Appendix K
Traffic Impact Assessment

Cimitiere Plains Solar Farm

ENVIRONMENTAL CONSULTANCY

Amber

Traffic & Transportation Direction

Cimitiere Plains Solar Farm

Traffic Impact Assessment

May 2023

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Traffic Impact Assessment

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1. Background

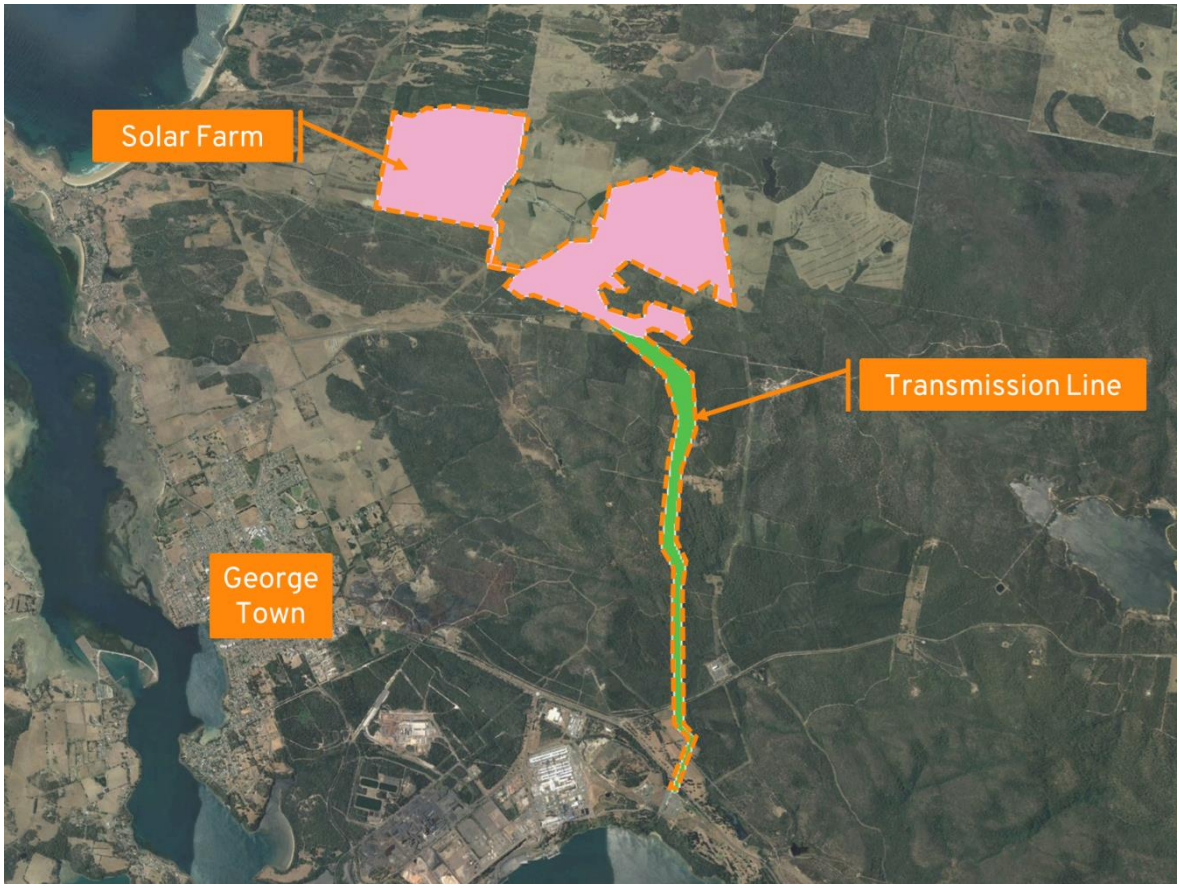
1.1 Background

Amber Organisation Pty Ltd has been engaged by Envoca on behalf of Sunspot 9 Pty Ltd to conduct a review of the traffic implications of the Cimitiere Plains Solar Farm and prepare a Traffic Impact Assessment.

The solar farm is located approximately 4.0km northeast of George Town and is proposed to have a capacity of 288MW. Access to the solar farm is proposed via Soldier Settlement Road and Musk Vale Road in the north, and access to the transmission line is proposed via Bridport Road to the south of the site. The workforce is expected to primarily be located in Launceston, with additional accommodation provided in George Town and Bridport with plant expected to be delivered from Bell Bay, Devonport or Burnie.

Figure 1 shows the proposed layout of the site in relation to the road network, access locations and existing infrastructure.

Figure 1: Site Layout



Source: Envoca

1.2 Purpose of Document

This Traffic Impact Assessment has been prepared to assess the construction and operational traffic impacts, and the access arrangements of the solar farm. The assessment details how road

impacts of the project traffic, particularly from heavy vehicle use and oversize and overmass vehicles, will be avoided or managed using road-use management strategies.

More specifically, the report addresses the following key matters:

- Details of both light and heavy vehicle traffic volumes and proposed transport routes;
- An assessment of the potential traffic impacts of the project on road network function and safety;
- An assessment of the capacity of the existing road network to accommodate the type and volume of traffic generated by the project;
- Details of measures to mitigate and / or manage potential impacts, including construction traffic control, road dilapidation surveys and measures to control dust generated by traffic volumes; and
- Details of access roads and how these connect to the existing road network and ongoing operational maintenance.

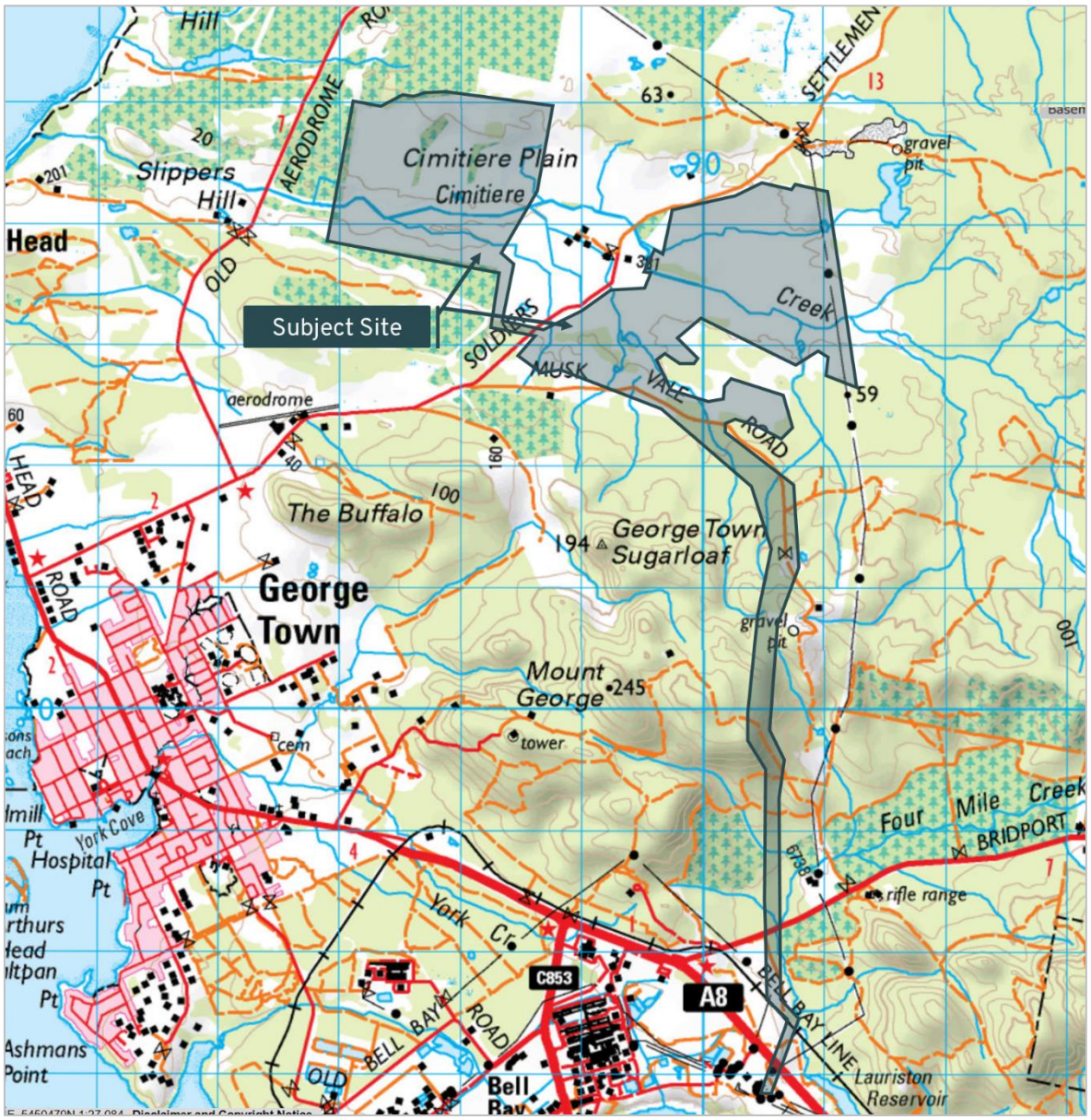
The traffic assessment has been undertaken in conjunction with consultation with Department of State Growth and George Town Council.

2. Existing Conditions

2.1 Site Location

The site is located at 381 Soldiers Settlement Road approximately 4.0km northeast of George Town, Tasmania, and is bounded by Bridport Road to the south and Soldiers Settlement Road in the northwest. Figure 2 shows the location of the site in relation to the surrounding transport network.

Figure 2: Site Location



Source: TASMAP

The site is zoned as 26.0 Rural Resource and is generally occupied by native forest and agricultural land uses with few dwellings nearby. Access to the site is currently provided via a number of formalised and non-formalised vehicle crossings on Soldiers Settlement Road, Musk Vale Road, and Bridport Road.

2.2 Road Network

East Tamar Highway is a Category 1 State Road under the care and management of the Department of State Growth. It runs in a general north-south alignment within the vicinity of the site between George Town and Launceston. It has a two-way carriageway with up to two lanes in each direction with wide shoulders on both sides. East Tamar Highway adopts the default speed limit of 100km/h.

Bridport Road is a Category 2 State Road under the care and management of the Department of State Growth. It runs in a general east-west alignment between Bridport and East Tamar Highway south of George Town. Within the vicinity of the site it has a two-way carriageway width of approximately 6.2 metres with unsealed shoulders provided on both sides and a wide vegetation envelope. Bridport Road adopts the default speed limit of 100km/h.

Soldiers Settlement Road is a local road under the care and management of George Town Council. It runs southwest-northeast from North Road near George Town to Beechford. Soldiers Settlement Road is a sealed, two-way carriageway between 5.0 and 6.0 metres wide with no central line marking and wide grassed berms on both sides. The road adopts the default speed limit of 100km/h.

Musk Vale Road is a minor local road that extends southeast from Soldiers Settlement Road. Musk Vale Road is unsealed and in moderate condition with some rutting and potholes throughout. It has a carriageway width of approximately 4.0 metres with narrow shoulders and overgrown vegetation on the roadside. Although Musk Vale Road adopts the default speed limit of 100km/h, it is more suited to low speed travel.

2.3 Traffic Volumes

Traffic data has been provided by the Tasmanian Government for the Category 1 and 2 roads as set out in Table 1.

Table 1: Traffic Volume Data

Road	Location	Years	AADT (vpd)	Heavy Vehicle %
East Tamar Highway	390m south of Bell Bay Road	2019, 2021	5,669	17%
Bridport Road	316m east of East Tamar Highway	2019, 2021	1,318	29%

Tasmanian Government, Department of State Growth – Tasmanian Traffic Data

No traffic data was available for Soldiers Settlement Road or Musk Vale road which are both estimated to have low vehicle volumes less than 300 and 20 vehicles per day (vpd), respectively. It is expected that the heavy vehicle percentage is similar to that on Bridport Road.

Accordingly, the road network currently accommodates a moderate to low level of traffic which is reflective of the road classifications.

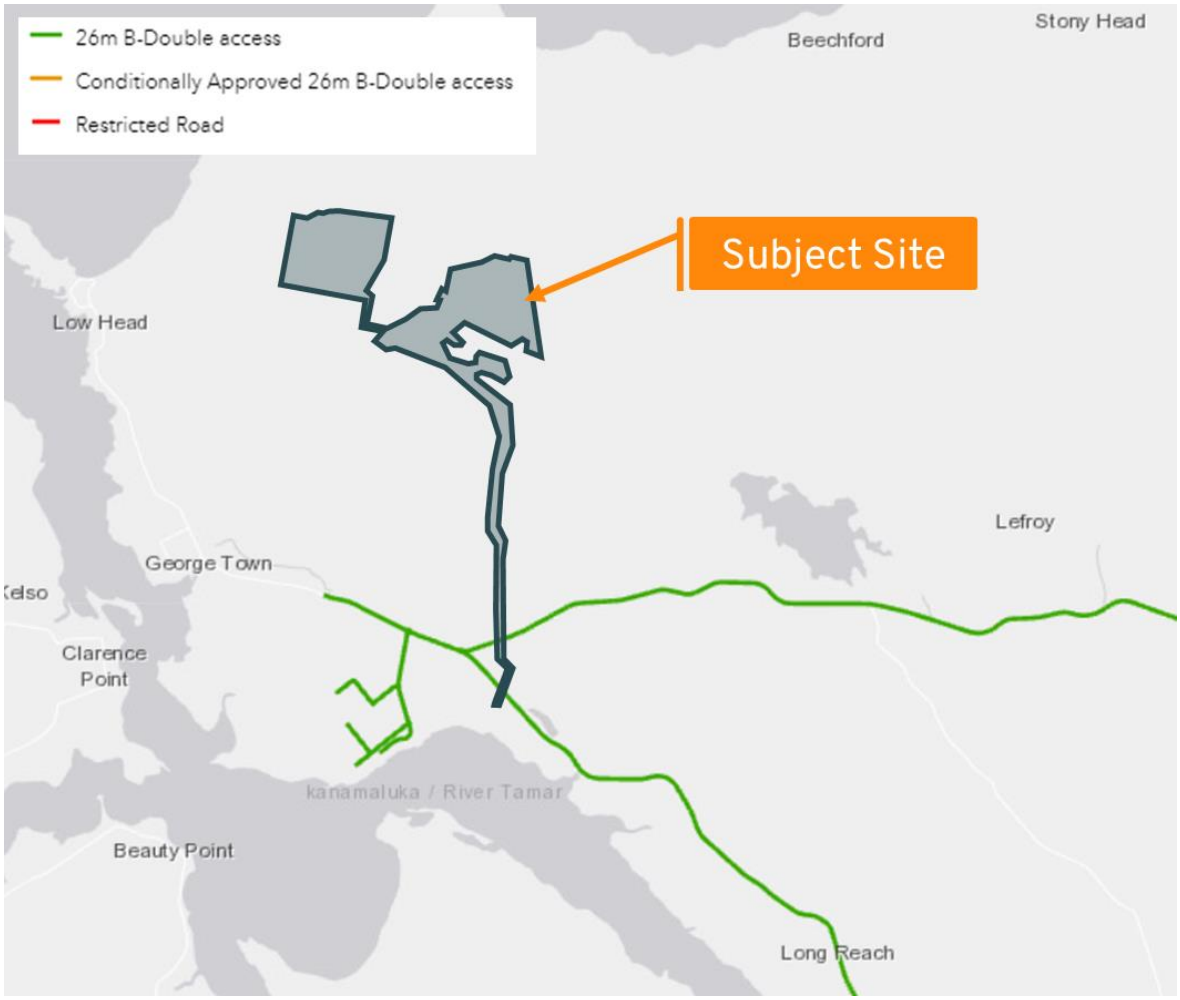
2.4 Public Transport Services

No public transport services or school bus services are known to be provided within the vicinity of the site.

2.5 Restricted Vehicle Access

The Tasmanian 26.0m B-Double Network map for the surrounding area is provided within Figure 3 with the green lines indicate B-Double declared roads.

Figure 3: B-Double Network Map



Source: Tasmanian 26.0m B-Double Network

The B-double network map shows that Bridport Road is a B-Double declared road while Soldiers Settlement Road and Musk Vale Road are general access.

2.6 Crash History

Amber has conducted a review of the Department of State Growth's crash database for all injury crashes relevant to the site. The crash database provides the location and severity of all injury and fatal crashes for the five-year period from 2017 to 2022. The location of the crashes identified within the search results are shown in Figure 4.

Figure 4: Crash Locations

Source: Department of State Growth

The crashes are summarised below:

- One serious injury crash located on North Street. The crash occurred in March 2022 in dark conditions and involved a person on the road;
- One minor injury crash at the intersection of North Street and Arnold Street involving a cross-traffic collision;
- One minor injury crash at the intersection of East Tamar Highway and Bridport Road due to a run-off-road incident; and
- One minor injury crash on Bridport Road east of the George Town converter station due to a run-off-road incident.

Given the road classifications and associated traffic volumes, it is concluded that the road network is currently operating in a relatively safe manner and there are no discernible crash trends.

3. Traffic Assessment

3.1 Traffic Generation

The solar farm construction is expected to take approximately 12 to 18 months, with the peak construction period expected to take up to 5 months. Construction activities would be undertaken during standard daytime construction hours, as follows:

- Monday to Friday: 7am – 6pm;
- Saturday: 8am – 6pm; and
- Sundays and public holidays: 10am – 6pm.

The peak workforce during construction will be approximately 300 people during peak construction periods. Shuttle buses will be provided to reduce the number of light vehicle trips.

Construction traffic generated by the solar farm can broadly be separated into the following categories:

- Light vehicles associated with transporting the workforce to/from the site
- Heavy vehicles which include the following:
  - Shuttle buses that would be provided to transport staff reducing the need for private vehicle use;
  - Medium and Heavy Rigid Trucks would be used to deliver raw materials and smaller plant;
  - Truck and Dog vehicles would be used to transport earthwork material to/from the site; and
  - Articulated Vehicles (19.0m semi-trailers) would be used to transport larger plant.

Restricted Access Vehicles / oversized and overmass (OSOM) vehicles would be required for the delivery of larger plant to the site such as the substation transformer and are subject to separate permit applications and regulations. The impacts of the OSOM vehicles are discussed within Section 5 with the following assessment focusing on the impacts of the light and heavy vehicles which generate the bulk of the traffic and represent the typical traffic impact of the project on a day-to-day basis.

The construction traffic volumes for the project have been provided by the proponent. It is anticipated that during peak construction the site could generate up to 246 light and 208 heavy vehicle movements per day. It is noted that a vehicle movement is classified as a vehicle travelling in one direction (i.e. a truck accessing the site would generate one movement towards the site and one movement away from the site when it departs).

Table 2 summarises the total traffic movements during the construction period of the solar farm by all construction activities.

Table 2: Traffic Generation During Peak Construction Periods

Vehicle Type	Average Construction Period		Peak Construction Period	
	Daily (vpd)	Peak Hour (vph)	Daily (vpd)	Peak Hour (vph)
Light Vehicle (car / 4WD)	207	94	246	115
Shuttle Bus	14	7	20	10
MRV/HRV	16	6	24	8
Truck and Dog/AV	98	14	164	26
Total	**335**	**120**	**454**	**159**

Overall, the site is expected to generate approximately 159 vehicle movements during the morning and evening peak hours during the peak construction period, which will reduce to 120 vehicle movements over the typical construction periods.

3.2 Traffic Distribution

Traffic accessing the site will do so via the accesses located on Bridport Road at the southern end of the site and Soldiers Settlement Road near the northern end of the site. Some vehicle traffic will utilise an access on Musk Vale Road to access the transmission line between Bridport Road and Musk Vale Road. Light vehicle traffic to the site is predominantly generated by the workforce accessing and departing the site in the morning and evening peak period, while heavy vehicle traffic is divided between the construction activities listed above. The access routes are shown within Figure 5 and Figure 6.

Figure 5: Southern Access Routes vis Bridport Road

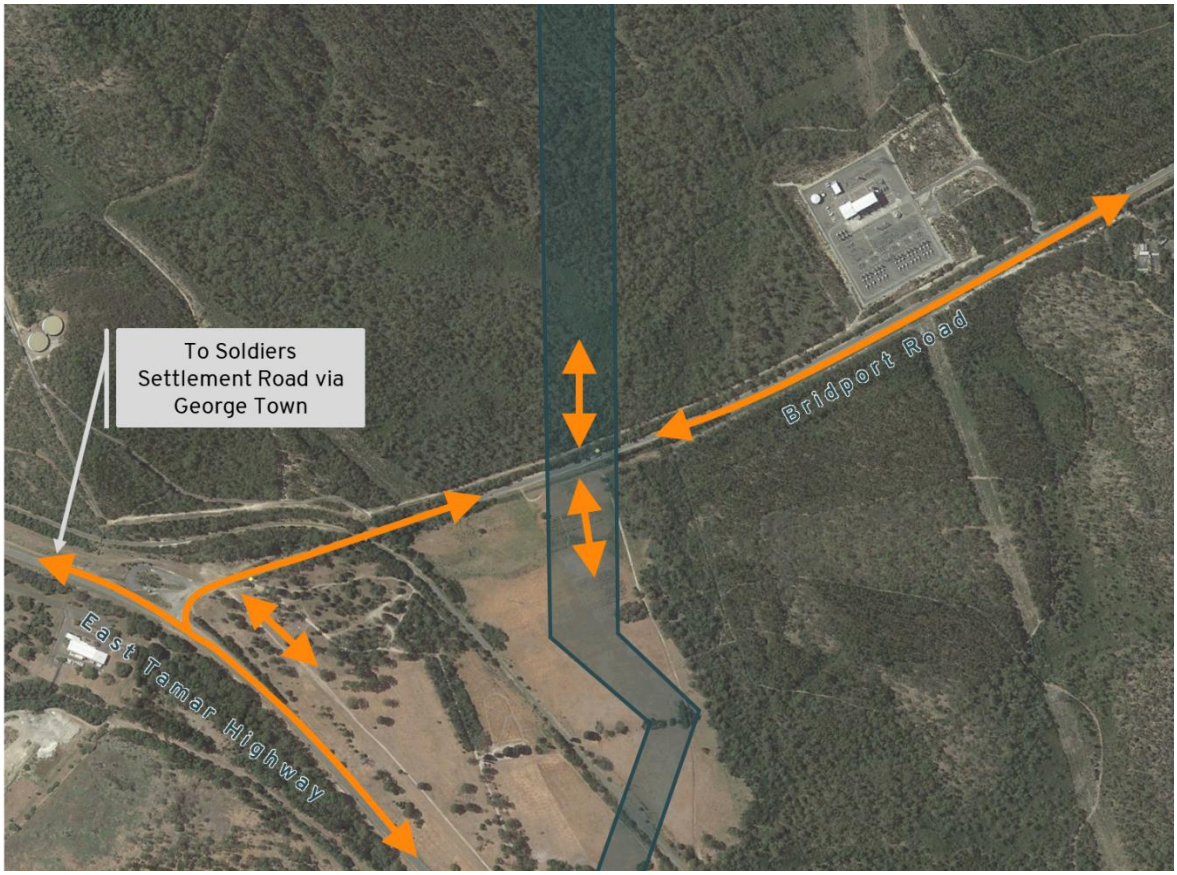
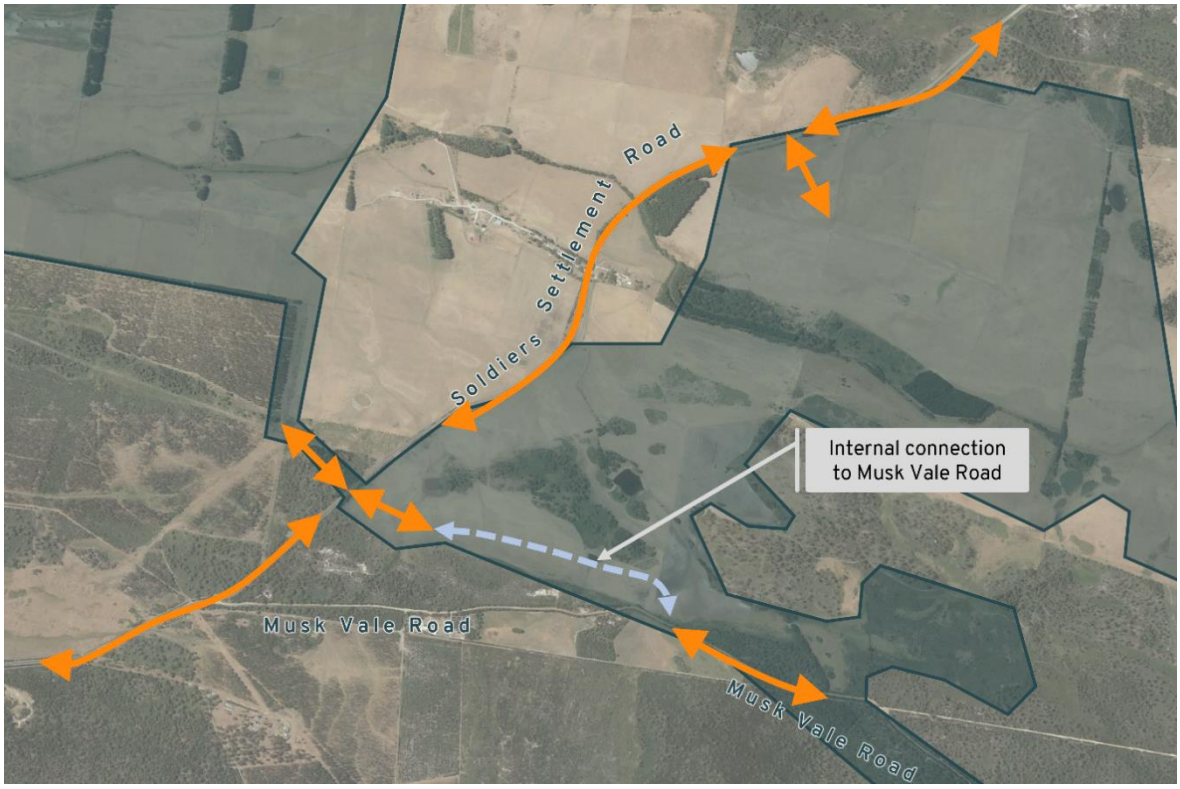


Figure 6: Northern Access Routes via Soldiers Settlement Road



The construction of the solar farm can be separated into a number of key activities with each of the activities gaining access via a range of access locations resulting in the traffic movements presented within Table 2 being distributed on the wider road network.

The following construction activities have been identified as part of the proposed solar farm construction:

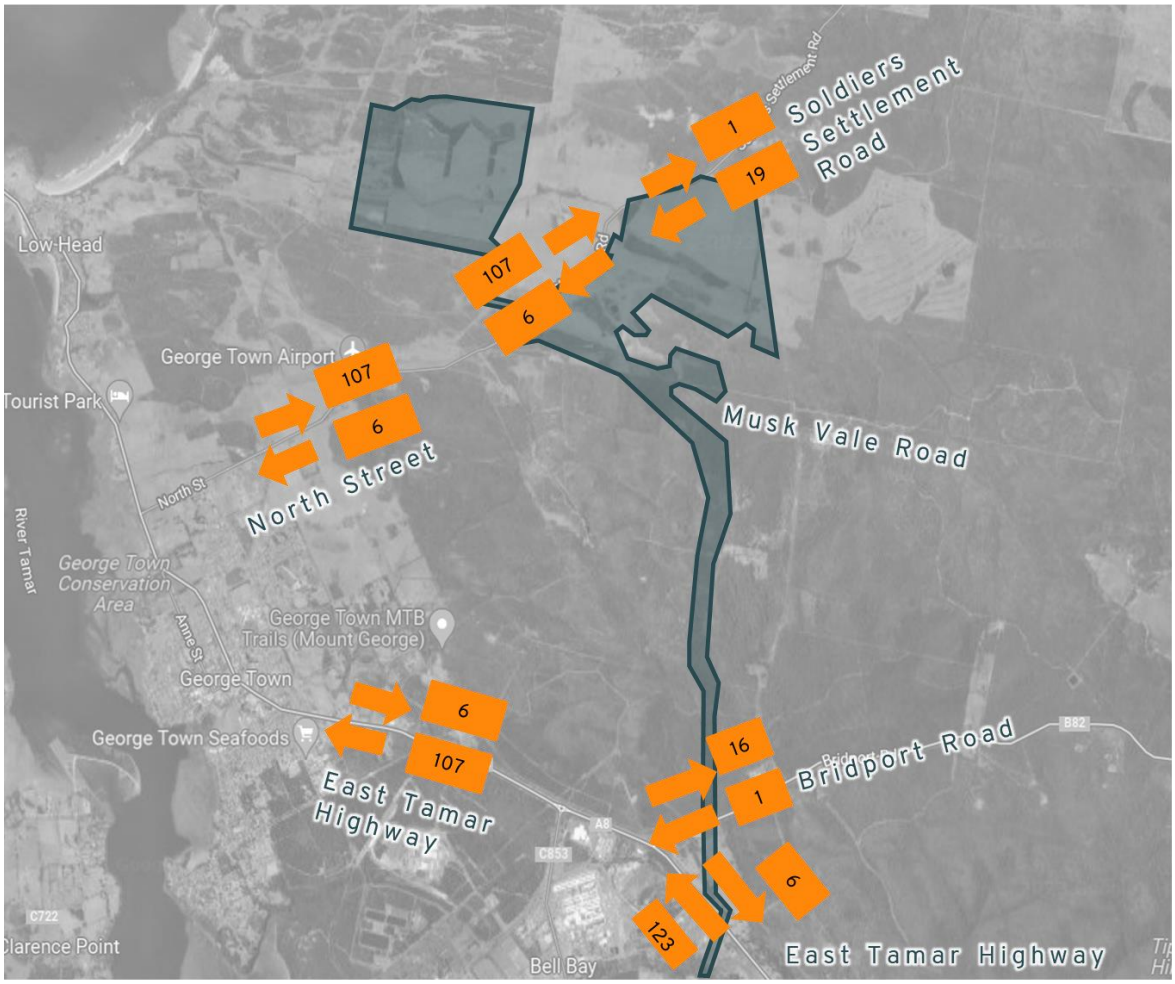
- Substation construction;
- Transmission line construction – via Soldiers Settlement Road;
- Transmission line construction – via Bridport Road;
- Solar farm quarry traffic; and
- Solar farm personnel traffic and material, plant and equipment delivery.

Traffic volumes expected during the solar farm construction have been supplied by the proponent for each of the construction activities identified above. The traffic volumes have been calculated to a high level of accuracy using forecasted scheduling and origin/destination data for materials and equipment deliveries.

Utilising the information provided by the proponent, the traffic volumes for the various construction activities have been distributed on the road network in order to determine the total traffic movements on the surrounding roads. The analysis of the construction traffic distribution is presented within Appendix A.

The expected traffic distribution for all site traffic in the morning peak hour during the peak construction period is shown in Figure 7.

Figure 7: Peak Hour Traffic Generation During Peak Construction Period



The peak hour for construction will occur at the start and end of the day when staff are transported to/from the site. The majority of staff will typically arrive on-site between 6:00am and 7:00am. However, staff generally have staggered finish times which results in the evening peak hour being less pronounced. For the purposes of this assessment, it has been assumed that all staff depart between 5:30pm and 6:30pm and the evening peak traffic volumes are 80% of the morning peak volume. Accordingly, the morning peak hour represents the worst-case scenario.

3.3 Traffic Assessment

Level of Service is a qualitative measure used to describe the operating conditions of a section of road or an intersection. Levels of Service are designated from A to F from best (free flow conditions) to worst (forced flow with stop start operation, long queues and delays) and represent the perception of the road conditions by motorists including speed and travel time, freedom to manoeuvre, traffic interruptions, comfort and convenience, and safety.

Figure 4.1 of the *Austroads Guide to Traffic Management Part 3: Transport Study and Analysis Methods* specifies the Level of Service based on average passenger car speeds and the flow rate (i.e. number of vehicle movements). However, the figure does not allow for variation in the road topography, such as the variation in road performance between flat and mountainous areas, or a variation in the number of heavy vehicles on the road network.

The *RTA Guide to Traffic Generating Developments* (RTA Guide), dated 2022, provides a generally accepted standard for determining the operational level of service for mid-block traffic volumes. Table 4.5 of the guide sets out two-way hourly road capacities for two-lane roads for different levels of service, with a design speed of 100 km/hr, based on different terrain types and varying percentage of heavy vehicles. The table provides an indication of the levels of service based on the expected traffic volumes.

Given the document allows for changes in road topography and heavy vehicle percentages it is considered to provide a more robust and accurate assessment of the Level of Service of a road compared to the Austroads Guide. Therefore, the assessment of Level of Service has been based on Table 4.5 of the RTA Guide. The traffic volumes under existing conditions and peak construction conditions are set out in Table 3 along with the resulting Level of Service.

Table 3: Peak Hour Flow Level of Service

Road Name	Critical Lane Traffic Volume During AM Peak Hour and Peak Construction Period					
	Existing Traffic (HV%)	Project Traffic	Total Traffic	Total % Heavy Vehicles	Existing Level of Service	Project Level of Service
East Tamar Highway	835* (17%)	123	958	18%	B	C
Bridport Road	198* (29%)	16	214	29%	A	A
North Street/ Soldiers Settlement Road	45* (30%)~	107	152	22%	A	A

** AM Peak hour traffic estimated as 15% of AADT*
~ Assumed heavy vehicle percentage

East Tamar Highway is estimated to be carrying in the order of 835 vehicles in the peak hour with 17% heavy vehicles. Peak construction traffic is expected in increase the volume by 123 vehicles to approximately 958 vehicles with a resultant heavy vehicle percentage of 18%. Based on the RTA Guide, the existing Level of Service is B which is expected to change to Level of Service C during peak construction.

Austroads Guide to Traffic Management Part 3: Traffic Studies and Analysis states that Level of Service C is in the zone of stable flow, but most drivers are restricted to some extent in their freedom to select their desired speed and to manoeuvre within the traffic stream. It also suggests that ideally rural roads should not exceed service volumes at Level of Service C. Accordingly, East Tamar Highway is expected to operate with acceptable conditions during peak construction.

Bridport Road is currently estimated to be carrying in the order of 198 vehicles per hour in the peak hour with a heavy vehicle percentage of 29%. During peak construction the traffic volume would increase to approximately 214 vehicles movements per hour, which is captured under level of service A. The traffic volumes can be readily accommodated on the road network and Bridport Road is expected to continue to operate with a good level of service.

North Street and Soldiers Settlement Road are expected to accommodate up to an additional 107 peak hour vehicle movements during the peak construction period. Given the existing road cross sections and condition it is expected that these roads will be able to accommodate the increase in traffic volume and the operating level of service is expected to remain at A.

Accordingly, it is concluded that the road network is able to accommodate the traffic generated by the solar farm during the construction period.

3.4 Cumulative Traffic Impacts

A review has been undertaken for any other renewable projects in the surrounding area.

Equis is developing a 42MW wind farm in Low Head, Tasmania. The project has fully secured development approval. Low Head Wind Farm is located to the north of the proposed Cimitiere Solar Farm. The site is understood to be accessed via East Tamar Highway.

The traffic assessment provided within this report demonstrates that the surrounding road network is expected to continue to operate with a good level of service with ample spare capacity. In the event construction for the two projects did overlap the combined increase in traffic generated by the solar farm and the Low Head Wind Farm project is expected to have a minimal cumulative impact on the road network.

3.5 Operational Traffic

During operation the solar farm is expected to generate a minimal level of traffic associated with maintenance and operation services. The site is expected to be operated by up to 10 staff resulting in a traffic generation of up to 20 vehicle movements per day spread across the solar farm, transmission lines and substation which would result in a negligible change to the traffic environment.

4. Site Access

Access to the solar farm development is proposed via Bridport Road and Soldiers Settlement Road, with an additional access onto Musk Vale Road that provides connectivity to the transmission line area. The Musk Value Road access will be connected internally from Soldiers Settlements Road. The indicative site access locations are shown in Figure 8 and Figure 9.

Figure 8: Indicative Site Access Locations (North)

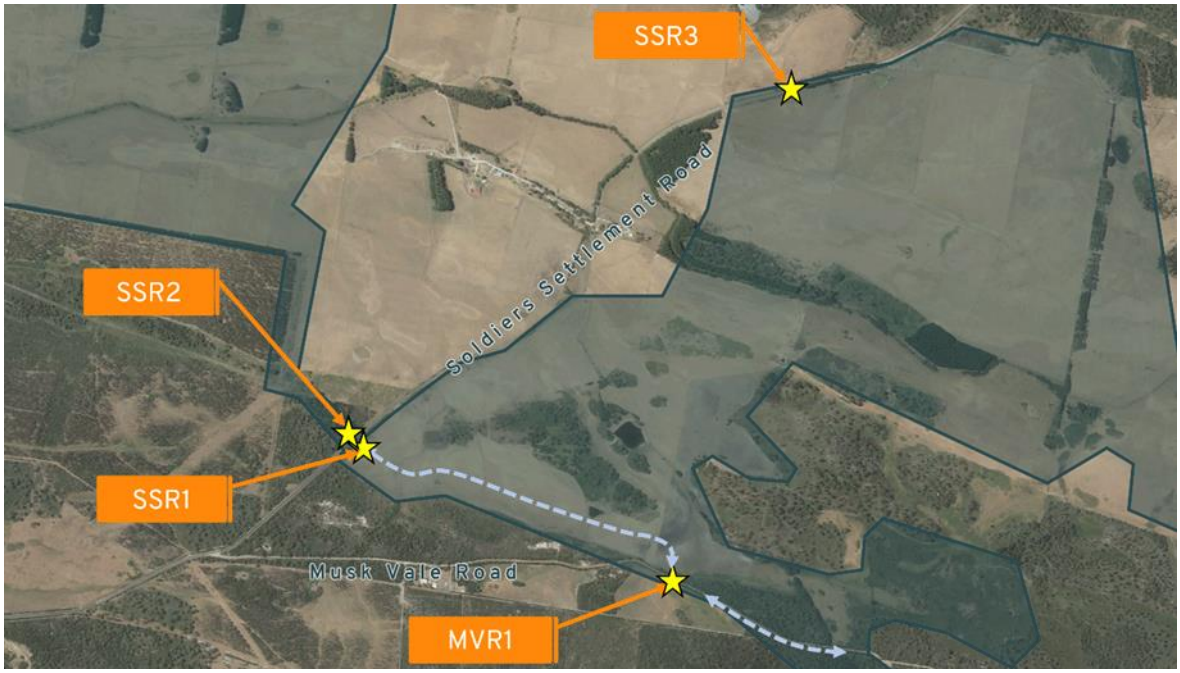
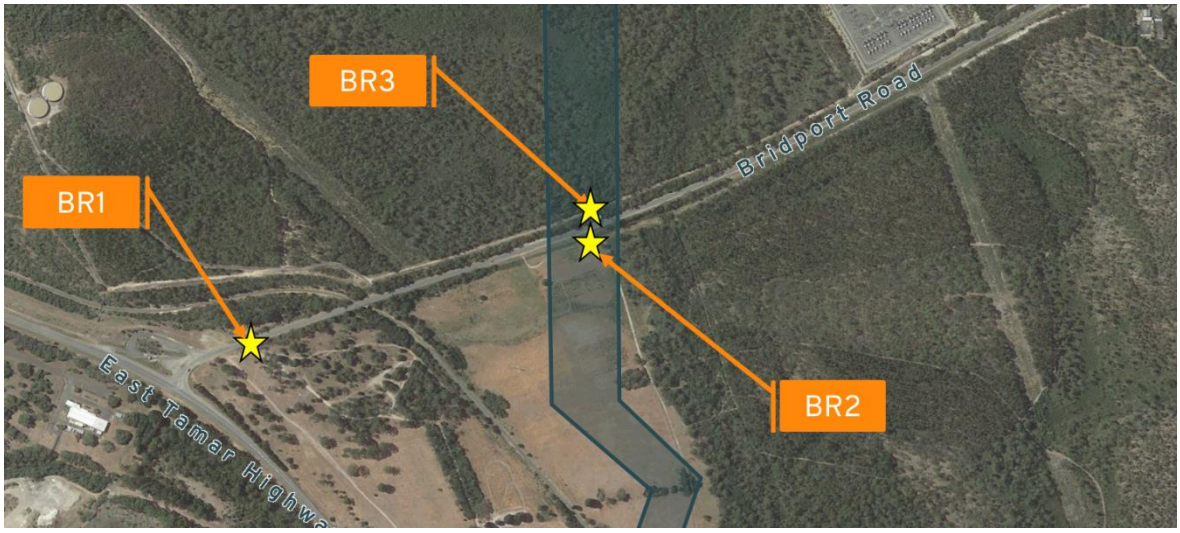


Figure 9: Indicative Site Access Locations (South)



The coordinates of each of the site accesses are provided in Table 4.

The accesses have been assessed and designed to accommodate 19.0 metre semi-trailer vehicles, with concept plans provided in Appendix B. An assessment of each of the access locations and intersections is provided below.

Table 4: Access Locations

Access ID	Northing (m S)	Easting (m E)
SSR1	5452991	488467
SSR2	5453009	488447
SSR3	5454183	489958
MVR1	5452583	489566
BR1	5447958	489945
BR2	5448139	490500
BR3	5448166	490497

4.1.1 Bridport Road Access

Access to the site from Bridport Road is proposed via 3 access locations, BR1, BR2, and BR3. All accesses are designed to accommodate 19.0 metre semi-trailer vehicles with swept path assessments provided within Appendix B demonstrating these vehicles are able to access the site.

4.1.1.1 BR1 Access

BR1 Access is located 100 metres east of the East Tamar Highway/Bridport Road intersection. The access is already established with existing road widening to support turning movements. The access is located in close proximity to the intersection of East Tamar Highway/Bridport Road which results in lower approach vehicle speeds and improved safety for vehicle movements in and out of the access.

4.1.1.2 BR2 Access

BR2 Access is located on the south side of Bridport Road and supports access to the transmission line area of the development. The access is proposed approximately 130 metres east of an existing access point in order to provide suitable sight distance for exiting vehicles. The new access is intended to replace the existing access and will support 19.0 metre semi-trailer vehicles turning to/from the east and west.

4.1.1.3 BR3 Access

BR3 Access is located on the north side of Bridport Road, opposite BR2 access. The access is proposed to accommodate access for 19.0 metre semi-trailer vehicles turning to/from the east and west.

4.1.2 Soldiers Settlement Road Accesses

Soldiers Settlement Road accommodates 3 access to the site: SSR1 and SSR3 provide access to the eastern part of the site, and SSR2 provides access to the western section of the site. The Soldiers Settlement Road accesses are expected to accommodate in the order of 67 one-way movements each in the peak hour during the peak construction period. Based on the expected traffic volumes the accesses are proposed to be constructed to accommodate up to 19.0 metre semi-trailer vehicle movements with manoeuvring and passing to be managed within the site. The accesses are to be sealed within 25 metres of the road. SSR1 provides an internal connection to MVR1, described in the following section.

4.1.3 Musk Vale Road Access

The Musk Vale Road access, MVR1, will be connected internally via Soldiers Settlement Road. With this arrangement, vehicles accessing the transmission line area will enter the site via Soldiers Settlement Road and exit onto Musk Vale Road before continuing south, and no site vehicles will use of the section of Musk Vale Road between Soldiers Settlement Road and this site access.

The access is expected to accommodate up to 21 one-way vehicle movements in each of the peak hours during the peak construction period, with the majority of movements travelling south and exiting the site onto Musk Vale Road in the morning, and the reverse in the afternoon. Based on the traffic volumes Musk Vale Road access is proposed to be constructed to accommodate up to 19.0 metre semi-trailer vehicles with manoeuvring and passing to be managed within the site.

4.1.4 George Town Power Substation

The proposed upgrades to the George Town Power Substation will be accessed via East Tamar Highway, and the existing access is suitable for heavy vehicles. The access route will not significantly impact the traffic in the area. However, appropriate traffic management measures will be considered during the construction period to ensure the safety of road users and workers.

4.2 Sight Distance

Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections specifies the Safe Intersection Sight Distance (SISD) as the minimum sight distance which should be provided along the major road at any intersection. Table 3.2 of the guide specifies the SISD required for various design speeds.

The available sight distance at the site access is illustrated within Appendix C and demonstrates that the sight distance meets the Austroads requirements and vehicles are expected to be able to safely enter and exit the site. The required and available sight distance of each access is summarised in Table 5 with design speeds adopted from on-site observations.

Table 5: Safe Intersection Sight Distance

Access	Design Speed	Required Sight Distance	Minimum Available Sight Distance
SSR1	100km/h	248m	+248m
SSR2	100km/h	248m	+248m
SSR3	100km/h	248m	+248m
MVR1	50km/h	97m	>100m
BR1 – West Approach	42km/h*	78m	89m
BR1 – East Approach	100km/h	248m	+248m
BR2	100km/h	248m	+248m
BR3	100km/h	248m	+248m

**Based on intersection speed of 20km/h and average acceleration rate for a passenger vehicle of 1.44m/s^2.*

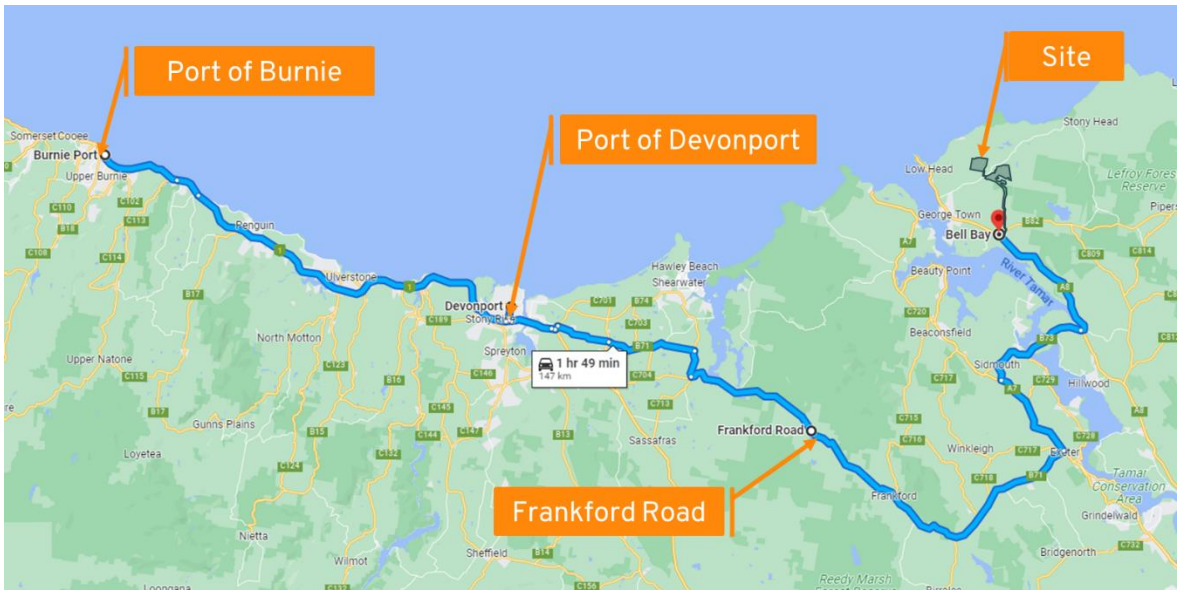
As such, it is considered that vehicles are able to safely exit the site onto the surrounding road network.

5. Route Assessment

5.1 Delivery Port

The ports of Burnie, Devonport and Bell Bay have been identified as the location where the solar farm plant will be imported. The proposed construction traffic access routes from the ports to the site is expected to be via the Bass Highway (Highway 1) and Frankford Road (B71) for trucks over 42 tonnes and under 42 tonnes, respectively. The routes are shown in Figure 10 and Figure 11.

Figure 10: Proposed Route to Site from Burnie or Devonport for Trucks Under 42 Tonnes



Source: Google Maps

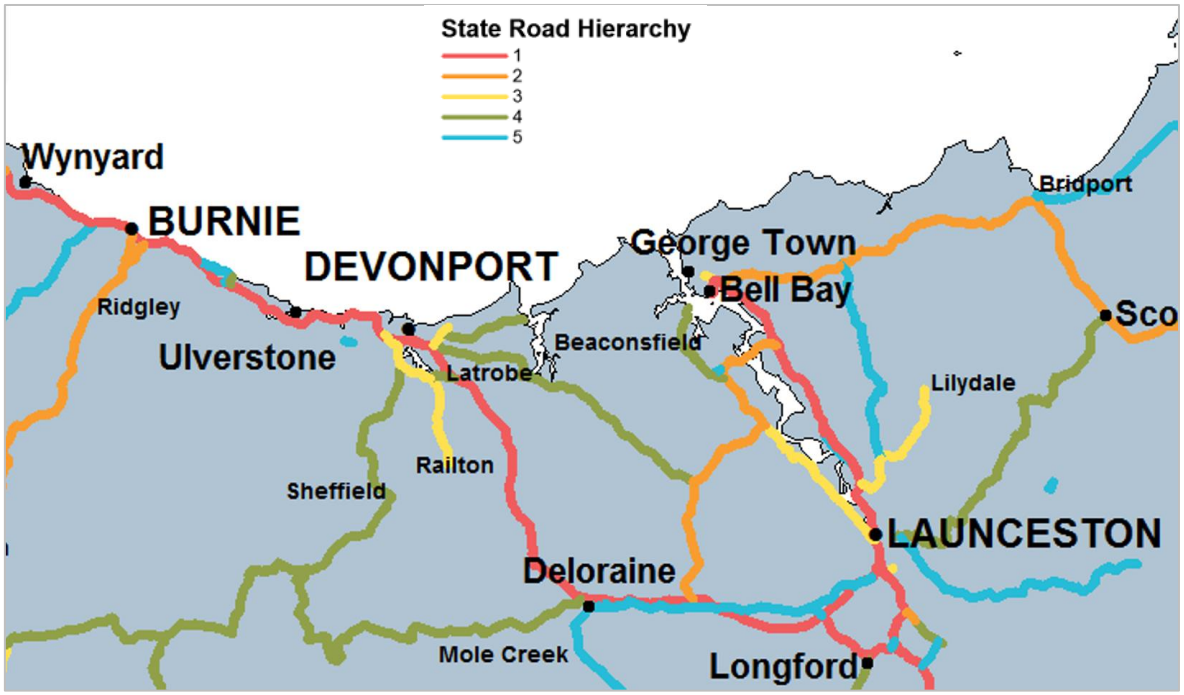
Figure 11: Proposed Route to Site from Burnie or Devonport for Trucks Over 42 Tonnes

Source: Google Maps

All roads along the proposed routes are classified as state roads under the Tasmanian State Road hierarchy, as shown in Figure 12. Accordingly, the access routes are suitable to accommodate the loads and type of vehicle movement to be generated during construction of the solar farm.

It is also noted that some oversize and overmass vehicles will be required to deliver larger plant to the site such as the sub-station transformer and earthmoving equipment. The vehicles are subject to specific road permits that will be applied for by the contractor once the dimensions of the load and the specific delivery vehicle are known.

Figure 12: State Road Hierarchy



Department of State Growth, Tasmania

5.2 Intersection Assessment

The North Street intersection with East Tamar Highway is recommended to be upgraded to accommodate 19.0m semi-trailer vehicles. A concept plan of the upgrade area is provided in Appendix D which has been based on a swept path assessment for the design vehicle.

5.3 Local Road Network

North Street, Soldiers Settlement Road, and Musk Vale Road make up the local road network required to access the site. North Street and Soldiers Settlement Road are sealed roads and their capacity under peak construction traffic has been discussed in Section 3.3 and are considered suitable. Musk Vale Road is an unsealed road and has been assessed under the following criteria.

The *Australian Road Research Board Best Practice Guide for Unsealed Roads 2* (ARRB Guide), dated October 2020, provides a breakdown of the unsealed road classifications based on a functional classification system which is reflective of the approach taken within the Austroads Guidelines. A summary of the classifications outlined within Table 3.9 of the ARRB Guide is provided below.

Table 6: Unsealed Roads Classification System (ARRB Guide)

Road Class	Class Type	Service Function Description	Road Type Description
4A	Main Road > 150 vpd	This type of road is used for major movements between population centres and connection to adjacent areas. High traffic volumes occur, and the road can carry large vehicles.	• All weather road, predominantly two-lane and unsealed. Can be sealed if economically justified. • Operating speed standard of 50–80 km/h according to terrain. • Minimum carriageway width is 7m.
4B	Minor Road 50-150 vpd	This type of road is used for connection between local centres of population and links to the primary network.	• All-weather two-lane road formed and gravelled or single-lane sealed road with gravel shoulders. • Operating speed standard of 30–70 km/h according to terrain. • Minimum carriageway width is 5.5m.
4C	Access Road 10-50 vpd	Provides access to low use areas or individual rural property sites and forest areas. Caters for low travel speed and a range of vehicles and may be seasonally closed.	• Substantially a single lane two-way, generally dry weather, formed road. • Operating speeds standard of < 20–40 km/h according to terrain. • Minimum carriageway width is 4m.
4D	Tracks < 10 vpd	Mainly used for fire protection purposes, management access and limited recreational activities.	• Predominantly a single-lane two-way earth track (unformed) at or near the natural surface level. • Predominantly not conforming to any geometric design standards. • Minimum cleared width is 3m.

During peak construction Musk Vale Road is expected to accommodate up to an additional 95 vehicle movements per day, resulting in a total of up to 115 vehicles per day.

Unsealed roads would typically be considered for sealing when they accommodate between 200 and 500 vehicle movements per day. The ARRB Guide notes that roads may warrant paving when maintenance costs increase to unacceptable levels, in wet climates, or when economic or social benefits are evident. Given the expected traffic volume Musk Vale Road is less than 200 vehicles per day and the increase in traffic is only temporary it is considered acceptable for Musk Vale Road to remain unsealed.

It is recommended that Musk Vale Road is upgraded with a combination of passing bays and road widening to 5.5 metres to suitably accommodate construction vehicle traffic. It is anticipated that appropriate treatments will be determined by onsite investigations prior-to and during the construction period.

5.4 Mitigation Measures

A Construction Traffic Management Plan (CTMP) will be prepared prior to construction of the site. It is recommended that the following form part of the CTMP to minimise the impact of construction traffic along the unsealed roads:

- Prior to construction, a pre-condition survey of the relevant sections of the existing road network be undertaken, in consultation with Council. During construction the sections of the road network utilised by the proposal are to be monitored and maintained to ensure continued safe use by all road users, and any faults attributed to construction of the solar farm would be rectified. At the end of construction, a post-

condition survey would be undertaken to ensure the road network is left in the consistent condition as at the start of construction.

- Vehicles are recommended to drive at slower speeds when travelling on unsealed roads. This can reduce the amount of dust created and the amount of dirt tracked onto the public road network. Standard mitigation measures such as a water trucks to dampen the roads and reduce the amount of dust in the air, can also be considered to reduce dust levels.
- Neighbours of the solar farm be consulted and notified regarding the timing of major deliveries which may require additional traffic control and disrupt access.

Therefore, it is concluded that the surface and widths of the roads are suitable to accommodate the future traffic volumes.

6. Construction Traffic Management Plan

A Construction Traffic Management Plan (CTMP) will be prepared prior to construction commencing by the appointed contractor. The CTMP will provide additional information regarding the traffic volumes and distribution of construction vehicles that is not available at this time, including:

- Road transport volumes, distribution and vehicle types.
- The origin, destination and routes for:
  - Employee and contractor light traffic.
  - Heavy vehicle traffic.
  - Oversize and overmass traffic.

The following provides recommended measures that should be adopted within the CTMP to minimise the impact of construction traffic along the road network:

- Neighbours of the solar farm be consulted and notified regarding the timing of major deliveries which may require additional traffic control and disrupt access.
- Loading and unloading is proposed to occur within the work area. No street or roads will be used for material storage at any time.
- All vehicles will enter and exit the site in a forward direction.
- Management of vehicular access to and from the site is essential in order to maintain the safety of the general public as well as the labour force. The following is to be implemented as a measure to maintain safety within the site:
  - Utilisation of only the designated transport routes.
  - Establishment of a Driver Code of Conduct.
- Implementation of a proactive erosion and sediment control plan for on-site roads, hardstands and laydown areas.
- All permits for working within the road reserve must be received from the relevant authority prior to works commencing.
- A map of the primary haulage routes.
- An induction process for vehicle operators and regular toolbox meetings.
- A complaint resolution and disciplinary procedure.
- Local climatic conditions that may impact road safety of employees throughout all project phases (e.g. fog, wet and significant dry, dusty weather).

The above recommendations will ensure the construction traffic will create a minimal impact to the capacity and safety of the surrounding road network.

7. Conclusion

Amber has assessed the traffic impacts of the 288MW solar farm located approximately 4 kilometres northeast of George Town. Access to the site will be provided via a range of new and existing accesses via Bridport Road, Soldiers Settlement Road, and Musk Vale Road. Construction workers will primarily be located in George Town and Launceston with all plant expected to be delivered from Devonport, Burnie and Bell Bay. The above assessment determined the following:

- The site will generate up to 159 vehicle movements in the peak hour during peak construction times, including 44 heavy vehicle movements;
- The road network is able to accommodate the traffic generated by the development during the construction and operation stages;
- The site accesses have been designed to accommodate 19.0m semitrailer vehicles.
- Intersection widening is proposed for the North Street/ East Tamar Highway intersection in order to accommodate the largest design vehicle expected to access the site.
- A combination of road widening, passing bays, and traffic management is recommended for Musk Vale Road between Soldiers Settlement Road and the site access in order to allow vehicles to safely and efficient access the site. The appropriate treatments will be determined by future on-site investigation.
- The proposed construction traffic access route from Devonport and Burnie to the site is proposed to utilise the State Road Network. The roads are suitable for general access 19.0m semitrailer vehicles and as such, the access route is able to accommodate the loads and type of vehicle movement to be generated during construction of the solar farm;
- It is noted that some oversize and overmass vehicles will be required to deliver larger plant to the site such as the sub-station transformer and earthmoving equipment. The vehicles are subject to specific road permits that will be applied for by the contractor once the dimensions of the load and the specific delivery vehicle are known; and
- In order to mitigate the impacts of the development during construction a CTMP will be prepared which should include the recommendations provided within this document.

Accordingly, based on the assessment above, it is concluded that the proposed access arrangements for the solar farm are suitable to accommodate the expected construction vehicle types and traffic volumes during the construction and operation phase of the project.

Appendix A

Construction Activities Traffic Generation

1. Traffic Generation

The following construction activities have been identified as part of the proposed solar farm construction:

- Substation construction;
- Transmission line construction
- Solar farm quarry traffic; and
- Solar farm personnel traffic and material, plant and equipment delivery.

Traffic generation for each of the construction activities has been calculated to a high level of accuracy using forecasted scheduling and origin/destination data for materials and equipment deliveries. It is expected that the peak accommodation requirement for the workforce will exceed the accommodation supply in George Town and as such most personnel will stay in Launceston and George Town with some personnel in Bridport and other areas.

It is assumed that the morning peak hour is between 6:00am and 7:00am whereby 95% of traffic flows toward the site and 5% of traffic flows away from the site. Traffic volumes have been rounded to one decimal place to retain representation of movements that occur on a weekly basis.

The overall traffic generation for all construction activities is summarised in Table 1.

Table 1: Generation During Peak Construction Periods

Vehicle Type	Average Construction Period		Peak Construction Period	
	Daily (vpd)	Peak Hour (vph)	Daily (vpd)	Peak Hour (vph)
Light Vehicle (car / 4WD)	207	94	246	115
Shuttle Bus	14	7	20	10
MRV/HRV	16	6	24	8
Truck and Dog/AV	98	14	164	26
Total	**335**	**120**	**454**	**159**

The following sections detail the traffic generation of each construction activity of the solar farm.

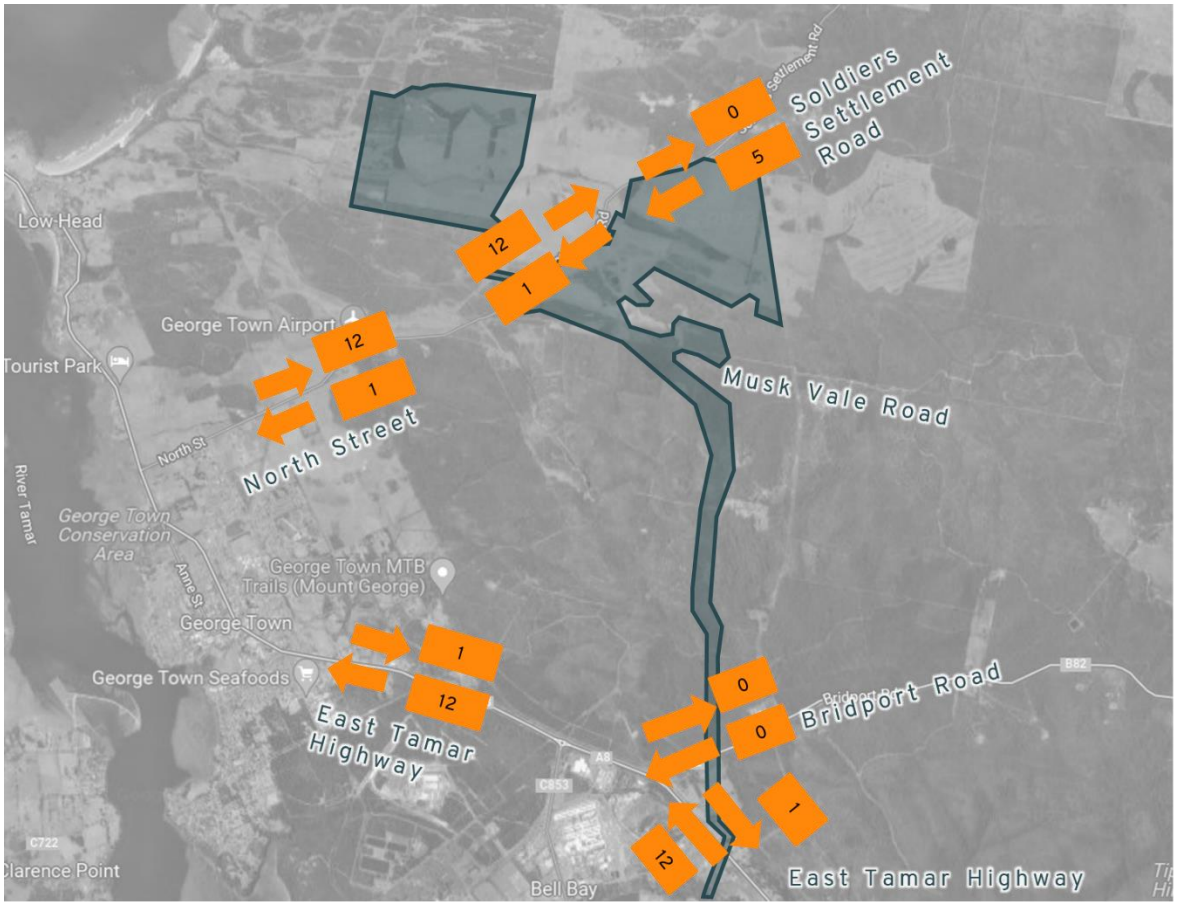
2. Substation Construction

Traffic generated from the substation construction will access the site via Soldiers Settlement Road, North Street and East Tamar Highway. The traffic is expected to be predominantly light vehicles with regular heavy vehicle movements. Most traffic is expected to travel from the south with truck and dog movements expected to approach from the north. Substation construction traffic is provided in Table 2 with the traffic distribution shown in Figure 1.

Table 2: Substation Construction Traffic via Musk Vale Road

Vehicle Type	Average Construction Period		Peak Construction Period	
	Daily (vpd)	Peak Hour (vph)	Daily (vpd)	Peak Hour (vph)
Light Vehicle (car / 4WD)	25.2	11.3	24	10.8
Shuttle Bus				
MRV/HRV	6.3	2.5	6	1.8
Truck and Dog	6.7	2.2	16	4.8
AV	0.2	0.07	1.2	0

Figure 1: Substation Construction Traffic in the Morning Peak Hour During the Peak Construction Period



3. Transmission Line Construction

The transmission line construction will occur from Musk Vale Road in the north and from Bridport Road in the south. Traffic travelling to Musk Vale Road will do so via an access on Soldiers Settlement Road which is connected through to Musk Vale Road via an internal road. Transmission line construction traffic volumes are outlined in Table 3.

Table 3: Transmission Line Construction Traffic via Musk Vale Road

Vehicle Type	Average Construction Period		Peak Construction Period	
	Daily (vpd)	Peak Hour (vph)	Daily (vpd)	Peak Hour (vph)
Light Vehicle	29.8	13.4	34.8	17.4
Shuttle Bus				
Rigid Vehicles	3.6	1.3	5	3
Truck and Dog	6.3	2.5	7	4.6
AV (19m semi-trailer)	0.5	0.3	0.6	0.6

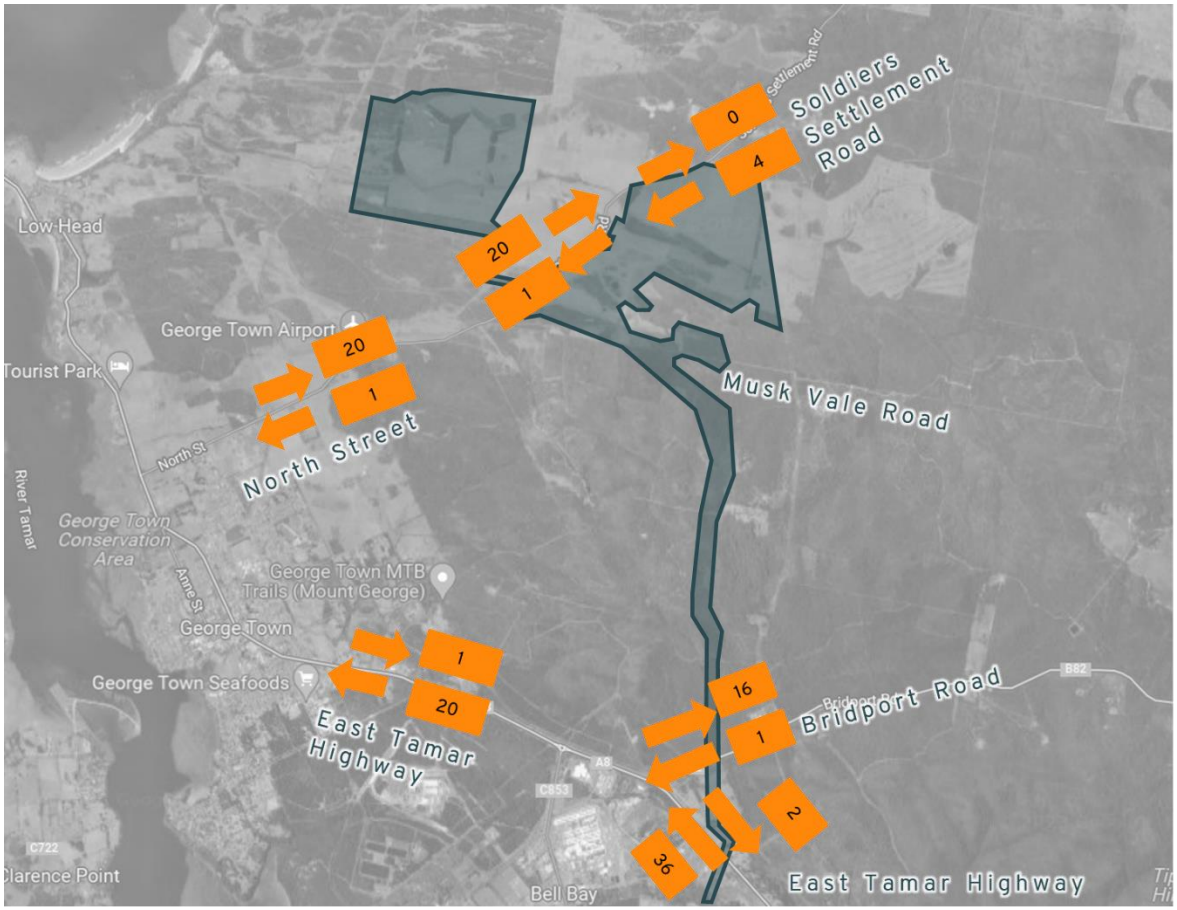
Transmission line construction traffic accessing the site via Bridport Road is expected to do so via East Tamar Highway from the south. Transmission line construction traffic volumes accessing the site via Bridport Road are outlined in Table 4.

Table 4: Transmission Line Construction Traffic via Bridport Road

Vehicle Type	Average Construction Period		Peak Construction Period	
	Daily (vpd)	Peak Hour (vph)	Daily (vpd)	Peak Hour (vph)
Light Vehicle	19.8	8.9	23.2	11.6
Shuttle Bus				
Rigid Vehicles	2.4	0.9	3.4	2
Truck and Dog	4.2	1.6	4.6	3
AV (19m semi-trailer)	0.3	0.2	0.4	0.4

The combined transmission line construction traffic distribution for the morning peak hour during the peak construction period is shown in Figure 2.

Figure 2: Combined Transmission Line Construction Traffic Distribution for the Morning Peak Hour During the Peak Construction Period



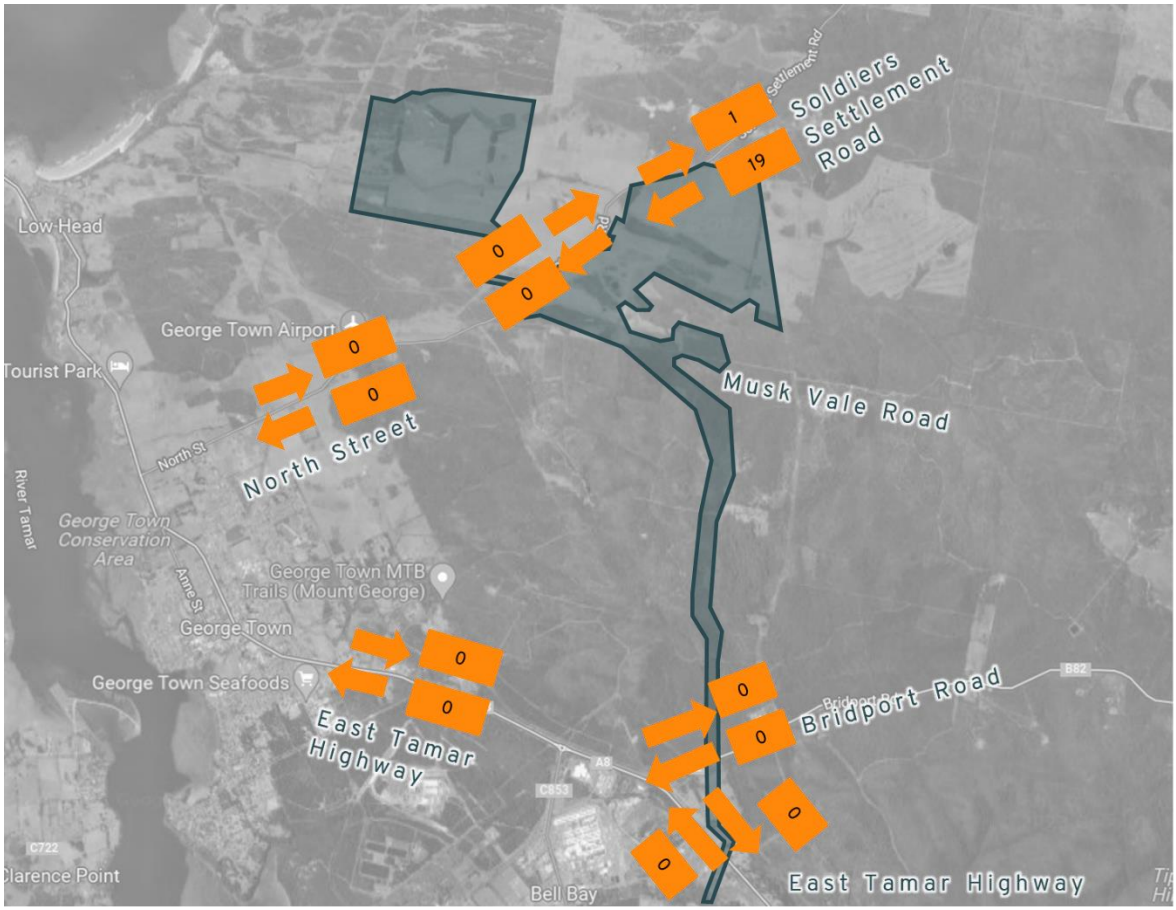
4. Quarry Traffic

The solar farm construction is expected to source materials from nearby quarries, generally from the north and northeast of the site. Quarry vehicles will access the site from the north down Soldiers Settlement Road. The quarry traffic volumes are set out in Table 5 with the expected traffic distribution for the morning peak hour during the peak construction period shown in Figure 3.

Table 5: Quarry Traffic for Solar Farm Construction

Vehicle Type	Average Construction Period		Peak Construction Period	
	Daily (vpd)	Peak Hour (vph)	Daily (vpd)	Peak Hour (vph)
Light Vehicle	12	6	24	12
Shuttle Bus				
Rigid Vehicles				
Truck and Dog	60	6	80	8
AV (19m semi-trailer)				

Figure 3: Quarry Construction Traffic in the Morning Peak Hour During the Peak Construction Period



5. Solar Farm Traffic

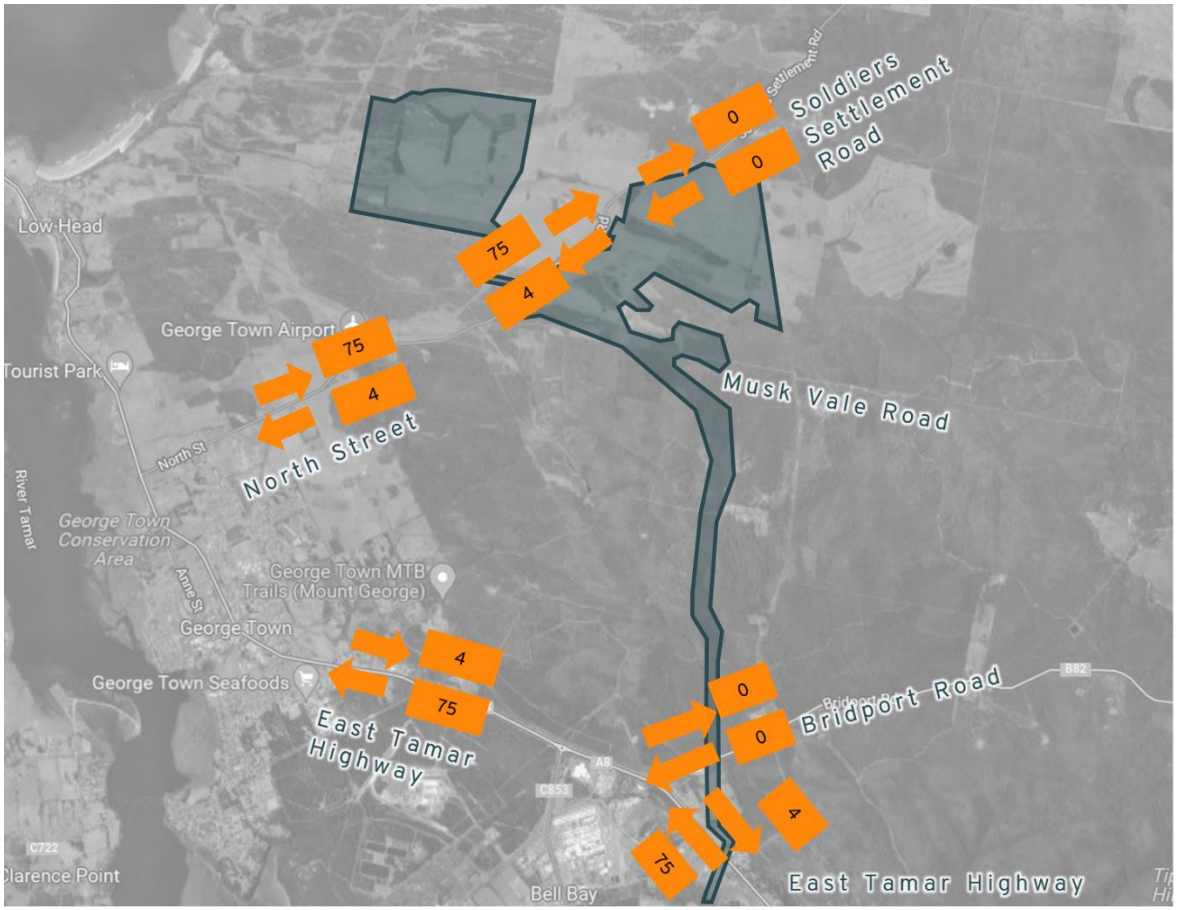
Solar farm traffic is generated from workforce personnel trips to site and from material, plant, and equipment deliveries. Buses will be provided to minimise personnel trips, which are expected to access the site via Soldiers Settlement Road, via North Street and East Tamar Highway. Material, plant and equipment deliveries are expected to arrive from Bell Bay, Devonport or Burnie and access the site via East Tamar Highway, North Street, and Soldiers Settlement Road.

The solar farm construction traffic volumes are provided in Table 6 with the morning peak hour traffic volume during the peak construction period distribution shown in Figure 4.

Table 6: Solar Farm Construction Traffic - Workforce Trips and Deliveries of Material, Plant and Equipment

Vehicle Type	Average Construction Period		Peak Construction Period	
	Daily (vpd)	Peak Hour (vph)	Daily (vpd)	Peak Hour (vph)
Light Vehicle	120	54	140	63
Shuttle Bus	14	7	20	10
Rigid Vehicles	4	1	10	1
Truck and Dog				
AV (19m semi-trailer)	20	1	54	5

Figure 4: Solar Farm Construction Traffic Distribution for the Morning Peak Hour During the Peak Construction Period



Appendix B

Site Access Design

Entry Manoeuvre

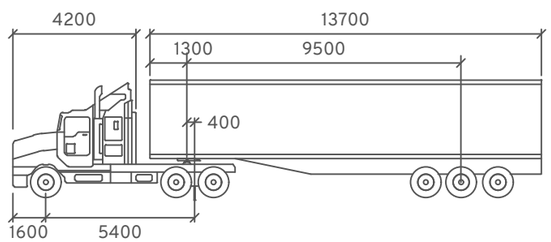
Exit Manoeuvre

Vehicle Envelope

300mm Clearance

Reverse Manoevure

AV



	mm
Tractor Width	: 2500
Trailer Width	: 2500
Tractor Track	: 2500
Trailer Track	: 2500
Lock to Lock	: 6.0s
Steering Angle	: 28.3
Articulating Angle	70.0

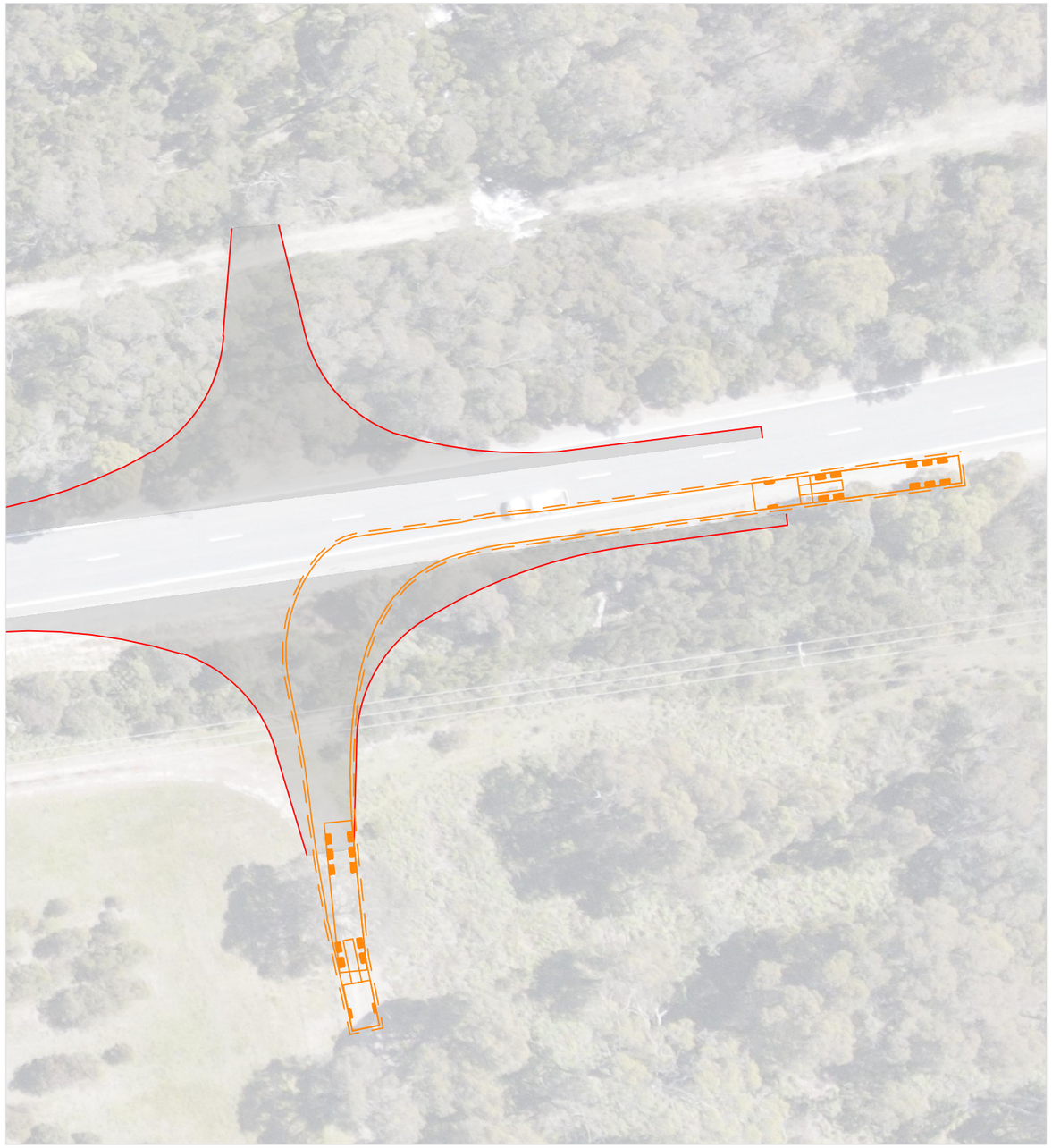
Cimitiere Solar Farm

Bridport Road Site Access - BR1

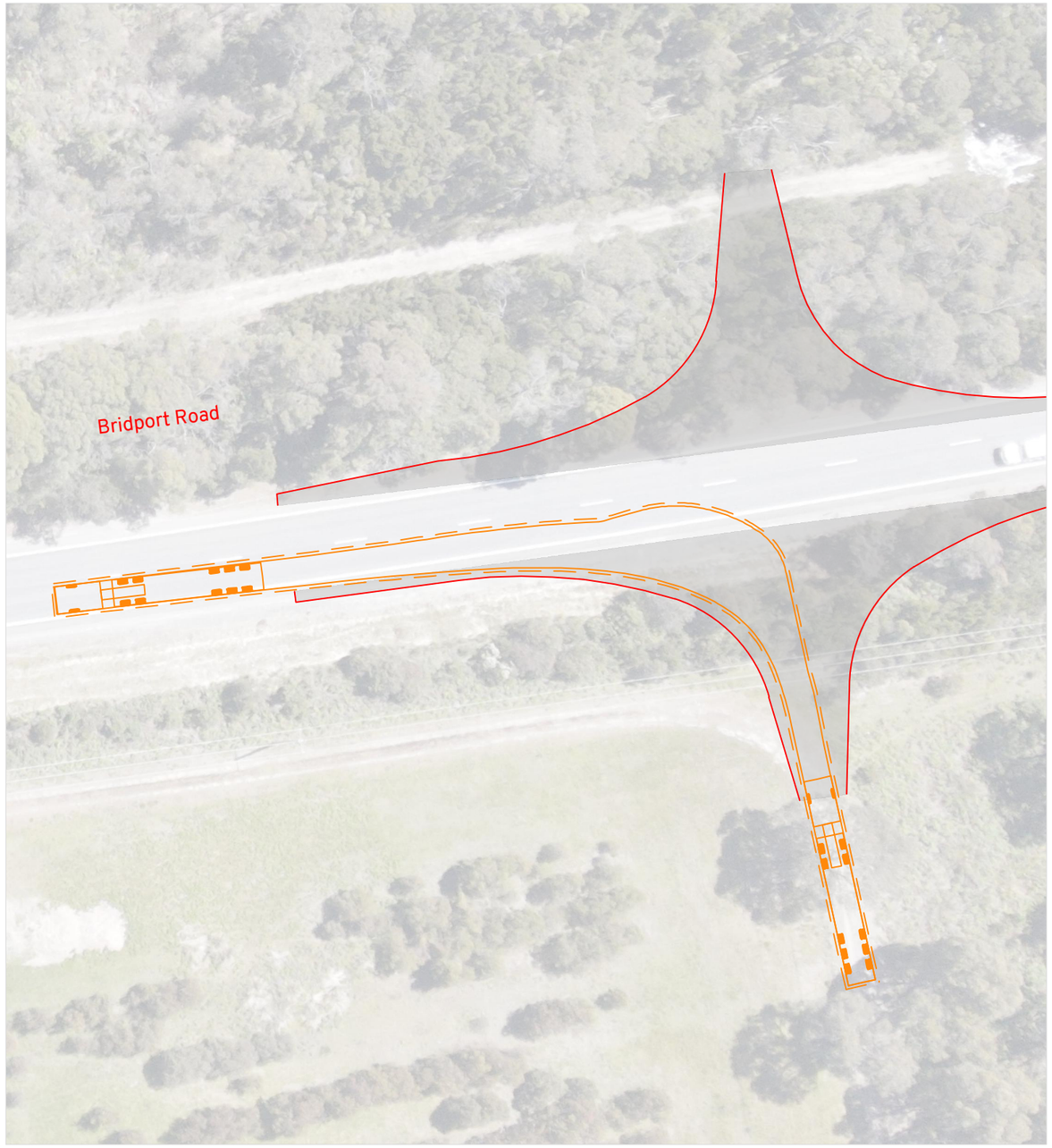
Access Assessment

DRAWN: CT
DATE: 27/04/2023
DWG NO: 538 S01E
SCALE at A3: 1:500

Amber 001



Entry Manoeuvre



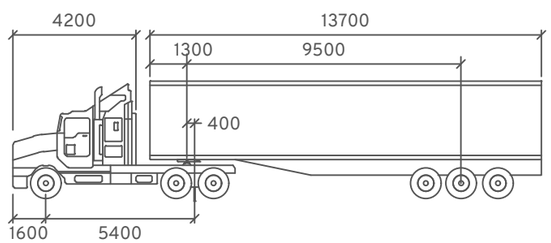
Exit Manoeuvre

Vehicle Envelope

300mm Clearance

Reverse Manoeuvre

AV



	mm
Tractor Width	: 2500
Trailer Width	: 2500
Tractor Track	: 2500
Trailer Track	: 2500
Lock to Lock	: 6.0s
Steering Angle	: 28.3
Articulating Angle	70.0

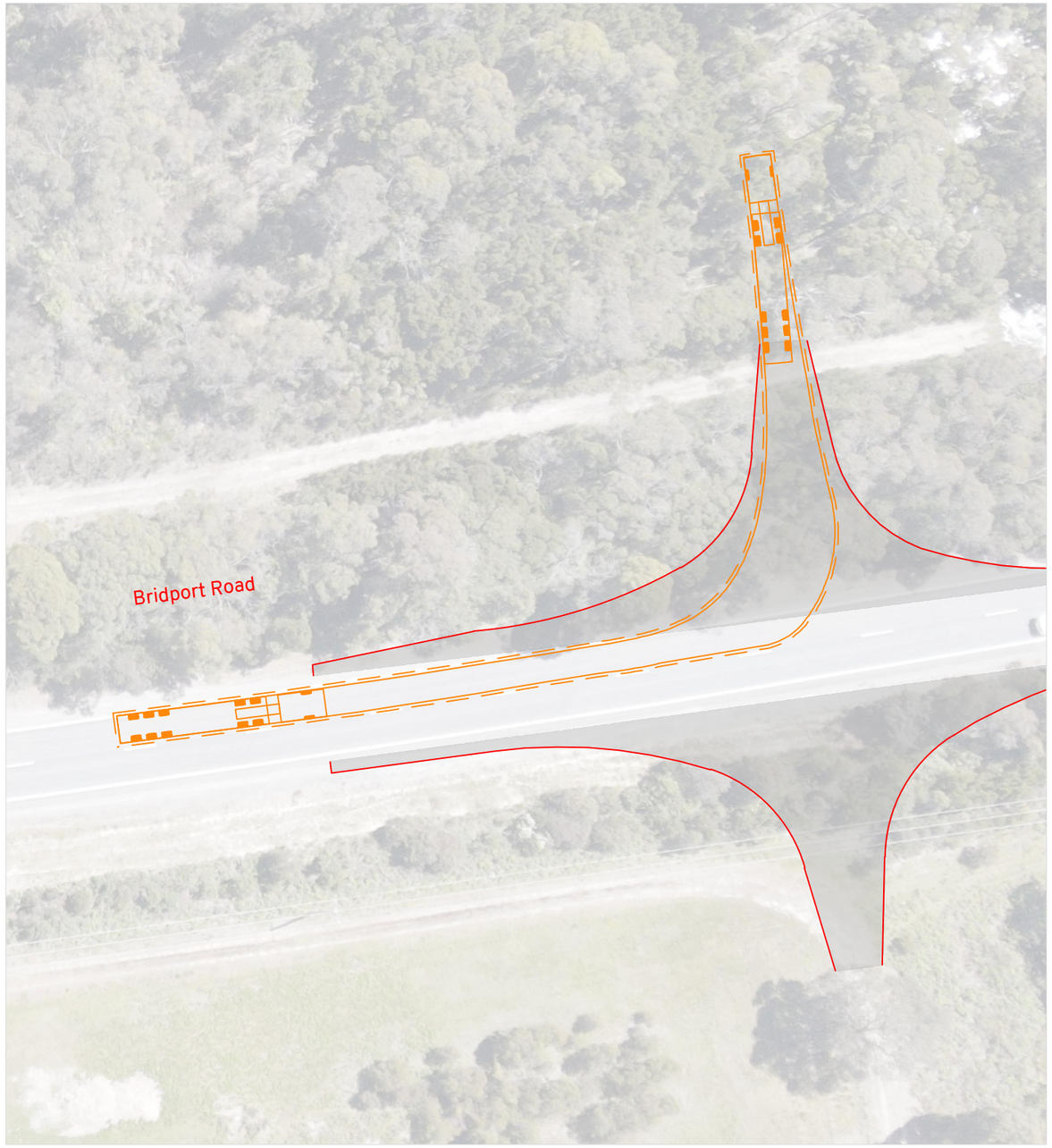
Cimitiere Solar Farm

Bridport Road South Site Access - BR2

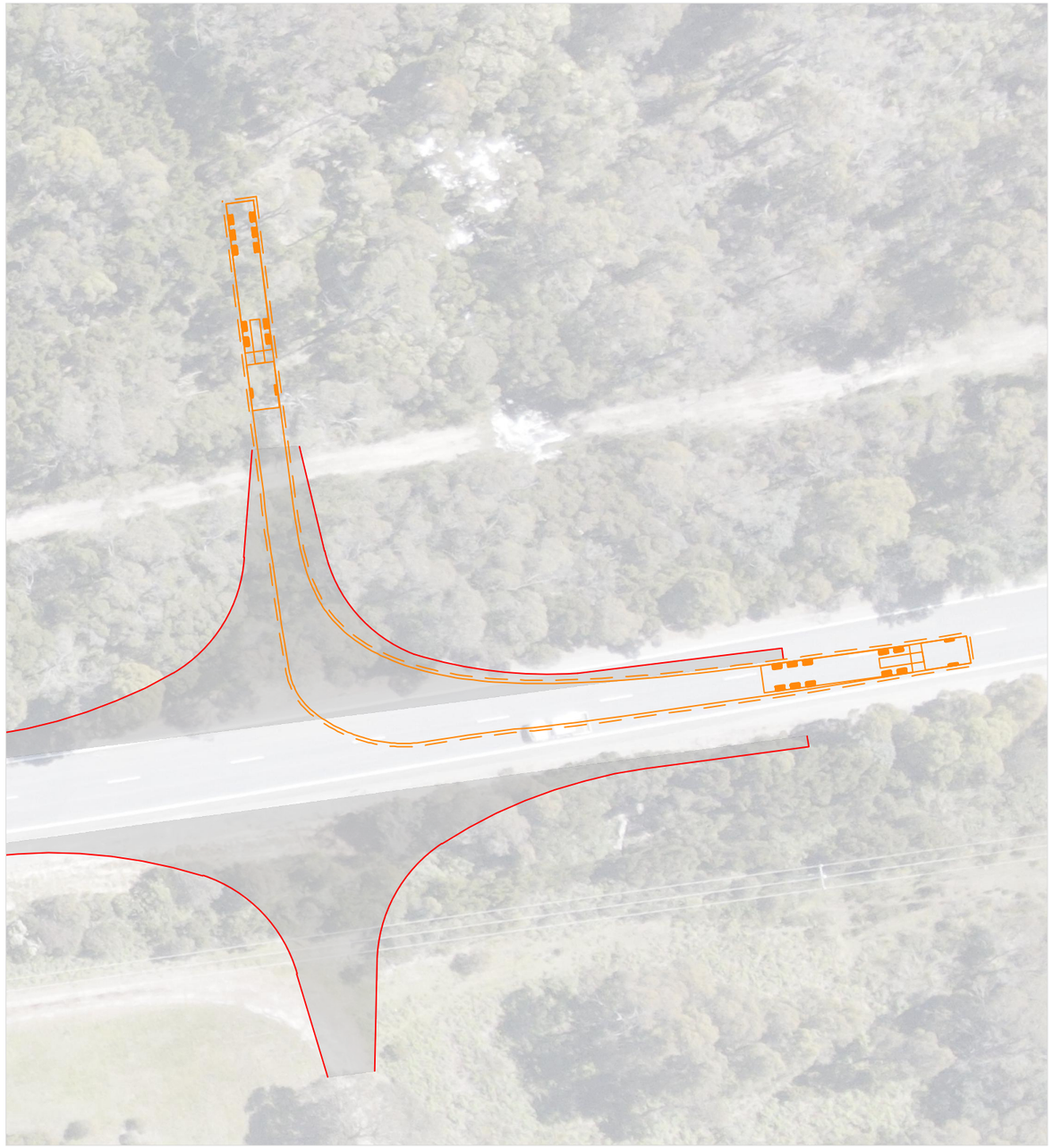
Access Assessment

DRAWN: CT
DATE: 27/04/2023
DWG NO: 538 S01E
SCALE at A3: 1:500

Amber 002



Entry Manoeuvre



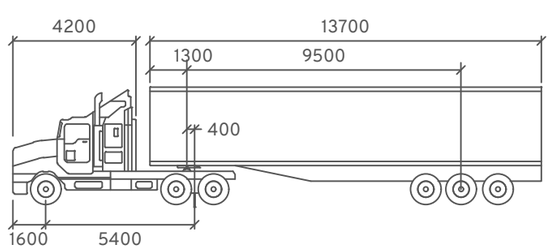
Exit Manoeuvre

Vehicle Envelope

300mm Clearance

Reverse Manoevure

AV



	mm
Tractor Width	: 2500
Trailer Width	: 2500
Tractor Track	: 2500
Trailer Track	: 2500
Lock to Lock	: 6.0s
Steering Angle	: 28.3
Articulating Angle	70.0

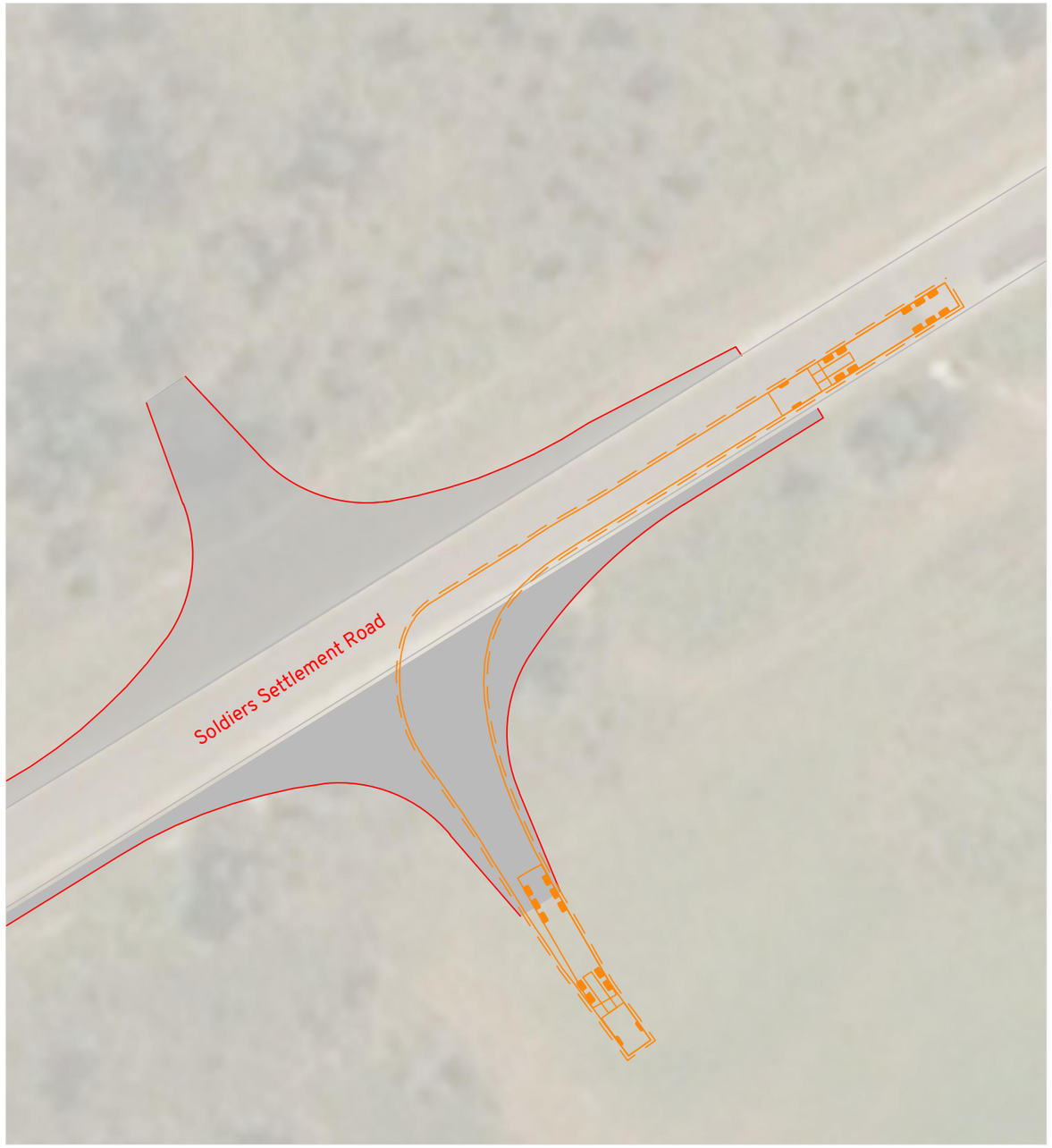
Cimitiere Solar Farm

Bridport Road North Site Access - BR3

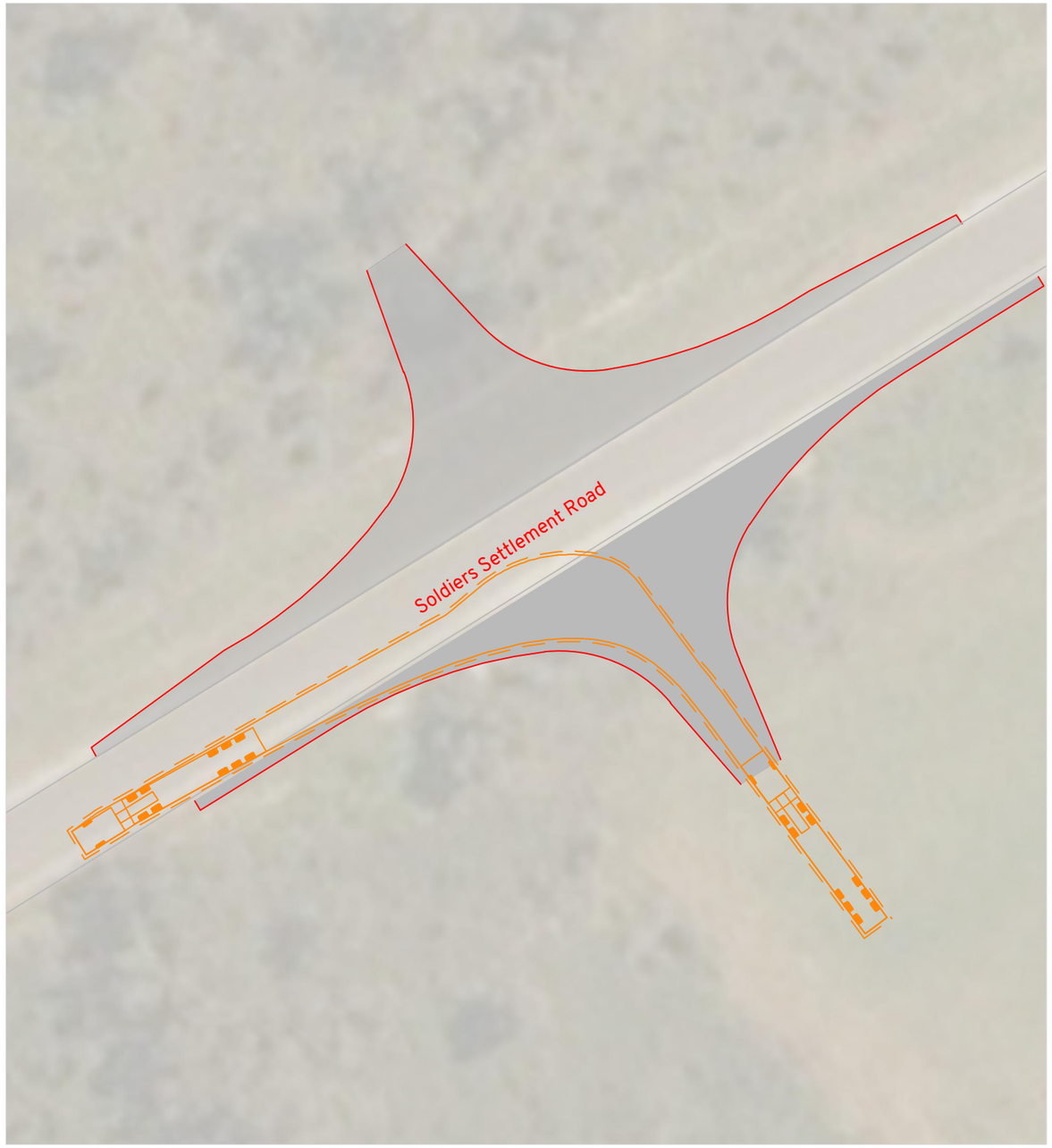
Access Assessment

DRAWN: CT
DATE: 27/04/2023
DWG NO: 538 S01E
SCALE at A3: 1:500

Amber 003



Entry Manoeuvre



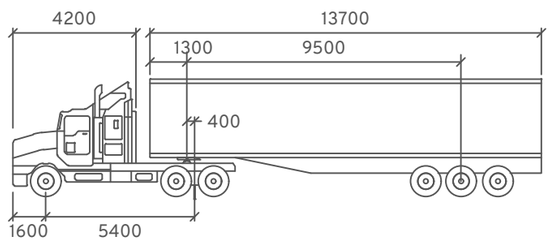
Exit Manoeuvre

Vehicle Envelope

300mm Clearance

Reverse Manoeuvre

AV



	mm
Tractor Width	: 2500
Trailer Width	: 2500
Tractor Track	: 2500
Trailer Track	: 2500
Lock to Lock	: 6.0s
Steering Angle	: 28.3
Articulating Angle	70.0

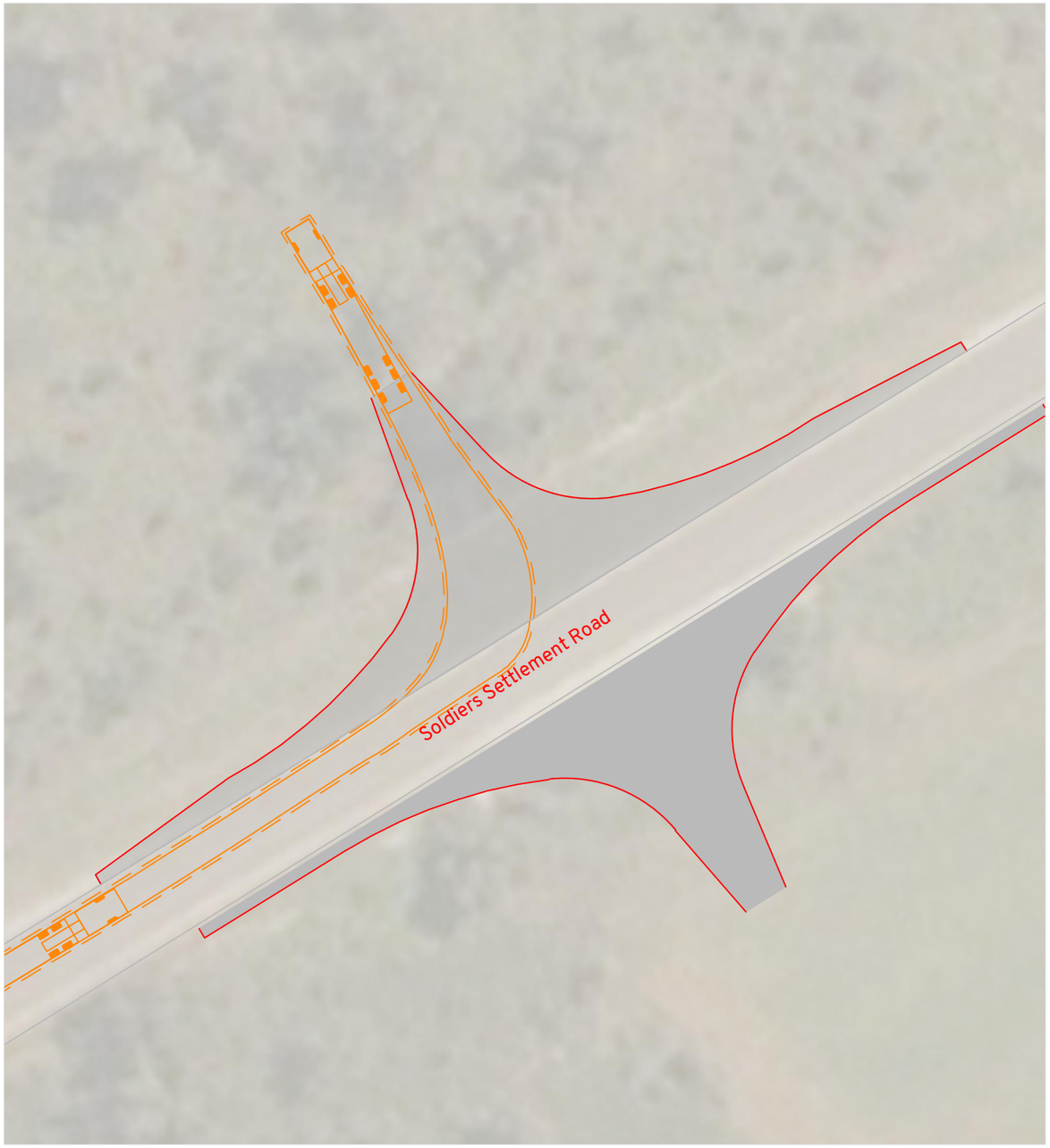
Cimitiere Solar Farm

Soldiers Settlement Road South Site Access - SSR1

Access Assessment

DRAWN: CT
DATE: 27/04/2023
DWG NO: 538 S01E
SCALE at A3: 1:500

Amber 004



Entry Manoeuvre

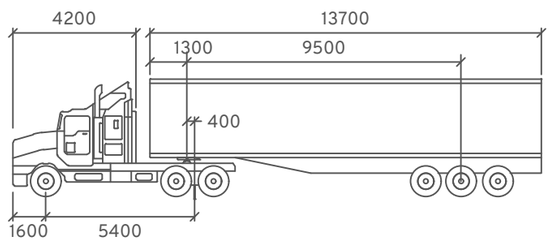
Exit Manoeuvre

Vehicle Envelope

300mm Clearance

Reverse Manoevure

AV



	mm
Tractor Width	: 2500
Trailer Width	: 2500
Tractor Track	: 2500
Trailer Track	: 2500
Lock to Lock	: 6.0s
Steering Angle	: 28.3
Articulating Angle	70.0

Cimitiere Solar Farm

Soldiers Settlement Road North Site Access - SSR2

Access Assessment

DRAWN: CT
DATE: 27/04/2023
DWG NO: 538 S01E
SCALE at A3: 1:500

Amber

005

Entry Manoeuvre

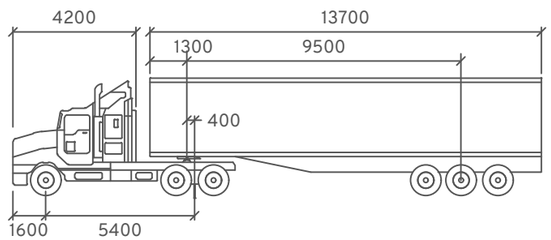
Exit Manoeuvre

Vehicle Envelope

300mm Clearance

Reverse Manoeuvre

AV



	mm
Tractor Width	: 2500
Trailer Width	: 2500
Tractor Track	: 2500
Trailer Track	: 2500
Lock to Lock	: 6.0s
Steering Angle	: 28.3
Articulating Angle	70.0

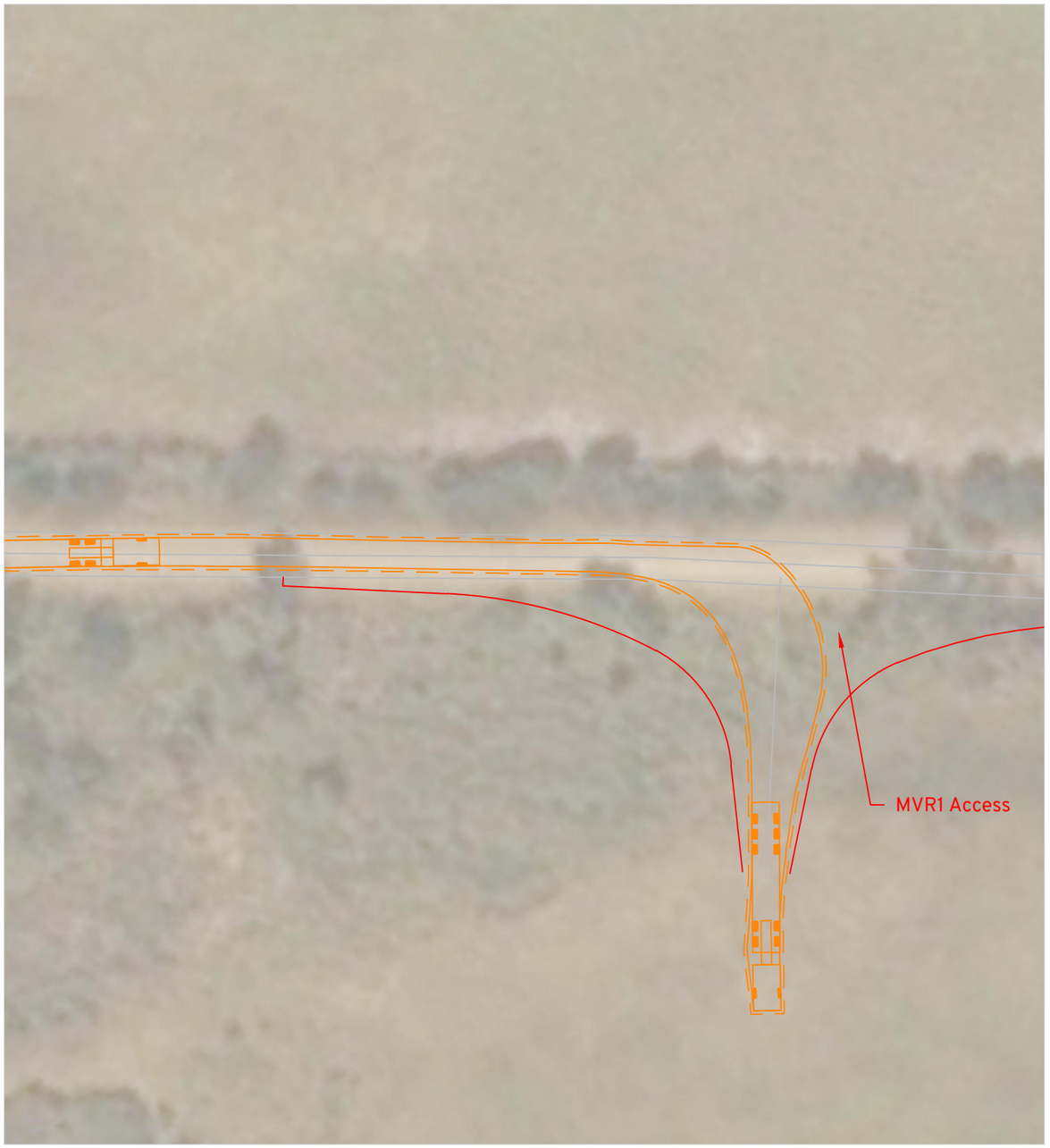
Cimitiere Solar Farm

Soldiers Settlement Road South Site Access - SSR3

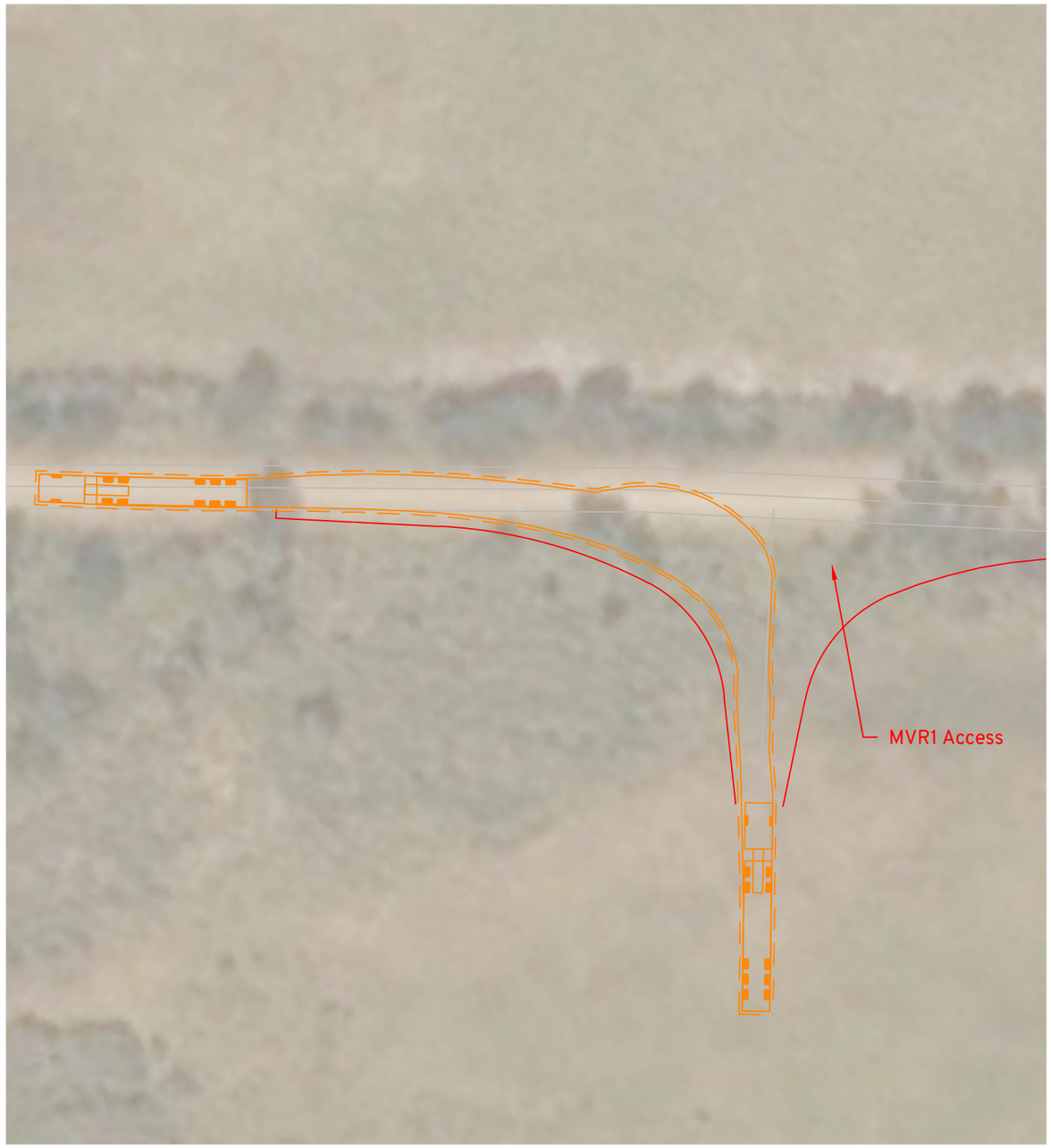
Access Assessment

DRAWN: CT
DATE: 27/04/2023
DWG NO: 538 S01E
SCALE at A3: 1:500

Amber 006



Entry Manoeuvre



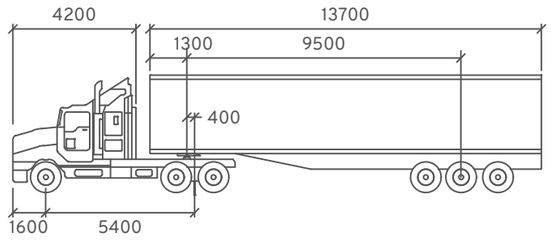
Exit Manoeuvre

Vehicle Envelope

300mm Clearance

Reverse Manoevure

AV



	mm
Tractor Width	: 2500
Trailer Width	: 2500
Tractor Track	: 2500
Trailer Track	: 2500
Lock to Lock	: 6.0s
Steering Angle	: 28.3
Articulating Angle	70.0

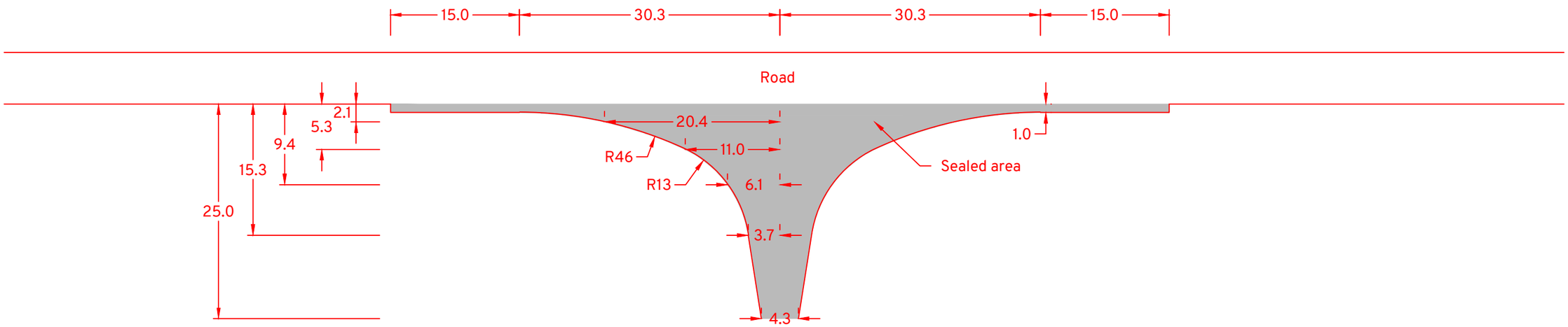
Cimitiere Solar Farm

Musk Vale Road Site Access - MVR2

Access Assessment

DRAWN: CT
DATE: 27/04/2023
DWG NO: 538 S01E
SCALE at A3: 1:500

Amber 007



Notes

1. The diagram is a guide for a typical layout of a driveway access for a rural property.
2. Slight variations may occur after site inspection, analysis and approval of the location.
3. Pavement materials and earthwork layers need to be in accordance with local government specification requirements.
4. A traffic management plan must comply with the road management act and applicable codes in relation to any works undertaken within the road reserve.
5. Truck warning signs & guide posts should be installed in accordance with Austroads Guide to Traffic Management.
6. The driveway access construction and maintenance is the responsibility of the property owner. Maintenance also includes associated drainage works.

Typical vehicle access setout dimensions

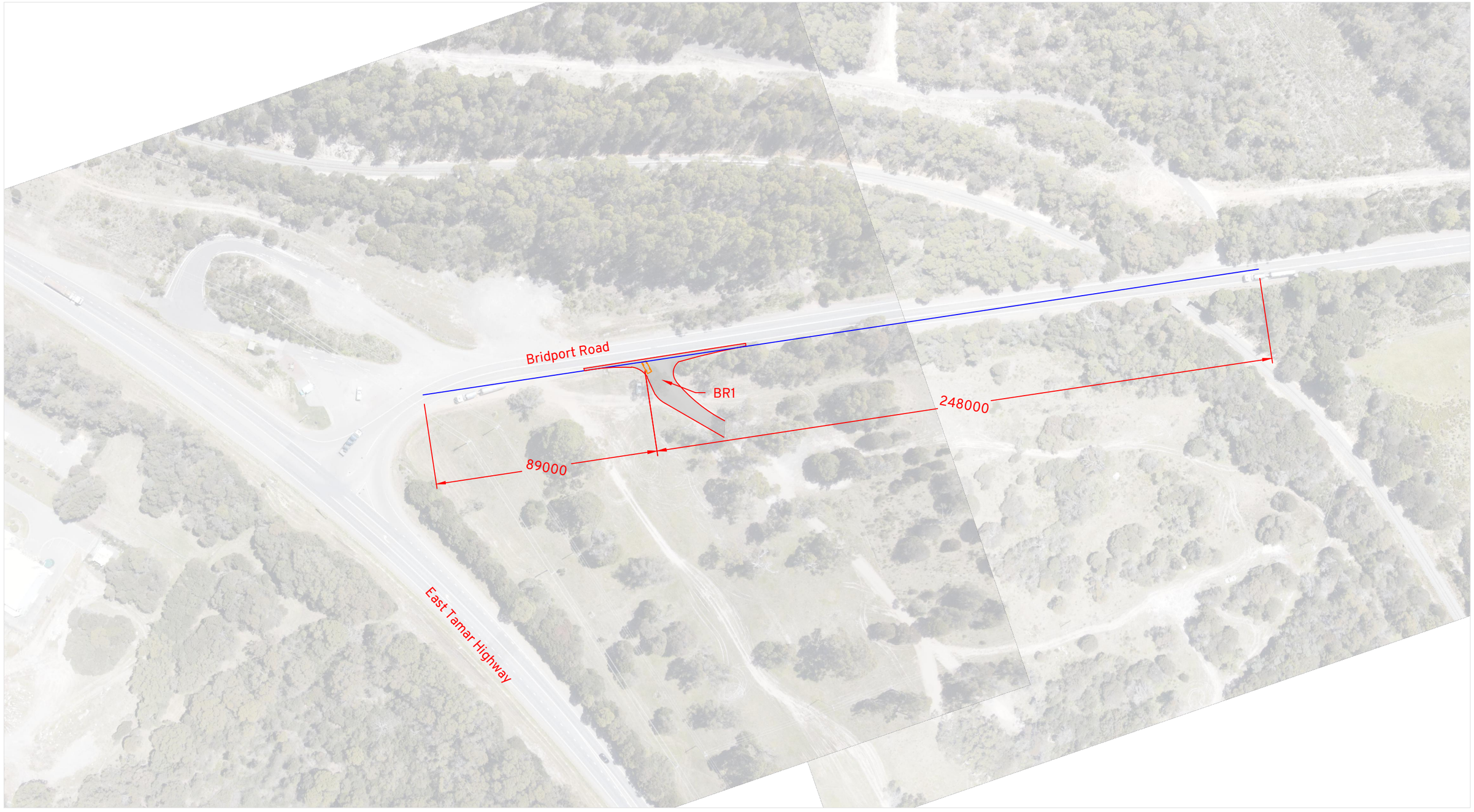
Cimitiere Solar Farm
Typical Site Access
Access Assessment

DRAWN: CT
DATE: 27/04/2023
DWG NO: 538 S01E
SCALE at A3: 1:500

Amber 010

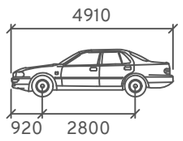
Appendix C

Sight Distance Assessment



Sight Line

B85



	mm
Width	: 1870
Track	: 1770
Lock to Lock	: 6.0s
Steering Angle	: 34.1
Height	: 2100

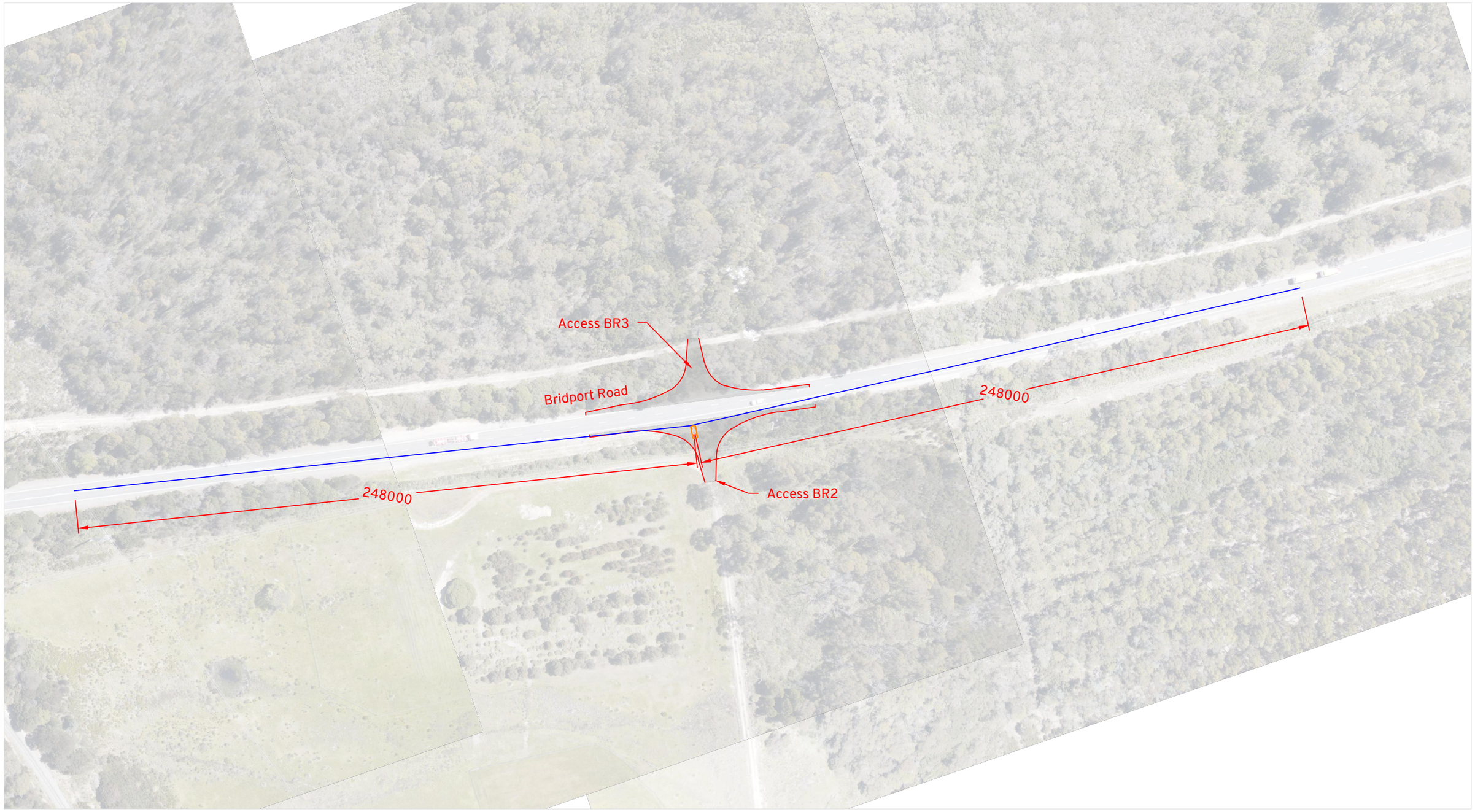
Cimitiere Solar Farm

Bridport Road Road Site Access - BR1

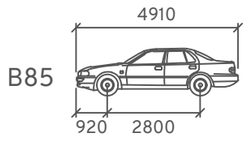
Access Assessment

DRAWN: CT
DATE: 27/04/2023
DWG NO: 538 S01E
SCALE at A3: 1:1500

Amber 101



Sight Line



	mm
Width	: 1870
Track	: 1770
Lock to Lock	: 6.0s
Steering Angle	: 34.1
Height	: 2100

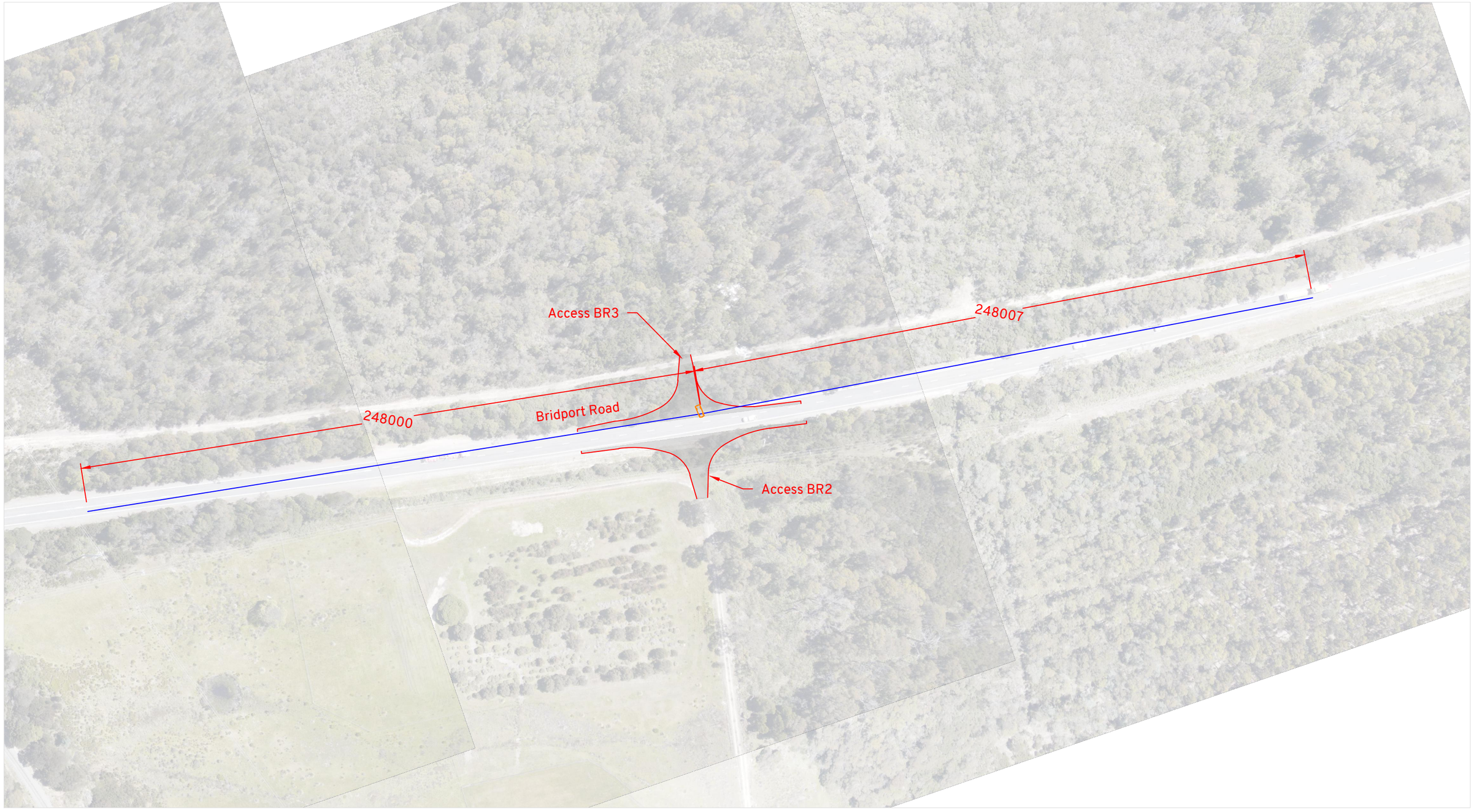
Cimitiere Solar Farm

Soldiers Settlement Road South Site Access

Access Assessment

DRAWN: CT
DATE: 27/04/2023
DWG NO: 538 S01E
SCALE at A3: 1:1500

Amber 102

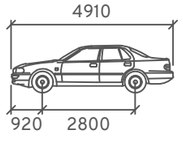


Vehicle Envelope

300mm Clearance

Reverse Manoevure

B85



	mm
Width	: 1870
Track	: 1770
Lock to Lock	: 6.0s
Steering Angle	: 34.1
Height	: 2100

Cimitiere Solar Farm

Soldiers Settlement Road North Site Access

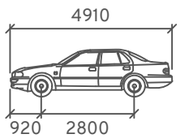
Access Assessment

DRAWN: CT
DATE: 27/04/2023
DWG NO: 538 S01E
SCALE at A3: 1:1500

Amber 103

Sight Line

B85



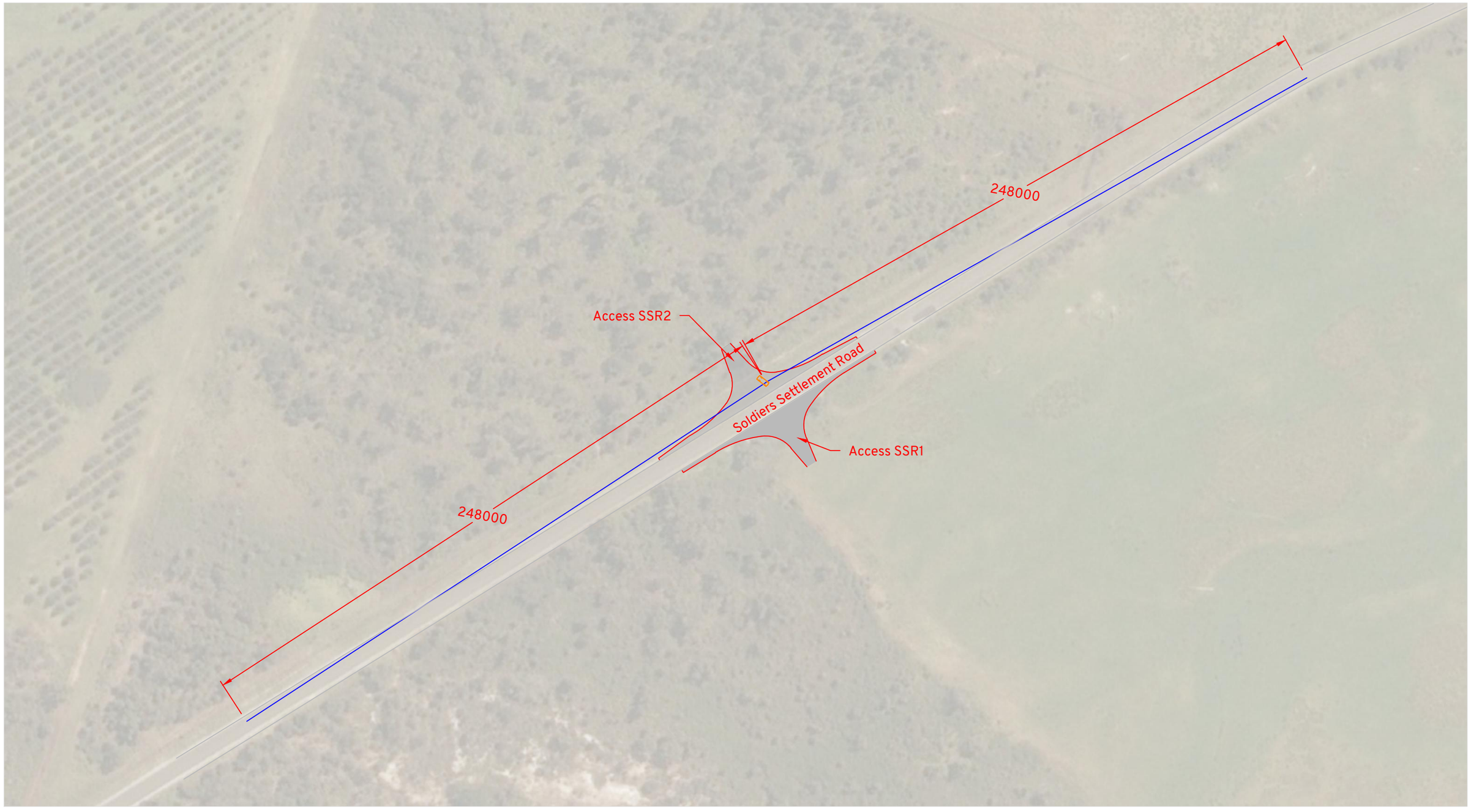
	mm
Width	: 1870
Track	: 1770
Lock to Lock	: 6.0s
Steering Angle	: 34.1
Height	: 2100

Cimitiere Solar Farm

Soldiers Settlement Road South Site Access Access Assessment

DRAWN: CT
DATE: 27/04/2023
DWG NO: 538 S01E
SCALE at A3: 1:1500

Amber 104

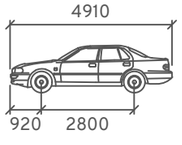


Vehicle Envelope

300mm Clearance

Reverse Manoevure

B85



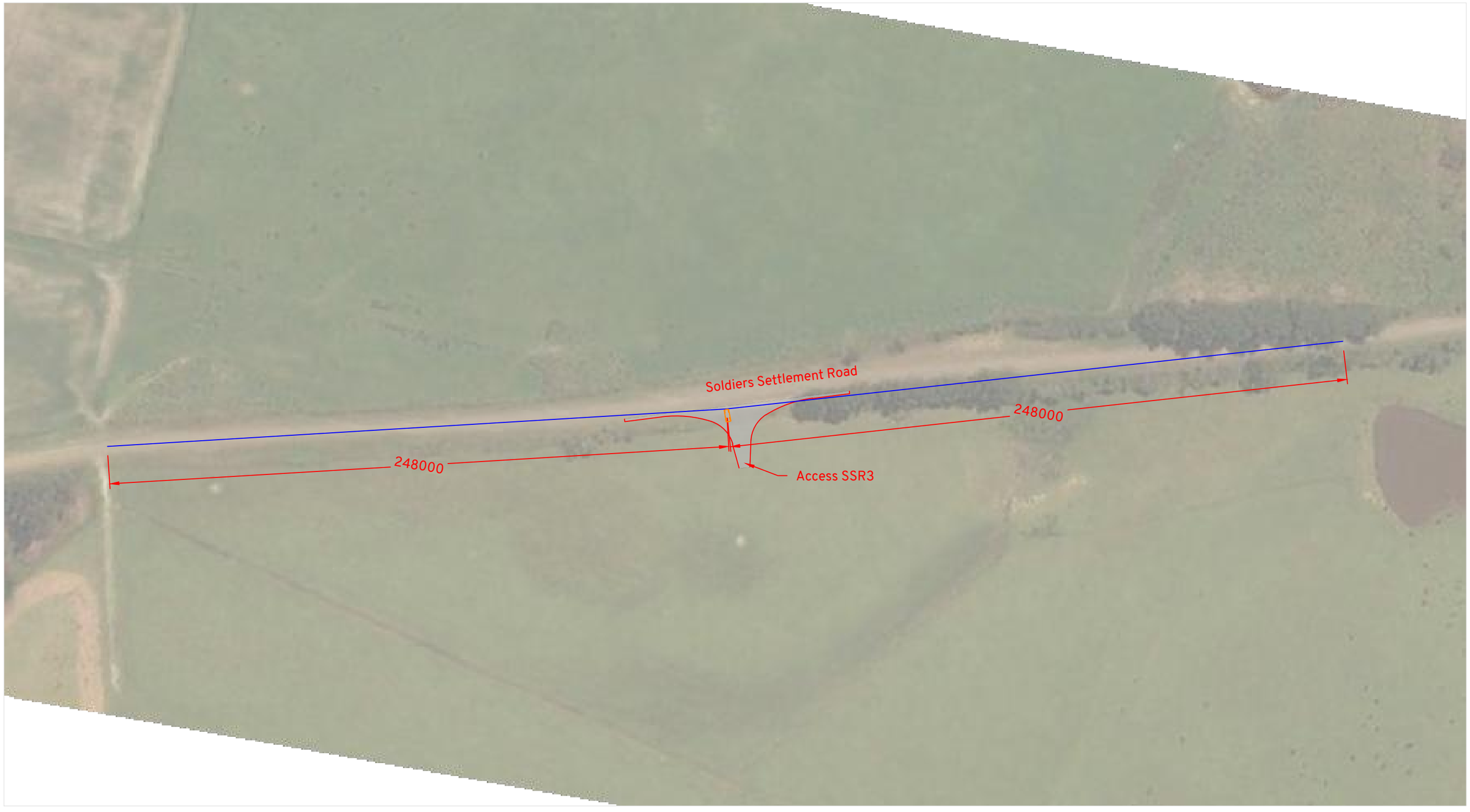
		mm
Width	:	1870
Track	:	1770
Lock to Lock	:	6.0s
Steering Angle	:	34.1
Height	:	2100

Cimitiere Solar Farm

Soldiers Settlement Road North Site Access Access Assessment

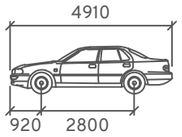
DRAWN: CT
DATE: 27/04/2023
DWG NO: 538 S01E
SCALE at A3: 1:1500

Amber 105



Sight Line

B85



	mm
Width	: 1870
Track	: 1770
Lock to Lock	: 6.0s
Steering Angle	: 34.1
Height	: 2100

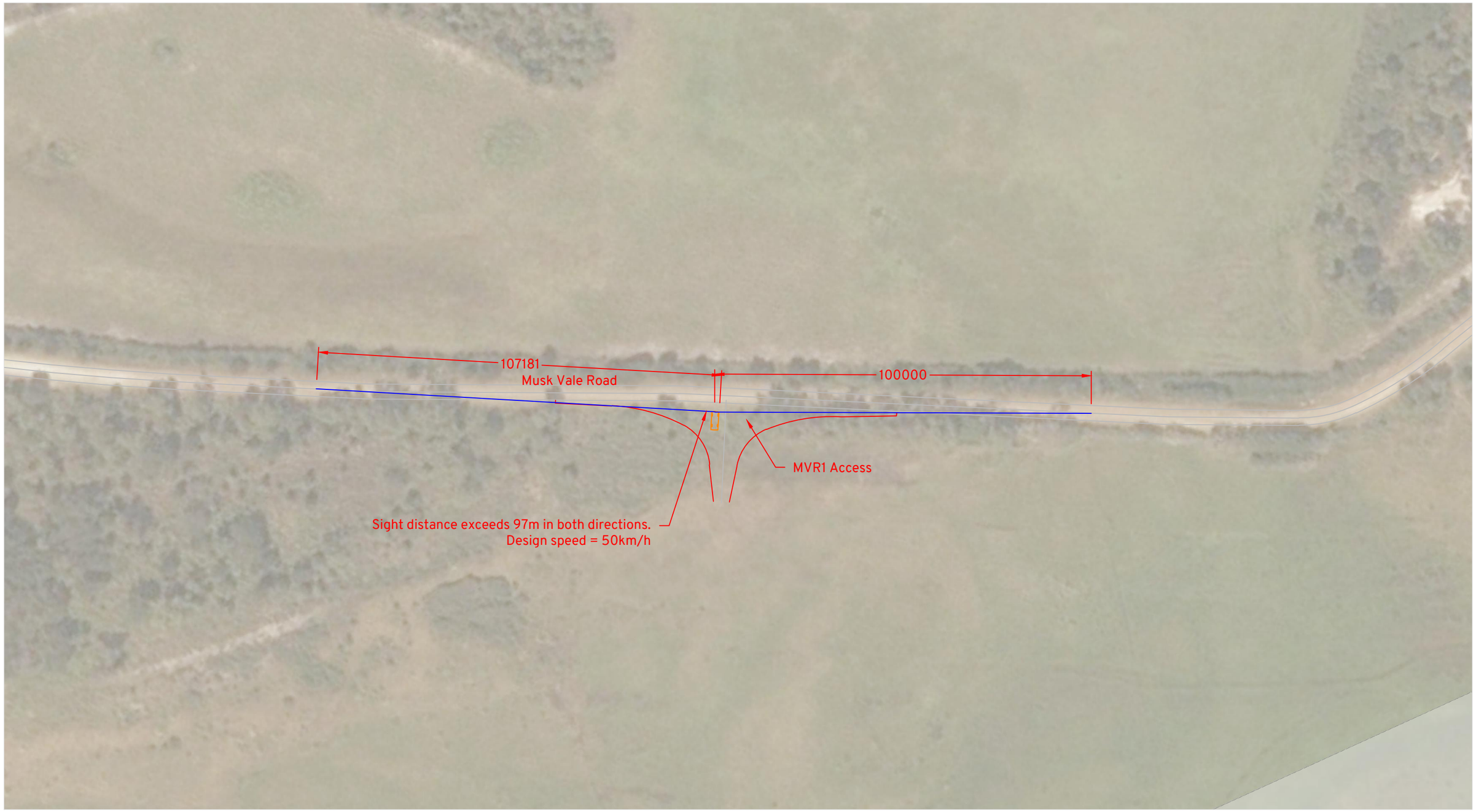
Cimitiere Solar Farm

Soldiers Settlement Road South Site Access

Access Assessment

DRAWN: CT
DATE: 27/04/2023
DWG NO: 538 S01E
SCALE at A3: 1:1500

Amber 106

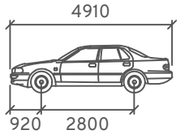


Vehicle Envelope

300mm Clearance

Reverse Manoevure

B85



	mm
Width	: 1870
Track	: 1770
Lock to Lock	: 6.0s
Steering Angle	: 34.1
Height	: 2100

Cimitiere Solar Farm

Musk Vale Road Site Access

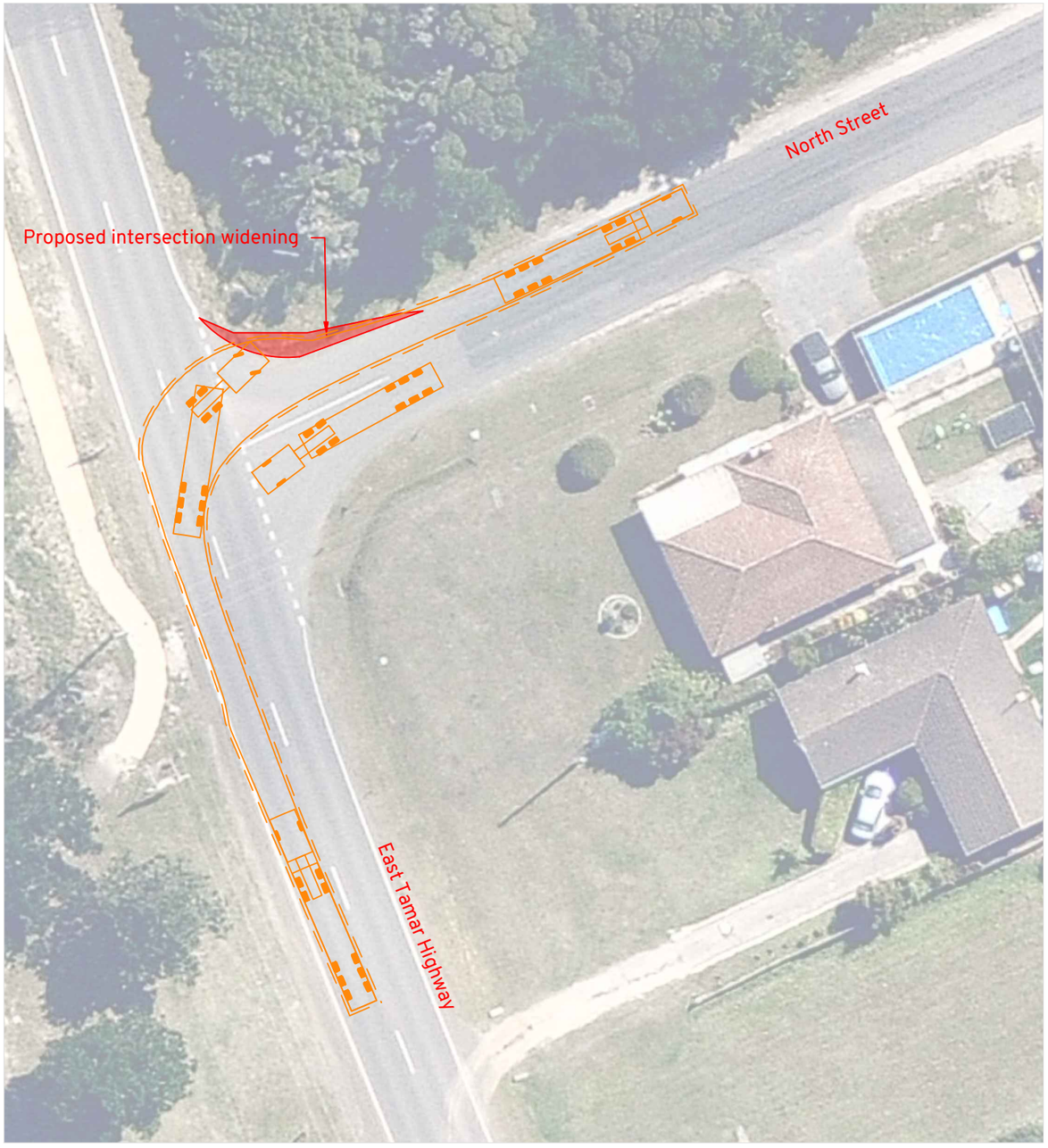
Access Assessment

DRAWN: CT
DATE: 27/04/2023
DWG NO: 538 S01E
SCALE at A3: 1:1000

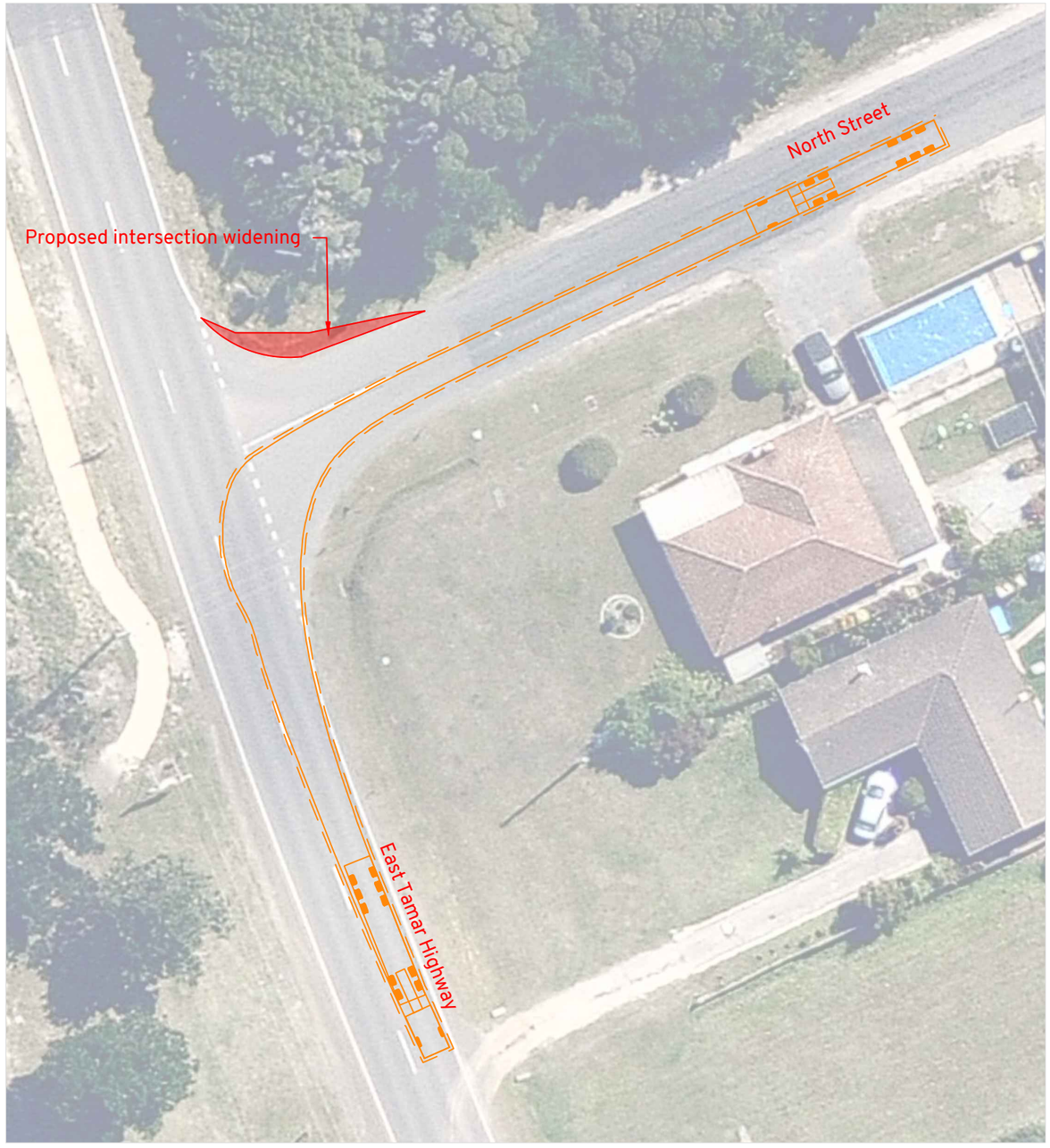
Amber 107

Appendix D

Intersection and Local Road Concept Plans



Entry Manoeuvre



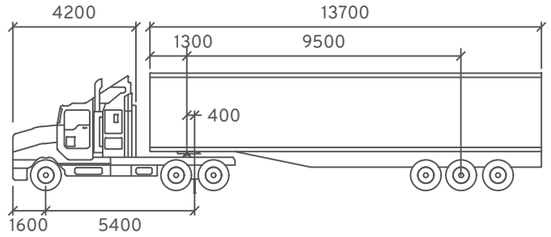
Exit Manoeuvre

Vehicle Envelope

300mm Clearance

Reverse Manoevure

AV



	mm
Tractor Width	: 2500
Trailer Width	: 2500
Tractor Track	: 2500
Trailer Track	: 2500
Lock to Lock	: 6.0s
Steering Angle	: 28.3
Articulating Angle	70.0

Cimitiere Solar Farm

East Tamar Highway / Soldiers Settlement Road Intersection
Access Assessment

DRAWN: CT
DATE: 27/04/2023
DWG NO: 538 S01E
SCALE at A3: 1:500

Amber 200