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Traffic Impact Assessment Report

Richards Road, Castlemaine

Proposed Waste-to-Energy Facility

24/11/2021

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Proposed Waste-to-Energy Facility

Prepared for the Applicant: MA Bioenergy

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Executive Summary

This report assesses the Proposed Waste-to-Energy Facility on Richards Road, Castlemaine. The following provides an executive summary of the report.

Car Parking

The land use term 'Waste-to-Energy Facility' is not listed in Table 1 of Clause 52.06-5 of the Planning Scheme. On this basis, a provision of car parking is to be provided the satisfaction of the Responsible Authority.

A Car Parking Demand Assessment indicates that the proposed development is likley to generate a peak car parking demand of 4-7 spaces, including 3-5 staff spaces and 1-2 visitor spaces.

The provision of 7 on-site car parking spaces, will cater for the expected parking demands on-site.

The proposed on-site car parking spaces are generally in accordance with Clause 52.06-9 and AS2890.1:2004.

Site Access / Design

The internal accessways have been designed to accommodate truck movements associated with raw material deliveries and distribution of finished products. Trucks up to B-Double in size are expected on-site, with 10-12 trucks per day associated with the proposed facility.

Truck movements will enter the site via the southern accessway, travel to the plant sheds at the rear of the site and exit the site via the northern accessway.

Bicycle Parking

The proposed development does not generate a statutory bicycle parking requirement under Clause 52.34 of the Mount Alexander Planning Scheme.

Any bicycle parking demands that do occur could be accommodated informally with the administration building at the front of the site.

Traffic Impacts

The site is expected to service 5-6 trucks on a daily basis, with occasional peak days serving up to 10-12 trucks. The traffic impacts have been conservatively assessed on the peak truck activity of 10-12 trucks.

The development is assessed as generating 44-48 daily vehicle movements, with 16 trips occurring during the 'day' peak hour. This level of traffic generation is modest in the context of the site's location.

The proposed site access points to Richards Road have been assessed to have sufficient capacity to cater for the expected peak hour traffic volumes generate by the proposed development.

Richards Road will comfortably continue to operate with daily traffic volumes within the typical threshold for a local road, following the development of the proposed Waste-to-Energy facility.

The proposal seeks to provide a new 'entry' access point to Richards Road, with no turn lane provision. Turn lanes are not warranted for the proposed 'in' accessway due to the local road classification of Richards Road, low traffic volumes and proposed 50km/h speed zoning.

Service Vehicles

Waste collection will occur via private contractor and can comfortably be accommodated on-site via the substantial on-site loading facilities and accessways.

Summary of Opinions

Having undertaken all tasks necessary to adequately assess the traffic engineering impacts of the Proposed Waste-to-Energy Facility on Richards Road, Castlemaine, we are satisfied that the proposed development is satisfactory.

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1 Introduction

The following Traffic Impact Assessment Report, reviews the key matters pertaining to traffic engineering associated with the Waste-to-Energy facility on Richards Road, Castlemaine.

2 Proposed Development

The proposal is for new Waste-to-Energy facility on Richard Road, Castlemaine, to the north of the existing Don KR Castlemaine facility.

The proposed facility will operate as follows:

- Waste feedstock ('wet' waste including livestock waste, crops, waste water and food waste or 'dry' waste such as wood) will be delivered to the site by truck.
- The waste is processed on-site in an anaerobic digestor to produce biogas, and digestate (fertilizer, soil amendments) or via the biomass plant to produce heat (steam) and biochar.
- The biogas and heat (steam) produced will be piped to the adjacent Don KR Castlemaine plant.
- The digestate and biochar products are transported off-site via trucks.

Table 1 outlines the key attributes of the development from a traffic engineering perspective.

Table 1: Proposed Development Numbers

Attribute	Proposal
Site Operation	
Staff	3-5 people
Hours of Operation	Staff Supervised: 8am-6pm Monday-Friday Plant operated remotely outside of these hours.
Truck Size	Typical Size: Truck & Trailer Unit Maximum Size: 26m B-Double
Daily Volume	Average: 5-6 trucks per day Maximum: 10-12 trucks per day
Car Parking Provision	
Site Office Car Park	7 x car parking spaces including 1 x disabled parking space.
Vehicle Access	
Ingress	New vehicle access to Richards Road, approximately 150m south of Mary Street.
Egress	Widened existing vehicle access to Richards Road, approximately 100m south of Mary Street.

Trucks will enter the site via the southern crossover, travel along the western accessway to the site weighbridge. Trucks would then proceed to load / unload materials within the large plant sheds at the rear of the site. Trucks will then exit the site via the northern accessway to Richards Road (via a truck wash facility on

exit as required). All truck movements will approach / depart the site to/from the south along Richards Road.

Development plans showing the proposed internal layout are attached at Appendix A.

3 Existing Conditions

3.1 Subject Site

The subject site is located on the west side of Richards Road, between Mary Street and Beddard Street in Castlemaine.

Table 2 outlines the key existing features of the subject site.

Table 2: Existing Features of Subject Site

Site Feature	Detail
Municipality	
Municipality	Mount Alexander Shire
Existing Use	
Richards Road	Vacant land
Zoning & Overlays	
Zoning	Industrial 1 Zone (IN1Z)
Overlays	None
Critical Dimensions	
Total Site Area	Approx. 6,000m²
Nearby Land Use	
Within 200m	Don KR Castlemaine Plant to the south. Vacant land to the north.

An aerial photo and location map are provided in Figure 1 and Figure 2 below.



Figure 1: Aerial Photograph (source: Nearmap)

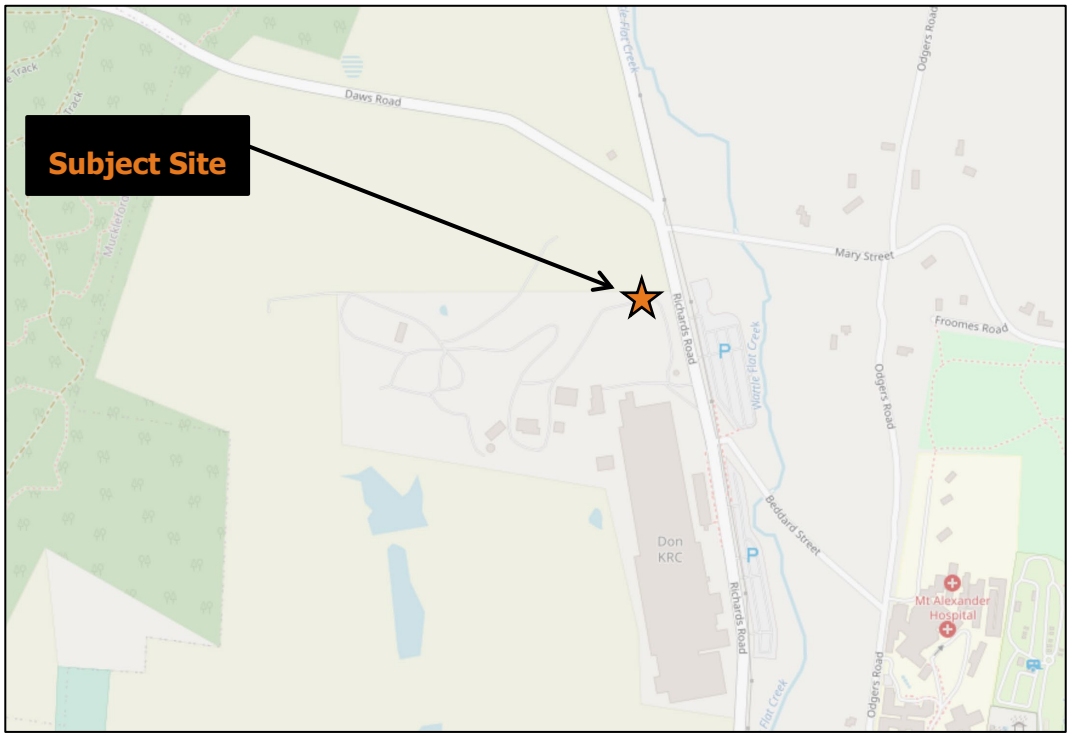


Figure 2: Locality Plan (source: Melway Online)

3.2 Road Network

Richards Road

Richards Road is classified as a local road between Mary Street and Walker Street, under the control and management of Mount Alexander Shire. In the subject section, Richards Road generally provides for a single lane of traffic in each direction, with unsealed gravel shoulders.

The Don KR Castlemaine manufacturing facility is located on the west side of the road, including a number of vehicle access points utilised by trucks for incoming and outgoing goods. Staff car parking is located on the east side of the road, with a carpark to the south of Beddard Street (4 vehicle access points) and a carpark to the north of Beddard Street (2 vehicle access points). Footpaths are provided to facilitate movements between the staff carpark and the manufacturing facility, however, no formal pedestrian crossings of Richards Road are provided.

The intersection at Beddard Street is unsignalised, with a 'give-way' control applying to Beddard Street. The intersection at Mary Street / Muckleford-Castlemaine Road is unsignalised, with priority to Richards Road (south) / Muckleford-Castlemaine Road. 'Give-way' controls apply to the north leg of Richards Road and the east leg of Mary Street.

No Stopping restrictions apply for the majority of both sides of the road, apart from small sections of P15min, P5min, Truck Zone and Bus Zone restrictions.

An existing 50km/h speed limit applies to the south of Beddard Street, with the default rural speed zoning of 100km/h applying to the north of Beddard Street.



Figure 3: Richards Road (view north)



Figure 4: Canterbury Road (view south)



Figure 5: Existing Site Access (view west)



Figure 6: Existing Site Access (view north-west)

Mary Street / Froomes Road

Mary Street / Froomes Road is a local road managed by Mount Alexander Shire and extends in an east-west direction between Richards Road and Downes Road.

Mary Street / Frooomes Road generally provides for a single lane of traffic in each direction. The horizontal alignment includes a significant bend/curve due to the existing topography.

Froomes Road includes a narrow single lane bridge over Barkers Creek in the vicinity of Downes Road.

Mary Street / Froomes Road has a posted speed limit of 60km/h.

3.3 Existing Traffic Volumes

An automatic traffic count was conducted on Richards Road in the vicinity of the subject site (approximately 150m south of Mary Street) for 7 days between Wednesday 4th November and Tuesday 10th November 2020.

A summary of the traffic volumes information is provided in Table 3 below.

Table 3: Richards Road Traffic Statistics – Average Weekday

Measure	Northbound	Southbound	Combined
Daily Traffic Volume	692vpd	728vpd	1,425vpd
AM Pek Hour Volume	50vph (12-1am)	125vph (5-6am)	135vph (5-6am)
PM Peak Hour Volume	132vph (2-3pm)	103vph (2-3pm)	235vph (2-3pm)

3.4 Public Transport

Bus Route 2 – Castlemaine Town Loop operates along Richards Road and Beddard Street, with a summary of the route shown in Figure 7 below.

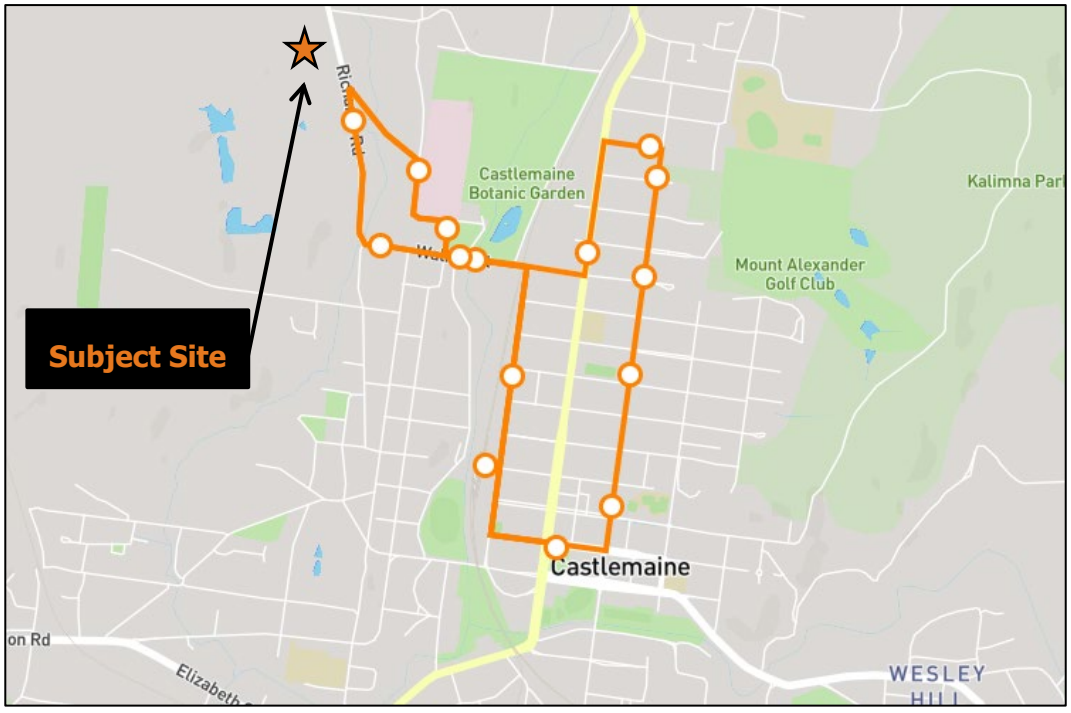


Figure 7: Castlemaine Bus Route 2 (source: PTV)

Given the loop arrangement, buses operates in a northbound direction on Richards Road, with an existing bus stop located outside of the Don KR Castlemaine facility approximately 350m south of the subject site.

Bus Route 2 operates Monday to Friday with 5 services per day as follows:

- 9:29am
- 11:29am
- 12:45pm
- 1:43pm
- 2:50pm

4 Car Parking Assessment

4.1 Statutory Car Parking

Clause 52.06-5 prescribes the number of car spaces to be provided for new developments and changes of use.

Under Clause 74 the proposed land use is defined as 'Waste-to-Energy Facility'.

The land use 'Waste-to-Energy Facility' is not listed in Table 1 of Clause 52.06 of the Mount Alexander Planning Scheme. On this basis, car parking for the proposed development is to the satisfaction of the Responsible Authority.

The following sections detail our assessment of the likley car parking demands and the adequacy of the proposed on-site car parking provision.

4.2 Car Parking Demand Assessment

The proposed facility will operate with 3-5 staff on-site at any one time, operating from the site administration office located at the front of the subject site.

On this basis, long term car parking demands will be generated by staff. Given the location of the site on the periphery of the Castlemaine township and the limited access to public transport, we would conservatively expect a parking rate of 1 space / staff member for the proposed development. Therefore, the 3-5 staff associated with the subject site are likley to generate a demand of 3-5 car parking spaces.

Truck activity associated with the subject site will not generate car parking demands, given that truck movements will originate off-site.

From time to time, additional short-medium term parking demands may be generated by visitors to the site, principally for plant maintenance purposes. We would expect these parking demands to be infrequent, with a peak in the order of 1-2 spaces.

An assessment of the relevant factors with respect to the Car Parking Demand Assessment is outlined in Table 4.

Table 4: Car Parking Demand Assessment Factors

Factor	Commentary
The likelihood of multi-purpose trips within the locality which are likely to be combined with a trip to the land in connection with the proposed use.	The proposed Waste-to-Energy Facility is located on an isolated site and is unlikely to result in multi-purpose trips with other land uses.
The variation of car parking demand likely to be generated by the proposed use over time.	The proposed Waste-to-Energy facility will generate peak parking demands during staff operating hours (8am-6pm weekday). No parking demands are expected outside of the proposed operating hours, when the plant will be remotely operated.

Factor	Commentary
The short-stay and long-stay car parking demand likely to be generated by the proposed use.	The on-site staff will typically generate long term parking demands, which is consistent with the typical 8 hour working day.
The availability of public transport in the locality of the land.	The site has limited access to public transport with Bus Route 2 operating 350m south of the subject site (5 services per day). In view of the above, we expect public transport to only represent a minor number of trips. For the purposes of this assessment, we have conservatively adopted 100% travel by vehicle (1 trip/staff member).
The convenience of pedestrian and cyclist access to the land.	The site has limited access to walking infrastructure, with Richards Road only providing footpaths in the vicinity of the Don KR Castlemaine car parks. In view of the above, we expect walking and cycling to only represent a minor number of trips. For the purposes of this assessment, we have conservatively adopted 100% travel by vehicle (1 trip/staff member).
The provision of bicycle parking and end of trip facilities for cyclists in the locality of the land.	The proposed development does not generate a statutory bicycle parking requirement, and cycling is expected to only represent a minor number of trips. If staff choose to ride to work, bicycles can be informally stored within the site administration office as required.
The anticipated car ownership rates of likely or proposed visitors to or occupants (residents or employees) of the land.	We expect car ownership levels for staff to be reflective of the general regional Victorian population (i.e. the majority of staff would have access to vehicles).
Any empirical assessment or case study.	An empirical assessment is provided above this table, which outlines why the likely demand of the proposed development.

Table 5 summarises the expected car parking demands associated with the proposed Waste-to-Energy facility on Richards Road, Castlemaine.

Table 5: Car Parking Demand Assessment Summary

Component	Size	Rate	Demand
Staff	3-5 staff	1 space/staff member	3-5 spaces
Visitors	1-2 visitors	1 space/visitor	1-2 spaces
TOTAL	**4-7 people**	**-**	**4-7 spaces**

4.3 Adequacy of Car Parking Provision

The proposed development includes 7 on-site car parking spaces adjacent to the administration building. A summary of the proposed on-site car parking is shown in Figure 8 below.

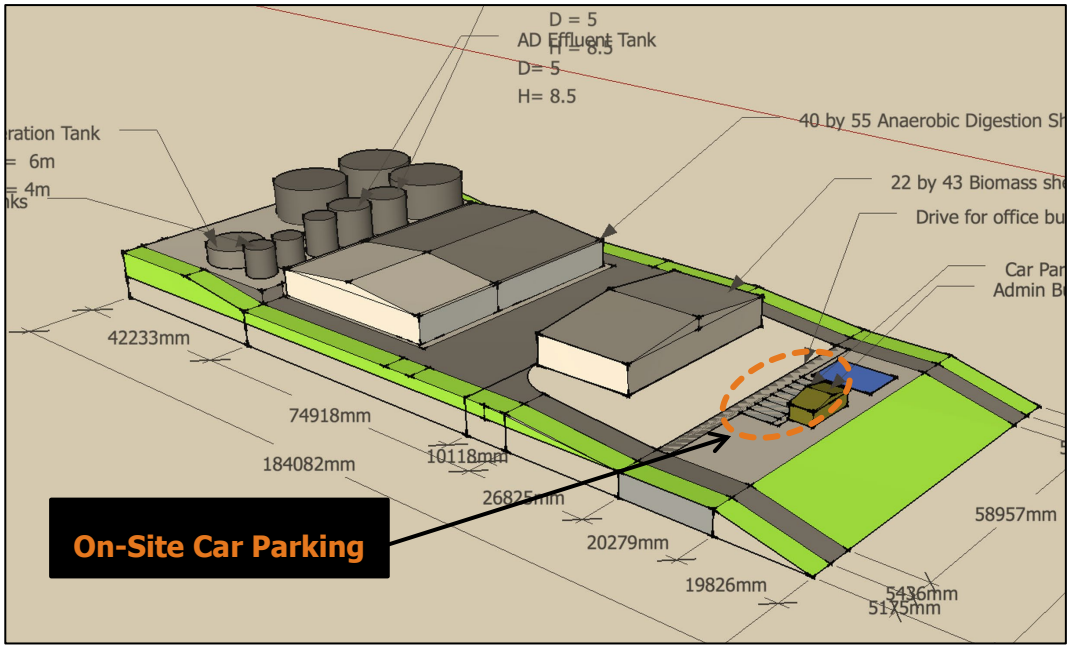


Figure 8: Proposed Plant Layout – On-Site Car Parking

The proposed 7 on-site car parking spaces can comfortably accommodate the predict car parking demand of 4-7 spaces.

4.4 Car Park Design & Access Arrangements

4.4.1 On-Site Car Parking

The proposal seeks to provide 7 on-site car parking spaces, including 1 disabled parking space.

The car parking is proposed in a 90 degree arrangement with access occurring via an internal accessway between the 'entry' and 'exit' accessway roads.

Table 6 below outlines an assessment of the proposed on-site car parking design against the requirements of Clause 52.06 of the Planning Scheme.

Table 6: Review of Proposed On-Site Car Parking (Design Standards)

Design Standard	Compliant	Comments
Design Standard 1 - Accessways		
Be at least 3 metres wide	Compliant	All on-site accessways are a minimum of 4.8m wide.
Have an internal radius of at least 4 metres at changes of direction or intersection or be at least 4.2 metres wide.	Compliant	Generous curve radii are provided at all key changes of direction.
Allow vehicles parked in the last space of a dead-end accessway in public car parks to exit in a forward direction with one manoeuvre	Not Applicable	Not applicable – no dead-end accessways proposed.
Provide at least 2.1 metres headroom beneath overhead	Compliant	No obstructions proposed above the internal accessways or car parking areas.

Design Standard	Compliant	Comments
obstructions, calculated for a vehicle with a wheel base of 2.8 metres		
If the accessway serves four or more car spaces or connects to a road in a Road Zone, the accessway must be designed so that cars can exit the site in a forward direction	Compliant	All vehicles can enter and exit the site in a forwards direction.
Provide a passing area at the entrance at least 6.1 metres wide and 7 metres long if the accessway serves ten or more car parking spaces and is either more than 50 metres long or connects to a road in a Road Zone	Not Applicable	The proposed layout includes separate 'entry' and 'exit' accessways, with the internal road network operating in a one-way configuration. On this basis, passing areas aren't required.
Have a corner splay or area at least 50 per cent clear of visual obstructions extending at least 2 metres along the frontage road from the edge of an exit lane and 2.5 metres along the exit lane from the frontage, to provide a clear view of pedestrians on the footpath of the frontage road.	Not Applicable	No footpaths are located on Richards Road at the site access points. In any event, generous accessway dimensions are provided to allow access for B-Double vehicles.
If an accessway to four or more car parking spaces is from land in a Road Zone, the access to the car spaces must be at least 6 metres from the road carriageway	Compliant	All car parking spaces are well within the subject site, clear of the Richards Road carriageway.
If entry to the car space is from a road, the width of the accessway may include the road	Not Applicable	All car parking spaces accessed internally.
Design Standard 2 – Car Parking Spaces		
Car parking spaces and accessways must have the minimum dimensions as outlined in Table 2.	Compliant	All standard car parking spaces are proposed with dimensions of 2.6m wide x 4.9m long. Spaces are accessed via a 6.2m aisle, with a setback to the parking spaces. On this basis, all parking spaces comply with the minimum space dimensions of Table 1.
A wall, fence, column, tree, tree guard or any other structure that abuts a car space must not encroach into the area marked 'clearance required' on Diagram 1, other than: • *A column, tree or tree guard, which may project into a space if it is within the area marked 'tree or column permitted' on Diagram 1.*	Compliant	All on-site car parking spaces are clear of adjacent obstructions.

Design Standard	Compliant	Comments
A structure, which may project into the space if it is at least 2.1 metres above the space.		
Car spaces in garages or carports must be at least 6 metres long and 3.5 metres wide for a single space and 5.5 metres wide for a double space measured inside the garage or carport.	Not Applicable	No garage spaces proposed.
Where parking spaces are provided in tandem (one space behind the other) an additional 500 mm in length must be provided between each space	Not Applicable	No tandem spaces proposed.
Where two or more car parking spaces are provided for a dwelling, at least one space must be under cover	Not Applicable	Non-residential development.
Disabled car parking spaces must be designed in accordance with Australian Standard AS2890.6-2009 (disabled) and the Building Code of Australia. Disabled car parking spaces may encroach into an accessway width specified in Table 2 by 500mm	Compliant	The disabled parking space is shown with a 2.6m x 4.9m disabled space and adjacent 2.6m x 4.9m 'shared area'. These dimensions satisfy the requirements of Clause 52.06-9, which allows disabled spaces to encroach 500mm into the access aisle to achieve the 5.4m length required under AS2890.6:2009.
Design Standard 3 – Gradients		
Accessway grades must not be steeper than 1:10 (10 per cent) within 5 metres of the frontage.	Not Applicable	This requirement is typically applied to ensure vehicle sight lines to pedestrians on an adjacent footpath. Given that Richards Road does not include footpaths in the vicinity of the subject site, this requirement isn't applicable. In any event, changes in grade are limited to 1:16 over 10m to accommodate articulated vehicles.
Ramps (except within 5 metres of the frontage) must have the maximum grades as outlined in Table 3 and be designed for vehicles travelling in a forward direction.	Compliant	The internal accessways have been designed to accommodate articulated vehicles with maximum grades of 1:6.5 (15.4%). This is well within the maximum grades permitted for standard vehicles.
Where the difference in grade between two sections of ramp or floor is greater that 1:8 (12.5 per cent) for a summit grade change, or greater than 1:6.7 (15 per cent) for a sag grade change, the ramp must include a transition section of at least	Compliant	Grade transitions on-site have been design to accommodate articulated vehicles with a rate of change of 1:16 (6.25%) in 10m of travel. This is well within the maximum change of grade permitted for standard vehicles.

Design Standard	Compliant	Comments
2 metres to prevent vehicles scraping or bottoming.		
Plans must include an assessment of grade changes of greater than 1:5.6 (18 per cent) or less than 3 metres apart for clearances, to the satisfaction of the responsible authority.	Not Applicable	Not required, all changes of grade are within 12.5%.

4.4.1 Internal Accessways

The internal accessways have been designed to accommodate truck movements associated with the delivery of raw materials and the distribution of finished goods (i.e. fertiliser and biochar).

The majority of material deliveries will occur via truck and trailer combinations (truck & dog units), however, larger vehicles up to semi-trailer and B-Double trucks are also expected from time to time.

Site access for truck movements is proposed as follows:

- Trucks turn left in from Richard Road into the southern crossover.
- Trucks travel along the southern accessway and are weighed at the site weighbridge
- Trucks procced to the rear of the site and turn onto the 24.8m wide hardstand area between the plant sheds.
- Trucks up to semi-trailer size reverse into the shed structures to unload raw material or load goods. B-Double vehicles are proposed to unload on the hardstand area, parking parallel to the plant sheds.
- Trucks exit the sheds in a forwards direction and travel along the northern accessway to the truck wash if required.
- Trucks exit the site right out to Richards Road.

A summary diagram showing the on-site circulation of truck movements is shown in Figure 9 below.

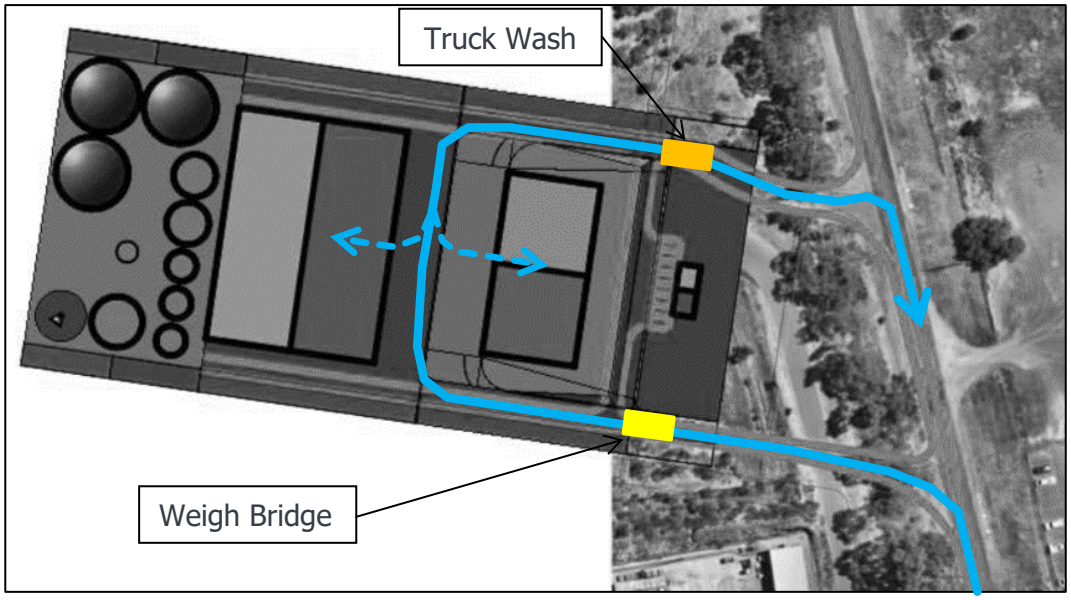


Figure 9: Proposed Plant Layout – On-Site Truck Circulation

The following table summarises the key design features of the internal accessways to cater for the on-site truck movements.

Table 7: Review of Proposed On-Site Accessway for Truck Movements

Design Standard	Comments
Accessway Widths	The internal accessways are a minimum of 4.8m wide, with widening on curves to accommodate truck swept paths. Swept path diagrams of the truck movements along the internal accessways are provided in Appendix B.
Truck Passing	A significant hardstand area is provided between the plant sheds at the rear of the site, which allows for truck passing as required. In any event, the volume of trucks expected is unlikely to result in many truck passing events.
Curve Radii	At changes of direction generous curve radii and splays have been provided to accommodate the extents of the truck swept paths. Swept path diagrams of the truck movements along the internal accessways are provided in Appendix B.
Site Grades	The internal accessways have generally been design to the following requirements of AS2890.3 for articulated vehicles: • Maximum Grade – 1:6.5 (15.4%) • Rate of Change – 1:16 (6.25%) in 10m of travel
Plant Shed Access Doors	Indicative access doors have been shown on the plant sheds, with a clear width of 7m. These doors are shown in the centre of the plant sheds. Whilst the final provision of doors is to be determined, we recommend that the doors are at least 7m wide and located generally in the centre of the sheds.

In view of the above, the internal accessways can cater for the expected on-site truck movements up to B-double in size.

4.4.2 Richards Road Access Points

External vehicle access is proposed to Richards Road, with separate 'entry' and 'exit' crossovers.

The 'entry' access is a new access located approximately 150m south of Mary Street and permits left in only movements for trucks and both left in and right in movements for standard vehicles. The access has been sized to accommodate the swept path movement of a B-Double truck turning left in, which can then comfortably accommodate standard vehicle movements.

The 'exit' access consists of a widening of an existing access, located approximately 100m south of Mary Street. The access has been designed to accommodate right out truck movements and both left out and right out standard vehicle movements.

Swept path diagrams of B-Double movements utilsing the site access points to Richards Road are provided in Appendix C.

A summary diagram of the proposed access points to Richards Road is provided in Figure 10 below.

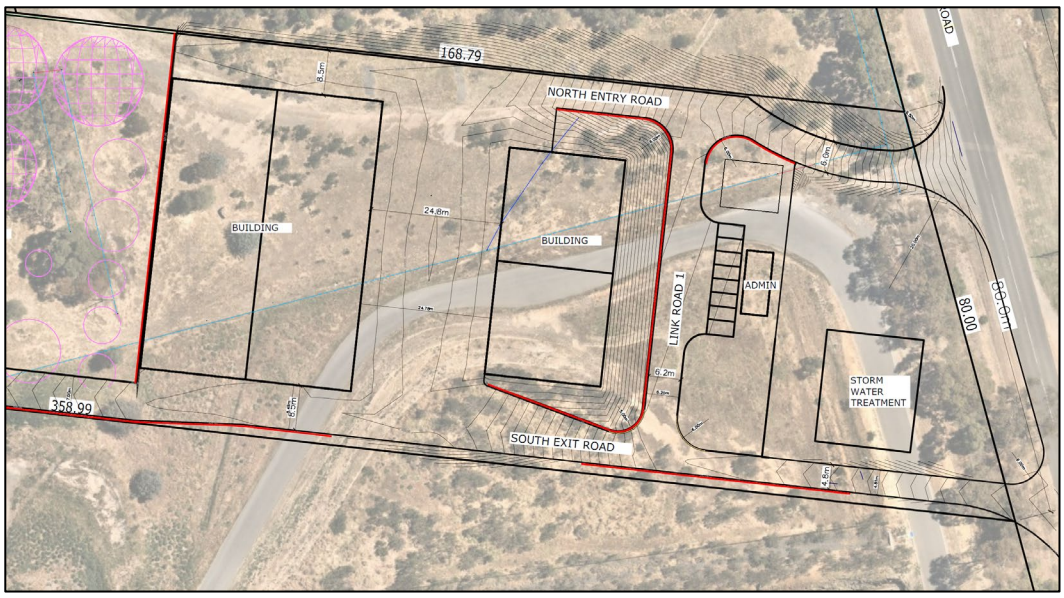


Figure 10: Proposed Richards Road Access Points (Aerial Source: Nearmap)

The proposed access points are located on a straight length of Richards Road, with a gentle grade up from south to north. On this basis, sight lines to the south are generally unimpeded and sight lines to the north extend to past the intersection with Mary Street (approximately 130m).

We note that Mount Alexander Shire has commenced a process to review the speed zoning on Richard Road adjacent to the subject site. The proposal seeks to reduce the speed zoning to 50km/h, consistent with the approach adjacent to the Don KR Castlemaine facility. On this basis, sight distance in accordance with the Austroads Guide to Road Design can be achieved in both directions.

5 Bicycle Parking Assessment

5.1 Statutory Bicycle Parking

Clause 52.34 prescribes the number of bicycle spaces to be provided for new uses and changes of use.

Waste-to-Energy Facility is not listed in Table 1 of Clause 52.34 and therefore there is no statutory bicycle parking requirement associated with the proposed development.

We are satisfied that informal storage of bicycles could occur internally within the administration building as required.

6 Traffic Impacts

6.1 Traffic Generation

Staff

Staff trips to/from the site are generally expected to occur at the start and end of the day, associated with commuter trips to/from work. For the purposes of this assessment we have assumed that the maximum 5 staff are on-site and each staff member arrives or departs in the same hour. This result in 5 'in' trips during the AM commuter peak and 5 'out' trips in the PM commuter peak.

Staff may also generate trips during the work day, principally associated with trips for lunch and other breaks. During any one hour throughout the day, we would expect up to 60% of staff would generate an external trip which would depart the site and return within an hour. Therefore during a 'day' peak period up to 6 trips could be expected (3 'out' trips and 3 'in' trips).

In view of the above, a daily traffic generation rate of 4 trips / staff member has been adopted, which allows for the commuter movements in each peak period and 1 return trip during the day (i.e. for lunch trips, etc).

Visitors

Visitors principally associated with plant maintenance are expected on an occasional basis. These movements are expected to occur throughout the 'day' period, with up to 2 'in' trips and 2 'out' trips expected. Given the purpose of these trips, the duration of stay is expected to be longer than 1 hour and therefore any peak hour period would only include either the 'in' or 'out' trips.

Truck Movements

Truck movements associated with raw material delivery and distribution of finalised products will occurring during operational hours. During typical operation 5-6 trucks are expected on a daily basis, rising to 10-12 trucks per day during peak operation. For the purposes of this assessment, we have conservative assessed the peak operation of 10-12 trucks per day.

A total of 10-12 trucks are expected for peak operation (10-12 'in' trips and 10-12 'out' trips). Allowing 15 minutes for truck loading, a peak hour could accommodate up to 4 trucks (4 'in' trips and 4 'out' trips).

Truck movements would occur throughout the 'day' period, during operating hours of the facility.

Summary

Table 8 below outlines the daily and peak hour traffic generation of the proposed development. The peak hours have been separated into commuter peak periods (when staff movements occur) and the 'day' peak period when truck movement, occasional visitor movements and staff trips throughout the day occur.

Table 8: Traffic Generation Summary

	No.	Daily Volume	Commuter Peak hour Volume	'Day' Peak Hour Volume
Staff	5 staff	20	5	6
Visitors	2 visitors	4	-	2
Trucks	10-12 Trucks	20-24	-	8
TOTAL		**44-48**	**5**	**16**

Accordingly, the traffic generation of the proposed development is 44-48 daily vehicle movements with up to 16 vehicle movements occurring during the 'day' peak hours.

6.2 Traffic Distribution

The following outlines the distribution of trips during the typical 'day' peak period.

- Staff – 50% departure 50% arrival
- Visitors – 0% departure 100% arrival
- Trucks – 50% departure 50% arrival

Table 9 below outlines the traffic distribution of the proposed development based on 16 vehicle movements in the 'day' peak hour.

Table 9: Traffic Distribution

	Arrival Movements	Departure Movements
Staff	TOTAL = 3 trips (avg. 1 movement every 20 mins)	TOTAL = 3 trips (avg. 1 movement every 20 mins)
Visitors	TOTAL = 2 trips (avg. 1 movement every 30 mins)	-
Trucks	TOTAL = 4 trips (avg. 1 movement every 15 mins)	TOTAL = 4 trips (avg. 1 movement every 15 mins)
TOTAL	**9 trips** (avg. 1 movement every 6-7 mins)	**7 trips** (avg. 1 movement every 8-9 mins)

6.3 Capacity Assessment

The traffic volumes generated by the proposed development will access the broader road network via separate 'entry' and 'exit' accessways.

6.3.1 Peak Hour Capacity

From a capacity perspective, the 'entry' access will accommodate 9 trips during the day peak period, whilst the 'exit' access will accommodate 7 trips during the day peak period. These volumes are minor in the context of intersection capacity, representing an average of 1 movement every 6-9 minutes.

Richards Road is classified as a local road, with the following peak hour volumes:

- AM peak hour – 135 vehicle per hour (5am-6am)
- PM peak hour – 235 vehicles per hour (2pm-3pm)

These traffic volumes are minor, with the sparse traffic flow resulting in numerous 'gaps' in the traffic stream. On this basis, the proposed access points to Richards Road will have sufficient capacity to comfortably accommodate the predicted peak hour traffic volumes associated with the proposed Waste-to-Energy facility.

6.3.2 Daily Traffic Volume Capacity

The proposed Waste-to-Energy facility is expected to generate 44-48 trips per day.

Local roads are typically assigned an environmental capacity of up to 3,000 vehicle per day.

Given the existing daily volume on Richards Road is 1,425 vehicles per day, Richards Road will comfortably continue to operate with traffic volumes within the typical threshold for a local road.

6.4 Turn Lanes

The proposal seeks to provide a new 'entry' access point to Richard Road, with no turn lane provision. Turn lanes are typically applied to higher order roads to manage capacity and safety.

As discussed above, the road environment on Richards Road is local in nature with a low daily traffic volume of 1,425 vehicle per day. Furthermore, Council's current proposal to reduce the traffic speed adjacent to the subject site to 50km/h further downgrades the road environment.

In view of the above, turn lanes are not warranted for the proposed 'in' accessway due to the local road classification, low traffic volumes and proposed 50km/h speed zoning. This is consistent with the approach to other significant access points along Richards Road to the Don KR Castlemaine Facility.

7 Service Vehicles

7.1 Waste Collection

We would expect a level of waste to be generated by the site, that would be collected by private contractor.

Private waste collection vehicles are typically similar in size to the 8.8m MRV and therefore can be comfortably accommodated by the internal / external access arrangement which have been designed to accommodate semi-trailer and B-double vehicles.

A Waste Management Plan could be provided as a condition of permit in order to formalise the waste collection arrangements.

7.2 Loading

As discussed previously in Section 4.4.1 and Section 4.4.2, the site has been design with substantial loading facilities to cater for the delivery of raw materials and the distribution of finished goods (i.e. fertiliser).

Swept paths diagrams demonstrating the adequacy of the proposed internal accessways and external access points are provided in Appendix B and Appendix C.

8 Conclusions

Having undertaken a detailed traffic engineering assessment the following conclusions are reached in relation to the proposed Waste-to-Energy Facility on Richards Road, Castlemaine.

1. The land use term 'Waste-to-Energy Facility' is not listed in Table 1 of Clause 52.06-5 of the Planning Scheme. On this basis, a provision of car parking is to the satisfaction of the Responsible Authority.
2. A Car Parking Demand Assessment indicates that the proposed development is likley to generate a peak car parking demand of 4-7 spaces, including 3-5 staff spaces and 1-2 visitor spaces.
3. The provision of 7 on-site car parking spaces, will cater for the expected parking demands on-site.
4. The proposed on-site car parking spaces are generally in accordance with Clause 52.06-9 and AS2890.1:2004.
5. The internal accessways have been designed to accommodate truck movements associated with raw material deliveries and distribution of finished products. Truck movements will enter the site via the southern accessway, travel to the plant sheds at the rear of the site and exit the site via the northern accessway.
6. The proposed development does not generate a statutory bicycle parking requirement under Clause 52.34 of the Mount Alexander Planning Scheme.
7. Any bicycle parking demands that do occur could be accommodated informally with the administration building at the front of the site.

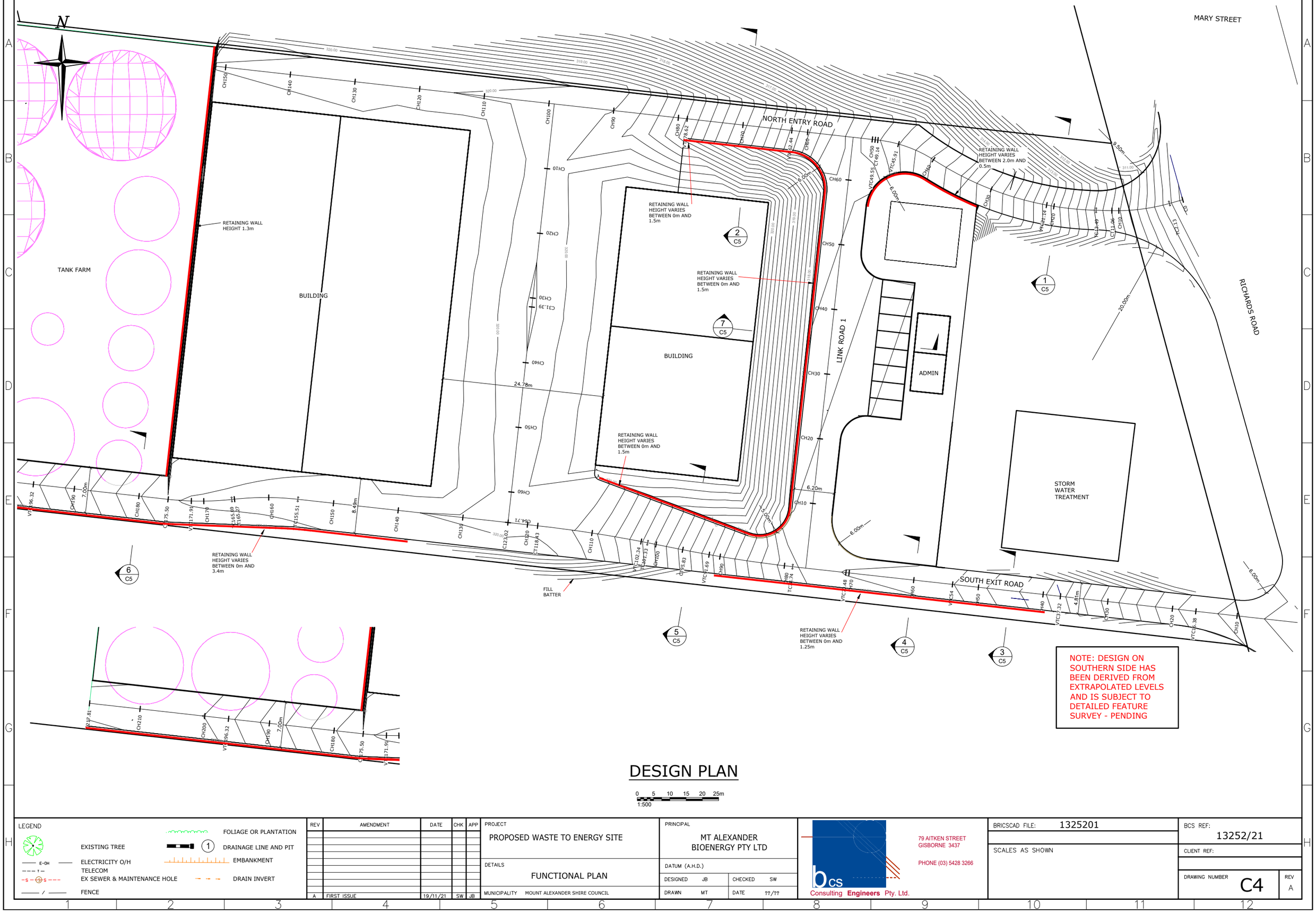
8. The site is expected to service 5-6 trucks on a daily basis, with occasional peak days serving up to 10-12 trucks. The traffic impacts have been conservatively assessed on the peak truck activity of 10-12 trucks.
9. The development is assessed as generating 44-48 daily vehicle movements, with 16 trips occurring during the 'day' peak hour, which is modest in the context of the site's location.
10. The proposed site access points to Richards Road have been assessed to have sufficient capacity to cater for the expected peak hour traffic volumes generate by the proposed development
11. Richards Road will comfortably continue to operate with daily traffic volumes within the typical threshold for a local road, following the development of the proposed Waste-to-Energy facility.
12. The proposal seeks to provide a new 'entry' access point to Richards Road, with no turn lane provision. Turn lanes are not warranted for the proposed 'in' accessway, due to the local road classification of Richards Road, low traffic volumes and proposed 50km/h speed zoning.
13. Waste collection will occur via private contractor and can comfortably be accommodated on-site via the substantial on-site loading facilities and accessways.

Having undertaken all tasks necessary to adequately assess the traffic engineering impacts of the Proposed Waste-to-Energy Facility on Richards Road, Castlemaine, we are satisfied that the proposed development is satisfactory.

There are no reasons why the permit for the proposed development should not be approved from a traffic engineering perspective, subject to appropriate conditions.

Appendix A

Proposed Development Plans



DESIGN PLAN

0 5 10 15 20 25m
1:500

LEGEND

- EXISTING TREE
- E-OH — ELECTRICITY O/H
- TELECOM
- S — EX SEWER & MAINTENANCE HOLE
- FENCE
- FOLIAGE OR PLANTATION
- 1 DRAINAGE LINE AND PIT
- EMBANKMENT
- DRAIN INVERT

REV	AMENDMENT	DATE	CHK	APP
A	FIRST ISSUE	19/11/21	SW	JB

PROJECT: PROPOSED WASTE TO ENERGY SITE

DETAILS: FUNCTIONAL PLAN

MUNICIPALITY: MOUNT ALEXANDER SHIRE COUNCIL

PRINCIPAL: MT ALEXANDER BIOENERGY PTY LTD

DATUM (A.H.D.)

DESIGNED	JB	CHECKED	SW
DRAWN	MT	DATE	??/??

bcs Consulting Engineers Pty. Ltd.
79 AITKEN STREET
GISBORNE 3437
PHONE (03) 5428 3266

BRICSCAD FILE: 1325201

SCALES AS SHOWN

BCS REF: 13252/21

CLIENT REF:

DRAWING NUMBER: C4

REV: A

Appendix B

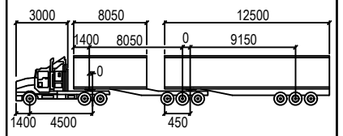
Swept Path Diagrams – Internal Truck Movements



PRELIMINARY PLAN

FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT NOTIFICATION
DATE OF ISSUE: 26/11/2021

DESIGN VEHICLE USED IN SIMULATION



B-DOUBLE 26M

mm

Tractor Width	:	2500	Lock to Lock Time	:	6.0
Trailer Width	:	2500	Steering Angle	:	23.4
Tractor Track	:	2500	Articulating Angle	:	70.0
Trailer Track	:	2500			

LEGEND

Vehicle Body

Wheel Tracks

Clearance Lines (300mm)

ISSUE	DATE	DESCRIPTION
A	26/11/21	TIA PLANS

DESIGNED	B HODGES
CHECKED	D BEATON
DATE	26/11/2021
PROJECT REF	21-0361

Quantum Traffic
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a: 5 Murray Place RINGWOOD VIC 3134

GENERAL NOTES

1. CONCEPT PLAN BASED ON AERIAL PHOTOGRAPH
2. AERIAL PHOTOGRAPH SOURCE NEARMAP - DECEMBER 2020
3.
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5.

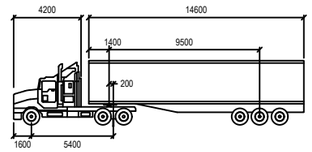
RICHARDS ROAD, CASTLEMAINE
MA BIOENERGY FACILITY
INTERNAL CIRCULATION

DRAWING NO.	ISSUE	SCALE
21-0361-01	A	1:500 @ A3

0 5 10



DESIGN VEHICLE USED IN SIMULATION



Articulated Vehicle 19M

		mm			
Tractor Width	:	2500	Lock to Lock Time	:	6.0
Trailer Width	:	2500	Steering Angle	:	28.3
Tractor Track	:	2500	Articulating Angle	:	72.0
Trailer Track	:	2500			

LEGEND

- Vehicle Body
- Wheel Tracks
- Clearance Lines (300mm)

ISSUE	DATE	DESCRIPTION
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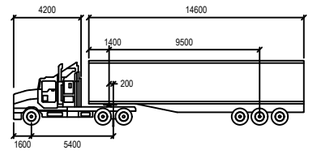
RICHARDS ROAD, CASTLEMAINE
MA BIOENERGY FACILITY
PLANT SHED ENTRY - WEST

DRAWING NO.	ISSUE	SCALE
21-0361-01	A	1:500 @ A3

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DESIGN VEHICLE USED IN SIMULATION



Articulated Vehicle 19M

		mm			
Tractor Width	:	2500	Lock to Lock Time	:	6.0
Trailer Width	:	2500	Steering Angle	:	28.3
Tractor Track	:	2500	Articulating Angle	:	72.0
Trailer Track	:	2500			

LEGEND

Vehicle Body

Wheel Tracks

Clearance Lines (300mm)

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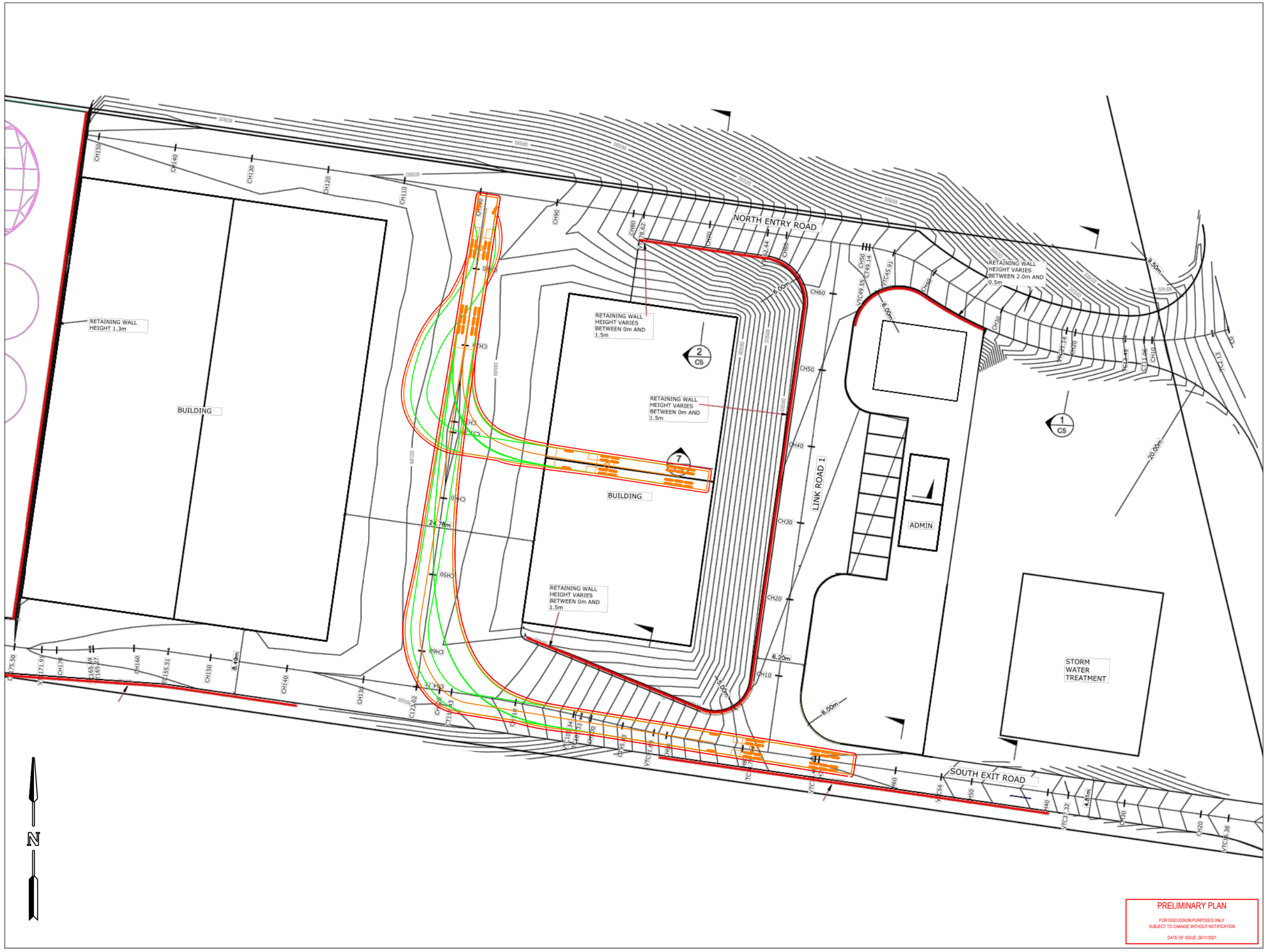
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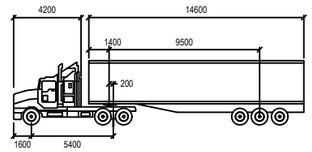
RICHARDS ROAD, CASTLEMAINE
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PLANT SHED EXIT - WEST

DRAWING NO.	ISSUE	SCALE
21-0361-01	A	1:500 @ A3

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DESIGN VEHICLE USED IN SIMULATION



Articulated Vehicle 19M

		mm			
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Trailer Width	:	2500	Steering Angle	:	28.3
Tractor Track	:	2500	Articulating Angle	:	72.0
Trailer Track	:	2500			

LEGEND

- Vehicle Body
- Wheel Tracks
- Clearance Lines (300mm)

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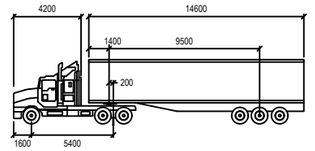
RICHARDS ROAD, CASTLEMAINE
MA BIOENERGY FACILITY
PLANT SHED ENTRY - EAST

DRAWING NO.	ISSUE	SCALE
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Articulated Vehicle 19M

		mm			
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Trailer Width	:	2500	Steering Angle	:	28.3
Tractor Track	:	2500	Articulating Angle	:	72.0
Trailer Track	:	2500			

LEGEND

Vehicle Body

Wheel Tracks

Clearance Lines (300mm)

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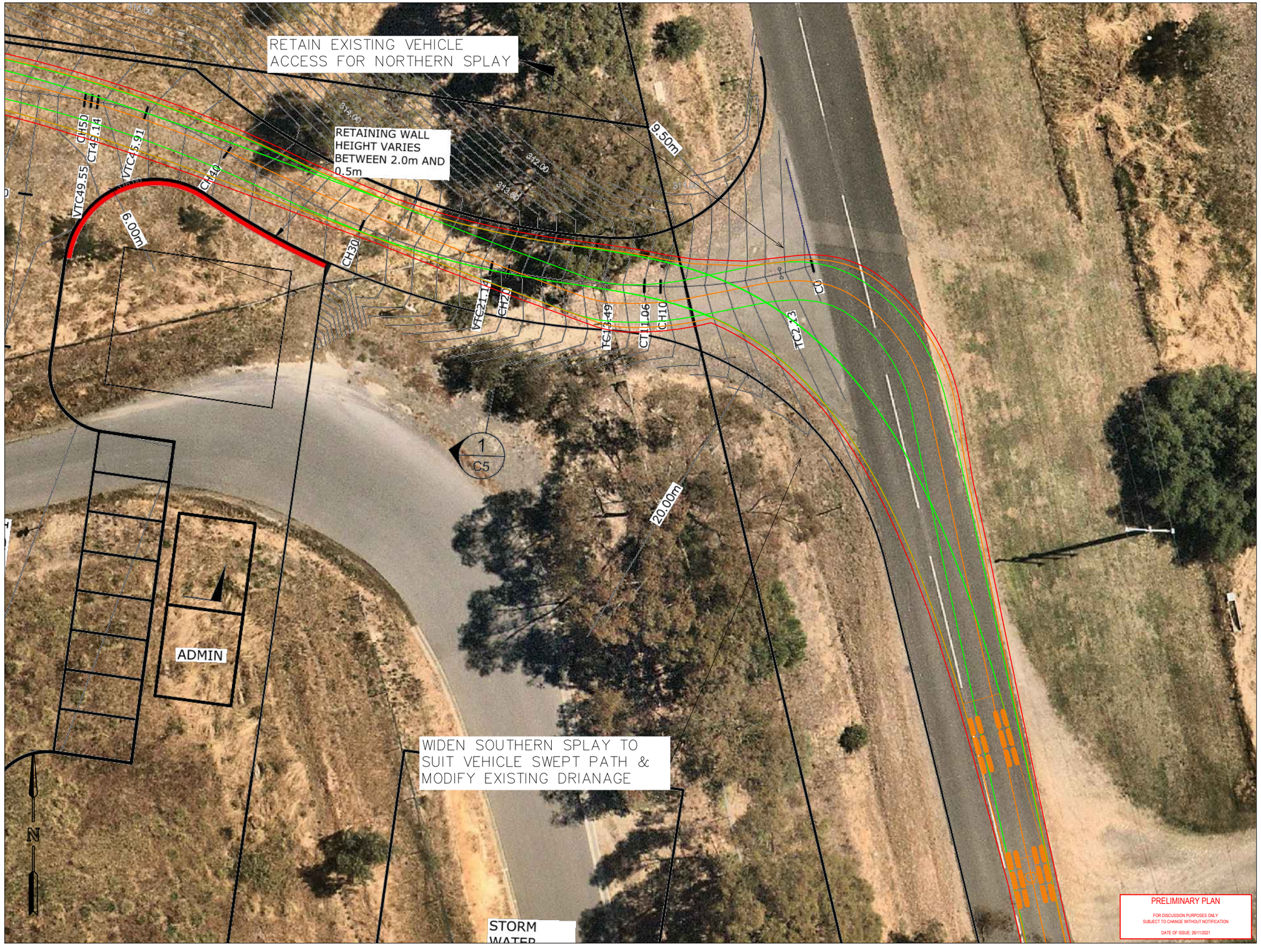
RICHARDS ROAD, CASTLEMAINE
MA BIOENERGY FACILITY
PLANT SHED EXIT - EAST

DRAWING NO.	ISSUE	SCALE
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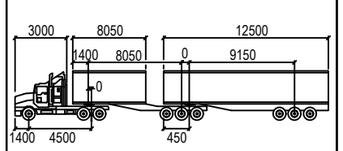
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Appendix C

Swept Path Diagrams – External Access Points



DESIGN VEHICLE USED IN SIMULATION



B-DOUBLE 26M

mm

Tractor Width	:	2500	Lock to Lock Time	:	6.0
Trailer Width	:	2500	Steering Angle	:	23.4
Tractor Track	:	2500	Articulating Angle	:	70.0
Trailer Track	:	2500			

LEGEND

- Vehicle Body
- Wheel Tracks
- Clearance Lines (300mm)

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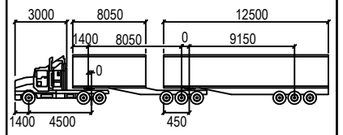
RICHARDS ROAD, CASTLEMAINE
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EXTERNAL VEHICLE ACCESS - SITE EXIT

DRAWING NO.	ISSUE	SCALE
21-0361-01	A	1:250 @ A3

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DESIGN VEHICLE USED IN SIMULATION



B-DOUBLE 26M

mm

Tractor Width	:	2500	Lock to Lock Time	:	6.0
Trailer Width	:	2500	Steering Angle	:	23.4
Tractor Track	:	2500	Articulating Angle	:	70.0
Trailer Track	:	2500			

LEGEND

Vehicle Body

Wheel Tracks

Clearance Lines (300mm)

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EXTERNAL VEHICLE ACCESS - SITE ENTRY

DRAWING NO.	ISSUE	SCALE
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