Goulburn Valley Water-Seymour Solar Farm

Traffic Impact Assessment

Goulburn Valley Water

26 March 2024

→ The Power of Commitment

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1. Introduction

GHD Pty Ltd (GHD) has been engaged by Goulburn Valley Water (GVW) to undertake a traffic impact assessment of a proposed solar farm to be located on Tarcombe Road in Seymour.

In the course of preparing this assessment, the subject site and its environs have been reviewed using latest aerial imagery and plans of the development have been examined.

1.1 Purpose of this report

The purpose of this report is to provide an assessment of the impacts of traffic generated by the proposed solar farm development. It is intended that this report accompany a town planning submission by GVW to the Mitchell Shire Council.

1.2 Scope and limitations

This report: has been prepared by GHD for Goulburn Valley Water and may only be used and relied on by Goulburn Valley Water for the purpose agreed between GHD and Goulburn Valley Water as set out in this report.

GHD otherwise disclaims responsibility to any person other than Goulburn Valley Water arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

Accessibility of documents

If this report is required to be accessible in any other format, this can be provided by GHD upon request and at an additional cost if necessary.

2. Existing Conditions

2.1 Subject Site

The subject site is located within the existing Seymour Wastewater Management Facility (WMF) site along Tarcombe Road, Seymour approximately 4 km to north-east of the Seymour township area as shown in Figure 1.

The site is bounded by Back Mountain Road to the north, Dead Horse Lane to the west and Tarcombe Road to the south.

An aerial imagery of the subject site is presented in Figure 2.

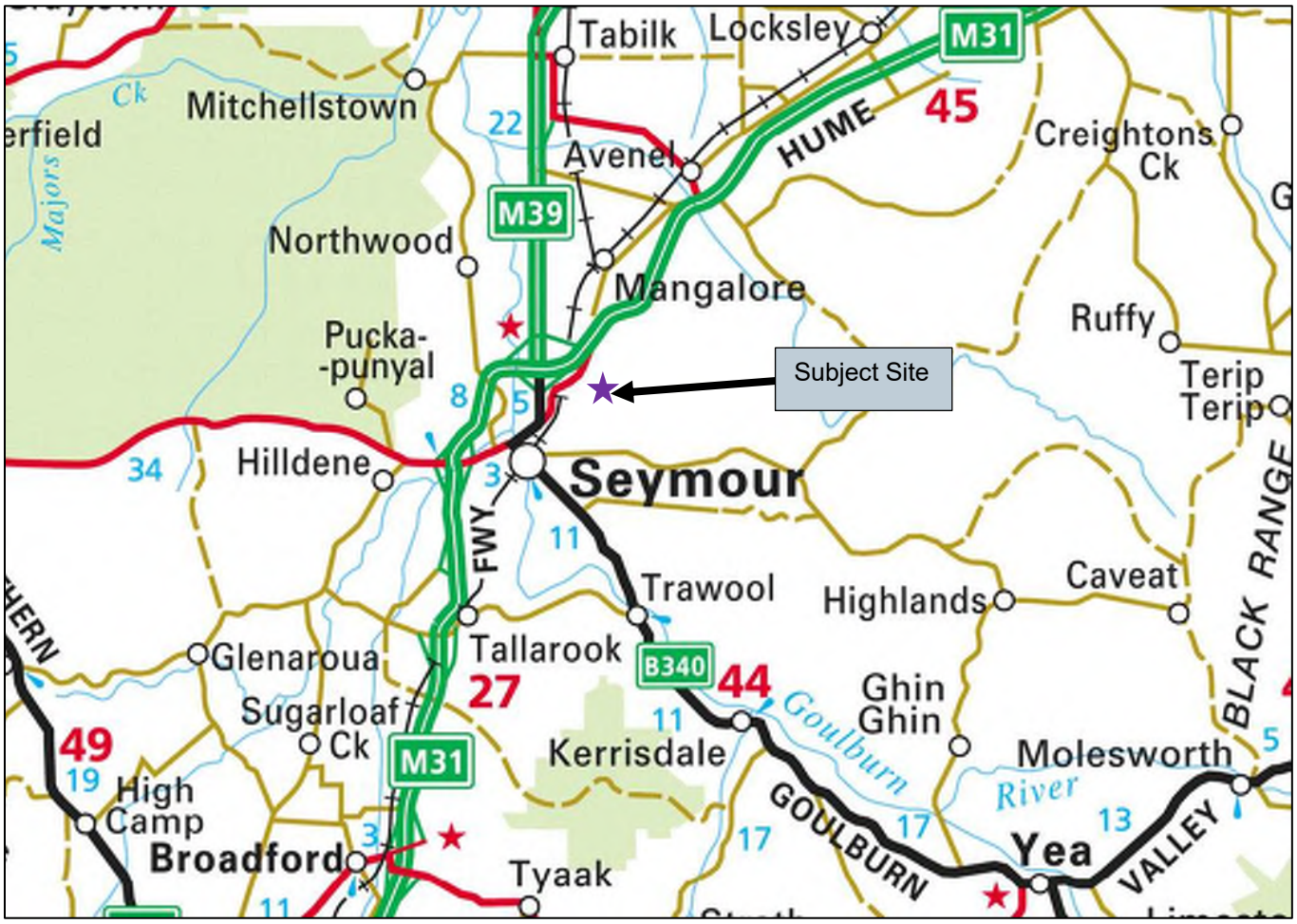


Figure 1 *Subject site location*

Image source: Melways Online (Date extracted: 05/12/2023)

Figure 2 *Subject site aerial image*

Image source: Nearmap – Imagery (Date captured: 24/12/2022, Date extracted: 05/12/2023)

2.2 Planning Zones

Figure 3 shows that that the site is currently located within a Public Use Zone (PUZ1). Additionally, the surrounding land uses of the subject site are mainly Farming Zone (FZ). The purpose of this zoning is to enable land use for agriculture and to encourage the retention of productive agricultural land.

Figure 3 *Planning scheme zones*

Image source: VicPlan (Date extracted: 05/12/2023)

2.3 Road Network

2.3.1 Back Mountain Road

Back Mountain Road is Local Road (managed by Mitchell Shire Council) and is aligned in east-west direction (located north of the subject site).

It is a dirt road, with a localised sealed section at the intersection with Avenel Road. The carriageway has a width of approximately 5.5m catering generally for traffic in one direction with vehicle slowing down to let vehicles passing in the opposite direction as shown in Figure 4. The carriageway narrows to around 4m to the east of the Dead Horse Lane intersection.

Abutting the subject site Back Mountain Road has a posted default speed limit of 50 km/hr.

Footpaths are not available adjacent to Back Mountain Road.

Online traffic data was not available for Back Mountain Road. The road provides local access to residents of up to 9 properties. As such, Back Mountain Road expected to carry around 7-8 movements in the peak hour and would likely to generate no more than 70-80 movements per day as a highly conservative estimate.

Figure 4 **Back Mountain Road facing east adjacent to subject site**

Image source: Google Street View (Date extracted: 05/12/2023)

2.3.2 Dead Horse Lane

Dead Horse Lane is a local road oriented generally north-south in the vicinity of the subject site providing connection between Back Mountain Road to the north and Tarcombe Road to the south.

The carriageway is approximately 4m wide with a dirt and gravel surface, operating generally as a single lane road as shown in Figure .

In the vicinity of the subject site, Dead Horse Lane has a default speed limit of 50 km/hr.

Footpaths are not available adjacent to Dead Horse Lane.

Publicly available traffic count data is not available for Dead Horse Lane. However, it provides local access to residents for only 1 property. Considering the local road nature and only a single property, traffic volumes are expected to be very low with no more than 10 traffic movements daily in both directions as a highly conservative assessment.

Figure 5 ***Dead Horse Lane facing north adjacent to subject site***

Image source: Google Street View (Date extracted: 05/12/2023)

2.3.3 Tarcombe Road

Tarcombe Road is a Local Road and is aligned in an east-west direction to the south of the subject site. The Road terminates before the entrance of the Seymour Wastewater Management Facility. In the vicinity of the subject site, Tarcombe Road is a dirt road with an approximately 5.5m wide carriageway as shown in Figure 6.

Adjacent to the subject site, Tarcombe Road has a posted speed limit of 50 km/hr.

Footpaths are not available adjacent to Tarcombe Road.

Publicly available traffic count data is not available for Tarcombe Road. It provides access to provides local access to residents of up to 5 properties and the Seymour waste management facility. As such it is estimated to generate 4-5 peak hour movements per hour, and would likely carry no more than 40-50 movements per day as a highly conservative assessment.

Figure 6 *Tarcombe Road facing east adjacent to subject site*

Image source: Google Street View (Date extracted: 05/12/2023)

2.4 Public Transport

The provision of public transport surrounding the subject site is shown in Figure 7 below. The nearest bus stop located on Tarcombe Road, approximately 1.4 km south-west of the subject site.

Details of the bus facilities in proximity to the site are illustrated in Table 1.

Figure 7 Public transport map adjacent to subject site

Image source: PTV Website (Date extracted: 06/12/2023)

Table 1 Public Transport Summary

Service	Route	Frequency	Nearest Stop	Distance from subject site
Bus	2 – Seymour North	1 service per hour	Delatite Rd/ Tarcombe Rd	1.4 km
	5 – Seymour North East (PM peak only)	2 services per hour and operates only during 6pm to 8pm		

2.5 Crash Analysis

Crash data obtained from Department of Transport and Planning's Data VIC website for the most recent 5-year period (2019-2023) for the roads surrounding the subject site. No crashes were recorded surrounding the subject site within the data collection period.

3. Proposed Development

3.1 General

It is proposed to develop a solar Photovoltaic (PV) generating system on GVW owned land located adjacent to Wastewater Management Facility (WMF) at Seymour with a project area of 217,316 m². The intent of the solar PV system is to provide GVW with maximum energy yield so that GVW can offset its carbon footprint and generate revenue by selling electricity to the market.

The project will include a solar photovoltaic (PV) generation plant, high voltage (HV) infrastructure integration and reticulation systems comprising of the following:

- Fixed tilt or Single Axis Tracking (SAT) PV arrays located within GVW land
- Power stations comprising of inverters, transformers, ring main units, controls, communication systems, AC/DC reticulation and other balance of plant
- Control and switching room
- Associated civil and structural works at the Solar Farm
- Integration into the DNSP electrical network including HV cabling, conduits, pits (a substantial portion of this being in GVW land)

The proposed Solar Farm is expected to have a capacity of less than 5 MW AC, the final DC size will be depending on the equipment and configuration selected by the contractor.

The proposed development plan is shown in Figure 8 and included in Appendix A.

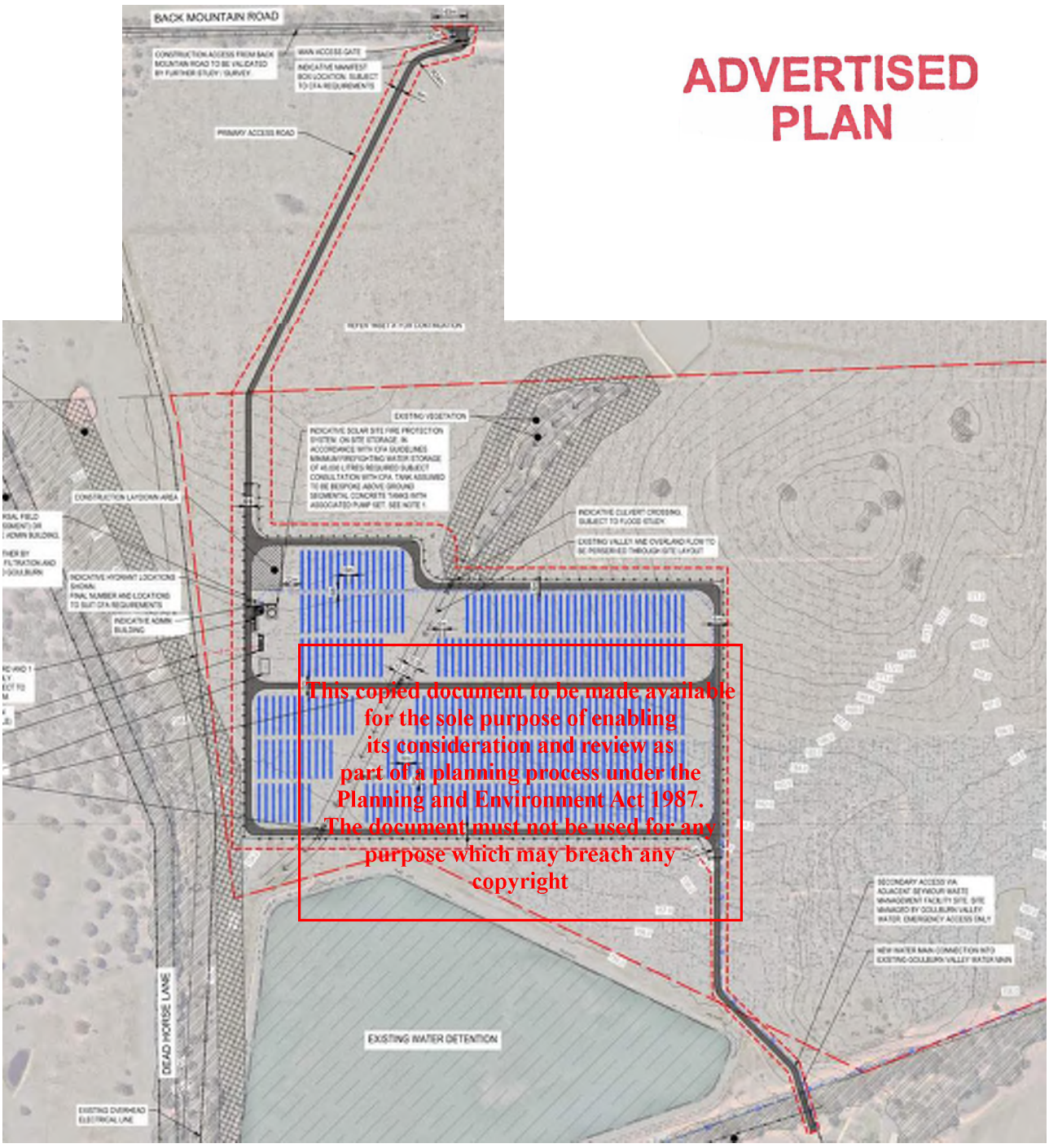


Figure 8 *Proposed site layout*

Source: GHD, Drawing number: 12579414-GHD-00-00-DRG-CI-00200, Rev: P02, Date: 19/10/23

3.2 Site access

The main site access is proposed to be located on Back Mountain Road. In addition, a secondary site access point is proposed from Tarcombe Road via the existing Seymour waste management facility access to satisfy CFA requirements.

3.3 Parking

As part of the proposal, it is proposed to provide total of six (6) on-site car parking spaces including one (1) accessible parking space. The car parking spaces will be located adjacent to the administration building.

4. Traffic Considerations

4.1 Traffic generation

4.1.1 Construction period

The level of expected construction traffic data is not available at this stage. Therefore, a previous traffic impact assessment (TIA) completed by GHD for a solar farm has been referenced to estimate the expected traffic generation for the subject site. The TIA was completed for a 50-60MW solar farm project in Glenrowan West. It was estimated that the site would generate in the order of 330 vehicle movements per day during the peak of the construction period comprising:

– 300 light vehicle movements (two-way)
– 30 heavy vehicle movements (two-way)

The subject site for this project is approximately 10% the size of the Glenrowan solar farm site. As such, it is estimated that construction traffic would be around 10% of the traffic that Glenrowan solar farm site was estimated to generate, which equates to in the order of 34 vehicle movements per day during the peak of the construction period including:

– 30 light vehicle movements per day (two-way)
– 4 heavy vehicle movements (two-way)

4.1.2 Operation period

It is expected that traffic movements will be minimal during operation period. This is limited to staff and routine and emergency maintenance only and expected to be in the order of approximately 5 vehicles per week. These movements are not considered to have any impact on the surrounding road network and as such are not considered for analysis.

4.2 Traffic distribution

It is expected that all of the estimated construction traffic would use the main access to the site from Back Mountain Road. The alternate access via Tarcombe Road is not planned to be used for construction vehicle movements.

4.3 Traffic impact

It is anticipated that proposed development construction activity will generate in the order of 34 vehicle movements per day and is expected to distribute across Back Mountain Road.

These numbers are considered a maximum (or “worst-case”) scenario, and on some days, traffic volumes will be considerably lower, typically when deliveries are not expected, and the full complement of construction workers are not required on-site.

Overall, this level of traffic is considered to be on the low side and can be adequately accommodated within the surrounding road network capacity without causing detrimental impact to the existing traffic network.

5. Design consideration

5.1 Site access

It is proposed to provide two access locations for the subject site. The main access will be located on Black Mountain Road and an alternate access would be from Tarcombe Road via the existing Seymour waste management facility access.

A swept path assessment of a 26 m B-double truck's movements demonstrates that the proposed access design and internal roads can accommodate the truck movements conformably. The swept path assessment is included in Appendix B.

The proposed internal access roads are 6m wide which exceeds the minimum 5.5m roadway width requirement as per AS2890.1 to accommodate two-way movements.

The sight lines for the proposed access at Back Mountain Road might be restricted due to roadside trees and vegetation. It is noted however that the traffic volumes on this road are likely to be very low and can be managed appropriately. As per the table 3.2 of Austroads Guide to Road Design (AGRD) part 4A, for 50 km/hr speed and considering a 2 sec reaction time, the minimum Safe Intersection Sight Distance requirement is 97 metres. Some vegetation trimming may be required adjacent to proposed access to ensure that adequate sight lines are available at the access point.

Alternatively, warning signs such as W2-10 (L) or W2-10 (L) (as shown in Figure 9) could be provided (as deemed appropriate) at an appropriate location which would alert the drivers approaching the access. Clause 2.9.2.1 of the AS 1742.2 (2009) sates that: "*Warning signs in this series may be provided in advance of an intersection where there is insufficient sight distance along the main road to a vehicle about to enter from the side road.*"

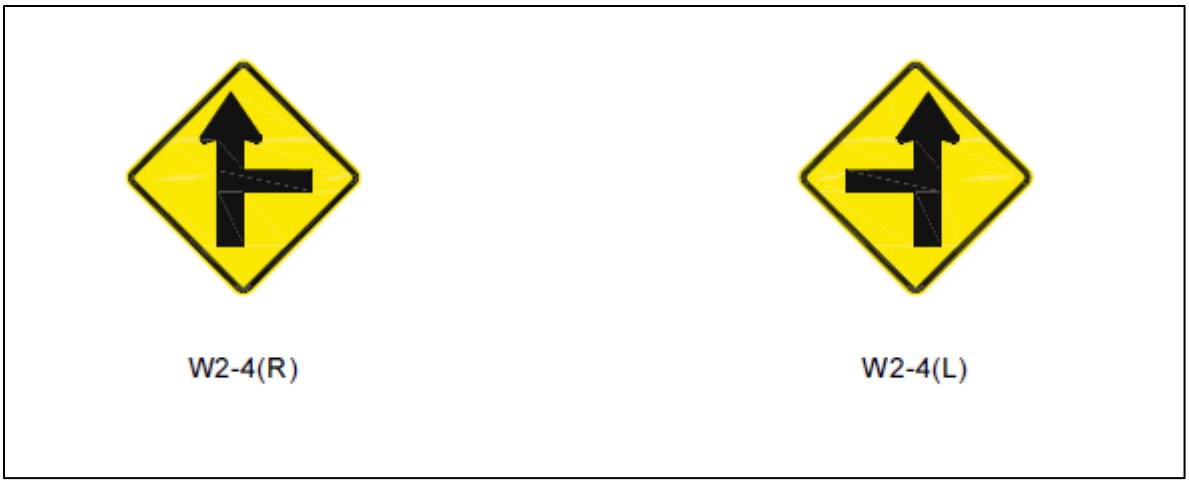


Figure 9 *Side road intersection warning sign as per AS 1742.2-2009 clause 2.9.2.2*

In addition to above, it is noted that Back Mountain Road is not an approved Oversize/Over mass network (OSOM) route (as showed in Figure 13). Back Mountain Road is anticipated to be used by construction trucks to access the subject site. Therefore, it is recommended to conduct swept path analysis for a 26 m B-double truck's turning movement at the Back Mountain Road and Avenel Road intersection to ensure that the truck can make the turning manoeuvre satisfactorily.

Furthermore, the height clearance and pavement stability of the Back Mountain Road will require further assessment to confirm that the road can carry large truck movements for the construction of the proposed development.

5.2 On-site parking

A total of six (6) on-site car parking spaces including one (1) accessible parking space are proposed to be provided. Given low traffic movements of approximately 5 vehicles per week during operation time, six on-site parking spaces is considered satisfactory. Additionally, it is noted that the site will have available open spaces which can be used to accommodate additional on-site parking demand if required.

The Mitchell Shire Council Planning Scheme Clause 52.06-9 Table 2 provides design requirements for accessway width, parking space width and length as shown in Figure 10.

Table 2: Minimum dimensions of car parking spaces and accessways

Angle of car parking spaces to access way	Accessway width	Car space width	Car space length
Parallel	3.6 m	2.3 m	6.7 m
45°	3.5 m	2.6 m	4.9 m
60°	4.9 m	2.6 m	4.9 m
90°	6.4 m	2.6 m	4.9 m
	5.8 m	2.8 m	4.9 m
	5.2 m	3.0 m	4.9 m
	4.8 m	3.2 m	4.9 m

Figure 10 Mitchell planning scheme clause 52.06-9 requirement for car parking space design

The design for the proposed car parking spaces has not been finalised yet. It is recommended that the design of the car parking spaces and accessway width as illustrated in Figure 10 will need to meet Mitchell Planning Scheme Clause 52.06-9 criteria and it is considered that sufficient area is available adjacent to the proposed administration building to accommodate compliant car park design and accessways.

6. Major Truck Access Routes

Two access routes have been identified for heavy vehicles as described below, which are aligned with Victoria's approved OSOM:

– Route to and from north (e.g., Shepparton, Benalla): Subject site – Back Mountain Road – Avenel Road – Goulburn Valley Highway - Goulburn Valley Freeway / Hume Freeway (as shown in Figure 11)

– Route to and from south (e.g., Melbourne): Subject site – Back Mountain Road – Avenel Road – Goulburn Valley Highway – Emily Street – Hume Freeway (as shown in Figure 12)

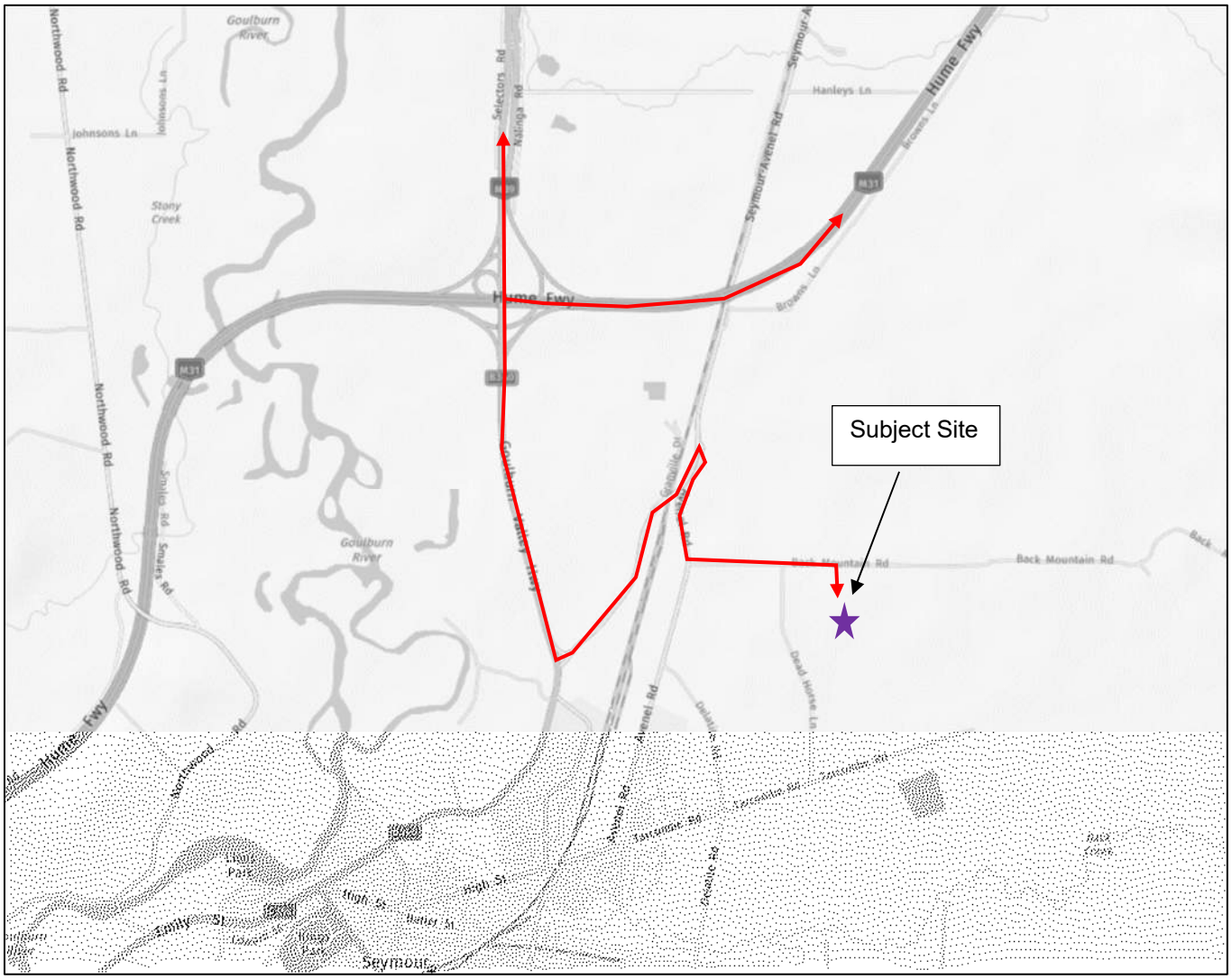


Figure 11 *Truck access routes route to and from north*

Image source: Nearmap – Imagery (Date extracted: 07/12/2023)

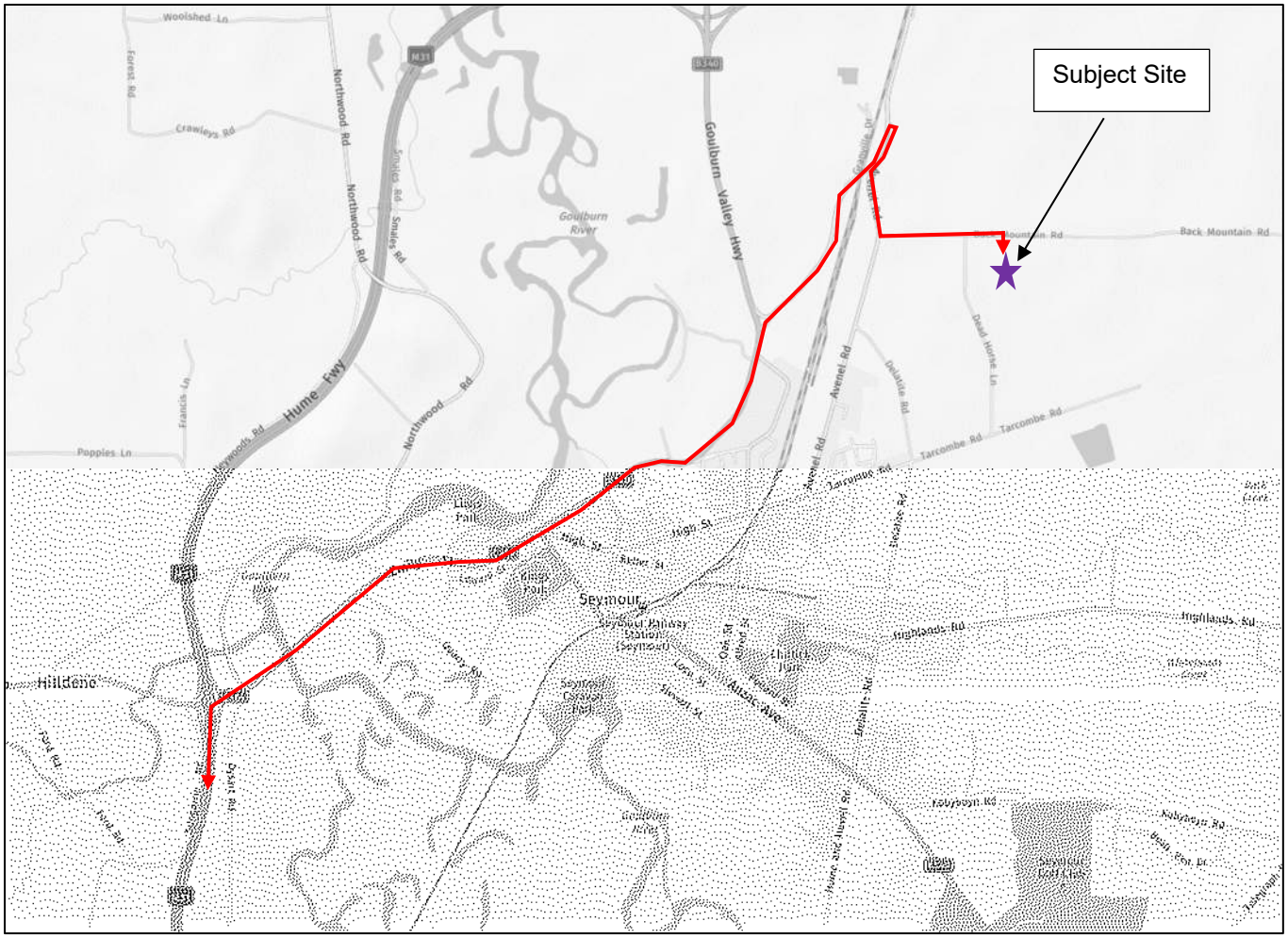


Figure 12 *Truck access routes route to and from south*

Image source: Nearmap – Imagery (Date extracted: 07/12/2023)

The approved OSOM network surrounding the subject site is shown in Figure 13.

If an over-dimensioned load needs to be carried to the project site, it will require a permit from the National Heavy Vehicle Registration (NHVR) to travel through the Victoria region. The haulage contractor will ultimately be responsible for obtaining and complying with the permit for each over-dimensioned load to be transported to the project area.

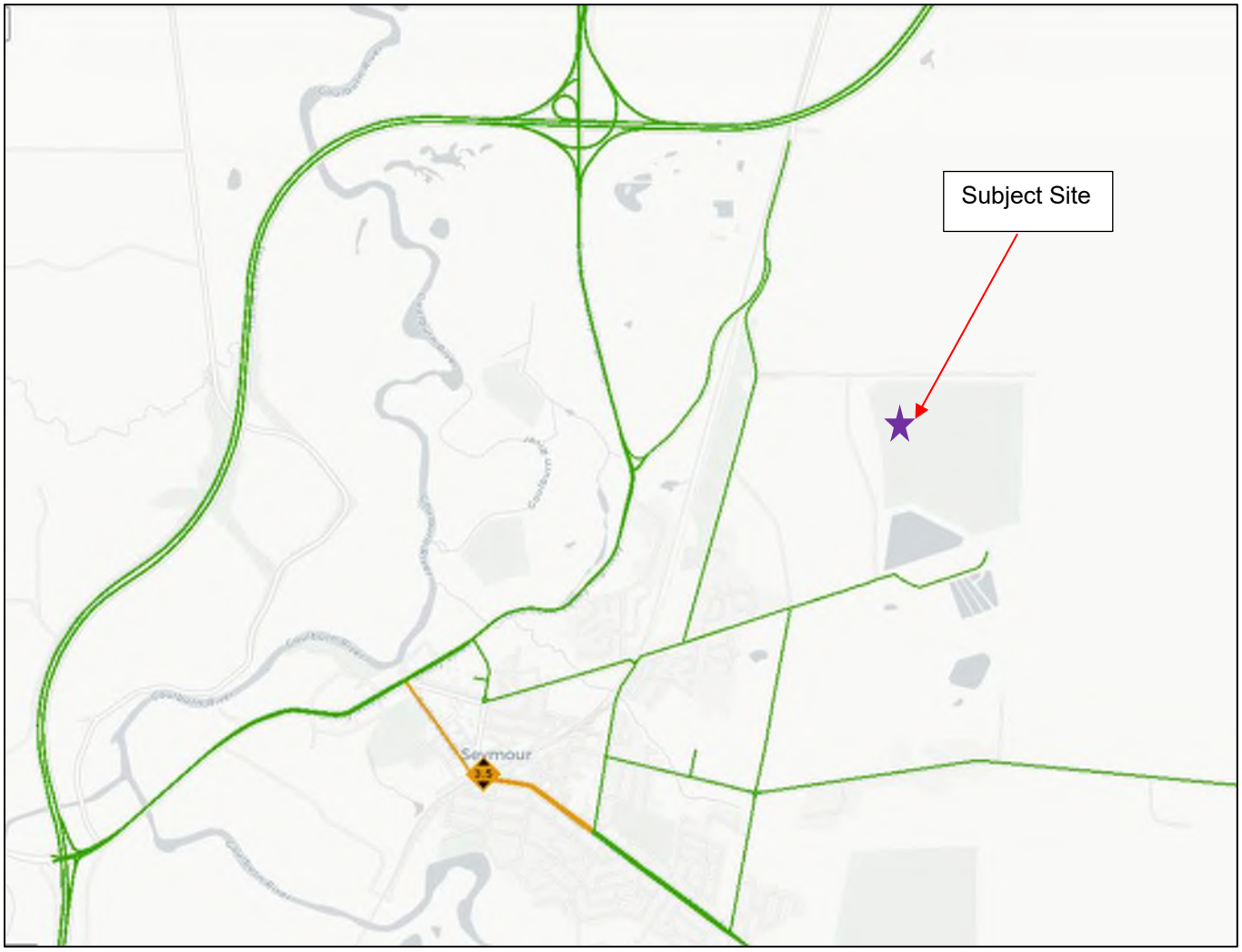


Figure 13 *OSOM map surrounding subject site*

source: NHVR website (Date extracted: 06/12/2023)

7. Conclusions

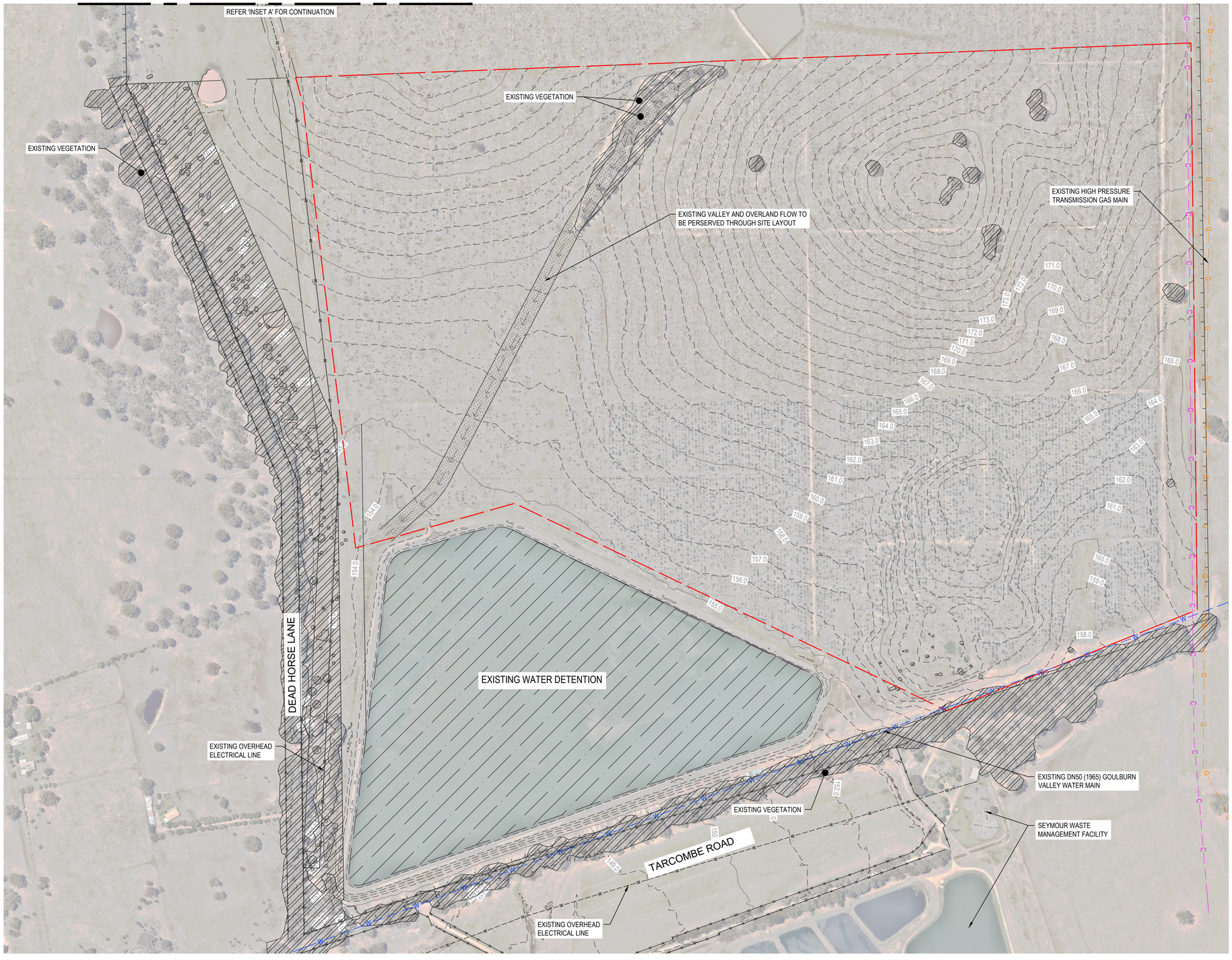
Based on the foregoing analysis, it is concluded that:

- Access to the development will be provided from Back Mountain Road. An alternative access will be provided from Tarcombe Road via the existing Seymour Waste Management Facility.
- The proposed development construction is expected to generate up to 34 daily traffic movements during peak construction periods. The generated traffic is anticipated to be distributed across the proposed main access point in order of 34 daily traffic movements along Back Mountain Road.
- Access crossovers and internal access roads are designed to accommodate a 26 m B-double truck's swept path.
- Some vegetation adjacent to the proposed access on Back Mountain Road may be required to be trimmed to ensure that adequate sight lines are available for the motorists exiting the site. In addition, warning signs could be provided to alert the motorist approaching the site access.
- It is recommended that a swept path analysis be undertaken for 26 m B-double trucks' turning movements at the Back Mountain Road and Avenel Road intersection. A further height clearance and pavement stability of the Back Mountain Road is also required to be assessed to ensure that the road can carry large truck movements during the proposed development construction.
- It is recommended that the proposed car parking spaces and accessway widths be designed to meet Mitchell Planning Scheme Clause 52.06-9 criteria as described in section 5.2.
- The projected traffic increase during construction period is considered to have low impact and can be adequately accommodated within the surrounding road network without causing detrimental impact.

Appendices

Appendix A

Development Plan



PLAN
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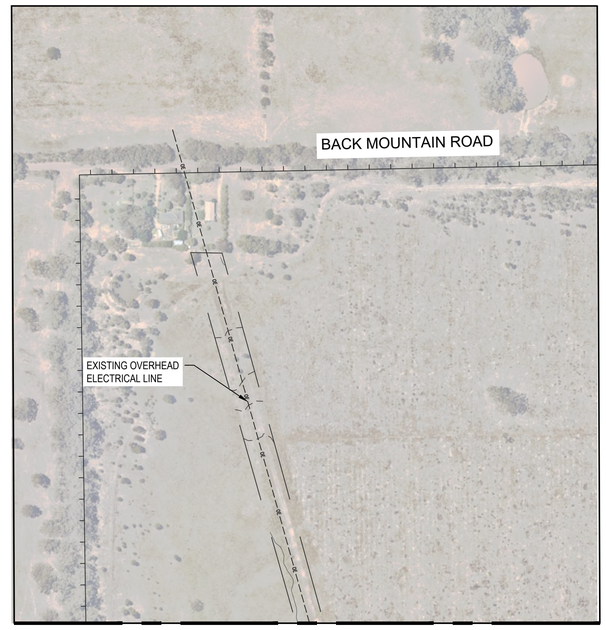
ADVERTISED PLAN

LEGEND

- SITE BOUNDARY (AREA = 694,524.400 m²)
- EXISTING POND
- EXISTING VEGETATION
- EXISTING VALLEY (EXPECTED OVERLAND FLOW ROUTE)
- EXISTING STREAM FLOW
- EXISTING FENCE
- 153.0 EXISTING MAJOR CONTOURS
- 153.2 EXISTING MINOR CONTOURS
- C EXISTING TELCO LINE
- G EXISTING GAS LINE
- W EXISTING WATER MAIN
- EXISTING GATE

NOTES:

1. SITE AREA UNDERSTOOD TO BE RECENTLY CLEARED FOREST LAND USED FOR POST-TREATMENT WASTEWATER DISPERSION.



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P02	CONCEPT DESIGN	M.G.	A.V.	19.10.23
P01	DRAFT CONCEPT DESIGN	M.G.	A.V.	10.10.23

Author M. PAÑA **Drafting Check** D. KOKOTOVIC
Designer M. JARING **Design Check** M. GOODE

0 25 50 75 100 125m
SCALE 1:2500 AT ORIGINAL SIZE

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Project No. 12579414

Client GOULBURN VALLEY WATER
Project GVW SOLAR FARM
Status IN DEVELOPMENT

Drawing Title SEYMOUR
EXISTING CONDITIONS PLAN

Drawing No. 12579414-GHD-00-00-DRG-CI-00020
Size A1
Rev P02

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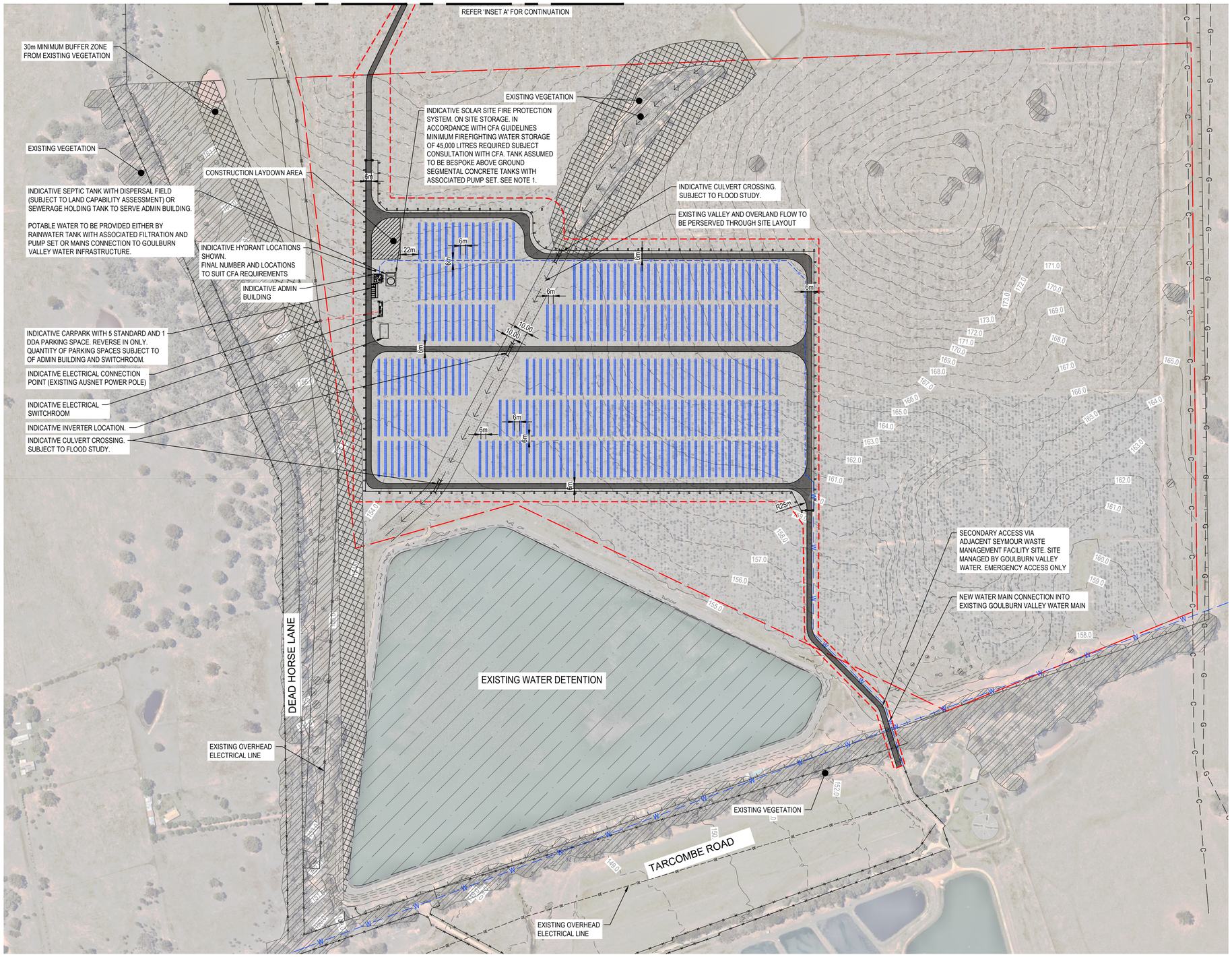


PLAN
SCALE 1:2500

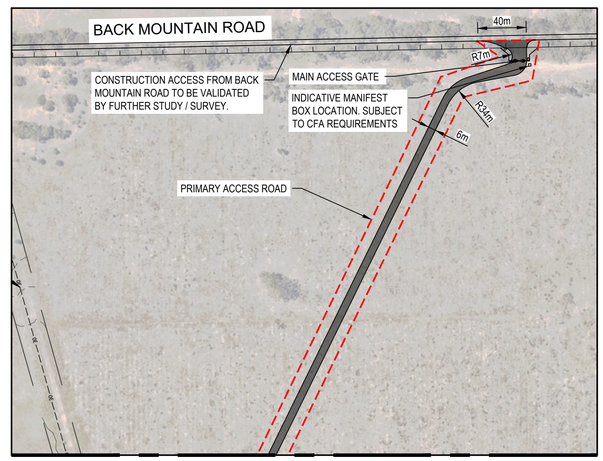
LEGEND

- SITE BOUNDARY (AREA = 694,524.400 m²)
- EXTENT OF WORKS / PROJECT AREA (AREA = 217,316 m²)
- 20m VEGETATION BUFFER ZONE
- EXISTING POND
- EXISTING VEGETATION
- EXISTING VALLEY (EXPECTED OVERLAND FLOW ROUTE)
- EXISTING STREAM FLOW
- EXISTING FENCE
- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- EXISTING TELCO LINE
- EXISTING GAS LINE
- EXISTING GATE
- PROPOSED GATE
- PROPOSED FENCE
- INDICATIVE SOLAR PANEL
- INDICATIVE INVERTER
- PROPOSED HYDRANT
- PROPOSED UNSEALED ROADS
- PROPOSED ELECTRICAL LINES
- PROPOSED WATER MAIN

ADVERTISED PLAN

NOTES:

1. REFERENCE CFA GUIDELINES "DESIGN GUIDELINES AND MODEL REQUIREMENTS - RENEWABLE ENERGY FACILITIES V4.
2. CONTRACTOR TO INCLUDE CULVERTS FOR 10% AEP FOR OPEN DRAIN CROSSINGS.



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0 25 50 75 100 125m
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Project No. 12579414

Client GOULBURN VALLEY WATER
Project GVW SOLAR FARM
Status CONCEPT

Drawing Title SEYMOUR SITE LAYOUT PLAN
Drawing No. 12579414-GHD-00-00-DRG-CI-00200
Size A1
Rev P03

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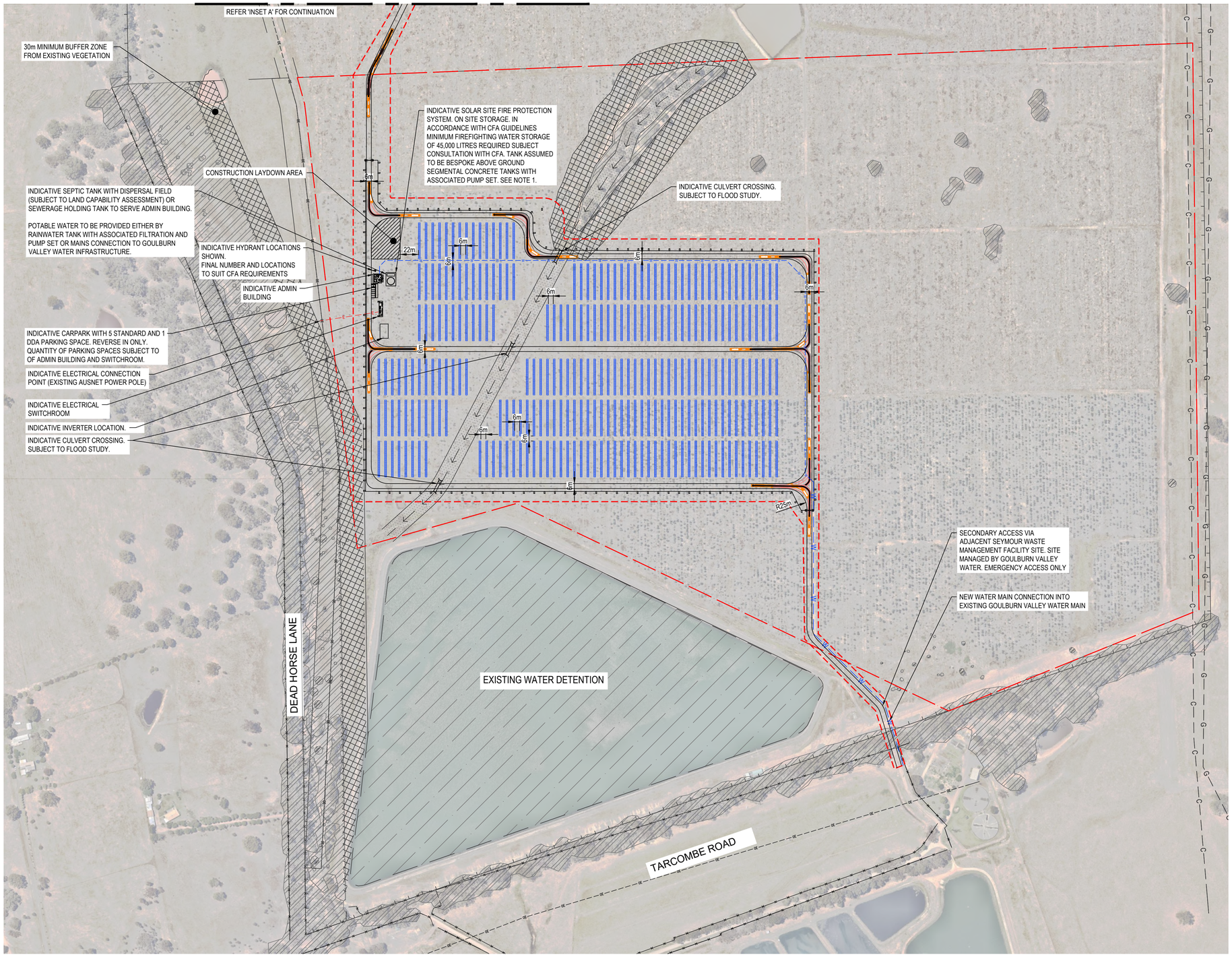
Appendix B

Swept Path Assessment



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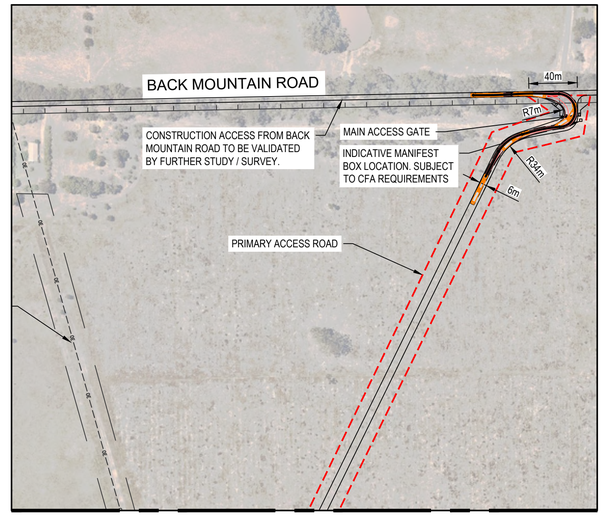

INSET A
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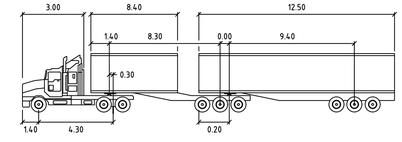
ADVERTISED PLAN



B-DOUBLE 26M

meters

Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 22.2
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

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WARNING

SERVICES SHOWN ON THIS DRAWING ARE APPROXIMATE ONLY. THE EXACT LOCATION IS TO BE CONFIRMED ON SITE BY CONTRACTOR PRIOR TO COMMENCEMENT OF WORKS.

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P02	REVISED CONCEPT DESIGN	A.V.	M.G.	19.01.24
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SCALE 1:2500 AT ORIGINAL SIZE

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Project No. 12579414

Client GOULBURN VALLEY WATER
Project GVW SOLAR FARM
Status CONCEPT

Drawing Title SEYMOUR SWEPT PATH PLAN

Size A1

Drawing No. 12579414-GHD-00-00-DRG-CI-00400

Rev P02

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