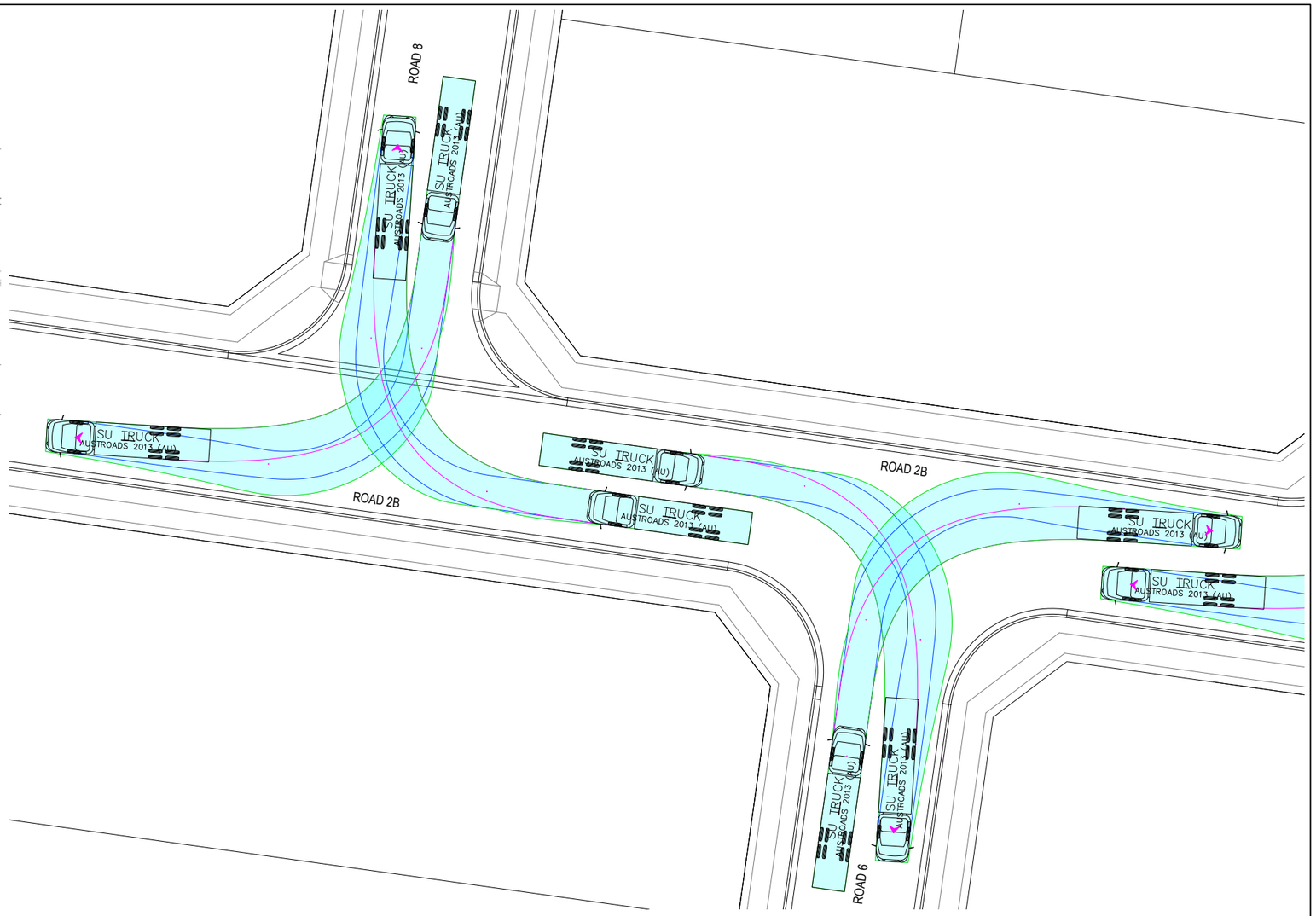


SERVICE VEHICLE INTO NORTHERN BASIN



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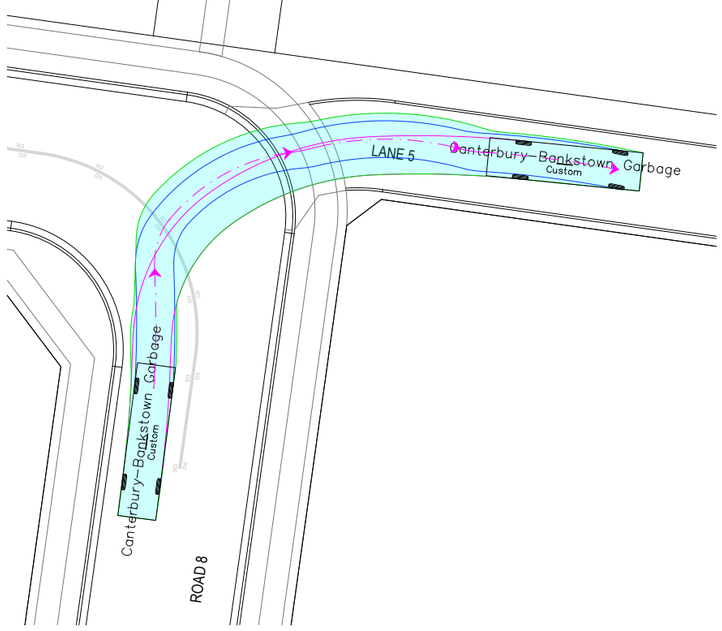

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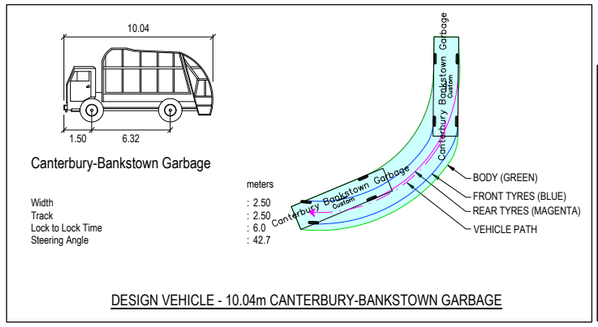
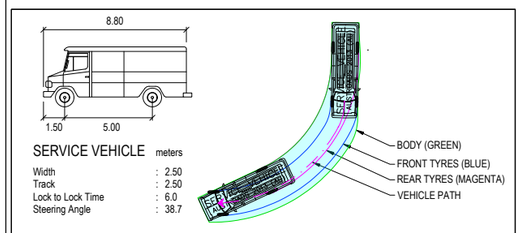


DESIGN VEHICLE - 10.04m CANTERBURY-BANKSTOWN GARBAGE



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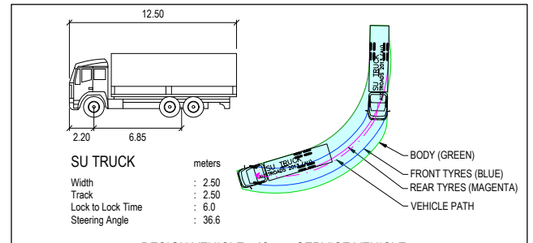

DESIGN VEHICLE - 12.5 m SERVICE VEHICLE

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0 2 4 8 12 16
SCALE 1:200 AT A1 SIZE

Designed R. GOVENDER
Date 23.06.2025
Drawn D.RAFTER
Approved
Date 07.11.25
DA Number -

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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA

Drawing Title: TURNING MOVEMENTS SHEET 14 OF 18

Sheet 129 of145
Scale 1:200 @ A1
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Project Number	Reference	Drawing No	Revision
2301879	321	713	B

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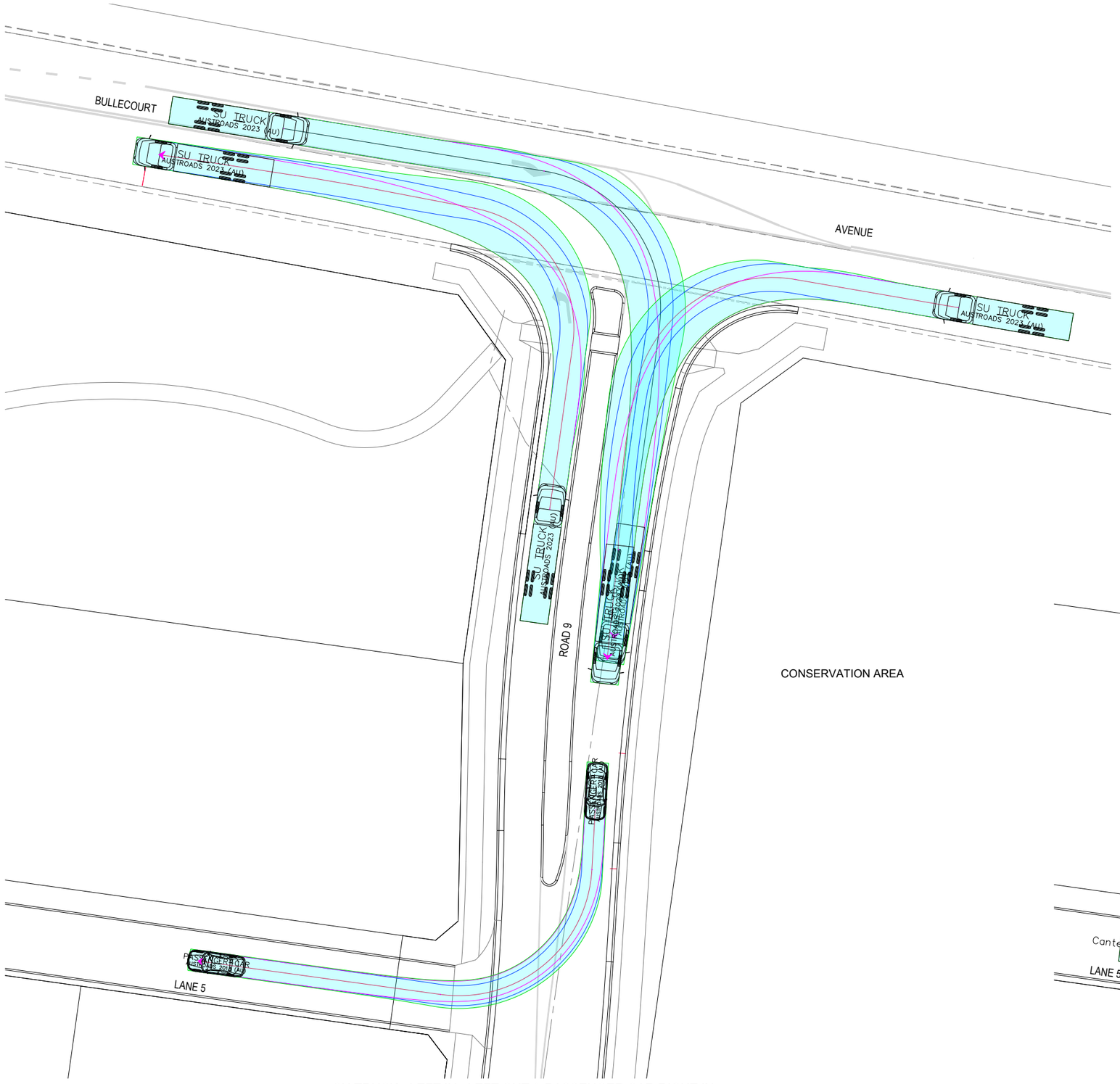

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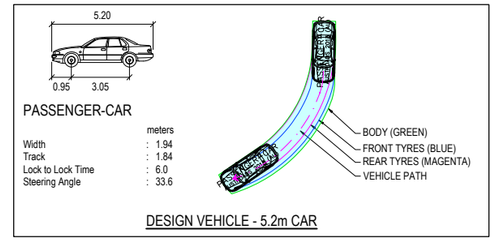

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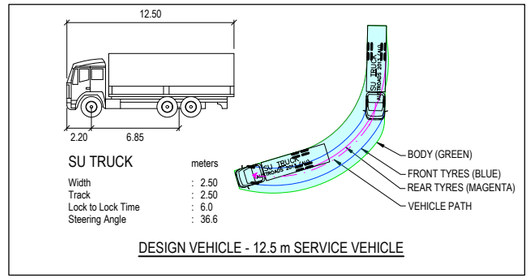

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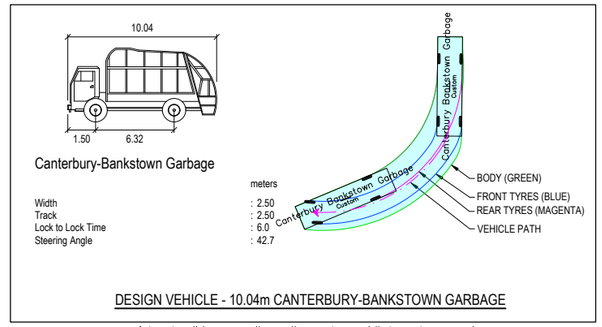

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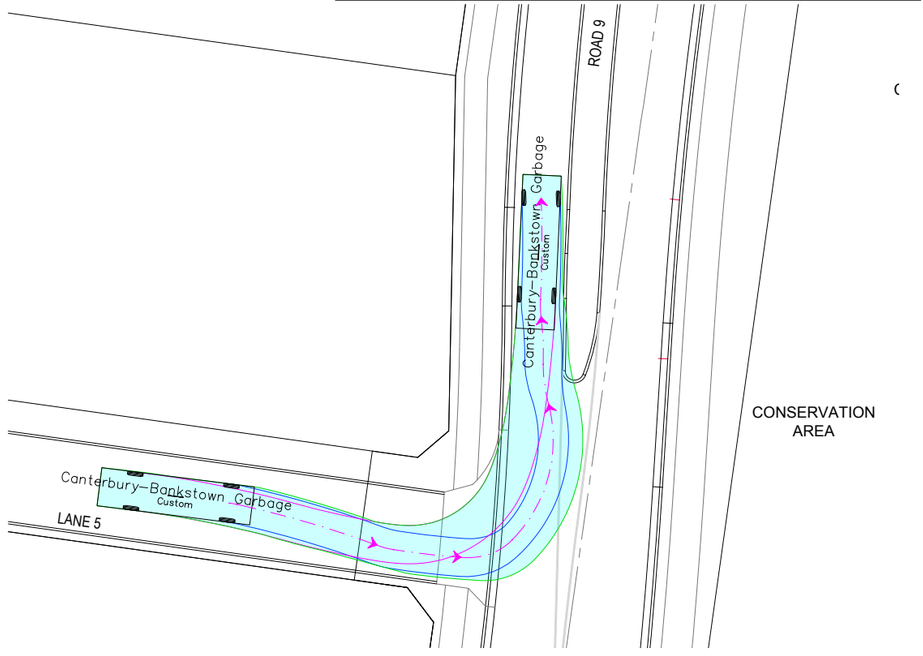

GARBAGE TRUCK - LEFT OUT

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Drawing Title: TURNING MOVEMENTS
SHEET 15 OF 18

Sheet 130 of145
Scale 1:200 @ A1

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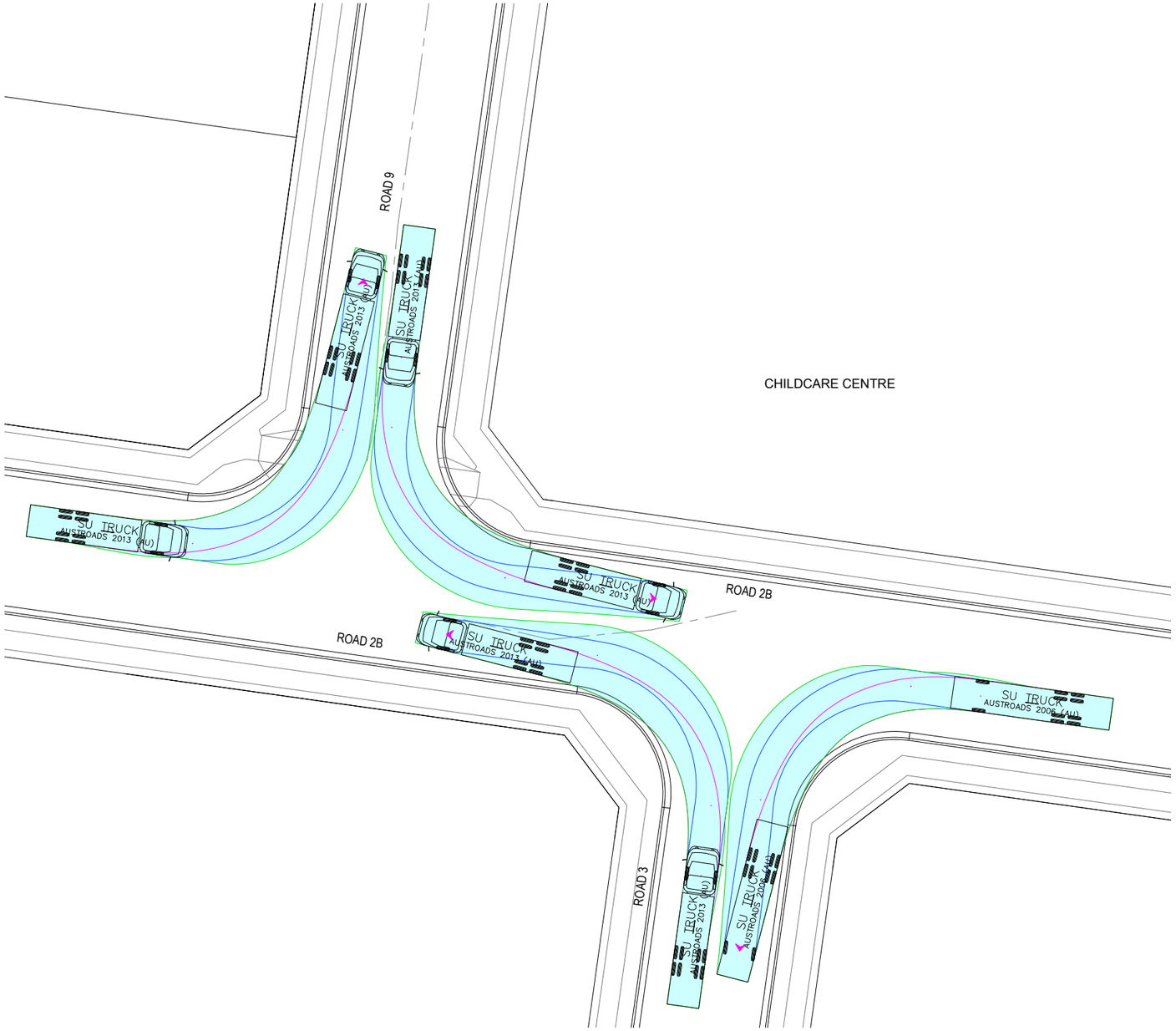

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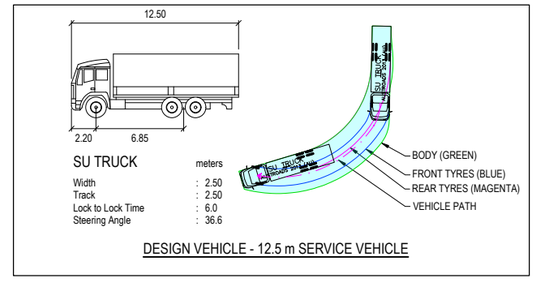

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Drawing Title	TURNING MOVEMENTS SHEET 16 OF 18

Sheet 131 of145

Scale 1:200 @ A1

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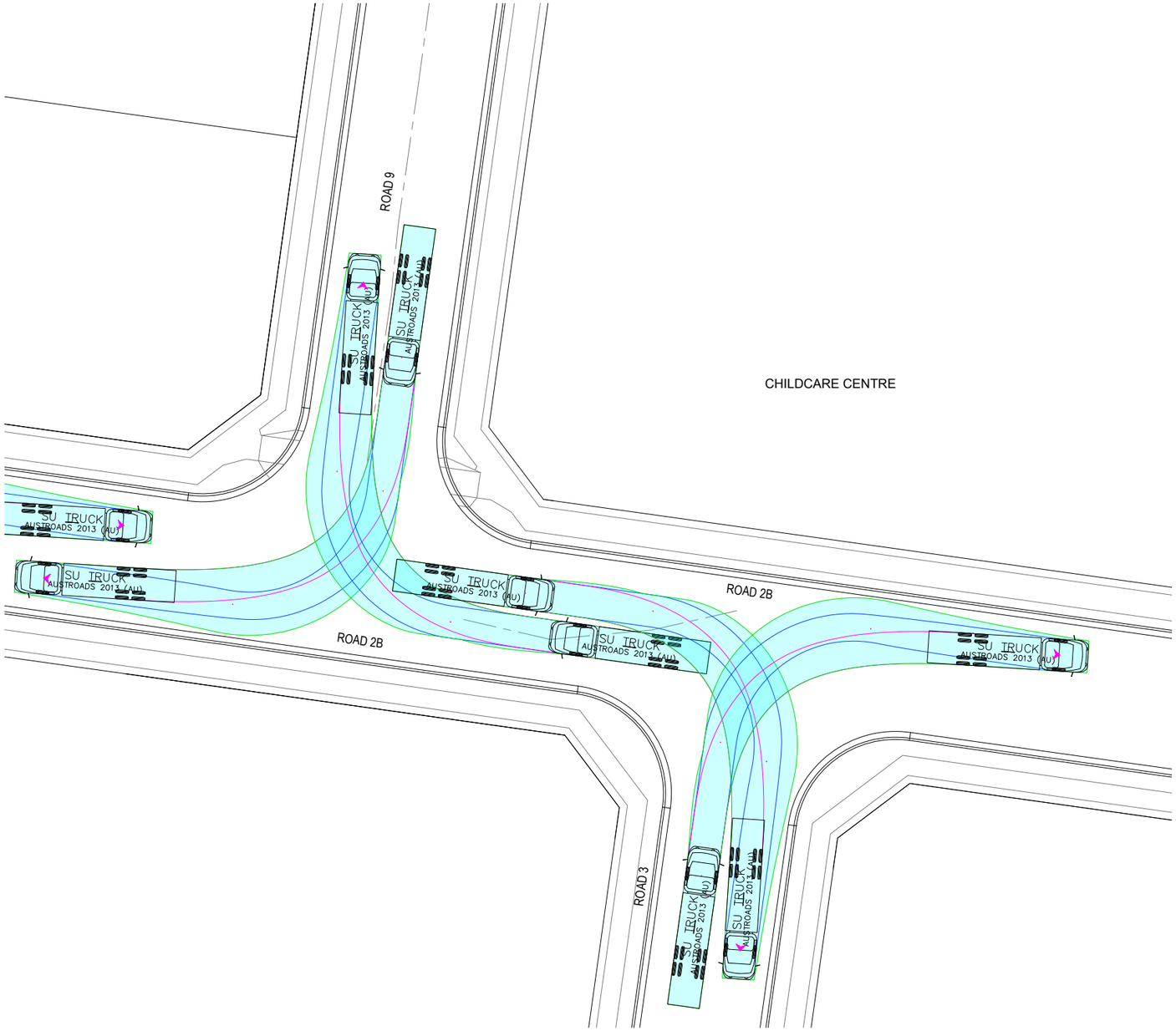

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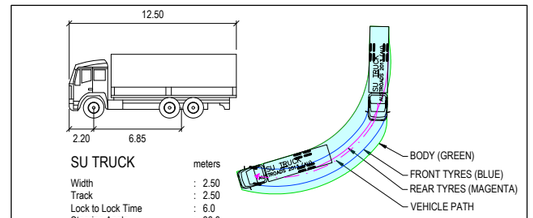

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Sheet 132 of145

Scale 1:200 @ A1

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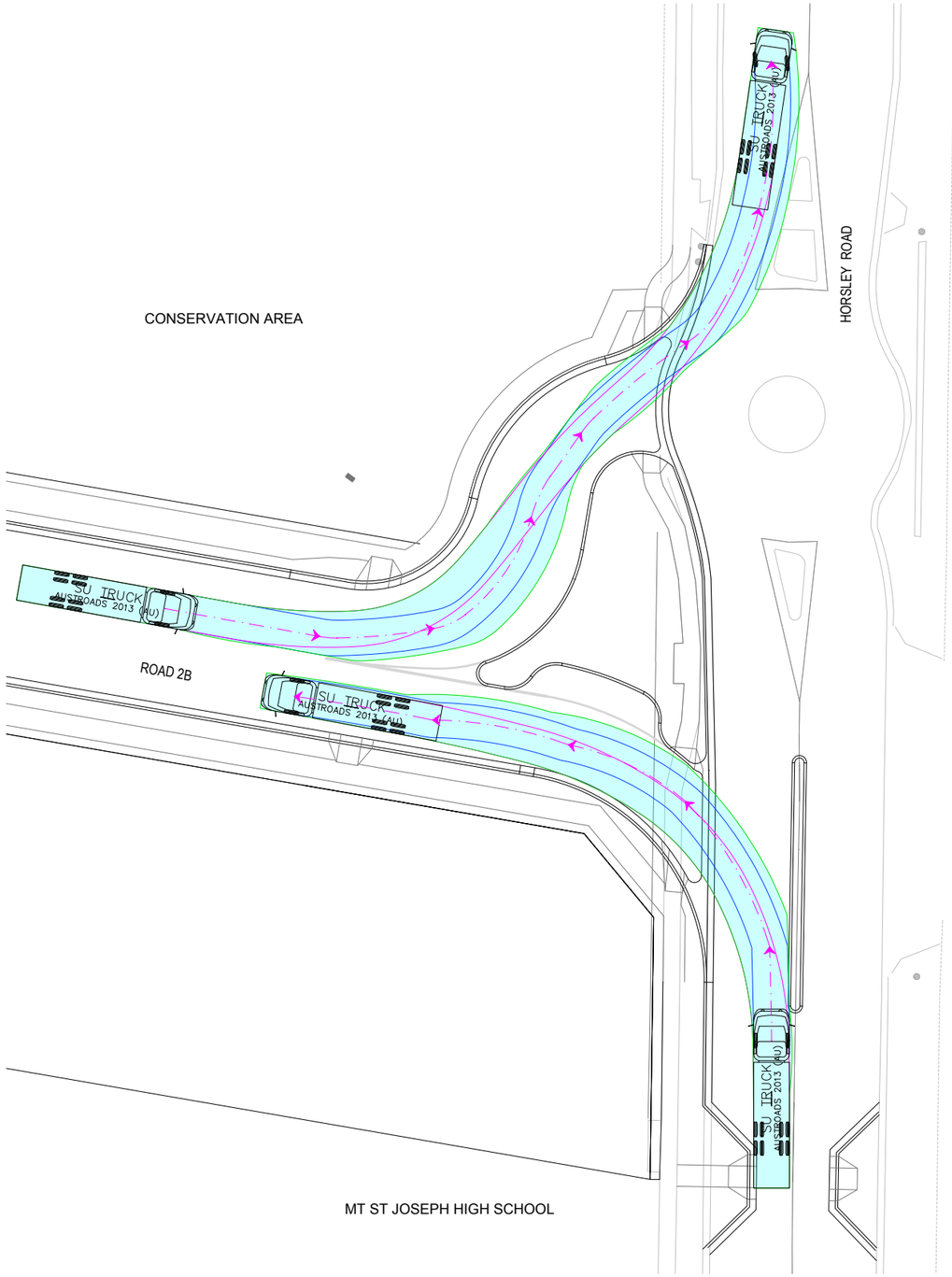
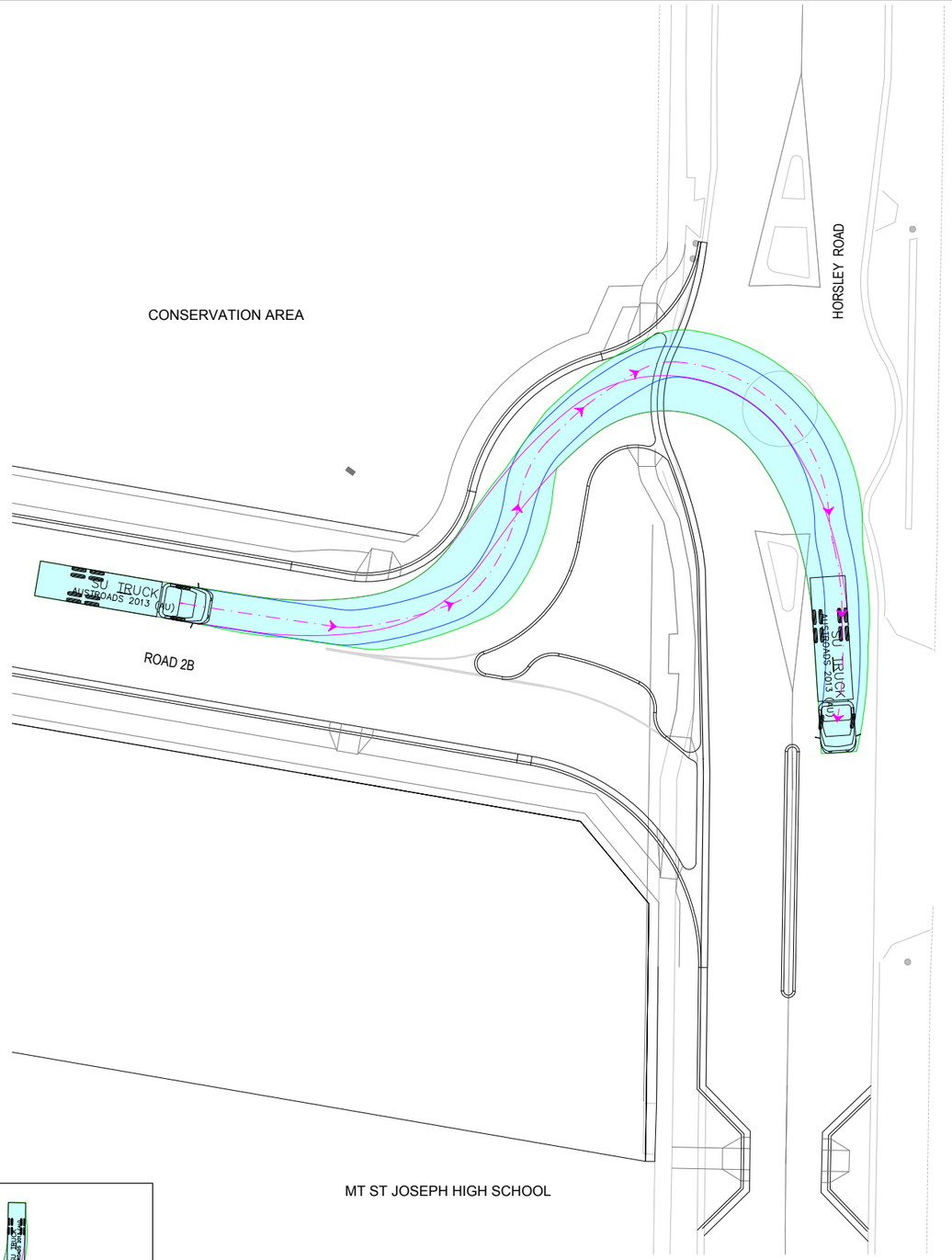


TRUCK - ENTRY AND EXIT - ROAD 2 & HORSLEY ROAD



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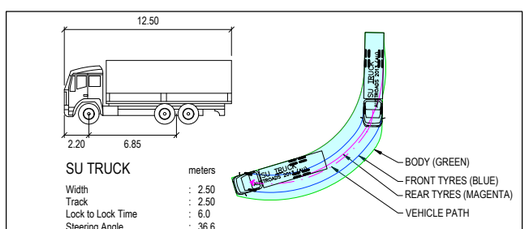

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Drawing Title: TURNING MOVEMENTS
SHEET 18 OF 18

Sheet 133 of145
Scale 1:200 @ A1

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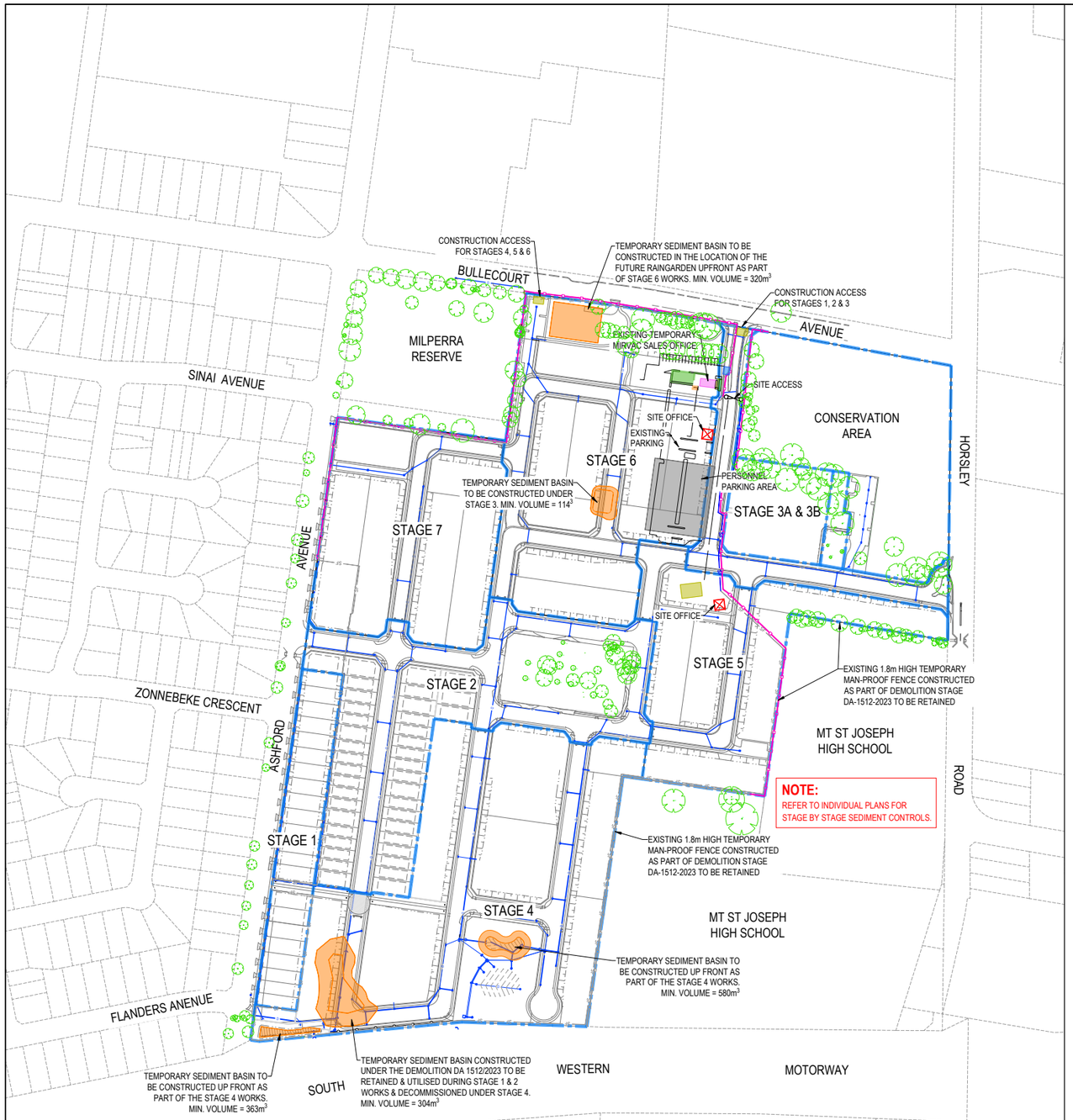

1. Erosion Hazard and Sediment Basins

Site Name: WSU Milperra

Site Location: 2 Bullecourt Ave, Milperra

Precinct/Stage: All Stages

Other Details: Stage 1 & 2 (Temp), 3 (Temp), 4B & 5 (Temp in Permanent), 4A & 7 (Temp in Permanent), 6 & 3 (Temp in Permanent)

Site area	Sub-catchment or Name of Structure						Notes
	1 & 2	3	4B & 5	4A & 7	6 & 3		
Total catchment area (ha)	3.838	1.562	7.712	5.033	4.337		
Disturbed catchment area (ha)	3.838	0.876	5.575	2.584	2.775		
Soil analysis (enter sediment type if known, or laboratory particle size data)							
Sediment Type (C , F or D) if known:	F	F	F	F	F		From Appendix C (if known)
% sand (fraction 0.02 to 2.00 mm)	33	33	33	33	33		Enter the percentage of each soil fraction. E.g. enter 10 for 10%
% silt (fraction 0.002 to 0.02 mm)	33	33	33	33	33		
% clay (fraction finer than 0.002 mm)	33	33	33	33	33		
Dispersion percentage	10.0	10.0	10.0	10.0	10.0		E.g. enter 10 for dispersion of 10%
% of whole soil dispersible	4.95	4.95	4.95	4.95	4.95		See Section 6.3.3(e). Auto-calculated
Soil Texture Group	F	F	F	F	F		Automatic calculation from above
Rainfall data							
Design rainfall depth (no of days)	5	5	5	5	5		See Section 6.3.4 and, particularly, Table 6.3 on pages 6-24 and 6-25.
Design rainfall depth (percentile)	75	75	75	75	75		
x-day, y-percentile rainfall event (mm)	19.4	19.4	19.4	19.4	19.4		
Rainfall R-factor (if known)	2600	2600	2600	2600	2600		Only need to enter one or the other here
IFD: 2-year, 6-hour storm (if known)	8.3	8.3	8.3	8.3	8.3		
RUSLE Factors							
Rainfall erosivity (*R*-factor)	2600	2600	2600	2600	2600		Auto-filled from above
Soil erodibility (*K*-factor)	0.038	0.038	0.038	0.038	0.038		RUSLE LS factor calculated for a high rill/interrill ratio.
Slope length (m)	300	150	220	130	180		
Slope gradient (%)	2	2	2	2	2		
Length/gradient (*LS*-factor)	0.68	0.52	0.61	0.49	0.56		
Erosion control practice (*P*-factor)	1.3	1.3	1.3	1.3	1.3	1.3	
Ground cover (*C*-factor)	1	1	1	1	1	1	
Sediment Basin Design Criteria (for Type D/F basins only. Leave blank for Type C basins)							
Storage (soil) zone design (no of months)	2	2	2	2	2	2	Minimum is generally 2 months
Cv (Volumetric runoff coefficient)	0.35	0.35	0.35	0.35	0.35	0.35	See Table F2, page F-4 in Appendix F
Calculations and Type D/F Sediment Basin Volumes							
Soil loss (t/ha/yr)	88	67	78	63	72		
Soil Loss Class	1	1	1	1	1		See Table 4.2, page 4-13
Soil loss (m^3/ha/yr)	68	51	60	49	55		Conversion to cubic metres
Sediment basin storage (soil) volume (m^3)	43	8	56	21	26		See Sections 6.3.4(i) for calculations
Sediment basin settling (water) volume (m^3)	261	106	524	342	294		See Sections 6.3.4(i) for calculations
Sediment basin total volume (m^3)	304	114	580	363	320		

CONSTRUCTION SEQUENCE

FOLLOWING REMEDIATION OF THE AREA:

1. PLACE ALL SEDIMENT CONTROLS INCLUDING BASINS & OVERLAND FLOW PATHS FOR PCA APPROVAL BEFORE STARTING ANY WORKS ON SITE.
2. ALL TOPSOIL CONTAINING VEGETATION TO BE STRIPPED FROM EXISTING SURFACE & STOCKPILED FOR REMOVAL OFF-SITE (APPROX. 75mm THICK).
3. ALL TOPSOIL NOT CONTAINING VEGETATION TO BE STRIPPED FROM THE SITE & STOCKPILED FOR AMELIORATION FOR USE ELSEWHERE IN THE SITE OR BLENDING WITH CLAY / FILL TO BE USED AS FILL MATERIAL ON SITE.
4. PLACE REMEDIATION MATERIAL AT DEPTH IN ACCORDANCE WITH GEOTECHNICAL & ENVIRONMENTAL / SITE AUDITOR DIRECTION. MATERIAL TO BE BLENDED WITH FILL MATERIAL TO ACHIEVE COMPACTION REQUIREMENTS. ALL FILL TO BE PLACED UNDER LEVEL 1 GEOTECHNICAL SUPERVISION.
5. STRIPPED SURFACE TO BE INSPECTED & CERTIFIED READY FOR FILL PLACEMENT BY GEOTECHNICAL ENGINEER.
6. COMPLETE INITIAL EARTHWORKS IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S REPORT
7. IMPORTED FILL TO BE CERTIFIED AS V.E.N.M. & FREE OF SLAG, HAZARDOUS, CONTAMINATED, TOXIC, PUTRESCIBLE OR RADIO-ACTIVE MATTER & INDUSTRIAL WASTE & BUILDING DEBRIS. THE ORIGIN OF FILL PROPOSED TO BE IMPORTED & THE ABOVE CERTIFICATION TO BE REVIEWED & APPROVED BY COUNCIL PRIOR TO ANY IMPORTED FILL ARRIVING ON SITE.
8. ALL FILL IS TO BE PLACED & COMPACTED IN ACCORDANCE WITH COUNCIL'S CONSTRUCTION SPECIFICATION.
9. ALL FILL TO BE PLACED UNDER LEVEL 1 GEOTECHNICAL SUPERVISION.
10. COPIES OF ALL FILL COMPACTION TESTS TO BE PROVIDED TO PRINCIPLE.
11. INSTALL ALL PIT & KERB INLET FILTERS / SEDIMENT TRAPS.
12. 300mm WIDE, 50mm THICK TOPSOIL TO BE PLACED BEHIND KERBS & TURFED WITH KIKUYU TURF WITH ADDITIONAL SEDIMENT FENCING FOR BUILDING SITES
13. FINAL TOPSOIL/ TURF & PATHWAYS WITHIN ROAD VERGES TO BE BONDED WITH COUNCIL & COMPLETED BY BUILDERS FOLLOWING HOUSE CONSTRUCTION

SEDIMENT BASIN

1. THE CONTRACTOR IS TO ENSURE STORMWATER RUNOFF IS DIRECTED TO THE SEDIMENT BASIN WITH PLACEMENT OF TEMPORARY DIVERSION MOUNDS OR THE FORMATION OF OVERLAND FLOW PATHS.
2. DIVERSION MOUNDS & FLOW PATHS ARE TO BE ADJUSTED AS FILLING LAYERS PROGRESS & SURFACE LEVELS RISE.
3. SEDIMENT IS TO BE REMOVED SUCH THAT NOT LESS THAN 70% OF THE DESIGN CAPACITY IS AVAILABLE AT ALL TIMES MARKERS WITH DEPTH INDICATORS ARE TO BE PLACED IN EACH BASIN TO INDICATE WHEN SEDIMENT ACCUMULATION EXCEEDS 30% OF STORAGE REQUIREMENTS.
4. BASINS ARE TO BE FLOCCULATED WITH GYPSUM WHEN SUSPENDED SOLID CONCENTRATION EXCEEDS 50 *milligrams per litre*. SPREADING RATE TO BE DETERMINED AFTER TESTING AND ANALYSIS OF THE INITIAL STORM EVENT. FIRST APPLICATION IS TO BE *30 kilograms GYPSUM PER 100 cum*. OF STORED WATER & THEREAFTER AS DETERMINED BY TESTING. PUMP OUT CLEAN WATER TO LARGE GRASSED / VEGETATED AREA WITHIN 72 hrs OF TREATMENT. REFER LANDCOM SOIL & CONSTRUCTION - "MANAGING URBAN STORMWATER" MANUAL - APPENDIX E
5. UPON ADEQUATE SITE REVEGETATION & COUNCIL APPROVAL SEDIMENT BASIN IS TO BE DECOMMISSIONED & CONVERTED INTO RAINGARDENS PER DESIGN.

LEGEND

- EXISTING SURFACE CONTOURS (45.5)
- PROPOSED DRAINAGE PIPE AND PIT
- GRAVEL KERB INLET SEDIMENT TRAP
- GEOTEXTILE FILTER AROUND GRATED SURFACE INLET PITS
- STABILISED ACCESS POINT
- NEW 1.8m HIGH TEMPORARY MANPROOF FENCE W/ SHADE CLOTH
- HI-VIS MESH FENCING TO LIMIT CONTRACTORS ACTIVITIES TO THE STAGE 1 LIMITS
- SFS — SAND OR AGGREGATE FILLED HESSIAN FILTER LAIDACROSS ROAD PAVEMENT TO TRAP LOCALISED SILT MATERIAL
- SEDIMENT FENCING
- STRAW BALE
- TEMPORARY MOUND TO DIVERT DIRTY WATER TO TEMPORARY SEDIMENT BASIN
- TEMPORARY SEDIMENT BASIN
- SITE OFFICE
- PERSONNEL PARKING AREA

NOTE: ALL SOIL AND WATER MANAGEMENT DETAILS ARE NOTED ON SOIL AND WATER MANAGEMENT NOTES. SEDIMENT & MANPROOF FENCES ARE TO BE LOCATED WHOLLY WITHIN BOUNDARIES & HAVE BEEN SHOWN DIAGRAMMATICALLY. PROVIDE CONSTRUCTION SIGN & AMENITIES IN ACCORDANCE WITH CONDITIONS OF THE DA.

NOTE: MEASURES PROPOSED IN THE PLAN ARE FOR GUIDANCE AND SUBJECT TO MODIFICATION TO SUIT CONTRACTORS METHODOLOGY & APPROVAL OF THE PRINCIPLE CERTIFYING AUTHORITY.

LEGEND:

_ _ _ _ _ _ INDICATIVE RESIDENTIAL LOT BOUNDARY. SUBJECT TO FURTHER DA APPROVAL

WARNING
BEWARE OF UNDERGROUND SERVICES
The locations of underground services are approximate only and their exact position should be proven on site.
No guarantee is given that all existing services are shown.
Locate all underground services before commencement of works
BEFORE YOU DIG
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www.beveridgewilliams.com.au

Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: OVERALL SOIL & WATER MANAGEMENT PLAN

Sheet 134 of 145
Scale 1:2000 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	800	B

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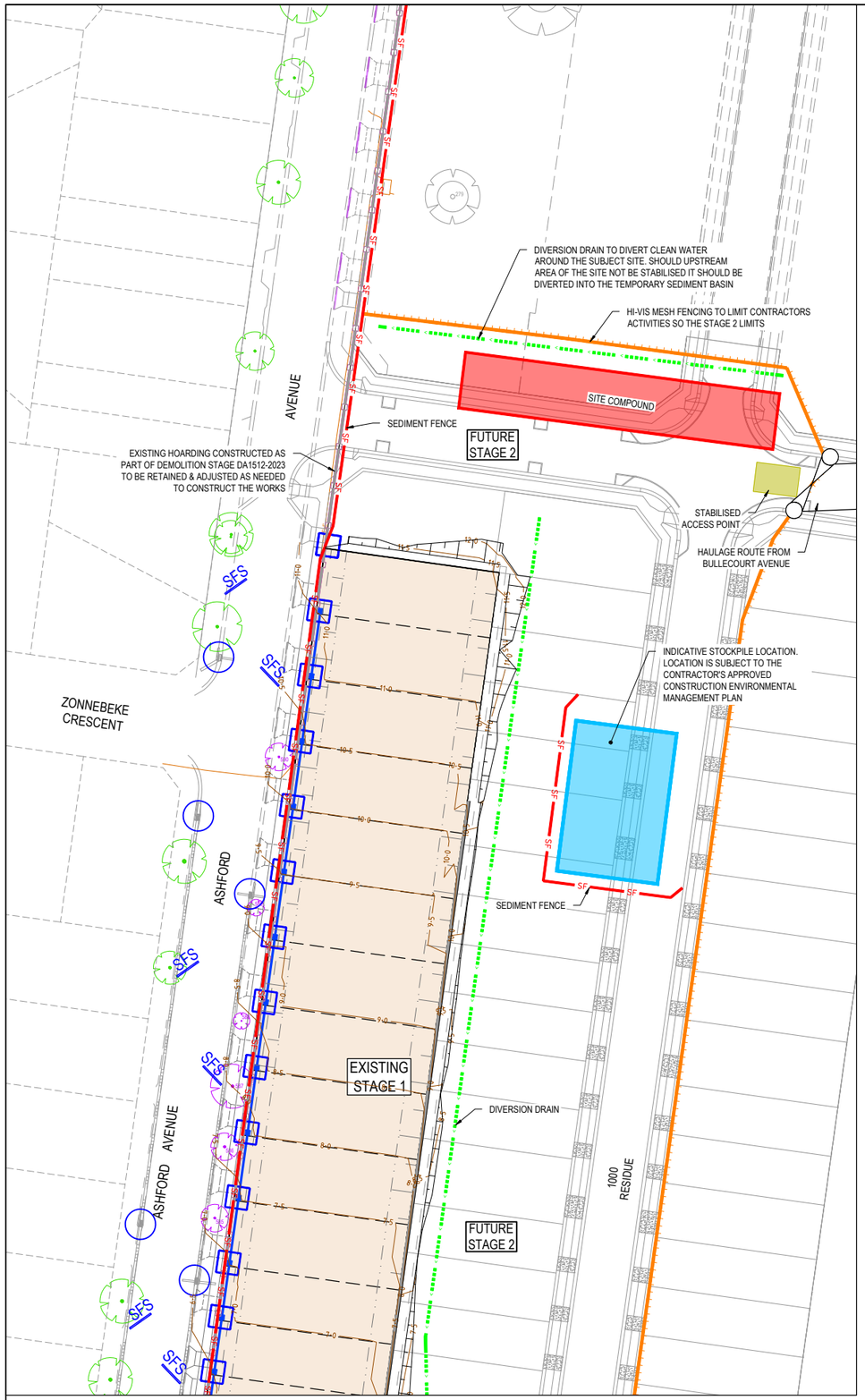
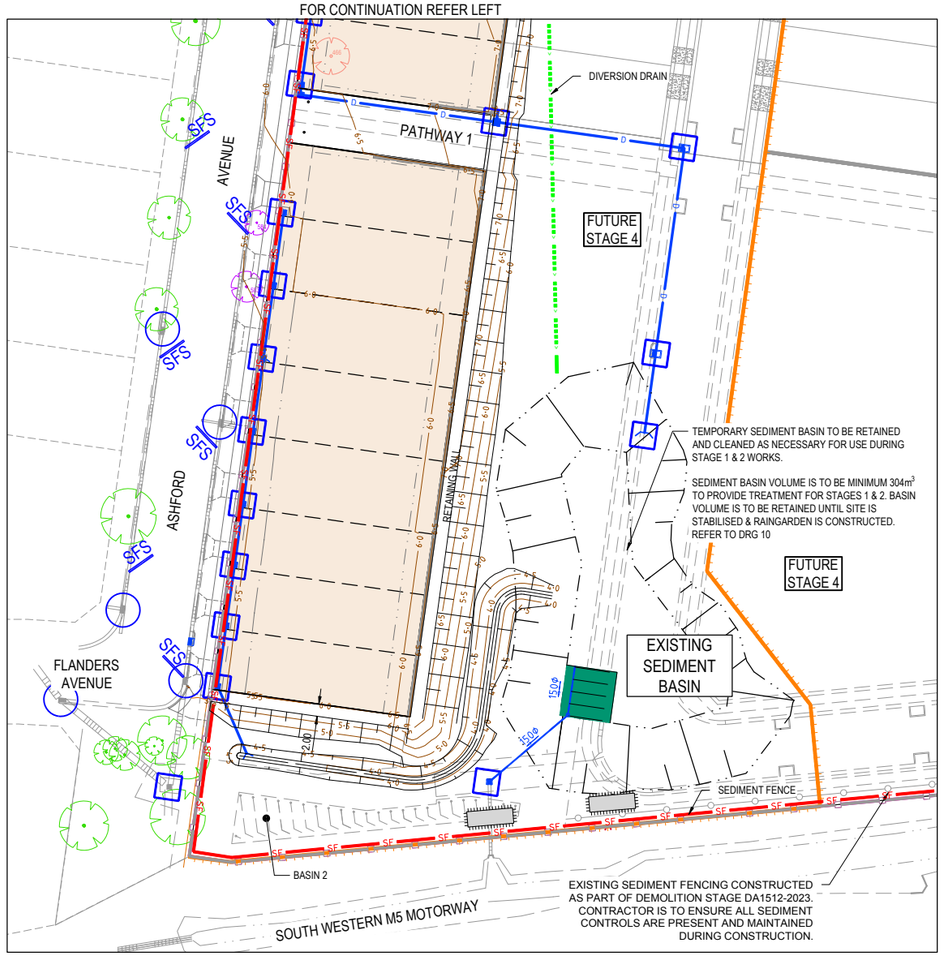


FOR CONTINUATION REFER TOP RIGHT

FOR CONTINUATION REFER LEFT



LEGEND

- EXISTING SURFACE CONTOURS
- PROPOSED DRAINAGE PIPE AND PIT
- GRAVEL KERB INLET SEDIMENT TRAP
- GEOTEXTILE FILTER AROUND GRATED SURFACE INLET PITS
- STABILISED ACCESS POINT
- NEW 1.8m HIGH TEMPORARY MANPROOF FENCE W/ SHADE CLOTH
- HI-VIS MESH FENCING TO LIMIT CONTRACTORS ACTIVITIES TO THE STAGE 2 LIMITS
- SAND OR AGGREGATE FILLED HESSIAN FILTER LAIDACROSS ROAD PAVEMENT TO TRAP LOCALISED SILT MATERIAL
- SEDIMENT FENCING
- STRAW BALE
- DIVERSION DRAIN
- TEMPORARY SEDIMENT BASIN
- SITE COMPOUND
- INDICATIVE STOCKPILE LOCATION

NOTE: ALL SOIL AND WATER MANAGEMENT DETAILS ARE NOTED ON SOIL AND WATER MANAGEMENT NOTES. SEDIMENT & MANPROOF FENCES ARE TO BE LOCATED WHOLLY WITHIN BOUNDARIES & HAVE BEEN SHOWN DIAGRAMMATICALLY. PROVIDE CONSTRUCTION SIGN & AMENITIES IN ACCORDANCE WITH CONDITIONS OF THE DA.

NOTE: MEASURES PROPOSED IN THE PLAN ARE FOR GUIDANCE AND SUBJECT TO MODIFICATION TO SUIT CONTRACTORS METHODOLOGY & APPROVAL OF THE PRINCIPLE CERTIFYING AUTHORITY.

CONSTRUCTION SEQUENCE

FOLLOWING REMEDIATION OF THE AREA:

1. PLACE ALL SEDIMENT CONTROLS INCLUDING BASINS & OVERLAND FLOW PATHS FOR PCA APPROVAL BEFORE STARTING ANY WORKS ON SITE.
2. ALL TOPSOIL CONTAINING VEGETATION TO BE STRIPPED FROM EXISTING SURFACE & STOCKPILED FOR REMOVAL OFF-SITE (APPROX. 75mm THICK).
3. ALL TOPSOIL NOT CONTAINING VEGETATION TO BE STRIPPED FROM THE SITE & STOCKPILED FOR AMELIORATION FOR USE ELSEWHERE IN THE SITE OR BLENDING WITH CLAY / FILL TO BE USED AS FILL MATERIAL ON SITE.
4. PLACE REMEDIATION MATERIAL AT DEPTH IN ACCORDANCE WITH GEOTECHNICAL & ENVIRONMENTAL / SITE AUDITOR DIRECTION. MATERIAL TO BE BLENDED WITH FILL MATERIAL TO ACHIEVE COMPACTION REQUIREMENTS. ALL FILL TO BE PLACED UNDER LEVEL 1 GEOTECHNICAL SUPERVISION.
5. STRIPPED SURFACE TO BE INSPECTED & CERTIFIED READY FOR FILL PLACEMENT BY GEOTECHNICAL ENGINEER.
6. COMPLETE INITIAL EARTHWORKS IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S REPORT
7. IMPORTED FILL TO BE CERTIFIED AS V.E.N.M. & FREE OF SLAG, HAZARDOUS, CONTAMINATED, TOXIC, PUTRESCIBLE OR RADIO-ACTIVE MATTER & INDUSTRIAL WASTE & BUILDING DEBRIS. THE ORIGIN OF FILL PROPOSED TO BE IMPORTED & THE ABOVE CERTIFICATION TO BE REVIEWED & APPROVED BY COUNCIL PRIOR TO ANY IMPORTED FILL ARRIVING ON SITE.
8. ALL FILL IS TO BE PLACED & COMPACTED IN ACCORDANCE WITH COUNCIL'S CONSTRUCTION SPECIFICATION.
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10. COPIES OF ALL FILL COMPACTION TESTS TO BE PROVIDED TO PRINCIPLE.
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12. 300mm WIDE, 50mm THICK TOPSOIL TO BE PLACED BEHIND KERBS & TURFED WITH KIKUYU TURF WITH ADDITIONAL SEDIMENT FENCING FOR BUILDING SITES
13. FINAL TOPSOIL/ TURF & PATHWAYS WITHIN ROAD VERGES TO BE BONDED WITH COUNCIL & COMPLETED BY BUILDERS FOLLOWING HOUSE CONSTRUCTION

SEDIMENT BASIN

1. THE CONTRACTOR IS TO ENSURE STORMWATER RUNOFF IS DIRECTED TO THE SEDIMENT BASIN WITH PLACEMENT OF TEMPORARY DIVERSION MOUNDS OR THE FORMATION OF OVERLAND FLOW PATHS.
2. DIVERSION MOUNDS & FLOW PATHS ARE TO BE ADJUSTED AS FILLING LAYERS PROGRESS & SURFACE LEVELS RISE.
3. SEDIMENT IS TO BE REMOVED SUCH THAT NOT LESS THAN 70% OF THE DESIGN CAPACITY IS AVAILABLE AT ALL TIMES MARKERS WITH DEPTH INDICATORS ARE TO BE PLACED IN EACH BASIN TO INDICATE WHEN SEDIMENT ACCUMULATION EXCEEDS 30% OF STORAGE REQUIREMENTS.
4. BASINS ARE TO BE FLOCCULATED WITH GYPSUM WHEN SUSPENDED SOLID CONCENTRATION EXCEEDS 50 *milligrams per litre.* SPREADING RATE TO BE DETERMINED AFTER TESTING AND ANALYSIS OF THE INITIAL STORM EVENT. FIRST APPLICATION IS TO BE *30 kilograms GYPSUM PER 100 cum.* OF STORED WATER & THEREAFTER AS DETERMINED BY TESTING. PUMP OUT CLEAN WATER TO LARGE GRASSED / VEGETATED AREA WITHIN 72 hrs OF TREATMENT. REFER LANDCOM SOIL & CONSTRUCTION - "MANAGING URBAN STORMWATER" MANUAL - APPENDIX E
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A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

mirvac

0 5 10 20 30 40
SCALE 1:500 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
Reg. No.	PE0008347
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: SOIL & WATER MANAGEMENT PLAN STAGE 1

Sheet 135 of 145
Scale 1:500 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	801	B

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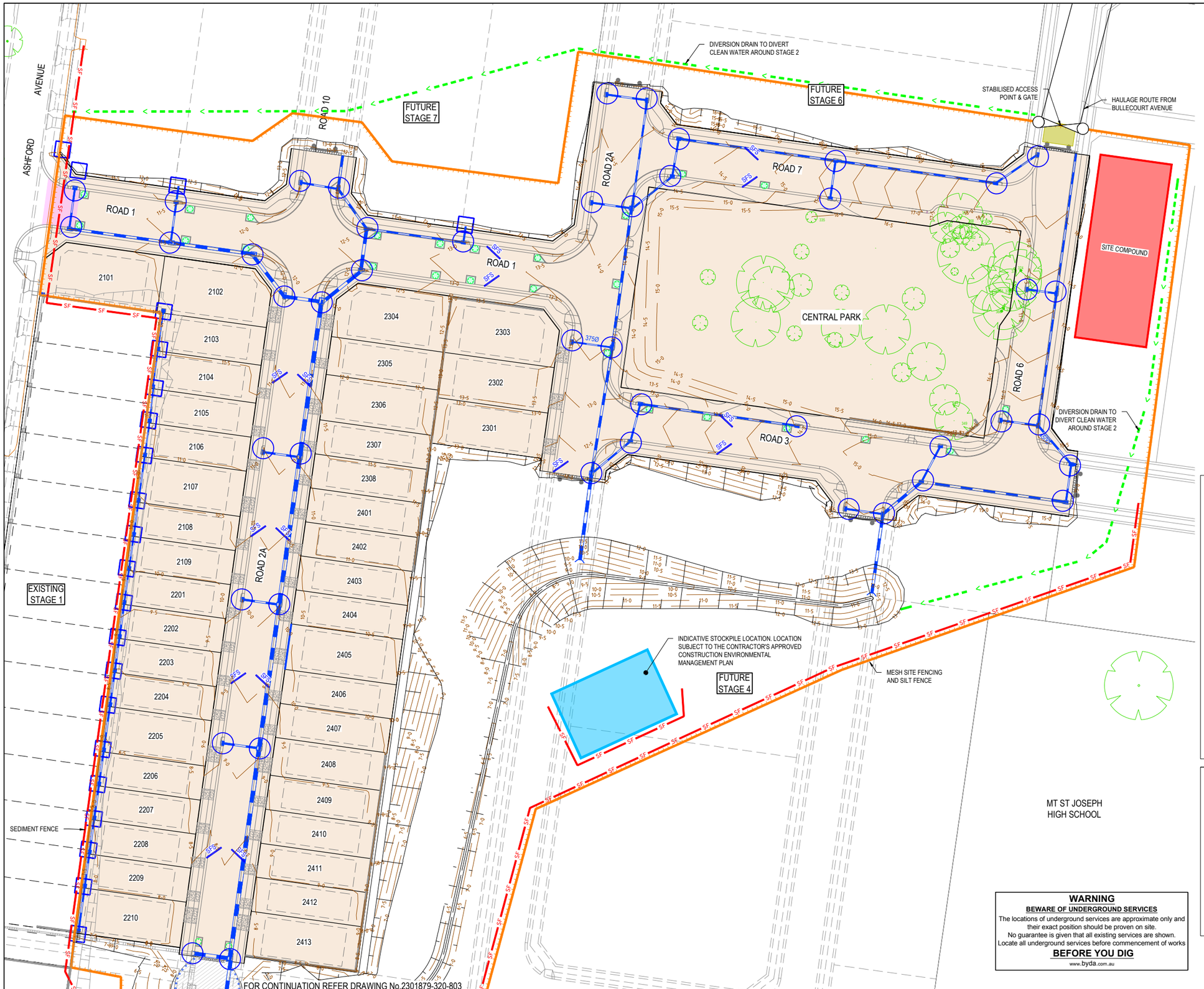

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mirvac

0 5 10 20 30 40
SCALE 1:500 AT A1 SIZE

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Project Details	WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA
Drawing Title	SOIL & WATER MANAGEMENT PLAN STAGE 2 SHEET 1 OF 2

Sheet 136 of 145
Scale 1:500 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	802	B

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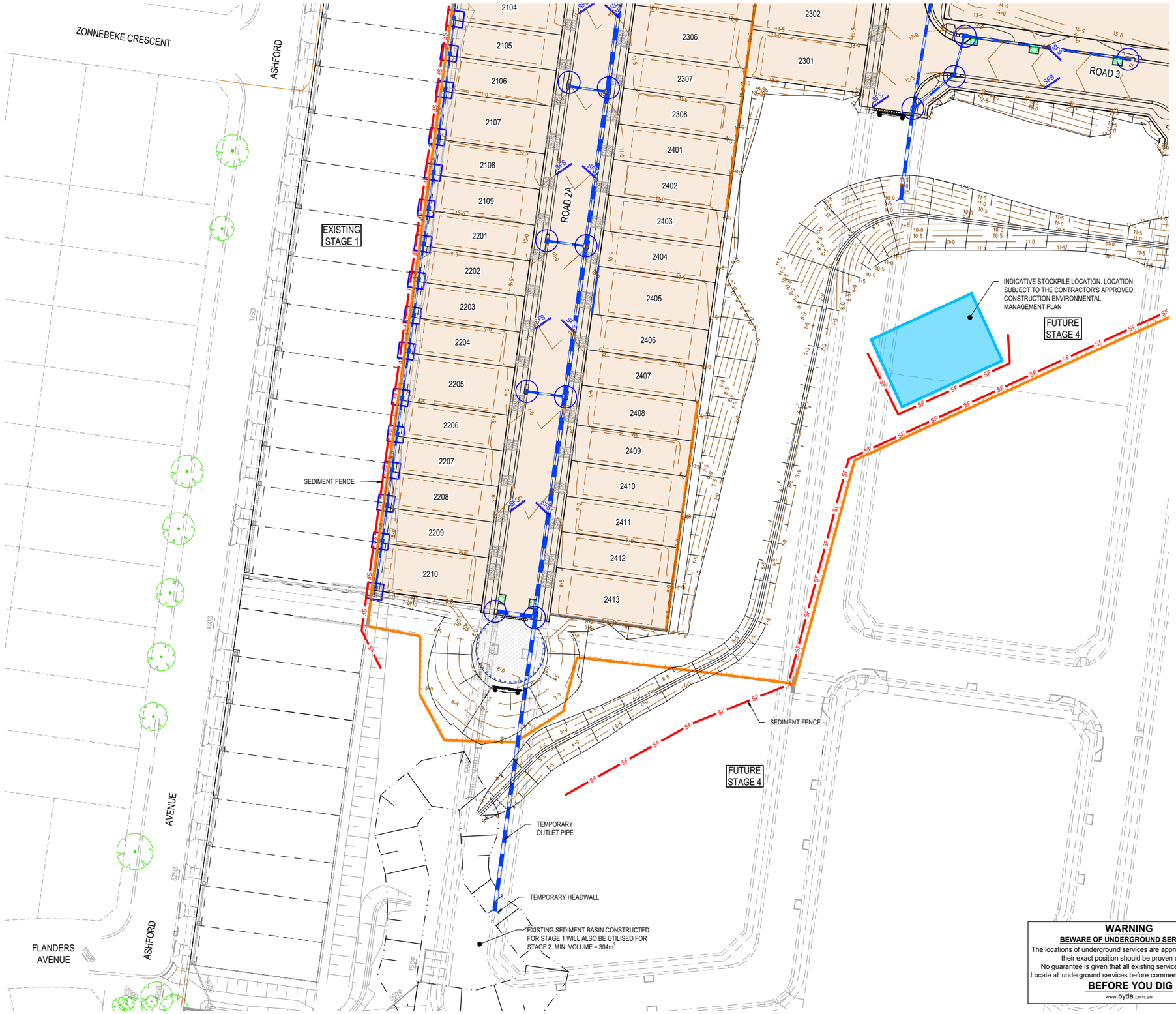

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SEDIMENT BASIN

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Drawing Title	SOIL & WATER MANAGEMENT PLAN STAGE 2 SHEET 2 OF 2

Sheet 137 of 145
Scale 1:500 @ A1
N

Project Ref	Stage No	Drawing No	Rev
2301879	321	803	B

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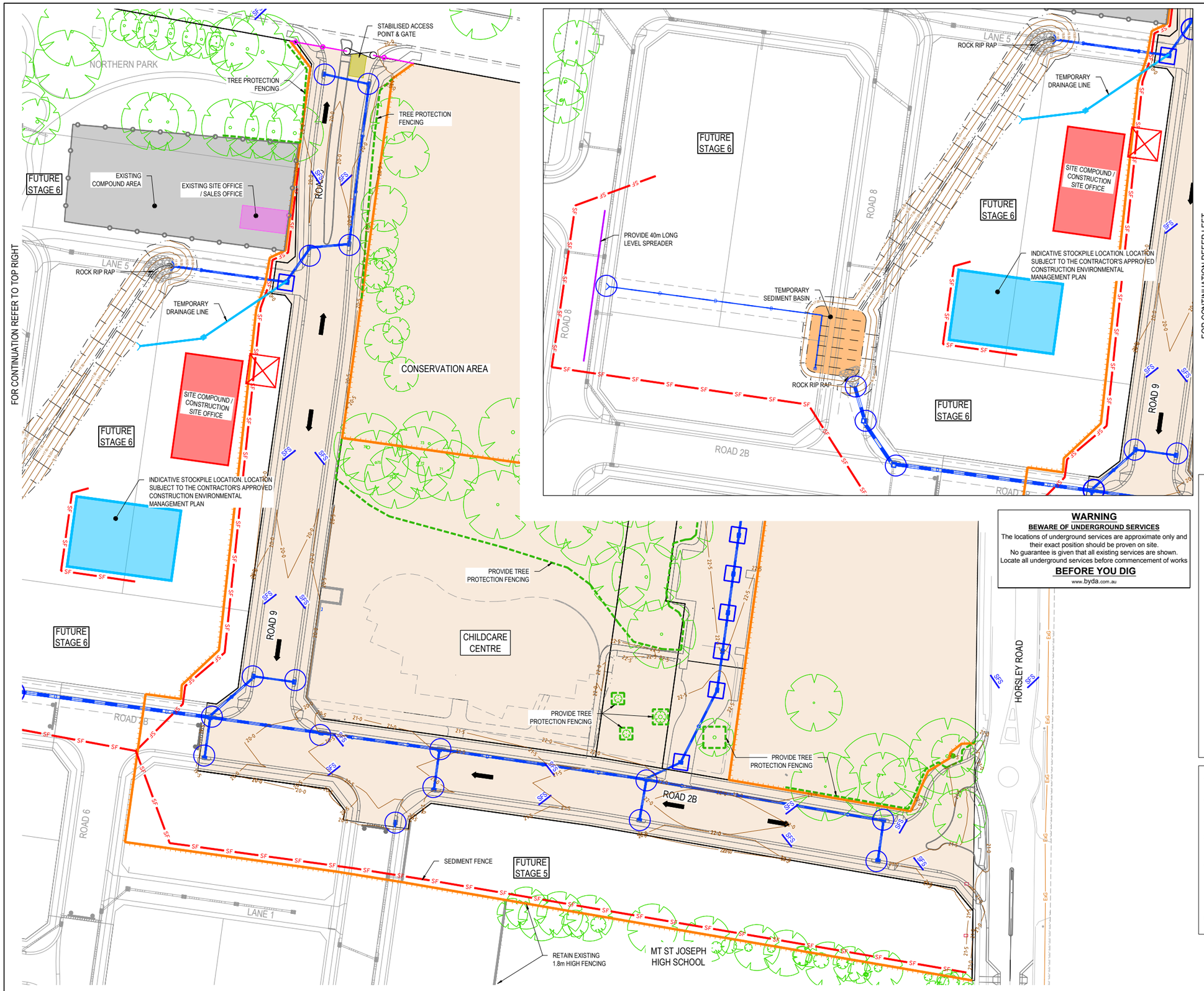

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2. DIVERSION MOUNDS & FLOW PATHS ARE TO BE ADJUSTED AS FILLING LAYERS PROGRESS & SURFACE LEVELS RISE.
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5. UPON ADEQUATE SITE REVEGETATION & COUNCIL APPROVAL SEDIMENT BASIN IS TO BE DECOMMISSIONED & CONVERTED INTO RAINGARDENS PER DESIGN.

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mirvac

0 5 10 20 30 40
SCALE 1:500 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Checked	S. FERGUSON
Date	07.11.25
Approved	S. FERGUSON
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: SOIL & WATER MANAGEMENT PLAN
STAGE 3

Sheet 138 of 145

Scale 1:500 @ A1

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Project Ref	Stage No	Drawing No	Rev
2301879	321	804	B

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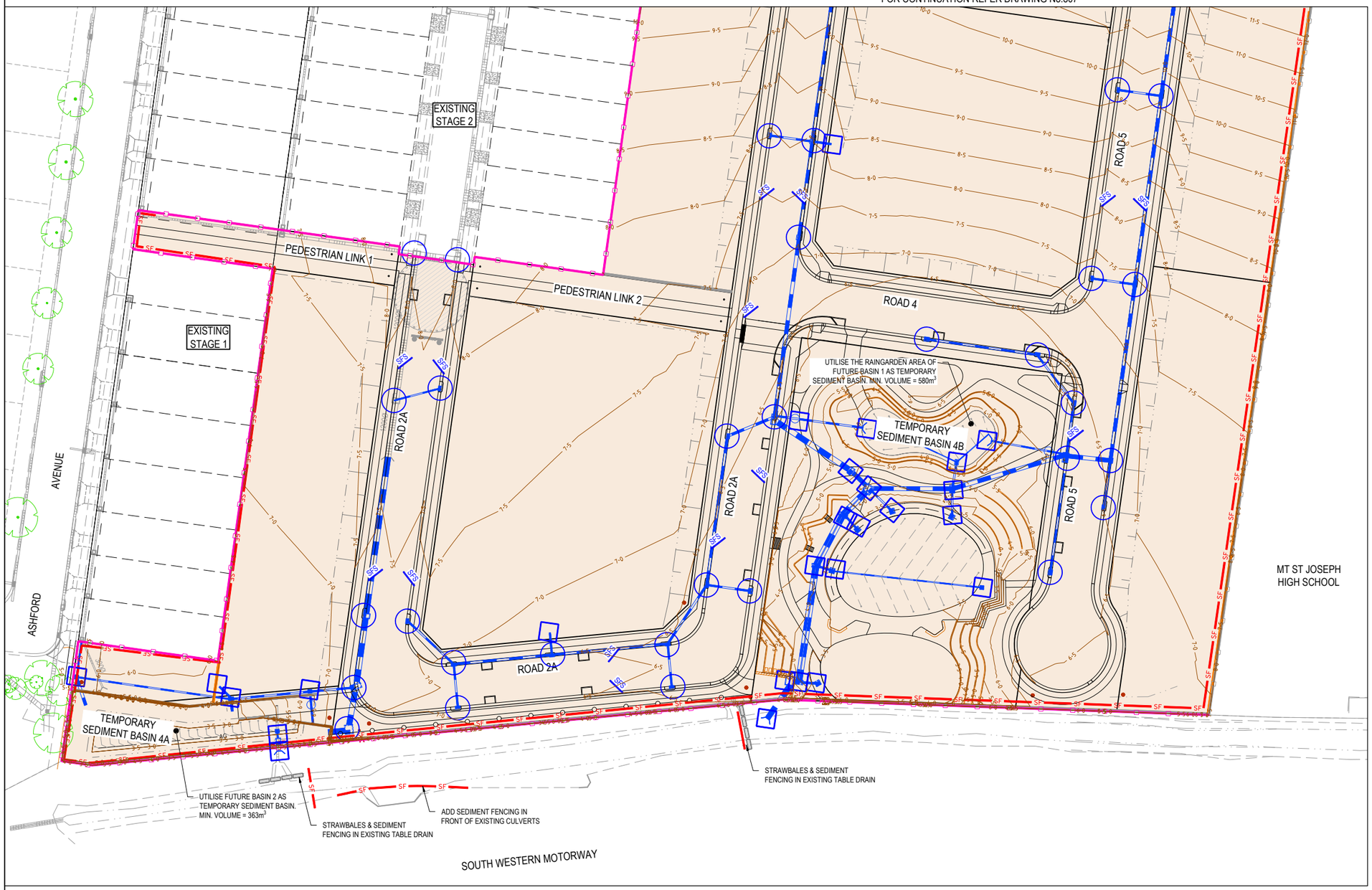
FOR CONTINUATION REFER DRAWING No.807



LEGEND

- EXISTING SURFACE CONTOURS
- PROPOSED DRAINAGE PIPE AND PIT
- TEMPORARY DRAINAGE PIPE AND PIT
- GRAVEL KERB INLET SEDIMENT TRAP
- GEOTEXTILE FILTER AROUND GRATED SURFACE INLET PITS
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- TEMPORARY SEDIMENT BASIN
- SITE COMPOUND
- INDICATIVE STOCKPILE LOCATION
- INDICATIVE RESIDENTIAL LOT BOUNDARY. SUBJECT TO FURTHER DA APPROVAL

NOTE: ALL SOIL AND WATER MANAGEMENT DETAILS ARE NOTED ON SOIL AND WATER MANAGEMENT NOTES. SEDIMENT & MANPROOF FENCES ARE TO BE LOCATED WHOLLY WITHIN BOUNDARIES & HAVE BEEN SHOWN DIAGRAMMATICALLY. PROVIDE CONSTRUCTION SIGN & AMENITIES IN ACCORDANCE WITH CONDITIONS OF THE DA.

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SCALE 1:500 AT A1 SIZE

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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
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Drawing Title: SOIL & WATER MANAGEMENT PLAN
STAGE 4
SHEET 1 OF 2

Sheet 139 of 145

Scale 1:500 @ A1

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Project Ref	Stage No	Drawing No	Rev
2301879	321	806	B

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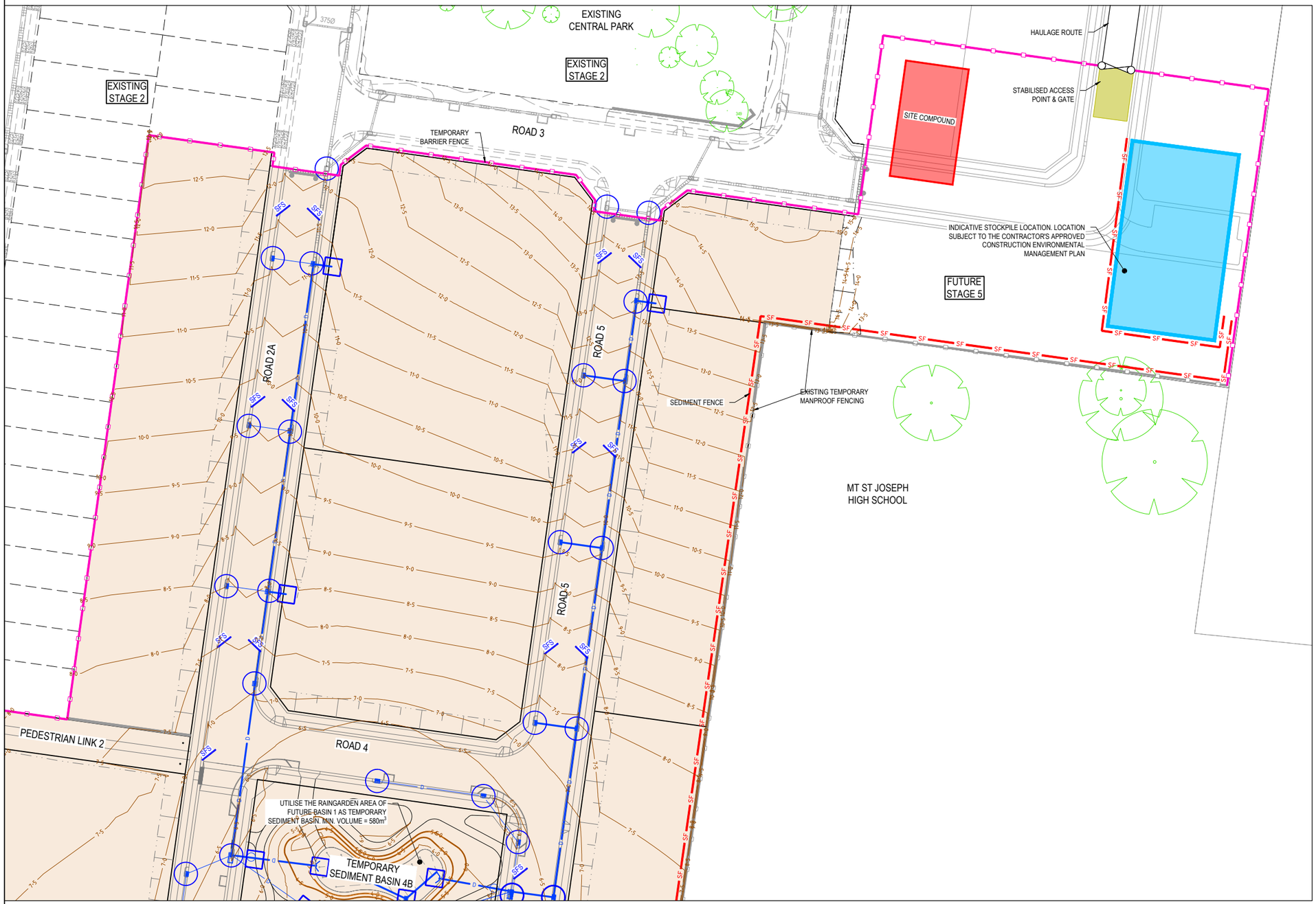

FOR CONTINUATION REFER DRAWING No.806

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SCALE 1:500 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Checked	S. FERGUSON
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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: SOIL & WATER MANAGEMENT PLAN
STAGE 4
SHEET 2 OF 2

Sheet 140 of 145
Scale 1:500 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	807	B

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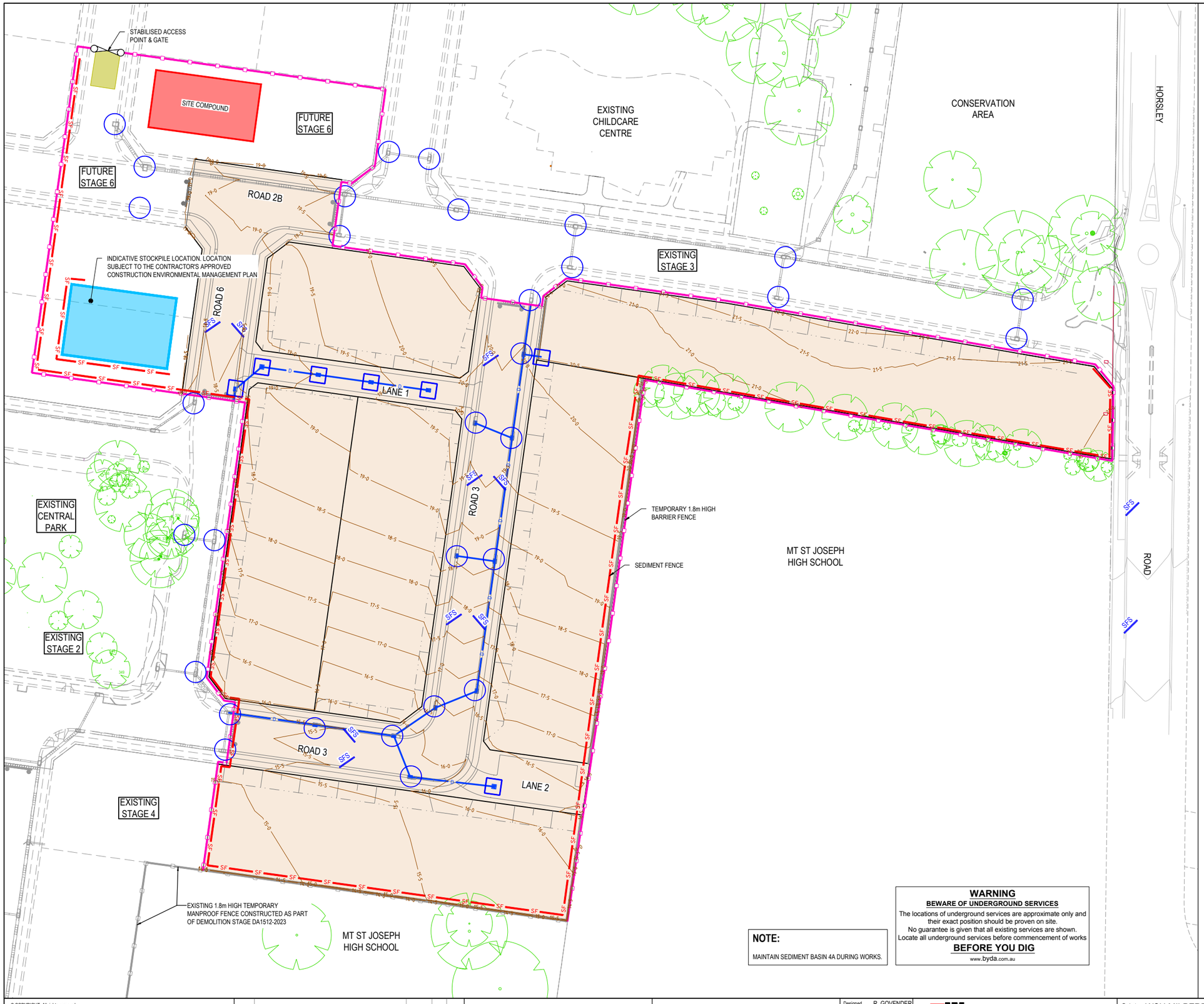

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NOTE:

MAINTAIN SEDIMENT BASIN 4A DURING WORKS.

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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA

Drawing Title: SOIL & WATER MANAGEMENT PLAN STAGE 5

Sheet 141 of 145

Scale: 1:500 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	808	B

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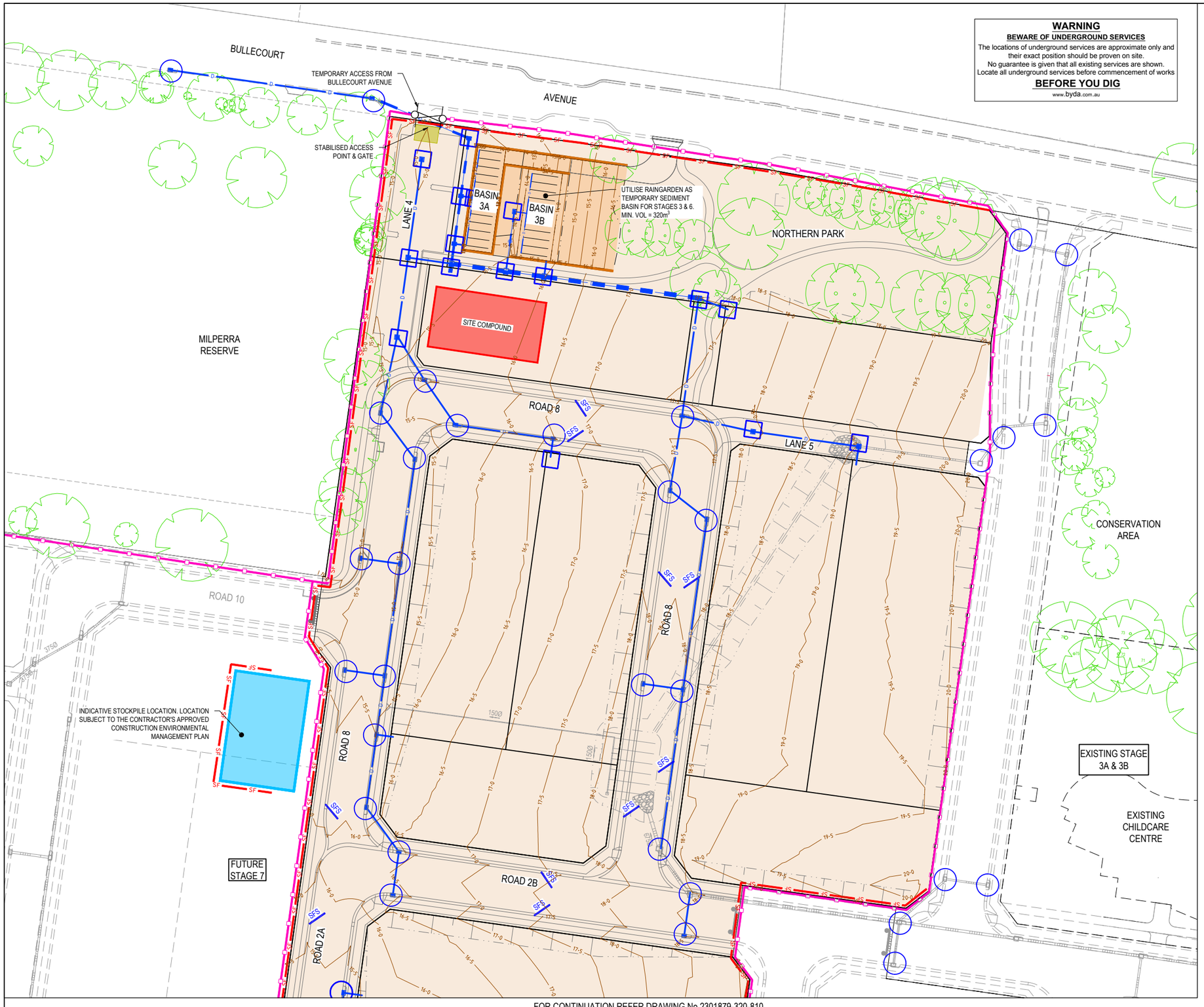

FOR CONTINUATION REFER DRAWING No.2301879-320-810

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2. ALL TOPSOIL CONTAINING VEGETATION TO BE STRIPPED FROM EXISTING SURFACE & STOCKPILED FOR REMOVAL OFF-SITE (APPROX. 75mm THICK).
3. ALL TOPSOIL NOT CONTAINING VEGETATION TO BE STRIPPED FROM THE SITE & STOCKPILED FOR AMELIORATION FOR USE ELSEWHERE IN THE SITE OR BLENDING WITH CLAY / FILL TO BE USED AS FILL MATERIAL ON SITE.
4. PLACE REMEDIATION MATERIAL AT DEPTH IN ACCORDANCE WITH GEOTECHNICAL & ENVIRONMENTAL / SITE AUDITOR DIRECTION. MATERIAL TO BE BLENDED WITH FILL MATERIAL TO ACHIEVE COMPACTION REQUIREMENTS. ALL FILL TO BE PLACED UNDER LEVEL 1 GEOTECHNICAL SUPERVISION.
5. STRIPPED SURFACE TO BE INSPECTED & CERTIFIED READY FOR FILL PLACEMENT BY GEOTECHNICAL ENGINEER.
6. COMPLETE INITIAL EARTHWORKS IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEER'S REPORT
7. IMPORTED FILL TO BE CERTIFIED AS V.E.N.M. & FREE OF SLAG, HAZARDOUS, CONTAMINATED, TOXIC, PUTRESCIBLE OR RADIO-ACTIVE MATTER & INDUSTRIAL WASTE & BUILDING DEBRIS. THE ORIGIN OF FILL PROPOSED TO BE IMPORTED & THE ABOVE CERTIFICATION TO BE REVIEWED & APPROVED BY COUNCIL PRIOR TO ANY IMPORTED FILL ARRIVING ON SITE.
8. ALL FILL IS TO BE PLACED & COMPACTED IN ACCORDANCE WITH COUNCIL'S CONSTRUCTION SPECIFICATION.
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13. FINAL TOPSOIL/ TURF & PATHWAYS WITHIN ROAD VERGES TO BE BONDED WITH COUNCIL & COMPLETED BY BUILDERS FOLLOWING HOUSE CONSTRUCTION

SEDIMENT BASIN

1. THE CONTRACTOR IS TO ENSURE STORMWATER RUNOFF IS DIRECTED TO THE SEDIMENT BASIN WITH PLACEMENT OF TEMPORARY DIVERSION MOUNDS OR THE FORMATION OF OVERLAND FLOW PATHS.
2. DIVERSION MOUNDS & FLOW PATHS ARE TO BE ADJUSTED AS FILLING LAYERS PROGRESS & SURFACE LEVELS RISE.
3. SEDIMENT IS TO BE REMOVED SUCH THAT NOT LESS THAN 70% OF THE DESIGN CAPACITY IS AVAILABLE AT ALL TIMES MARKERS WITH DEPTH INDICATORS ARE TO BE PLACED IN EACH BASIN TO INDICATE WHEN SEDIMENT ACCUMULATION EXCEEDS 30% OF STORAGE REQUIREMENTS.
4. BASINS ARE TO BE FLOCCULATED WITH GYPSUM WHEN SUSPENDED SOLID CONCENTRATION EXCEEDS 50 *milligrams per litre*. SPREADING RATE TO BE DETERMINED AFTER TESTING AND ANALYSIS OF THE INITIAL STORM EVENT. FIRST APPLICATION IS TO BE *30 kilograms GYPSUM PER 100 cum*. OF STORED WATER & THEREAFTER AS DETERMINED BY TESTING. PUMP OUT CLEAN WATER TO LARGE GRASSED / VEGETATED AREA WITHIN 72 hrs OF TREATMENT. REFER LANDCOM SOIL & CONSTRUCTION - "MANAGING URBAN STORMWATER" MANUAL - APPENDIX E
5. UPON ADEQUATE SITE REVEGETATION & COUNCIL APPROVAL SEDIMENT BASIN IS TO BE DECOMMISSIONED & CONVERTED INTO RAINGARDENS PER DESIGN.

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SCALE 1:500 AT A1 SIZE

Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Checked	S. FERGUSON
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Reg. No.	PE0008347
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Project Details	WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984 2A BULLECOURT AVENUE, MILPERRA
Drawing Title	SOIL & WATER MANAGEMENT PLAN STAGE 6 SHEET 1 OF 2

Sheet 142 of 145
Scale 1:500 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	809	B

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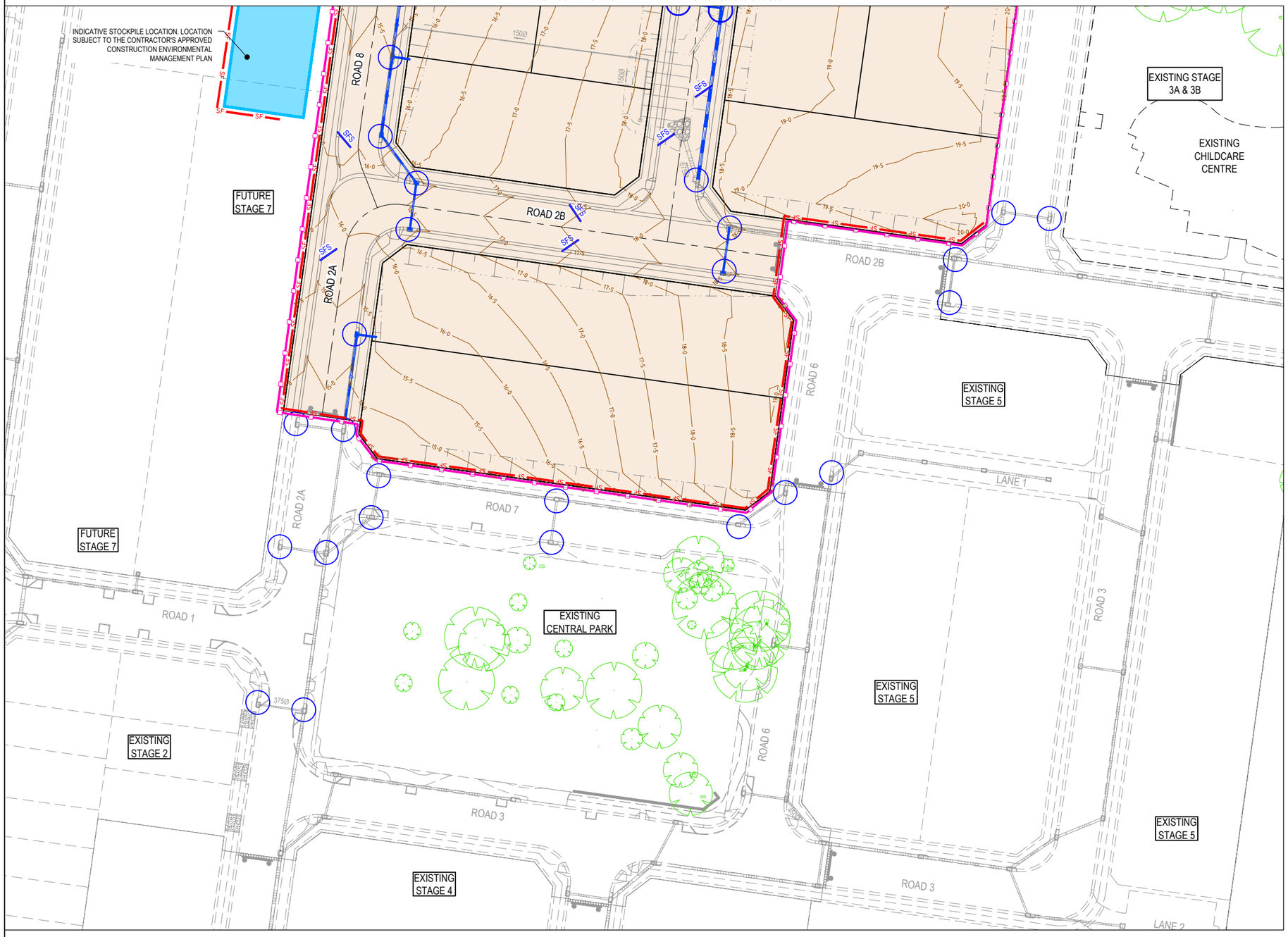
FOR CONTINUATION REFER DRAWING No.2301879-320-809



LEGEND

- EXISTING SURFACE CONTOURS
- PROPOSED DRAINAGE PIPE AND PIT
- TEMPORARY DRAINAGE PIPE AND PIT
- GRAVEL KERB INLET SEDIMENT TRAP
- GEOTEXTILE FILTER AROUND GRATED SURFACE INLET PITS
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- NEW 1.8m HIGH TEMPORARY MANPROOF FENCE W/ SHADE CLOTH
- HI-VIS MESH FENCING TO LIMIT CONTRACTORS ACTIVITIES TO THE STAGE 6 LIMITS
- LEVEL SPREADER
- SFS — SAND OR AGGREGATE FILLED HESSIAN FILTER LAIDACROSS ROAD PAVEMENT TO TRAP LOCALISED SILT MATERIAL
- SF — SEDIMENT FENCING
- STRAW BALE
- TREE PROTECTION FENCING
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- SITE COMPOUND
- INDICATIVE STOCKPILE LOCATION

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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

Drawing Title: SOIL & WATER MANAGEMENT PLAN
STAGE 6
SHEET 2 OF 2

Sheet 143 of 145
Scale 1:500 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	321	810	B

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Drawing Title	SOIL & WATER MANAGEMENT PLAN STAGE 7

Sheet 144 of 145

Scale 1:500 @ A1

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Project Ref	Stage No	Drawing No	Rev
2301879	321	811	B

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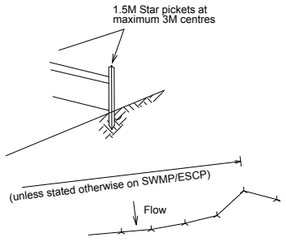
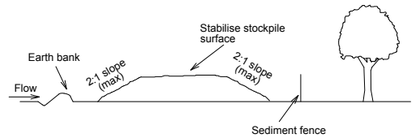


Star pickets at maximum 3M spacings

1. Construct sediment fence as close as possible to parallel to the contours of the site
2. Drive 1.5 metre long star pickets into ground, 3 metres apart.
3. Dig a 150MM deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched
5. Fix self supporting geotextile to upslope side of posts with wire ties or as recommended by geotextile manufacturer
6. Join sections of fabric at a support post with a 150mm overlap

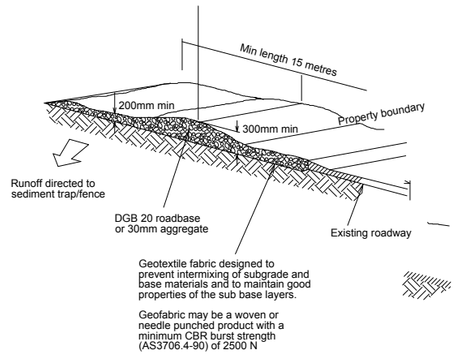
SEDIMENT FENCE



Construction Notes

1. Locate stockpile at least 5 metres from existing vegetation, concentrated water flows, roads and hazard areas.
2. Construct on the contour as a low, flat elongated mound.
3. All stockpiles shall be less than 2 metres in height
4. Rehabilitate in accordance with the SWMP/ESCP.
5. Construct earth bank (Standard Drawing 5-2) on the upslope side to divert run off around the stockpile and a sediment fence (standard Drawing 6-7) 1 to 2 metres downslope of stockpile.
6. Seeded areas to be watered twice weekly until established. Substantial growth required within 14 days or bitumen straw mulch to be placed.
7. Dust to be controlled by watering

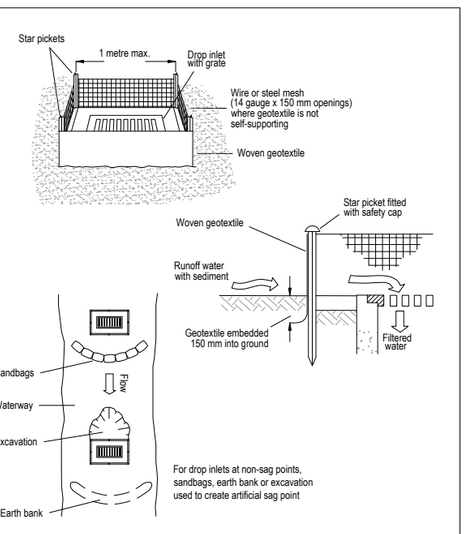
STOCKPILES



Construction Notes

1. Strip topsoil and level site.
2. Compact subgrade
3. Cover area with needle punch geotextile.
4. Construct 200mm thick pad over geotextile using roadbase or 30mm aggregate. Minimum length 15 metres or to building alignment width 3 metres
5. Construct hump immediately within boundary to divert water to a sediment fence or other sediment trap.

STABILISED SITE ACCESS

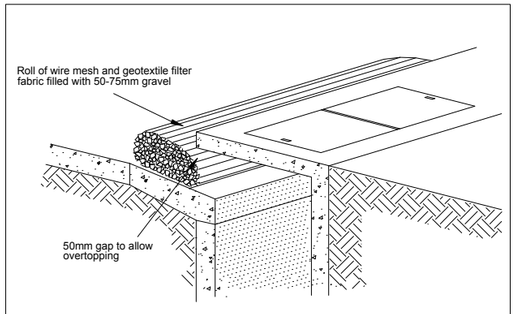


GEOTEXTILE INLET FILTER (SD 6-12)

NTS

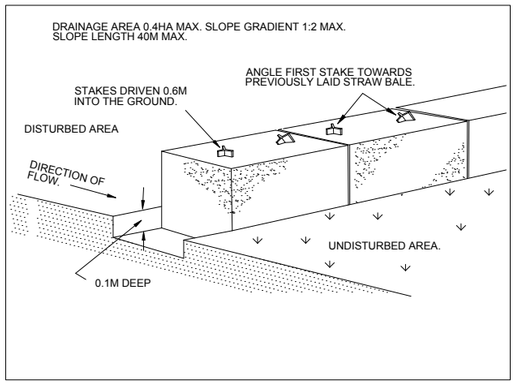
Construction Notes

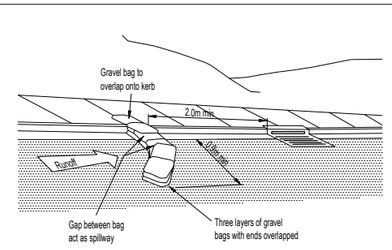
1. Fabricate a sediment barrier made from geotextile or straw bales.
2. Follow Standard Drawing 6-7 and Standard Drawing 6-8 for installation procedures for the straw bales or geofabric. Reduce the picket spacing to 1 metre centres.
3. In waterways, artificial sag points can be created with sandbags or earth banks as shown in the drawing.
4. Do not cover the inlet with geotextile unless the design is adequate to allow for all waters to bypass it.



Portable Gravel Kerb Inlet

Sediment Trap





KERB INLET CONTROL - ON GRADE

Gravel Bag Check Dam

SFS

NOTES

ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE LANDCOM'S MANUAL "MANAGING URBAN STORMWATER" 4TH EDITION AUGUST 2004.

WORKS SHALL BE UNDERTAKEN AS OUTLINED ON PLANS EROSION AND SEDIMENT CONTROL MEASURES AFFECTED BY WORKS ARE TO BE RE-ESTABLISHED PRIOR TO THE COMPLETION OF EACH DAY'S WORK.

THE CONTRACTOR IS TO STABILISE ALL STOCKPILES AND DISTURBED AREAS AS SOON AS THEY ARE FORMED TO FINAL LEVELS. STABILISATION TO BE BY HYDROSEEDING / SPRAY GRASS, OR AS DIRECTED BY COUNCIL ENGINEER.

SEED MIXTURE FOR FOOTWAYS AND OTHER AREAS UNDER THE CONTROL OF COUNCIL ARE TO BE IN ACCORDANCE WITH COUNCIL'S SPECIFICATION. FOR OTHER AREAS, THE LIST OF PLANT SPECIES FOR TEMPORARY COVER IS:-

JAPANESE MILLET AND OATS(RYECORN) AT 25kg/ha EACH - SPRING/SUMMER
JAPANESE MILLET AT 10kg/ha AND OATS(RYECORN) AT 30kg/ha - AUTUMN/WINTER

ALL SEEDED AREAS ARE TO BE WATERED TWICE WEEKLY.

WHERE SURFACE SLOPES ARE MORE THAN 4H:1V BATTER THEY SHALL BE TURFED.

DUST CONTROL MEASURES SHALL BE IMPLEMENTED CONTINUOUSLY DURING CONSTRUCTION WORKS. SUCH MEASURES ARE TO BE TO THE SATISFACTION OF THE SUPERINTENDENT AND COUNCIL.

TOPSOIL SHALL BE RESPREAD ON CONSTRUCTION AREAS AND STABILISED AS SOON AS POSSIBLE WITHIN 60 DAYS OF DISTURBANCE. ALL DISTURBED AREAS ARE TO BE LEFT WITH A SCARIFIED SURFACE AT ALL TIMES TO ENCOURAGE WATER INFILTRATION AND ASSIST WITH KEYING OF TOPSOIL.

FOLLOWING COMPLETION OF WORKS AND STABILISATION OF ALL DISTURBED SURFACES, ALL MATERIALS AND CONTROL MEASURES ARE TO BE REMOVED FROM SITE AND TEMPORARY BASINS FILLED, COMPACTED AND STABILISED.

ALL SITE ACCESS TO BE ACHIEVED FROM DESIGNATED SITE ACCESS. SITE ACCESS TO BE PROTECTED BY THE INSTALLATION OF AN APPROVED SHAKER RAMP. SHAKER RAMP TO BE REGULARLY MAINTAINED TO ENSURE EFFECTIVENESS.

UPON COMPLETION OF FINAL EARTHWORKS OR AFTER WRITTEN DIRECTION OF COUNCIL, IMMEDIATE SILT CONSERVATION TREATMENTS SHALL BE APPLIED SO AS TO RENDER AREAS THAT HAVE BEEN DISTURBED, EROSION PROOF WITHIN 14 DAYS.

ALL DISTURBED OVER ALL STORMWATER, POWER, TELEPHONE, GAS AND SEWER LINES NOT WITHIN STREETS IS TO BE SPRAY GRASSED AS SOON AS POSSIBLE BUT NO LATER THAN WITHIN 14 DAYS AFTER BACKFILL.

NO MORE THAN 150m OF TRENCH IS TO BE OPEN AT ANY ONE TIME. ALL TEMPORARY EARTH BERMS, DIVERSION AND SEDIMENT BASIN EMBANKMENTS ARE TO BE TRACK ROLLED, SEEDED OR MULCHED OR SPRAYED WITH BITUMEN AS SOON AS THEY HAVE BEEN FORMED.

ALL FILLS ARE TO BE LEFT WITH A WINDROW AT LEAST 20cm HIGH AT THE TOP OF THE SLOPE AT THE END OF EACH DAY'S EARTHWORKS AMD ALL EARTHWORK AREAS SHALL BE ROLLED EACH EVENING TO "SEAL" THE EARTHWORKS.

STABILISATION OF ALL CUT AND FILL SLOPES SHALL BE COMMENCED WITHIN 14 DAYS OF COMPLETION OF FORMATION.

THE CONTRACTOR SHALL MAINTAIN AND PRODUCE ON REQUEST A LOGBOOK ON SITE DETAILING THE FOLLOWING:-

- RECORDS OF ALL RAINFALL
- DAILY CONDITION OF ALL EROSION AND SEDIMENT CONTROL MEASURES
- ANY APPLICATION OF FLOCCULATION AGENTS TO BASINS
- VOLUMES OF WATER DISCHARGED FROM BASINS
- METHOD OF DISPOSAL OF WATER FROM BASINS
- ANY ADDITIONAL REMEDIAL WORKS REQUIRED.

THE ORIGINAL LOGBOOK SHALL BE ISSUED TO THE PROJECT MANAGER ON COMPLETION OF THE WORKS. SEDIMENT CONTROL MEASURES TO BE MONITORED ONCE A WEEK AND AFTER EVERY STORM EVENT.

STOCKPILES TO BE MAX 2 METRE HIGH WITH SEDIMENT FENCING TO LOW SIDE LOCATED CLEAR OF WATERCOURSES

ALL STORMWATER PITS TO BE BLOCKED DURING CONSTRUCTION UNTIL SITE STABILISED.

DURING CONSTRUCTION WORKS ANY WORK AND STORAGE AREAS WHERE SPILLAGE MAY OCCUR MUST BE BUNDED. THE SIZE OF THE AREA TO BE BUNDED AND HEIGHT OF THE BUND WALLS MUST BE CALCULATED AS BEING EQUAL TO 110% OF THE TOTAL VOLUME STORED OR EQUAL TO THE LARGEST STORAGE CONTAINER, WHICH EVER IS GREATER. ALL PIPE WORK EXTENDING FROM THE BUNDED AREA MUST BE DIRECTED OVER THE BUND WALL AND HOSE COUPLINGS MUST BE PLACED SUCH THAT LEAKS AND SPILLAGE'S ARE CONTAINED. THE AREAS MUST BE GRADED TO A PIT/SUMP TO FACILITATE EMPTYING.

ANY IMPORTED FILL USED MUST BE VALIDATED & SUITABLE & FREE OF SALINE & CONTAMINATION

SEDIMENT & EROSION CONTROL

SE1. THE CONTRACTOR SHALL IMPLEMENT ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO DISTURBANCE OF THE WORK AREA & TO BE CARRIED OUT IN ACCORDANCE WITH LANDCOM'S "MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION" VOLUME 1.

SE2. THE CONTRACTOR SHALL REGULARLY MAINTAIN ALL SEDIMENT AND EROSION CONTROL DEVICES AND REMOVE ACCUMULATED SILT FROM SUCH DEVICES BEFORE MORE THAN 60% OF THEIR CAPACITY IS LOST. ALL THE SILT REMOVED SHALL BE DISPOSED OF AS DIRECTED BY THE SUPERINTENDENT. NO SILT IS TO BE PLACED OUTSIDE THE LIMIT OF WORKS. THE PERIOD FOR MAINTAINING THESE DEVICES SHALL BE AT LEAST UNTIL ALL DISTURBED AREAS ARE REVEGETATED AND LONGER AS MAY BE DIRECTED BY THE SUPERINTENDENT OR COUNCIL.

SE3. VEHICULAR TRAFFIC SHALL BE CONTROLLED DURING CONSTRUCTION CONFINING ACCESS WHERE POSSIBLE TO PROPOSED OR EXISTING ROAD ALIGNMENTS.

SE4. WHEN ANY DEVICES ARE TO BE HANDED OVER TO COUNCIL, THEY SHALL BE IN A CLEAN & STABLE CONDITION.

SE5. THE CONTRACTOR SHALL MAINTAIN ALL REVEGETATED AREAS INCLUDING WATERING UNTIL FINAL COMPLETION OF WORKS.

SE6. THE CONTRACTOR SHALL MAINTAIN DUST CONTROL UNTIL FINAL COMPLETION OF WORKS.

SE7. THE CONTRACTOR'S RESPONSIBILITY IS TO ENSURE ALL NECESSARY MEASURES SO AS TO PROTECT ALL DISTURBED AREAS AS PER NOTE SE1. ALL ADDITIONAL COSTS ARE TO BE REFLECTED IN TENDER PRICE EVEN IF SUCH MEASURES ARE NOT INDICATED ON THE SEDIMENT AND EROSION CONTROL PLAN.

SE8. THE CONTRACTOR MUST COMMENCE REHABILITATION WITHIN 5 DAYS OF ANY SITE REGRADING & BATTER FORMATION.

SE9. A 0.3m WIDE STRIP OF TURF TO BE PLACED BEHIND NEW ROADS.

SE10. PROVIDE TURF AROUND ALL SURFACE INLET PITS IN ADDITION TO THE GEOTEXTILE INLET FILTER.

SE11. STOCKPILES TO BE STABILISED WITHIN 14 DAYS OF COMPLETING THE STOCKPILE.

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REV	DESCRIPTION	DATE	DRN.	APP.
B	FINAL ISSUE FOR SSDA	07.11.25	GN	SG
A	PRELIMINARY ISSUE FOR SSDA	17.10.25	RG	SG

mirvac

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Designed	R. GOVENDER
Date	23.06.2025
Drawn	D.RAFTER
Checked	S. FERGUSON
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Approved	S. FERGUSON
Reg. No.	PE0008347
Date	07.11.25
DA Number	-

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Project Details: WSU MILPERRA, LOT 1 IN DP101147 AND LOT 2 IN DP1291984
2A BULLECOURT AVENUE, MILPERRA

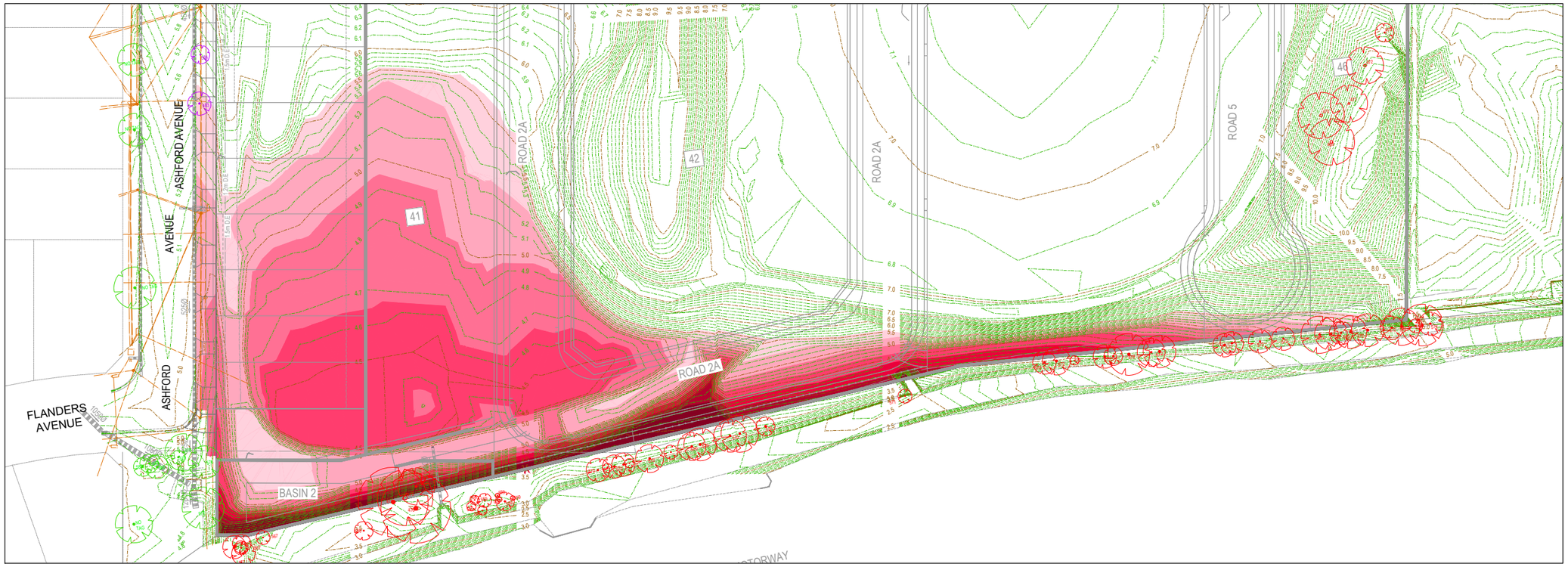
Drawing Title: SOIL & WATER MANAGEMENT PLAN DETAILS AND NOTES

Sheet 145 of 145
Scale 1:500 @ A1

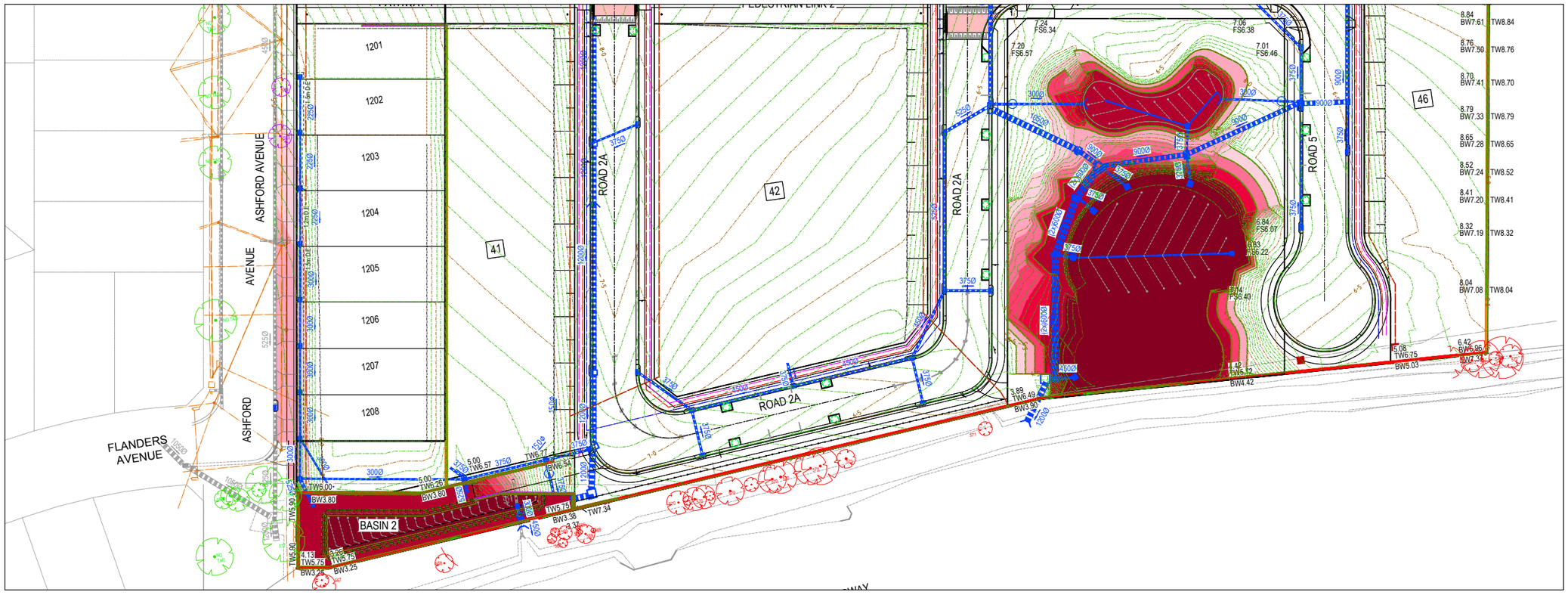
Project Ref	Stage No	Drawing No	Rev
2301879	321	820	B

F:\synergytemp\12dSynergy\12dSynergyServerService\3192\a0aac392-9e58-408d-ab3d-b9bfe4405e2f\2301879-321-820-SWM.dwg

APPENDIX B - Compensatory Storage Plans



FLOOD STORAGE - EXISTING SCENARIO



FLOOD STORAGE - DEVELOPED SCENARIO

STORAGE LEGEND	
DEPTH RANGE (m)	COLOUR
>1.8m STORAGE	
1.8 – 1.5	
1.5 – 1.2	
1.2 – 0.9	
0.9 – 0.6	
0.6 – 0.3	
0.3 – 0.0	

STORAGE VOLUMES:

EXISTING SCENARIO : 6400 m^3
DEVELOPED SCENARIO : 6610 m^3

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REV	DESCRIPTION	DATE	DRN.	APP.
P4	DRAWING REVISED	13.11.25	R.G	S.G
P3	DRAWING REVISED	10.03.25	S.F.	S.G.
P2	DRAWING REVISED	07.08.24	C.Y.	S.F.
P1	ISSUED FOR INFORMATION	14.05.24	C.Y.	S.F.

mirvac

0 5 10 20 30 40
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Designed S.FERGUSON Date 14.05.2024
Drawn C.YAP
Approved S.FERGUSON Date 14.05.2024
PS Number -

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Project Details: 2 BULLECOURT AVENUE, MILPERRA
OVERALL ESTATE
MIRVAC

Drawing Title: COMPENSATORY STORAGE PLAN

Sheet 01 of 01
Scale 1:500 @ A1

Project Ref	Stage No	Drawing No	Rev
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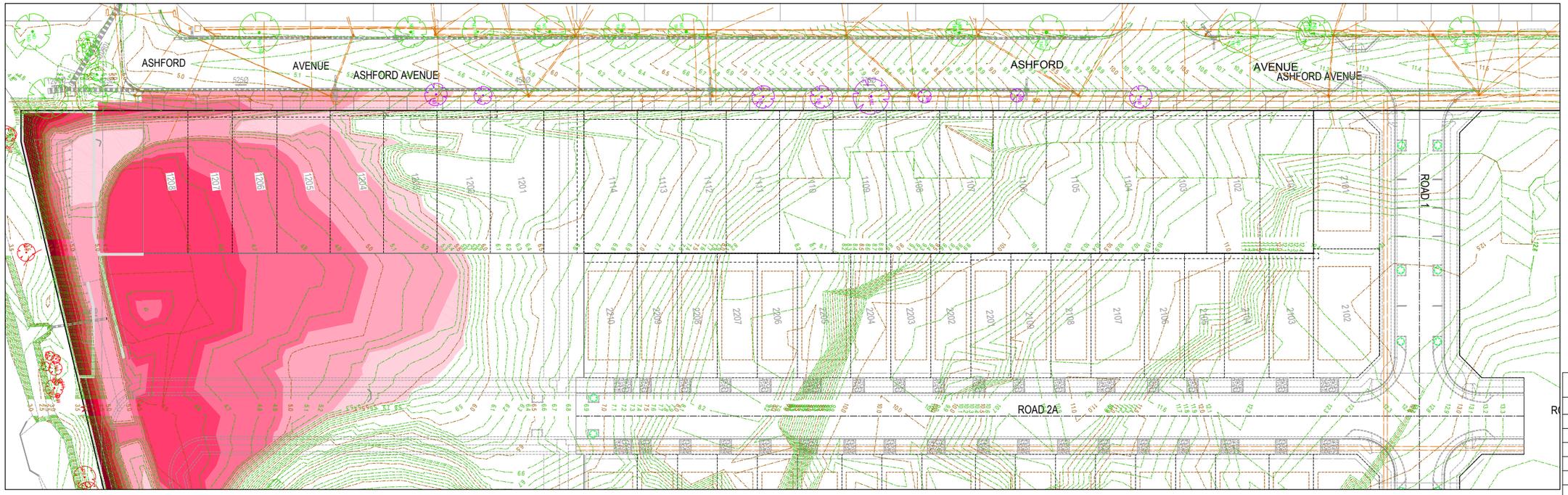
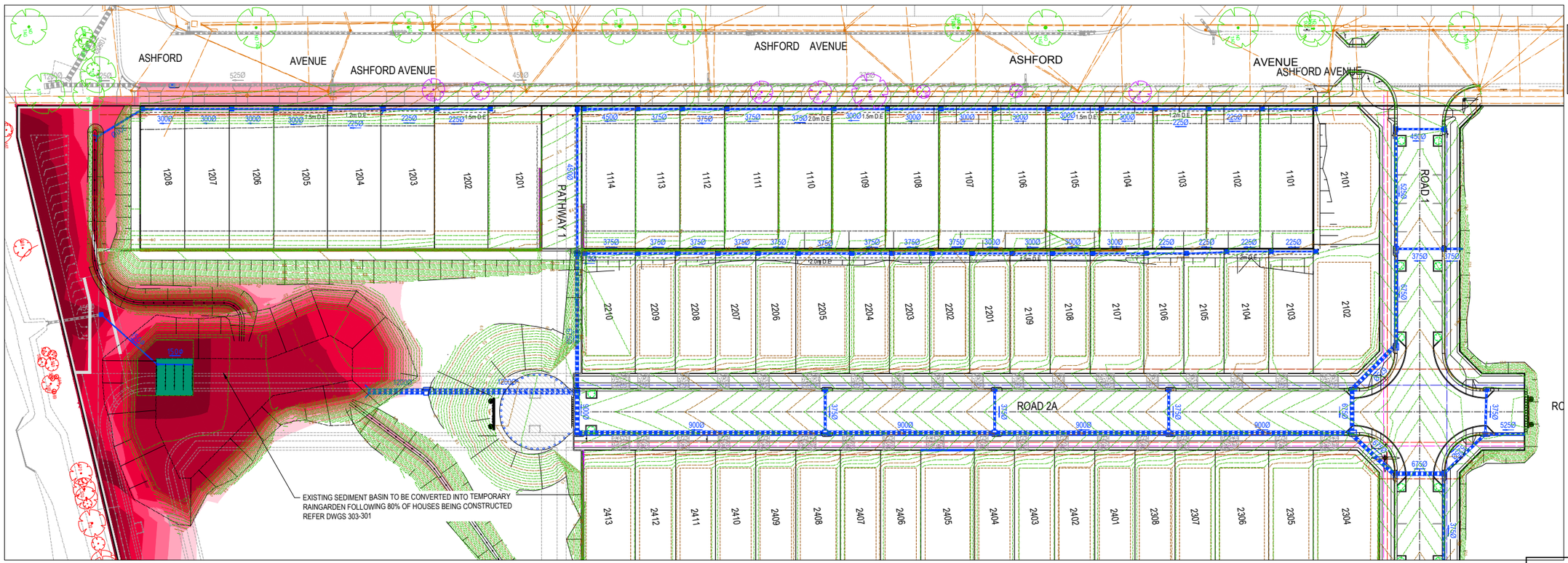


FLOOD STORAGE - EXISTING SCENARIO

STORAGE LEGEND	
DEPTH RANGE (m)	COLOUR
>1.8m STORAGE	
1.8 – 1.5	
1.5 – 1.2	
1.2 – 0.9	
0.9 – 0.6	
0.6 – 0.3	
0.3 – 0.0	



FLOOD STORAGE - DEVELOPED SCENARIO

STORAGE VOLUMES:

EXISTING SCENARIO :	6400 m^3
DEVELOPED SCENARIO :	7060 m^3

ISSUED FOR D.A.

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D	ISSUED FOR INFORMATION	13.11.25	R.G	S.G
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A	ISSUED FOR INFORMATION	23.05.24	S.F	S.G

REV	DESCRIPTION	DATE	DRN.	APP.

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SCALE 1:500 AT A1 SIZE

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Approved	S. GRAY
Date	20.05.2024
PS Number	-

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Project Details	WSU MILPERRA, LOT 2 IN DP1291984 2 BULLECOURT AVE, MILPERRA STAGE 1 & 2 SUBDIVISION
Drawing Title	COMPENSATORY STORAGE PLAN

Sheet 01 of 01

Scale 1:500 @ A1

Project Ref	Stage No	Drawing No	Rev
2301879	306	850	D

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APPENDIX C – Stormwater Systems Report

Level 1, 66 - 72 Rickard Road, Bankstown NSW
PO Box 8, Bankstown NSW 1885
Tel: (02) 9707 9010 - Fax: (02) 9707 9408
DX 11220 BANKSTOWN
council@cbcity.nsw.gov.au

CITY OF CANTERBURY BANKSTOWN

To: Beveridge Williams & Co. Pty Ltd
Suite 4-05, LPC House
Level 4, 3 Fordham Way
ORAN PARK NSW 2570

STORMWATER SYSTEM REPORT
2 Bullecourt Avenue, MILPERRA NSW 2214

Date:	09-Jul-2025
Ref:	WP-SIAONL-699/2025
Development type:	Mixture of detached dwellings and attached dwellings

NO	FLOOD STUDY REQUIRED

This Stormwater System Report (SSR) provides flood and stormwater information about the property.

The information in this report should be reviewed by those who are knowledgeable in flooding or have a technical requirement to understand more about Council's building development controls (such as surveyors, builders, certifiers, architects and engineers).

Stormwater Infrastructure

The site is affected by the following Private stormwater system components.

- A 3m wide and variable width private drainage easement located adjacent to the southeastern boundary of the site.

Property Levels

Description	Minimum (m AHD)	Maximum (m AHD)
Approximate Ground Level	3.01	22.45

Flooding Levels

Stormwater Catchment Flooding from Milperra Catchment Flood Study (BMT WBM, 2015), Kelso Swamp Catchment Flood Study and Georges River Floodplain Risk Management Study & Plan 2004" by Bewsher Consulting Pty Ltd May 2004

Flood Event	Minimum Level (m AHD)	Maximum Level (m AHD)
1% AEP (100 year ARI)	4.40	17.90
PMF (Probable Maximum Flood)	10.14	20.00

Terms and Definitions

Annual Exceedance Probability (AEP)	The probability of a flood event of a given size occurring in any one year, usually expressed as a percentage annual chance.
Average Recurrence Interval (ARI):	Similar to AEP. The long-term average number of years between the occurrence of a flood as big as (or larger than) the selected event.
metres above Australian Height Datum (m AHD)	The reference level for defining ground levels in Australia. The level of 0.0m AHD is approximately mean sea level.
Maximum and Minimum Ground Level –	Highest and lowest ground levels on the property based on available ground level information. A Registered Surveyor can confirm exact ground levels.
Probable Maximum Flood	An extreme flood deemed to be the largest flood that could conceivably occur at a specific location. The PMF defines the extent of flood prone land (i.e. the floodplain).

Further Information
For further information on flood-related development controls which may be applicable to this property, refer to the following guidelines:

- Canterbury Bankstown Development Control Plan (2023, Chapter 2.2 Flood Risk Management)
- Canterbury Bankstown Development Engineering Standards (2023)
- Council Standard Drawings.

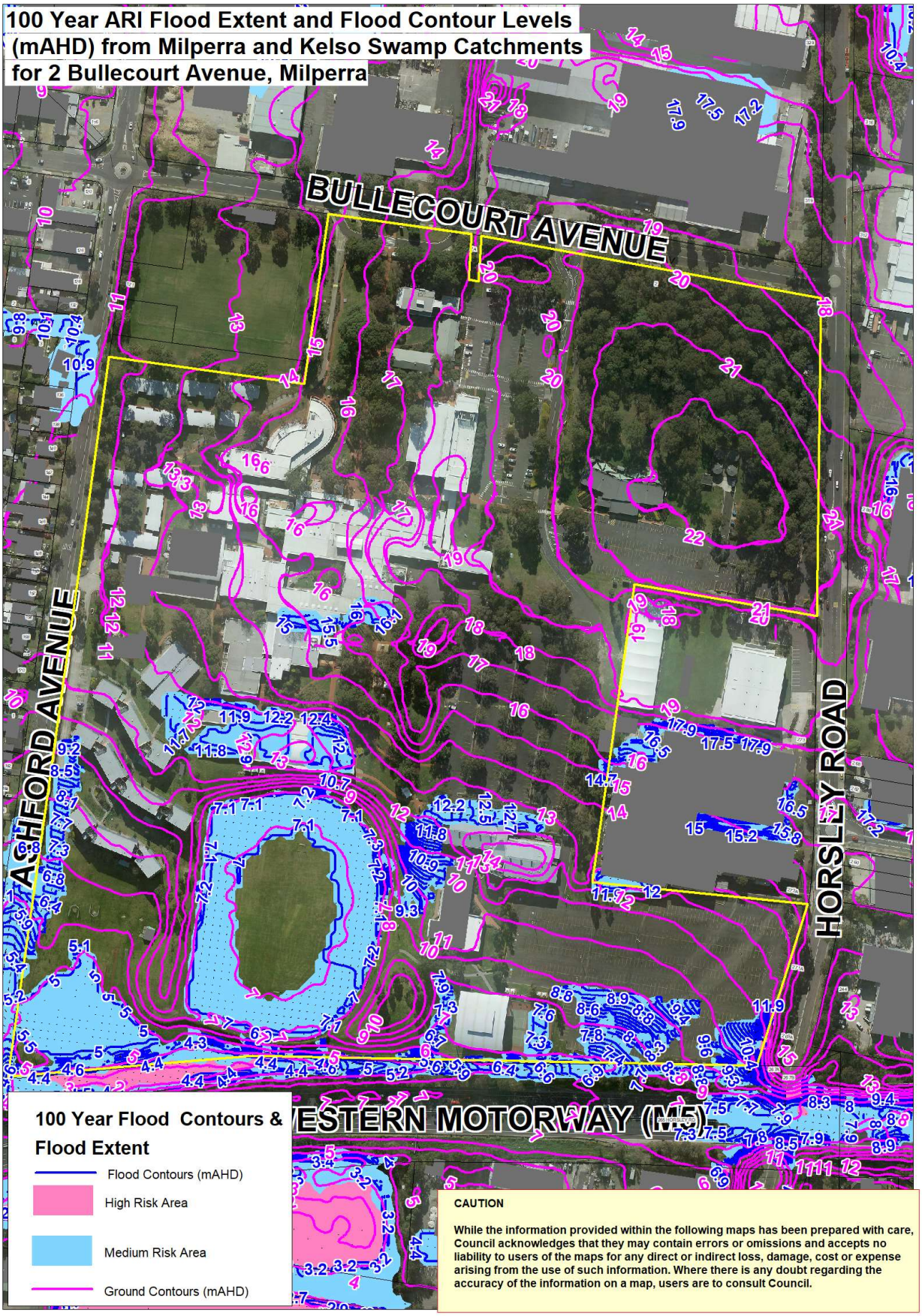
Disclaimer
The information contained in this document is not endorsed by the Council as without error, omission or mis-description. Council accordingly expressly disclaims all and any liability and responsibility in respect of loss, damage or injury to person or property arising from anything done or omitted to be done by any person in reliance, whether wholly or in part, upon any part of this information.

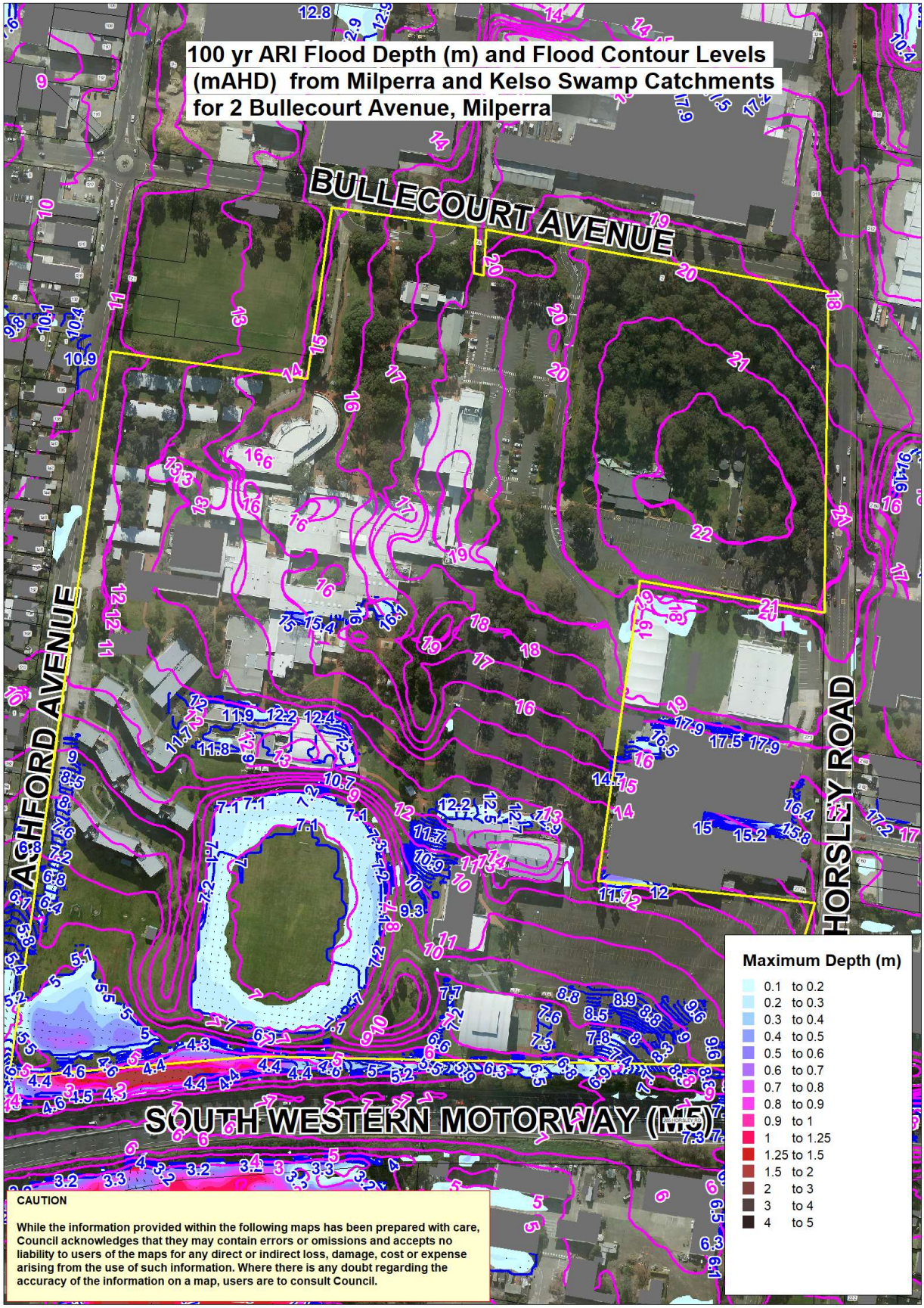
Any person having regard to the information contained in this document is encouraged to seek, at their discretion, all other sources of information on the subject matter as they consider appropriate, which may include local knowledge and/or professional advice.

ATTACHMENTS

For 1% AEP (100 year ARI)
1. Flood Extent & Flood Contours Map
2. Flood Depth Map
3. Velocity Depth Product Map

For PMF
4. Flood Contours & Flood extent Map
5. GIS Map (from Council's Data)
6. Aerial Map (from Council 's Data)


100 Year ARI Flood Extent and Flood Contour Levels (mAHD) from Milperra and Kelso Swamp Catchments for 2 Bullecourt Avenue, Milperra
BULLECOURT AVENUE
ASHFORD AVENUE
HORSLEY ROAD
WESTERN MOTORWAY (M5)
100 Year Flood Contours & Flood Extent
Flood Contours (mAHD)
High Risk Area
Medium Risk Area
Ground Contours (mAHD)
CAUTION
While the information provided within the following maps has been prepared with care, Council acknowledges that they may contain errors or omissions and accepts no liability to users of the maps for any direct or indirect loss, damage, cost or expense arising from the use of such information. Where there is any doubt regarding the accuracy of the information on a map, users are to consult Council.


100 yr ARI Flood Depth (m) and Flood Contour Levels (mAHD) from Milperra and Kelso Swamp Catchments for 2 Bullecourt Avenue, Milperra
BULLECOURT AVENUE
ASHFORD AVENUE
HORSLEY ROAD
SOUTH WESTERN MOTORWAY (M5)
Maximum Depth (m)
0.1 to 0.2
0.2 to 0.3
0.3 to 0.4
0.4 to 0.5
0.5 to 0.6
0.6 to 0.7
0.7 to 0.8
0.8 to 0.9
0.9 to 1
1 to 1.25
1.25 to 1.5
1.5 to 2
2 to 3
3 to 4
4 to 5
CAUTION
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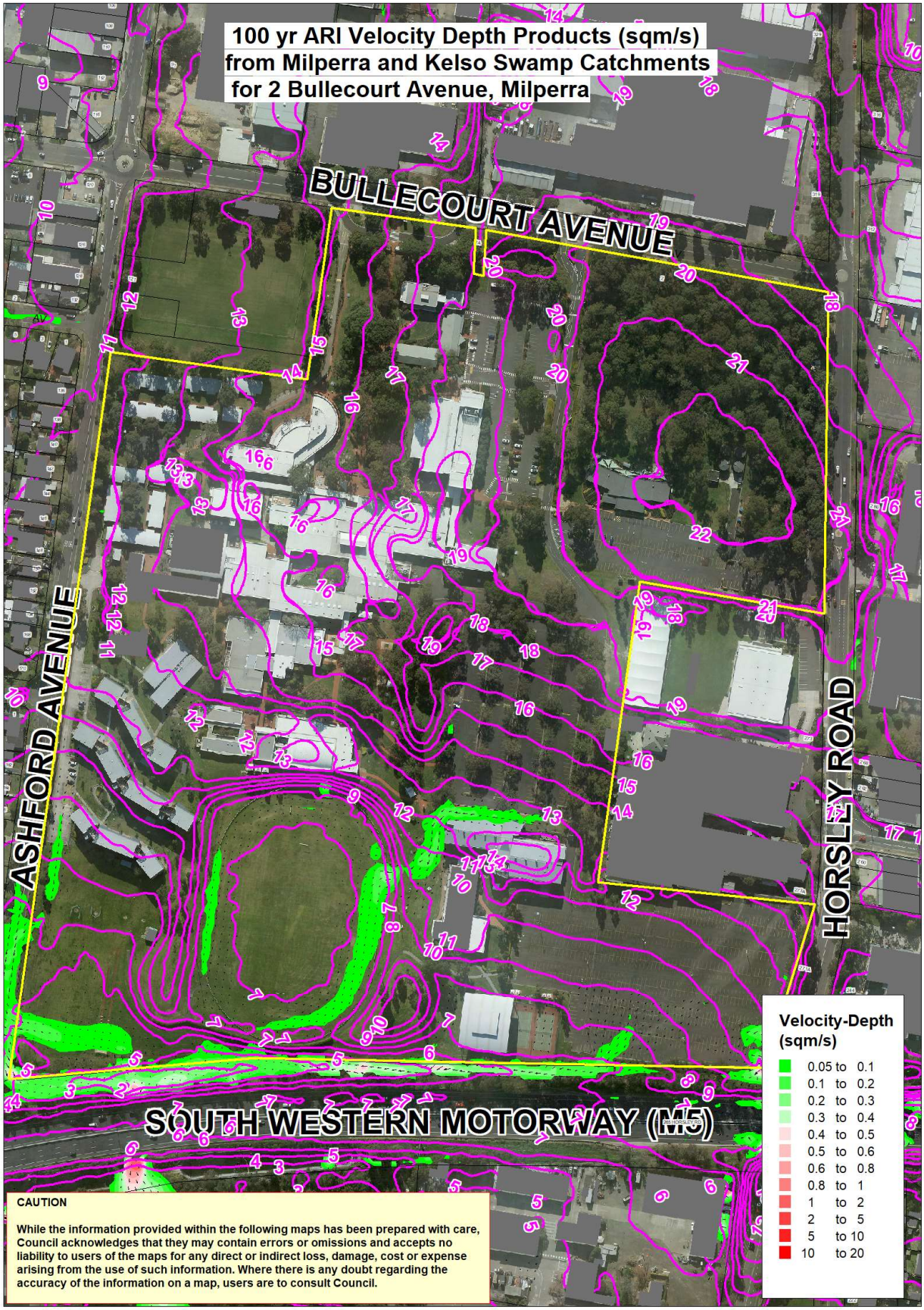
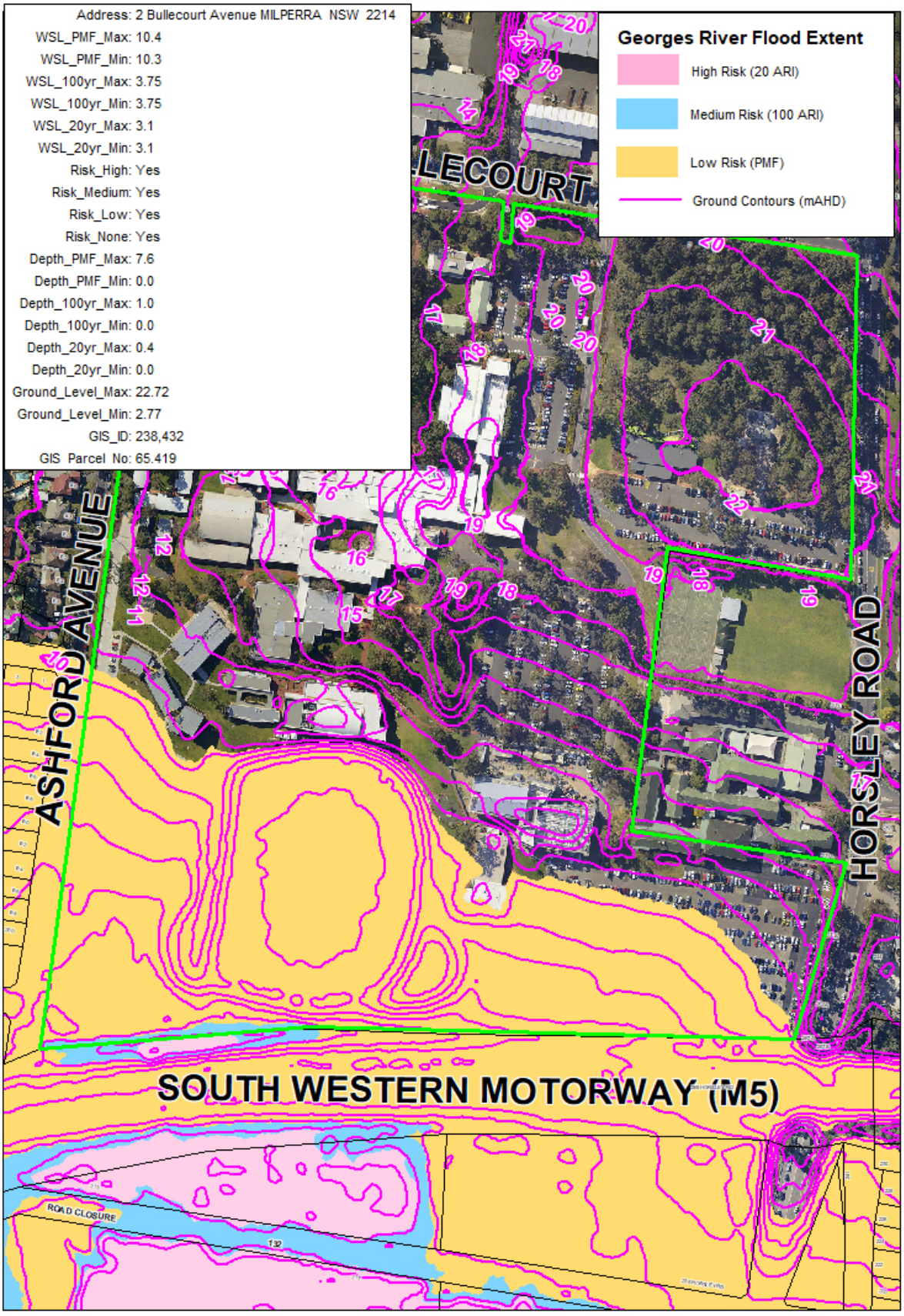
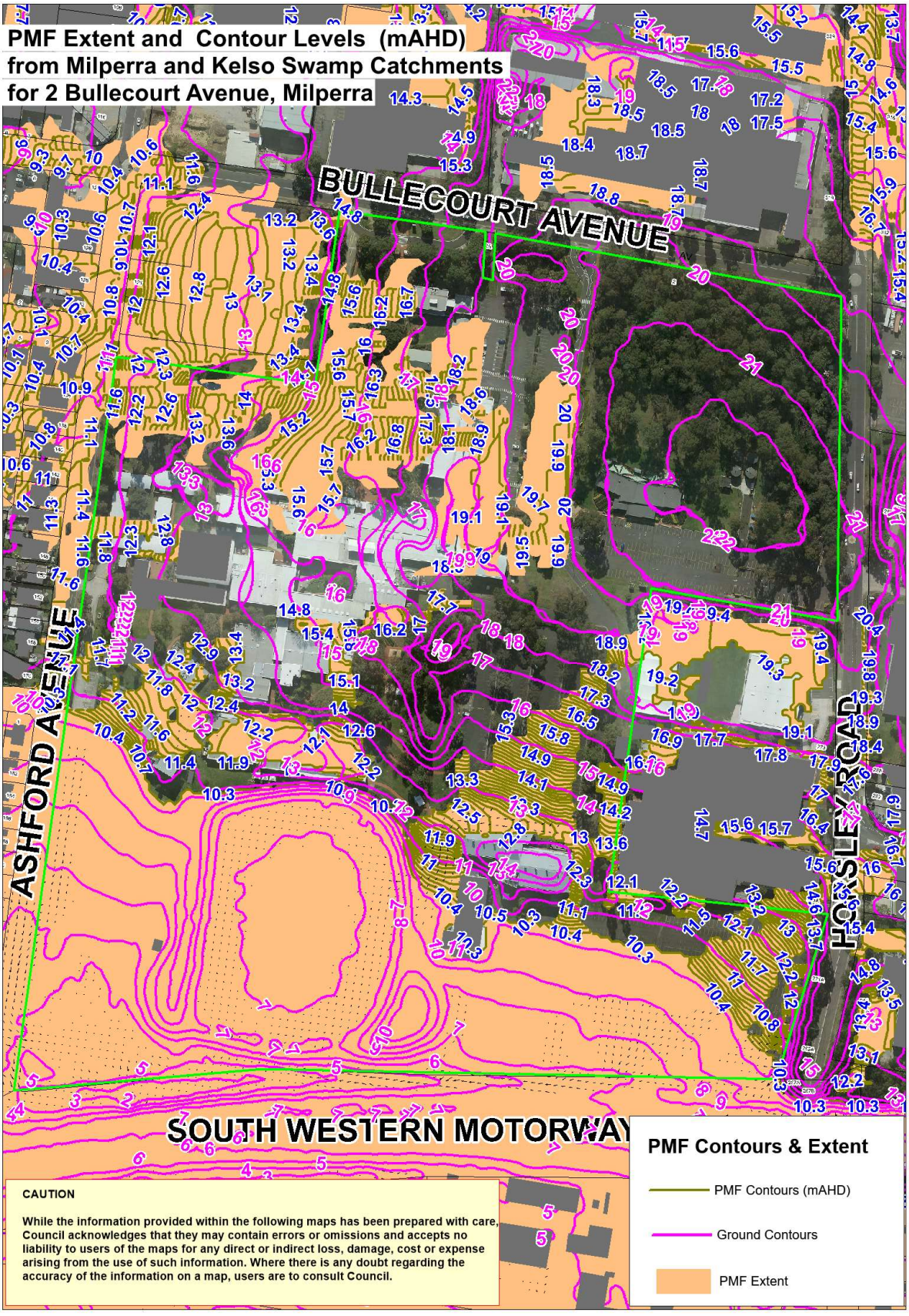
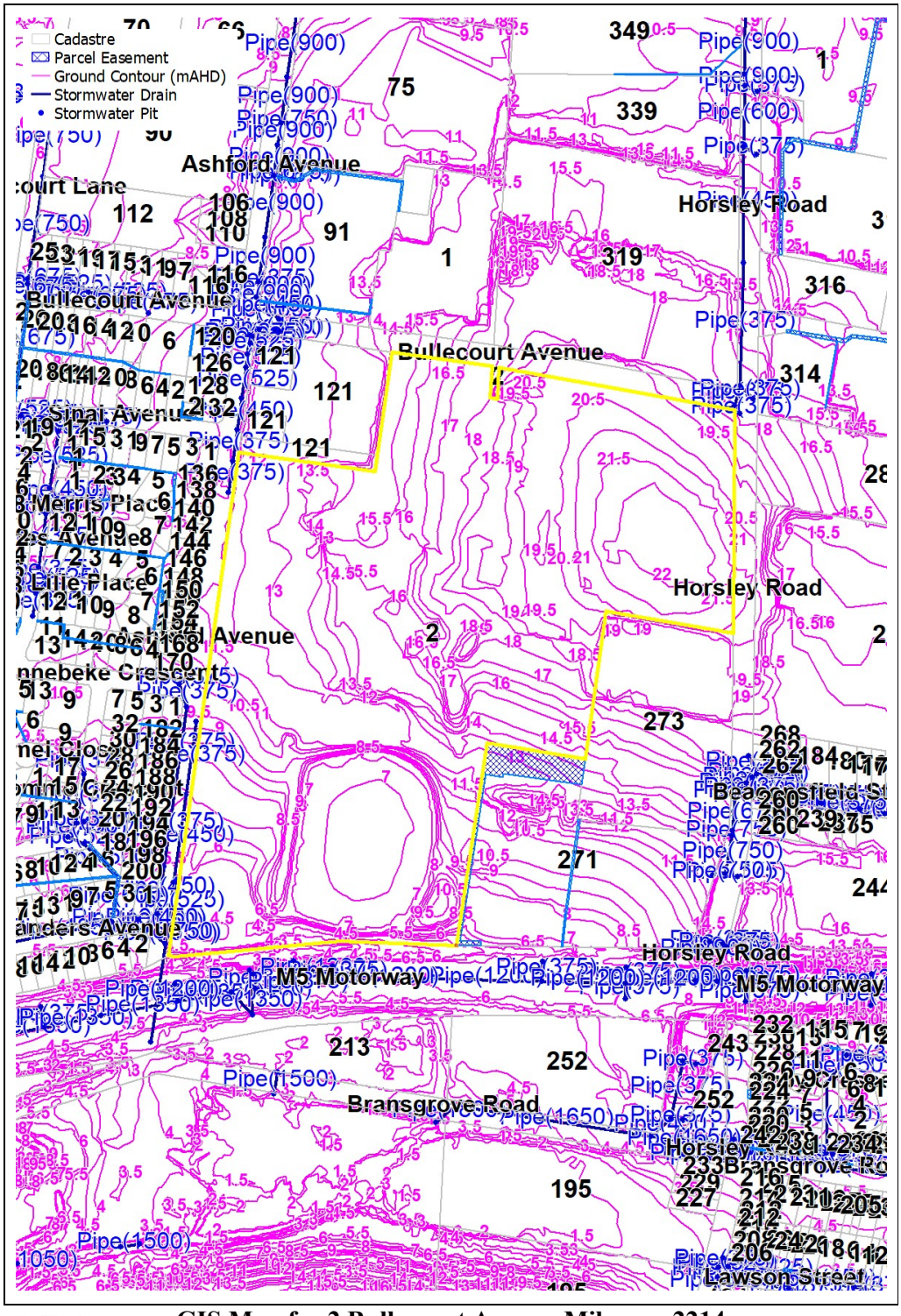

100 yr ARI Velocity Depth Products (sqm/s)
from Milperra and Kelso Swamp Catchments
for 2 Bullecourt Avenue, Milperra
BULLECOURT AVENUE
ASHFORD AVENUE
HORSLEY ROAD
SOUTH WESTERN MOTORWAY (M5)
Velocity-Depth (sqm/s)
0.05 to 0.1
0.1 to 0.2
0.2 to 0.3
0.3 to 0.4
0.4 to 0.5
0.5 to 0.6
0.6 to 0.8
0.8 to 1
1 to 2
2 to 5
5 to 10
10 to 20
CAUTION
While the information provided within the following maps has been prepared with care, Council acknowledges that they may contain errors or omissions and accepts no liability to users of the maps for any direct or indirect loss, damage, cost or expense arising from the use of such information. Where there is any doubt regarding the accuracy of the information on a map, users are to consult Council.


Address: 2 Bullecourt Avenue MILPERRA NSW 2214
WSL_PMF_Max: 10.4
WSL_PMF_Min: 10.3
WSL_100yr_Max: 3.75
WSL_100yr_Min: 3.75
WSL_20yr_Max: 3.1
WSL_20yr_Min: 3.1
Risk_High: Yes
Risk_Medium: Yes
Risk_Low: Yes
Risk_None: Yes
Depth_PMF_Max: 7.6
Depth_PMF_Min: 0.0
Depth_100yr_Max: 1.0
Depth_100yr_Min: 0.0
Depth_20yr_Max: 0.4
Depth_20yr_Min: 0.0
Ground_Level_Max: 22.72
Ground_Level_Min: 2.77
GIS_ID: 238,432
GIS Parcel No: 65.419
Georges River Flood Extent
High Risk (20 ARI)
Medium Risk (100 ARI)
Low Risk (PMF)
Ground Contours (mAHD)
LECOURT
ASHFORD AVENUE
HORSLEY ROAD
SOUTH WESTERN MOTORWAY (M5)
ROAD CLOSURE

1% AEP (100 year ARI) Flood Hydraulic Category


PMF Extent and Contour Levels (mAHD)
from Milperra and Kelso Swamp Catchments
for 2 Bullecourt Avenue, Milperra
BULLECOURT AVENUE
ASHFORD AVENUE
HORSLEY ROAD
SOUTH WESTERN MOTORWAY
CAUTION
While the information provided within the following maps has been prepared with care, Council acknowledges that they may contain errors or omissions and accepts no liability to users of the maps for any direct or indirect loss, damage, cost or expense arising from the use of such information. Where there is any doubt regarding the accuracy of the information on a map, users are to consult Council.
PMF Contours & Extent
PMF Contours (mAHD)
Ground Contours
PMF Extent



GIS Map for 2 Bullecourt Avenue Milperra 2214

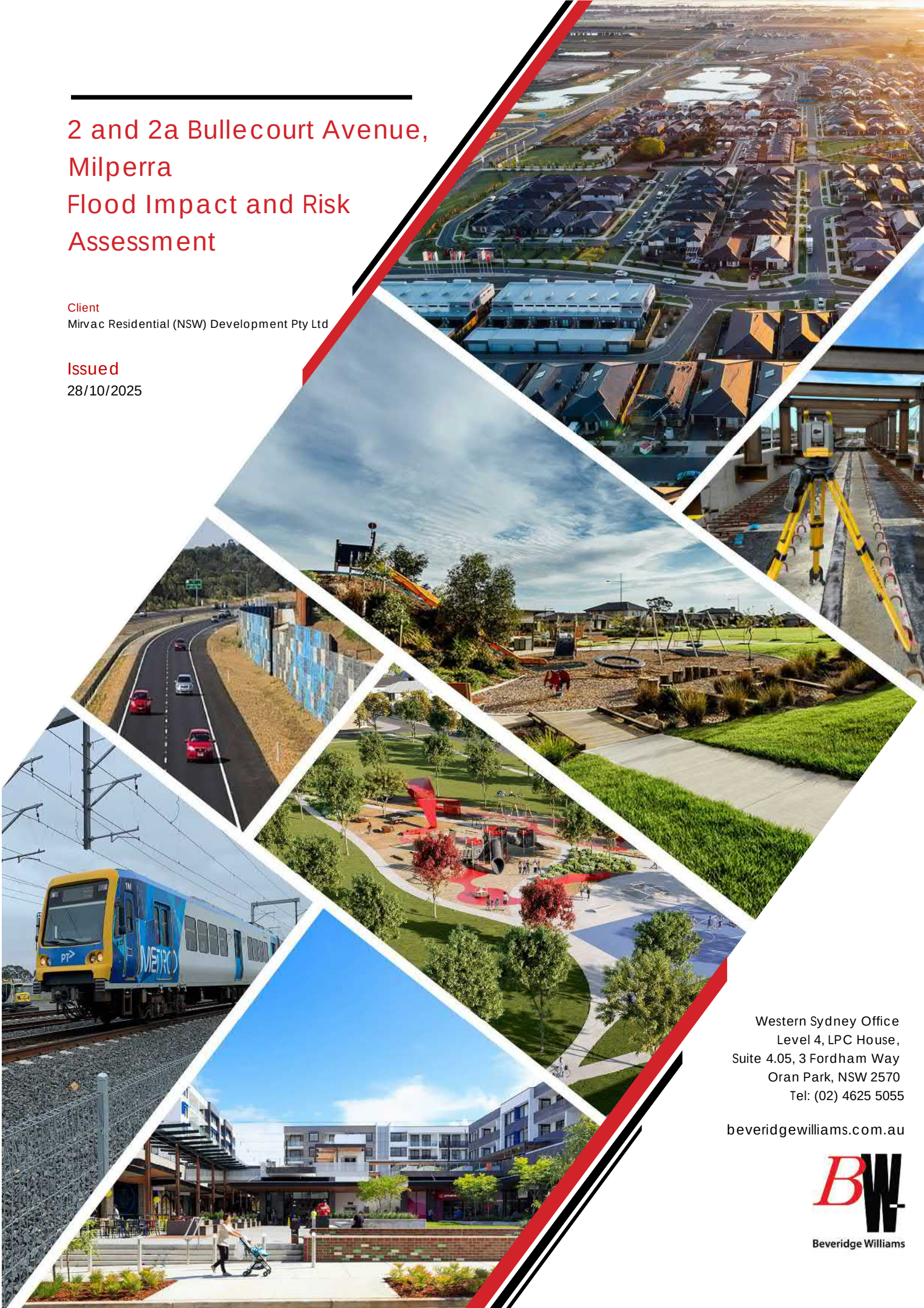
Aerial Map for 2 Bullecourt Avenue Milperra 2214

APPENDIX D – Flood Impact Assessment

2 and 2a Bullecourt Avenue, Milperra
Flood Impact and Risk Assessment

Client
Mirvac Residential (NSW) Development Pty Ltd

Issued
28/10/2025



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Issued:	28/10/2025
Version:	C
Prepared by:	Yanzhe Li
Checked by:	Frank Guo
Project Manager:	Shane Gray
Project Number:	2301879

Surveying
Asset Recording
Civil Engineering
Infrastructure Engineering
Traffic & Transport Engineering
Environmental Consulting
Water Resource Engineering
Strata Certification (NSW)
Town Planning
Urban Design
Landscape Architecture
Project Management

Revision Table

REV	DESCRIPTION	DATE	AUTHORISED
A	Issued for DA	22/08/2025	SG
B	Update per Client Comments & Issued for DA	27/08/2025	SG
C	Issued for SSDA	28/10/2025	SG

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APPENDIX D: SENSITIVITY TEST 100-YEAR WATER LEVEL DIFFERENCE

1 INTRODUCTION

This Flood Impact Assessment is submitted to the Department of Planning, Housing and Infrastructure (the Department) on behalf of Mirvac Residential (NSW) Pty Ltd (the Applicant) in support of a State Significant Development Application (SSDA) for a staged residential development at 2 and 2A Bullecourt Avenue (the site).

2 RELEVANT SEARS

This Flood Impact Assessment addresses the following relevant Secretary's Environmental Assessment Requirements (SEARs) set out in the table below.

Table 1 SEARs Compliance Table

SEARS Request		Response / Location in Report
The flood extent and velocity up to the Probable Maximum Flood and risk on-site having regard to adopted flood studies and, floodplain risk management studies and plans		**Appendix B** and **Appendix C** show the flood depth, flood velocity and flood hazard category up to PMF.
Evacution and egress routes		**Section 8.2** and **Figure 12**
The potential effects of climate change		**Section 8.3**
any relevant provisions of the NSW Flood Risk Management Manual, and any other relevant guidelines	Canterbury-Bankstown **Development Control Plan Chapter 2.2, Schedule 3** **Habitable floor levels to be no lower than the 100-Year flood level plus freeboard**.	**Section 3.2** Refer to DCP chapter 2.2 schedule 3, there is no planning considerations required for subdivision except flood effects, however, the subdivision of 2 and 2A Bullecourt Avenue meets the minimum floor level requirements for residential.
	Canterbury-Bankstown Development Control Plan Chapter 2.2, Schedule 3 Flood impacts to be considered in the case of major development if Council advise that the development may generate flood impact, such as significant loss of storage or conveyance. Any assessment may also be asked to demonstrate that the proposed development is structurally sound.	**Section 8.1**

3 SITE OVERVIEW

The site is currently owned by Western Sydney University and is located within the Canterbury Bankstown LGA at 2 and 2A Bullecourt Avenue, Milperra, being legally described as Lot 2 in DP1291984 and Lot 1 in DP101147 (refer Figure 1)

The total site has an area of approximately 19.64ha and is the subject of numerous easements affecting the site, including two easements to drain water, easements for electricity and other purposes, and a right of carriageway.

Since the demolition of the previous buildings on the site, the site currently comprises:

- Existing at-grade car park (within Zone 4) repurposed as parking and hardstand area for the temporary sales office.
- Existing at-grade car park for the Childcare Centre (generally within the location of the future Road 2B).
- At-grade roads off Bullecourt Avenue.
- A large oval to the south.
- The Western Sydney University Early Learning Centre (Child-care centre).
- Vegetation of varying significance, including Cumberland Plain Woodland.

The site is bound by the M5 Motorway to the south, Ashford Avenue / existing residential dwellings to the west, Bullecourt Avenue / existing industrial development to the north, and Horsley Road / existing industrial development to the east. Adjoining the site along the southeastern boundary is Mount St Joseph Catholic College.

A substantial number of bus stops are located along Bullecourt Avenue and Horsley Road, servicing routes that connect passengers both within and beyond the LGA, including direct links to Bankstown Central (approximately 8.5km drive from the site), Westfield Burwood, and Westfield Miranda. While the nearest train line is the T8, accessible via East Hills, Panania, and Revesby stations, the T6 line at Bankstown Station can also be reached via bus services operating near the site.

3.1 The proposed Development

The project will be delivered in stages and across two separate SSDA Projects, and comprises the construction of approximately 385 dwelling houses, dual occupancies and attached dwellings, three (3) public parks, new roads and shared paths, civil infrastructure, a car park, and the management of conservation land.
Specifically, across the two SSDAs, consent is sought for:

- Tree removal
- Site remediation (excluding works carried out as category 2 remediation works)
- Construction of bulk earthworks, public roads and landscaping, and services
- Augmentation of existing services and road infrastructure
- Construction of three (3) public parks
- Construction of 385 dwelling houses
- Construction of a carpark to service the existing childcare centre and E1 Local Centre zoned land
- Subdivision resulting in 385 residential lots, infrastructure lots, and the creation of a community title lot for land zoned C2 Environmental Conservation and E1 Local Centre
- Conservation works including the management of >2Ha Cumberland Plain Woodland Species.

This SSDA comprises of all Civil works across the entirety of the site as well as the construction of all 62 dwellings in Stages 1 and 2 only, which are as follows:

- Stage 1 – Commencement of site-wide tree removal and land remediation, creation of two (2) super lots and total of 22 residential lots, and construction of 22 dwelling houses fronting Ashford Avenue. This will be the first stage to be delivered and will connect into the existing infrastructure that located within Ashford Avenue.
- Stage 2 – Creation of four (4) super lots, a new lot (Lot 25) across the RE1 Public Recreation zoned land, and 40 residential lots. This stage also involves the construction of 40 dwellings within Stage 2, and the construction of new roads and the new public park referred to in the Civil Plans as the 'Central Park'.
- Stage 3a – Creation of a new super lot, and the construction of perimeter roads surrounding the existing childcare centre, construction of a new car park to service the childcare centre and C2 Environmental Conservation zoned land. It is proposed all associated civil works required to enable the operation of the existing childcare centre will be delivered under this stage. The new traffic intersections at both Bullecourt Avenue and Horsley Road will be constructed.
- Stage 3b – Creation of three (3) lots to be delivered under a Community Title Scheme for the E1 Local Centre zoned land.

- Stage 4 – Creation of eight (8) super lots, a new lot (Lot 50) across the RE1 Public Recreation zoned land, and a new lot (Lot 49) across the SP2 Infrastructure zoned land. This stage also involves the construction of new roads, the stormwater infrastructure Basin 1 and Basin 2, and the new public park referred to in the Civil Plans as the 'Southern Park', all to be dedicated to Council.
- Stage 5 – Creation of six (6) super lots and construction of new roads and civil works.
- Stage 6 – Creation of nine (9) super lots and a new lot (70) across the RE1 Public Recreation zoned land. This stage also involves the construction of new roads and civil works, and the new public park referred to in the Civil Plans as the 'Northern Park', all to be dedicated to Council.
- Stage 7 – Creation of six (6) super lots and construction of road and civil works.

The second SSDA will seek consent for all outstanding works in stages 3 to 7, which are as follows:

- Stage 3 – Construction of the Childcare Alterations and Additions and Construction of a permanent structure for Commercial use.
- Stage 4 – Creation of the subsequent subdivision into 107 residential lots and construction of dwellings.
- Stage 5 – Creation of the subsequent subdivision into 65 residential lots and construction of dwellings.
- Stage 6 – Creation of the subsequent subdivision into 92 residential lots and construction of dwellings.
- Stage 7 – Creation of the subsequent subdivision into 59 residential lots and construction of dwellings.

3.2 Background, Rationale and Objectives of the Flood Impact Assessment

As part of the original Development Applications lodged for Stages 1 and 2, a flood verification letter prepared by BW was lodged which supported the development. The letter referred to the original J. Wyndham Prince flood and risk impact assessment 2023 (JWP report) that was accepted by Council/DPIE in support of the rezoning of the site. The JWP report identifies that there will be no detrimental offsite impacts as a result from the proposed development.

The JWP report calculated a regional 1%AEP flood level for the site of RL5.55m which is more conservative than Council's adopted 1%AEP flood levels from the Brewsher 2004 report or from the Kelso Park/Swamp report. The flood verification letter assessed the proposed development against the conservative 1%AEP flood level of RL5.55 and verified that the future finished floor levels of the houses would be above the Flood Planning Level based on the JWP Report (i.e. 5.55m+0.5m=6.15m).

In addition, the flood verification letter also verified that the change in landform in the southern area of the site as a result of proposed cut and fill operations to support the future residential development provided additional flood storage than what was available under existing conditions in both the temporary and ultimate scenarios. The temporary scenario being the temporary sediment basin/temporary raingarden (in stage 1) and the permanent basins 1 and 2 along the southern boundary.

As part of further requests for information for the previous Development Applications, Council requested that a Stormwater Systems Report is to be provided. An original Stormwater System Report (SSR) for the site was issued by Council on 22/04/2025. This SSR identified that a Flood Study is Required.

During a meeting with Council staff on 18/06/2025 following the withdrawal of the original Development Applications lodged for Stages 1 and 2, Council requested a Flood Impact Assessment be submitted with any future Development Applications. Council advised that the flood impact assessment is required to investigate:

- the flood behaviour in the southern portion of Ashford Avenue and how any change to the overland flow from Ashford Avenue and Flanders Avenue into the site may impact adjacent residential properties;
- any increase in flows into the M5 culverts, and;
- any adverse flood impacts on downstream floodplain i.e. Kelso Park / Swamp.

Council confirmed within the meeting that they are not concerned with compensatory storage during flood events or overland flows internally to the site as the Water Cycle Management Plan and Flood verification letter previously supplied were adequate to show that the proposed development mitigates these issues. Council also confirmed that they accept the more conservative flood planning level of 0.5m above the regional Flood level RL5.55m identified in the JWP Report.

A new Stormwater Systems Report issued by Council for the site dated 09/07/2025 revised the original conclusion and confirmed that a Flood Impact Assessment is not required. Despite this, in further discussions with Council, Council

requested that a Flood Impact Assessment still be completed to address the items above which relate to areas external to the development.

On the 29/07/2025 BW received the 'Kelso Stormwater catchment flood modelling' from Council. The model was created by BMT WBM Pty Ltd dated 2009,

Council confirmed on 31/07/2025 that "*the 2020 model referred to by JWP in their report is the 2020 Georges River Flood Study not the Kelso Swamp Flood Study*" and the 2009 BMT Flood Study Model provided by Council is "*the one used by Council for its mapping for the Kelso Swamp catchment*" and should be used. During the meeting with Council, Council asked that we use Council's Tuflow model so that any amendments can be integrated back into Council's model at a later date.

BW has utilised this model with minor refinements to assess the flooding affectation under and existing and proposed scenarios to the:

- western existing residential area,
- M5 culverts, and
- downstream area of the Kelso Swamp Catchment for the 1% AEP and PMF Flood Events.

Furthermore, it is noted that the Kelso Park/Swamp has a significantly smaller 1%AEP Flood Level. As such, a sensitivity analysis has also been completed. For the sensitivity analysis, the model was updated with a tailwater condition of 5.55 m AHD for both the existing and proposed scenarios, as to align with the JWP report.

This report is to be read in conjunction with the Water Cycle Management Plan which addresses Water Quantity/OSD modelling, Water Quality/WSUD modelling, Compensatory Storage, and the assessment of increased rainfall data as a result of climate change to the year 2090 in accordance with the recent AR&R changes.

For this report 1%AEP and 1:100 year ARI or 100-year are interchangeable and mean the same thing.

4 METHODOLOGY

As mentioned above Council confirmed on 31/07/2025 that "*the 2020 model referred to by JWP in their report is the 2020 Georges River Flood Study not the Kelso Swamp Flood Study*" and the 2009 BMT Flood Study Model provided by Council is "*the one used by Council for its mapping for the Kelso Swamp catchment*" and should be used. During the meeting with Council, Council asked that we use Council's Tuflow model so that any amendments can be integrated back into Council's model at a later date.

The Flood impact assessment was conducted in accordance with Guidelines for Development in Flood Affected Areas (DELWP, 2019).

The following methodology was used to investigate the existing flooding conditions for the site and facilitate assessment of potential flooding impacts to the adjoining areas:

- Review the received Kelso Stormwater catchment flood model
- Update the flood model with the actual topographic survey for the site (as opposed to Lidar) and create a proposed scenario with the proposed Finished Surface levels of the site, (other details of changes are list in Section 6 below.
- Simulate the 1% AEP and PMF storm events and assess the resultant flood behaviour and conveyance of water surrounding the subject site.
- Compare existing and proposed scenarios to assess adverse impacts to the western existing residential area, M5 culverts and downstream area of it by comparing existing and proposed scenarios.
- Document in a final report.

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Project Number: 2301879
Drawn by:YL
Checked by: FG
Issued: 20/08/2025

Project: 2 and 2a Bullecourt Avenue, Milperra
Flood Impact Assessment

Client: Mirvac Residential (NSW) Development Pty Ltd

Locality Plan

Figure Number: 1

Rev: 1

0 100 200 300 m

5 AVAILABLE DATA

The following data was available and obtained for the flood impact assessment.

- Rainfall on grid TUFLOW model of Kelso Stormwater Catchment provided by Council
- Detailed Survey conducted by BW on 28th February 2024 at the subject site
- Design surface from BW for the proposed development.

6 HYDRAULIC MODEL

TUFLOW is robust and widely accepted unsteady-state flood simulation software with combined 1D and 2D design capabilities. The flood modelling processes consider guidance provided in ARR 2019 and floodplain development manual 2023.

BW has utilised the Kelso Stormwater Catchment Flood Model (originally developed by BMT WBM Pty Ltd in 2009 and provided by Canterbury Bankstown Council) as the basis for this assessment. The model was updated to evaluate flooding at the subject site for the following Annual Exceedance Probability (AEP) events:

- 1% AEP
- PMF

The updated of the model includes:

- Software Version:
  - Upgraded TUFLOW engine from 2008-08-DB to 2023-03-A
- Existing scenario
  - Incorporated latest site survey data conducted by BW, date on 28th February 2024 refer Section 5 this is because the original data was based on Lidar and not on actual Topographic survey data
- Proposed Scenario refer section3
  - Integrated BW's design surface for the proposed development
  - Updated material layers to reflect proposed changes
  - Site inflow adjustments to match the proposed drainage network and earthworks.
- Sensitivity test
  - Updated the initial water level and tailwater condition to 5.55 mAHD for both existing and proposed scenarios, as to align with flood and risk impact assessment WSU Campus Milperra Planning proposal prepared by J. Wyndham Prince in 2023

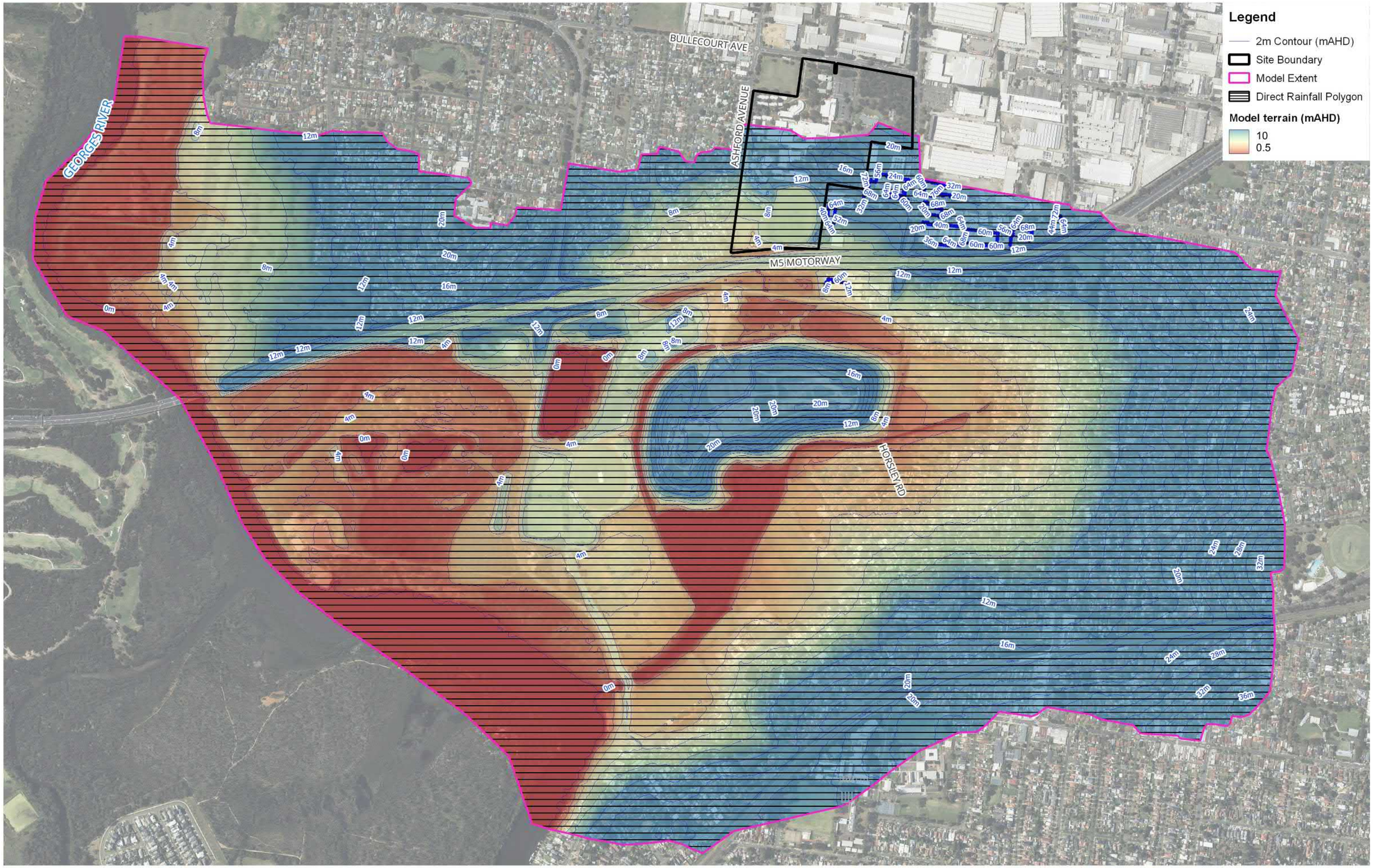
Below are the details that have been retained from the 2009 model:

- Rainfall data
- Grid Resolution: 5m x 5m (it is noted that this is a large grid size and doesn't necessarily pick up abrupt changes in level like kerbs, retaining walls etc.)
- DEM offsite
- Roughness zone offsite
- The culverts and drainage networks

The model extents can be found in Figure 2 and Figure 3, The existing and proposed topography is shown in Figure 2 and Figure 3, with different 2D inflows applied for existing and proposed scenario, as shown in Figure 2 and Figure 3. The hydraulic roughness for both existing and proposed scenarios are shown in Figure 4 and Figure 5, respectively.

To maintain the most conservative outcome, as part of this assessment the "drainage network and culverts with no blockage" has been selected in the model.

The initial results identify that the critical duration is 120min and 60min for the 100-Year and PMF storm events, respectively. So only these storm events are selected for all modelling to speed up the modelling process.



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Flood Impact Assessment

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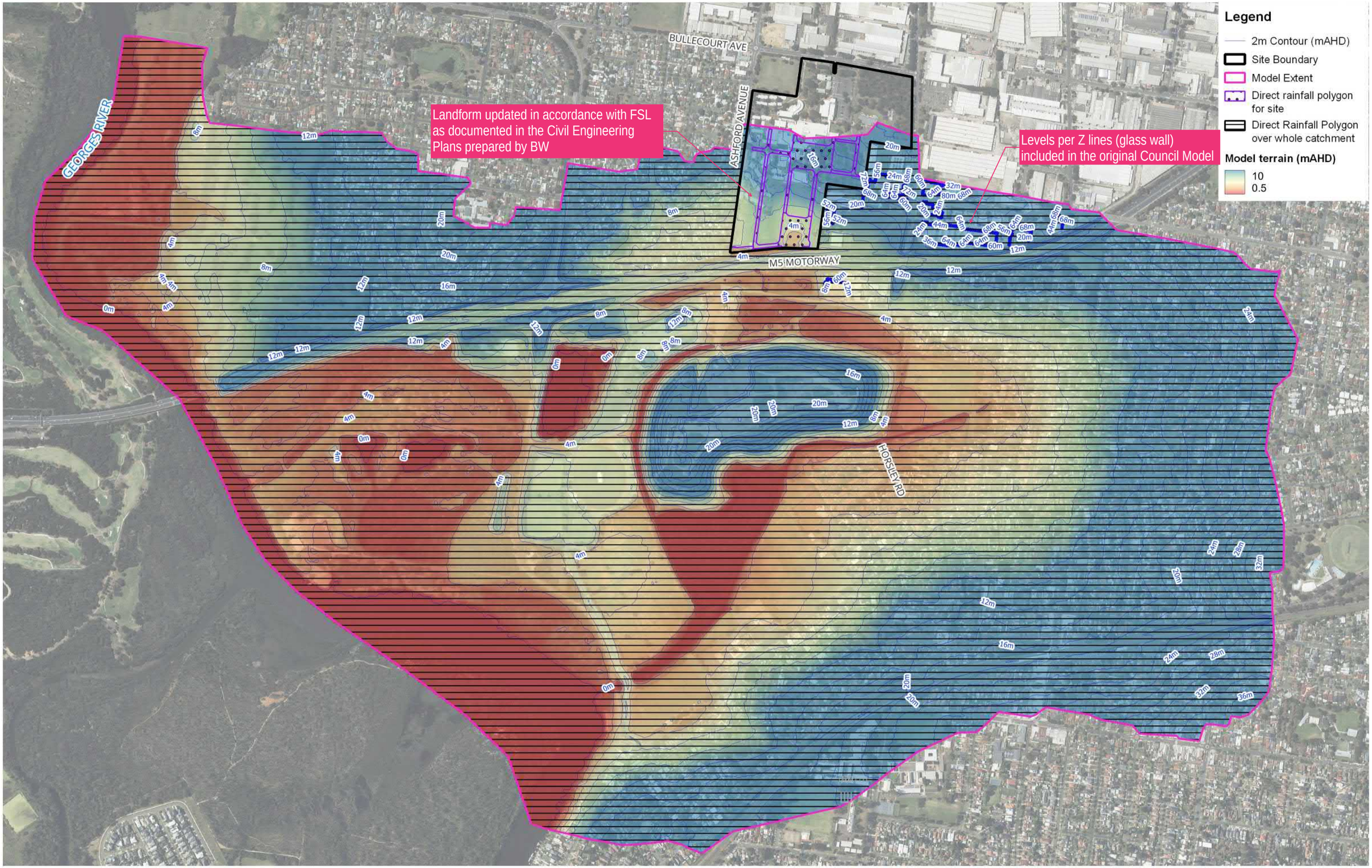
Existing Model Setup

Figure Number: 2 Rev: 1

0 200 400 600 m



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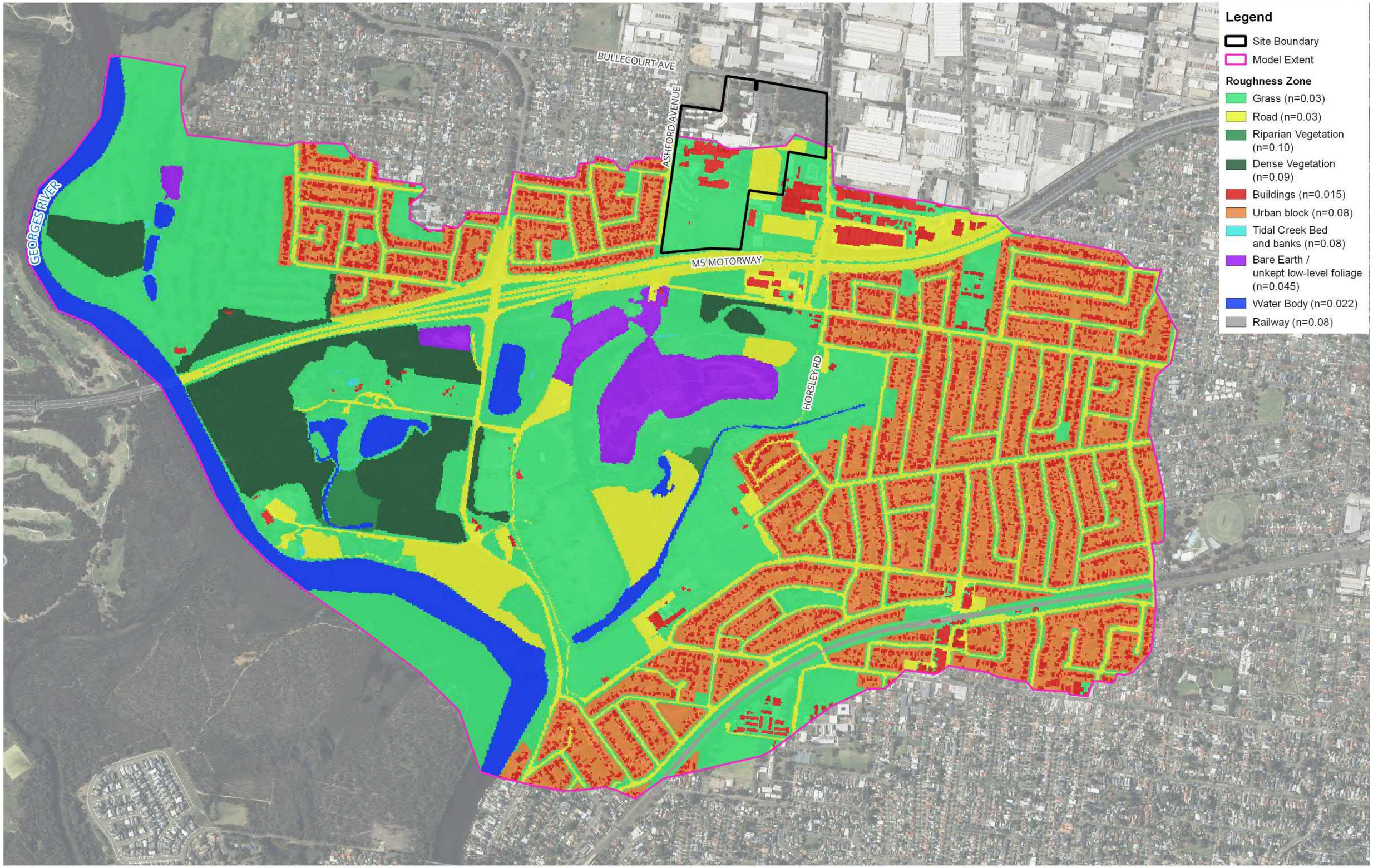
Proposed model setup

Figure Number: 3 Rev: 1

0 200 400 600 m



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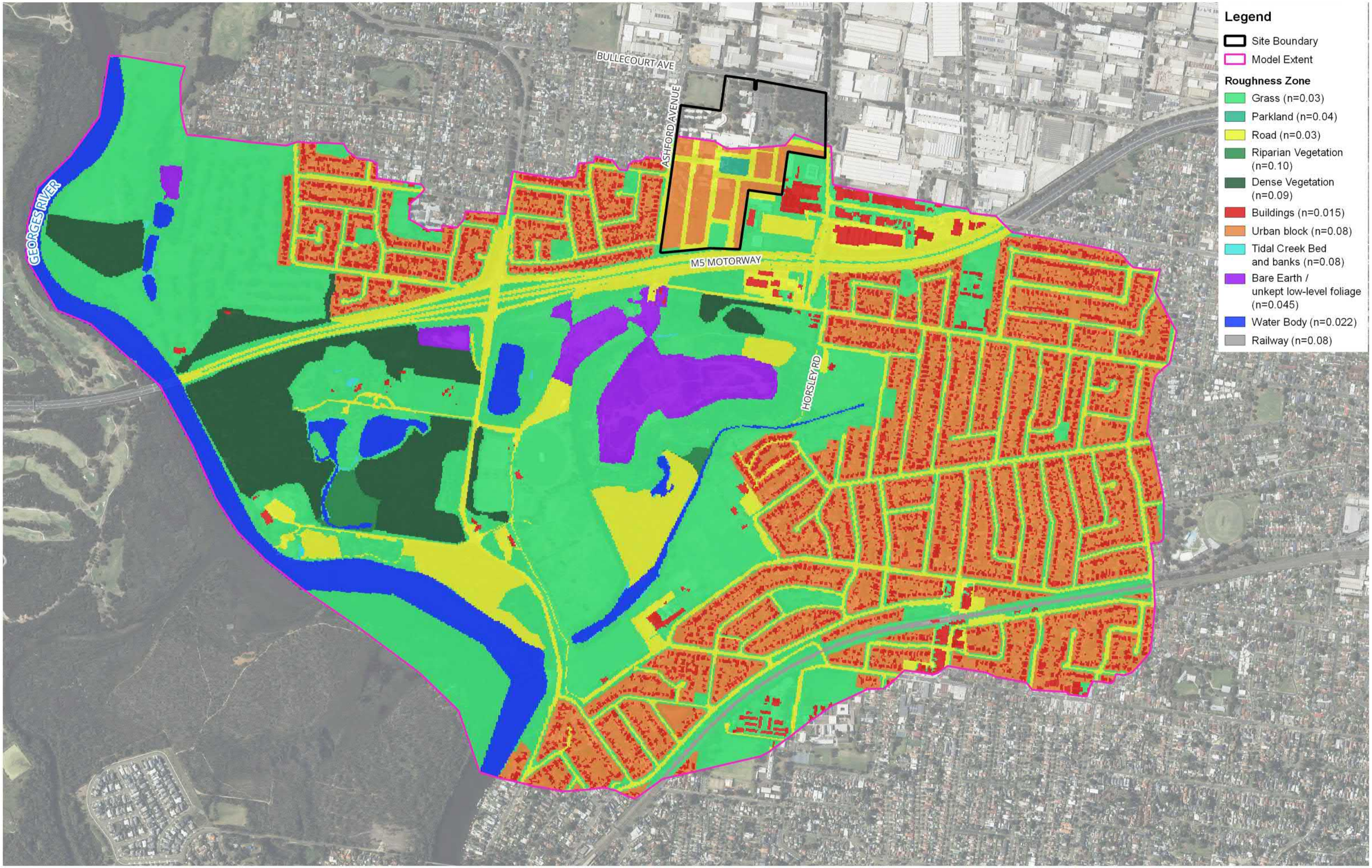
Client: Mirvac Residential (NSW) Development Pty Ltd

Existing Roughness Zone Overall

Figure Number: 4 Rev: 1

0 200 400 600 m



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Flood Impact Assessment

Client: Mirvac Residential (NSW) Development Pty Ltd

Proposed Roughness Zone Overall

Figure Number: 5 Rev: 1

0 200 400 600 m

7 MODEL RESULTS

7.1 Flow Behaviour

The model was simulated for the critical duration of 1% AEP and PMF. Flood maps for both design events showing the flood level, depth, velocity, and flood hazard for the base case existing scenario and the proposed scenario are presented in Appendix B and Appendix C, respectively. The 100-Year Water Level Difference for sensitivity test is shown in Appendix D.

7.1.1 Flow Path

For the 100-year event, the main overland flow path differs. Currently, flow is conveyed from Flanders Avenue/Ashford Avenue through the southwest corner of the site to a swale near the M5 motorway, primarily affecting the southern part of the site due to the natural terrain grade. In the proposed scenario, the flow is conveyed from Flanders Avenue/Ashford Avenue through the bottom portion of Ashford Avenue which is unformed road reserve consisting of grass and trees before entering into the southern swale.

7.1.2 Flood Depth

Regarding flood depth, the existing scenario shows that Ashford Avenue and Flanders Avenue adjoining the site are mainly limited to a flood depth of less than 0.25m. The proposed scenario shows a similar pattern except for the intersection of Flanders and Ashford Avenues which slightly exceeds 0.25m to just above 0.30m. For the PMF event, the existing condition has a maximum depth of 2.2m in the south-western corner, with the intersection and areas along the M5 motorway heavily inundated by over 1.0m of water. The proposed scenario improves depths within the site to mainly under 0.25m, but the intersection and M5 areas remain heavily inundated.

7.1.3 Flood Velocities

Flood velocities in the existing 100-year event exceed 1m/s on Ashford and Flanders Avenues and locally in the south-western corner. The proposed scenario reduces velocities generally to under 1m/s along Ashford and Flanders Avenues. For the PMF, existing velocities exceed 1.5m/s on roadways and reach 2m/s in the south-western corner, while the proposed scenario sees velocities reduced to under 1.5m/s for most of along Ashford and Flanders Avenues.

7.1.4 Hazard Category

The hazard category for the existing 100-year event is mostly category 1, in the majority of Ashford and Flanders Avenues including the intersection of Ashford and Flanders falls into category 1. The exception to this is further west along Flanders which has a category 3 at the low point in the intersection with Dernancourt Parade. Along the southern site boundary, the swale in the M5 Motorway falls into categories 4 and 5 and areas across the M5 culverts are category 3 and above. In the proposed scenario, the 100-year event shows the majority of Ashford and Flanders Avenues remains as category 1 except that a small section in the intersection of Ashford and Flanders increases to Category 2. In the swale within the M5 Motorway, the Hazard Category changes as a result of the OSD Basin discharging water at a different location. A portion of the swale reduces categories while another section immediately downstream increases categories, but the swale never exceeds the maximum categories 4 and 5 shown in the existing condition.

For the PMF, the existing scenario the existing residential lots along the bottom portion of Ashford Avenue and along Flanders Avenue are impacted by varying hazard categories ranging from 1 to 4. The swale in the M5 Motorway boundary is primarily category 5 with some minor areas of category 6. For the PMF in the proposed scenario, the hazard category reduces along Ashford Avenue in particular at the intersection with Flanders Avenue where a portion is reduced from category 5 back to category 4. The other high-hazard areas remaining unchanged from the existing condition.

7.1.5 M5 Culverts

For drainage, the current M5 motorway culverts provide sufficient conveyance for all AEP design events under unblocked conditions in both existing and proposed scenarios.

7.2 Model Limitation

In TUFLOW modelling, "model noise" refers to small, localised variations in flood results that do not represent real impacts but are artefacts of the numerical solution. This arises because the shallow water equations used in flood modelling are nonlinear, meaning that even very minor changes in geometry, boundary conditions, or time stepping can produce localised differences in results. Such noise is most commonly observed at the flood extent margins, where cells may be intermittently wetting and drying. This can manifest as apparent changes, such as purple or yellow pixels on afflux maps, which indicate cells switching between wet and dry states across model runs. These edge effects are not hydraulically connected to the development and should not be interpreted as genuine flood impacts. Instead, they are recognised as numerical artefacts, distinguishable from true impacts, which propagate logically from modifications such as terrain changes, hydraulic controls, or boundary condition adjustments.

As shown in Figures C4 and C8 in Appendix C, several isolated purple cells are present in the western existing residential area. Because these cells are scattered and lack any continuous spatial pattern, they are interpreted as edge effects of the modelling process rather than true impacts generated by the proposed development.

8 FLOOD RISK ASSESSMENT AND MANAGEMENT

In this assessment, BW has interrogated the results noted above from the existing and proposed development scenarios simulated using the TUFLOW hydraulic model provided by Council with small refinements. The model was run under an unblocked drainage condition, which is considered as the worst case, to represent a conservative assessment of flooding behaviour.

8.1 Flood Impact Assessment and Management

8.1.1 Existing Western Residential Area

The modelling results indicate that the proposed site filling introduces a minor disturbance to the existing overland flow path along Flanders Avenue towards the M5 swale. This results in localised water level increase at the intersection of Flanders Avenue and Ashford Avenue. As shown in Figure C4 in Appendix C, during the 100-year event, the increase in flood level is less than 70mm, and this rise remains confined within the road carriageway. No afflux into adjoining residential properties is observed.

A review of the hazard mapping (Figures B3 in Appendix B and Figure C3 in Appendix C) demonstrates that, in 100-year event, under existing conditions, Ashford Avenue is predominantly classified as Hazard Category 1. Under the proposed development scenario, the road continues to fall within hazard category 1, with only a small number of cells transitioning to hazard category 2. Accordingly, the trafficability of Ashford Avenue and the intersection with Flanders Avenue remains unchanged.

The PMF map (Figure C8 in Appendix C), shows the swale in the M5 corridor to have an afflux range from 50mm to 100mm. Since it remains confined within the swale area and the hazard category for the swale remains in category 5 under proposed conditions it is considered a negligible impact. In the same map there is small patch of increase just above 50mm in Ashford Avenue north to the intersection of Flanders Avenue and Ashford Avenue. The maximum hazard category remains unchanged as category 3 in the lots and 5 in the road, but improvement is seen especially in Ashford Avenue and at the intersection, as shown in Figures B6 in Appendix B and Figure C7 in Appendix C.

A sensitivity analysis adopting an elevated tailwater of 5.55 m AHD (consistent with JWP, 2023) confirms the results are robust: impacts remain localised and negligible, with no off-site afflux, no change to road trafficability, and no material change to flood hazard. As shown in Figures D1 in Appendix D, for 100-Year, the predicted afflux remains within the site boundary, with only scattered increases in the swale; elsewhere in the model domain, flood-level differences are within ±50 mm, which is considered negligible.

On this basis, it is concluded that flood impact risk caused from the proposed development is negligible on flood behaviour under 100-Year and PMF. Road trafficability is unchanged, no afflux within existing residential allotments for 100-year, and no increased implications for structural, vehicle, or community safety in the PMF.

The current design is considered sufficient to manage and mitigate the potential flood-related impacts identified in this assessment. Accordingly, no additional mitigation or management measures are required.

8.1.2 To M5 Crossings

For Culverts Cul_001b, the flow are velocity are essentially the same for existing and proposed scenario, as shown in Figure 7 and Figure 8,which proves that the proposed development with OSD does not imply extra flow through the culvert and the proposed basin on site will retain the flow as per existing condition.

For Culverts C16134A, the flows in proposed scenario and existing scenario are 1.97m^3/s and 2.02m^3/s, respectively, in 100-Year event. The increase of the flow is only 0.05m^3/s and this will only be caused by minor water level increase in at the pit inlets. The velocity increased from 1.74 m/s to 1.79 m/s, when comparing the existing and proposed scenarios. The velocity still remains under 2m/s, and it is believed this is unlikely to create any structural damage to the drainage network.

The location of these two culverts is shown in Figure 6.

The current design is considered sufficient to manage and mitigate the potential flood-related impacts identified in this assessment. Accordingly, no additional mitigation or management measures are required.

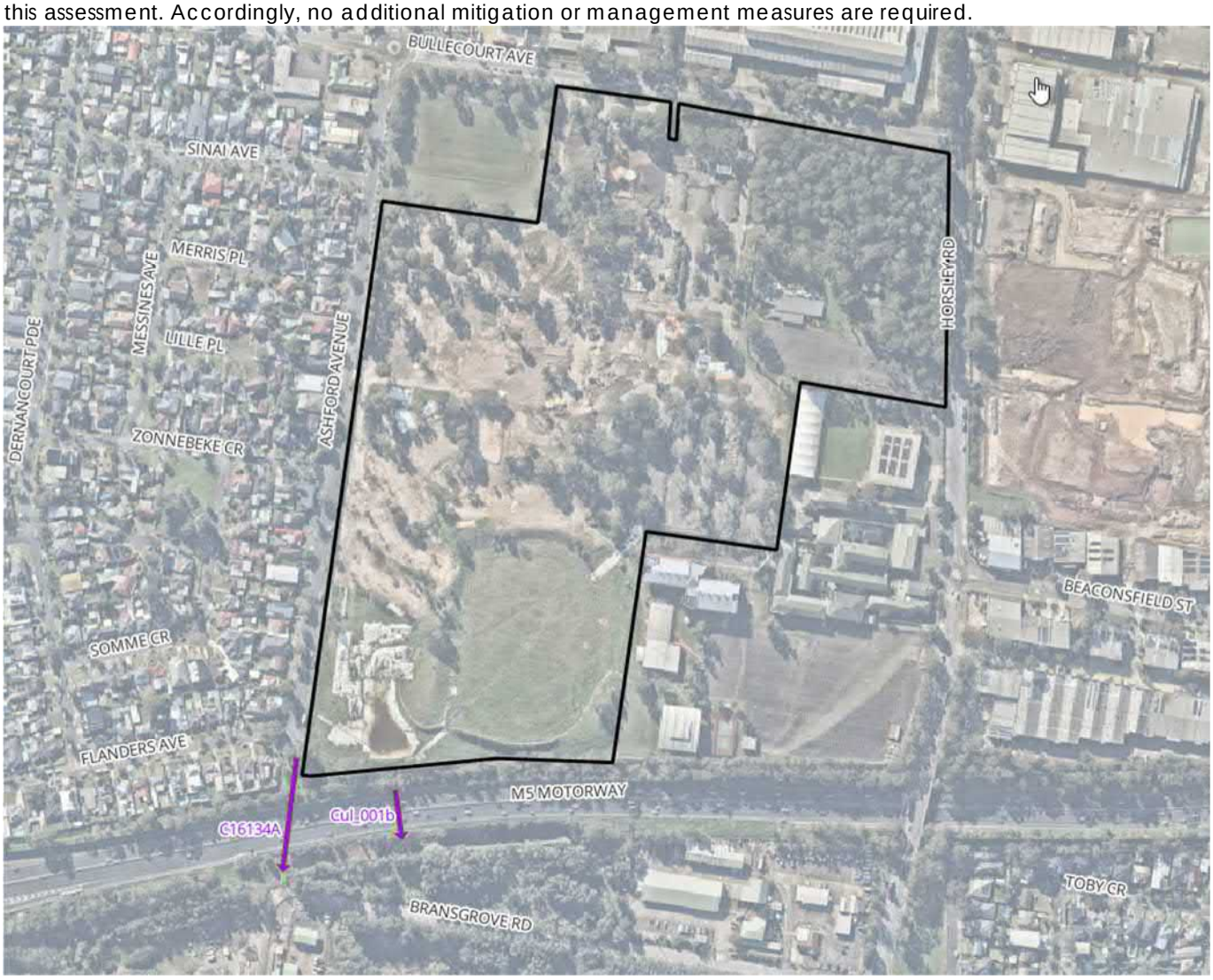


Figure 6 M5 Motorway Culverts Location

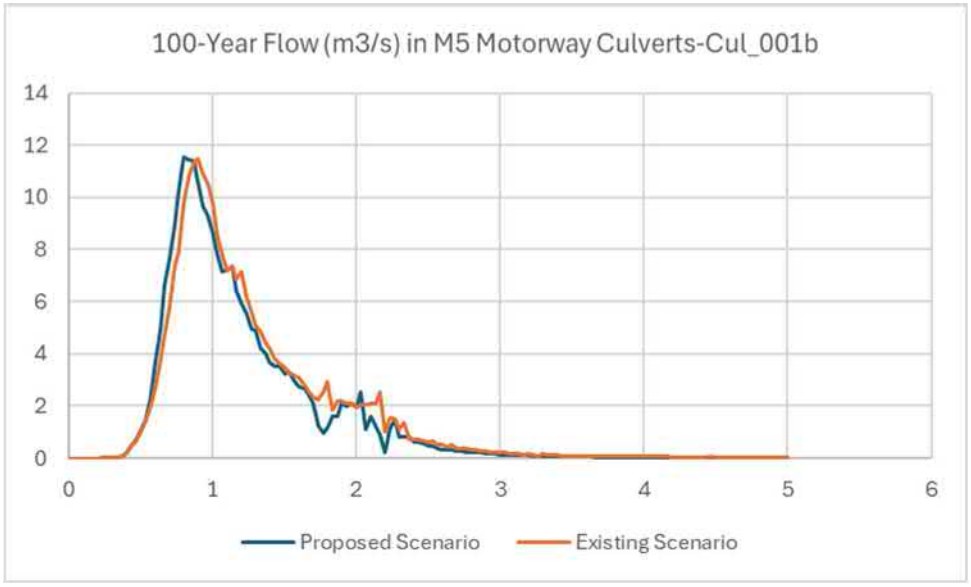


Figure 7 100-Year flow in M5 Motorway Culverts-Cul_001b between Existing scenario and Proposed Scenario

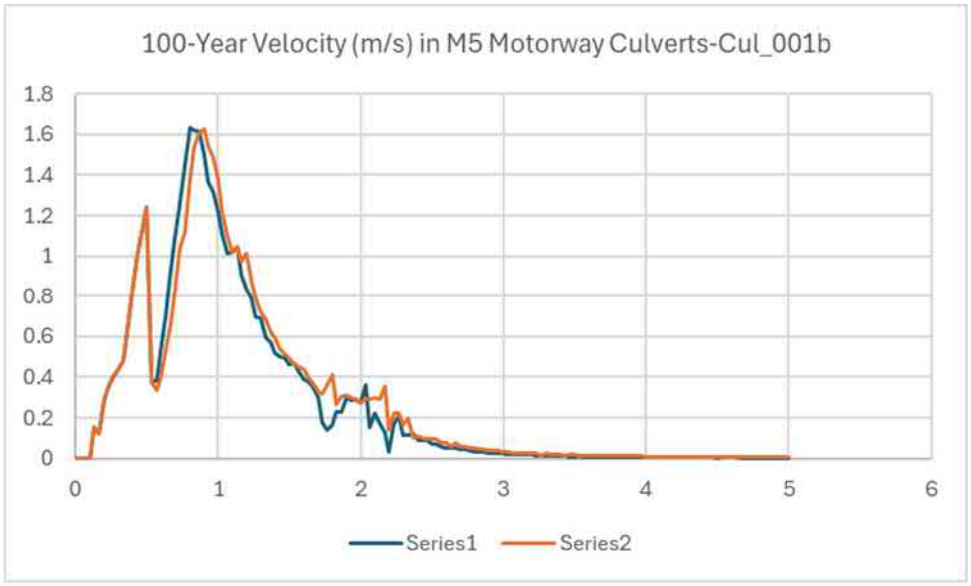


Figure 8 100-Year flood velocity in M5 Motorway Culverts-Cul_001b between Existing scenario and Proposed Scenario

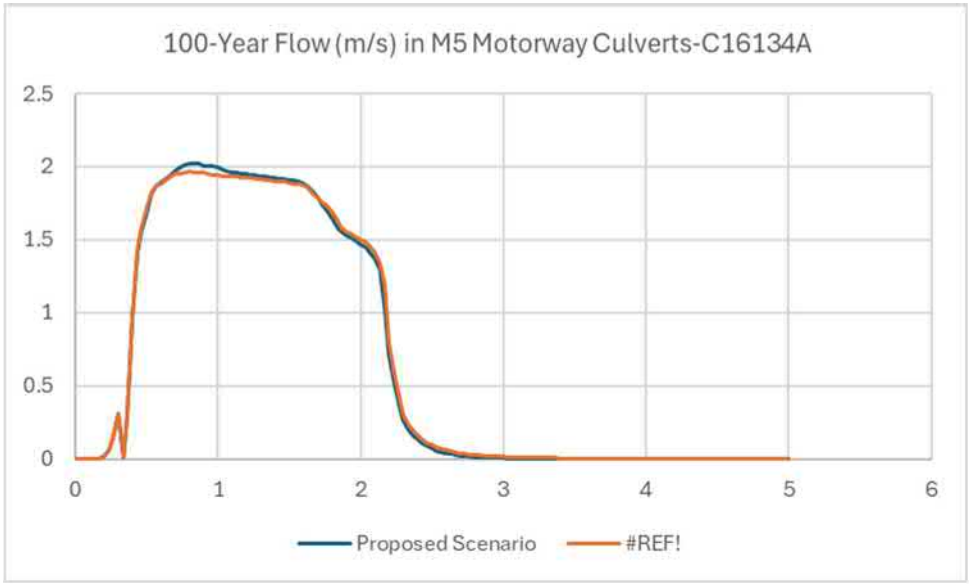


Figure 9 100-Year flood Flow in M5 Motorway Culverts-C1613A between Existing scenario and Proposed Scenario

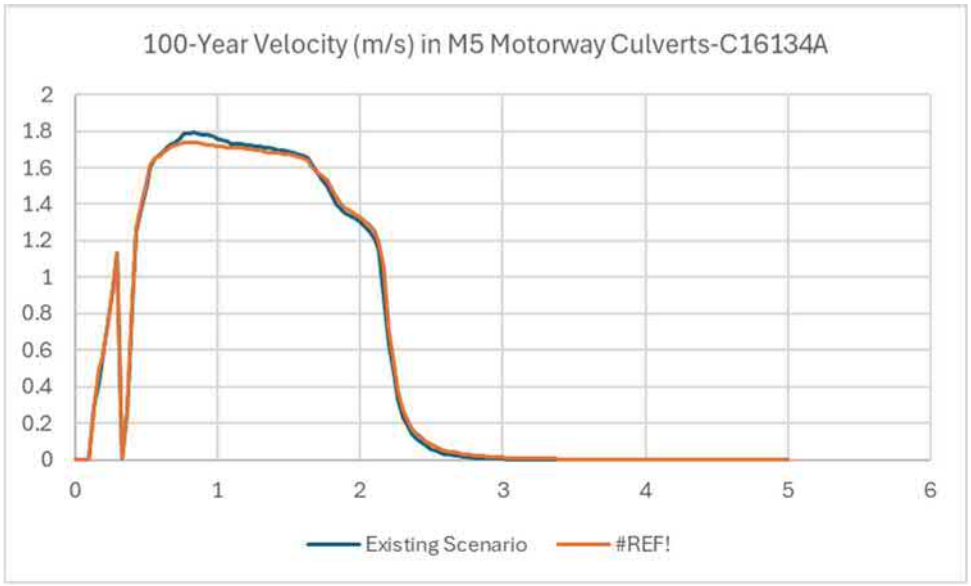


Figure 10 100-Year flood velocity in M5 Motorway Culverts- C16134A between Existing scenario and Proposed Scenario

8.1.3 Flood Impacts on the Downstream Floodplain i.e. Kelso Park / Swamp

While the flow and velocity have increased across the Culverts C16134A, the increases in flood level downstream of the culverts are less than 10mm for both 100-Year event and PMF event, which is considered as negligible. Also, the downstream area of the culverts falls in category 3 and above in the existing scenario of the 100-Year event, this remains unchanged in the proposed scenario for the 100-Year event. For the PMF event, in the existing scenario, this area is mainly subject to category 5 and above. In the proposed scenario, it still falls into category 5 and above. Therefore, it is concluded that the development does not imply any detrimental harm on the Kelso Park/Swamp area downstream of it.

The current design is considered sufficient to manage and mitigate the potential flood-related impacts identified in this assessment. Accordingly, no additional mitigation or management measures are required.

Refer to Figures C4 and Figure C8 in Appendix C.

8.2 Flood Evacuation Route

The safe evacuation of residents during a Probable Maximum Flood (PMF) event is a critical design consideration for the proposed development. The development layout must facilitate effective evacuation to flood-free areas during an extreme event, ensuring that all dwellings have access to a continuous, rising evacuation route leading to land situated above the PMF flood level. The evacuation pathway should maintain positive grade without localised depressions or flood hazards, thereby providing a reliable and hydraulically safe means of egress for all occupants under PMF conditions

Self-evacuation is considered achievable, and the proposed development is not likely to impose any additional burden on the State Emergency Service (SES). In a Probable Maximum Flood (PMF) event, lots affected by inundation will adopt a shelter-in-place strategy to ensure resident safety, while lots remaining above the PMF level will evacuate via the designated evacuation route. The proposed internal road network provides a continuous rising egress towards higher ground, facilitating safe evacuation for the unaffected lots during extreme events.

The details can be found in Figure 12.

8.3 Climate Change Scenario

A climate change assessment was undertaken to address the requirements outlined in the Secretary's Environmental Assessment Requirements (SEARs) table. The TUFLOW model was originally developed using ARR1987 design rainfall data with a rainfall-on-grid approach. To incorporate the latest climate change consideration, the centroid of the two-dimensional model domain was extracted, and the corresponding ARR2019 rainfall intensities were obtained. The climate change scenario is selected as SSP5-8.5, 2090, which is considered as the worst-case climate change scenario. The climate change multipliers are summarised in the table below and were applied to provide a conservative assessment. Rainfall and loss parameters were adjusted in accordance with this multiplier, while the tailwater boundary conditions were maintained consistent with the base model setup.

Table 2 Climate Change Multiplier

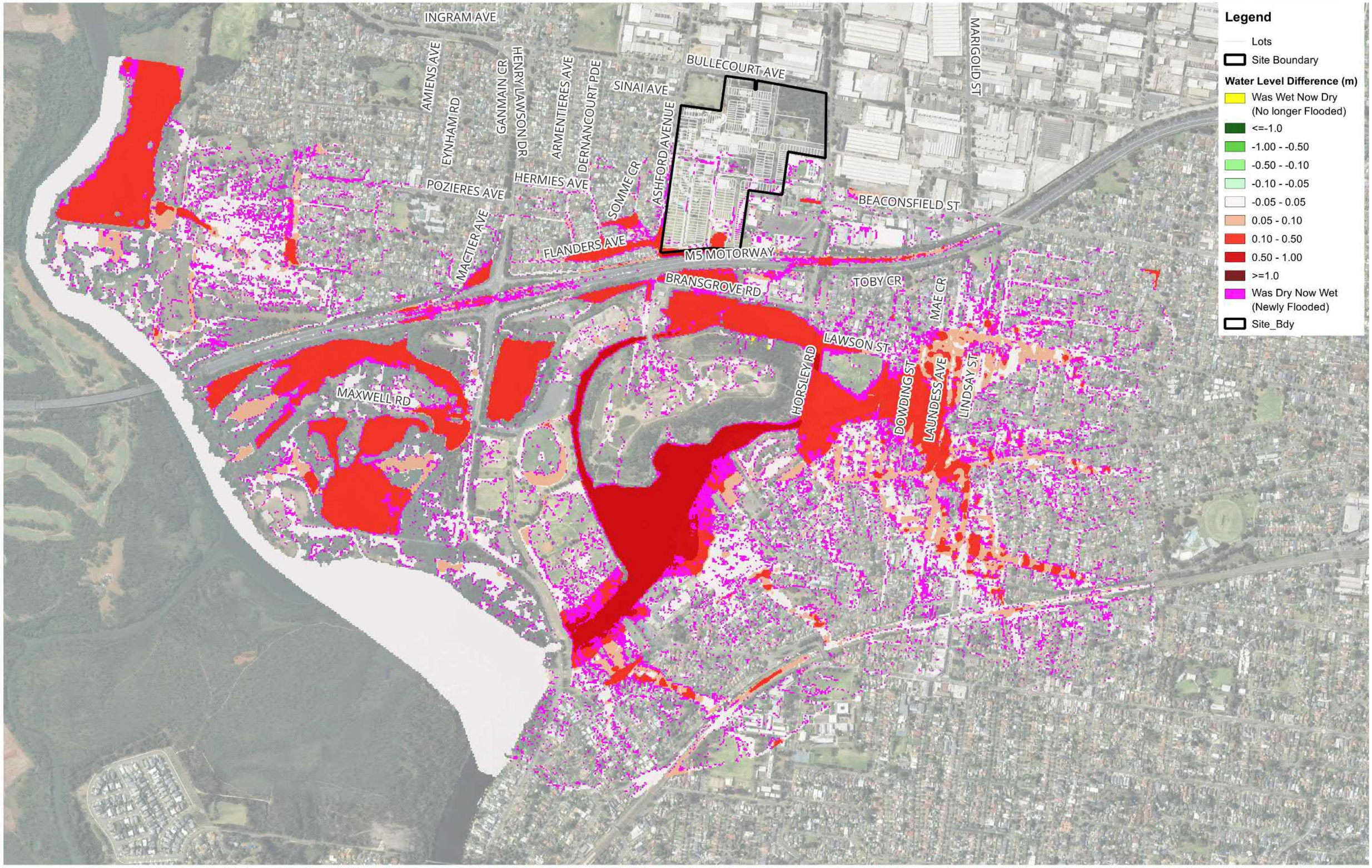
Selected SSP	Target/Design Year	Initial Loss Multiplier	Continuing Loss Multiplier	Burst Duration Multiplier for 2 Hour
SSP5-8.5	2090	1.08	1.16	1.64

The water level difference between proposed climate change case and proposed base case is presented in Figure 11, indicates that when compared to the proposed base case, the climate change scenario generally results in water level increases of less than 0.5 m, which is typically considered within the acceptable threshold for climate change impact. The water level increase in the proposed basin is less than 0.3m and it is showed that the freeboard is sufficient to cover the uncertainties imposed by the worst-case climate change scenario. Localised increases exceeding 0.5 m are observed within the swale adjacent to the M5 Motorway and downstream of the M5 culverts; however, these changes are confined to limited areas and do not result in significant changes to overall flood behaviour.

8.4 Other Flood Risk

The proposed multi-purpose hardstand sports court within Basin 1 is located in an area subject to flooding and rapidly rising floodwater. The surrounding parkland has been designed so that the moat encircling the court is inundated first, acting as an early-warning indicator of rising water. Upon moat inundation, users of the court are to evacuate promptly via the designated footpath egress to exit the basin. Based on the hydraulic assessment, there is approximately 16.9 minutes from when water first reaches the moat invert (RL 3.40 m AHD) to the 1% AEP peak flood level (RL 4.62 m AHD). Users should exit the court immediately once the moat is fully inundated (≈ RL 3.50 m AHD), following the signed egress route.

To support safe operation, install clear and durable flood warning signage (e.g., "Area subject to rapid flooding—leave immediately if water enters moat") and egress wayfinding (pavement arrows and signs marking the evacuation route). Signage should discourage use of the court during storms and be positioned at court entries and along the egress path where practicable.



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Oran Park, NSW 2570
Tel: (02) 4625 5055

Project Number: 2301879
Drawn by:YL
Checked by: FG
Issued: 28/10/2025

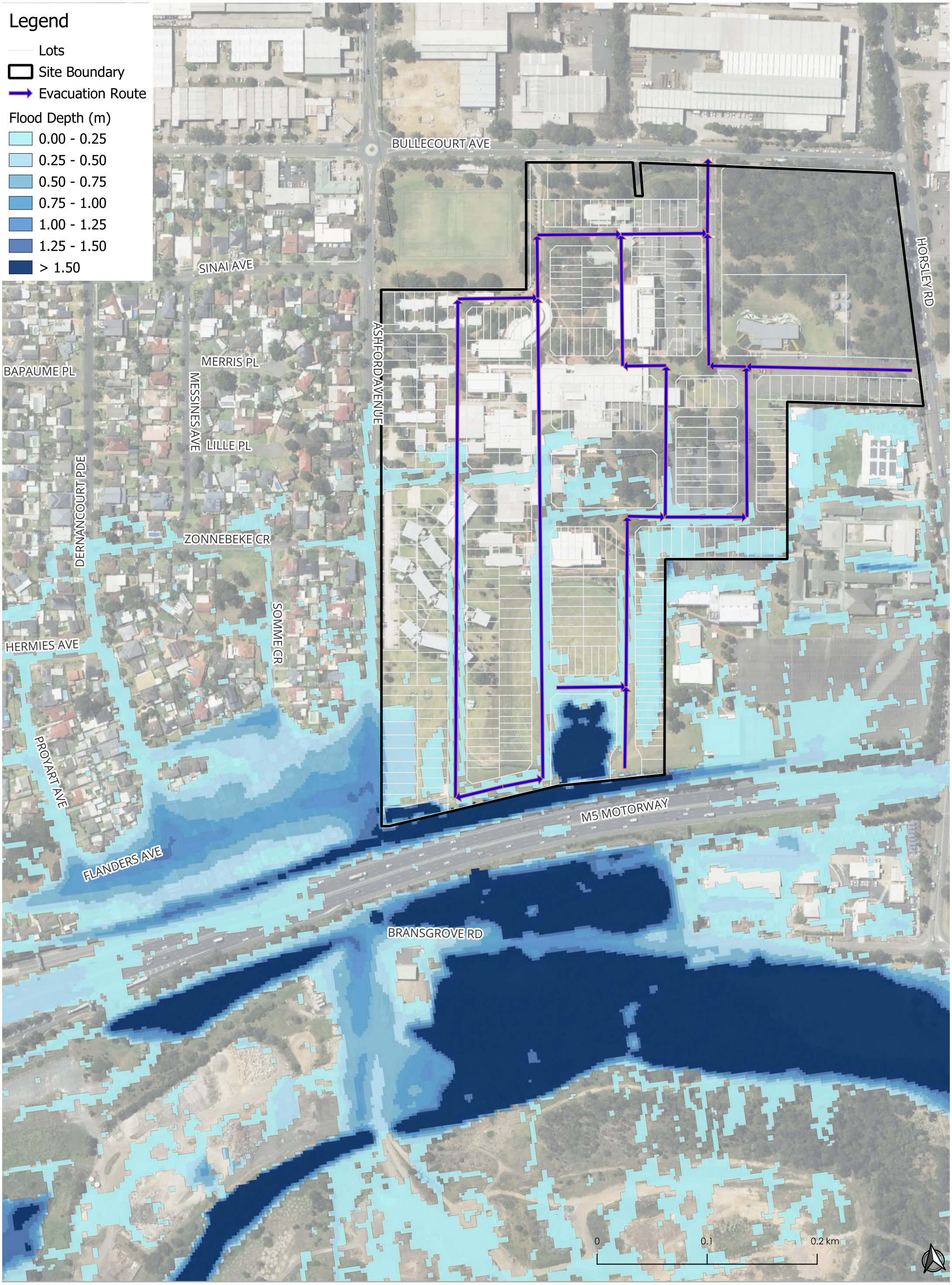
Project: 2 and 2a Bullecourt Avenue, Milperra
Flood Impact Assessment

Client: Mirvac Residential (NSW) Development Pty Ltd

Water Level Difference
Proposed Climate Change Less Proposed Base Case
1% AEP

Figure Number: 11 **Rev: 1**

0 200 400 600 m



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Tel: (02) 4625 5055

Client:

Mirvac Residential (NSW) Development Pty Ltd

Evacuation Route
PMF
Proposed Scenario
Figure 12

Project Coordination: EPSG:7856
Drawn by: YL
Checked by FG
Issued: Date: 2025-10-24

9 CONCLUSIONS

In support of the proposed Development Application (DA) for 2&2A Bullecourt Avenue Milperra (Lot 2 in DP1291984) to create, residential lots and dwellings, superlots for future residential lots and dwellings, roads, public recreation areas, drainage reserves this flood impact assessment has been prepared.

As requested by Council, this flood impact assessment has been undertaken by using the existing hydraulic model for the Kelso Park/Swamp provided by Council with minor updates as described in Section 2.

Previously Council has accepted that all internal overland flows and pit/pipe systems and flood compensatory storage can be addressed through the design process, most of which is documented in the Water Cycle Management Report prepared by BW which is to be read in conjunction with this report.

The aim of this Flood Impact Assessment is to investigate:

- the flood behaviour in the southern portion of Ashford Avenue and how any change to the overland flow from Ashford Avenue and Flanders Avenue into the site under may impact adjacent residential properties.
- any increase in flows into the M5 culverts, and.
- any adverse flood impacts on downstream floodplain i.e. Kelso Park / Swamp.

The modelling has been completed and is documented in Appendices B, C and D. The key findings are summarised as follows:

- Due to the natural site gradients, overland flow is concentrated in the southern portion of the site. Filling this area to support the future residential development results in the flow path from Ashford Avenue into the site diverting south along the unconstructed portion of Ashford Avenue to the swale adjacent to the M5 Motorway for all design events. More of this unconstructed portion of Ashford Avenue now gets wet but it generally does not impact the adjoining property.
- The hazard category in Ashford Avenue generally remains the same H1 category in the 100-year event except for a small section in the intersection that increases to a H2 category. The hazard category for the PMF event actually reduces from H5 to H4 for a large area in Ashford Avenue.
- The height of the water level increases slightly in Ashford Avenue at the intersection with Flanders Avenue and minor increases in the M5 swale in the 100 year event.
- The M5 Motorway culverts provide sufficient conveyance capacity under unblocked conditions for both existing and proposed scenarios across all design events.
- The proposed development has generally no impact on the Kelso Park/Swamp on the other side of the M5 Motorway as can be seen in Appendix C.
- The sensitivity test was conducted which uses a higher 100 year tailwater (RL 5.5m) in accordance with the JWP Report for both scenarios. The sensitivity test found there tailwater to have negligible impacts to the safety of structures, vehicles, or the community.

Overall, flood impacts associated with all design events are negligible, with no loss of trafficability along Ashford Avenue and no afflux affecting existing residential allotments, no detrimental impact on the existing M5 motorway and flood level increases to the downstream Kelso Park/Swamp area of less than 10mm in 100-Year event and PMF event.

The current design is considered sufficient to manage and mitigate the potential flood-related impacts identified in this assessment. Accordingly, no additional mitigation or management measures are required.

This report is to be read in conjunction with the Water Cycle Management Plan which addresses Water Quantity/OSD modelling, Water Quality/WSUD modelling, Compensatory Storage, and the assessment of increased rainfall data as a result of climate change to the year 2090 in accordance with the recent AR&R changes.

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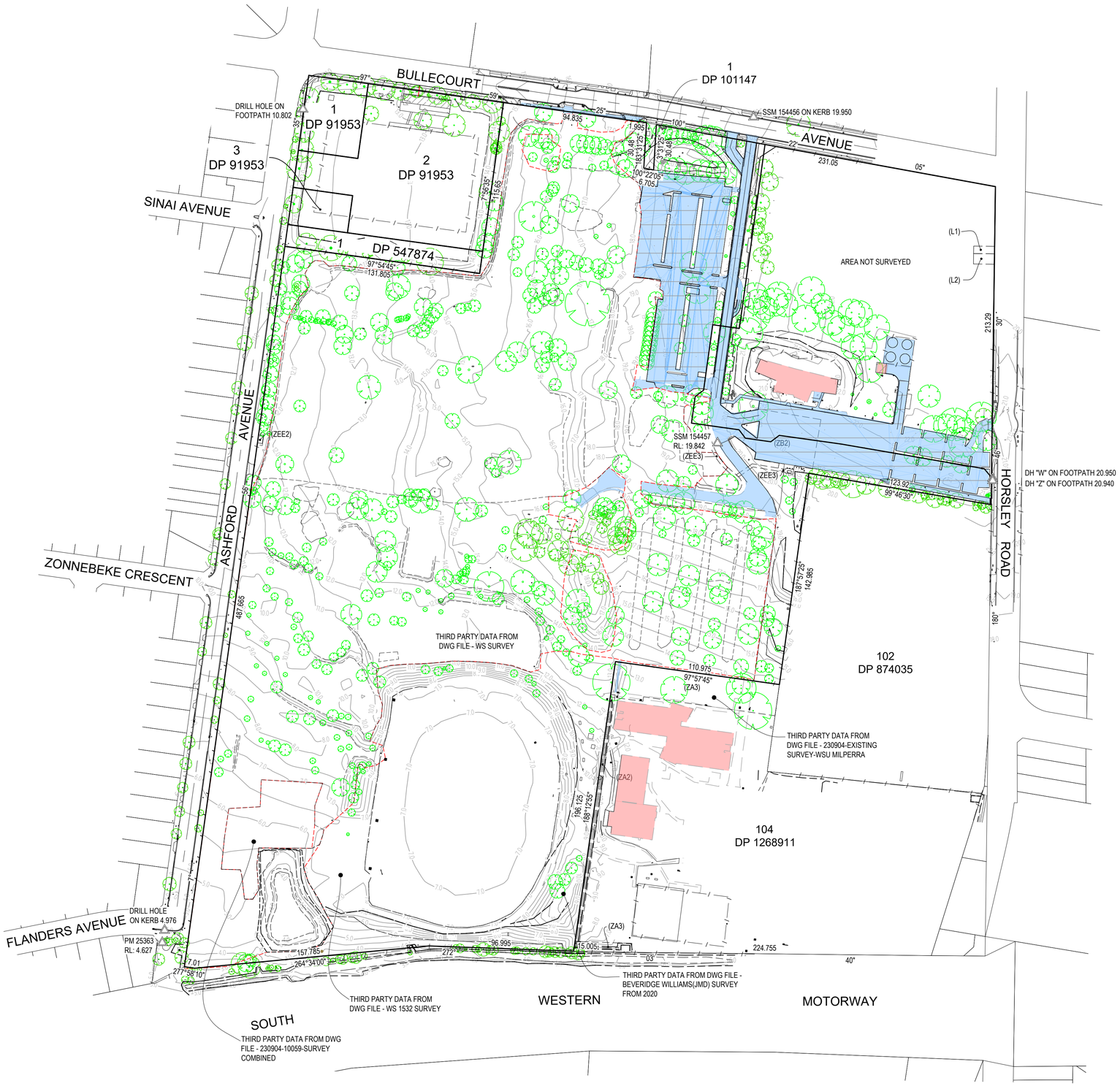
Frank Guo
Senior Water Resources Engineer
guof@bevwill.com.au

APPENDIX A: SITE SURVEY



GENERAL NOTES

1A THESE NOTES AND LEGEND (IF SHOWN) FORM PART OF THE PLAN AND SURVEY AND MUST REMAIN WITH THE PLAN IN ANY REPRODUCTION IN WHOLE OR PART.

1B THE CAD FILE USES METRES AS ITS BASE UNIT AND IS IN A "GROUND" COORDINATE SYSTEM. IF THE SURVEY IS STATED AS MGA, ANY POINT IN THE FILE WILL BE AN APPROXIMATE MGA COORDINATE.

1C SOME SYMBOLS REPRESENTING PHYSICAL STRUCTURES SUCH AS POWER POLES AND PITS ARE DIAGRAMMATIC ONLY AND DO NOT NECESSARILY REPRESENT THE ACTUAL SIZE AND EXTENT OF THESE FEATURES.

1D THE SURVEY INFORMATION SHOWN HERE WAS PREPARED FOR A SPECIFIC PURPOSE FOR THE CLIENT SHOWN. THIS INFORMATION IS NOT INTENDED TO BE USED FOR ANY OTHER PURPOSE OR BY ANYONE NOT AUTHORISED BY THIS CLIENT.

2A BOUNDARY DIMENSIONS AND AREAS HAVE BEEN DETERMINED BY CURRENT CADASTRAL SURVEY AND THE BOUNDARY AND EASEMENT LINES IN THE ELECTRONIC FILE HAVE BEEN INCLUDED USING THOSE SURVEYED DIMENSIONS. THE TITLE DIMENSIONS SHOWN ON THE HARD COPY PLAN TAKE PRECEDENCE OVER THE LINES IN THE ELECTRONIC FILE.

3A THE TITLES TO THE SUBJECT LAND HAS BEEN REVIEWED AND THE POSITION OF ALL EASEMENTS AFFECTING THE LAND ARE SHOWN. THE TERMS OF ANY EASEMENT, RESTRICTION ON THE USE OF LAND OR COVENANT AFFECTING THE LAND HAVE NOT BEEN INVESTIGATED. LEASES AND OTHER NOTATIONS MAY ALSO EXIST WHICH AFFECT THE LAND.

4A UNDERGROUND SERVICES OTHER THAN THOSE SHOWN HAVE NOT BEEN INVESTIGATED PRIOR TO DEMOLITION, EXCAVATION OR CONSTRUCTION WORK ON THE SITE. THE RELEVANT SERVICE AUTHORITY SHOULD BE CONTACTED TO ESTABLISH DETAILED LOCATION AND DEPTH.

5A THIS SURVEY IS LIMITED TO IMPROVEMENTS AND OTHER DETAIL WHICH WERE VISIBLE AND ACCESSIBLE AT THE TIME OF SURVEY. THE LOCATION OF DETAIL SUCH AS PRIVATE UNDERGROUND SERVICE LINES AND BUILDING FOUNDATIONS WITHIN THE SITE IS UNKNOWN.

5B THE COORDINATES WITHIN THIS DRAWING RELATE TO THE DATUM SHOWN IN THE TITLE BLOCK. REFER TO A REGISTERED LAND SURVEYOR FOR FURTHER CLARIFICATION. CAUTION SHOULD BE TAKEN WHEN IMPORTING INFORMATION OBTAINED FROM OTHER SUB-CONSULTANTS OR SOURCES TO ENSURE THAT THE DATA IS ON A MATCHING COORDINATE SYSTEM.

5C CONTOURS SHOWN HEREON DEPICT THE GENERAL TOPOGRAPHY ONLY EXCEPT AT SPOT LEVELS SHOWN, THEY DO NOT NECESSARILY REPRESENT THE EXACT LEVEL AT ANY PARTICULAR POINT.

5D ANY GUTTER, RIDGE, ROOF AND WINDOW DETAILS AND LEVELS SHOWN HAVE BEEN OBTAINED VIA INDIRECT SURVEY METHODS WHERE VISIBLE FROM GROUND LEVEL AND ARE SHOWN ON THIS PLAN IN THEIR APPROXIMATE LOCATION FOR THE PURPOSE OF GENERAL SITE ANALYSIS ONLY.

5E ANY TREE CANOPIES, TRUNK DIAMETERS AND HEIGHTS SHOWN ARE APPROXIMATE ONLY AND SHOULD BE VERIFIED BY FURTHER SURVEY WORKS IF CRITICAL TO DESIGN OR SITE ANALYSIS.

5F SMALL TREES, SHRUBS, GARDEN FEATURES, PATHWAYS AND OTHER MINOR DETAIL MAY NOT BE SHOWN ON THIS PLAN, FOR THE PURPOSES OF THIS SURVEY.

5G SOME UNDERGROUND SERVICE LINES (IDENTIFIED ON THE PLAN IN GREY) HAVE BEEN PLOTTED FROM THIRD PARTY DATA PROVIDED BY THE CLIENT AND ARE APPROXIMATE.

BEFORE YOU DIG www.byda.com.au

LEGEND

- BOLLARD
- TRAFFIC SIGNAL POLE
- TRAFFIC SIGNAL PIT
- GATE
- ELECTRICAL PILLAR
- POWER POLE
- LIGHT POLE
- COMMS JUNCTION PIT
- MANHOLE
- MAINTENANCE SHAFT
- INSPECTION OPENING
- TAP
- HYDRANT
- STOP VALVE
- WATER METER
- RECYCLED WATER HYDRANT
- RECYCLED WATER STOP VALVE
- GAS VALVE
- GRATED PIT
- PIT/LINTEL
- SAG PIT
- BENCHMARK
- 8/0.4/15 TREE, SPREAD/DIAMETER/HEIGHT
- BANK

The symbols depicted are purely illustrative and should not be interpreted as exact representations. The scale and orientation of these symbols may not accurately reflect the actual size or orientation of the corresponding features.

- UNDERGROUND POWER
- OVERHEAD POWER
- COMMUNICATIONS
- OVERHEAD COMMUNICATIONS
- SEWER
- WATER
- RECYCLED WATER
- GAS
- SERVICE HYDRANT
- DRAINAGE
- CONTOUR
- UNDERGROUND POWER
- COMMUNICATIONS
- SEWER
- WATER
- SEWER
- STORM WATER
- FIRE HYDRANT
- THIRD PARTY DATA BOUNDARIES

Services shown in gray have been provided by others, location and connectivity not verified.

All Overhead Comms and Electrical are approximate only.

- BUILDING/STRUCTURES
- HARD SURFACES

THIRD PARTY DATA FROM DWG FILE - 2301879-010-LAY

(L1) LEASES TO CROWN CASTLE (AH574654, AH574655, AH574656, AH574657)

(L2) LEASES TO AMPLITEL (AH208745 AND AH208746) AND LEASES TO CROWN CASTLE (AH574654, AH574655, AH574656. AH574657)

(ZA2) EASEMENT TO DRAIN WATER 3.0 WIDE

(ZA3) EASMENT TO DRAIN WATER VARIABLE WIDTH

(ZB2) RIGHT OF CARRIAGE WAY VARIABLE WIDTH (DP1236474)

(ZEE2) EASEMENT FOR ELECTRICITY AND OTHER PURPOSES (DP1144378)

(ZEE3) EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 2 & 3.3 WIDE (DP1236474)

0 30 60 90

SCALE ON ORIGINAL DRAWING AT 1:1500

PLAN OF CONTOUR AND DETAIL OVER SITE

LOT 2 IN DP1291984, LOT 1 IN DP547874, AND LOTS 1, 2 AND 3 IN DP91953
2 BULLECOURT AVENUE, MILPERRA

Client: MIRVAC

BC	E	22-08-2025	Detail survey after demolition
BC	D	08-05-2025	Addition of extra trees
BC	C	16-09-2024	Updated tree positions
BC	B	28-02-2024	Additional information
BC	A	~	Original Issue
By	Ver	Date	Amendments

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Survey Date: 25-09-2023
Vertical Datum: AHD
Horizontal Datum: GDA 2020
Origin of Levels
SSM: 25363
RL: 4.627

MGA SCIMS

Scale (A3) 1:1500
(A1) 1:1500

mirvac

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SHEET KEY

BULLECOURT

AVENUE

ASHFORD

1
DP 91953

2
DP 91953
MILPERRA RESERVE

3
DP 91953

GRASSED AREA

PICNIC SHELTER

ELECTRICAL EQUIPMENT CUPBOARD

MISCELLANEOUS WIRE NOT LOCATED BY SURVEY

BRICK BUILDING

CONCRETE AREA

AWNING

CONCRETE PATH

PATH

GUTTER

VEHICLE CROSSING

PRAM CROSSING

BIN STORAGE

PIT NOT ACCESSIBLE

SW PIT

SMH TOP RL 12.84
BOTTOM OF BASE 11.64

SMH TOP RL 12.23
BOTTOM OF BASE 11.08

SMH TOP RL 11.89
BOTTOM OF BASE 10.11

INV OUT 9.57

FENCE

MESH

METAL

KERB

AND

SEE SHEET 1 FOR LEGEND AND PLAN NOTES

0 4 8 12

SCALE ON ORIGINAL DRAWING AT 1:200

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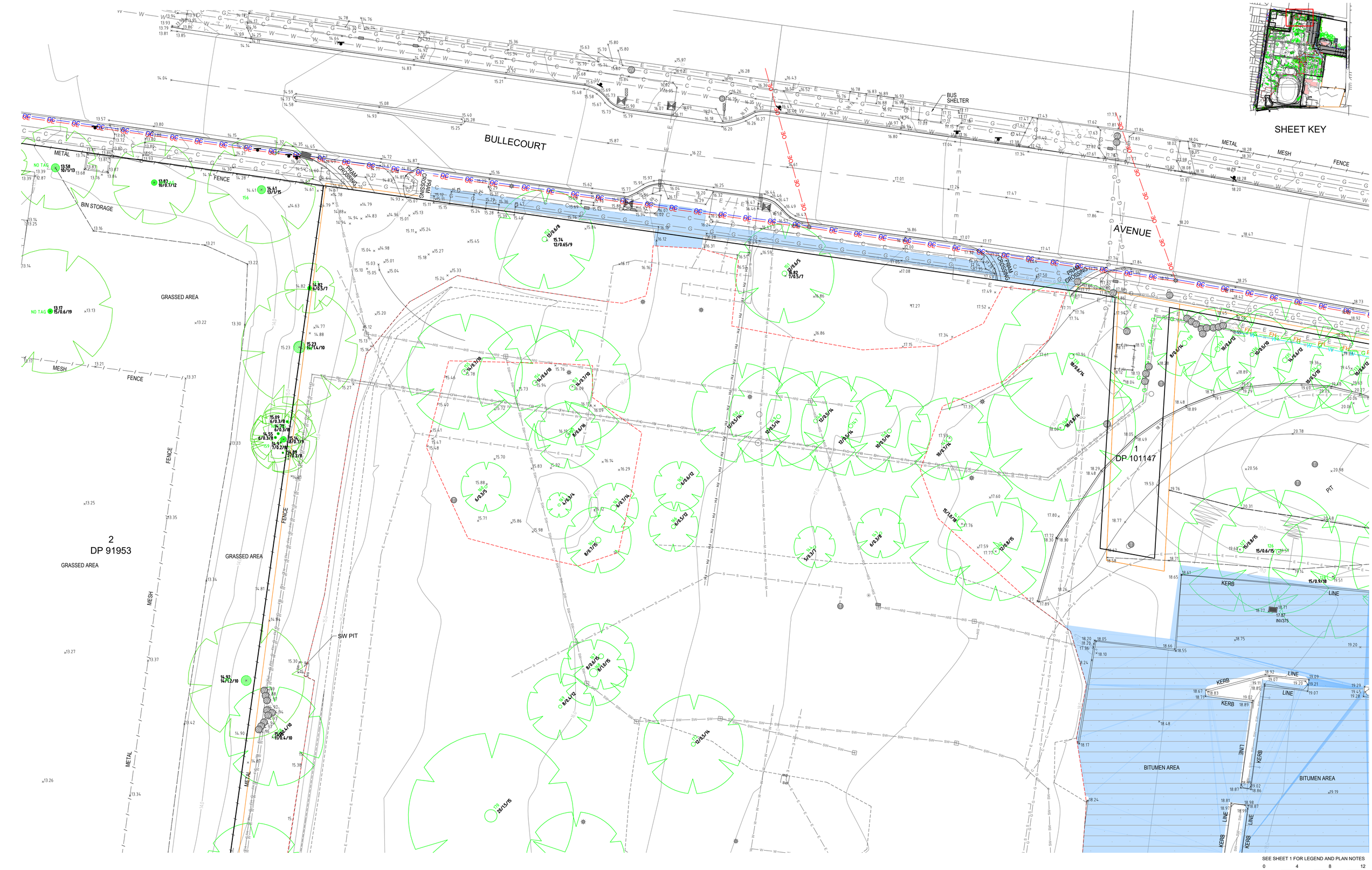

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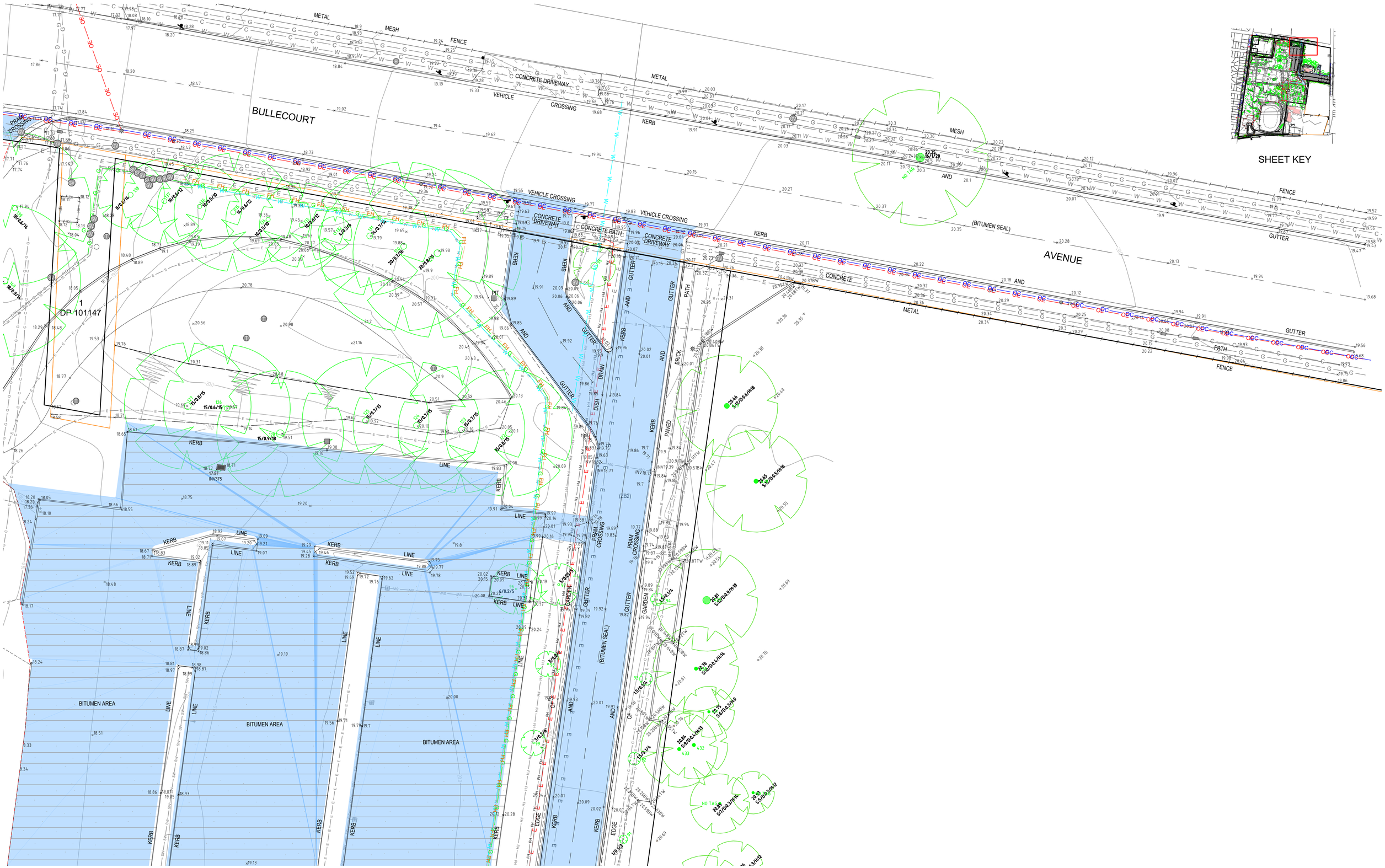

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BULLECOURT AVENUE

HORSLEY ROAD

(L1)

(L2)

FOREST AREA

NO TAG 21.69

NO TAG 21.35

21.17

21.28

NO TAG

NO TAG 21.45

21.24

21.69

21.85 NO TAG

21.98 NO TAG

NO TAG

NO TAG

NO TAG

NO TAG

19.82

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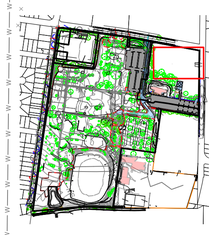

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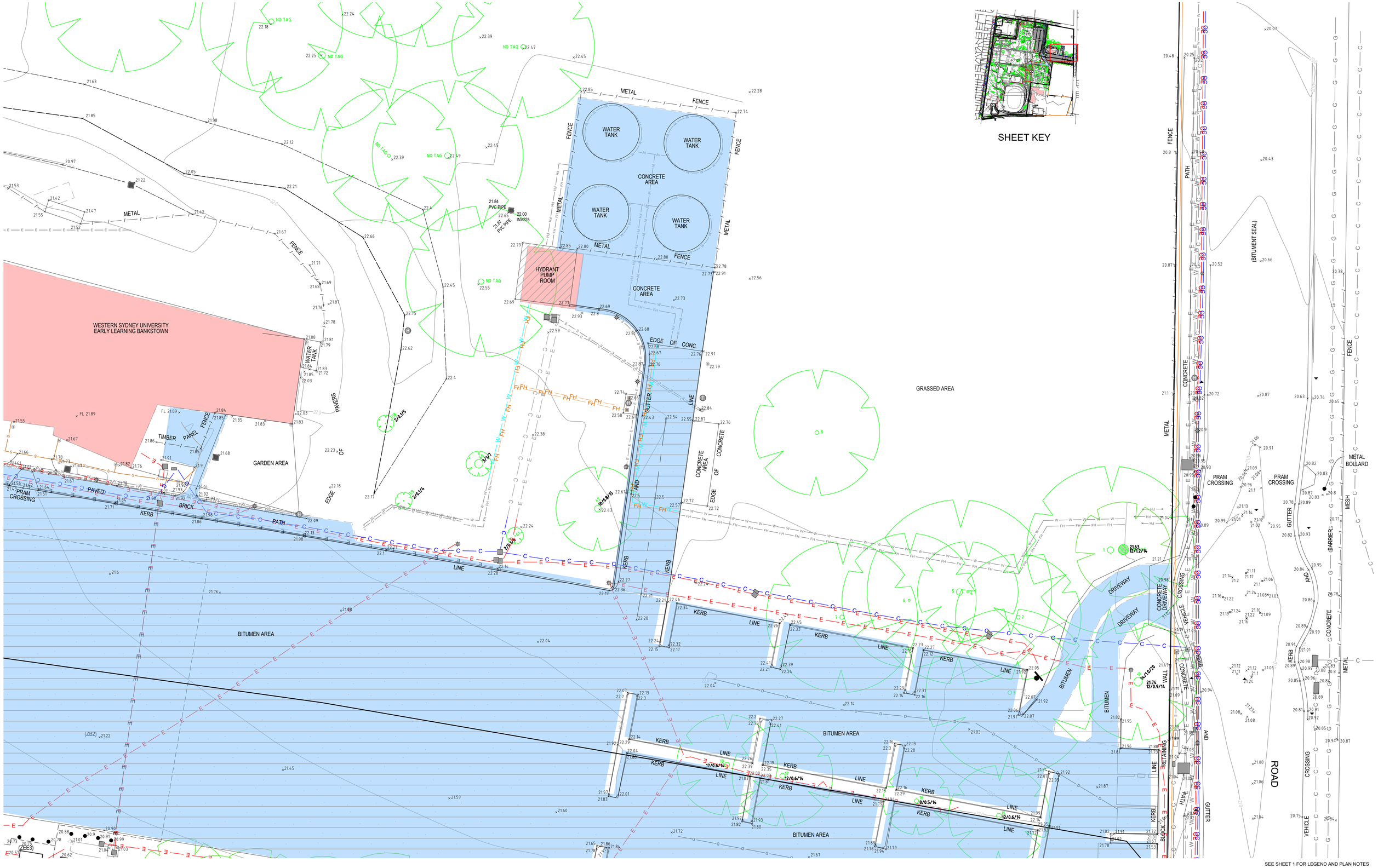

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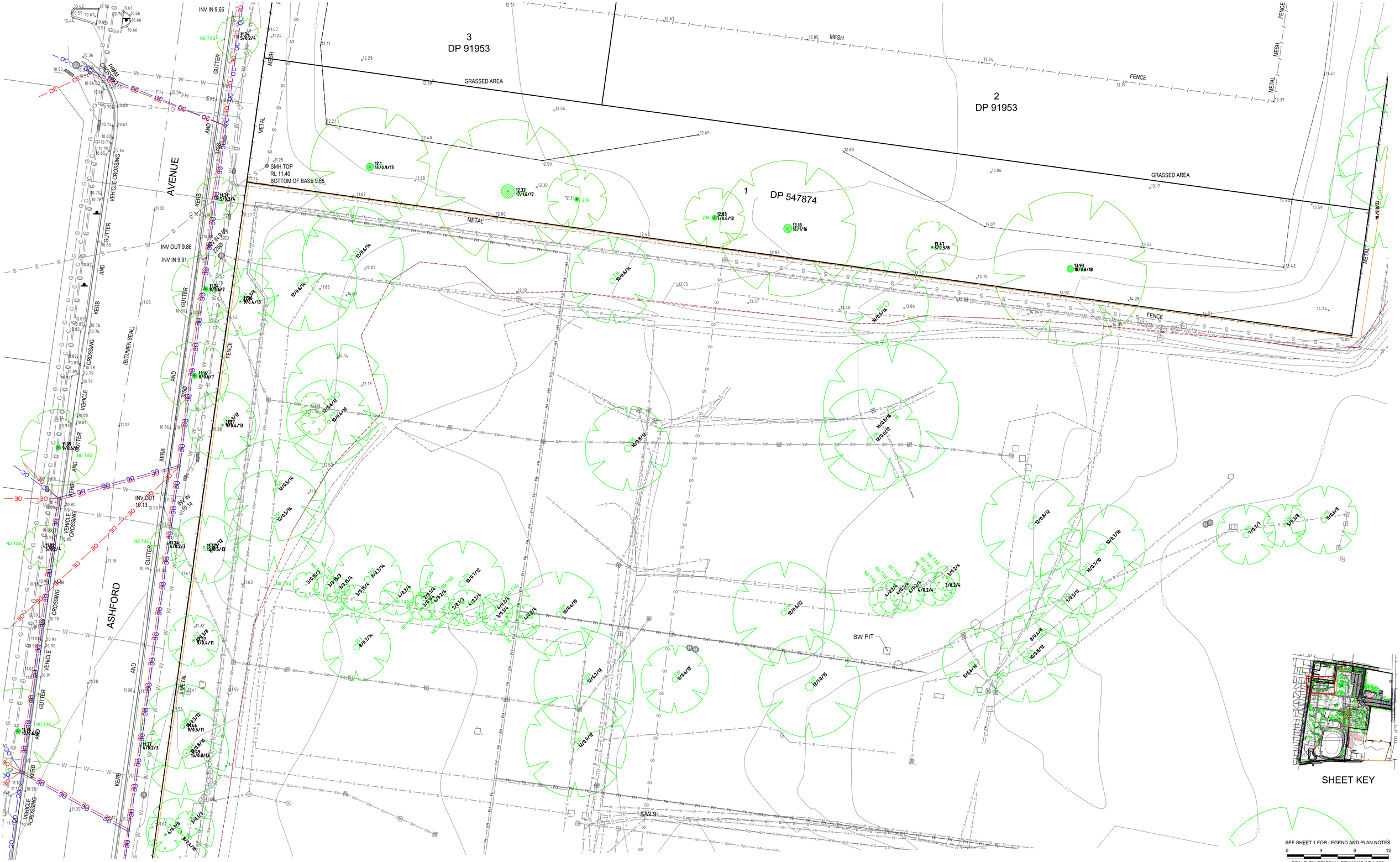

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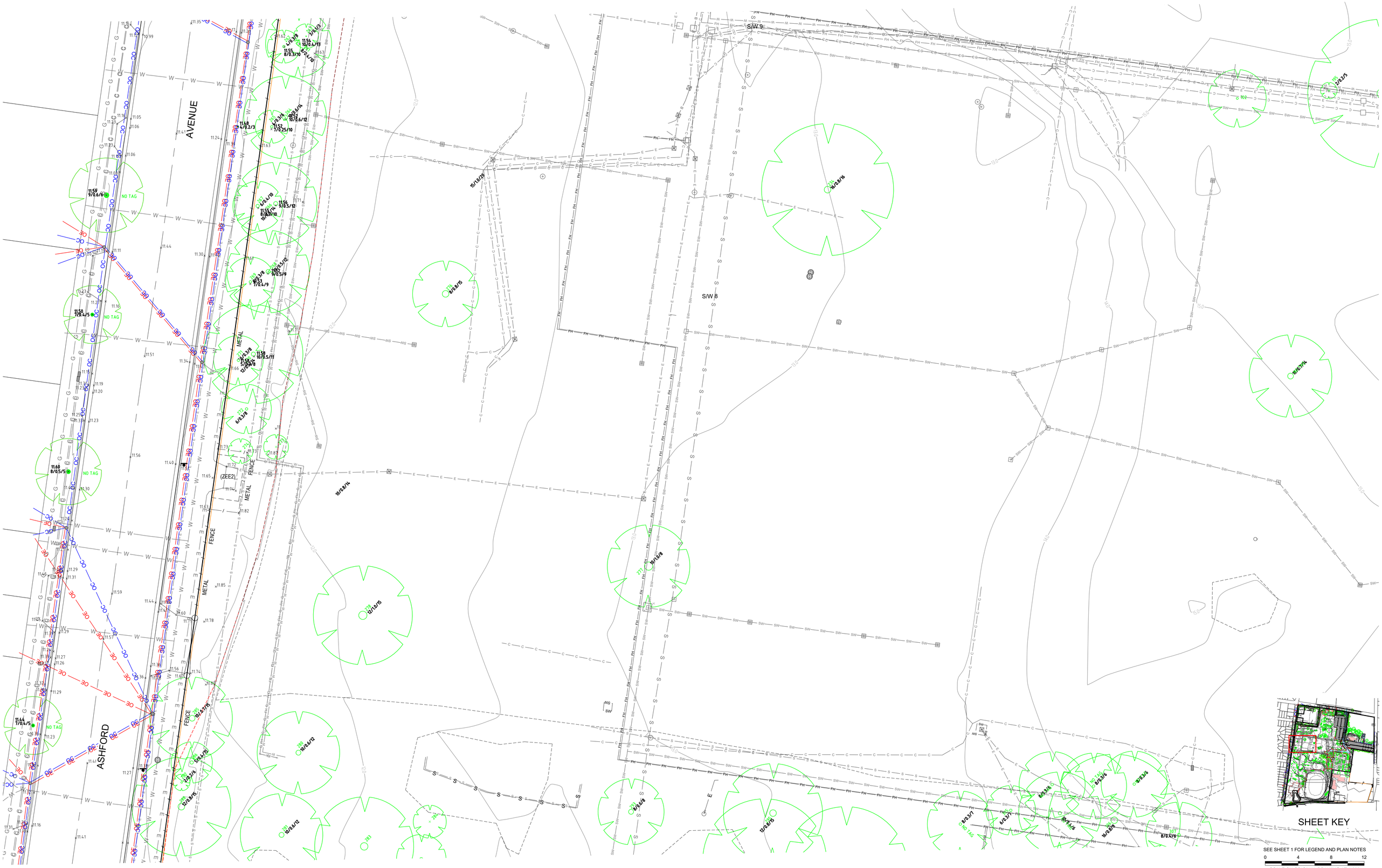

PLAN OF CONTOUR AND DETAIL OVER SITE

LOT 2 IN DP1291984, LOT 1 IN DP547874, AND LOTS 1, 2 AND 3 IN DP91953
2 BULLECOURT AVENUE, MILPERRA

Client: MIRVAC

Beveridge Williams
Development and Infrastructure Consultants
Western Sydney ph: (02) 4625 5055
www.beveridgewilliams.com.au

By	Ver	Date	Amendments
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BC	B	28-02-2024	Additional Information
BC	A	–	Original Issue

Survey Date:	25-09-2023
Vertical Datum:	AHD
Horizontal Datum:	GDA 2020
Origin of Levels SSM:	25363
RL:	4.927

Scale (A3) (A1) 1:200

Sheet 10 of 22

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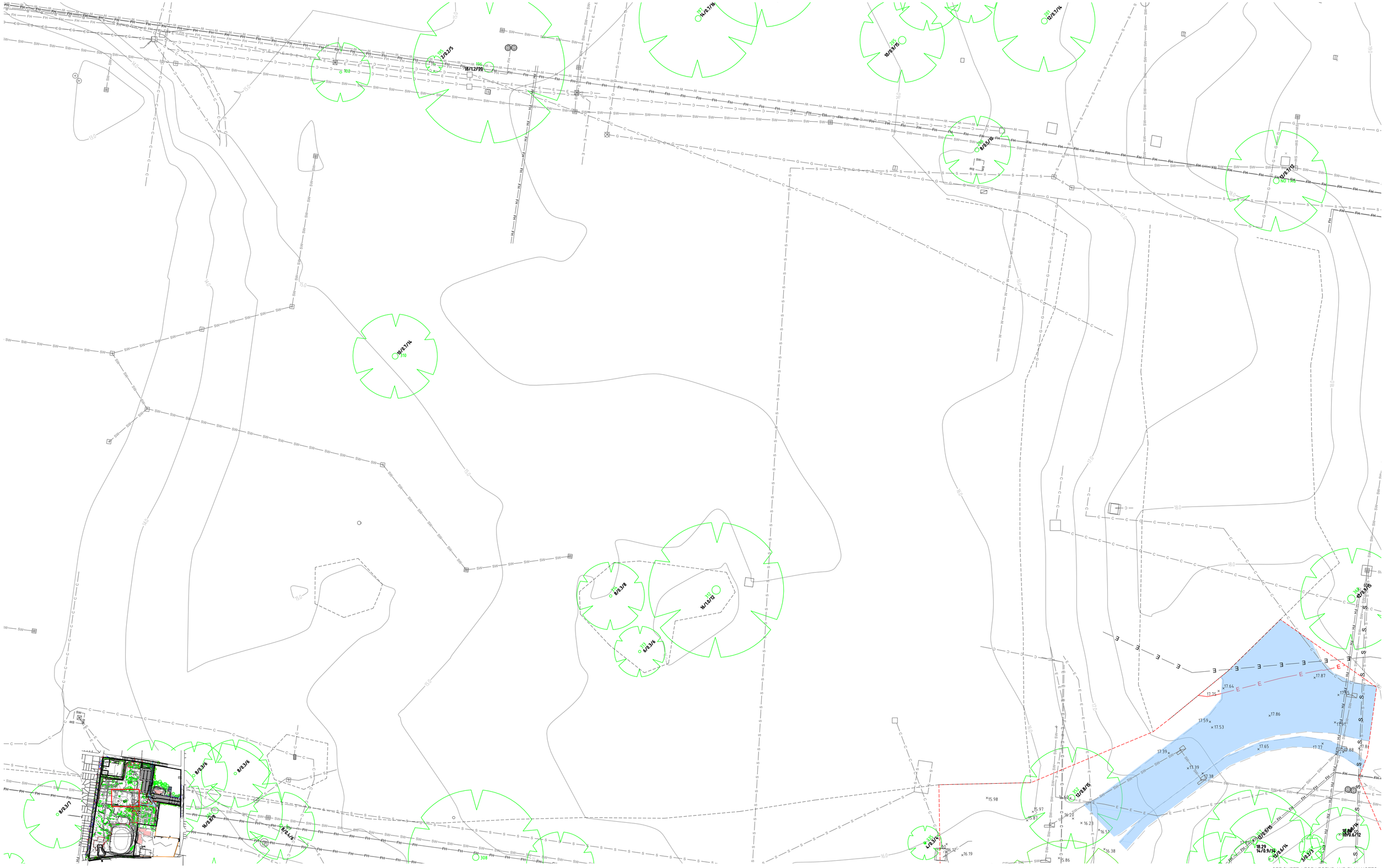

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Scale (A3) (A1) 1:200

MGA SCIMS

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SHEET KEY

SMH TOP RL 19.48
INV IN 17.77
INV OUT 17.73

BITUMEN AREA
KERB
LINE
GUTTER AND KERB
PRAM CROSSING
PATH
BRICK PAVED
ASSED AREA
BITUMEN
EDGE
OF
DRIVEWAY
GRASSED AREA
(ZEE3)
(ZB2)
(ZB2) (ZEE3)

SEE SHEET 1 FOR LEGEND AND PLAN NOTES

0 4 8 12

SCALE ON ORIGINAL DRAWING AT 1:200

PLAN OF CONTOUR AND DETAIL OVER SITE

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RL: 4.927

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Scale (A3)
(A1) 1:200

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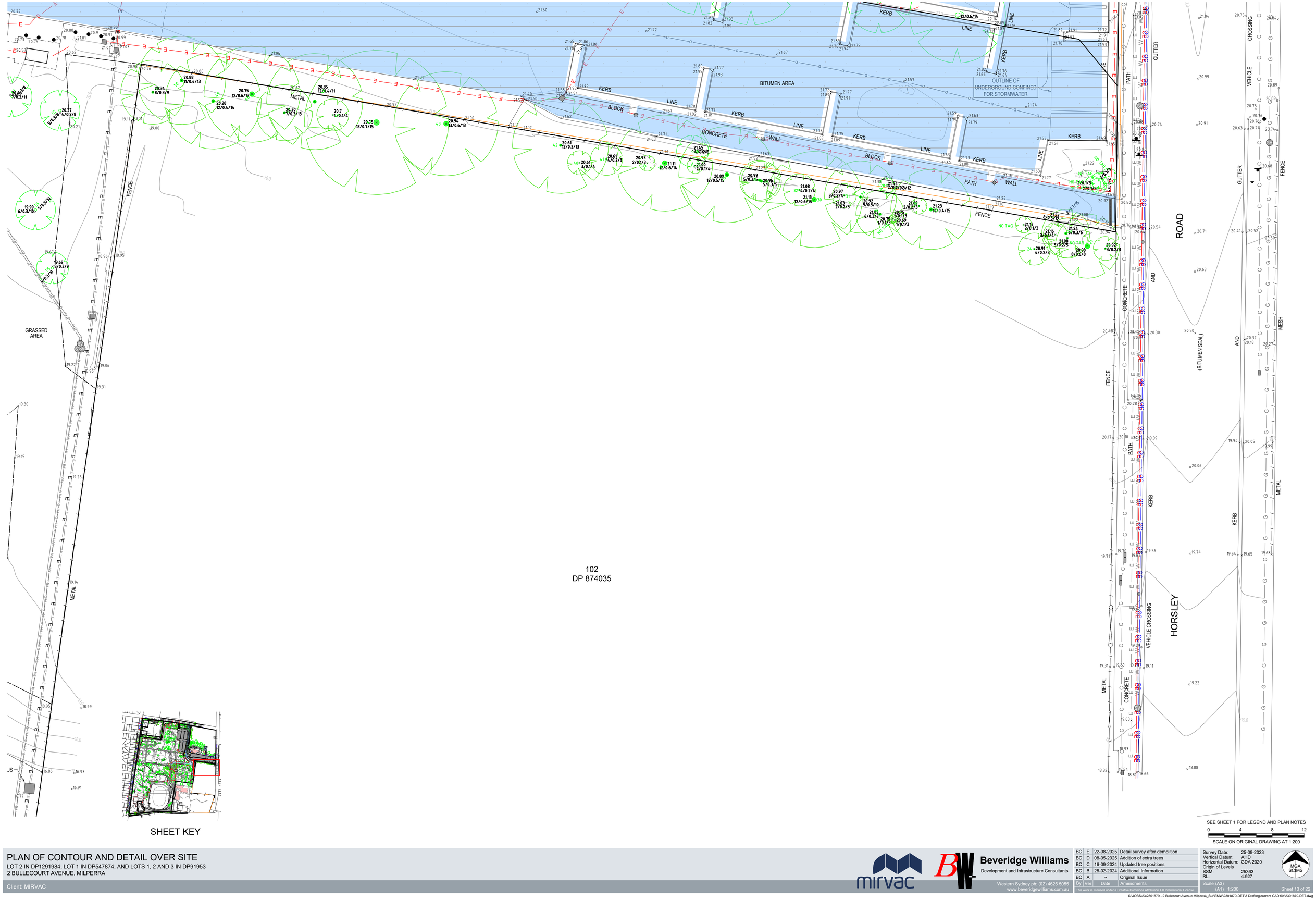

102
DP 874035

SHEET KEY

SEE SHEET 1 FOR LEGEND AND PLAN NOTES

0 4 8 12

SCALE ON ORIGINAL DRAWING AT 1:200

PLAN OF CONTOUR AND DETAIL OVER SITE

LOT 2 IN DP1291984, LOT 1 IN DP547874, AND LOTS 1, 2 AND 3 IN DP91953
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104
DP 1268911

102
DP 874035

GRASSED AREA

GRASSED AREA

MISCELLANEOUS PIT

FENCE

METAL

SHEET KEY

SEE SHEET 1 FOR LEGEND AND PLAN NOTES

0 4 8 12

SCALE ON ORIGINAL DRAWING AT 1:200

PLAN OF CONTOUR AND DETAIL OVER SITE

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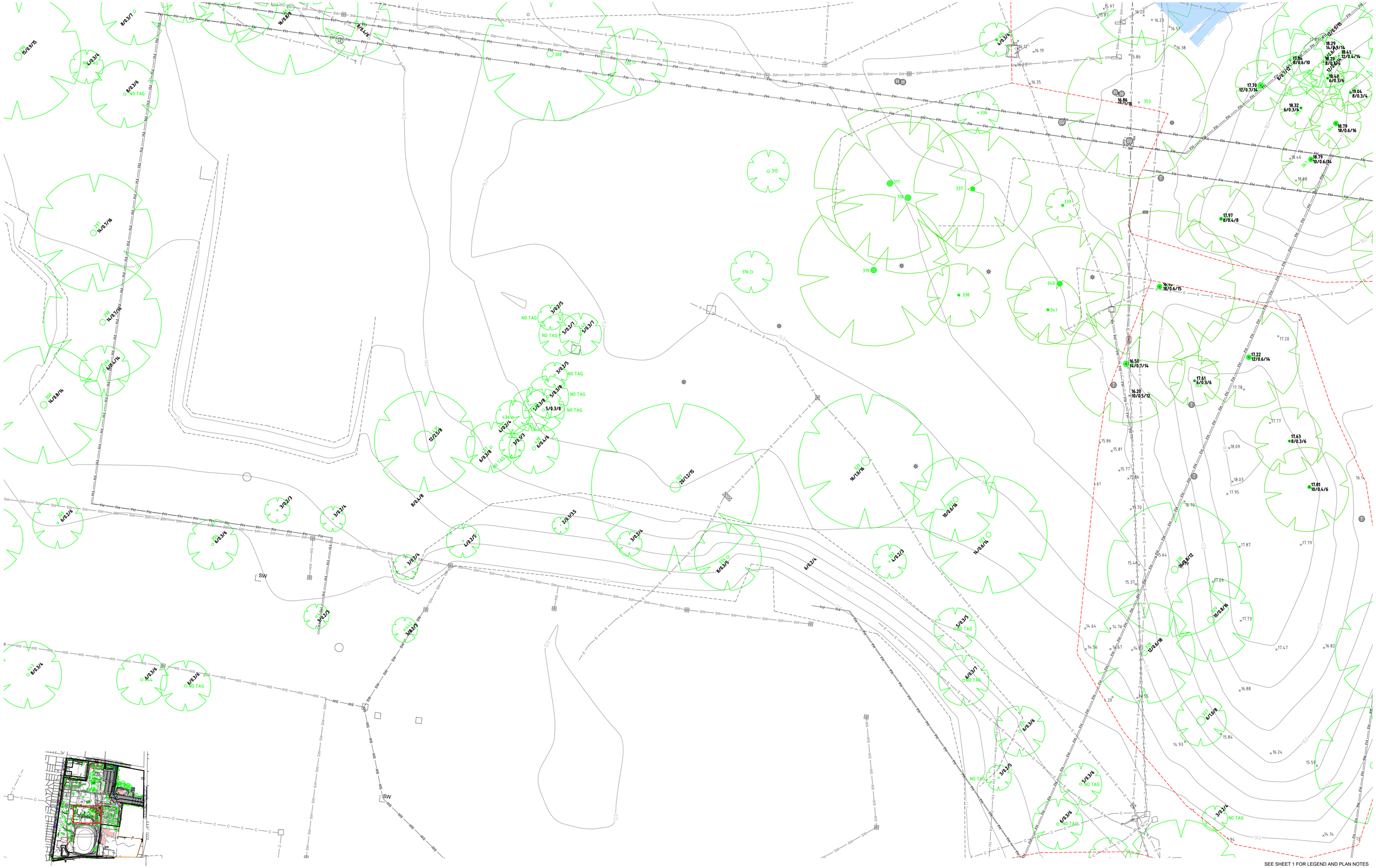
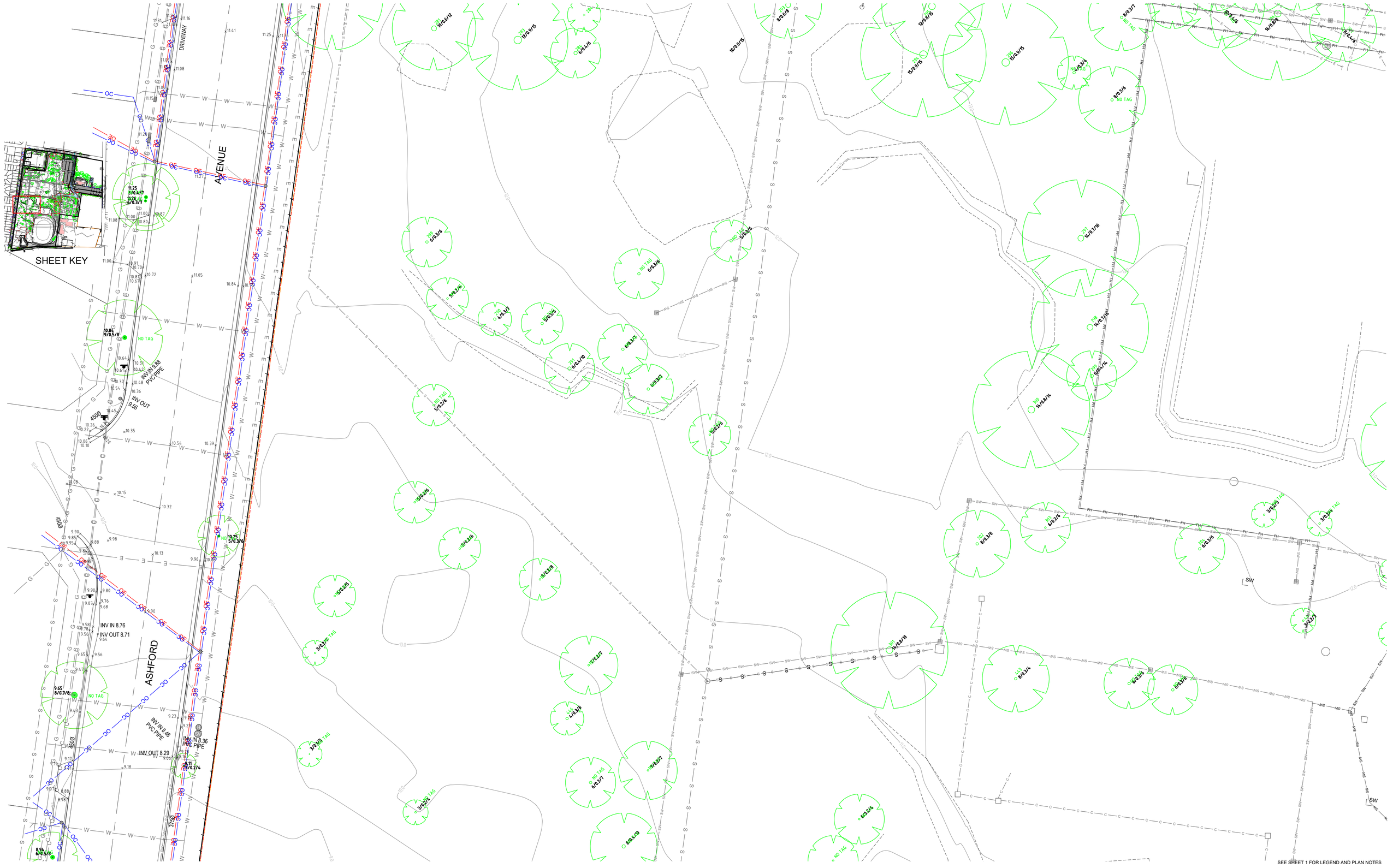

SW
SW
SW



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Scale (A3)	
(A1)	1:200

MGA SCIMS

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SHEET KEY

AVENUE

ASHFORD

VEHICLE CROSSING

KERB AND GUTTER

4500

1750

(BITUMEN SEAL)

INV IN 5.82
INV OUT 5.77

INV IN 5.79
INV IN 5.77

INV IN 5.84
PVC PIPES
INV OUT 5.62

INV IN 4.80
INV OUT 4.79

INV IN 4.36
INV OUT 4.34

8250

GRASS OVAL

SEE SHEET 1 FOR LEGEND AND PLAN NOTES

0 4 8 12

SCALE ON ORIGINAL DRAWING AT 1:200

PLAN OF CONTOUR AND DETAIL OVER SITE

LOT 2 IN DP1291984, LOT 1 IN DP547874, AND LOTS 1, 2 AND 3 IN DP91953
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INV IN 4.80
INV OUT 4.79
INV OUT 5.82
INV OUT 5.95
INV OUT 6.16
INV OUT 5.97
INV/IN 6.21
INV100 OULET
GRASS OVAL
GRASSED AREA
(ZA2)
(ZA3)
(ZA2)(ZA3)
PAVED
PATH
BRICK
NO TAG

SHEET KEY

SEE SHEET 1 FOR LEGEND AND PLAN NOTES

0 4 8 12
SCALE ON ORIGINAL DRAWING AT 1:200

PLAN OF CONTOUR AND DETAIL OVER SITE

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SHEET KEY

GRASS OVAL

GRASSED AREA

GRASSED AREA

GRASSED AREA

CONCRETE

CONCRETE

CONCRETE

PATH

PATH

PATH

PAVED - BRICK - PATH

INV OUT 5.97

INV IN 6.21

225Ø

(ZA2)

9/0.6/10

10/0.6/14

8/0.4/10

10/0.6/14

104
DP 1268911

SEE SHEET 1 FOR LEGEND AND PLAN NOTES

0 4 8 12

SCALE ON ORIGINAL DRAWING AT 1:200

PLAN OF CONTOUR AND DETAIL OVER SITE

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mirvac

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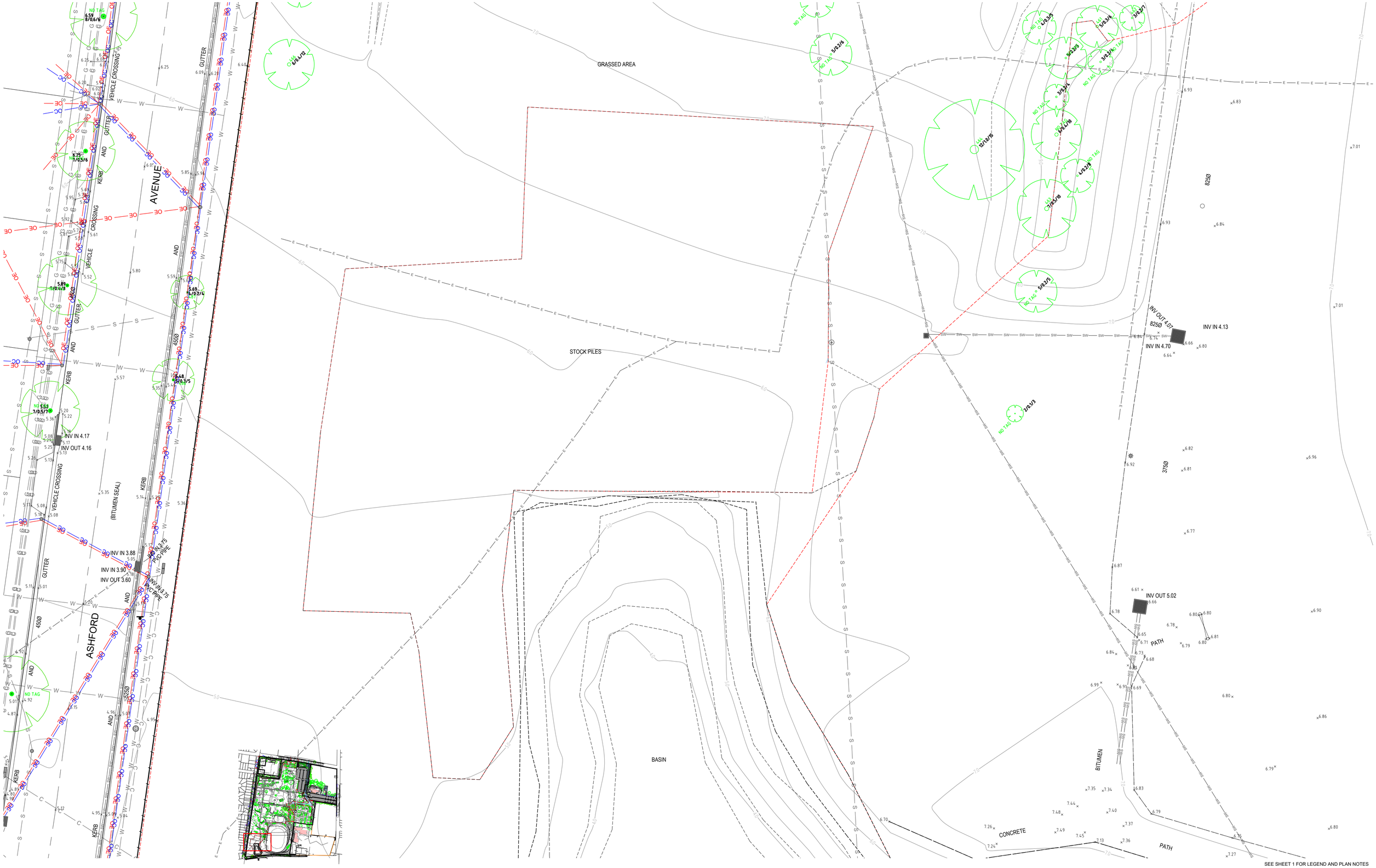

SHEET KEY

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(A1)

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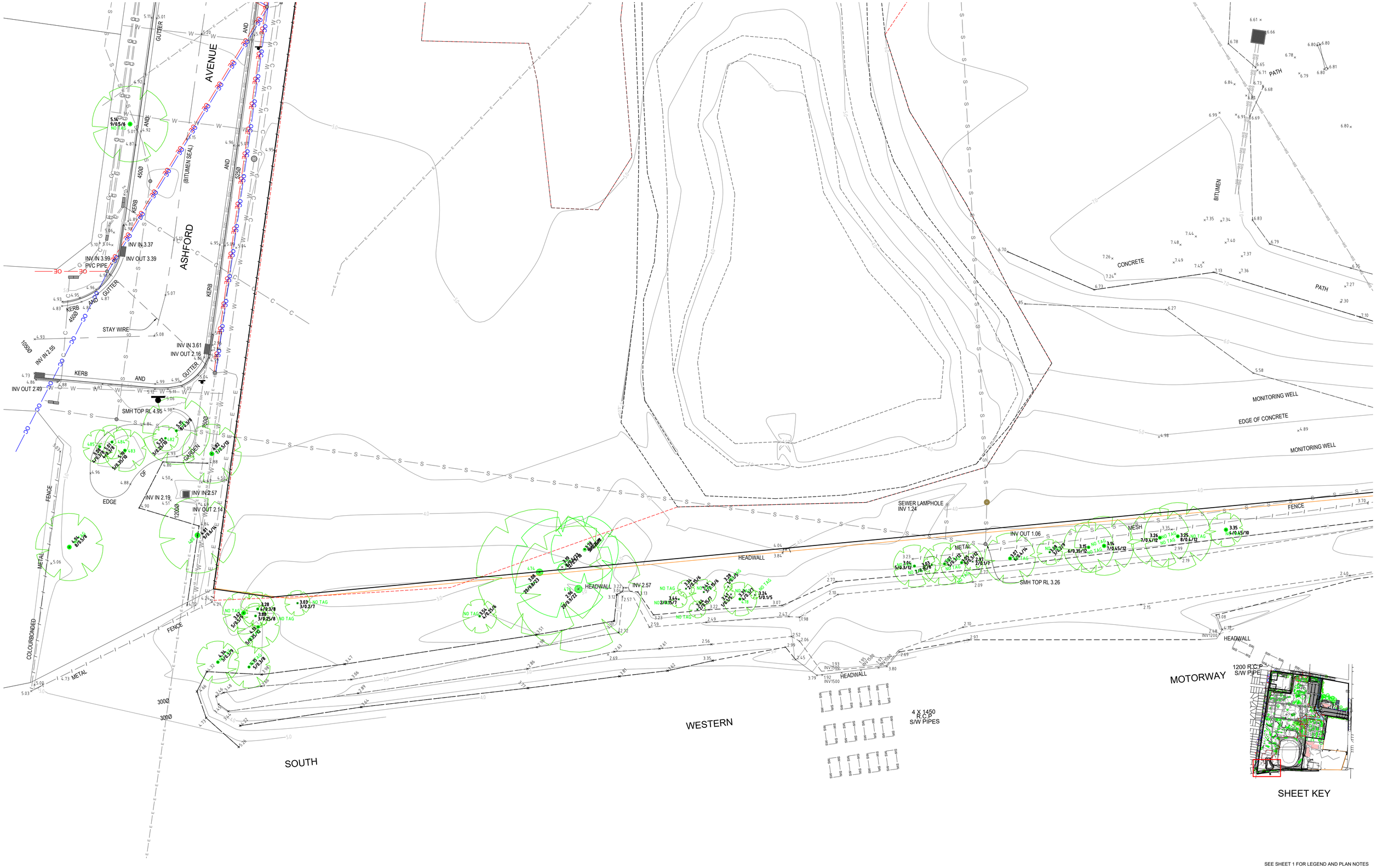

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GRASS OVAL

GRASSED AREA

GRASSED AREA

PATH

CONCRETE

MONITORING WELL

MONITORING WELL

EDGE OF CONCRETE

(ZA2)

(ZA3)

HEADWALL

SMH TOP RL 4.03

METAL

MESH

FENCE

METAL

MESH

FENCE

HEADWALLS

SOUTH

WESTERN

MOTORWAY

SHEET KEY

SEE SHEET 1 FOR LEGEND AND PLAN NOTES

0 4 8 12

SCALE ON ORIGINAL DRAWING AT 1:200

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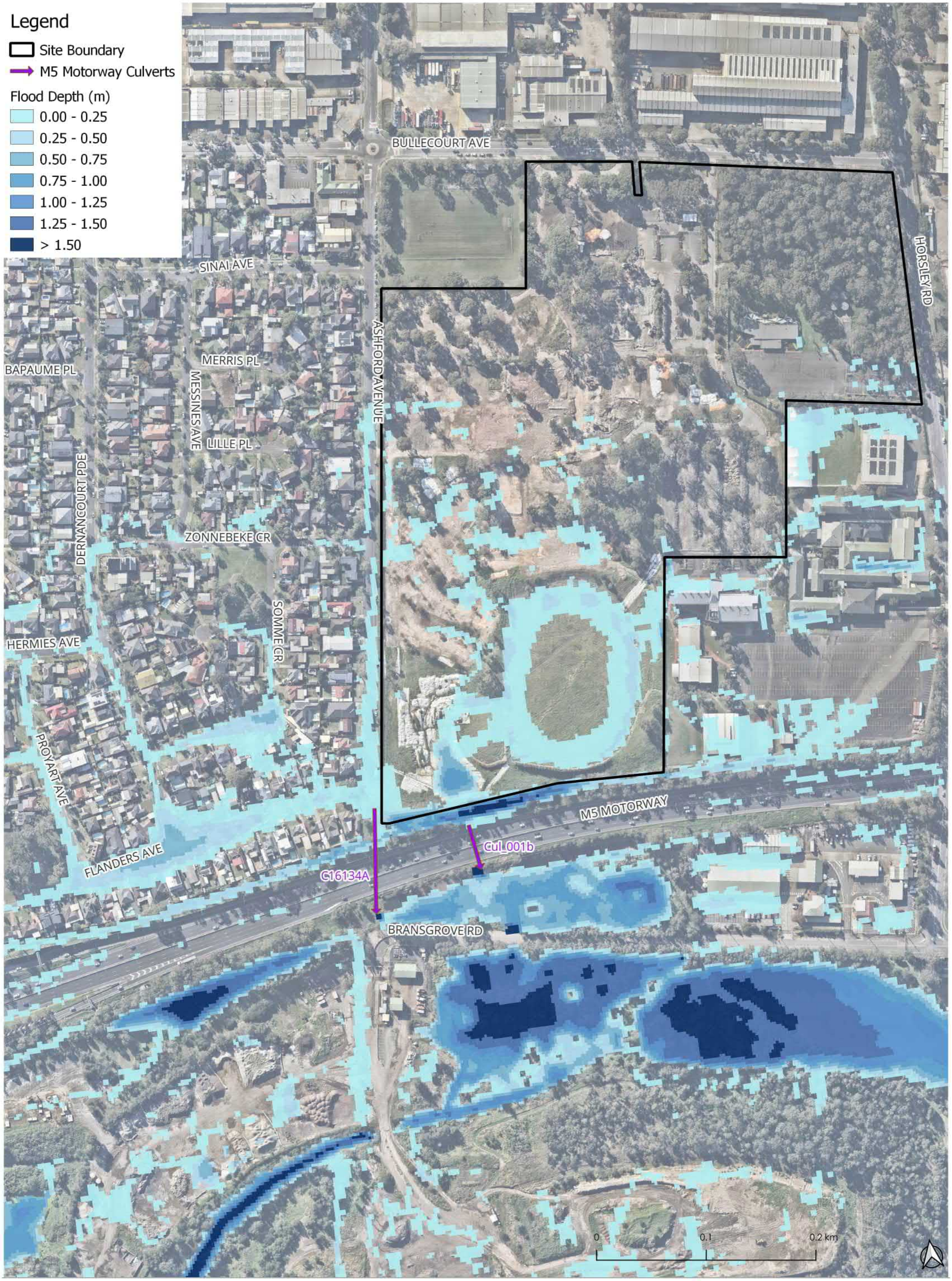
APPENDIX B: BASE CASE EXISTING FLOOD MAPS



Beveridge Williams

Western Sydney Office
Level 4, LPC House,
Suite 4.05, 3 Fordham Way
Oran Park, NSW 2570
Tel: (02) 4625 5055

Client:

Mirvac Residential (NSW) Development Pty Ltd

Flood Depth
100 Year ARI
Base Case Existing
Figure B1

Project Coordination:	EPSG:7856
Drawn by:	YL
Checked by	FG
Issued:	Date: 2025-08-27

Legend

- Site Boundary
- M5 Motorway Culverts

Flood Velocity (m/s)

- 0.00 to 0.50
- 0.50 to 1.00
- 1.00 to 1.50
- 1.50 to 2.00
- 2.00 to 3.00
- > 3.00

BULLECOURT AVE
SINAI AVE
MERRIS PL
BAPAUME PL
MESSINES AVE
LILLE PL
ASHFORD AVENUE
HORSLEY RD
DERNANCOURT PDE
ZONNEBEKE CR
SOMME CR
HERMIES AVE
PROYART AVE
FLANDERS AVE
M5 MOTORWAY
Cul_001b
C16134A
BRANSGROVE RD
0
0.1
0.2 km

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Flood Velocity
100 Year ARI
Base Case Existing
Figure B2

Project Coordination:	EPSG:7856
Drawn by:	YL
Checked by	FG
Issued:	Date: 2025-08-27

Legend

Site Boundary

M5 Motorway Culverts

Hazard Category

H1

H2

H3

H4

H5

H6

BULLECOURT AVE

HORSLEY RD

SINAI AVE

ASHFORD AVENUE

BAPAUME PL

MERRIS PL

MESSINES AVE

LILLE PL

DERNANCOURT PDE

ZONNEBEKE CR

SOMME CR

HERMIES AVE

PROYART AVE

FLANDERS AVE

M5 MOTORWAY

Cul_001b

C16134A

BRANSGROVE RD

0 0.1 0.2 km

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Tel: (02) 4625 5055

Client:

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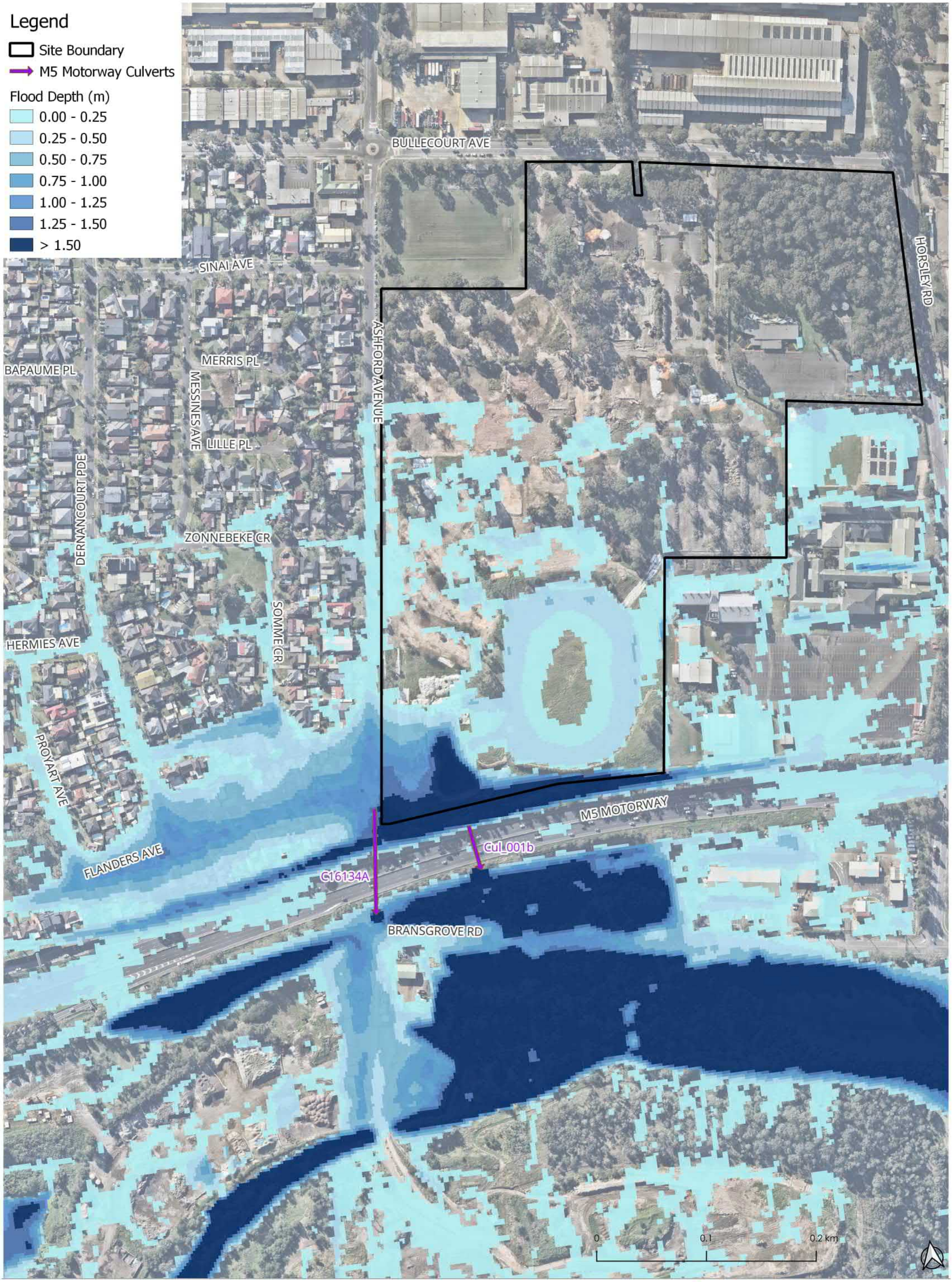
Hazard Category
100 Year ARI
Base Case Existing
Figure B3

Project Coordination: EPSG:7856
Drawn by: YL
Checked by FG
Issued: Date: 2025-08-27



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Client:

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Flood Depth
PMF
Base Case Existing
Figure B4

Project Coordination:	EPSG:7856
Drawn by:	YL
Checked by	FG
Issued:	Date: 2025-08-27

Legend

- Site Boundary
- M5 Motorway Culverts

Flood Velocity (m/s)

- 0.00 to 0.50
- 0.50 to 1.00
- 1.00 to 1.50
- 1.50 to 2.00
- 2.00 to 3.00
- > 3.00

BULLECOURT AVE
SINAI AVE
MERRIS PL
BAPAUME PL
MESSINES AVE
LILLE PL
ASHFORD AVENUE
HORSLEY RD
DERNANCOURT PDE
ZONNEBEKE CR
SOMME CR
HERMIES AVE
PROYART AVE
FLANDERS AVE
M5 MOTORWAY
Cul_001b
C16134A
BRANSGROVE RD
0
0.1
0.2 km

Beveridge Williams

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Oran Park, NSW 2570
Tel: (02) 4625 5055

Client:

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Flood Velocity
PMF
Base Case Existing
Figure B5

Project Coordination: EPSG:7856
Drawn by: YL
Checked by FG
Issued: Date: 2025-08-27

Legend

Site Boundary

M5 Motorway Culverts

Hazard Category

H1

H2

H3

H4

H5

H6

BULLECOURT AVE

SINAI AVE

MERRIS PL

BAPAUME PL

MESSINES AVE

LILLE PL

ASHFORD AVENUE

HORSLEY RD

DERNANCOURT PDE

ZONNEBEKE CR

SOMME CR

HERMIES AVE

PROYART AVE

FLANDERS AVE

M5 MOTORWAY

Cul_001b

C16134A

BRANSGROVE RD

0

0.1

0.2 km

Beveridge Williams

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Tel: (02) 4625 5055

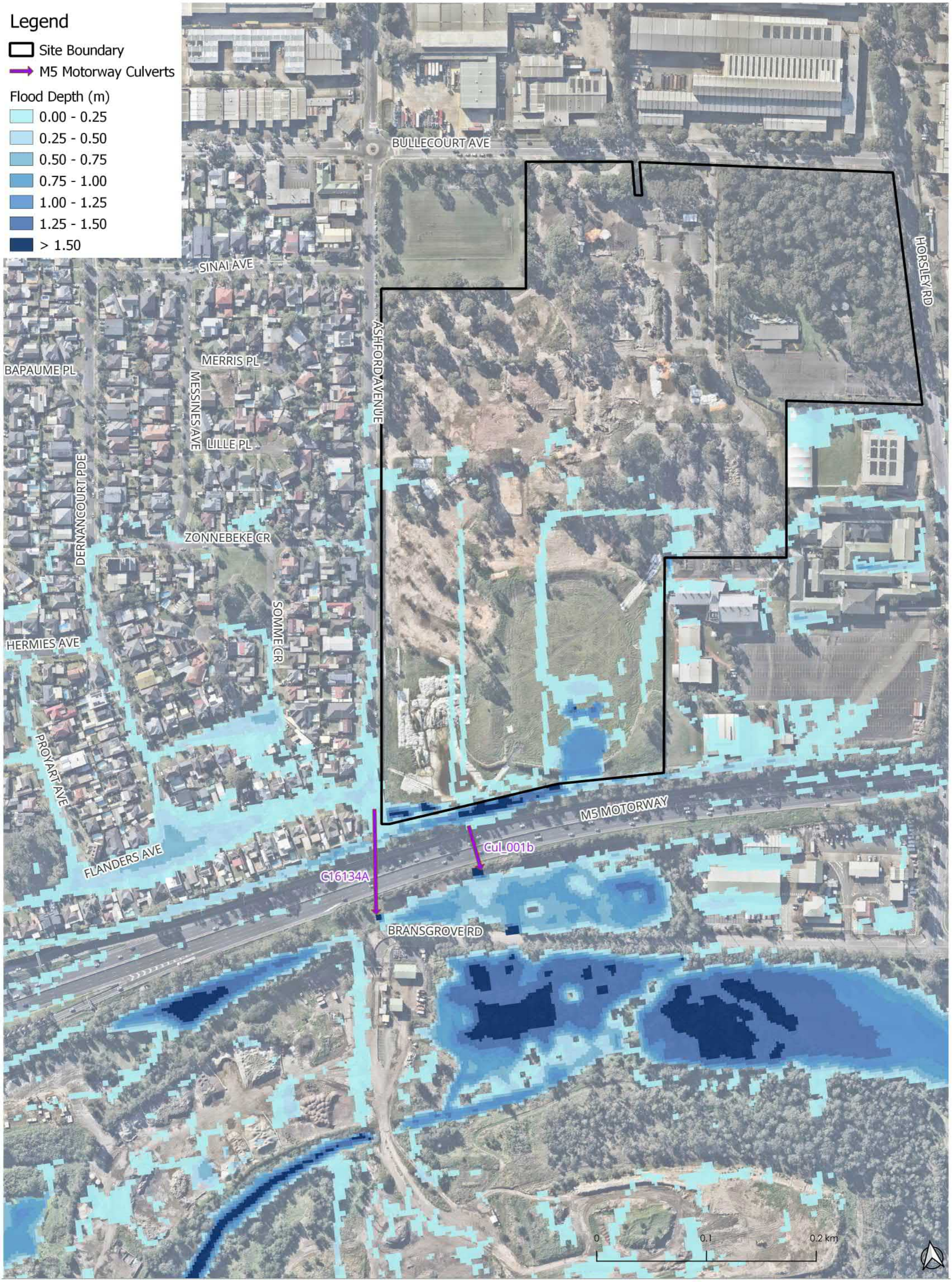
Client:

Mirvac Residential (NSW) Development Pty Ltd

Hazard Category
PMF
Base Case Existing
Figure B6

Project Coordination:	EPSG:7856
Drawn by:	YL
Checked by	FG
Issued:	Date: 2025-08-27

APPENDIX C: BASE CASE PROPOSED FLOOD MAPS



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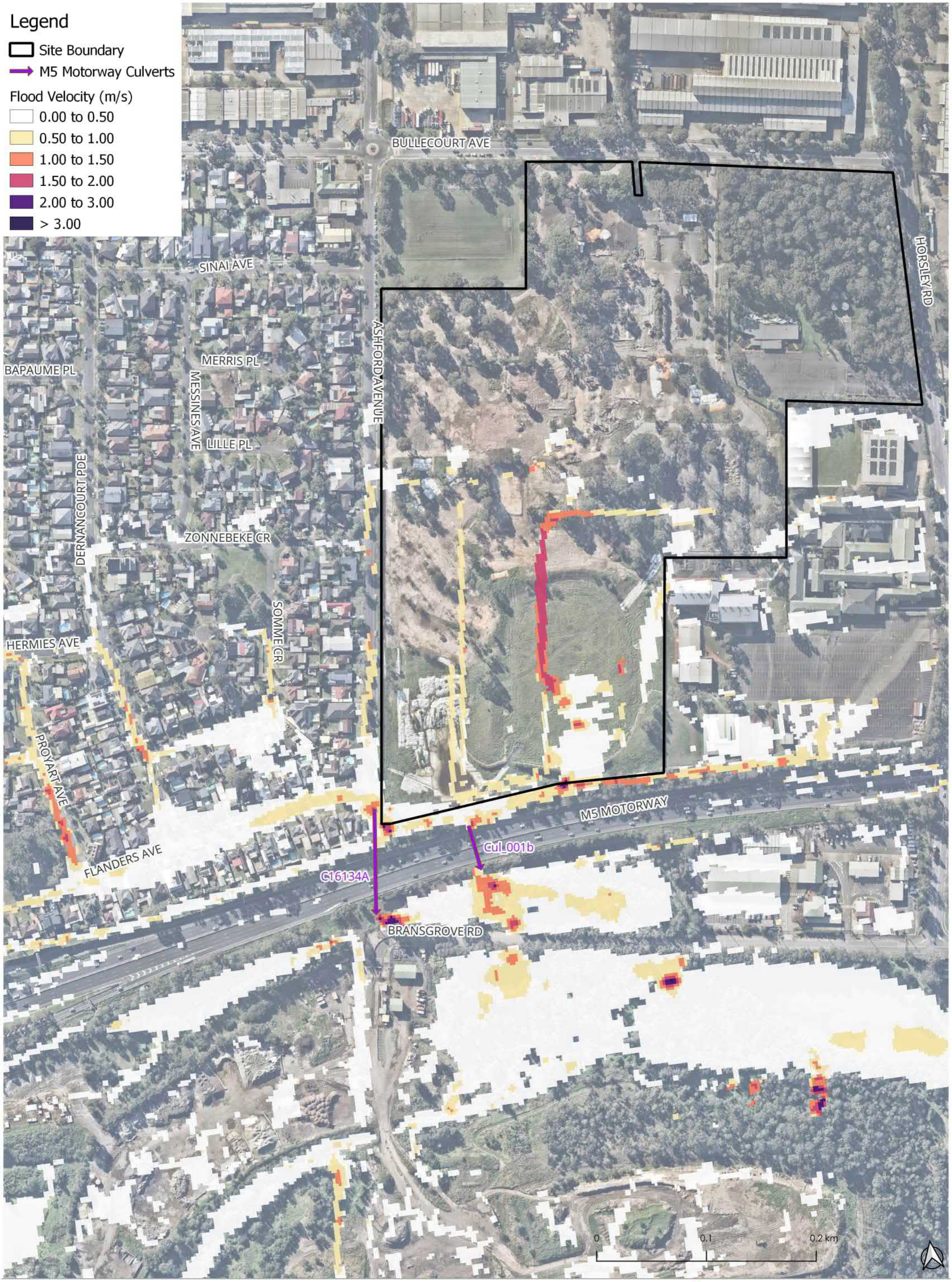
Tel: (02) 4625 5055

Client:

Mirvac Residential (NSW) Development Pty Ltd

Flood Depth
100 Year ARI
Base Case Proposed
Figure C1

Project Coordination:	EPSG:7856
Drawn by:	YL
Checked by	FG
Issued:	Date: 2025-08-27



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Client:

Mirvac Residential (NSW) Development Pty Ltd

Flood Velocity
100 Year ARI
Base Case Proposed
Figure C2

Project Coordination:	EPSG:7856
Drawn by:	YL
Checked by	FG
Issued:	Date: 2025-08-27

Legend

Site Boundary

M5 Motorway Culverts

Hazard Category

H1

H2

H3

H4

H5

H6

BULLECOURT AVE

SINAI AVE

MERRIS PL

BAPAUME PL

MESSINES AVE

LILLE PL

ASHFORD AVENUE

HORSLEY RD

DERNANCOURT PDE

ZONNEBEKE CR

SOMME CR

HERMIES AVE

PROYART AVE

FLANDERS AVE

M5 MOTORWAY

Cul_001b

C16134A

BRANSGROVE RD

0 0.1 0.2 km

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Client:

Mirvac Residential (NSW) Development Pty Ltd

Hazard Category
100 Year ARI
Base Case Proposed
Figure C3

Project Coordination: EPSG:7856
Drawn by: YL
Checked by FG
Issued: Date: 2025-08-27

Legend

- Site Boundary
- M5 Motorway Culverts

Water Level Difference (m)

- Was Wet Now Dry (No longer Flooded)
- <=-1.0
- -1.00 - -0.30
- -0.30 - -0.10
- -0.10 - -0.05
- -0.05 - 0.05
- 0.05 - 0.10
- 0.10 - 0.30
- 0.30 - 1.00
- >=1.0
- Was Dry Now We t(Newly Flooded)

BULLECOURT AVE
SINAI AVE
MERRIS PL
MESSINES AVE
LILLE PL
ASHFORD AVENUE
HORSLEY RD
DERNANCOURT PDE
ZONNEBEKE CR
SOMME CR
HERMIES AVE
PROYART AVE
FLANDERS AVE
M5 MOTORWAY
C16134A
Cul_001b
BRANSGROVE RD
0
0.1
0.2 km

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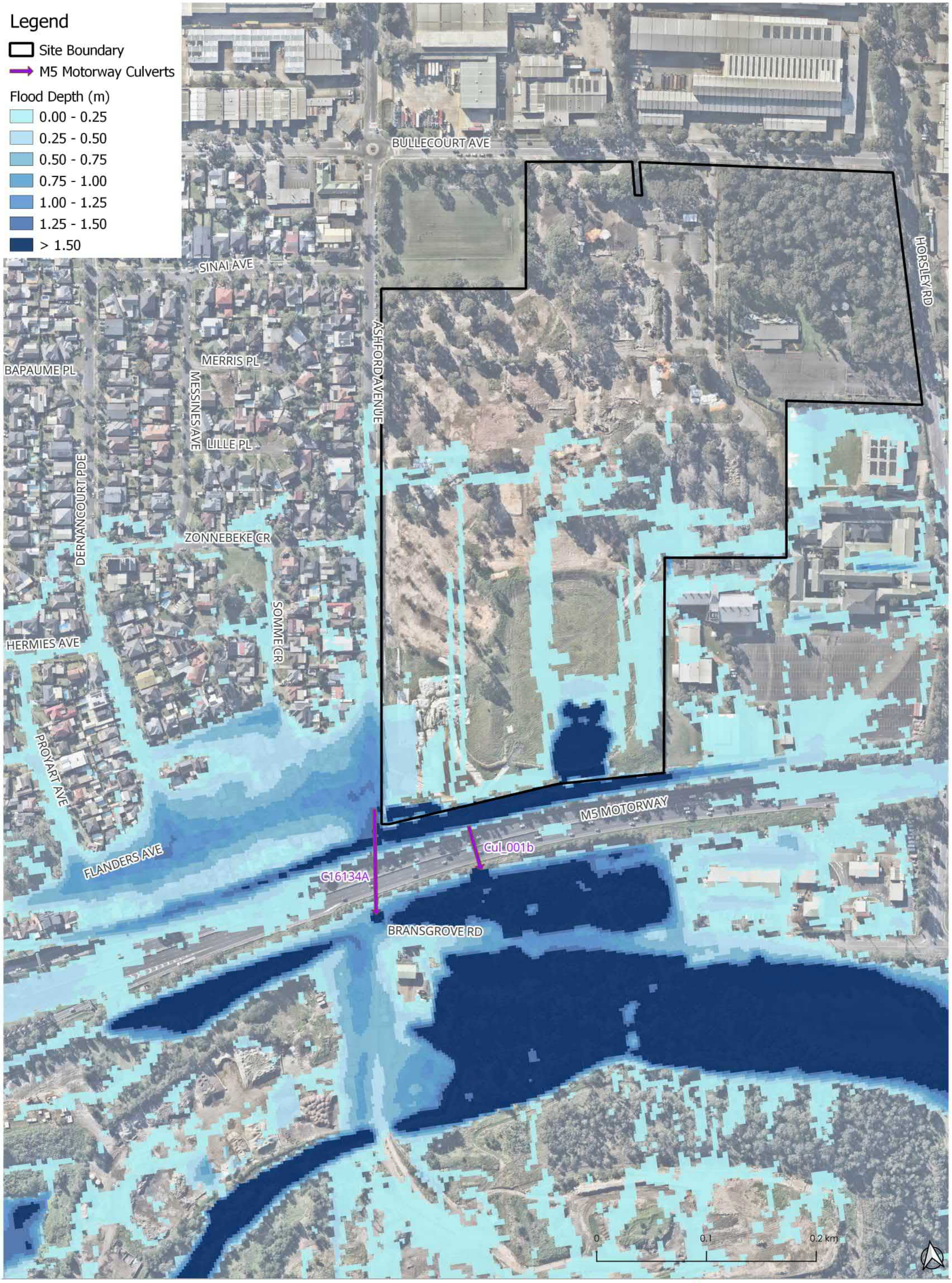
Client:

Mirvac Residential (NSW) Development Pty Ltd

Water Level Difference
100 Year ARI
Base Case Proposed Less Base Case Existing
Figure C4

Project Coordination: EPSG:7856
Drawn by: YL
Checked by FG
Issued: Date: 2025-08-27



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Client:

Mirvac Residential (NSW) Development Pty Ltd

Flood Depth
PMF
Base Case Proposed
Figure C5

Project Coordination:	EPSG:7856
Drawn by:	YL
Checked by	FG
Issued:	Date: 2025-08-27

Legend

- Site Boundary
- M5 Motorway Culverts

Flood Velocity (m/s)

- 0.00 to 0.50
- 0.50 to 1.00
- 1.00 to 1.50
- 1.50 to 2.00
- 2.00 to 3.00
- > 3.00

BULLECOURT AVE
SINAI AVE
MERRIS PL
BAPAUME PL
MESSINES AVE
LILLE PL
ASHFORD AVENUE
HORSLEY RD
DERNANCOURT PDE
ZONNEBEKE CR
SOMME CR
HERMIES AVE
PROYART AVE
FLANDERS AVE
M5 MOTORWAY
Cul_001b
C16134A
BRANSGROVE RD
0
0.1
0.2 km

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Client:
Mirvac Residential (NSW) Development Pty Ltd

Flood Velocity
PMF
Base Case Proposed
Figure C6

Project Coordination: EPSG:7856
Drawn by: YL
Checked by FG
Issued: Date: 2025-08-27

Legend

Site Boundary

M5 Motorway Culverts

Hazard Category

H1

H2

H3

H4

H5

H6

BULLECOURT AVE

HORSLEY RD

SINAI AVE

ASHFORD AVENUE

BAPAUME PL

MERRIS PL

MESSINES AVE

LILLE PL

DERNANCOURT PDE

ZONNEBEKE CR

SOMME CR

HERMIES AVE

PROYART AVE

FLANDERS AVE

M5 MOTORWAY

Cul_001b

C16134A

BRANSGROVE RD

0 0.1 0.2 km

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Client:

Mirvac Residential (NSW) Development Pty Ltd

Hazard Category
PMF
Base Case Proposed
Figure C7

Project Coordination: EPSG:7856
Drawn by: YL
Checked by FG
Issued: Date: 2025-08-27

Legend

- Site Boundary
- M5 Motorway Culverts

Water Level Difference (m)

- Was Wet Now Dry (No longer Flooded)
- <=-1.0
- -1.00 - -0.30
- -0.30 - -0.10
- -0.10 - -0.05
- -0.05 - 0.05
- 0.05 - 0.10
- 0.10 - 0.30
- 0.30 - 1.00
- >=1.0
- Was Dry Now Wet (Newly Flooded)

BULLECOURT AVE
SINAI AVE
MERRIS PL
MESSINES AVE
LILLE PL
ASHFORD AVENUE
HORSLEY RD
DERNANCOURT PDE
ZONNEBEKE CR
SOMME CR
HERMIES AVE
PROYART AVE
FLANDERS AVE
M5 MOTORWAY
C16134A
Cul_001b
BRANSGROVE RD
0
0.1
0.2 km

Beveridge Williams
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Tel: (02) 4625 5055

Client:
Mirvac Residential (NSW) Development Pty Ltd

Water Level Difference
PMF
Base Case Proposed Less Base Case Existing
Figure C8

Project Coordination:	EPSG:7856
Drawn by:	YL
Checked by	FG
Issued:	Date: 2025-08-27

APPENDIX D: SENSITIVITY TEST 100-YEAR WATER LEVEL DIFFERENCE

Legend

Site Boundary

M5 Motorway Culverts

BULLECOURT AVE

SINAI AVE

MERRIS PL

BAPAUME PL

MESSINES AVE

LILLE PL

ASHFORD AVENUE

HORSLEY RD

DERNANCOURT PDE

ZONNEBEKE CR

SOMME CR

HERMIES AVE

PROYART AVE

FLANDERS AVE

M5 MOTORWAY

Cul_001b

C16134A

BRANSGROVE RD

0 0.1 0.2 km

Beveridge Williams

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Client:

Mirvac Residential (NSW) Development Pty Ltd

Water Level Difference
100 Year ARI
Sensitivity Test Proposed Less Sensitivity Test Existing
Figure D1

Project Coordination: EPSG:7856
Drawn by: YL
Checked by FG
Issued: Date: 2025-08-27

APPENDIX E – Supporting Electrical Letter

29 August 2025

Our ref: 5894

Nibraas Ahmad
Mirvac

Mirvac WSU Milperra Subdivision

ASP L3 Design DCP Controls

Edgewater Connections has been engaged to carry out ASP L3 design for the proposed subdivision works at WSU Milperra. This letter outlines the impact of DCP items C1, C2, C6 C8 and C9 and their impact on the ASP L3 Design

C1. The provision of EV charging infrastructure within the public domain is encouraged where practicable.

C2. In the event the provision of EV charging infrastructure cannot be provided, adequate space and electricity connections for battery storage and electric vehicle charging services should be provided to futureproof for future implementation of EV charging stations. This provision must include utility infrastructure capable of at least 480 volts and 100 amps to facilitate future EV charging infrastructure.

The DCP requires provisions for EV Charging infrastructure throughout the subdivision, notably around the public opens pace, with some parks being allocated multiple charging provisions. The required provision for these chargers is a minimum of 480 volts at 100 amps or 48kVA. These loads will be the largest loads in the subdivision, being significantly larger than that of a standard domestic house, generally provisioned at 3.5kVA in accordance with Ausgrid standards.

It is best practice in electrical design to locate the substation as close possible to the load centre in order to reduce the require cable size and voltage drop. In this case the largest load centre would be the EV chargers, having a provision an order of magnitude larger than a residential house. Locating the substations adjacent the chargers would allow for the most efficient design downstream of the substation.

Additionally, the largest supply you can get off a standard Ausgrid pillar is 400V at 200A (80kVA) which would allow for a maximum of one charger with minimal capacity for future increase of the charger size. The installation of more than one charger would require either a direct distributor or a dedicated substation to support the charger. As the subdivision works are for provision for EV charging only, having the substation as close as possible to the future location leaves the most flexibility for future install and increases in EV charging capacity.

C6. Each dwelling must install (or be designed to facilitate the installation of) a solar PV array, inverter and battery system sufficiently large to provide enough renewable energy to balance its predicted energy use over a year.

C9. All new residential developments must be designed to accommodate future capability to be completely offset by renewable energy i.e. reach net zero carbon emissions.

These aspects of the DCP will be addressed in the individual house designs with the MSB design at each property being designed to accommodate the connection of solar and battery systems, along with the special provisions required in each premises. The ASP L3 design for the Ausgrid distribution network is not directly impacted by these requirements.

P 02 8814 1299
E info@edgewaterconnections.com.au
PO Box 8114, Norwest NSW 2153

C8. All public domain lighting should be powered by a PV and battery system.

In a standard subdivision the lighting is owned and maintained by the DNSP (Ausgrid) on behalf of council. Ausgrid have an approved material list form which this lighting equipment must be selected. Standard Ausgrid light fixtures are supplied by mains power form the nearest pillar.

If council require installation of solar powered lighting under the DCP then council will need to take ownership of the lighting columns including the ongoing maintenance and repairs.

If you require further information on the electrical works, please contact the undersigned.

Full Name of Designer:	Nathan Patrick Albertini
Qualifications:	BEng(Hons), MIEAust, NER, ASP L3 2508/9
Address of Certifier:	Unit 35, 5 – 7 Inglewood Place Norwest NSW 2153
Business Telephone No.:	02 8814 1299
Name of Employer:	Green Futures Pty Ltd T/A Edgewater Connections

Signature:

Nathan Albertini