



JINDERA BESS

OSOM Route Study

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Client: Gransolar Development Australia
Type: Desktop Survey
Rev: 0

Table of Contents

01

Overview

7

01.1

Scope of Survey

8

01.2

Port of Import

8

01.3

Site

8

02

Route Assessment

13

02.1

Route Overview

14

03

Conclusion

45

03.1

Summary

46

Revision History

Revision	Date	Details	Prepared	Checked	Approved
0	31/07/2025	First issue	ICW	SK	JJM

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This report has been prepared for advisory purposes only. Information provided within the report is based on data provided by the Client as well as publicly available information and, to the best of ARES Group's knowledge and experience, is accurate at the time of publication. All proposed routes, methodologies and schedules described in this report are subject to approval and issue of permits from the relevant stakeholders. Transport equipment is based on ARES Group vehicles and trailers, and swept path analysis results may differ if using equipment by third parties.

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Introduction

Jindera BESS (or Battery Energy Storage System) is a renewable energy development located near the town of Jindera in New South Wales. The facility has a proposed capacity of up to 250MW and storage of 500MWh and is currently in the planning and approvals stage.

The project is located approximately 4km north east of Jindera, in the Greater Hume Shire Council area. It is ideally situated close to TransGrid's Jindera substation servicing the town and nearby district.

ARES have been tasked by our customer Gransolar Development Australia to undertake a Route Survey from the Port of Melbourne to site. The purpose of the study is to determine the pinch points along the route and give best estimates of modifications and works required to enable oversize overmass (OSOM) cargo to be brought to site.

The study is designed for those involved in the project that have a limited knowledge of transportation, including a comprehensive outline of the routes and actions required to achieve delivery.





01

Overview

Project Overview

The Jindera BESS is a renewable energy development near Albury in New South Wales currently in the planning and approvals stage.

Scope of Survey

Jindera BESS is located approximately 15km to the north of the major regional town of Albury, and 4km north east of the town of Jindera in NSW.

ARES has been tasked with surveying the route from the proposed Port of Import (Port of **Melbourne**) to the project site. The survey includes all roads from the port exit to the site entrance. No details were provided for the site entrance design so this has not been assessed. It is assumed that the site entrance will be designed sufficient for the OSOM transformer combination.

This is a desktop survey, relying on existing aerial imagery from sources such as Google and Nearmaps. ARES has also previously driven large parts of the transport route as part of other assessments and has included data gathered from those trips in this assessment.

We recommend that a physical survey of the entire route is completed at a later stage, once the route is confirmed and final OSOM component dimensions are known, to verify the results of this desktop survey.

Port of Import

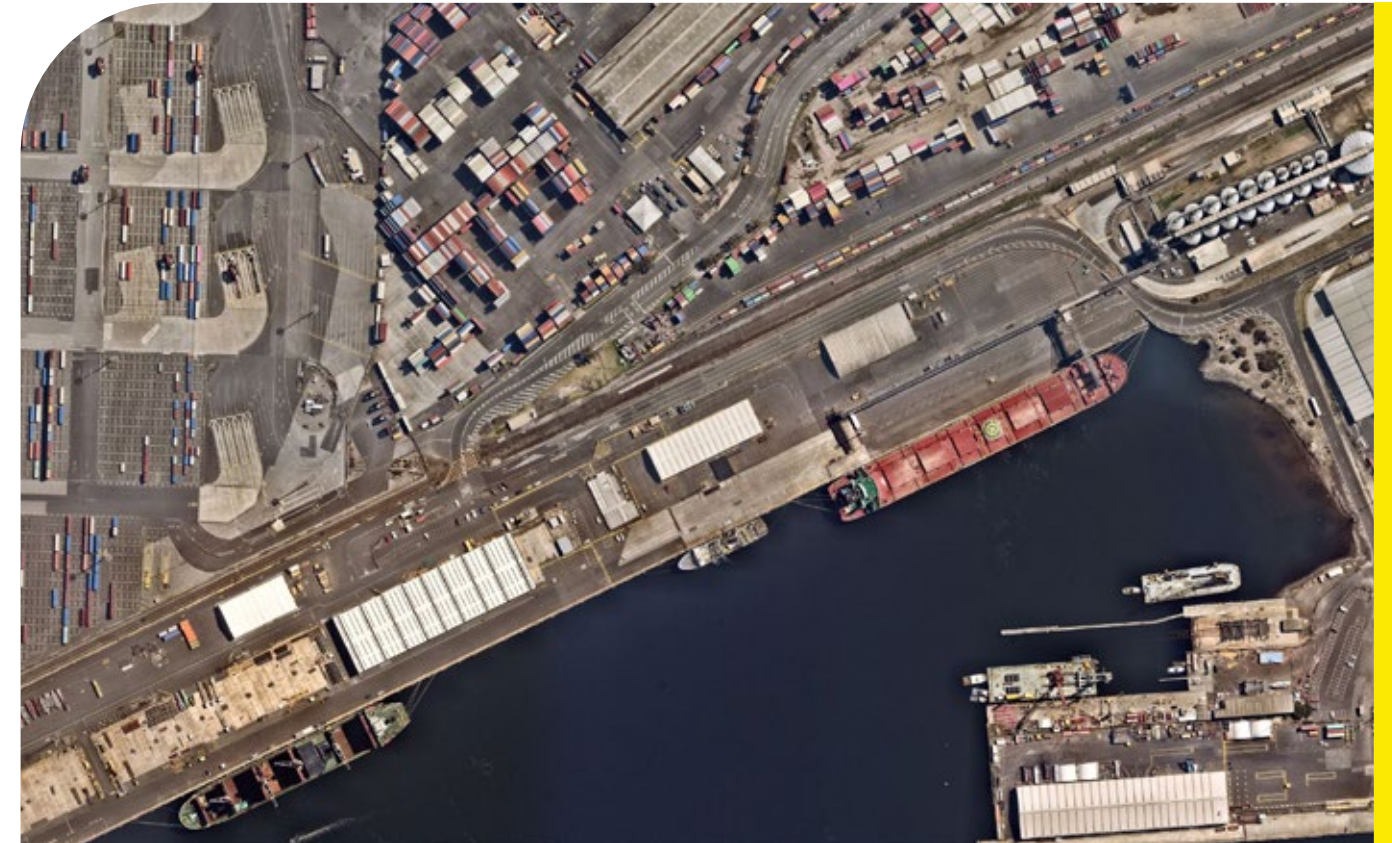
The Port of Melbourne serves as a vital import/export hub into the city of Melbourne and surrounds. There are several precincts within the Port - we have assumed that the transformer will be delivered to AAT Appleton Dock which has break bulk handling capability.

Following discharge from the ship and loading onto the transport combination, the load will navigate its way out of the facility via either Appleton Dock Rd to the north or Enterprize Rd to the north-east. Both are viable options and the final choice will come down to what constraints there are within the AAT facility on the day due to other stored cargoes. We have assumed Enterprize Rd for the purposes of this assessment.

From Appleton Dock Rd there are excellent connections to the freight and overdimensional road network out of Melbourne via Footscray Rd, the OD5 route and then onto the Metropolitan Ring Road.

Site

The project site is situated just north of the Transgrid Jindera substation on Ortlipp Rd. The site entry point is a right hand turn when approaching from Albury. Once turned in, the transformer pad will be located only a short distance away.



Above: Aerial view of AAT Appleton Dock at Port of Melbourne. Below: Site overview of the Jindera BESS facility.



Transport Methodology

Specialized cargo requires specialized transport solutions.

Cargo Dimensions

The majority of deliveries to the project will be in gauge and able to be delivered under gazette. The largest oversize, overmass (OSOM) component of the project is the delivery of the one-off main transformer. The exact weights and dimensions of this load is yet to be finalised but the following has been provided by the client for the purposes of this route assessment:

- Height: 4.0m
- Weight: 129 tons

- Length: 35,4m (excluding rear push truck)
- Width: 4,2m
- Height: 5,1m
- Gross Combination Mass: 228 tons
- Mass per Axle: 14,5 tons

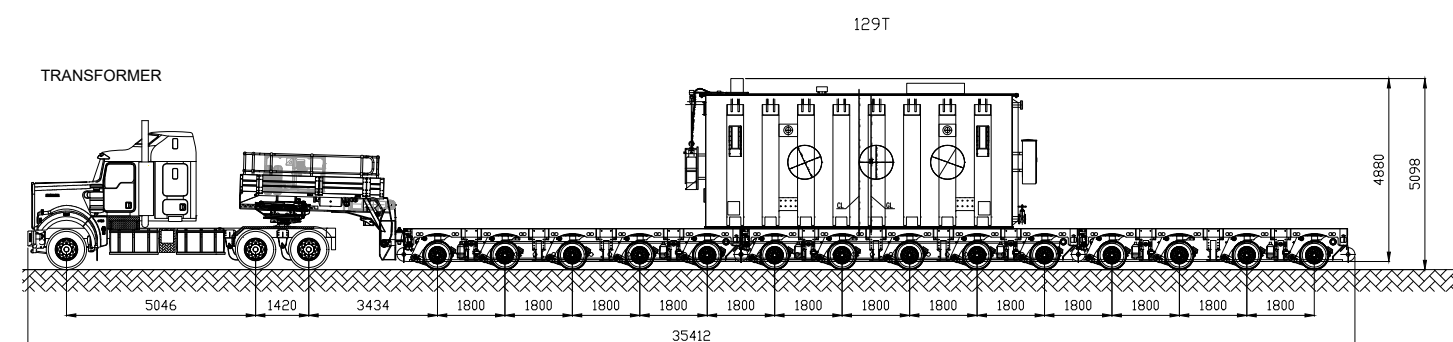
This combination will be able to pass under all height restrictions on the proposed route, with the trailer able to hydraulically lower further by approximately 200mm for additional height clearance if required.

The transformer is classified as a 'High Risk' OSOM Load" by Transport for NSW due to its weight. An OSOM Transport Management Plan (TMP) will be required and approved by TfNSW prior to transport. A TMP will also likely be required in Victoria.

Equipment

The load can be transported on a 14-axle platform trailer with hydraulic gooseneck.

Refer to the equipment schematic shown below for a mock-up of the proposed transport arrangement. Overall dimensions are;



Pilots & Escorts

The load will be accompanied by 3x certified oversize pilot vehicles in Victoria and 3x oversize pilot vehicles in NSW, with no police or TSS escort vehicles expected (subject to confirmation by the relevant authorities). The pilot vehicles will provide advanced warning (front and rear) of the OSOM load's approach.

If any street furniture such as signs need to be removed for the load to pass, the pilots will perform this task and replace the items once the load is through.



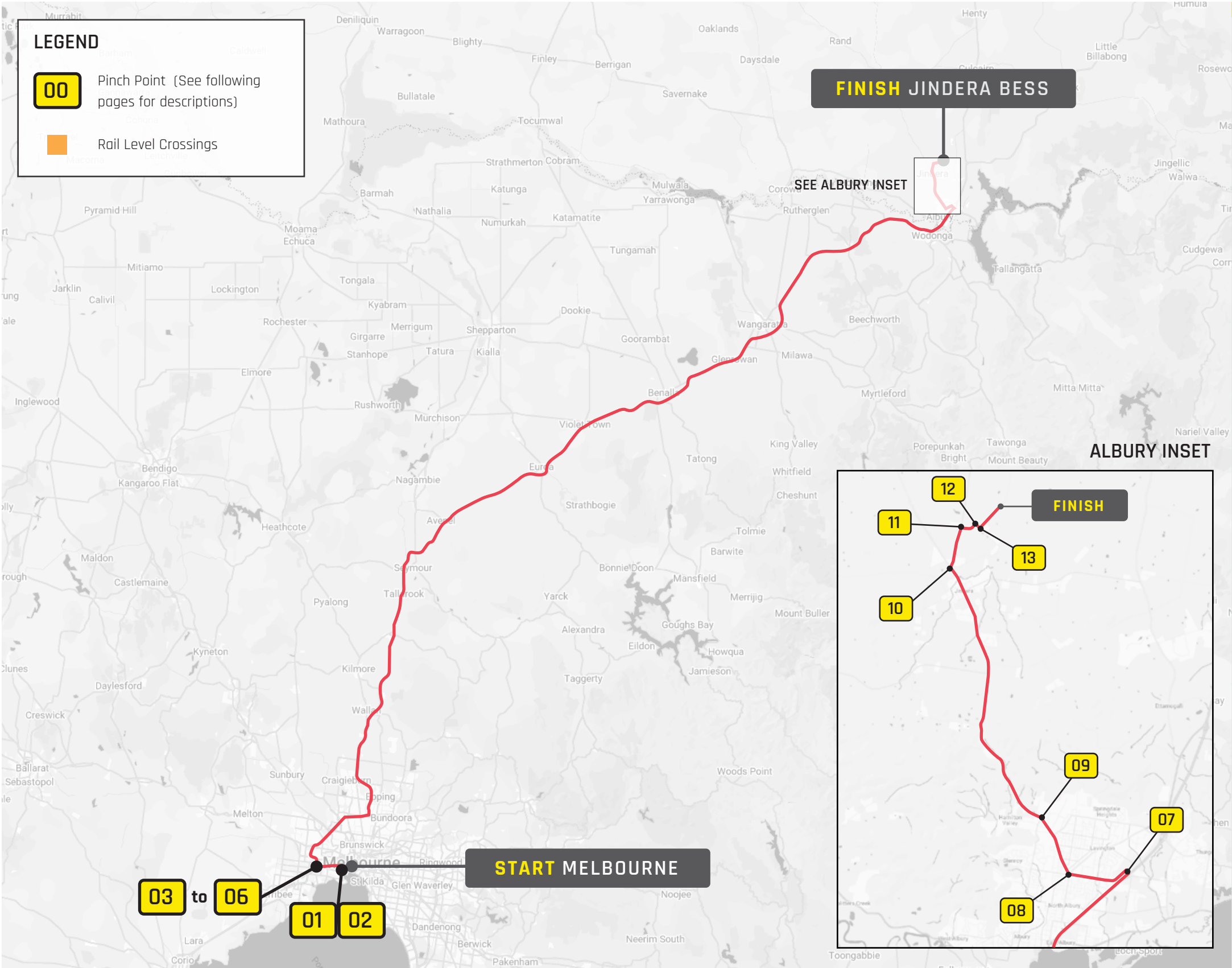
Left: Proposed transport equipment. **Above:** ARES transporting a 120-ton transformer on a platform trailer.



02

Route Assessment

Route Overview



ROUTE

0.0 KM	START - Port of Melbourne
0.5 KM	Appleton Dock Rd
1.4 KM	Enterprize Rd
1.5 KM	Appleton Dock Rd
3.5 KM	Footscray Rd
5.6 KM	Moreland/Whitehall St
9.8 KM	Francis St
12.3 KM	Princes Hwy
13.4 KM	Little Boundary Rd
14.2 KM	Boundary Rd
41.3 KM	M80 Ring Rd
343.9 KM	Hume Fwy/Hwy
344.0 KM	Racecourse Rd
346.3 KM	Union Rd
346.4 KM	Wagga Rd
359.6 KM	Urana Rd
361.2 KM	Walla Walla Jindera Rd
362.1 KM	Lindner Rd
363.2 KM	Ortlipp Rd
	FINISH - Jindera BESS

Note 1: There are multiple structures on the Victorian section of the route which are listed as restricted. These will require assessment by DTP during the permit approval process, and may alter the route if bridge bypasses are required.

Note 2: The return journey is expected to be the reverse of the above.

[INTERACTIVE MAP LINK](#)

General Route Notes

Port of Melbourne to Jindera BESS

Road Quality

The transport route will be primarily along the Victorian overdimensional route out of Melbourne, and VIC/NSW state highways, which are generally designed to a higher specification and able to handle heavier and higher volumes of traffic. The route is fully paved up to Ortlipp Rd, which becomes unpaved approaching the project site.

The route follows roads on the approved VIC OSOM Network and NSW OSOM Load Carrying Vehicle Network up to Urana Rd south of Jindera.

Overhead Structures

The 4.0m-high transformer will travel at a height of 5.1m as shown in the equipment schematic. The platform trailer has the ability to hydraulically lower further if required to give additional clearance to any low obstacles.

The main overhead obstacles are in metro Melbourne and along the Hume Hwy. A travel height of 5.1m will not be an issue along the route taken.

Overhead Power Lines

In general, a travel height below around 5.5m is not an issue with respect to power lines. Loads above 4.6m travel height will require a high load permit from the

power authorities prior to travel. The authorities will advise whether a powerline survey is required at this travel height.

The route traverses through the Jemena, Ausnet and Powercor distribution networks in Victoria and the Essential Energy network in NSW.

Bridges and Culverts

There are multiple structures along the Victorian section of the route which are flagged as restricted or “No Go”. These will require special assessment by Victoria’s Department of Transport and Planning (DTP) structures team and some may potentially require alterations to the route. This will not be known until permits are applied for.

Transport for NSW will usually require bridge assessments to be done for the NSW portion of the route as well.

Axle weights are proposed to be 14.5 tons per row.

Rail Crossings

There are no rail level crossings identified along the route.

Road Works

There may planned roadworks and road upgrade projects along the route which will need to be considered when planning for transport of OSOM components to the Project.

A check of the Big Build Roads Victoria and TfNSW Projects websites showed no planned projects along the route at this stage. The West Gate Tunnel Project is ongoing in Melbourne but should be completed by the time this project kicks off.

Close co-ordination with Department of Transport and Planning and Transport for NSW will be required once dates firm up for the project to ascertain which road



Above: Example of suitable truck parking and rest stop area (Hume Fwy, Kalkallo).

upgrade projects are active at the time of transport, and whether there are special conditions or access restrictions for OSOM loads (e.g. detours, speed restrictions, width restrictions etc).

Rest Stops

There are several suitable options for truck parking along the Hume Hwy which are sufficiently large to accommodate the transformer load.

Approvals

Transport permits will need to be obtained from the National Heavy Vehicle Regulator (NHVR) prior to travel. The permit process includes getting feedback from state transport authorities as well as any local councils along the route.

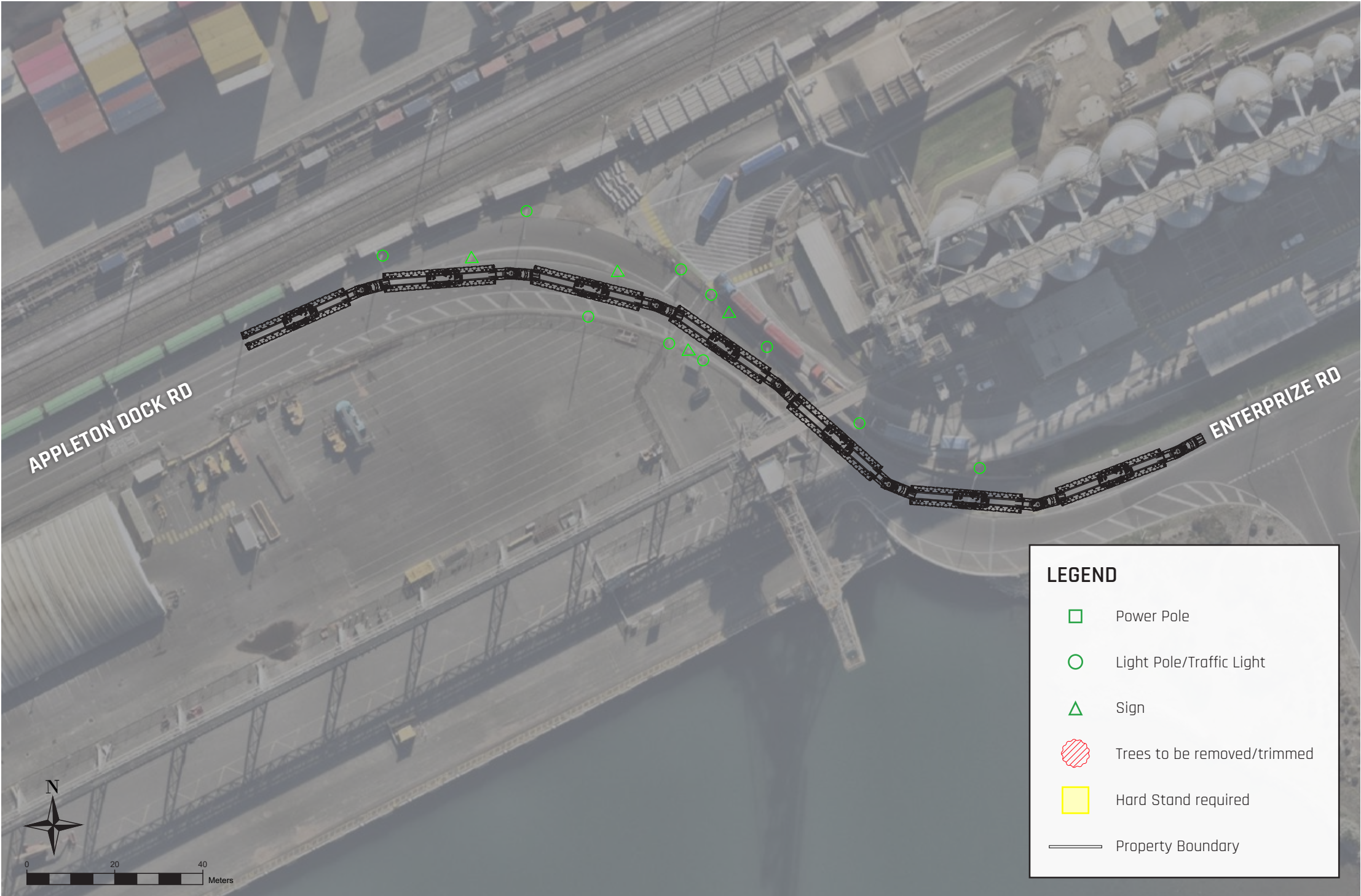
Third party approvals include electricity/telco authorities, rail/tram authorities, toll road and tunnel operators.

Pinch Point

01

S TURN
Appleton Dock Rd
& Enterprize Rd

The OSOM load will exit the Port of Melbourne area via AAT Appleton Dock Rd and Enterprize Rd. There is a right-left combination turn underneath a gantry to get onto Enterprize Rd. Both the entry and exit to this turn are wide and no modifications are required, although the trailer will need to use the opposite side of the road when turning so escorts will need to control any traffic on Enterprize Rd during the turn.



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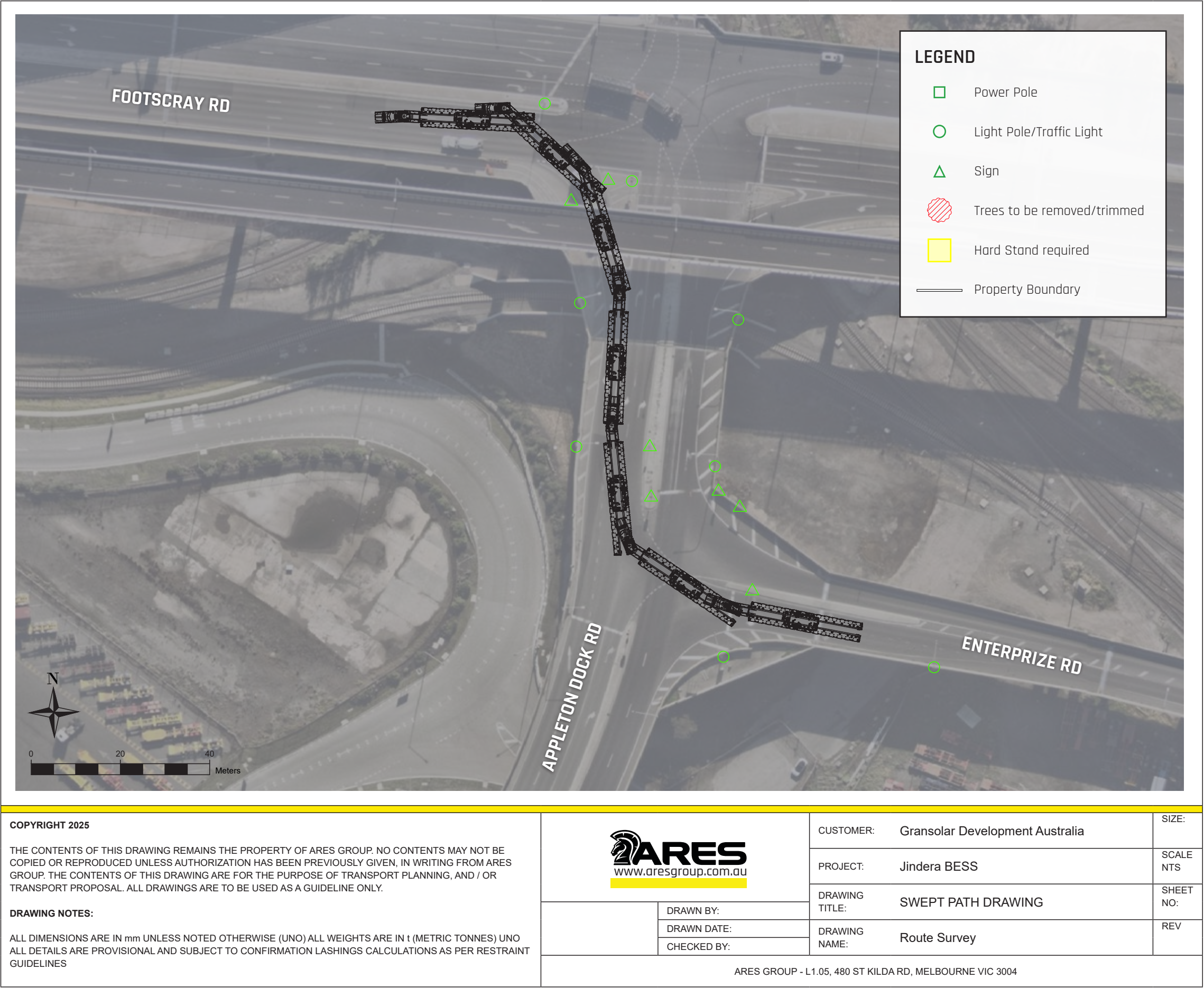
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Pinch Point

02

COMPOUND TURN
Enterprize Rd, Appleton
Dock Rd & Footscray Rd

Enterprize Rd terminates at Appleton Dock Rd, which then ends at Footscray Rd. The right-left combination turn can be taken quite easily by the transformer combination. No modifications are required.



Pinch Point

03

RIGHT TURN
Whitehall St &
Francis St

This turn is part of the OD route out of Melbourne and will require no modifications.



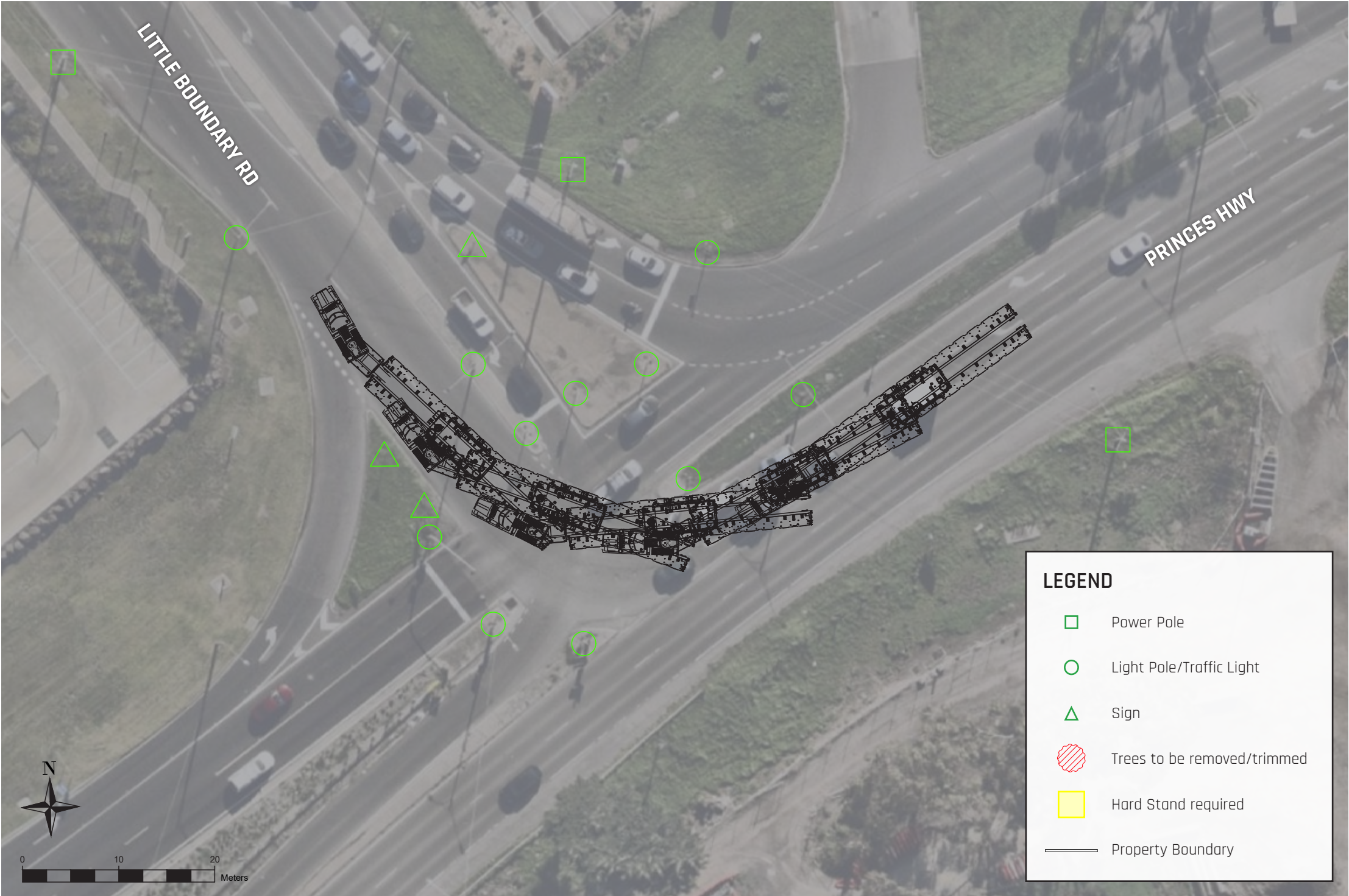
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Pinch Point

04

RIGHT TURN
Princes Hwy &
Little Boundary Rd

This turn is part of the OD route out of Melbourne and will require no modifications.



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Pinch Point

05

ROUNDAABOUT
Little Boundary Rd
& Boundary Rd

This turn is part of the OD route out of Melbourne
and will require no modifications.



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Pinch Point

06

RIGHT TURN
Boundary Rd &
M80 Ring Rd

This turn is part of the OD route out of Melbourne
and will require no modifications.



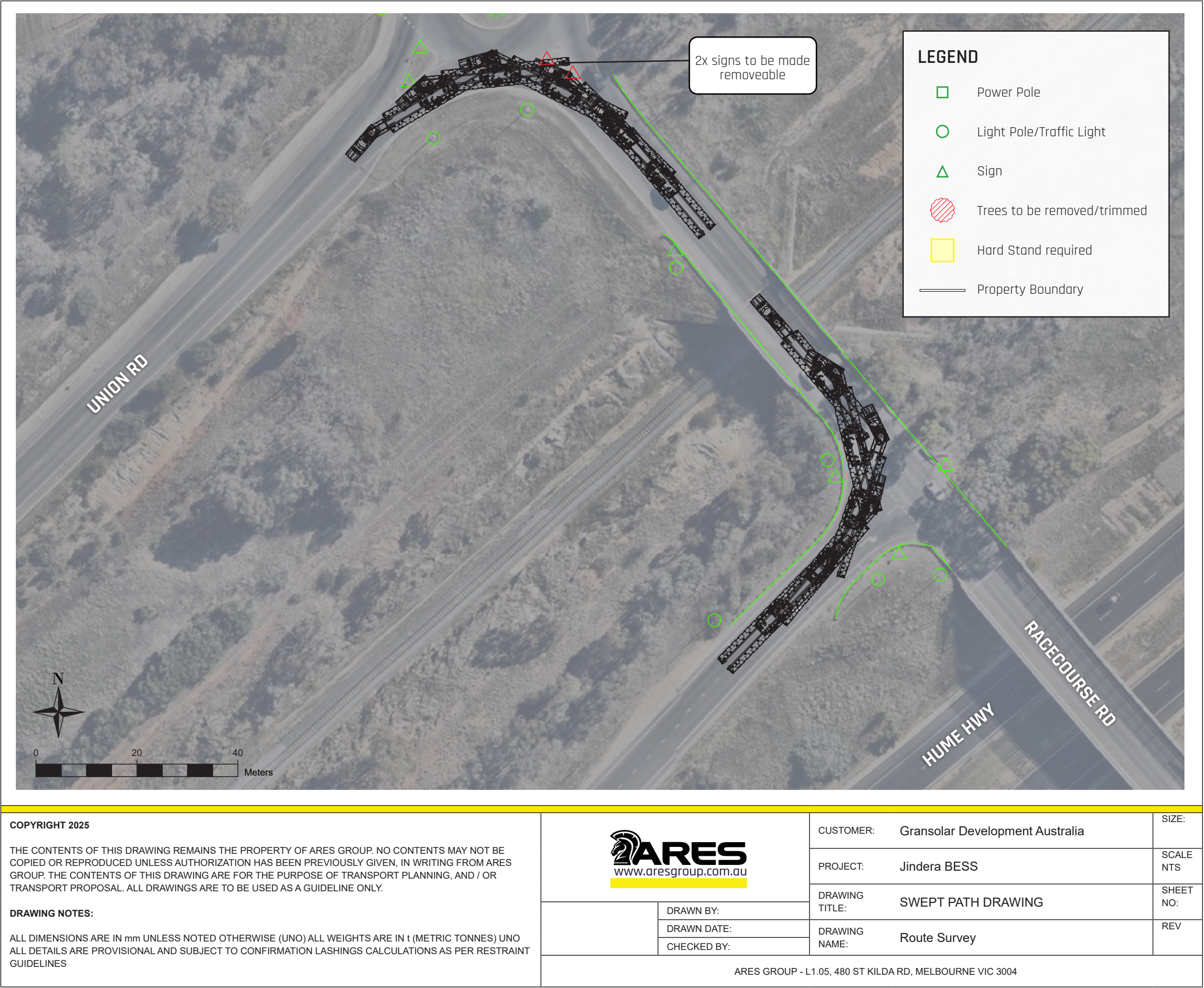
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Pinch Point

07

LEFT TURN
Hume Hwy, Racecourse Rd & River Rd

In Albury, the load will turn off the Hume Hwy onto Racecourse Rd before turning left again onto Union Rd to head back towards the town. The load will need to use the full width of Racecourse Rd when turning. Two signs on the traffic island on Racecourse Rd will need to be made removeable.

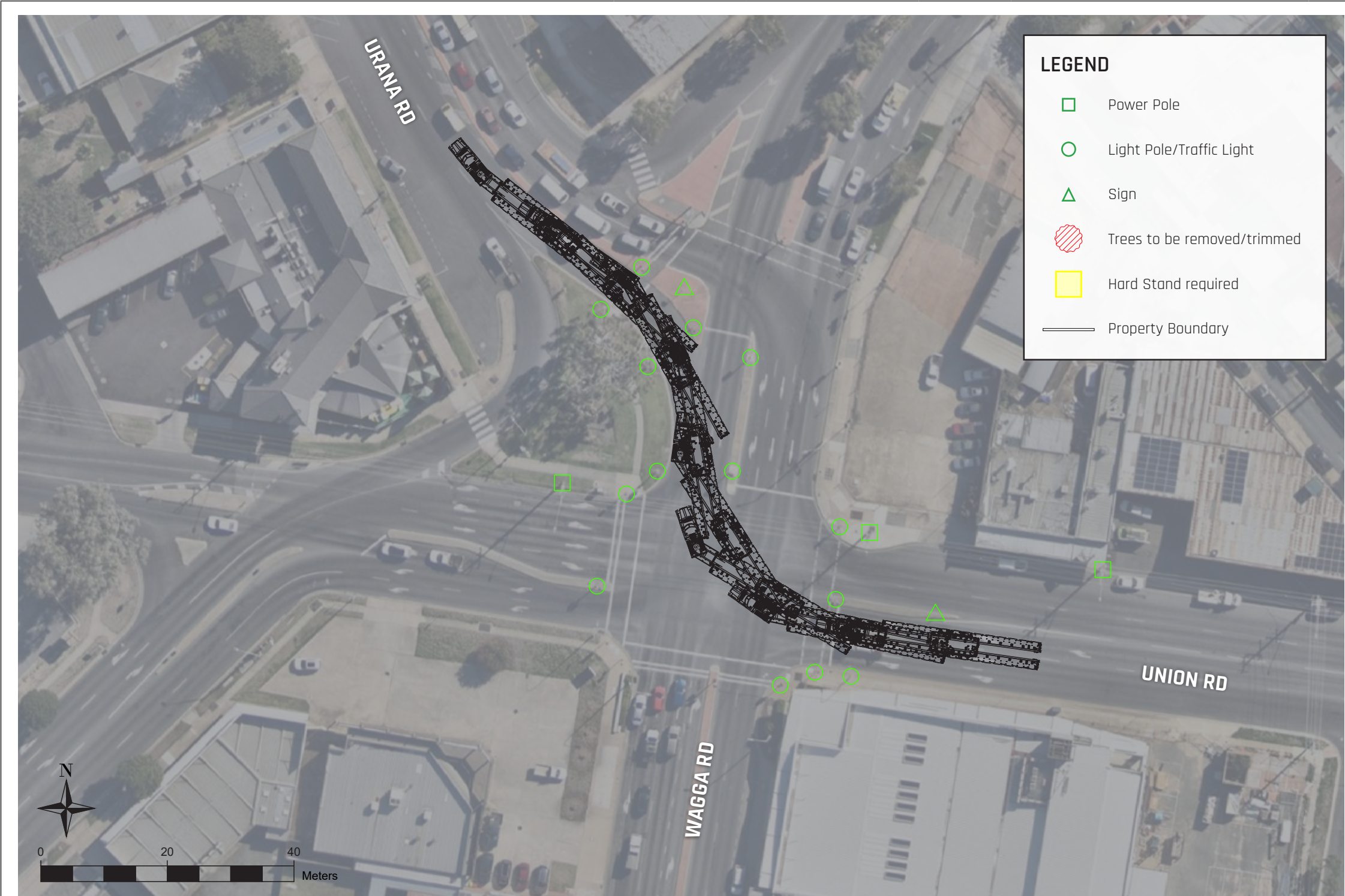


Pinch Point

08

RIGHT TURN
Union Rd, Wagga Rd
& Urana Rd

In North Albury, loads turn right onto Urana Rd.
The trailer will need to be steered carefully around
the traffic lights and light poles at this intersection,
but no modifications will be required.



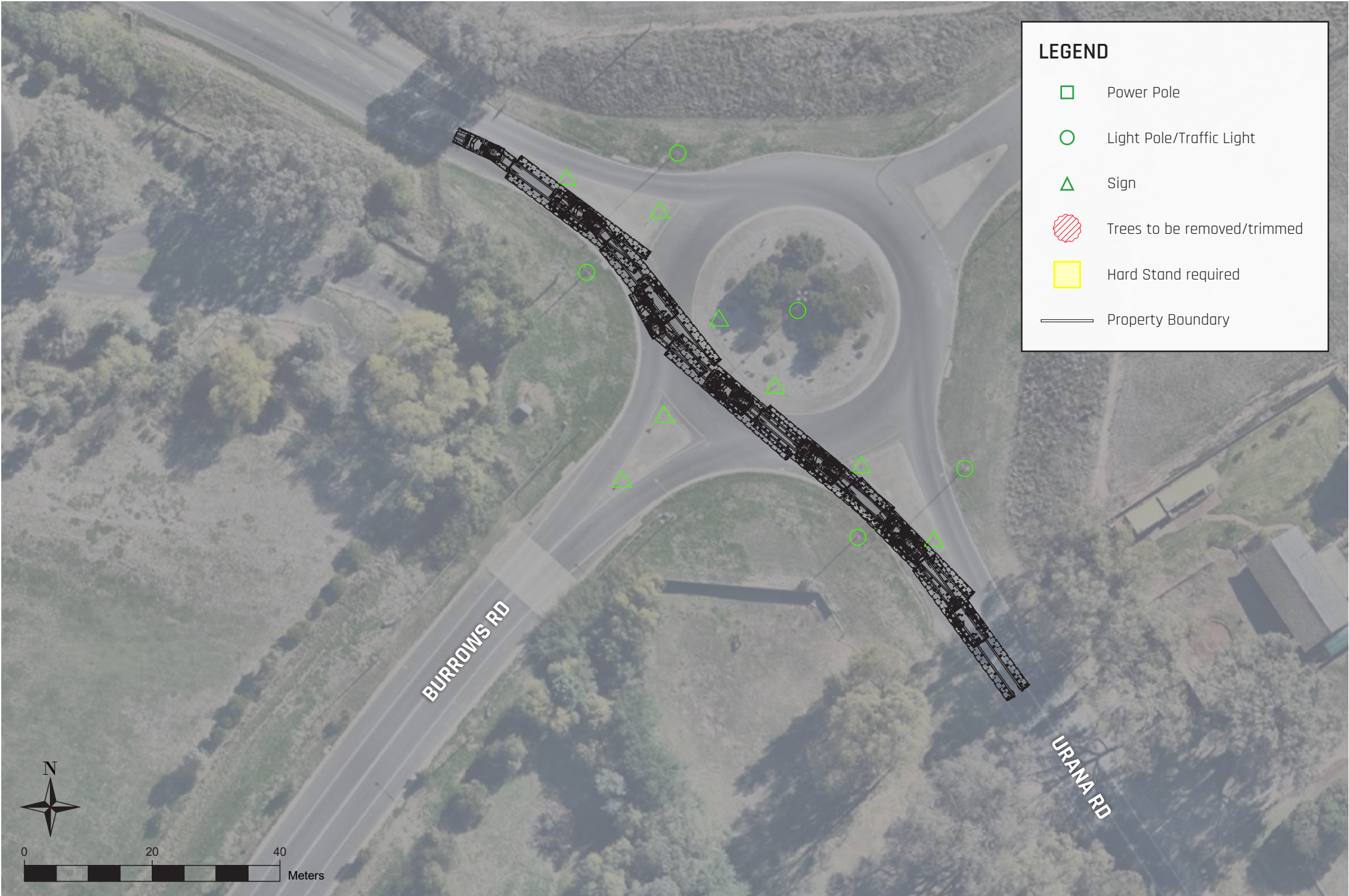
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Pinch Point

09

ROUNDAABOUT
Urana Rd &
Burrows Rd

The roundabout on Urana Rd heading north out of Albury can be negotiated with no issues. The trailer will use the trafficable outer annulus of the roundabout when going through the intersection.



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Pinch Point

10

RIGHT TURN
Urana Rd &
Walla Walla Jindera Rd

This right turn is very wide and can be taken with no issues at all.



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Pinch Point

11

RIGHT TURN
Walla Walla Jindera Rd
& Lindner Rd

The right turn into Lindner Rd appears to have been upgraded around 2 years ago and there is ample room for the transformer to make this turn. No modifications are required.

LEGEND

Power Pole

Light Pole/Traffic Light

Sign

Trees to be removed/trimmed

Hard Stand required

Property Boundary



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Pinch Point

12

RIGHT TURN
Lindner Rd

Lindner Rd turns right shortly after the turn from Walla Walla Jindera Rd. The trailer will need to be steered with care through the turn to avoid the tree on the inside of the corner, but no modifications are required.



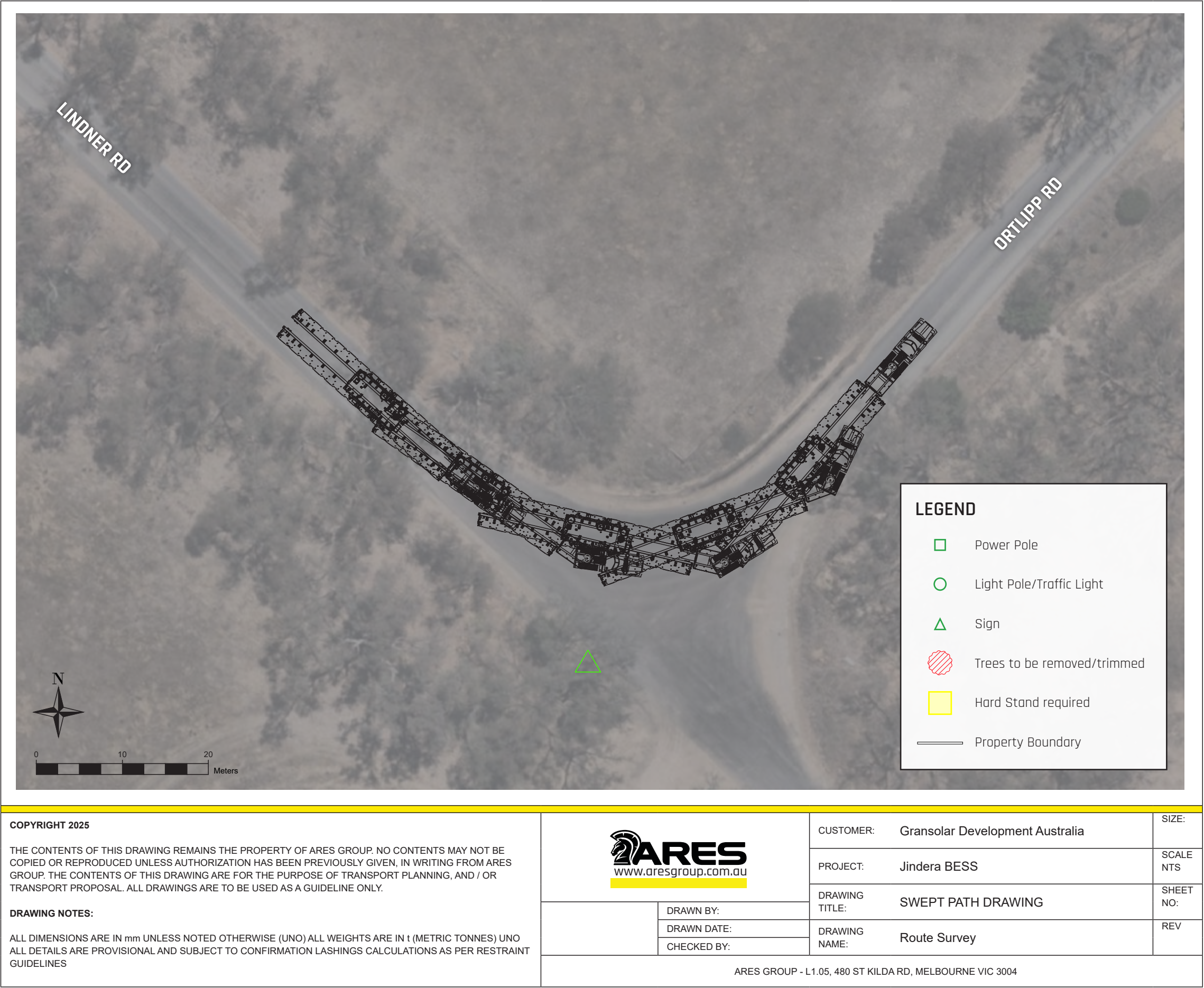
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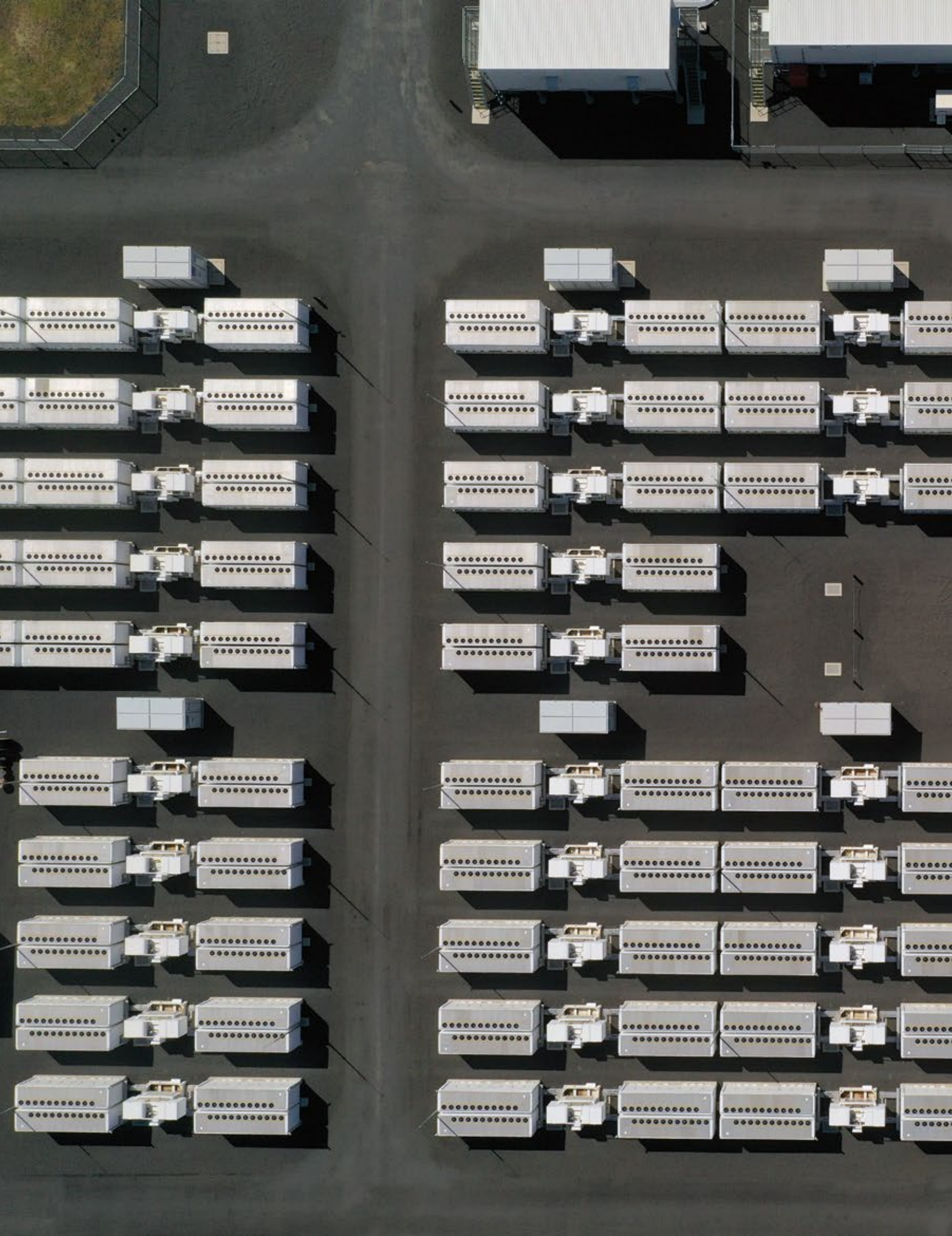
Pinch Point

13

LEFT TURN
Lindner Rd &
Ortlipp Rd

The transformer trailer can make this turn onto Ortlipp Rd without any modifications. The combination will need to use the full width of Ortlipp Rd when turning in.





03

Conclusion

Conclusion

A brief outline of the report's major findings and any recommendations for actions.

“

...transport
of OSOM
components to
Jindera BESS is
feasible.

Summary

Following our desktop survey and analysis, ARES believe that transport of the oversize overmass (OSOM) components for the Jindera BESS project from the **Port of Melbourne** is feasible along the proposed transport route, with only minor modifications required to make the route suitable for the OSOM load for the project, which is a one-off 129-ton transformer.

There are no issues with using the AAT berth at Appleton Dock to receive the cargo. This facility is well equipped to receive and process break bulk cargo and there is plenty of room to manoeuvre in the berth area. There is a well established route out of the port onto the overdimensional routes through and out of Melbourne.

The proposed transport route uses roads on the approved VIC OSOM Network and NSW Oversize Overmass Load Carrying Vehicles Network. The roads on these networks will be best equipped to handle the transformer load, although bridge assessments will still be required from both jurisdictions to ensure the infrastructure is suitable to cope with the axle loads proposed. Road modification requirements are very minor and limited to the temporary removal of signs on Racecourse Rd in Albury.

The height of the transformer allows it to be transported on a standard platform trailer and still be able to clear

underneath bridges along the route. Powerlines should not be an issue although high load permits will still be required from the electricity authorities.

The project site is accessed via Ortlipp Rd. A site entrance design has not been sighted or assessed as part of this assessment.

Next Steps

Based on the findings in this route survey, we recommend the following actions:

- Initiate dialogue with DTP and TfNSW regarding timing of major upgrade projects and any impacts
- Confirm final weights and dimensions of selected transformer
- Conduct a physical survey of the route to validate the results of this desktop survey closer to transport date



Level Crossing Removal Project

A 125-ton, 25m-long precast concrete U-trough is unloaded at its destination after travelling through the heart of metropolitan Melbourne.



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