Dinawan Wind Farm

Addendum Traffic Impact Assessment

Prepared for Spark Renewables Pty Ltd

July 2025

Dinawan Wind Farm

Addendum Traffic Impact Assessment

Spark Renewables Pty Ltd

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July 2025

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Approved by



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8 July 2025

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1 Introduction

Spark Renewables Pty Limited (Spark Renewables) proposes to develop the Dinawan Wind Farm (the project). The project includes the installation, operation, maintenance and decommissioning of up to 200 wind turbine generators (WTGs), and associated infrastructure. The project is on the traditional lands of the Wiradjuri people and several smaller nations of the Murrumbidgee plains, about halfway between the towns of Coleambally and Jerilderie. The project is within the Murrumbidgee and Edward River local government area (LGA) in New South Wales (NSW).

The development application (DA) and environmental impact statement (EIS) for the project were submitted to the NSW Department of Planning, Housing and Infrastructure (DPHI) and publicly exhibited from 12 July 2024 to 8 August 2024. The traffic impacts of the project were assessed in the traffic impact assessment (TIA), provided in Appendix E.6 of the EIS.

Spark Renewables has amended the project following further detailed design, and in response to feedback from Transgrid (as the proponent for VNI West) and Origin Energy (as the proponent for Yanco Delta Wind Farm), as well as outcomes of ongoing engagement with the local community and government agencies. The development footprint has been reduced by approximately 245 ha (18%) from 1,339 ha to 1,095 ha. The reduction has facilitated further avoidance of impacts in the amended design.

The amended project has included changes to the proposed access route for the project, including:

- removal of two site access points on Fernbank Road and addition of two new site access points on McLennons Bore Road
- removal of project-related vehicles from Cadell Road (south) and associated removal of proposed intersection improvements at the intersection of Kidman Way/Cadell Road (south)
- amendments to the development footprint at the McLennons Bore Road/Kidman Way intersection to allow sufficient space for the proposed intersection upgrades
- amendments to the proposed oversize/overmass (OSOM) vehicle route from Port of Newcastle in response to feedback from Transport for NSW (TfNSW) and outcomes of additional assessments, including the option of a Wagga Wagga bypass route due to potential height limitations at Edward Street rail bridge in Wagga Wagga
- addition of haulage route road upgrades to facilitate OSOM movements at:
    - the intersection of Kidman Way/Newell Highway, Bundure
    - the intersection of Sturt Highway/Eunony Bridge Road, East Wagga Wagga
    - the intersection of Olympic Highway (Moorong Street)/Sturt Highway, Wagga Wagga
    - the intersection of Byrnes Road/West Bomen Road, Bomen.

Once public road upgrades (including haulage route road upgrades) have been constructed, they would no longer form part of the project.

Following the public exhibition of the EIS, submissions on the TIA were received from TfNSW, TfNSW (Sydney Trains), Murrumbidgee Council and Edward River Council. Detailed responses to these submissions are provided in Chapter 4 of the submissions report.

The purpose of this addendum TIA is to assess the impacts of these amendments and respond to agency submissions relevant to traffic. This includes:

- updates to turn warrant assessments (Section 2)
- updates to SIDRA modelling (Section 3 and Annexure D)
- preparation of strategic concept designs and swept paths for intersections on the State road network that require upgrades (Section 4, Annexure A and Annexure C)
- consideration of the haulage route for OSOM loads, including interactions with infrastructure such as rail, bridges, tunnels, traffic signals and signage (Section 5 and Annexure B).

Reference should be made to the TIA for the project description, existing and predicted traffic conditions, assessment approach, and impact assessment for aspects not addressed in this addendum TIA.

2 Turn warrant assessments

In the TIA, Cadell Road (south) was proposed to be used by project-related light vehicles. Cadell Road (south) is no longer proposed to be used by project-related vehicles and all vehicles will turn from Kidman Way onto McLennons Bore Road. Cumulative traffic volumes have been recalculated to consider the removal of project-related vehicles from Cadell Road (south) for month 15 (Figure 2.1) and month 37 (Figure 2.2).

Turn warrant assessments for the Kidman Way/McLennons Bore Road intersection have been updated and include consideration of baseline, project-related and cumulative traffic volumes for month 15 only. This is considered appropriate as traffic volumes for month 15 will be greater than traffic volumes for month 37, and therefore, turn warrant assessments for month 15 are more conservative than for month 37 and can be used to inform the proposed upgrade requirements at this intersection.

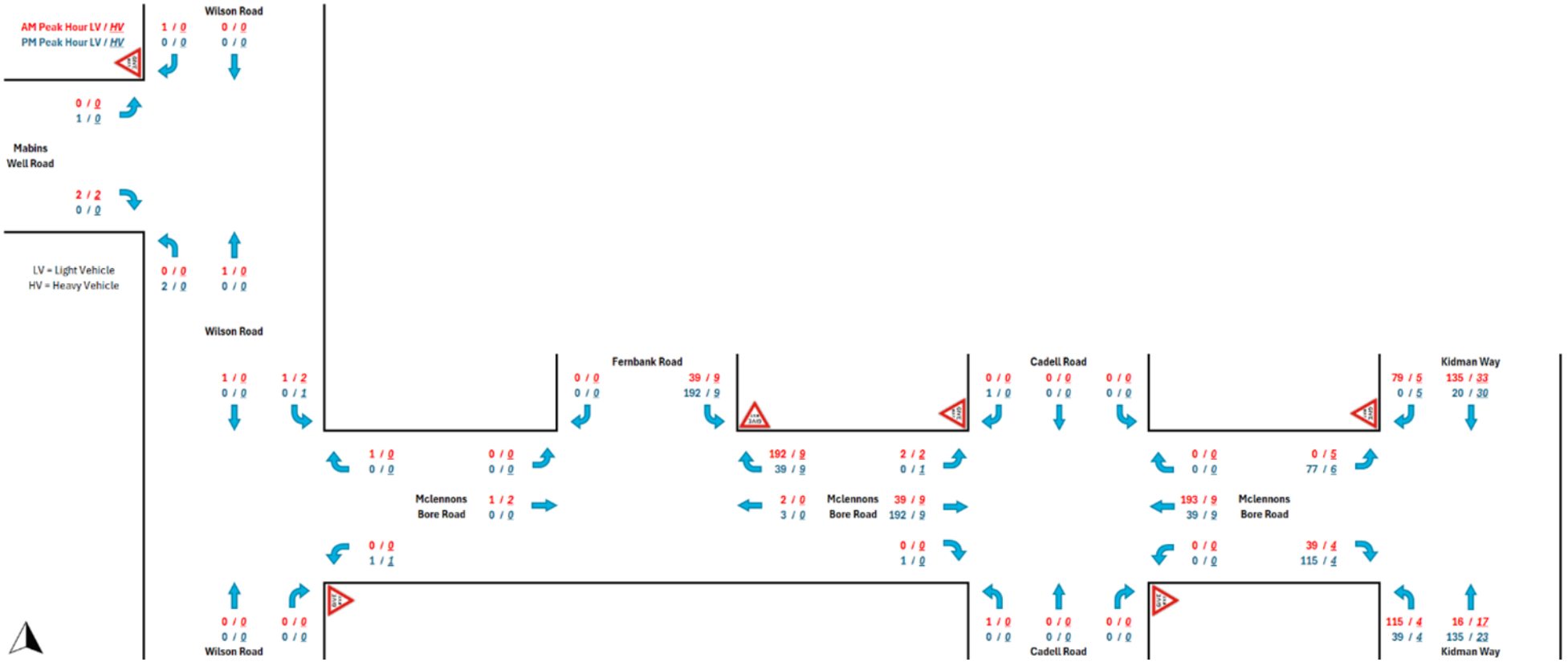


Figure 2.1 **Baseline 2027, construction month 15 and cumulative traffic volumes (Dinawan Solar Farm, Yanco Delta Wind Farm, VNI West)**

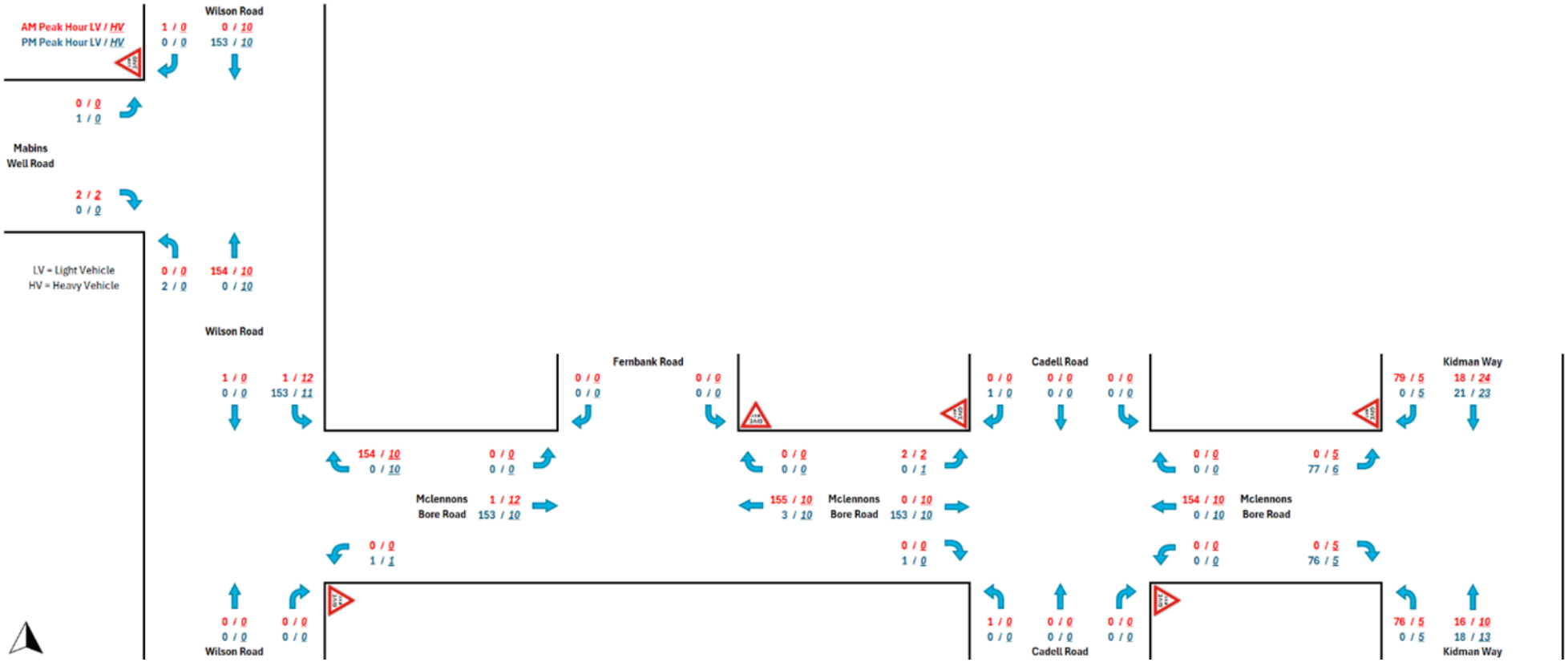


Figure 2.2 **Baseline 2029, construction month 37 and cumulative traffic volumes (Argoon Wind Farm)**

2.1 Assessment approach

Intersection operations are assessed from a combination of the peak hourly through and turning traffic movements that occur at each intersection. This determines the need for additional intersection turning lanes (e.g. basic, auxiliary lane and channelised) in accordance with the current intersection design standards *Guide to Road Design Part 4A, Unsignalised and Signalised Intersections* (Austroads 2023) (Figure 2.3), where:

- Curve 1 (red line) represents the boundary between a basic right turn (BAR) and a channelised short right turn (CHR(s)) treatment and between a basic left turn (BAL) and an auxiliary short left turn (AUL(s)) turn treatment.

- Curve 2 (blue line) represents the boundary between a CHR(s) and a full length CHR treatment and between an AUL(s) and a full length AUL or CHL treatment. The choice of CHL over an AUL will depend on factors such as the need to change the give way rule in favour of other manoeuvres at the intersection and the need to define more appropriately the driving path by reducing the area of bitumen surfacing.

Figure 2.3 contains the graph for the selection of turn treatments on roads with a design speed greater than or equal to 100 km/h.

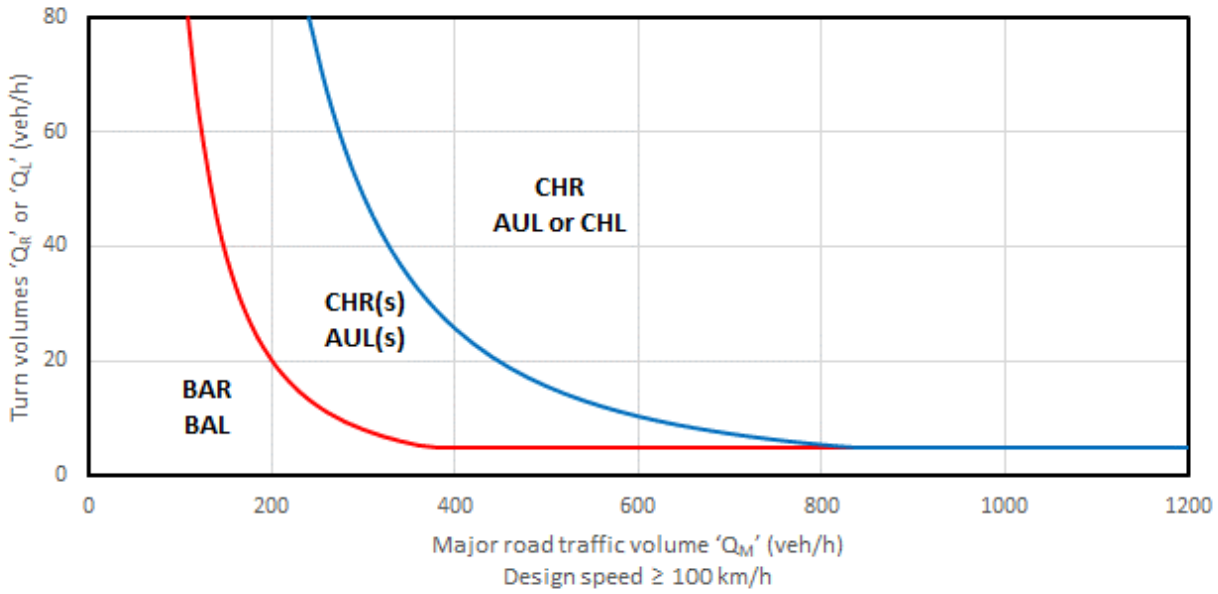


Figure 2.3 Austroads warrant design charts for rural intersection turning lanes

The method to calculate the major road traffic volume on Kidman Way, Q_M, is shown in Figure 2.4 and Table 2.1.

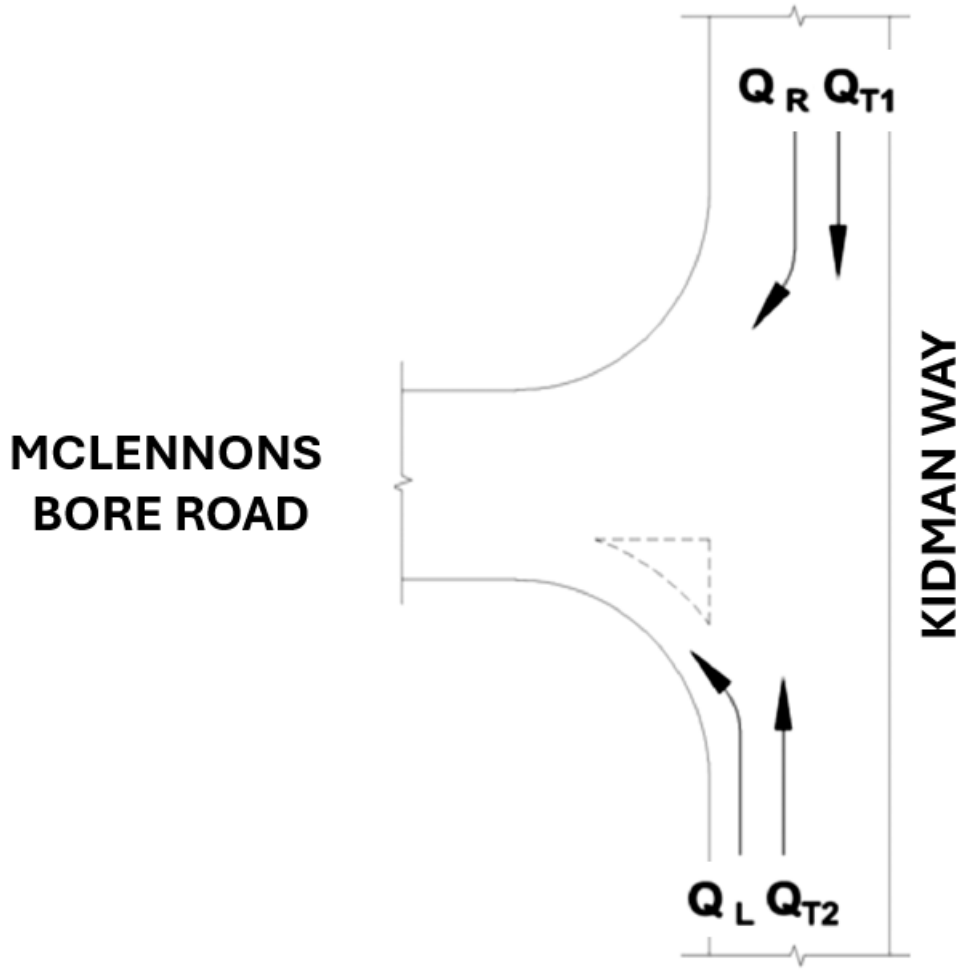


Figure 2.4 Calculation of the major road traffic volume on Kidman Way

Two options, Option A and Option B, have been explored to determine the intersection upgrades required (Table 2.1). The key difference between the two options are:

- Option A does not have a splitter island for left turn movements from Kidman Way
- Option B includes a splitter island for left turn movements from Kidman Way.

Table 2.1 Calculation of the major road traffic volume (Q_M)

Option	Splitter island	Turn type from Kidman Way	Major road traffic volume Q_M (vehicles/hour)
A	No	Left	$= Q_{T2}$
		Right	$= Q_{T1} + Q_{T2} + Q_L$
B	Yes	Left	$= Q_{T2}$
		Right	$= Q_{T1} + Q_{T2}$

Source: Austroads

TfNSW recommends intersections should be designed for a travel speed 10 km/h greater than the posted speed limit. As Kidman Way has a posted speed limit of 100 km/h, intersections with Kidman Way (including any requirements for turning bays at McLennons Bore Road) should be designed for 110 km/h, which is 10 km/h above the posted speed limit. Hence, Figure 2.3 is appropriate for determining the turn treatment.

2.2 Kidman Way/McLennons Bore Road intersection

2.2.1 Option A

Project-related vehicles are assumed to be coming from both directions on Kidman Way and turning onto McLennons Bore Road. Hence, assessments are required for a possible left or right turn bay from Kidman Way.

The left turn treatment warrant design chart for Kidman Way/McLennons Bore Road intersection during peak hour periods for month 15 is shown in Figure 2.5.

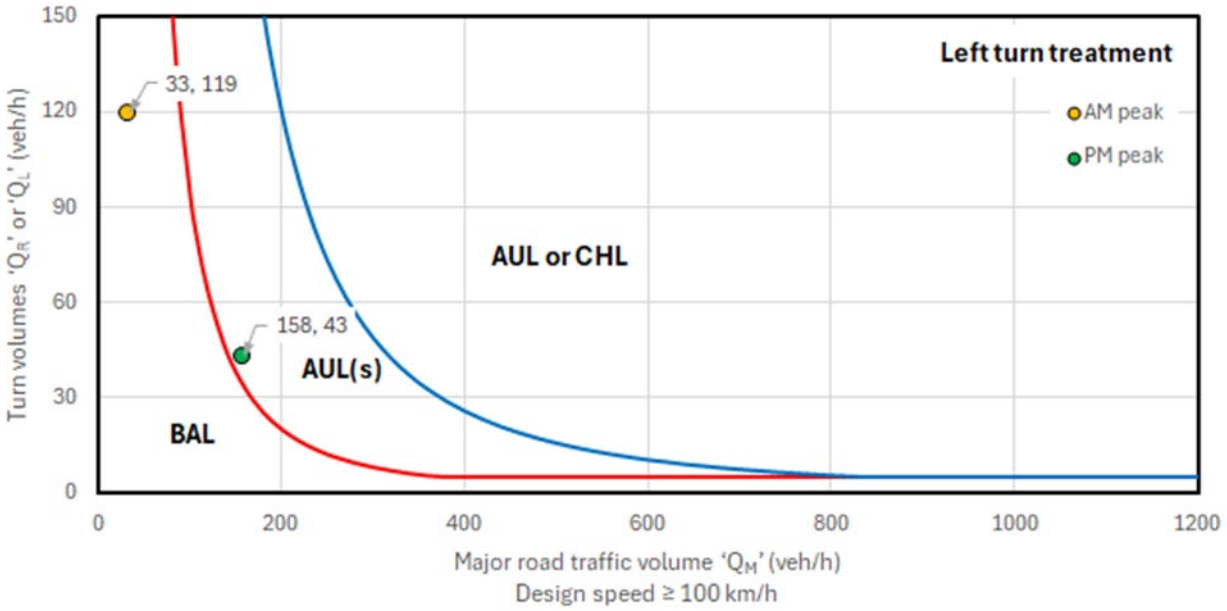
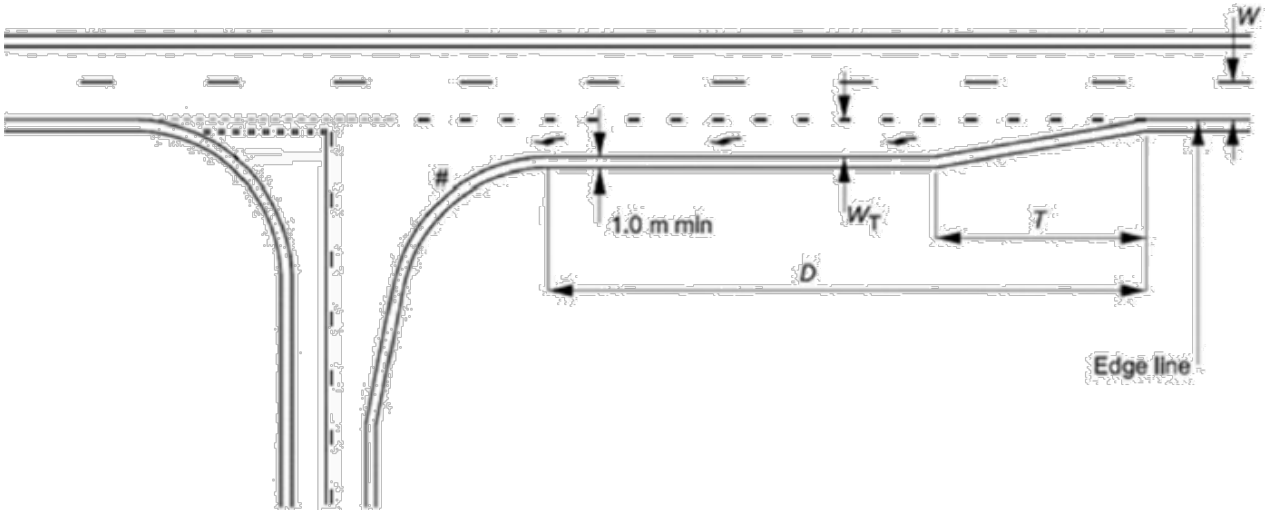


Figure 2.5 Turn treatment warrant (left turn) for Baseline 2027 + Construction Month 15 + Dinawan Solar Farm + Yanco Delta Wind Farm + VNI West cumulative scenario

For 43 left turning vehicles and 158 northbound vehicles on Kidman Way, an AUL(s) treatment would be required. In accordance with Figure 8.3 of Austroads (2023) *Guide to Road Design (Part 4A)*, a left turn bay would be required (see Figure 2.6). At a minimum, the left turn bay for Option A would need to be 55-m-long, plus a 30-m-long taper.



Source: Austroads (2023)

Figure 2.6 AUL(s) turn treatment

The right turn treatment warrant design chart for Kidman Way/McLennons Bore Road intersection during peak hour periods for month 15 is shown in Figure 2.7.

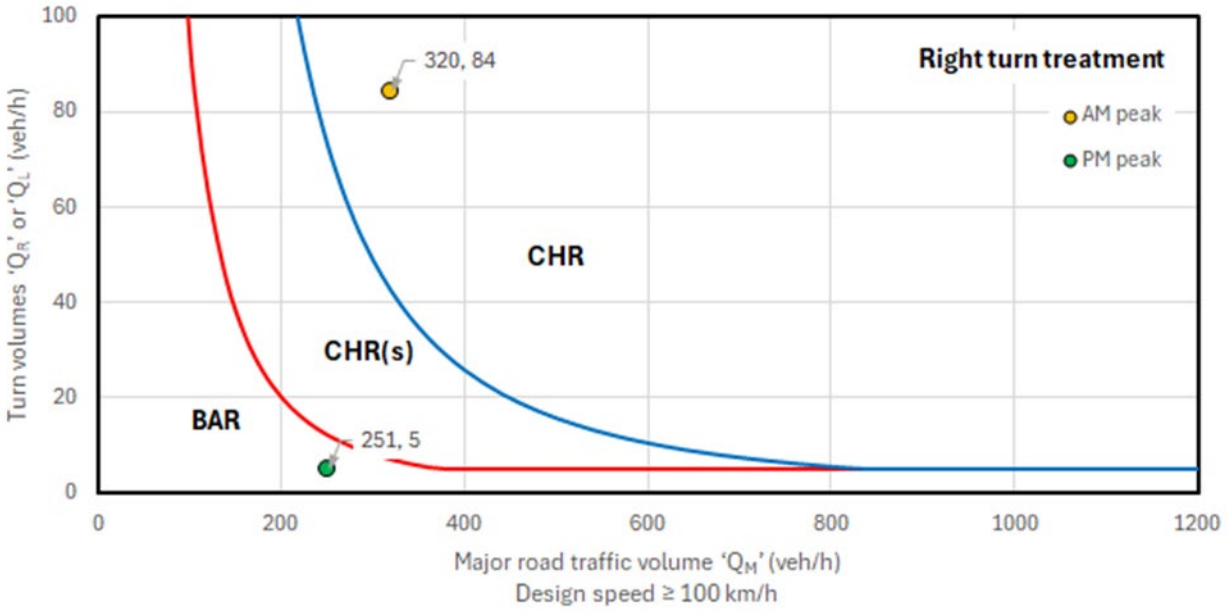
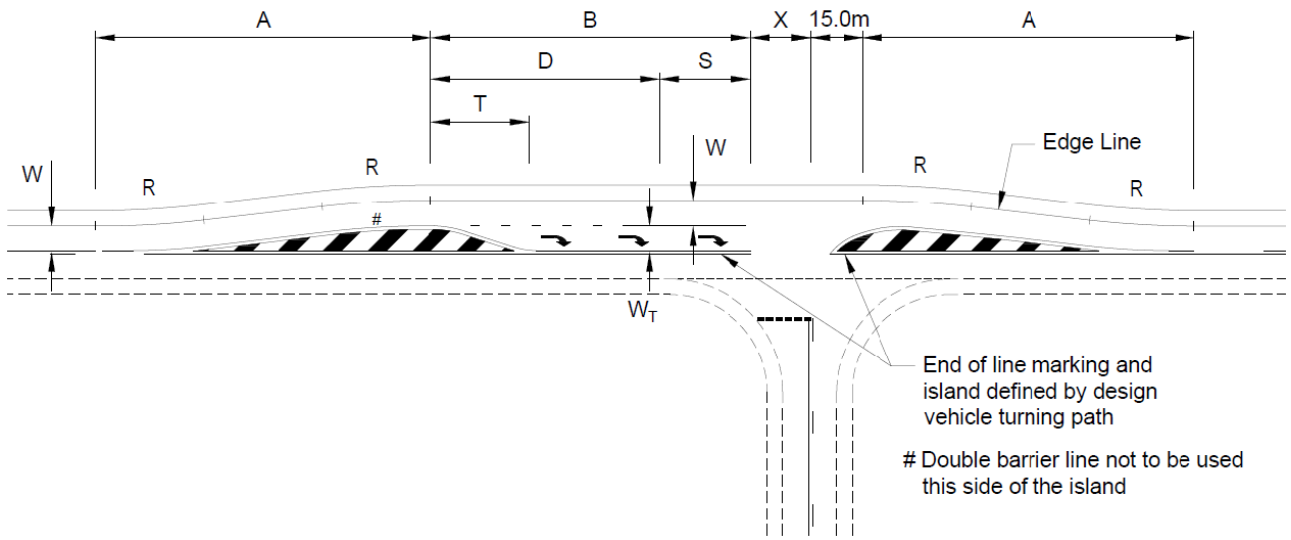


Figure 2.7 Turn treatment warrant (right turn) for Baseline 2027 + Construction Month 15 + Dinawan Solar Farm + Yanco Delta Wind Farm + VNI West cumulative scenario

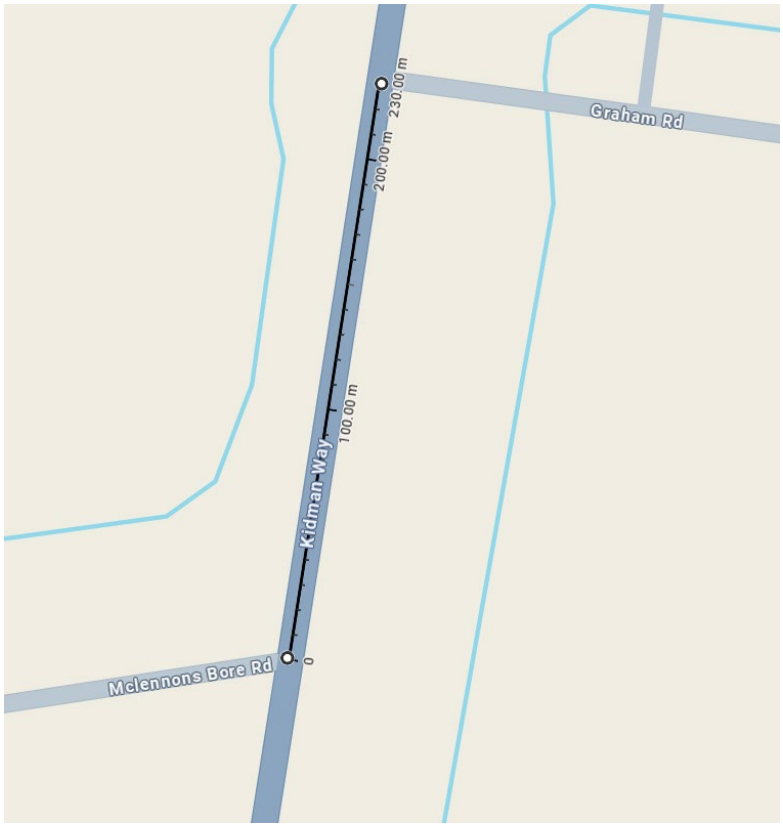
For 84 right turning vehicles and 320 major road vehicles on Kidman Way, a CHR treatment would be required. In accordance with Figure 7.3 of Austroads (2023) *Guide to Road Design (Part 4A)*, a right turn bay would be required (see Figure 2.8). The right turn bay for Option A would need to be 185-m-long, plus a 35-m-long taper.



Source: Austroads (2023)

Figure 2.8 CHR turn treatment

The implementation of a CHR at Kidman Way/McLennons Bore Road intersection would trigger the requirement for upgrades at the neighbouring Kidman Way/Graham Road intersection, 230 m north of McLennons Bore Road. This is due to the length of the right turn bay that would be required for the CHR at Kidman Way/McLennons Bore Road intersection (Figure 2.9). Additional upgrades at Kidman Way/Graham Road intersection would result in further disturbance of roadside vegetation, prolong impacts to existing road users and introduce requirements for upgrades on a local road that's not proposed to be used by project-related vehicles.



Source: Google Maps

Figure 2.9 Distance between McLennons Bore Road and Graham Road

2.2.2 Option B

To mitigate the requirement for a CHR, the Kidman Way/McLennons Bore Road intersection has been designed with a splitter island for left turning vehicles from Kidman Way to McLennons Bore Road (Annexure A - A.1). Separating the left turn movement removes the conflict with right turning vehicles from Kidman Way at Kidman Way/McLennons Bore Road intersection. A longer left turn bay has been provided compared to the minimum requirement, with the left turn bay for Option B designed to be 70-m-long, plus a 30-m-long taper.

Left turning vehicles will only need to slow down to 45 km/h before making the left turn. There will be extra room along the left turn curve for further deceleration and storage for the design vehicle to wait before merging onto McLennons Bore Road, if necessary.

The traffic data in Figure 2.1 shows that the through movement on Kidman Way exhibits a tidal flow pattern, with southbound traffic movements dominating during the AM peak and a reversal to northbound dominance during the PM peak. Hence, a full-length deceleration lane for left turning vehicles is not considered necessary as the northbound vehicle volumes from Kidman Way (south approach) are low enough, especially during the AM peak, for safe operation of this intersection under the proposed design.

The right turn treatment warrant has been reassessed based on the provision of a splitter island for left turn movements from Kidman Way onto McLennons Bore Road. When assessing the provision for a right turning bay, left turning vehicles are not considered to be part of the major road vehicle volumes. The revised right turn treatment warrant design chart for Kidman Way/McLennons Bore Road intersection with the splitter island in place is shown in Figure 2.10.

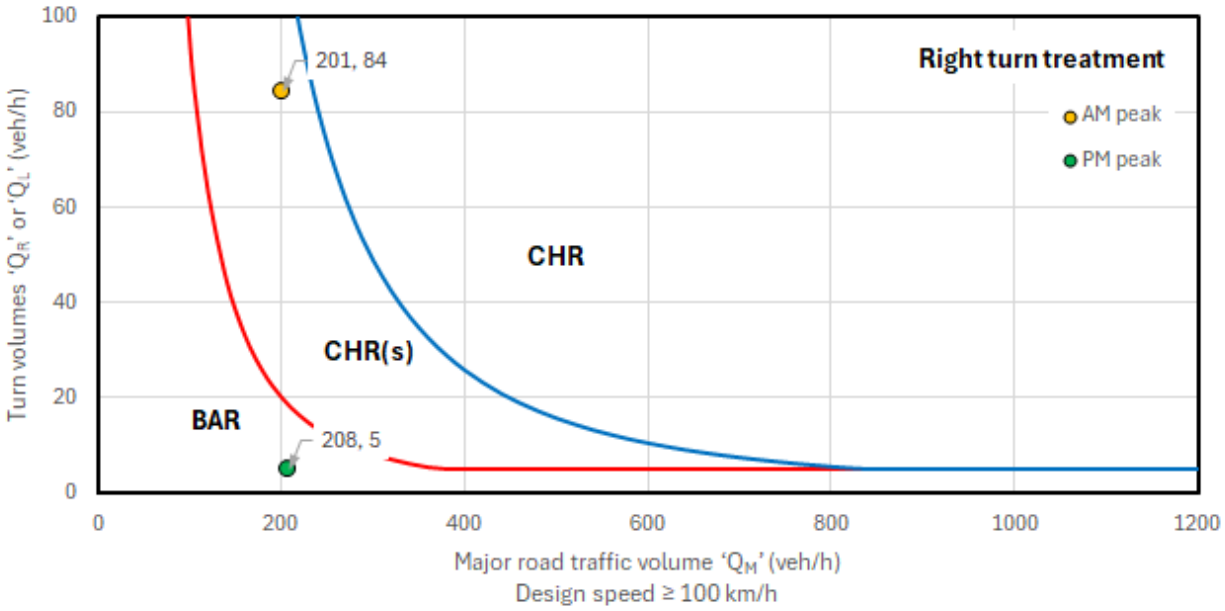
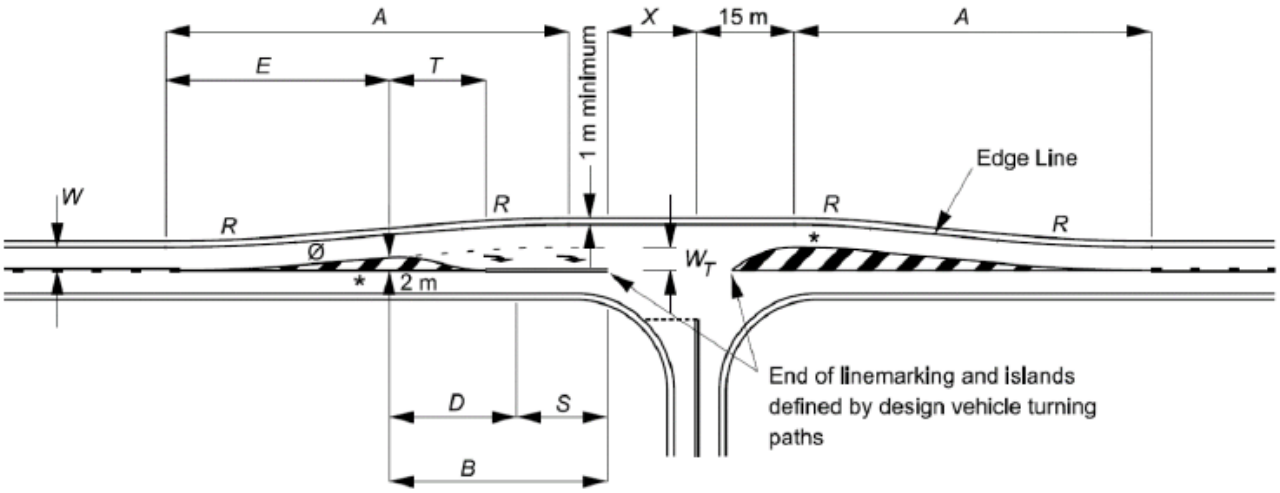


Figure 2.10 Revised turn treatment warrant (right turn) for Baseline 2027 + Construction Month 15 + Dinawan Solar Farm + Yanco Delta Wind Farm + VNI West cumulative scenario

For 84 right turning vehicles and 201 major road vehicles on Kidman Way, a CHR(s) treatment will be required. In accordance with Figure 7.2 of Austroads (2023) *Guide to Road Design (Part 4A)*, a shortened right turn bay will be required (see Figure 2.11). The right turn bay for Option B will be 85-m-long, plus a 35-m-long taper.



Source: Austroads (2023)

Figure 2.11 CHR(s) turn treatment

In summary, the following turn treatments are proposed at the Kidman Way/McLennons Bore Road intersection and are included in the strategic concept design in Annexure A:

- AUL(s) turn treatment with a splitter island for vehicles turning left from Kidman Way onto McLennons Bore Road
- CHR(s) turn treatment in accordance with Figure 7.2 of Austroads (2023) *Guide to Road Design (Part 4A)* for vehicles turning right from Kidman Way onto McLennons Bore Road.

3 Intersection impact assessment

Due to the increase in traffic volumes on Kidman Way/Mclennons Bore Road, SIDRA modelling has been updated to include consideration of baseline, project-related and cumulative traffic volumes for month 15 only. This is considered appropriate as traffic volumes for month 15 will be greater than traffic volumes for month 37, and therefore, SIDRA modelling results for month 15 are more conservative than for month 37 and can be used to inform the proposed upgrade requirements at this intersection.

3.1 Assessment approach

Kidman Way/Mclennons Bore Road intersection has been modelled with the SIDRA Intersection 10 software, a micro-analytical tool for individual intersections and linked intersection-network modelling. SIDRA provides the following performance indicators:

- Degree of saturation (DOS) – the total usage of the intersection expressed as a factor of 1 with 1 representing 100% use/saturation (e.g. 0.8 = 80% saturation).

  In practice, the target degrees of saturation of 0.90 for signals, 0.85 for roundabouts and 0.80 for unsignalised intersections are generally agreed to. These are usually called 'practical degrees of saturation'.

- Average delay (DEL) – for a signalised or roundabout intersection, this is the average delay in seconds encountered by all vehicles passing through the intersection. For a priority-controlled intersection, this is the average delay experienced by the worst approach and turning movement. It is often important to review the average delay of each approach as a side road could have a long delay time, while the large free flowing major traffic will provide an overall low average delay.

- Level of service (LOS) – this is a categorisation of average delay, intended for simple reference. For a priority-controlled intersection, this is the categorisation of the average delay experienced by the worst approach and turning movement.

- 95% queue lengths (Q95) – is defined to be the queue length in metres that has only a 5% probability of being exceeded during the analysed time period. It transforms the average delay into measurable distance units.

The following abbreviations are used for the turn movements:

- TH: through
- LT: left turn
- RT: right turn.

3.2 SIDRA results

The SIDRA results for Kidman Way/Mclennons Bore Road priority controlled (give way) intersection for the baseline 2027 + month 15 construction + cumulative scenario are shown in Table 3.1. The SIDRA results are also provided in Annexure D.

Table 3.1 SIDRA modelling results for Kidman Way/McLennons Bore Road intersection

Peak hour	Intersection volume	DEL (s)	LOS	DOS	Q95 (m)	Q95 approach and direction
AM peak	476	11.0	A	0.102	2.2	LT and RT from Mclennons Bore Road (west)
PM peak	482	11.3	A	0.212	6.8	LT and RT from Mclennons Bore Road (west)

Kidman Way/Mclennons Bore Road intersection performs satisfactorily, with LOS A in the AM and PM peak hour, including when the project and cumulative traffic volumes are added. Any queues from right turning traffic from Kidman Way will not impede through traffic on Kidman Way. Overall, the intersection will have significant spare capacity to accommodate the additional traffic volumes from this project and cumulative projects.

4 Swept path assessments

The amended project includes changes to the OSOM haulage route, site access locations and a reduction to the maximum length of vehicles required to transport OSOM loads. Swept path assessments have informed amendments to the development footprint at each of the site access points to ensure sufficient space is available to facilitate blade deliveries.

The swept paths undertaken to inform the development footprint at each site access location were conservatively based on a 100 m blade length with a full impact where the blade overhangs the trailer. Modelling was completed using a kinematic single-track model with a one-on-axle trailer, which is considered appropriate given OSOM vehicles will be manoeuvring at a low speed on flat terrain with gentle turns.

Swept path assessments are included in the strategic concept designs (Annexure A), amended OSOM route study (Annexure B) and haulage route road upgrades (Annexure C).

5 OSOM route

The amended project has changed the maximum dimensions and haulage route of OSOM vehicles. No changes have been made to OSOM volumes. An amended OSOM route study is provided in Annexure B.

5.1 Dimensions

There will be a variety of OSOM vehicles that deliver various components to the project area:

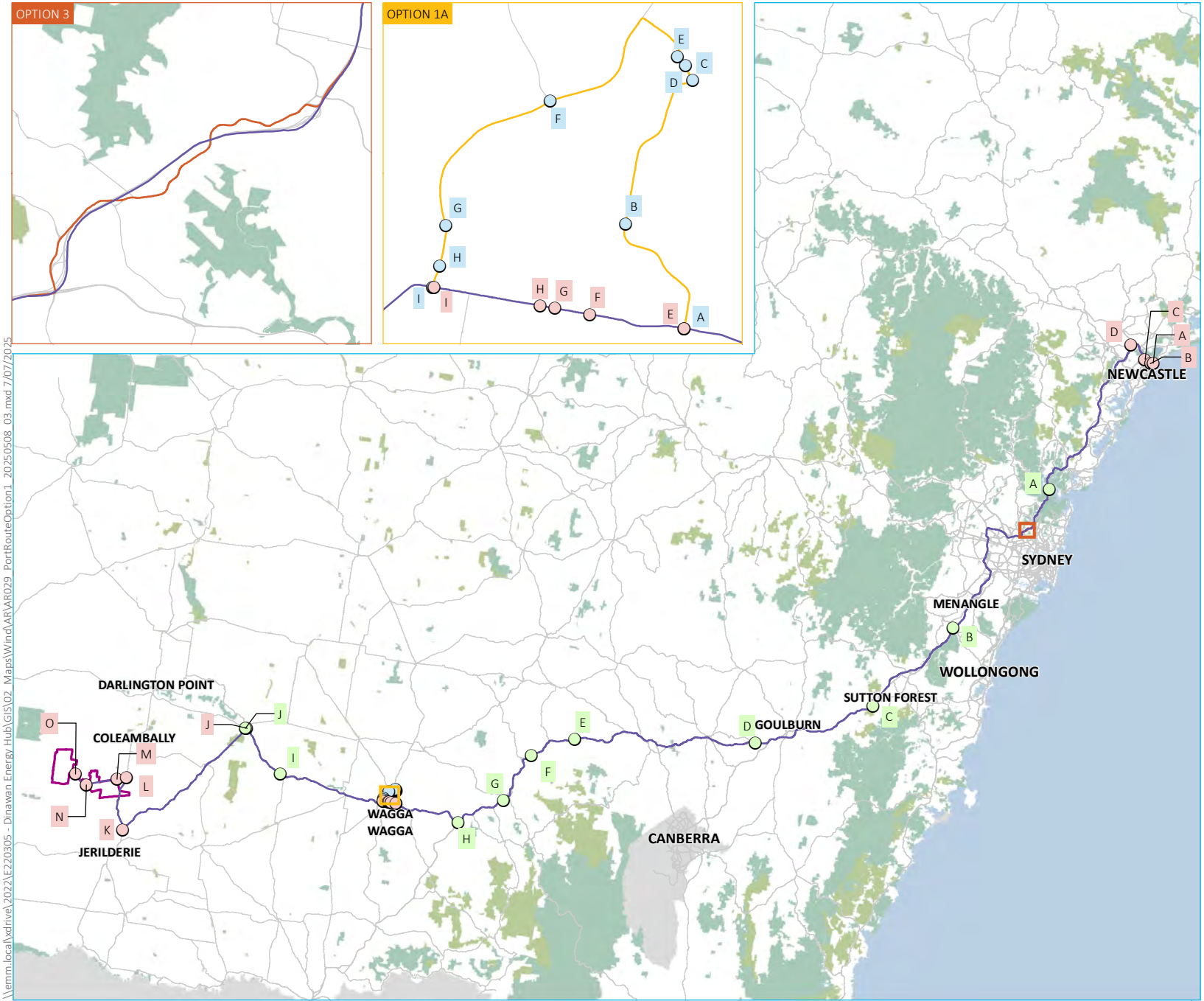
- The longest OSOM vehicle is expected to be carrying an 85-m-long wind turbine blade on a prime mover with 3x8-3x8 trailer (i.e. three axles on the front and back of trailer with eight wheels on each axle).
- The tallest OSOM vehicle is expected to be carrying a 5.85-m-wide base tower on a prime mover and two 4x8 platform trailers (i.e. four axles with eight wheels) in a bookend configuration, followed by a push truck.
- The heaviest and widest OSOM vehicle is expected to carry a substation transformer on a prime mover, two 10x8 platform trailers (i.e. ten axles with eight wheels) with a beamset, with extra prime movers in a push/pull configuration.

Further details of transport configurations for OSOM vehicles can be found in Annexure B.

5.2 Routes

Three potential OSOM vehicle routes from Port of Newcastle to the project area have been assessed in Annexure B:

- Option 1 – suitable for OSOM vehicles with a loaded height of up to 5 m for blades to use North Connex tunnel. Roads used on this route are Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, M1, NorthConnex tunnel, M2, M7, M5, Hume Highway, Sturt Highway, Newell Highway, Kidman Way, Mclennons Bore Road and Wilson Road (refer to Figure 5.1)
    - Option 1A – an option for the blades to detour the Wagga Wagga Rail bridge. Roads used on this route are Sturt Highway, Eunony Bridge Road, Byrnes Road, West Bomen Road, Merino Road, Olympic Hwy and Sturt Highway.
- Option 2 – suitable for OSOM vehicles with a loaded height of up to 6.1 m for towers. Roads used on this route are Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, New England Highway, Golden Highway, Denman Road, Bengalla Road, Wybong Road, Golden Highway, Boothenba Road, Troy Bridge Road, Bunglegumbie Road, Mitchell Highway, Newell Highway, Compton Road, Showground Road, Newell Highway, Kidman Way, Mclennons Bore Road, Wilson Road (refer to Figure 5.2)
- Option 3 – suitable for OSOM vehicles with a loaded height of up to 5.3 m for all remaining loads via Pennant Hills Road. Roads used on this route are Quayside Close, Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, M1, Pennant Hills Road, M2, M7, Hume Motorway, Hume Highway, Sturt Highway, Newell Highway, Kidman Way, Mclennons Bore Road, Wilson Road (refer to Figure 5.1).



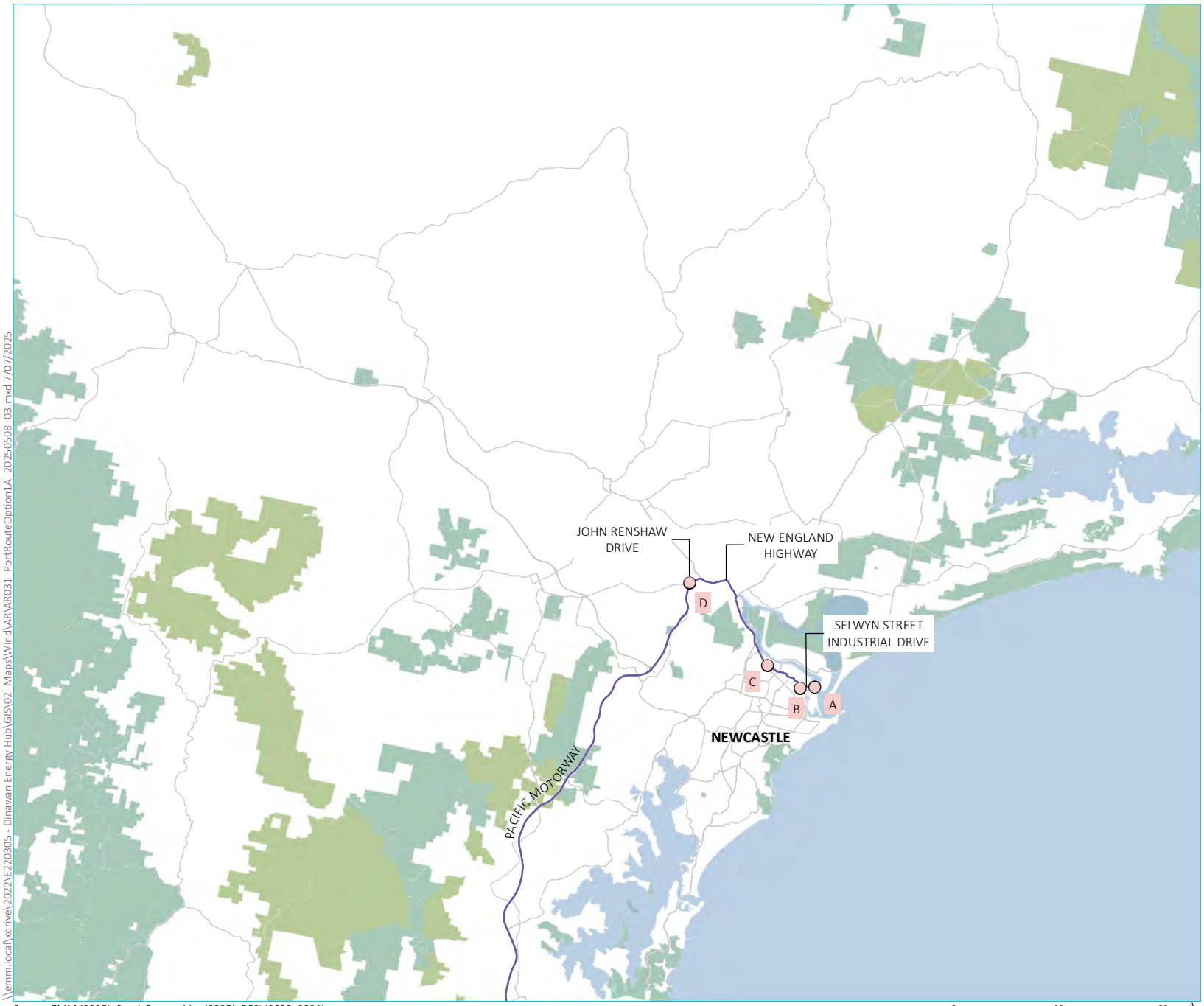
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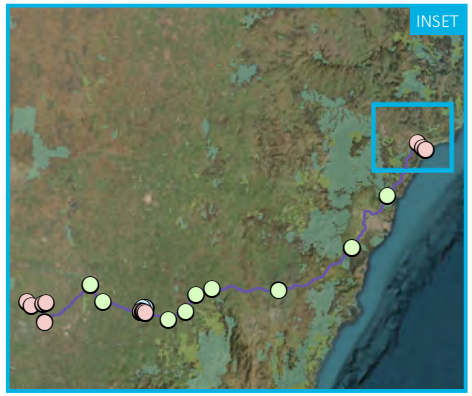
Source: EMM (2025); Spark Renewables (2025); DFSI (2020, 2021)

OSOM route from Port of Newcastle to project area - Option 1, 1a and 3

Dinawan Wind Farm
Addendum Traffic Impact Assessment
Figure 5.1

EMM creating opportunities





KEY

OSOM route option
- Option 1
- Option 1a - Wagga Bypass
- Option 3 - Pennant Hills Road
- Parking area
- Existing road network deficiencies - Option 1
- Existing road network deficiencies - Option 1a

Existing environment
- Major road
- NPWS reserve
- State forest

Source: EMM (2025); Spark Renewables (2025); DFSI (2020, 2021)

0 10 20 km

GDA2020 MGA Zone 55

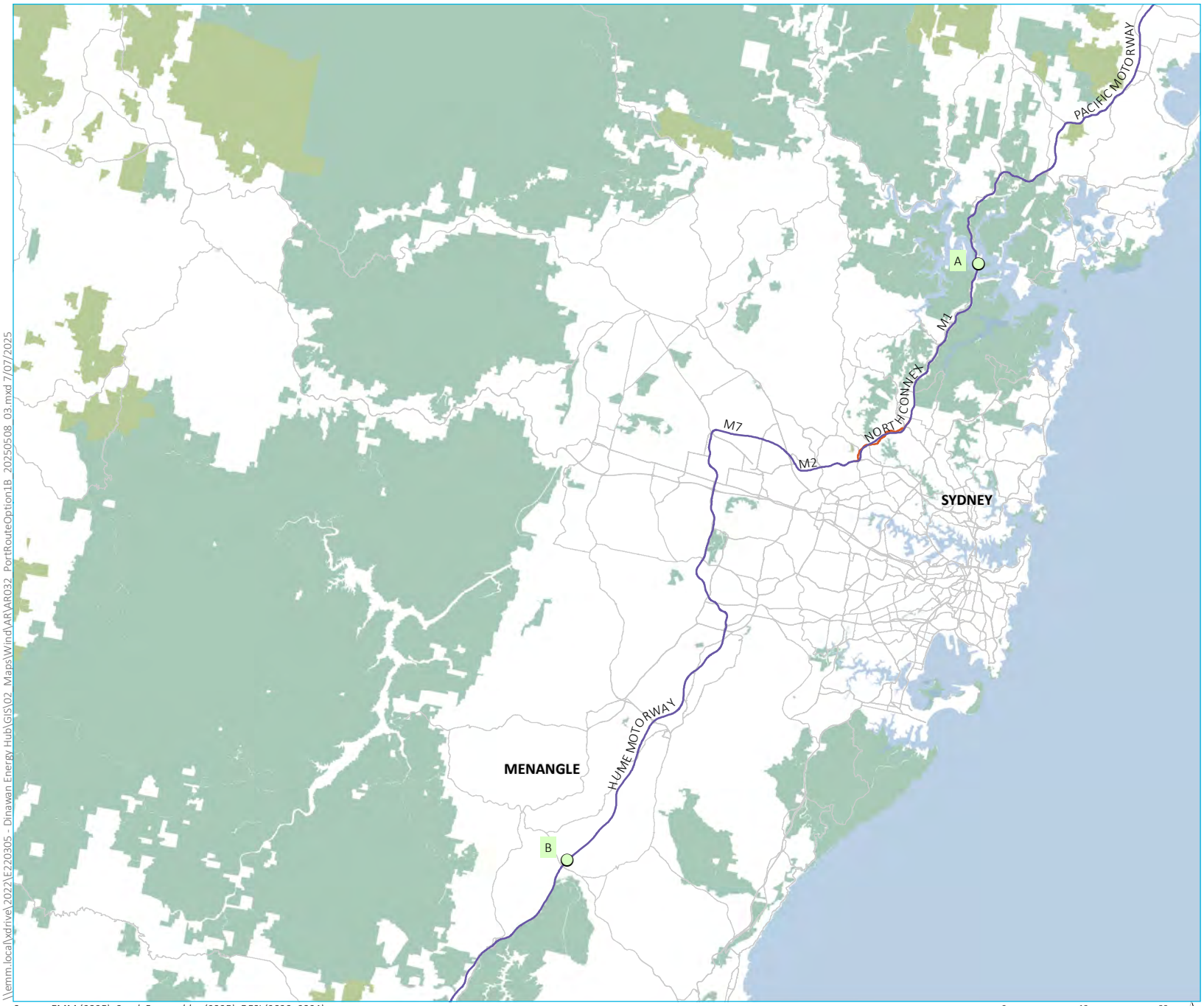
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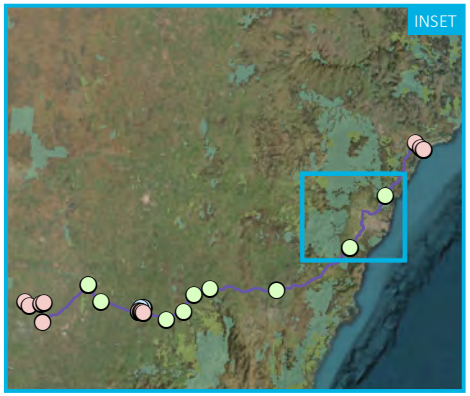
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OSOM route from Port of Newcastle to project area - Option 1, 1a and 3

Dinawan Wind Farm
Addendum Traffic Impact Assessment
Figure 5.1a

EMM creating opportunities





KEY

OSOM route option

- Option 1
- Option 1a - Wagga Bypass
- Option 3 - Pennant Hills Road
- Parking area
- Existing road network deficiencies - Option 1
- Existing road network deficiencies - Option 1a

Existing environment

- Major road
- NPWS reserve
- State forest

Source: EMM (2025); Spark Renewables (2025); DFSI (2020, 2021)

0 10 20 km

GDA2020 MGA Zone 55

N

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OSOM route from Port of Newcastle to project area - Option 1, 1a and 3

Dinawan Wind Farm
Addendum Traffic Impact Assessment
Figure 5.1b

EMM creating opportunities



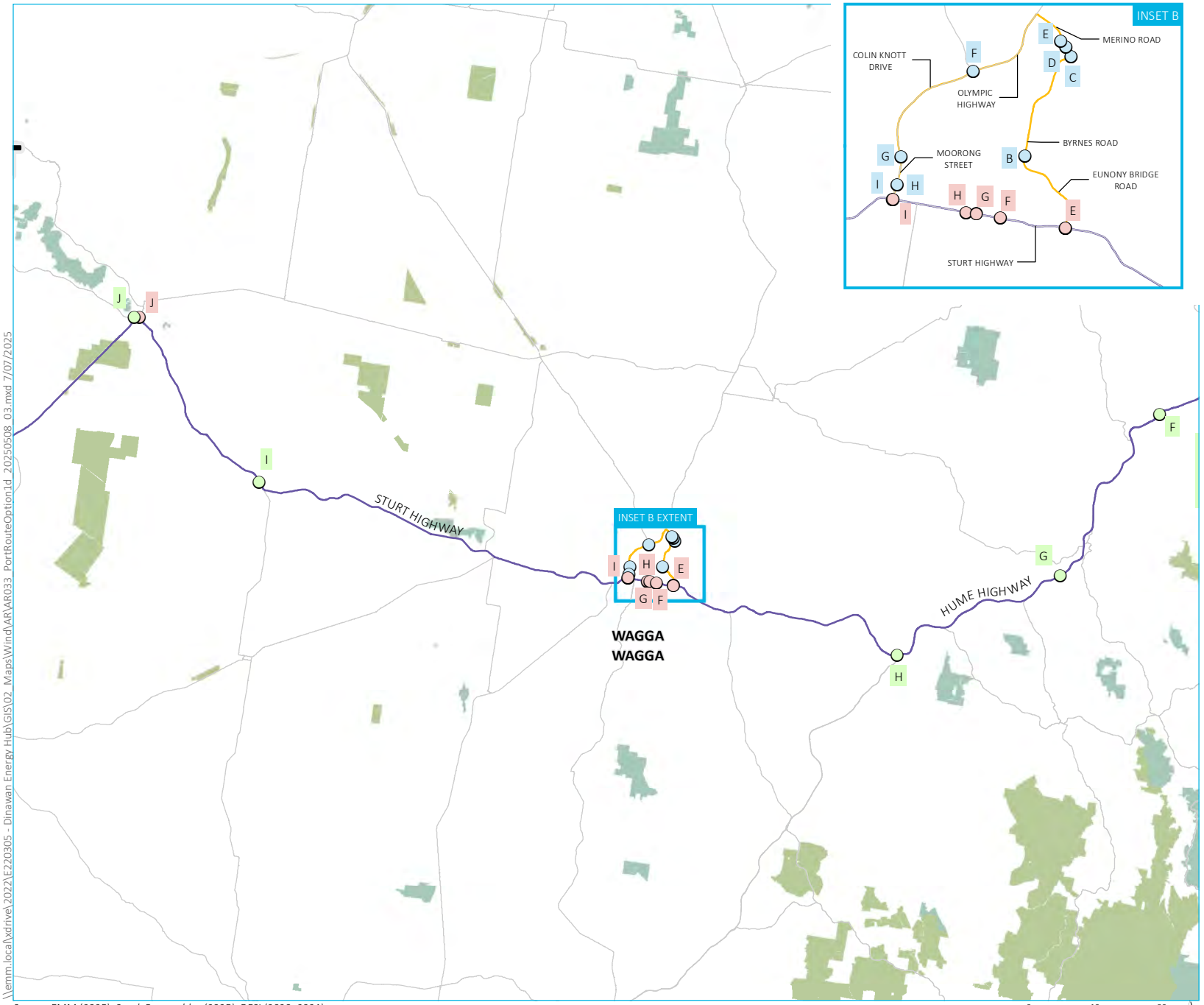
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Source: EMM (2025); Spark Renewables (2025); DFSI (2020, 2021)

OSOM route from Port of Newcastle to project area - Option 1, 1a and 3

Dinawan Wind Farm
Addendum Traffic Impact Assessment
Figure 5.1c

EMM creating opportunities



KEY

OSOM route option
- Option 1
- Option 1a - Wagga Bypass
- Option 3 - Pennant Hills Road
- Parking area
- Existing road network deficiencies - Option 1
- Existing road network deficiencies - Option 1a

Existing environment
- Major road
- NPWS reserve
- State forest

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Source: EMM (2025); Spark Renewables (2025); DFSI (2020, 2021)

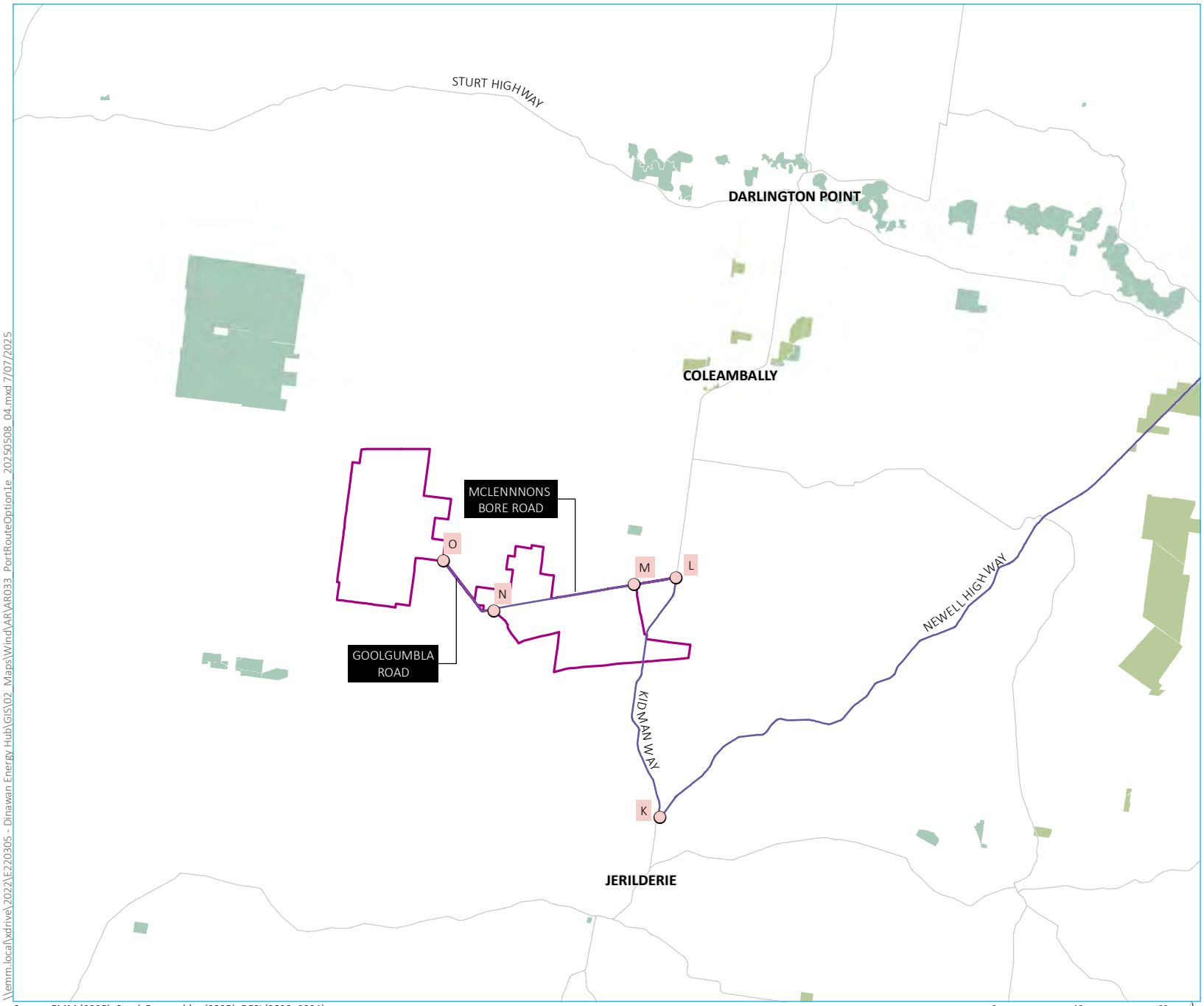
0 10 20 km
GDA2020 MGA Zone 55

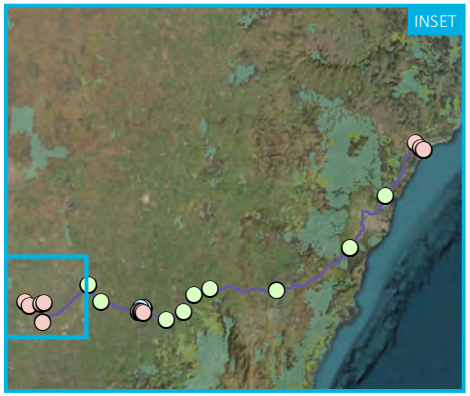
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OSOM route from Port of Newcastle to project area - Option 1, 1a and 3

Dinawan Wind Farm
Addendum Traffic Impact Assessment
Figure 5.1d

EMM creating opportunities





KEY

- Project area

OSOM route option

- Option 1
- Option 1a - Wagga Bypass
- Option 3 - Pennant Hills Road
- Parking area
- Existing road network deficiencies - Option 1
- Existing road network deficiencies - Option 1a
- NPWS reserve
- State forest

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Source: EMM (2025); Spark Renewables (2025); DFSI (2020, 2021)

0 10 20 km

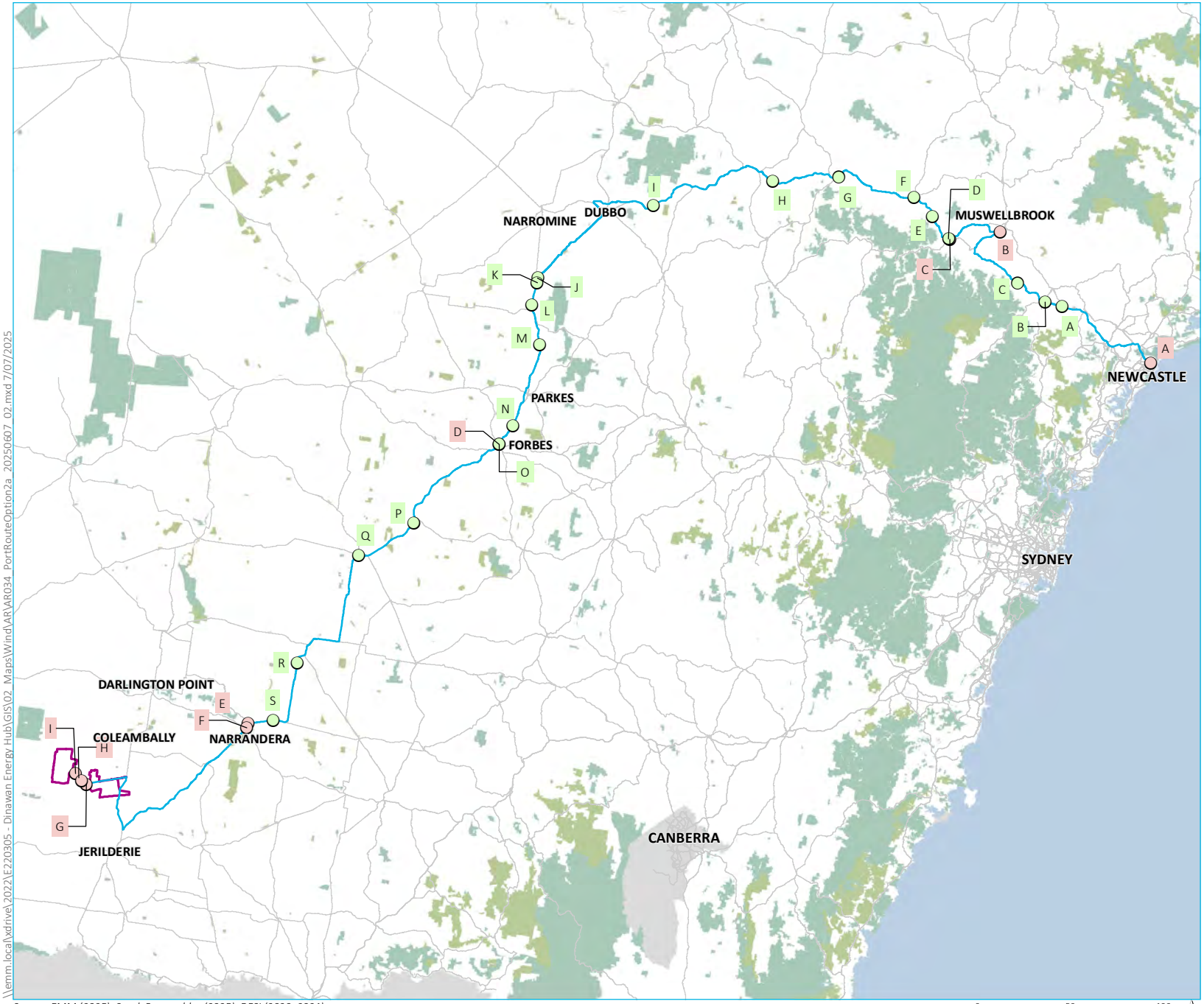
GDA2020 MGA Zone 55

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OSOM route from Port of Newcastle to project area - Option 1, 1a and 3

Dinawan Wind Farm
Addendum Traffic Impact Assessment
Figure 5.1e

EMM creating opportunities



KEY

Project area

OSOM route option

Option 2

Parking area

Existing road network deficiencies

Existing environment

Major road

NPWS reserve

State forest

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Source: EMM (2025); Spark Renewables (2025); DFSI (2020, 2021)

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GDA2020 MGA Zone 55

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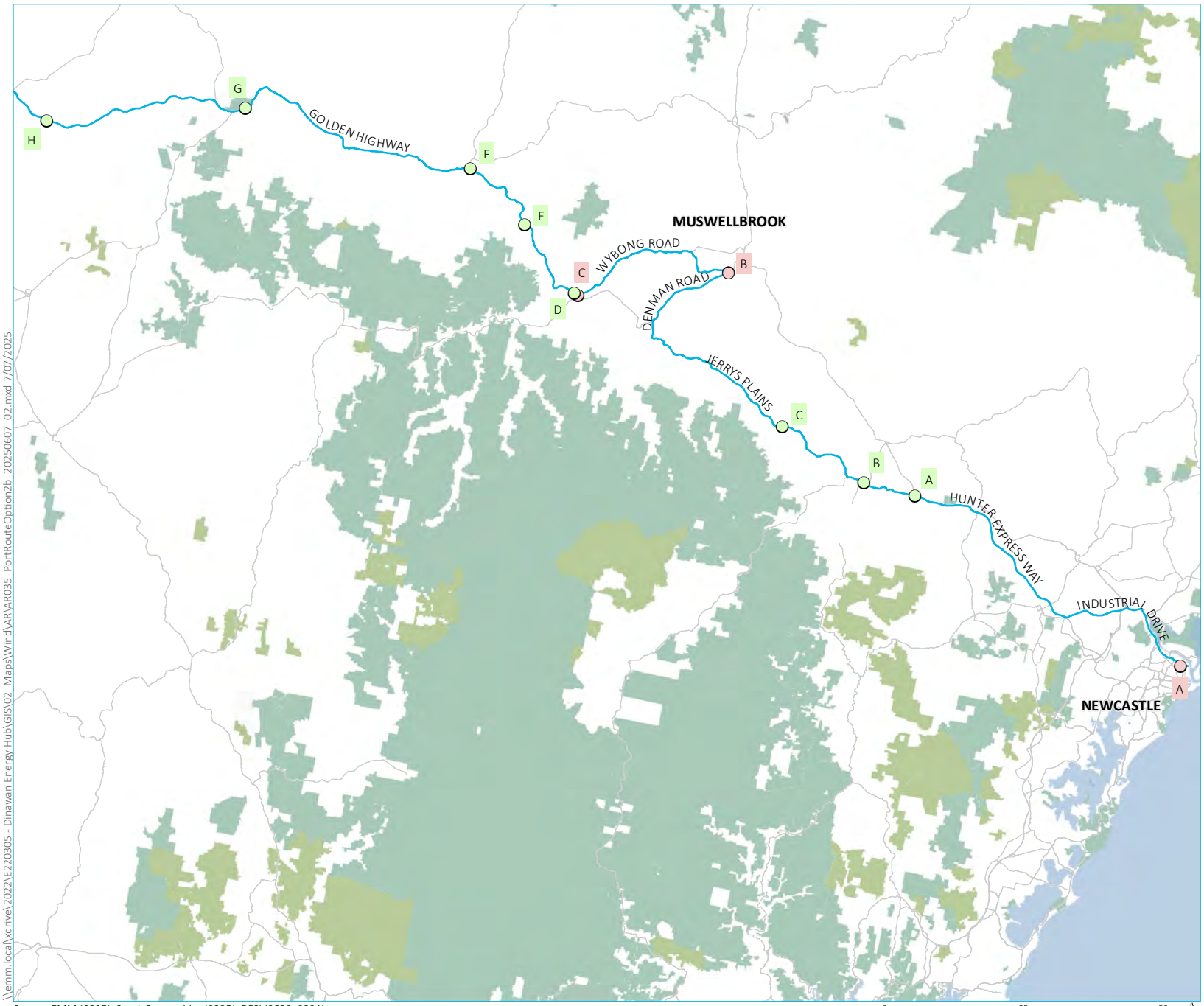
OSOM route from Port of Newcastle to project area - Option 2

Dinawan Wind Farm

Addendum Traffic Impact Assessment

Figure 5.2

EMM creating opportunities





KEY

Project area

OSOM route option

Option 2

Parking area

Existing road network deficiencies

Existing environment

Major road

NPWS reserve

State forest

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Source: EMM (2025); Spark Renewables (2025); DFSI (2020, 2021)

0 25 50 km

GDA2020 MGA Zone 55

N

OSOM route from Port of Newcastle to project area - Option 2

Dinawan Wind Farm

Addendum Traffic Impact Assessment

Figure 5.2a

EMM creating opportunities





KEY

- Project area

OSOM route option

- Option 2
- Parking area
- Existing road network deficiencies

Existing environment

- Major road
- NPWS reserve
- State forest

OSOM route from Port of Newcastle to project area - Option 2

Dinawan Wind Farm
Addendum Traffic Impact Assessment
Figure 5.2b

Source: EMM (2025); Spark Renewables (2025); DFSI (2020, 2021)

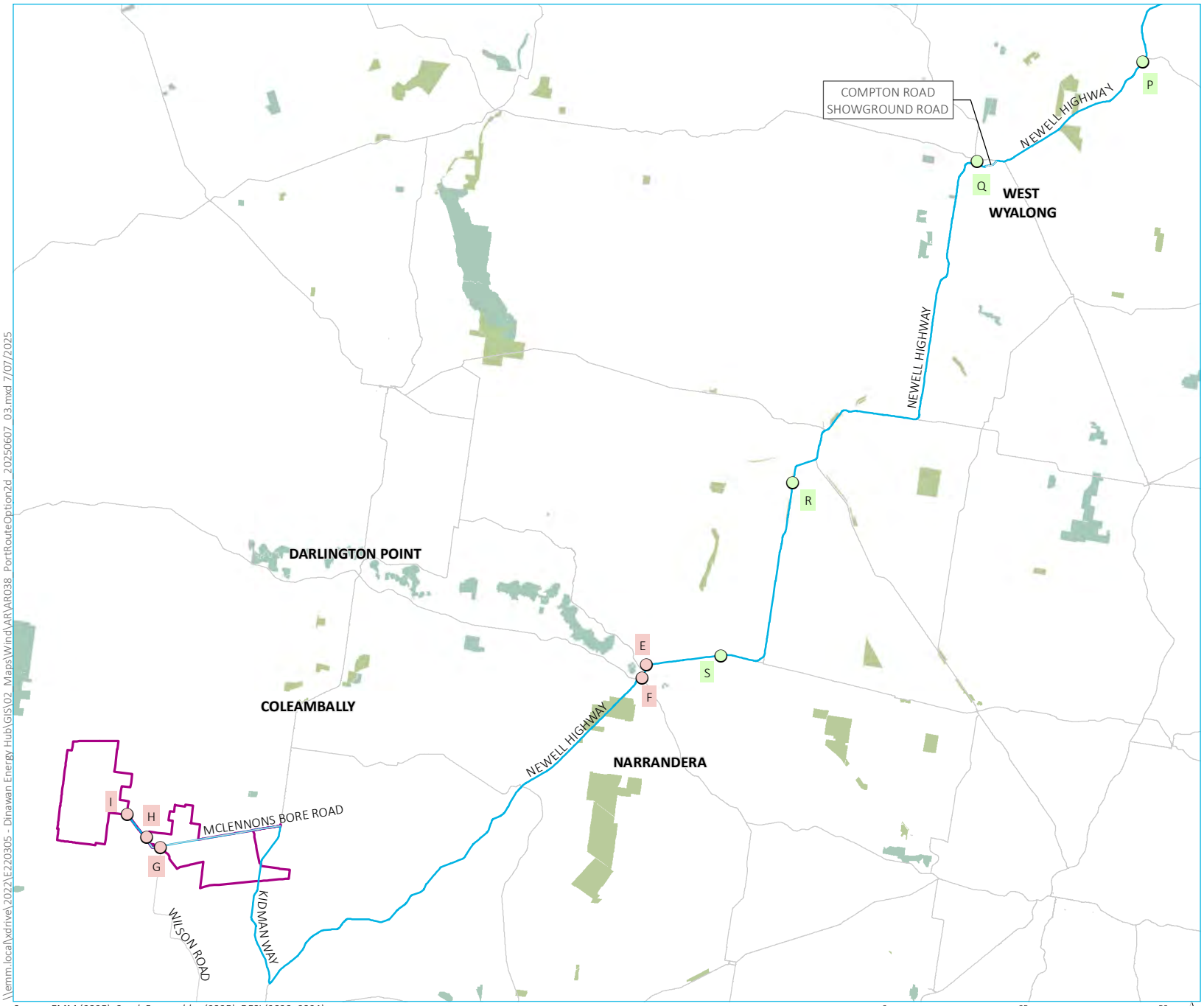
0 25 50 km

GDA2020 MGA Zone 55

N

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creating opportunities





KEY

- Project area

OSOM route option

- Option 2
- Parking area
- Existing road network deficiencies

Existing environment

- Major road
- NPWS reserve
- State forest

Source: EMM (2025); Spark Renewables (2025); DFSI (2020, 2021)

0 25 50 km

GDA2020 MGA Zone 55

N

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OSOM route from Port of Newcastle to project area - Option 2

Dinawan Wind Farm
Addendum Traffic Impact Assessment
Figure 5.2c

EMM
creating opportunities

5.2.1 Parking areas

Parking areas that can accommodate OSOM vehicles have been identified along the assessed routes and are summarised in:

- Table 5.1 and Figure 5.1 (Option 1, Option 1A and Option 3)
- Table 5.2 and Figure 5.2 (Option 2).

Swept paths are provided in Section 9 of Annexure B to demonstrate that the longest OSOM vehicle can use the parking areas identified for Option 1 and Option 3. Swept paths have not been undertaken for parking areas along Option 2 as the proposed OSOM vehicles using this route option will not exceed 44 m.

Table 5.1 OSOM route – Option 1, Option 1A and Option 3 – parking areas

Label (refer to Figure 5.1)	Distance from port (km)	Location	Section of road	Current clearance
A	120	Mooney Mooney	M1	125-m-long x 6.7-m-wide
B	236	Wilton	Hume Highway	210-m-long x 9-m-wide
C	300	Sutton Forest	Hume Highway	150-m-long x 10-m-wide
D	372	Breadalbane	Hume Highway	140-m-long x 14-m-wide
E	480	Berremangra	Hume Highway	180-m-long x 10-m-wide
F	508	Jugiong	Hume Highway	140-m-long x 14-m-wide
G	541	South Gundagai	Hume Highway	150-m-long x 12-m-wide
H	574	Tarcutta	Sturt Highway	210-m-long x 7.5-m-wide
I	679	Galore	Sturt Highway	110-m-long x 18-m-wide
J	712	Gillenbah	Sturt Highway	140-m-long x 11.5-m-wide

Table 5.2 OSOM route – Option 2 – parking areas

Label (refer to Figure 5.2)	Distance from port (km)	Location	Section of road	Current clearance
A	67.4	Whittingham	Golden Highway	115-m-long x 9-m-wide
B	77.5	Mount Thorley	Golden Highway	100-m-long x 10-m-wide
C	98	Warkworth	Golden Highway	100-m-long x 8-m-wide
D	190.1	Sandy Hollow	Golden Highway	50-m-long x 4-m-wide
E	201	Gungal	Golden Highway	70-m-long x 6-m-wide
F	224	Merriwa	Golden Highway	100-m-long x 5-m-wide
G	274	Cassilis	Golden Highway	200-m-long x 8-m-wide
H	305	Leadville	Golden Highway	200-m-long x 8-m-wide
I	376	Ballimore	Golden Highway	150-m-long x 8-m-wide
J	475	Tomingley	Newell Highway	200-m-long x 15-m-wide
K	479	South Tomingley	Newell Highway	150-m-long x 7-m-wide

Label (refer to Figure 5.2)	Distance from port (km)	Location	Section of road	Current clearance
L	490	Peak Hill	Newell Highway	90-m-long x 7-m-wide
M	513	Alectown	Newell Highway	90-m-long x 7-m-wide
N	560	Daroobalgie	Newell Highway	200-m-long x 7-m-wide
O	573.2	Forbes	Newell Highway	100-m-long x 6-m-wide
P	642.1	Marsden	Newell Highway	200-m-long x 7-m-wide
Q	680	West Wyalong	Showground Road	150-m-long x 7-m-wide
R	761	Ardlethan	Newell Highway	200-m-long x 7-m-wide
S	802	Grong Grong	Newell Highway	200-m-long x 7-m-wide

5.2.2 Road network deficiencies

The OSOM route assessment (Annexure B) has identified deficiencies in the existing road network that would need to be addressed prior to being used by the project's OSOM vehicles. These deficiencies are summarised in Table 5.3 (Option 1), Table 5.4 (Option 1A) and Table 5.5 (Option 2). No deficiencies have been identified in the existing road network for Option 3. Potential road network deficiencies are labelled on Figure 5.1 (Option 1 and Option 1A) and Figure 5.2 (Option 2). The corresponding local government area (LGA) for each location is also provided in Table 5.3 (Option 1), Table 5.4 (Option 1A) and Table 5.5 (Option 2).

Works required to facilitate the project's OSOM vehicles from Port of Newcastle to the project area are listed in in Table 5.3 (Option 1), Table 5.4 (Option 1A) and Table 5.5 (Option 2). Figures showing the outcomes of swept path assessments and indicative work areas for each of these deficiencies are provided in Annexure B.

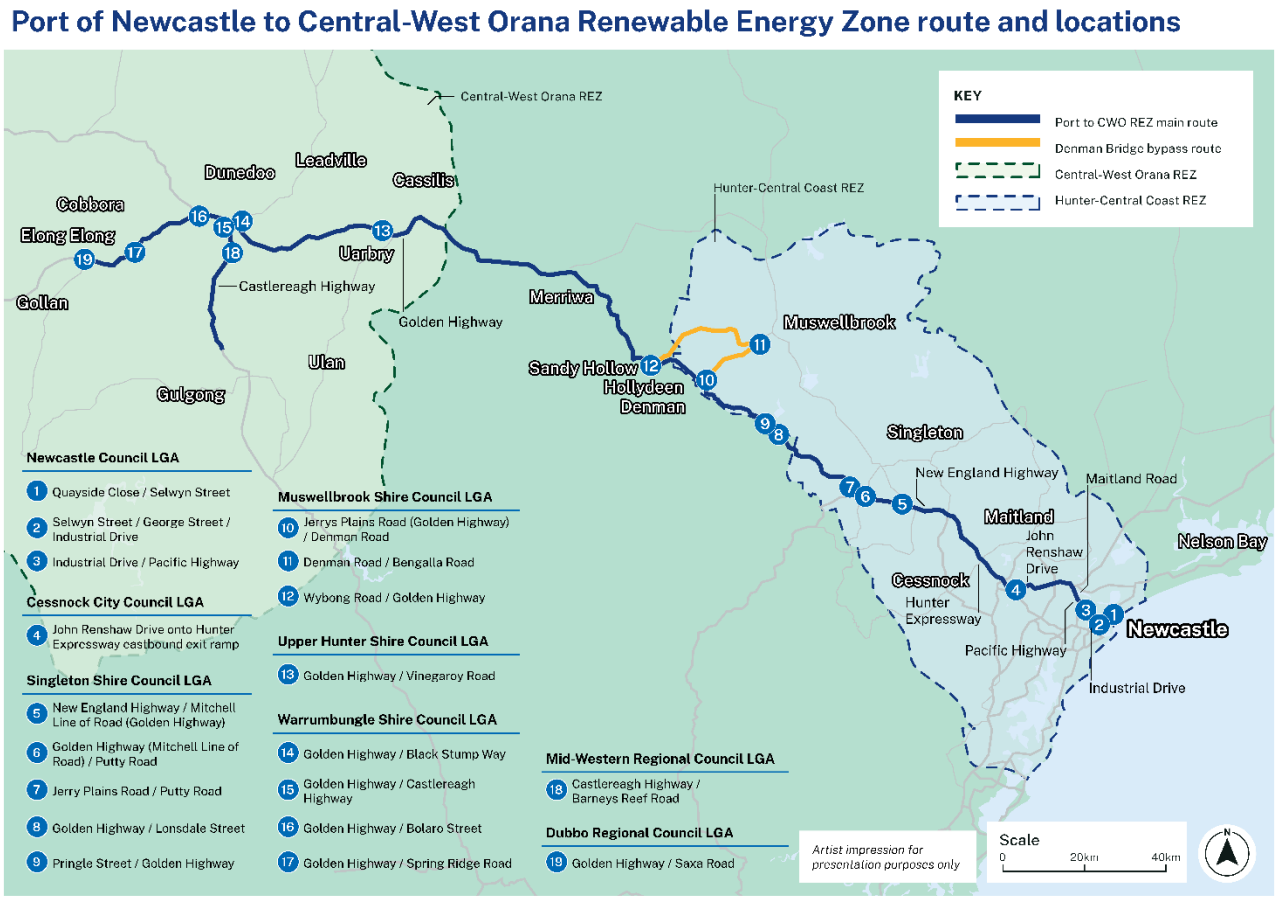
Some works will be undertaken by EnergyCo as part of the Port of Newcastle to Central-West Orana Renewable Energy Zone road upgrades (port to REZ upgrades), summarised in Figure 5.3 and described on the EnergyCo website: https://www.energyco.nsw.gov.au/our-projects/enabling-projects/port-to-rez#port-to-rez-route. As outlined in the EnergyCo Port to REZ factsheet, the upgrades have been undertaken for loads of 85 to 100 metres in length and up to 6.2 metres wide (EnergyCo 2025). OSOM vehicle dimensions for the project will be less than those proposed by EnergyCo (refer to Section 5.1).

Works to be completed by EnergyCo include locations A-C for Option 1 (Table 5.3 and Figure 5.1) and locations A-D for Option 2 (Table 5.4 and Figure 5.2).

All other works are proposed to be completed as part of the project.

Potential impacts from the proposed haulage road upgrades have been categorised as the following:

1. **Not applicable** – impacts have been separately assessed as part of upgrades undertaken by EnergyCo.
2. **Minor (street furniture adjustments)** – minor adjustments to street furniture within the existing road pavement e.g. sign/light pole removal or relocation.
3. **Minor (works within existing road pavement)** – works within existing road pavement that may modify the road layout e.g. traffic island or roundabout to be made trafficable.
4. **Moderate** – works outside of existing road pavement where a disturbance area has been defined (e.g. development footprint, haulage route upgrade).



Source: EnergyCo

Figure 5.3 Port to Renewable Energy Zones road upgrades

A decision on the project's OSOM route is subject to further consultation with relevant road authorities (including TfNSW and local councils) and EnergyCo prior to an NHVR application. The selection of a WTG model for construction will determine the exact dimensions of components requiring transport and subsequent road upgrades needed between the site access points and Port of Newcastle to facilitate deliveries.

Table 5.3 OSOM route – Option 1 – potential road network deficiencies

Label (refer to Figure 5.1)	Distance from port (km)	Location	Section of road	Current clearance	Procedure	Potential issues	Summary of proposed works	Summary of impacts
Newcastle LGA								
A[1]	0	Mayfield	Quayside Close onto Selwyn Street (location 1 on Figure 5.3)	Length: 80 m Width: 8 m	Right hand turn	Blade to oversail fence. The turn may be constrained by the existing dimensions of the intersection.	Road upgrades proposed by EnergyCo will facilitate access through this intersection.	Not applicable.
B[1]	1.3	Mayfield	Selwyn Street onto Industrial Drive via George Street (location 2 on Figure 5.3)	Length: 80 m Width: 8 m	Right hand turn	The turn may be constrained by the existing dimensions of the intersection.	Road upgrades proposed by EnergyCo will facilitate access through this intersection.	Not applicable.
C[1]	5.5	Mayfield West	Industrial Drive onto Pacific Hwy (location 3 on Figure 5.3)	Length: 80 m Width: 8 m	Right hand turn	The turn may be constrained by a traffic island. The blades will need to cross to the incorrect side of the intersection 200 m prior, before crossing back over to the correct side 120 m to the north of the intersection.	Road upgrades proposed by EnergyCo will facilitate access through this intersection.	Not applicable..
D	18.4	Beresfield	John Renshaw Drive onto the M1	Length: 100 m Width: 8 m	Left hand bend	The outside corner of the tail swing may impact on one light pole and one sign.	Light pole to be relocated out of swept path. Blade to oversail sign or sign to be relocated.	Minor (street furniture adjustments).

Label (refer to Figure 5.1)	Distance from port (km)	Location	Section of road	Current clearance	Procedure	Potential issues	Summary of proposed works	Summary of impacts
Wagga Wagga LGA								
E	614.6	Wagga Wagga	Sturt Highway	Length: 80 m	Second exit on round-about	Some modifications to the existing roundabout may be required for the vehicle to pass safely.	Sign to be removed in the middle of the roundabout. Roundabout made trafficable.	Minor (works within existing road pavement).
F	617.3	Wagga Wagga	Sturt Highway	Length: 80 m	Second exit on round-about	Some modifications to the existing roundabout may be required for the vehicle to pass safely.	Sign to be removed in the middle of the roundabout. Hardstand to be installed on roundabout and roundabout made trafficable.	Minor (works within existing road pavement).
G	618.4	Wagga Wagga	Sturt Highway	Length: 80 m	Second exit on round-about	Some modifications to the existing roundabout may be required for the vehicle to pass safely.	The truck will need to cut across the centre of the roundabout. The existing pavement is ok to drive on without any extra work. 2x signs to be removed in the middle of the roundabout.	Minor (works within existing road pavement).
H	618.75	Wagga Wagga	Sturt Highway under rail overpass	Height clearances: 5.25 m	Travel under rail overpass	The vehicle may be constrained by the height of the rail overpass. Detailed vertical curve assessment required to determine whether blade loads can travel under the rail bridge and maintain clearance, as well as maintaining tip clearance to the ground on entry and the bridge on exit while travelling through the dip.	A bypass route (Option 1A) has been provided if project vehicles cannot meet height clearance requirements at this location.	None. If vertical curve assessment demonstrates suitability, there will be no impact. If the height clearance is not suitable, the bypass route (Option 1A) will be used.

Label (refer to Figure 5.1)	Distance from port (km)	Location	Section of road	Current clearance	Procedure	Potential issues	Summary of proposed works	Summary of impacts
I	621.5	Wagga Wagga	Sturt Highway	Length: 80 m	Second exit on round-about	Some modifications to the existing roundabout may be required for the vehicle to pass safely.	Signs to be removed in the middle of the roundabout. Roundabout made trafficable.	Minor (works within existing road pavement).
Narrandera LGA								
J	711	Gillenbah	Sturt Highway	Length: 80 m	Left hand turn	The turn may be constrained by the presence of signage, a power pole, vegetation and a traffic island.	A light pole will need to be relocated. Several signs to be relocated or made removable. Traffic island to be made trafficable or removed and replaced with chevrons. Some minor vegetation trimming within the road corridor (extent of which will be confirmed through detailed survey prior to OSOM deliveries).	Minor (works within existing road pavement).
Murrumbidgee LGA								
K	802	Bundure	Newell Hwy onto Kidman Way	Length: 35 m Width: 8 m	Right hand turn	The turn may be constrained by the existing dimensions of the intersection.	Hardstand to be installed on inside and outside of corner. Sign to be relocated or made removable.	Moderate (works outside of existing road pavement). A disturbance area has been defined (haulage route road upgrade) and a concept design has been prepared (Annexure C.1).
L	833	Coleambally	Kidman Way onto McLennons Bore Road	Length: 25 m Width: 5.5 m	Left hand turn	The turn may be constrained by the intersection dimensions and the presence of signage.	Signs to be relocated and hardstand installed on inside of corner. Dry weather road only.	Moderate (works outside of existing road pavement). Potential impacts included in the development footprint and development corridor.

Label (refer to Figure 5.1)	Distance from port (km)	Location	Section of road	Current clearance	Procedure	Potential issues	Summary of proposed works	Summary of impacts
M	838	Bundure	McLennons Bore Road at Cadell Road	Width: 6 m	Travel directly ahead	The movement may be constrained by the vertical curve of the road.	Vertical curve to be suitable for all proposed loads	Moderate (works outside of existing road pavement). Potential impacts included in the development footprint and development corridor.
N	855	Argoon	Mclennons Bore Rd onto Wilsons Rd	Length: 40 m	Right hand turn	The turn may be constrained by the intersection dimensions. Clearance to an overhead conductor also requires confirmation.	Hardstand to be installed on inside and outside of corner. Overhead conductor clearance to be confirmed.	Moderate (works outside of existing road pavement). Potential impacts included in the development footprint and development corridor.
Edward River LGA								
O	863.9	Argoon	Wilsons Rd Stock Grid	Width: 5.8 m	Travel straight ahead	Existing stock grids may not support the weight of some project deliveries.	All stock grids to be upgraded to accommodate all proposed loads.	Moderate (works outside of existing road pavement). Potential impacts included in the development footprint and development corridor.

Notes: 1. Upgrades to be coordinated by EnergyCo as part of upgrades proposed for Port of Newcastle to the Central-West Orana Renewable Energy Zone.

Table 5.4 OSOM route – Option 1A – potential road network deficiencies

Label (refer to Figure 5.1)	Distance from start of bypass (km)	Location	Section of road	Current clearance	Procedure	Potential issues	Summary of proposed works	Summary of impacts
Wagga Wagga LGA								
A	0	Wagga Wagga	Sturt Hwy roundabout onto Eunony Bridge Road	Length: 40 m Width: 7.5 m	Right hand turn on incorrect side of roundabout	The turn may be constrained by the intersection dimensions, the presence of signage, light poles and a traffic island.	Light poles to be relocated out of swept path. Signs to be relocated or made removable with flush bases and traffic islands made trafficable. Hardstand to be installed on outside of corner.	Moderate (works outside of existing road pavement). A disturbance area has been defined (haulage route road upgrade) and a concept design has been prepared (Annexure C.2).
B	3.8	North Wagga Wagga	Eunony Bridge Road onto Byrnes Road	Length: 45 m Width: 6 m	Travel directly ahead over roundabout	Some modifications to the existing roundabout may be required for the vehicle to pass safely.	Signs to be relocated or made trafficable with flush bases. Hardstand to be installed on roundabout and islands made trafficable.	Minor (works within existing road pavement).
C	8.4	Bomen	Byrnes Road onto West Bomen Road	Length: 45 m Width: 5 m	Left hand turn	The turn may be constrained by the intersection dimensions, the presence of signage, light poles and a traffic island.	Blade clearance to be confirmed on outside of corner. Light poles to be relocated out of swept path. Signs to be relocated or made removable with flush bases. Traffic islands to be made trafficable. Hardstand to be installed on outside of corner.	Moderate (works outside of existing road pavement). A disturbance area has been defined (haulage route road upgrade) and a concept design has been prepared (Annexure C.4).

Label (refer to Figure 5.1)	Distance from start of bypass (km)	Location	Section of road	Current clearance	Procedure	Potential issues	Summary of proposed works	Summary of impacts
D	8.9	Bomen	West Bomen Road onto Merino Road	Length: 45 m Width: 6 m	Travel directly ahead over roundabout	Some modifications to the existing roundabout may be required for the vehicle to pass safely.	Roundabout to be made trafficable/concrete step reduced. Signs relocated or made removable with flush bases and traffic islands made trafficable.	Minor (works within existing road pavement).
E	10.7	Bomen	Merino Road onto Olympic Highway	Length: 75 m Width: 6 m	Left hand turn	The turn may be constrained by the presence of light poles.	Light pole to be relocated out of swept path.	Minor (street furniture adjustments).
F	14.3	Downside	Olympic Highway (Colin Knott Dr) Roundabout at Horseshoe Road	Length: 55 m Width: 5 m	Travel directly ahead over roundabout	Some modifications to the existing roundabout may be required for the vehicle to pass safely.	Signs to be relocated or made removable with flush bases. Roundabout to be made trafficable.	Minor (works within existing road pavement).
G	19.4	Moorong	Olympic Highway (Moorong St) Roundabout at Traverse Street	Length: 50 m Width: 7 m	Travel directly ahead over roundabout	Some modifications to the existing roundabout may be required for the vehicle to pass safely.	Roundabout to be made trafficable. Signs to be relocated or made removable with flush bases.	Minor (works within existing road pavement).
H	20.6	Wagga Wagga	Olympic Highway (Moorong St) Roundabout at Kincaid Street	Length: 50 m Width: 7 m	Travel directly ahead over roundabout	Some modifications to the existing roundabout may be required for the vehicle to pass safely.	Roundabout to be made trafficable. Signs to be relocated or made removable with flush bases.	Minor (works within existing road pavement).

Label (refer to Figure 5.1)	Distance from start of bypass (km)	Location	Section of road	Current clearance	Procedure	Potential issues	Summary of proposed works	Summary of impacts
I	21.2	Wagga Wagga	Olympic Highway (Moorong St) onto Sturt Highway	Length: 40 m Width: 7 m	Right hand turn on incorrect side of roundabout	The turn may be constrained by the intersection dimensions, the presence of signage, a power pole, traffic islands and an existing culvert.	Traffic islands to be made trafficable. Signs to be relocated or made removable with flush bases. Power pole to be relocated out of swept path. Culvert to be strengthened to edge, fence relocated. Hardstand installed and kerbs made trafficable on inside and outside of corner.	Moderate (works outside of existing road pavement). A disturbance area has been defined (haulage route road upgrade) and a concept design has been prepared (Annexure C.3).

Table 5.5 OSOM route – Option 2 – potential road network deficiencies

Label (refer to Figure 5.2)	Distance from port (km)	Location	Section of road	Current clearance	Procedure	Potential issues	Summary of proposed works	Summary of impacts
Newcastle LGA								
A[1]	1.3	Mayfield	Selwyn Street onto George Street (location 2 on Figure 5.3)	Length: 40 m Width: 8 m	Right hand turn	The turn may be constrained by a traffic island.	Road upgrades proposed by EnergyCo will facilitate access through this intersection.	Not applicable.
Muswellbrook LGA								
B[1]	137.9	Muswellbrook	Denman Road onto Bengalla Road (location 11 on Figure 5.3)	Length: 60 m Width: 8 m	Left hand turn	The turn may be constrained by the intersection dimensions.	Road upgrades proposed by EnergyCo will facilitate access through this intersection.	Not applicable.
C[1]	183	Sandy Hollow	Wybong Road onto Golden Highway (location 12 on Figure 5.3)	Length: 60 m Width: 8 m	Right hand turn	The turn may be constrained by the intersection dimensions and signage.	Road upgrades proposed by EnergyCo will facilitate access through this intersection.	Not applicable.
Forbes LGA								
D	573	Forbes	Newell Highway intersection with Dowling Street	Length: 45 m Width: 6 m	Left hand turn	The turn may be constrained by a traffic island and signage.	Signs to be relocated or made removable with flush bases & Islands made trafficable/replaced with painted lines.	Minor (works within existing road pavement).

Label (refer to Figure 5.2)	Distance from port (km)	Location	Section of road	Current clearance	Procedure	Potential issues	Summary of proposed works	Summary of impacts
Narrandera LGA								
E	814 to 816	Narrandera	Newell Highway (Cadell St)	Length: 50 m Width: 7.5 m	Travel directly ahead	Vehicle movements may be constrained by tree branches that overhang within the road corridor.	If required, trees to be trimmed.	Consultation with the relevant road authority responsible for maintenance of this section of road will be undertaken prior to use by OSOM vehicles to determine if trimming is required.
IF	817	Narrandera	Newell Highway onto Sturt Highway	Length: 80 m Width: 7.5 m	Right hand turn.	The turn may be constrained by signage.	Sign to be relocated or made removable.	Minor (street furniture adjustments).
Murrumbidgee LGA								
G	963	Jerilderie	Mclennons Bore Road onto Wilsons Road	Length: 40 m	Right hand turn	The turn may be constrained by the intersection dimensions. Clearance to an overhead conductor also requires confirmation.	Hardstand to be installed on inside of corner. Overhead conductor clearance to be confirmed. Gravel road. May become unusable in wet conditions. Spotter to assist at this pinch point.	Moderate (works outside of existing road pavement). Potential impacts included in the development footprint and development corridor.
Edward River LGA								
H	967	Argoon	Wilsons Road Stock Grid	Width: 5.8 m	Travel straight ahead	Existing stock grids may not support the weight of some project deliveries.	All stock grids to be upgraded to accommodate all proposed loads. Spotter to assist at this pinch point.	Moderate (works outside of existing road pavement). Potential impacts included in the development footprint and development corridor.

Label (refer to Figure 5.2)	Distance from port (km)	Location	Section of road	Current clearance	Procedure	Potential issues	Summary of proposed works	Summary of impacts
I	972.9	Argoon	Wilsons Road Stock Grid	Width: 5.8 m	Travel straight ahead	Existing stock grids may not support the weight of some project deliveries.	All stock grids to be upgraded to accommodate all proposed loads. Spotter to assist at this pinch point.	Moderate (works outside of existing road pavement). Potential impacts included in the development footprint and development corridor.

Notes: 1. Upgrades to be coordinated by EnergyCo as part of upgrades proposed for Port of Newcastle to the Central-West Orana Renewable Energy Zone.

6 Road upgrades and mitigation measures

6.1 Road upgrades

The proposed schedule of road upgrades for the project is provided in Table 6.1.

The amended project has removed use of Cadell Road (south) from the project, and therefore intersection upgrades at Kidman Way/Cadell Road (south) are no longer required. Upgrade requirements to facilitate OSOM vehicles have been included in the schedule of road upgrades as part of the amended project. Where works are proposed outside existing road pavement, a concept design has been prepared:

- Kidman Way/Newell Highway, Bundure (Annexure C.1)
- Sturt Highway/Eunony Bridge Road, East Wagga Wagga (Annexure C.2)
- Olympic Highway (Moorong Street)/Sturt Highway, Wagga Wagga (Annexure C.3)
- Byrnes Road/West Bomen Road, Bomen (Annexure C.4).

Table 6.1 Schedule of road upgrades

Road/intersection	Chainage (distance from port)[1]	Treatment	Timing	Relevant concept design
Newcastle LGA				
OSOM route option 1 – John Renshaw Drive onto the M1	18.4 km	Minor adjustments to street furniture to facilitate OSOM vehicles.	Prior to use by OSOM vehicles.	To be prepared in consultation with relevant road authority prior to construction.
Forbes LGA				
OSOM route option 2 – Newell Highway/Dowling Street intersection	573 km	Amendments to existing road infrastructure within existing road pavement to facilitate OSOM vehicles.	Prior to use by OSOM vehicles.	To be prepared in consultation with relevant road authority prior to construction.
Wagga Wagga LGA				
OSOM route option 1 – Sturt Highway roundabout at Tasman Road	614.6 km	Amendments to existing road infrastructure within existing road pavement to facilitate OSOM vehicles	Prior to use by OSOM vehicles.	To be prepared in consultation with relevant road authority prior to construction.
OSOM route option 1 – Sturt Highway roundabout at Kooringal Road	617.3 km	Amendments to existing road infrastructure within existing road pavement to facilitate OSOM vehicles	Prior to use by OSOM vehicles.	To be prepared in consultation with relevant road authority prior to construction.
OSOM route option 1 – Sturt Highway roundabout at Norton Street	618.4 km	Amendments to existing road infrastructure within existing road pavement to facilitate OSOM vehicles	Prior to use by OSOM vehicles.	To be prepared in consultation with relevant road authority prior to construction.
OSOM route option 1 – Sturt Highway roundabout at Pearson Street	621.5 km	Amendments to existing road infrastructure within existing road pavement to facilitate OSOM vehicles.	Prior to use by OSOM vehicles.	To be prepared in consultation with relevant road authority prior to construction.

Road/intersection	Chainage (distance from port)[1]	Treatment	Timing	Relevant concept design
OSOM route option 1A – Sturt Highway/Eunony Bridge Road intersection	615 km	Provision of hardstand area at the north-west corner of the intersection to facilitate OSOM vehicles	Prior to use by OSOM vehicles.	Annexure C.2 of Appendix D.5 of this amendment report
OSOM route option 1A – Eunony Bridge Road/Byrnes Road intersection	618.8 km	Amendments to existing road infrastructure within existing road pavement to facilitate OSOM vehicles	Prior to use by OSOM vehicles.	To be prepared in consultation with relevant road authority prior to construction.
OSOM route option 1A – Byrnes Road/West Bomen Road intersection	623 km	Provision of hardstand area at the north corner of the intersection to facilitate OSOM vehicles	Prior to use by OSOM vehicles.	Annexure C.4 of Appendix D.5 of this amendment report
OSOM route option 1A – West Bomen Road/Merino Road intersection	623.9 km	Amendments to existing road infrastructure within existing road pavement to facilitate OSOM vehicles	Prior to use by OSOM vehicles.	To be prepared in consultation with relevant road authority prior to construction.
OSOM route option 1A – Merino Road/Olympic Highway intersection	625.7 km	Minor adjustments to street furniture to facilitate OSOM vehicles.	Prior to use by OSOM vehicles.	To be prepared in consultation with relevant road authority prior to construction.
OSOM route option 1A – Olympic Highway (Colin Knott Dr) Roundabout at Horseshoe Road	629.3 km	Amendments to existing road infrastructure within existing road pavement to facilitate OSOM vehicles	Prior to use by OSOM vehicles.	To be prepared in consultation with relevant road authority prior to construction.
OSOM route option 1A – Olympic Highway (Moorong St) Roundabout at Traverse Street	634.4 km	Amendments to existing road infrastructure within existing road pavement to facilitate OSOM vehicles	Prior to use by OSOM vehicles.	To be prepared in consultation with relevant road authority prior to construction.
OSOM route option 1A – Olympic Highway (Moorong St) Roundabout at Kincaid Street	635.6 km	Amendments to existing road infrastructure within existing road pavement to facilitate OSOM vehicles	Prior to use by OSOM vehicles.	To be prepared in consultation with relevant road authority prior to construction.

Road/intersection	Chainage (distance from port)[1]	Treatment	Timing	Relevant concept design
OSOM route option 1A – Olympic Highway (Moorong Street)/Sturt Highway intersection	636 km	Provision of hardstand area at the north-west corner of the intersection to facilitate OSOM vehicles	Prior to use by OSOM vehicles	Annexure C.3 of Appendix D.5 of this amendment report
Narrandera LGA				
OSOM route option 1 – Left hand bend of Sturt Highway at Newell Highway	711 km	Amendments to existing road infrastructure within existing road pavement to facilitate OSOM vehicles	Prior to use by OSOM vehicles	To be prepared in consultation with relevant road authority prior to construction.
OSOM route option 2 – Newell Highway/Sturt Highway intersection	817 km	Minor adjustments to street furniture to facilitate OSOM vehicles.	Prior to use by OSOM vehicles	To be prepared in consultation with relevant road authority prior to construction.
Murrumbidgee LGA				
OSOM route option 1 – Kidman Way/Newell Highway intersection	802 km	Provision of hardstand area at the north-east corner of the intersection to facilitate OSOM vehicles	Prior to use by OSOM vehicles	Annexure C.1 of Appendix D.5 of this amendment report
Kidman Way – new intersection to access development corridor east of Kidman Way	823 km	New intersection: • Intersection upgrades to accommodate a 26-m-long truck and to allow the passage of the largest inbound OSOM vehicle. • Upgrade sealed road lanes and shoulders in the vicinity of the Kidman Way/Kidman Way Eastern Site Access intersection to Austroads standards. • Left turn bays and right turn bays on both approaches on Kidman Way.	Prior to construction of accommodation facility in the eastern area.	Annexure A.1 of Appendix D.5 of this amendment report
Kidman Way/McLennons Bore Road	833 km	Upgrade of existing intersection: • Intersection upgrades to accommodate a 36.5-m-long truck and to allow the passage of the largest OSOM vehicle. • Upgrade sealed road lanes and shoulders in vicinity of the Kidman Way/McLennons Bore Road intersection to Austroads standards. • Left turn bays and right turn bays on both approaches on Kidman Way.	Prior to construction of accommodation facility in the eastern area.	Annexure A.2 of Appendix D.5 of this amendment report

Road/intersection	Chainage (distance from port)[1]	Treatment	Timing	Relevant concept design
McLennons Bore Road/Cadell Road	838 km	Upgrade of existing intersection: • Subject to outcomes of engagement with Murrumbidgee Council, the major road priority at this intersection may change from Cadell Road to McLennons Bore Road. • Subject to Murrumbidgee Council's Local Traffic Committee's consideration, give-way signage would be installed on Cadell Road on both the north and south approaches. If required, additional truck warning signage would be provided on Cadell Road on both approaches to McLennons Bore Road.	Prior to construction of accommodation facility in the eastern area.	To be prepared in consultation with relevant road authority prior to construction.
McLennons Bore Road	838 km	Road upgrade and widening: • Upgrade of dry weather road from Cadell Road to Kidman Way to an all-weather road and removal of existing signage relating to the use of this road during dry weather only. • Widening of unsealed gravel road (where necessary) to cater for construction traffic (8 m trafficable width and 1 m unsealed shoulder on both sides, totalling 10-m-wide unsealed carriageway or as otherwise agreed with Murrumbidgee Council).	Prior to construction of accommodation facility in the eastern area.	To be prepared in consultation with relevant road authority prior to construction.
McLennons Bore Road/site access intersections	841 km, 847 km, 849 km, 853 km	New site access intersections: • Construct intersection to suit 36.5-m-long truck and to allow the passage of the largest OSOM vehicle.	Prior to construction of accommodation facility in the eastern area.	To be prepared in consultation with relevant road authority prior to construction.
McLennons Bore Road/Fernbank Road	848 km	Upgrade of existing intersection: • Intersection upgrades to accommodate a 36.5-m-long truck and to allow the passage of the largest OSOM vehicle.	Prior to construction of accommodation facility in the eastern area.	To be prepared in consultation with relevant road authority prior to construction.
Fernbank Road	848 km	Road widening: • Widening of the unsealed gravel road between McLennons Bore Road and the site access points to cater for construction traffic (8 m trafficable width and 1 m unsealed shoulder on both sides, totalling 10-m-wide unsealed carriageway or as otherwise agreed with Murrumbidgee Council).	Prior to construction of accommodation facility in the eastern area.	To be prepared in consultation with relevant road authority prior to construction.

Road/intersection	Chainage (distance from port)[1]	Treatment	Timing	Relevant concept design
Fernbank Road/site access intersection	850 km	New site access intersection: • Construct intersection to suit 36.5-m-long truck and to allow the passage of the largest OSOM vehicle.	Prior to construction of accommodation facility in the eastern area.	To be prepared in consultation with relevant road authority prior to construction.
McLennons Bore Road/Wilson Road	855 km	Upgrade of existing intersection • Intersection upgrades to accommodate a 36.5-m-long truck and to allow the passage of the largest OSOM vehicle.	Prior to commencement of Stage 2	To be prepared in consultation with relevant road authority prior to construction.
Wilson Road	855 km	Road widening: • Widening of the unsealed gravel road between McLennons Bore Road and Goolgumbla Road to cater for construction traffic (8 m trafficable width and 1 m unsealed shoulder on both sides, totalling 10-m-wide unsealed carriageway or as otherwise agreed with Murrumbidgee Council).	Prior to commencement of Stage 2	To be prepared in consultation with relevant road authority prior to construction.
Edward River LGA				
Goolgumbla Road	858 km	Road widening • Widening of the unsealed gravel road between Wilson Road and the site access points to cater for construction traffic (8 m trafficable width and 1 m unsealed shoulder on both sides, totalling 10-m-wide unsealed carriageway or as otherwise agreed with Edward River Council).	Prior to commencement of Stage 2	To be prepared in consultation with relevant road authority prior to construction.
OSOM route option 2 – Wilsons Road Stock Grids	967 km, 972.9 km	All stock grids to be upgraded to accommodate all proposed loads.	Prior to commencement of Stage 2	To be prepared in consultation with relevant road authority prior to construction.
Goolgumbla Road/site access intersections	866 km, 867 km	New site access intersections • Construct intersection to suit 36.5-m-long truck and to allow the passage of the largest OSOM vehicle.	Prior to commencement of Stage 2	To be prepared in consultation with relevant road authority prior to construction.

6.2 Mitigation measures

A summary of traffic management and mitigation measures for construction are outlined in Table 6.2. The timing of the implementation of these measures will be agreed with the relevant approval authorities. New measures for the amended project have been shown in bold and measures that have been removed for the amended project have been shown with ~~strikethrough~~.

Table 6.2 Summary of mitigation measures – construction

ID	Mitigation measure
T1	A detailed Construction Traffic Management Plan (CTMP) will be developed in consultation with TfNSW, Edward River Council and Murrumbidgee Council prior to the commencement of works.
T2	**The Kidman Way/Kidman Way Eastern Site Access intersection will include:** • **dedicated turning bays for left-turning and right-turning vehicles from Kidman Way** • **upgrades on both the north and south approaches** • **upgrades designed for a 26m long B-double truck and to allow the passage of the largest OSOM vehicle.**
~~T3~~	~~The Kidman Way/Cadell Road (south) intersection will be upgraded to include:~~ ~~• a dedicated turning bay for left turning vehicles from Kidman Way~~ ~~• a widened shoulder on the eastern side of Kidman Way at the intersection~~ ~~• upgrades on both the north and south approaches~~ ~~• closure of right turn from Kidman Way north approach into Cadell Road (south), subject to consultation with TfNSW and Murrumbidgee Council~~ ~~• upgrades designed for light vehicle access.~~
T3	The Kidman Way/McLennons Bore Road intersection will be upgraded to include: • **a dedicated turning bay for left turning vehicles and a dedicated turning bay for right turning vehicles from Kidman Way** • upgrades on both the north and south approaches • upgrades designed for a 36.5-m-long truck and to allow the passage of the largest OSOM vehicle.
T4	Obtain a permit (from NHVR) to allow up to 36.5-m-long trucks as well as OSOM vehicles to use the road network as part of construction. Conditional approval will be requested from NHVR for 36.5-m-long trucks to access McLennons Bore Road, Fernbank Road, Wilson Road and Goolgumbla Road, as it is currently only approved for 19-m-long heavy vehicles. Relevant councils will be consulted as part of the approval process.
T5	The following gravel roads will be widened to comply with the relevant Australian Road Research Board (ARRB) rural roads design guidelines (unless agreed otherwise with the relevant local council): • McLennons Bore Road • Fernbank Road from McLennons Bore Road to the site access point • Wilson Road between McLennons Bore Road and Goolgumbla Road • Goolgumbla Road between Wilson Road and the northern site access point.
T6	McLennons Bore Road between Cadell Road and Kidman Way will be upgraded from a dry weather road to an all-weather unsealed road and existing signage relating to the use of this road during dry weather only will be removed.
T7	All site access points will be constructed as per council's Rural Property Access standard to the satisfaction of **the relevant road authority**.
T8	Subject to outcomes of engagement with Murrumbidgee Council, the major road priority at the intersection of McLennons Bore Road and Cadell Road will change from Cadell Road to McLennons Bore Road. Give way signage will be installed on Cadell Road on both the north and south approaches. Alternatively, if the major road priority cannot be changed, truck warning signage will be installed on Cadell Road on both approaches to the intersection.
T9	At Wilson Road/McLennons Bore Road intersection, truck warning signage will be placed on Wilson Road to warn drivers of trucks turning at Wilson Road/McLennons Bore Road intersection.

ID	Mitigation measure
T10	The McLennons Bore Road/Fernbank Road and McLennons Bore Road/Wilson Road intersections will be widened based on the recommendations of the swept path assessment to facilitate access by the longest vehicles requiring access via these intersections.
T11	A dilapidation survey will be commissioned prior to the start of construction to assess the existing condition of the sections of McLennons Bore Road, ~~Cadell Road (south),~~ Fernbank Road, Wilson Road and Goolgumbla Road that will be used by vehicles associated with the project.
T12	A road maintenance strategy will be developed in consultation with Murrumbidgee Council and Edward River Council.
T13	**To prohibit light and heavy vehicle usage on Cadell Road, a 'Drivers Code of Conduct' will be prepared, which will clearly outline that this road is not to be used by project-related vehicles. The proponent is willing to work with Murrumbidgee Council on effective measures to prohibit development traffic from using Cadell Road.**
T17	**Haulage route (OSOM) and road upgrades and relevant timing is listed in Table 6.20 of the amendment report and will be implemented for the project.**

7 Conclusion

The development footprint will be accessed from Kidman Way, McLennons Bore Road, Fernbank Road and Goolgumbla Road. The amended project has removed the use of Cadell Road by project-related vehicles.

Construction vehicles will include light vehicles and shuttle buses transporting workers, and heavy and OSOM vehicles delivering materials, project components and equipment. At the peak of construction, an estimated 638 daily and 249 peak hour vehicle movements are anticipated. Approximately 2,884 OSOM loads are estimated to be required over the duration of the construction period, predominantly to deliver WTG components from the Port of Newcastle.

The level of service of key intersections and mid-block capacity on Kidman Way and McLennons Bore Road will not be adversely impacted during construction. With the implementation of the proposed mitigation measures, no significant impacts to traffic flow or road safety are expected.

Road and intersection upgrades are proposed to accommodate construction traffic using the local road network. The new intersections at the site access points will be designed for the largest heavy vehicles and OSOM vehicles that will be accessing the development footprint.

During operation it is expected that there will be 102 inbound and 102 outbound vehicles movements per day. These will result in negligible transport impacts.

With the implementation of the proposed road upgrades and traffic management measures, no significant transport impacts are predicted during construction, operation or decommissioning.

Annexure A

Strategic concept designs

EMM
creating opportunities

A.1 Kidman Way/McLennons Bore Road intersection

A1

DINAWAN WIND FARM

STRATEGIC CONCEPT DESIGN - INTERSECTION
KIDMAN WAY & MCLENNONS BORE ROAD ID101



OVERALL SITE PLAN
NTS.

SHEET INDEX

SHEET No	DESCRIPTION	REV
EMM - C00	COVER SHEET AND SHEET INDEX	-
EMM - C01	NOTES	-
EMM - C02	SURVEY AND SERVICES PLAN	-
EMM - C03	SURVEY AND SERVICES PLAN - SOUTH	-
EMM - C04	SURVEY AND SERVICES PLAN - NORTH	-
EMM - C05	SIGNS AND LINEMARKING PLAN 1.	-
EMM - C06	SIGNS AND LINEMARKING PLAN 2.	-
EMM - C07	OVERALL CONSTRUCTION PLAN	-
EMM - C08	CONSTRUCTION PLAN - SOUTH	-
EMM - C09	CONSTRUCTION PLAN - NORTH	-
EMM - C10	SAFE INTERSECTION SITE DISTANCE	-
EMM - C11	SWEPT PATH PLAN - A-DOUBLE	-
EMM - C12	SWEPT PATH PLAN - OSOM VEHICLE	-
EMM - C13	ROAD UPGRADE AREA	-

EMM creating opportunities

SYDNEY | Suite 01
Ground Floor
20 Chandos Street,
St Leonards NSW 2065

Phone # 02 9493 9500

www.emmconsulting.com.au

REV	DATE	COMMENT	DRAWN	REVIEWED	REV	DATE	COMMENT	DRAWN	REVIEWED
-	10/4/25	STRATEGIC CONCEPT DESIGN	C.J.	A.U.					

PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - INTERSECTION
KIDMAN WAY & MCLENNONS BORE ROAD ID101

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN
COVER SHEET AND SHEET INDEX

CLIENT: SPARK RENEWABLES
DRG. #: EMM - C00
PROJECT #: E240775
SCALE: AS SHOWN

REV: -

A1

GENERAL

1. THE DRAWINGS ARE A DIAGRAMMATIC REPRESENTATION ONLY OF THE WORK TO BE CARRIED OUT AND DIMENSIONS SHALL NOT BE OBTAINED BY SCALING.
2. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT MURRUMBIDGEE COUNCIL (MC) GUIDELINES AND SPECIFICATIONS. TfNSW THEN AUSTRALIAN STANDARDS TO BE USED IN OTHER INSTANCES.
3. PROVISION FOR TRAFFIC DURING CONSTRUCTION TO BE IN ACCORDANCE WITH MC CONSTRUCTION SPECIFICATION C201 – CONTROL OF TRAFFIC.
4. ALL LOCATION, ORIENTATION AND LEVELS SHALL BE VERIFIED ON SITE BEFORE COMMENCING ANY WORK. ANY DISCREPANCIES IN THE DRAWINGS AND/OR SPECIFICATIONS SHALL BE REFERRED TO THE PRINCIPAL FOR CLARIFICATION BEFORE PROCEEDING. NATURAL SURFACE LEVELS ARE INDICATIVE ONLY.
5. ALL INVESTIGATION & WORK TO BE UNDERTAKEN IN ACCORDANCE WITH MC CONSTRUCTION SPECIFICATION – DEVELOPMENT CONSTRUCTION – GENERAL
6. PRIOR TO COMMENCEMENT OF WORKS THE CONTRACTOR SHALL SATISFY HIMSELF OF THE CORRECT LOCATION OF EXISTING SERVICES WHETHER INDICATED OR NOT ON THE DRAWINGS.
7. ADJUST ALL UTILITY SERVICE COVERS TO SUIT NEW GRADES & LEVELS, FLUSH WITH SURROUNDING AREA.
8. EXISTING STATE SURVEY MARKS AFFECTED BY THE WORKS ARE TO BE RECOVERED IN ACCORDANCE WITH SURVEYOR GENERAL'S DIRECTION No. 11 – "PRESERVATION OF SURVEY INFRASTRUCTURE".

SITE MANAGEMENT:

1. PROVIDE BARRIERS AROUND ALL CONSTRUCTION WORKS WITHIN THE FOOTPATH AREA TO PROVIDE SAFE ACCESS FOR PEDESTRIANS.
2. CONCRETE PUMPS AND CRANES ARE TO OPERATE FROM WITHIN THE DESIGNATED WORK AREA AND ARE NOT TO OPERATE FROM THE PUBLIC ROADWAY UNLESS SPECIFIC COUNCIL PERMISSION IS OBTAINED.
3. DELIVERY VEHICLES MUST NOT STAND WITHIN THE PUBLIC ROADWAY FOR MORE THAN 20 MINUTES AT A TIME.
4. TOILET FACILITIES MUST BE EITHER FLUSHING TYPE OR APPROVED PORTABLE CHEMICAL CLOSET. CHEMICAL CLOSETS ARE TO BE MAINTAINED AND SERVICES ON A REGULAR BASIS SO THAT OFFENSIVE ODOUR IS NOT EMITTED.
5. TRAFFIC MANAGEMENT MEASURES ARE REQUIRED TO BE IMPLEMENTED AND MAINTAINED DURING CONSTRUCTION IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE RMS TRAFFIC CONTROL AT WORKSITES MANUAL AND AS1742, MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
6. PEDESTRIAN CONTROL MEASURES ARE REQUIRED TO BE IMPLEMENTED AND MAINTAINED DURING CONSTRUCTION IN ACCORDANCE WITH AS1742, MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
7. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT ALL WORK CARRIED OUT AT THE SITE IS IN ACCORDANCE WITH COUNCIL'S WORK HEALTH & SAFETY POLICY.
8. DO NOT STORE OR PLACE MATERIALS INSIDE THE DRIP LINE OF ANY TREE. CONSTRUCTION ACTIVITIES, VEHICLE PARKING OR MAINTENANCE, MATERIALS STORAGE OR LOCATING OF CONTAINERS AND SITE SHEDS MUST NOT OCCUR WITHIN THE DRIP LINE OF ANY TREES OR WITHIN 5M OF TREES WHERE THE DRIP LINE RADIUS IS LESS THAN 5M.
9. THE CONTRACTOR SHALL EFFECT TEMPORARY DRAINAGE MEASURES TO AVOID LOCALISED PONDING.

EARTHWORKS:

1. EARTHWORKS ARE TO BE CARRIED OUT IN ACCORDANCE WITH THE DRAWINGS AND GEOTECHNICAL ENGINEERS RECOMMENDATIONS. THE DESIGN AS DETAILED ON THESE DRAWINGS ASSUMES A PROPERLY PREPARED UNIFORM AND STABLE SUBGRADE.
2. THE DRAWINGS SHOULD BE READ IN CONJUNCTION WITH ANY GEOTECHNICAL REPORT PREPARED FOR THE WORKS.
3. STRIP OFF ALL VEGETATION, RUBBISH AND TOPSOIL CONTAINING ORGANIC OR ROOT MATTER FROM THE AREA OF THE WORKS AND REMOVE FROM SITE/STOCKPILE FOR RE-USE.
4. PRIOR TO ANY FILLING, THE EXPOSED SUBGRADE SHALL BE PROOF ROLLED WITH A MINIMUM OF 10 PASSES OF A 5 TONNE (MIN) DEAD WEIGHT VIBRATING ROLLER IN THE PRESENCE OF THE SUPERINTENDENT OR GEOTECHNICAL ENGINEER AND ANY SOFT OR YIELDING MATERIALS REMOVED AND REPLACED WITH APPROVED FILLING COMPACTED AS HEREAFTER SPECIFIED.
5. FILL SHALL BE SOUND WELL GRADED MATERIAL WITH A HIGH GRANULAR CONTENT AND SHALL BE THE BEST OF EXCAVATED MATERIALS FROM THE SITE, OR APPROVED SOUND IMPORTED MATERIAL FREE OF RUBBISH, PLASTIC CLAY OR LARGE PIECES THAT WOULD PRECLUDE COMPACTION.
6. FILL SHALL BE SPREAD IN LAYERS NOT EXCEEDING 200MM AND COMPACTED USING SUITABLE MECHANICAL EQUIPMENT AT OPTIMUM MOISTURE CONTENT ±2 % TO NOT LESS THAN 98% MAXIMUM STANDARD DRY DENSITY (MSDD) IN ACCORDANCE WITH AS1289 – E11 UNLESS OTHERWISE NOTED.
7. FINISH FILLING LEVELS TO SUIT CONSTRUCTION OVER, ALLOWING FOR MIN 75MM OF BASE COURSE (DGB20) COMPACTED TO 98% MAXIMUM MODIFIED DRY DENSITY (MMDD) WHERE NOTED ON DRAWINGS.
8. DENSITY TESTING OF FILLING (AND BASE COURSE WHERE APPLICABLE) SHALL BE CARRIED OUT AT THE RATE OF 1 TEST PER 200 SQUARE METRES EACH LAYER (MINIMUM 2 TESTS). TESTING SHALL BE BY A NATA REGISTERED LABORATORY AND SHALL BE ALLOWED FOR BY THE CONTRACTOR.
9. THE CONTRACTOR SHALL PROGRAM AND UNDERTAKE THE EARTHWORKS OPERATIONS SUCH THAT WORKING AREAS ARE ADEQUATELY DRAINED DURING CONSTRUCTION. THE SURFACE SHALL BE GRADED AND SEALED OFF TO REMOVE DEPRESSIONS WHICH WOULD ALLOW WATER TO POND AND PENETRATE THE UNDERLYING MATERIAL. ANY DAMAGE RESULTING FROM FAILURE TO COMPLY WITH THESE REQUIREMENTS SHALL BE RECTIFIED AT THE CONTRACTORS EXPENSE.

DEMOLITION:

1. CARRY OUT ALL DEMOLITION WORK IN ACCORDANCE WITH AS 2601.
2. UNTIL PERMANENT SUPPORT IS PROVIDED, PROVIDE TEMPORARY SUPPORT FOR SECTIONS OF EXISTING STRUCTURES WHICH ARE TO BE ALTERED AND WHICH NORMALLY RELY FOR SUPPORT ON WORK TO BE DEMOLISHED.
3. SUPPORT EXCAVATIONS FOR DEMOLITION OF UNDERGROUND SERVICES.
4. PROVIDE SUPPORT TO ADJACENT STRUCTURES WHERE NECESSARY, SUFFICIENT TO PREVENT DAMAGE RESULTING FROM THE WORKS.
   - LATERAL SUPPORTS: PROVIDE LATERAL SUPPORT AT LEAST EQUAL TO THAT GIVEN BY THE STRUCTURE TO BE DEMOLISHED, USING SHORING.
   - VERTICAL SUPPORTS: PROVIDE SUPPORT WHERE NECESSARY USING PILING OR UNDERPINNING, OR BOTH.
5. PROVIDE DUST PROOF SCREENS, BULKHEADS AND COVERS TO PROTECT EXISTING FINISHES AND THE IMMEDIATE ENVIRONMENT FROM DUST AND DEBRIS.
6. DO NOT USE EXPLOSIVES.
7. HAZARDOUS MATERIALS. GIVE NOTICE IMMEDIATELY IF HAZARDOUS MATERIALS OR CONDITIONS ARE FOUND, INCLUDING THE FOLLOWING:
   - ASBESTOS OR MATERIAL CONTAINING ASBESTOS.
   - FLAMMABLE OR EXPLOSIVE LIQUIDS OR GASES.
   - TOXIC, INFECTIVE AND CONTAMINATED MATERIALS.
   - RADIATION OR RADIOACTIVE MATERIALS.
   - NOXIOUS OR EXPLOSIVE CHEMICALS.
   - TANK OR OTHER CONTAINERS WHICH HAVE BEEN USED FOR STORAGE OF EXPLOSIVE, TOXIC, INFECTIVE OR CONTAMINATED SUBSTANCES.

ROAD WORKS

GENERAL

1. EXISTING VEGETATION TO BE REMOVED WITHIN EXTENTS OF WORKS UNLESS NOTED OTHERWISE
2. ALL PIT GRATES TO SUIT KMC STANDARDS KERB INLET ARRANGEMENTS SHOWING KMC STANDARDS DRAWINGS
3. KERB TYPES AND KERB RAMPS REFER TO KMC STANDARDS.

SET OUT PLANS AND COORDINATES TABLES

4. DESIGN HAS BEEN BASED ON LAND SURVEY COMPLETED BY EMM.
5. SURVEY DATUM IS AHD.
6. SURVEY AZIMUTH IS BASED ON MGA ZONE 56.
7. SURVEY MARKS ARE NOT TO BE DISTURBED BEFORE ASSESSMENT BY SURVEYOR
8. ALL LOCATIONS, ORIENTATION AND LEVELS SHALL BE VERIFIED ON SITE BEFORE COMMENCING ANY WORK. ANY DISCREPANCIES IN THE DRAWINGS AND/OR SPECIFICATIONS SHALL BE REFERRED TO THE PRINCIPAL FOR CLARIFICATION BEFORE PROCEEDING. NATURAL SURFACE LEVELS ARE INDICATIVE ONLY.
9. ANY SURVEY PMS OR SSMS THAT ARE DESTROYED ARE TO BE REPLACED WITH ANOTHER PM OR SSM TO LANDS DEPARTMENT STANDARDS. IT ALSO SHOULD BE DOCUMENTED AND COORDINATED TO EQUIVALENT LANDS DEPARTMENT STANDARDS.

PAVEMENT

1. PAVEMENT INTERFACES TO BE EITHER MID LANE OR AT LANE LINE UNLESS NOTED OTHERWISE ON THESE DRAWINGS OR INSTRUCTED BY THE PRINCIPAL.
2. LOCATION AND AREA OF MILL AND RE-SHEET PAVEMENT ARE INDICATIVE ONLY. FINAL LOCATIONS AND VOLUMES ARE TO BE DETERMINED ON SITE DURING CONSTRUCTION BY THE CONTRACTOR WITH AGREEMENT FROM THE PRINCIPAL.

STORMWATER DRAINAGE

1. STORMWATER DRAINAGE SHALL BE GENERALLY IN ACCORDANCE WITH CURRENT AUSTRALIAN STANDARDS AND COUNCIL'S SPECIFICATION.
2. PIPES OF 225mm DIA. AND UNDER SHALL BE UPVC. PIPES OF 300mm DIA. AND LARGER SHALL BE FRC OR CONCRETE CLASS 2 RUBBER RING JOINTED UNO.
3. ALL FRC OR RCP STORMWATER PIPES WITHIN ROAD RESERVE AREAS TO BE CLASS 3 U.N.O.
4. PIPES SHALL GENERALLY BE LAID AT THE GRADES INDICATED ON THE DRAWINGS.
5. MINIMUM COVER TO PIPES 300mm DIA. AND OVER GENERALLY SHALL BE 600mm IN CARPARK & ROADWAY AREAS UNO.
6. PIPES UP TO 150mm DIA SHALL BE LAID AT 1.0% MIN. GRADE U.N.O. PIPES 225mm DIA AND OVER SHALL BE LAID AT 0.5% MIN. GRADE U.N.O.
7. BACKFILL TRENCHES WITH APPROVED FILL COMPACTED IN 200MM LAYERS TO 98% OF STANDARD DENSITY
8. ANY PIPES OVER 16% GRADE SHALL HAVE CONCRETE BULKHEADS AT ALL JOINTS
9. PITS SHALL BE AS DETAILED WITH METAL GRATES AT LEVELS INDICATED. ALL PITS DEEPER THAN 1000mm TO HAVE CLIMB IRONS.
10. INSTALL TEMPORARY SEDIMENT BARRIERS TO INLET PITS, TO COUNCIL'S STANDARDS UNTIL SURROUNDING AREAS ARE PAVED OR GRASSED.
11. PIT LOCATIONS AND LEVELS MAY BE VARIED TO SUIT SITE CONDITIONS AFTER CONSULTING COUNCIL'S REPRESENTATIVE.
12. HAND-EXCAVATE STORMWATER PIPES IN VICINITY OF TREE ROOTS.
13. TRENCHING AND BEDDING DETAILS TO BE IN ACCORDANCE WITH AS3500 TO HS2 DETAIL UNLESS OTHERWISE NOTED.

SUBSURFACE DRAINAGE

1. LOCATION OF SUBSURFACE DRAINAGE SHOWN ON PLANS IS INDICATIVE ONLY. DRAWINGS TO BE READ IN CONJUNCTION WITH PAVEMENT DETAILS SECTIONS AND PLANS AND KMC CONSTRUCTION SPECIFICATION.
2. CONSTRUCTION OF TRENCH DRAINS TO BE IN ACCORDANCE WITH KMC CONSTRUCTION SPECIFICATION
3. DEPTH OF TRENCH AND PAVEMENT INTERFACE DRAINS TO BE CONFIRMED ONSITE BY THE CONTRACTOR WITH AGREEMENT FROM THE PRINCIPAL AND TO BE MEASURED FROM LOWEST POINT OF THE EXISTING OF NEW PAVEMENT SMZ.
4. GEOTEXTILE FOR TRENCH AND PAVEMENT INTERFACE DRAINS TO BE LAPPED ON THE TOP FACE.
5. MINIMUM GRADE OF SUBSURFACE DRAINAGE TO BE 0.5%.

REINFORCEMENT:

1. REINFORCEMENT SYMBOLS:
   - R DENOTES GRADE 250 R HOT ROLLED PLAIN BARS TO AS1302
   - F DENOTES GRADE 450 F HARD-DRAWN WIRE REINFORCING FABRIC TO AS1304
   - W DENOTES GRADE 450 W HARD-DRAWN PLAIN WIRE TO AS1303
   - N DENOTES DEFORMED BAR NORMAL DUCTILITY TO AS/NZS 4671 GRADE D500N
   - L DENOTES DEFORMED BAR LOW DUCTILITY TO AS/NZS 4671 GRADE D500L
   - RN DENOTES RECTANGULAR WIRE MESH NORMAL DUCTILITY TO AS/NZS 4671
   - RL DENOTES RECTANGULAR WIRE MESH LOW DUCTILITY
   - SN DENOTES SQUARE WIRE MESH NORMAL DUCTILITY
   - SL DENOTED SQUARE WIRE MESH LOW DUCTILITY TO AS/NZS 4671
2. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND NOT NECESSARILY IN TRUE PROJECTION.
3. THE SPLICES IN REINFORCEMENT SHALL BE MADE ONLY IN POSITIONS SHOWN OR OTHERWISE APPROVED IN WRITING BY THE ENGINEER.
4. R4. LAPS SHALL BE IN ACCORDANCE WITH AS 3600 AND NOT LESS THAN THE DEVELOPMENT LENGTH FOR EACH BAR.
5. WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED UNLESS SHOWN ON THE DRAWINGS OR APPROVED BY THE SUPERINTENDENT.
6. MINIMUM FABRIC LAP SHALL BE TWO TRANSVERSE WIRES PLUS 50MM. WHERE FABRIC LAPS, SHEETS TO HAVE MAXIMUM 2 LAYERS AT ANY POINT, CUT BACK FABRIC AT CORNERS AS REQUIRED.
7. WHERE TRANSVERSE TIE BARS ARE NOT SHOWN PROVIDE N12-400 SPLICED WHERE NECESSARY AND LAP WITH MAIN BARS 400MM UNLESS NOTED.
8. ALL REINFORCEMENT SHALL BE FIRMLY SUPPORTED ON PLASTIC CHAIRS OR CONCRETE CHAIRS, AT NOT GREATER THAN 1 METRE CENTRES BOTH WAYS, AND 800 EACH WAY FOR FABRIC. WHEN POURED ON GROUND AS FORMWORK PROVIDE PLATES UNDER ALL BAR CHAIRS. PLASTIC TIPPED STEEL CHAIRS SHALL NOT BE USED ON EXPOSED FACES IN EXPOSURE CLASSIFICATION B2 AND C.

CONCRETE:

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 3600 AND AS 3610 CURRENT EDITIONS WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
2. ALL CEMENT TO BE TYPE GP, GENERAL PURPOSE CEMENT IN ACCORDANCE WITH AS3972
3. PROJECT CONTROL TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 3600
4. DETAILS OF THE PROPOSED MIX ARE TO BE SUBMITTED & APPROVAL OBTAINED PRIOR TO POURING ANY CONCRETE.
5. NO ADMIXTURES SHALL BE USED IN CONCRETE UNLESS APPROVED IN WRITING.
6. MINIMUM CLEAR COVER TO ALL REINFORCEMENT SHALL BE AS FOLLOWS UNLESS SHOWN OTHERWISE:

ELEMENT	STRENGTH GRADE (MPa)	SLUP (mm)	MAX. AGGREG. SIZE (mm)	CAST AGAINST GROUND (mm)	CAST IN FORMS AND NOT EXPOSED (mm)	CAST IN FORMS AND EXPOSED (mm)
PATH	25	80	20	40	40	40

7. CONCRETE SIZES/DIMENSIONS SHOWN DO NOT INCLUDE THE THICKNESS OF ANY APPLIED FINISHES. NO FINISH THAT DECREASES COVER IS PERMITTED WITHOUT THE WRITTEN APPROVAL OF THE SUPERINTENDENT/ENGINEER.
8. MAINTAIN COVER TO REINFORCEMENT AT CHAMFERS, DRIP GROOVED, REGLETS ETC
9. NO HOLES, CHASES, BLOCKOUT, DUCTS OR EMBEDMENT OF PIPES OTHER THAN THOSE SHOWN ON THE DRAWINGS SHALL BE MADE IN CONCRETE MEMBERS WITHOUT THE PRIOR WRITTEN APPROVAL OF THE SUPERINTENDENT/ENGINEER.
10. CONSTRUCTION JOINTS WHERE NOT SHOWN SHALL BE LOCATED TO THE APPROVAL OF THE SUPERINTENDENT/ENGINEER.
11. ALL CONCRETE MEMBERS SHALL BE MECHANICALLY VIBRATED TO ACHIEVE A DENSE HOMOGENEOUS MASS, COMPLETELY FILLING THE FORMWORK AND THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS.
12. CURING OF ALL CONCRETE IS TO BE ACHIEVED BE KEEPING SURFACES CONTINUOUSLY WET FOR A PERIOD OF THREE DAYS, AND THE PREVENTION OF LOSS OF MOISTURE FOR A TOTAL OF 7 DAYS FOLLOWED BY A GRADUAL DRYING OUT.
13. CONSTRUCTION SUPPORT PROPPING IS TO BE LEFT IN PLACE WHERE NEEDED TO AVOID OVERSTRESSING THE STRUCTURE DUE TO CONSTRUCTION LOADING.
14. ALL CONCRETE SHALL BE PLACED IN SUCH A MANNER SO AS TO AVOID SEGREGATION OR LOSS OF MATERIALS.
15. UNDER NO CIRCUMSTANCES SHALL EXCESS CONCRETE BE DISPOSED OF ON-SITE. ALL EXCESS CONCRETE MUST BE CARTED FROM SITE AND DISPOSED OF IN AN APPROPRIATE MANNER.
16. WATER USED FOR FLUSHING CHUTES AND FOR CLEANING OF CONCRETE TRUCKS AND EQUIPMENT MUST BE DISCHARGED IN AN AREA DESIGNATED FOR THAT PURPOSE AND WHICH HAS EROSION AND SEDIMENT CONTROL MEASURES IN PLACE.

FORMWORK:

1. RESPONSIBILITY FOR DESIGN, CERTIFICATION, CONSTRUCTION AND PERFORMANCE OF FORMWORK AND FALSEWORK LIES WITH CONTRACTOR.
2. DO NOT SUPPORT OR RESTRAIN FORMWORK ON PERMANENT WORKS WITHOUT SUPERINTENDENTS WRITTEN APPROVAL.
3. CONSTRUCT FORMWORK TO COMPLY WITH AS3610 AND CLAUSE 19.6.2 OF AS3600 WHERE THIS IS MORE STRINGENT SO CONCRETE WILL HAVE DIMENSIONS, SHAPE, LOCATION AND FINISH SPECIFIED. PROVIDE OPENINGS OR REMOVABLE PANELS FOR INSPECTION AND CLEANING. APPLY RELEASE AGENT COMPATIBLE WITH CONTACT SURFACES TO INTERIOR OR FORMWORK (EXCEPT WHERE CONCRETE IS TO RECEIVE AND APPLIED FINISH FOR WHICH THERE IS NO COMPATIBLE RELEASE AGENT). WHERE NECESSARY CLEAN REINFORCEMENT TO REMOVE TRACES OF RELEASE AGENT. SEAL JOINT BETWEEN FORMWORK PANELS, AND TO HARDENED CONCRETE WITH FLEXIBLE RUBBER STRIP. SET OUT FORMWORK TO GIVE A REGULAR ARRANGEMENT OF PANELS, JOINT, BOLT HOLES ETC.
4. DO NOT USE FORMWORK HARDWARE THAT FORMS A COMPLETE HOLE THROUGH CONCRETE ELEMENTS. DO NOT USE REINFORCEMENT TO SUPPORT FORMWORK.
5. PROVIDE HOLES IN REBATE FORMERS ETC AS REQUIRED TO PREVENT AIR ENTRAPMENT.
6. CONSTRUCTION TOLERANCES TO BE TO AS3610.
7. STRIP FORMWORK TO AS3600 CLAUSE 19.6. REMOVE FROM TIE BOLTS WITHOUT DAMAGING CONCRETE. PARTS OF BOLTS LEFT IN CONCRETE MUST NOT INTRUDE INTO COVER CONCRETE. FLUSH FILL HOLES USING PRE-MIXED NON-SHRINK CEMENTITIOUS REPAIR MORTAR MATCHING CONCRETE SURFACE COLOUR, STRENGTH AND DURABILITY AND ADEQUATE BOND.

WORK NEAR EXISTING TREES AND TREE PROTECTION

GENERAL:

- TREES MUST NOT BE REMOVED OR LOPPED OR OTHERWISE DAMAGED, UNLESS SPECIFIED AND APPROVAL TO DO SO IS GIVEN BY THE SUPERINTENDENT. ALL CARE MUST BE TAKEN NOT TO DAMAGE OR INJURE ANY EXISTING TREES THAT ARE TO BE RETAINED. A QUALIFIED ARBORIST OR TREE PRESERVATION OFFICER IS TO BE CONSULTED PRIOR TO ANY EARTHWORKS BEING CONDUCTED NEAR EXISTING TREES WITHIN THE CONSTRUCTION ZONE. ANY DAMAGE INCURRED TO TREES THAT ARE TO BE RETAINED IS TO BE MADE GOOD AS SOON AS POSSIBLE FOLLOWING ADVICE BY AN APPROVED ARBORIST.

PROTECTION:

- IT IS THE SITE SUPERVISOR'S RESPONSIBILITY TO PROTECT ALL TREES IDENTIFIED FOR RETENTION.
- TREES TO BE RETAINED ARE TO BE PROTECTED WITH FENCING AND/OR TREE ARMOUR AS INDICATED ON THE DRAWINGS.
- COMPACTION OF SOIL IS TO BE AVOIDED WITHIN THE TREE PROTECTION ZONES SHOWN ON THE DRAWINGS.
- WHERE WORK IS REQUIRED TO BE UNDERTAKEN WITHIN THE TREE PROTECTION ZONES, TREE ARMOUR IS TO BE ERECTED AROUND THE TRUNK OF THE TREES AS INDICATED ON PLAN.

TREE PROTECTION FENCING:

- TREES ARE TO BE PROTECTED BY TEMPORARY CHAIN-WIRE CONSTRUCTION FENCING INSTALLED AT THE DRIPLINE IF POSSIBLE. TEMPORARY SIGNAGE LABELLED "TREE PROTECTION AREA. NO STORAGE OF MATERIALS OR MACHINERY" IS TO BE INSTALLED ON ALL TREE PROTECTION FENCING.

TREE ARMOUR:

- PROVIDE TREE ARMOUR AROUND TRUNKS OF TREES AS INDICATED ON PLAN BEFORE COMMENCEMENT OF ANY WORKS. ARMOUR IS TO CONSIST OF JUTE MATTING AND TIMBER BATTENS WRAPPED AROUND TREE TRUNKS AS INDICATED IN DRAWINGS.
- INSTALL A PROTECTIVE LAYER OF JUTE MAT AROUND TREE TRUNKS PRIOR TO INSTALLING TIMBER BATTENS AROUND TREE TRUNKS.
- TIMBER BATTENS ARE TO BE 1800 X 90 X 20mm. SECURE BATTENS INTO POSITION WITH THREE STRANDS OF WIRE OR NYLON WEBBING STAPLED OR NAILED TO CREATE A CONTINUOUS STRING, LONG ENOUGH TO SURROUND EACH TREE.
- ENSURE ARMOUR IS ATTACHED SECURELY AROUND THE TREE. AMOUR SHOULD BE ATTACHED TO ITSELF. NAILS OR FASTENERS ARE NOT TO BE ATTACHED DIRECTLY TO THE TREE TRUNK. ARMOUR IS TO REMAIN IN PLACE AS LONG AS MACHINERY IS REQUIRED ON SITE.

STORAGE OF MATERIALS:

- DO NOT STORE OR OTHERWISE PLACE BULK MATERIALS AND HARMFUL MATERIALS UNDER OR NEAR TREES WITHIN THE TREE PROTECTION ZONE. STORAGE OF MATERIALS, MIXING OF MATERIALS, VEHICLE PARKING, DISPOSAL OF LIQUIDS, MACHINERY REPAIRS AND REFUELLING, SITE OFFICE AND SHEDS MUST NOT OCCUR WITHIN THE DRIP LINE OF ANY EXISTING TREES, OR WITHIN 5M OF ANY EXISTING TREES WHERE THE DRIP LINE RADIUS IS LESS THAN 5m.
- DO NOT PLACE SPOIL FROM EXCAVATIONS AGAINST TREE TRUNKS, EVEN FOR SHORT PERIODS. PREVENT WIND-BLOWN MATERIALS SUCH AS CEMENT FROM HARMING TREES AND PLANTS.

WORK UNDER TREES:

- MINIMISE EXCAVATION OR FILLING AROUND TREES. IF CONSTRUCTION WORKS ARE NECESSARY AROUND TREES THEN MINIMISE THE USE OF MACHINERY. LEAVE TRENCHES OR EXCAVATED AREAS EXPOSED FOR AS SHORT A PERIOD AS POSSIBLE.

ROOTS:

- TREE ROOTS EXCEEDING 100mm DIAMETER ARE NOT TO BE CUT UNLESS ADVICE IS FIRST SOUGHT FROM AN ARBORIST.
- USE HAND TOOLS OR A CHAINSAW TO MAKE CLEAN CUTS TO ROOTS THAT REQUIRE CUTTING.

BACKFILLING:

- MINIMISE CHANGES TO SOIL SURFACE LEVELS AROUND TREES.
- RETURN NATURAL SOILS TO EXCAVATED AREAS OR USE OTHER VIRGIN EXCAVATED NATURAL MATERIAL (VENM) TO BACKFILL.
- ROAD MILLINGS, WASTE CONCRETE, ASPHALT OR OTHER FOREIGN MATERIALS ARE NOT TO BE USED FOR BACKFILLING WITHIN TREE ROOT ZONES.
- DO NOT BACKFILL AROUND TREE TRUNKS TO A HEIGHT GREATER THAN 300MM ABOVE THE ORIGINAL GROUND SURFACE UNLESS AUTHORISED.
- THOROUGHLY WATER THE SOIL FOLLOWING EXCAVATION WITHIN TREE ROOT ZONES.

REMOVAL OF TREES:

- WHEN REMOVING TREES, TAKE CARE NOT TO DAMAGE ANY ADJACENT EXISTING STRUCTURES, SERVICES OR TREES TO BE RETAINED.
- WHERE TREES BEING REMOVED ARE LOCATED IN FUTURE PLANTING AREAS AS SHOWN ON THE PLANTING PLAN, FULLY REMOVE THE TREES AND ALL THEIR PARTS INCLUDING THE ROOT SYSTEM.
- WHERE THIS IS NOT PRACTICAL CUT TRUNKS CLOSE TO THE EXISTING SOIL SURFACE LEVEL AND IMMEDIATELY APPLY UNDILUTED GLYPHOSATE HERBICIDE TO THE CUT SURFACES.

UTILITIES

1. THE LOCATION OF EXISTING UTILITIES SHOWN ON THE PLANS ARE INDICATIVE ONLY. THE CONTRACTOR IS TO REFER TO UTILITY RELOCATION PLANS APPROVED BY APPROPRIATE AUTHORITY FOR DETAILS ON PROPOSED UTILITY WORKS.
2. THE CONTRACTOR IS TO CONFIRM THE PRESENCE OF ALL UTILITIES ON SITE PRIOR TO THE COMMENCEMENT OF ROAD WORKS, REFERENCE MUST BE MADE TO THESE DRAWINGS PRIOR TO THE COMMENCEMENT OF ROAD WORKS, AND THE RELEVANT UTILITY PLANS OBTAINED BY CONTACTING DIAL BEFORE YOU DIG. CAUTION SHALL BE EXERCISED WHEN WORKING IN THE VICINITY OF ALL UTILITY SERVICES.
3. LOCATION AND LEVEL OF ALL SERVICES CROSSING THE PROPOSED WORKS MUST BE OBTAINED PRIOR TO CONSTRUCTION. ALL LEVELS MUST BE CHECKED FOR CONFLICT WITH ANY SERVICES, AND ANY CONFLICTS TO BE RAISED WITH PRINCIPAL.
4. PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION ON THE SITE, THE RELEVANT AUTHORITY SHOULD BE CONTACTED FOR POSSIBLE LOCATION OF FURTHER UNDERGROUND SERVICES AND DETAILED LOCATIONS OF ALL SERVICES.
5. UNDERGROUND SERVICES HAVE BEEN PLOTTED FROM RECORDS SUPPLIED BY THE PUBLIC AUTHORITIES TO SHIRE CIVIL DESIGN IN DECEMBER 2019 LOCATIONS HAVE BEEN INTERPRETED FROM THESE RECORDS AND ARE APPROXIMATE ONLY. EXTREME CAUTION SHOULD BE TAKEN BY PERSONS EXCAVATING.

EROSION AND SEDIMENT CONTROL

1. GENERAL MEASURES
   - SOIL EROSION AND SEDIMENTATION CONTROL MEASURES DURING CONSTRUCTION SHALL CONFORM WITH GUIDELINES IN ACCORDANCE WITH "MANAGING URBAN STORMWATER: SOILS AND CONSTRUCTION – VOLUME 1, LANDCOM 2004" AND COUNCIL'S POLICY
   - PERIMETER CONTROL MEASURES SHALL BE PLACED PRIOR TO OR IN CONJUNCTION WITH THE FIRST PHASE OF THE EARTHWORKS. THESE MEASURES SHALL BE APPLIED TO PROTECT ADJOINING PROPERTIES FROM EROSION AND SILT DAMAGE.
   - EARTH STOCKPILES SHALL BE CONFINED TO ONE CENTRAL AREA WHERE POSSIBLE. ALL STOCKPILES OF EXCAVATED OR CONSTRUCTION SOILS MUST HAVE A SILT FENCE ERECTED IMMEDIATELY DOWNHILL FOR THE FULL EXTENT OF THE STOCKPILE. WHERE SITE REGRADING OR FILLING IS BEING UNDERTAKEN PROVISION SHALL BE MADE TO ENSURE THAT NO WATER IS PONDED IN ANY LOT.
   - ALL AREAS NOT SUBJECT TO CONSTRUCTION WORKS SHALL BE RETAINED FREE FROM DISTURBANCE OR DAMAGE DURING THE CURRENCY OF THE WORK. SHOULD THESE AREAS BECOME DISTURBED OR DAMAGED THEY SHALL BE REINSTATED AS DIRECTED BY THE SUPERINTENDENT.
2. SEDIMENT CONTROL DEVICES (S.C.D.)
   - THESE DEVICES SHALL BE CONSTRUCTED AT INLETS TO STORMWATER SYSTEMS TO TRAP THE SEDIMENT IN RUN-OFF.
3. STABILISATION OF DISTURBED AREAS
   - STABILISATION OF DISTURBED AREAS SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS INDICATED IN GENERAL NOTES ABOVE.
   - THE FOLLOWING SHALL BE APPLIED FOR THE CONTROL OF EROSION AND SEDIMENTATION:-
     a. STABILISATION OF DENUDED AREAS SHALL COMMENCE AS SOON AS POSSIBLE AFTER THE AREAS HAVE BEEN DISTURBED.
     b. STABILISATION OF ALL CUT AND FILL SLOPES SHALL BE COMMENCED AS SOON AS PRACTICABLE AFTER COMPLETION OF FORMATION.
     c. ALL STABILISATION MEASURES SHALL BE TAKEN PRIOR TO THE END OF THE MAINTENANCE PERIOD.
4. MAINTENANCE
   - ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE MAINTAINED IN A SATISFACTORY WORKING ORDER THROUGHOUT THE CONTRACT. MAINTENANCE AND DEFECTS LIABILITY PERIODS OR UNTIL SUCH EARLIER TIME AS THE AREA HAS BEEN STABILISED AND COUNCIL'S ENGINEER DIRECTS THAT THE DEVICE BE REMOVED.
   - ALL DEVICES SHALL BE INSPECTED AFTER EACH STORM FOR STRUCTURAL DAMAGE OR CLOGGING BY SILT AND OTHER DEBRIS AND MAKE PROMPT REPAIRS OR REPLACEMENT.

SIGNAGE AND LINEMARKING

1. INSTALLATION OF PAVEMENT MARKING RRPM'S AND SIGNAGE TO BE IN ACCORDANCE WITH KMC CONSTRUCTION SPECIFICATION, GUIDELINES AND STANDARDS.
2. CONTRACTOR TO OBTAIN WRITTEN APPROVAL FROM KMC PRIOR TO INSTALLATION OF ANY SIGNAGE OR LINEMARKING.
3. LOCATION OF ALL SIGNAGE TO BE CONFIRMED ON SITE IN COORDINATION WITH THE PRINCIPAL PRIOR TO MANUFACTURE.
4. ALL SIGNS TO BE SIZE 'B' UNLESS NOTED OTHERWISE.
5. EXISTING SIGNS DESIGNATED REMOVAL TO BE STORED IN CONTRACTOR'S COMPOUND FOR WCC RECOVERY.
6. SIGNAGE TO BE LOCATED IN ACCORDANCE WITH AS1742 APPENDIX B
7. SIGNS TO BE MOUNTED A MINIMUM 2.5M ABOVE FSL.
8. CONTRACTOR TO CONFIRM LOCATION OF ALL SERVICES, DRAINAGE WORKS AND UNDERGROUND INFRASTRUCTURE PRIOR TO COMMENCING WORK. CONTRACTOR TO ENSURE ADOPTED METHOD OF CONSTRUCTION AND PROPOSED WORK WILL AVOID DAMAGE TO ALL SERVICES AND DRAINAGE WORKS, INCLUDING CLEARANCE TO OVERHEAD POWERLINES.
9. INSTALL PAINTED CHEVRONS IN ACCORDANCE WITH RMS DELINEATION GUIDELINES.
10. ALL PERMANENT ROAD LINEMARKING AND PAVEMENT MESSAGES INCLUDING ARROWS TO BE NON-PROFILE REFLECTIVE THERMO-PLASTIC MATERIAL IN ACCORDANCE WITH WCC CONSTRUCTION SPECIFICATIONS.
11. ALL TEMPORARY LINEMARKING TO BE WATERBORNE PAINT.

A1

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PRIOR TO ANY CONSTRUCTION ON OR NEAR A PROPERTY BOUNDARY, THE LOCATION OF THE PROPERTY BOUNDARY SHOULD BE DETERMINED BY A REGISTERED SURVEYOR.

VISIBLE SERVICES ONLY HAVE BEEN LOCATED AS PART OF THIS SURVEY. ALL CARE HAS BEEN TAKEN IN THE FIELD SURVEY TO IDENTIFY VISIBLE SERVICES AND STRUCTURES. IN SOME CASES THE VISIBLE SERVICES HAVE NOT BEEN IDENTIFIED. IT IS RECOMMENDED THAT A FIELD INSPECTION WITH THE RELEVANT SERVICE AUTHORITY REPRESENTATIVE BE UNDERTAKEN TO CONFIRM THE IDENTITY OF SERVICES SHOWN ON THIS PLAN.

PRIOR TO EXCAVATION THE CONTRACTOR MUST:
CONTACT "BEFORE YOU DIG AUSTRALIA"
PH: 1100
WEB: https://smarterwx.1100.com.au

PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION ON THE SITE, THE RELEVANT AUTHORITY SHOULD BE CONTACTED FOR POSSIBLE LOCATION OF FURTHER UNDERGROUND SERVICES AND DETAILED LOCATIONS OF ALL SERVICES.

WARNING
UNDERGROUND SERVICES HAVE BEEN PLOTTED FROM RECORDS SUPPLIED BY THE PUBLIC AUTHORITIES TO EMM CONSULTING APRIL 24 LOCATIONS HAVE BEEN INTERPRETED FROM THESE RECORDS AND ARE APPROXIMATE ONLY.
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CABLES
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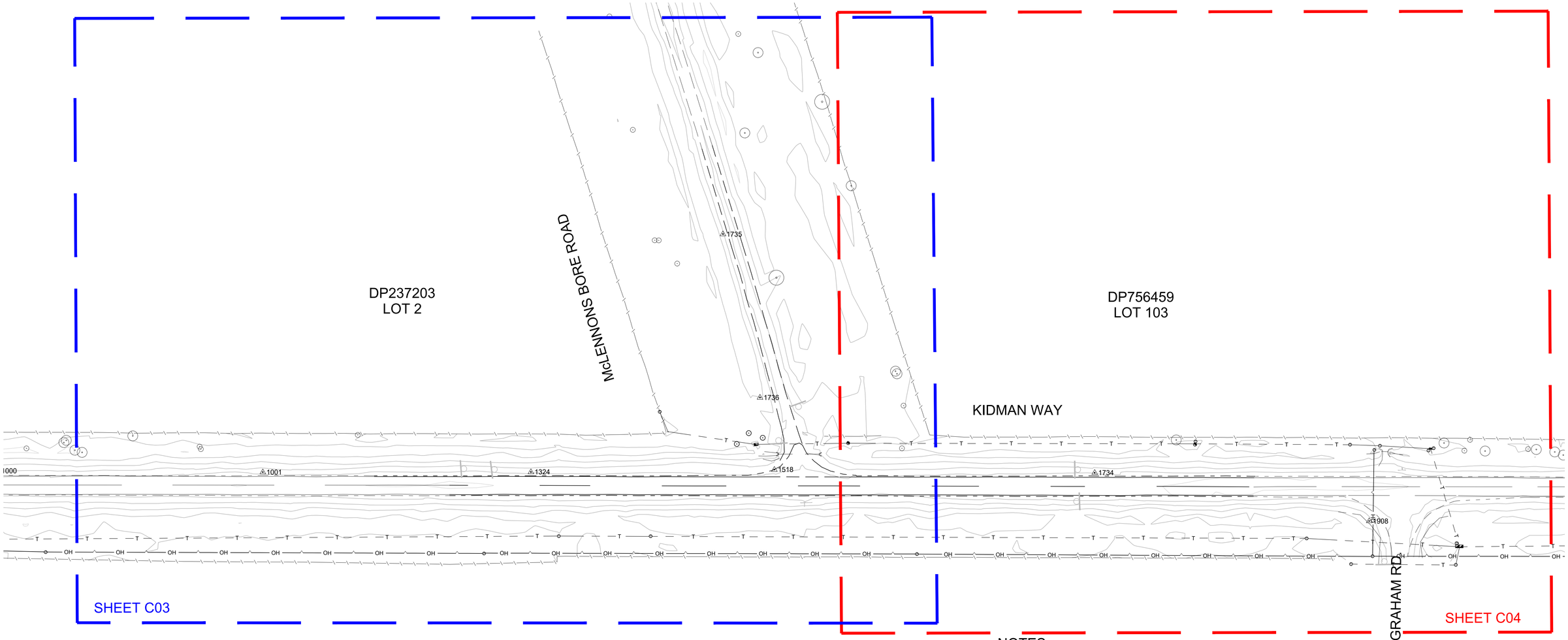
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BEWARE OPTIC FIBRE

SURVEY STATION MARKS

STATION No.	EASTING	NORTHING	R.L.	DESCRIPTION
1000	393252.234	6126407.905	115.556	STN
1001	393267.760	6126512.798	115.728	STN
1324	393282.851	6126618.952	115.765	STN
1518	393295.650	6126715.458	115.753	STN
1734	393314.963	6126842.123	115.800	STN
1735	393199.501	6126708.397	115.420	STN
1736	393266.304	6126713.843	115.265	STN
1908	393349.558	6126948.078	115.539	STN
2161	393343.257	6127036.713	115.733	STN

UTILITIES

WATER MAIN	W	TELSTRA PILLAR	Ⓣ
U/G TELSTRA	T	TELSTRA PIT	◪
O/H TELSTRA	OT	HYDRANT	H
OPTICAL FIBRE	OF	STOP VALVE	Ⓥ
GAS MAIN	G	POWER POLE	Ⓟ
HP GAS MAIN U/G	HG	ELECTRICAL PILLAR	■
ELECTRICITY	E	POWER LIGHT POLE	✱
O/H ELECTRICITY	OH	LIGHT POLE	☼
SEWER	S	GAS STOP VALVE	G
		SEWER MANHOLE	S



PLAN
SCALE 1:800
0.2m CONTOUR INTERVAL

NOTES:
EXISTING STATE SURVEY MARKS AFFECTED BY THE WORKS ARE TO BE RECOVERED IN ACCORDANCE WITH SURVEYOR GENERAL'S DIRECTION No. 11 - "PRESERVATION OF SURVEY INFRASTRUCTURE".
INVESTIGATIONS WERE UNDERTAKEN AND ALL SURVEY MARKS WERE INVESTIGATED AND IDENTIFIED ON SITE.
AT THIS STAGE THE LOCATION OF THE MARKS ARE WELL CLEAR OF THE WORKS AND SURVEY AREA AND SHOULD NOT BE IMPACTED BY THE WORKS.

EMM creating opportunities
SYDNEY | Suite 01
Ground Floor
20 Chandos Street,
St Leonards NSW 2065
Phone # 02 9493 9500
www.emmconsulting.com.au

REV	DATE	COMMENT	DRAWN	REVIEWED
-	10/4/25	STRATEGIC CONCEPT DESIGN	C.J.	A.U.

PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - INTERSECTION
KIDMAN WAY & MCLENNONS BORE ROAD ID101

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN
OVERALL SURVEY AND SERVICES PLAN

CLIENT: SPARK RENEWABLES
DRG. #: EMM - C02
PROJECT #: E240775
SCALE: AS SHOWN

REV: -

A1

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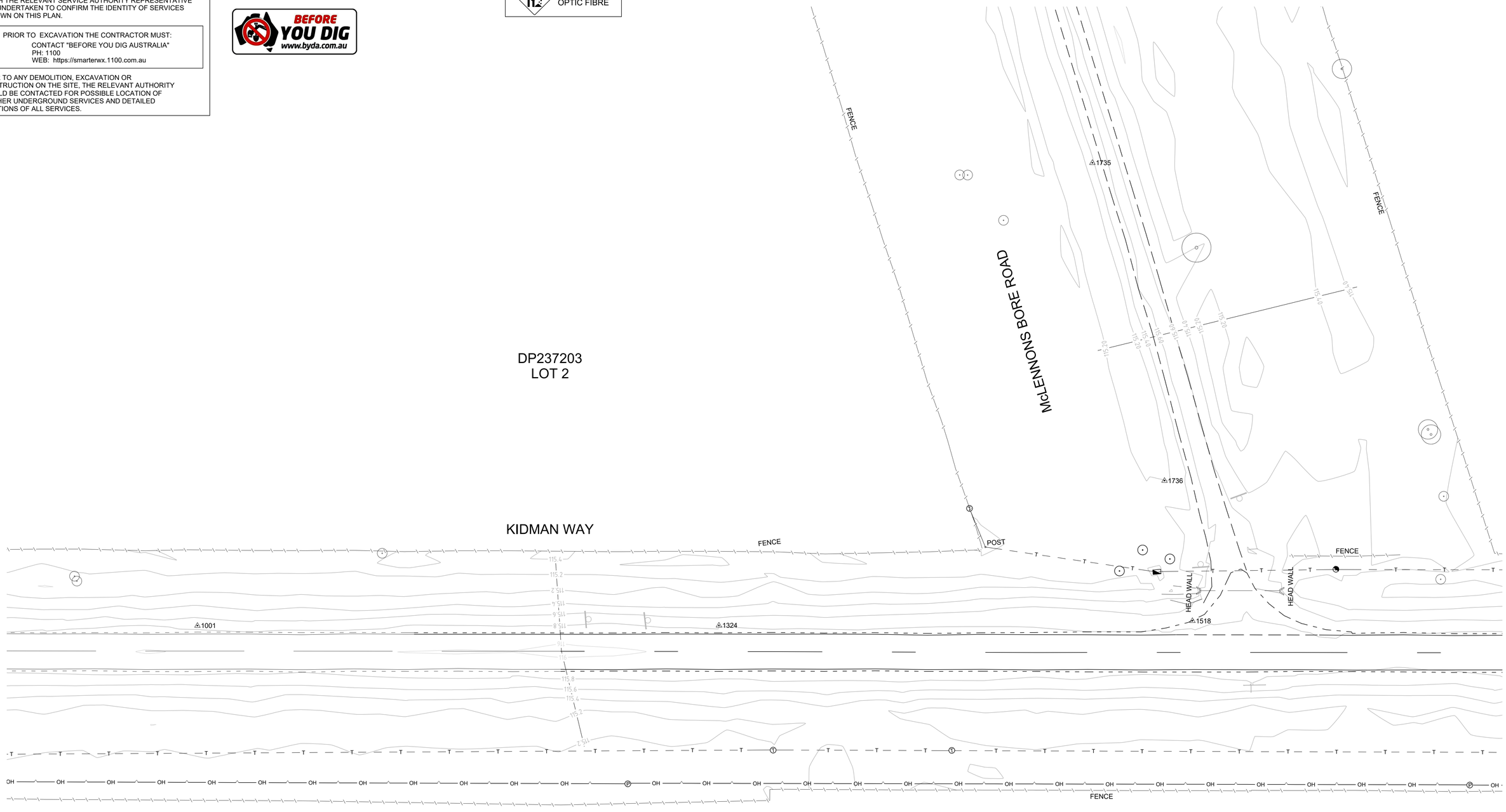
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UTILITIES		TELSTRA PILLAR	
WATER MAIN	W	TELSTRA PIT	
U/G TELSTRA	T	HYDRANT	
O/H TELSTRA	OT	STOP VALVE	
OPTICAL FIBRE	OF	POWER POLE	
GAS MAIN	G	ELECTRICAL PILLAR	
HP GAS MAIN U/G	HG	POWER LIGHT POLE	
ELECTRICITY	E	LIGHT POLE	
O/H ELECTRICITY	OH	GAS STOP VALVE	
SEWER	S	SEWER MANHOLE	

DP237203
LOT 2



PLAN
SCALE 1:400
0.2m CONTOUR INTERVAL

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REV	DATE	COMMENT	DRAWN	REVIEWED	REV	DATE	COMMENT	DRAWN	REVIEWED
-	10/4/25	STRATEGIC CONCEPT DESIGN	C.J.	A.U.					

PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - INTERSECTION
KIDMAN WAY & MCLENNONS BORE ROAD ID101

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN
SURVEY AND SERVICES PLAN - SOUTH

CLIENT: SPARK RENEWABLES
DRG. #: EMM - C03
PROJECT #: E240775
SCALE: AS SHOWN

REV: -

A1

UTILITIES			
WATER MAIN	W	TELSTRA PILLAR	Ⓣ
U/G TELSTRA	T	TELSTRA PIT	◪
O/H TELSTRA	OT	HYDRANT	Ⓗ
OPTICAL FIBRE	OF	STOP VALVE	Ⓥ
GAS MAIN	G	POWER POLE	Ⓟ
HP GAS MAIN U/G	HG	ELECTRICAL PILLAR	■
ELECTRICITY	E	POWER LIGHT POLE	❋
O/H ELECTRICITY	OH	LIGHT POLE	☼
SEWER	S	GAS STOP VALVE	Ⓖ
		SEWER MANHOLE	Ⓢ

DP756459
LOT 103

McLENNONS BORE ROAD

KIDMAN WAY

GRAHAM RD.

FENCE

HEAD WALL

△1734

△1908

115.40 115.60 115.80 116 115.80 115.60 115.40 115.20

PLAN

SCALE 1:400
0.2m CONTOUR INTERVAL

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REV	DATE	COMMENT	DRAWN	REVIEWED
-	10/4/25	STRATEGIC CONCEPT DESIGN	C.J.	A.U.

PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - INTERSECTION
KIDMAN WAY & MCLENNONS BORE ROAD ID101

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN
SURVEY AND SERVICES PLAN - NORTH

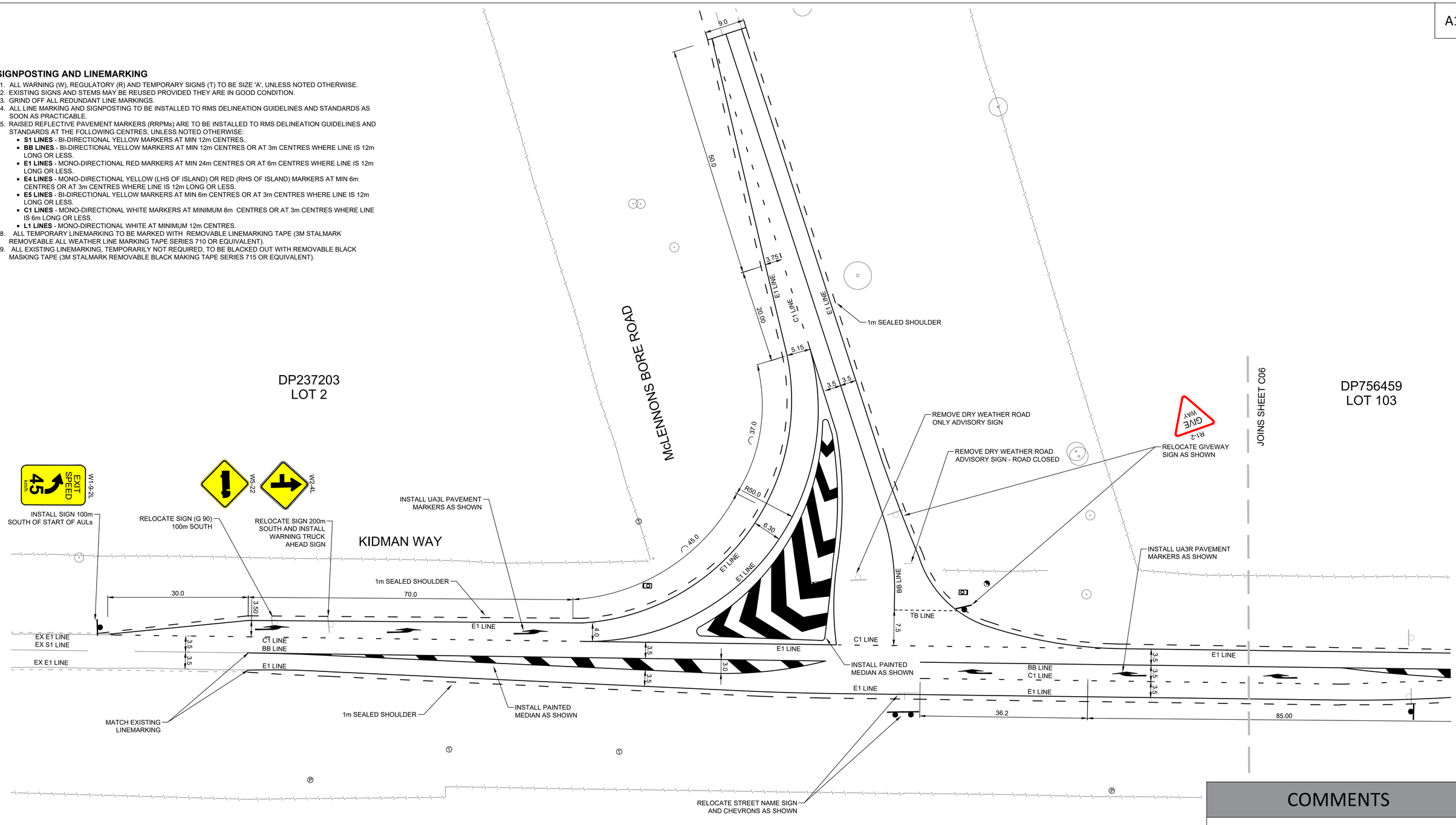
CLIENT: SPARK RENEWABLES
DRG. #: EMM - C04
PROJECT #: E240775
SCALE: AS SHOWN

REV: -

A1

SIGNPOSTING AND LINEMARKING

1. ALL WARNING (W), REGULATORY (R) AND TEMPORARY SIGNS (T) TO BE SIZE 'A', UNLESS NOTED OTHERWISE.
2. EXISTING SIGNS AND STEMS MAY BE REUSED PROVIDED THEY ARE IN GOOD CONDITION.
3. GRIND OFF ALL REDUNDANT LINE MARKINGS.
4. ALL LINE MARKING AND SIGNPOSTING TO BE INSTALLED TO RMS DELINEATION GUIDELINES AND STANDARDS AS SOON AS PRACTICABLE.
5. RAISED REFLECTIVE PAVEMENT MARKERS (RRPMs) ARE TO BE INSTALLED TO RMS DELINEATION GUIDELINES AND STANDARDS AT THE FOLLOWING CENTRES, UNLESS NOTED OTHERWISE:
   - **S1 LINES** - BI-DIRECTIONAL YELLOW MARKERS AT MIN 12m CENTRES.
   - **BB LINES** - BI-DIRECTIONAL YELLOW MARKERS AT MIN 12m CENTRES OR AT 3m CENTRES WHERE LINE IS 12m LONG OR LESS.
   - **E1 LINES** - MONO-DIRECTIONAL RED MARKERS AT MIN 24m CENTRES OR AT 6m CENTRES WHERE LINE IS 12m LONG OR LESS.
   - **E4 LINES** - MONO-DIRECTIONAL YELLOW (LHS OF ISLAND) OR RED (RHS OF ISLAND) MARKERS AT MIN 6m CENTRES OR AT 3m CENTRES WHERE LINE IS 12m LONG OR LESS.
   - **E5 LINES** - BI-DIRECTIONAL YELLOW MARKERS AT MIN 6m CENTRES OR AT 3m CENTRES WHERE LINE IS 12m LONG OR LESS.
   - **C1 LINES** - MONO-DIRECTIONAL WHITE MARKERS AT MINIMUM 8m CENTRES OR AT 3m CENTRES WHERE LINE IS 6m LONG OR LESS.
   - **L1 LINES** - MONO-DIRECTIONAL WHITE AT MINIMUM 12m CENTRES.
8. ALL TEMPORARY LINEMARKING TO BE MARKED WITH REMOVABLE LINEMARKING TAPE (3M STALMARK REMOVEABLE ALL WEATHER LINE MARKING TAPE SERIES 710 OR EQUIVALENT).
9. ALL EXISTING LINEMARKING, TEMPORARILY NOT REQUIRED, TO BE BLACKED OUT WITH REMOVABLE BLACK MASKING TAPE (3M STALMARK REMOVABLE BLACK MAKING TAPE SERIES 715 OR EQUIVALENT).



LEGEND

- PROPOSED SIGN
- EXISTING SIGN

PLAN

SCALE 1:400

NOT FOR CONSTRUCTION

COMMENTS

NOTES:
1. The CHR(s) and AUL(s) Treatments have been designed based on and in accordance with Austroads guides to traffic engineering practice.
2. Posted speed 100km/h, design speed is 110km/h and through lanes typically 3.5m wide.
3. The turn bays provides for storage of a 36.2m long vehicle.
4. Radius of travel lanes are 500m or greater.

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REV	DATE	COMMENT	DRAWN	REVIEWED	REV	DATE	COMMENT	DRAWN	REVIEWED
-	10/4/25	STRATEGIC CONCEPT DESIGN	C.J.	A.U.					

PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - INTERSECTION
KIDMAN WAY & MCLENNONS BORE ROAD ID101

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN
SIGNS AND LINEMARKING PLAN 1.

CLIENT: SPARK RENEWABLES

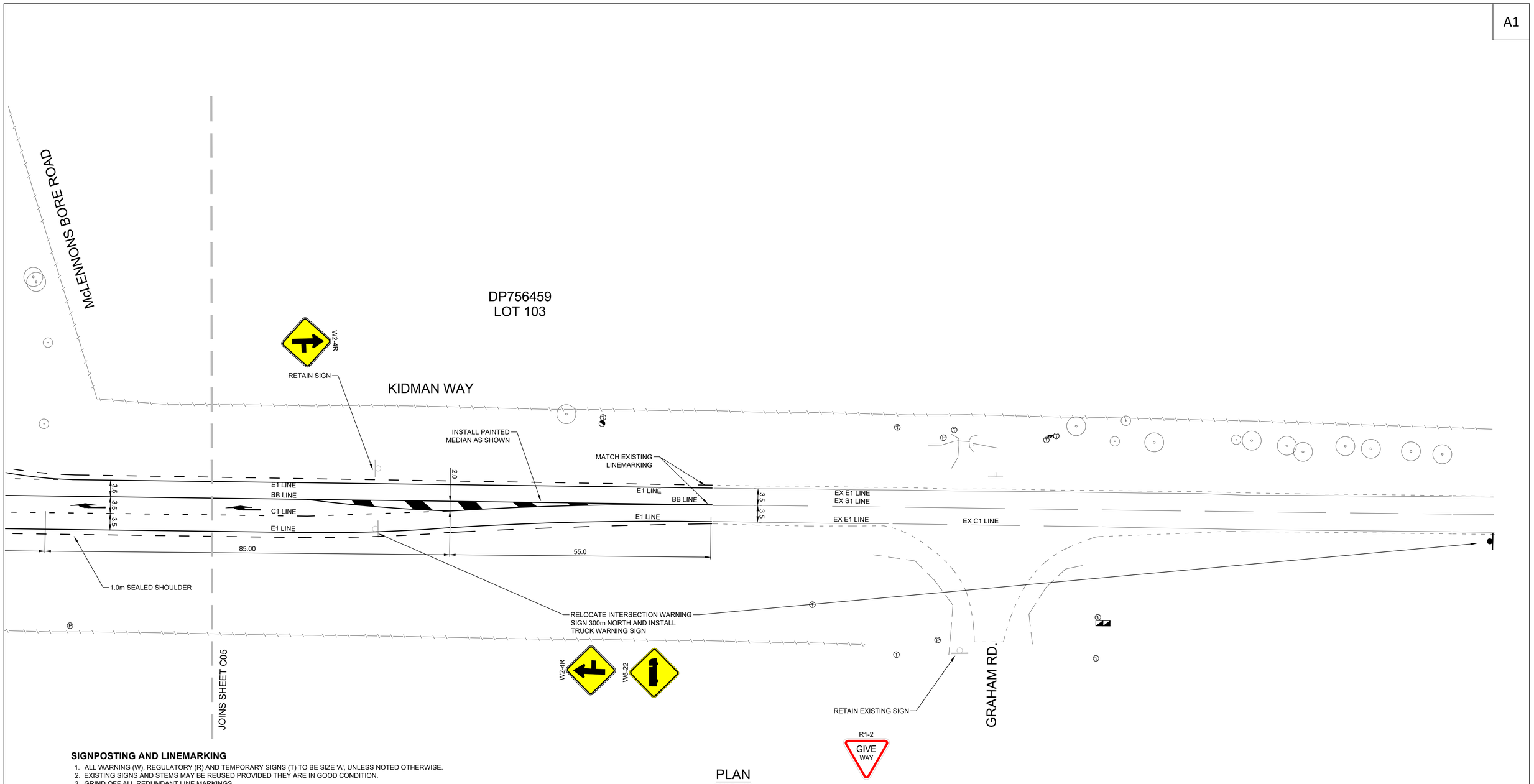
DRG. #: EMM - C05

PROJECT #: E240775

SCALE: AS SHOWN

REV: -

A1



PLAN
SCALE 1:400

SIGNPOSTING AND LINEMARKING

1. ALL WARNING (W), REGULATORY (R) AND TEMPORARY SIGNS (T) TO BE SIZE 'A', UNLESS NOTED OTHERWISE.
2. EXISTING SIGNS AND STEMS MAY BE REUSED PROVIDED THEY ARE IN GOOD CONDITION.
3. GRIND OFF ALL REDUNDANT LINE MARKINGS.
4. ALL LINE MARKING AND SIGNPOSTING TO BE INSTALLED TO RMS DELINEATION GUIDELINES AND STANDARDS AS SOON AS PRACTICABLE.
5. RAISED REFLECTIVE PAVEMENT MARKERS (RRPMs) ARE TO BE INSTALLED TO RMS DELINEATION GUIDELINES AND STANDARDS AT THE FOLLOWING CENTRES, UNLESS NOTED OTHERWISE:
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   - **BB LINES** - BI-DIRECTIONAL YELLOW MARKERS AT MIN 12m CENTRES OR AT 3m CENTRES WHERE LINE IS 12m LONG OR LESS.
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   - **E4 LINES** - MONO-DIRECTIONAL YELLOW (LHS OF ISLAND) OR RED (RHS OF ISLAND) MARKERS AT MIN 6m CENTRES OR AT 3m CENTRES WHERE LINE IS 12m LONG OR LESS.
   - **E5 LINES** - BI-DIRECTIONAL YELLOW MARKERS AT MIN 6m CENTRES OR AT 3m CENTRES WHERE LINE IS 12m LONG OR LESS.
   - **C1 LINES** - MONO-DIRECTIONAL WHITE MARKERS AT MINIMUM 8m CENTRES OR AT 3m CENTRES WHERE LINE IS 6m LONG OR LESS.
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LEGEND

- PROPOSED SIGN
- EXISTING SIGN

NOT FOR CONSTRUCTION

COMMENTS

NOTES:
1. The CHR(s) and AUL(s) Treatments have been designed based on and in accordance with Austroads guides to traffic engineering practice.
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3. The turn bays provides for storage of a 36.2m long vehicle.
4. Radius of travel lanes are 500m or greater.

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-	10/4/25	STRATEGIC CONCEPT DESIGN	C.J.	A.U.					

PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - INTERSECTION
KIDMAN WAY & MCLENNONS BORE ROAD ID101

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN
SIGNS AND LINEMARKING PLAN 2.

CLIENT: SPARK RENEWABLES
DRG. #: EMM - C06
PROJECT #: E240775
SCALE: AS SHOWN
REV: -

A1

WARNING
UNDERGROUND SERVICES HAVE BEEN PLOTTED FROM RECORDS SUPPLIED BY THE PUBLIC AUTHORITIES TO EMM CONSULTING APRIL 2024.

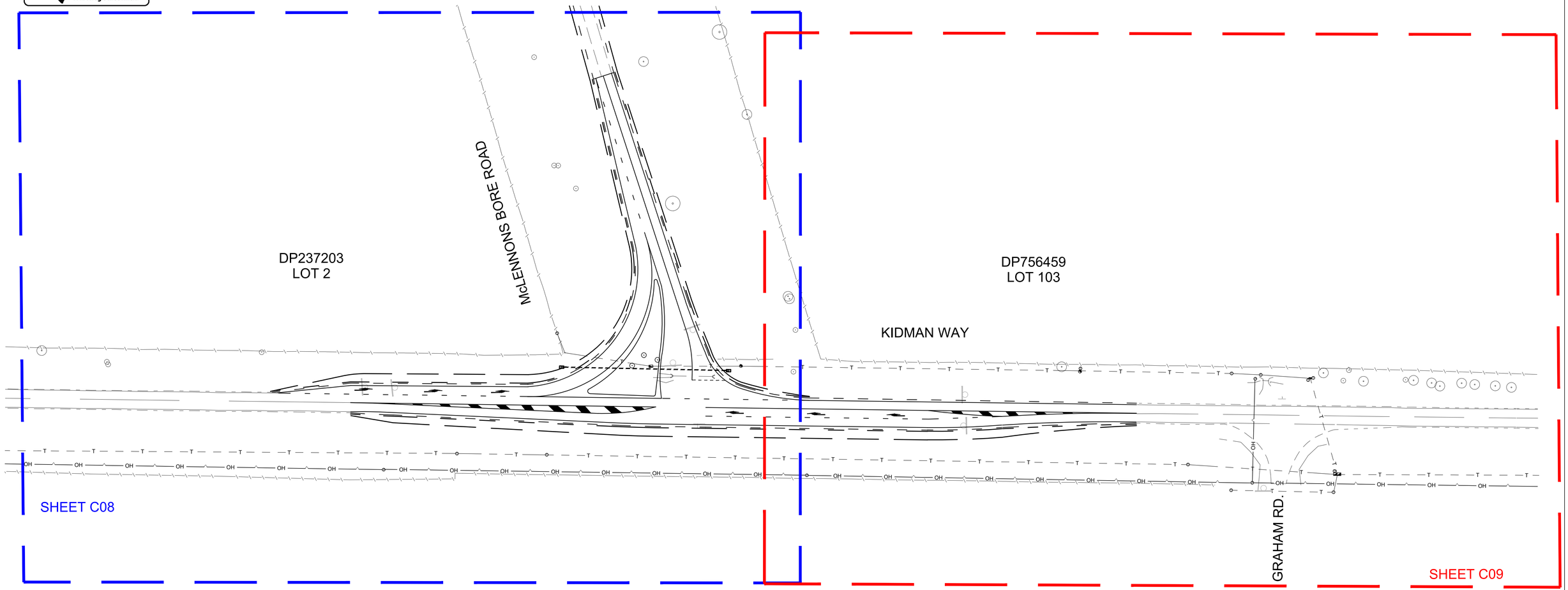
LOCATIONS HAVE BEEN INTERPRETED FROM THESE RECORDS AND ARE APPROXIMATE ONLY.
EXTREME CAUTION SHOULD BE TAKEN BY PERSONS EXCAVATING.

WARNING U/G TELSTRA
Telstra
CABLES
PLEASE CONTACT THE N.I.A.C. GROUP AT TELSTRA ON 9204-0880 OR 9204-0923. BEFORE STARTING ANY CONSTRUCTION WORK IN THE AREA.

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BEWARE OPTIC FIBRE

BEFORE YOU DIG www.byda.com.au

UTILITIES		TELSTRA PILLAR	
WATER MAIN	W	TELSTRA PIT	
U/G TELSTRA	T	HYDRANT	
O/H TELSTRA	OT	STOP VALVE	
OPTICAL FIBRE	OF	POWER POLE	
GAS MAIN	G	ELECTRICAL PILLAR	
HP GAS MAIN U/G	HG	POWER LIGHT POLE	
ELECTRICITY	E	LIGHT POLE	
O/H ELECTRICITY	OH	GAS STOP VALVE	
SEWER	S	SEWER MANHOLE	



PLAN
SCALE 1:800

NOT FOR CONSTRUCTION

COMMENTS

NOTES:
1. The CHR(s) and AUL(s) Treatments have been designed based on and in accordance with Austroads guides to traffic engineering practice.
2. Posted speed 100km/h, design speed is 110km/h and through lanes typically 3.5m wide.
3. The turn bays provides for storage of a 36.2m long vehicle.
4. Radius of travel lanes are 500m or greater.

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-	10/4/25	STRATEGIC CONCEPT DESIGN	C.J.	A.U.					

PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - INTERSECTION
KIDMAN WAY & MCLENNONS BORE ROAD ID101

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN
OVERALL CONSTRUCTION PLAN

CLIENT: SPARK RENEWABLES
DRG. #: EMM - C07
PROJECT #: E240775
SCALE: AS SHOWN

REV: -

A1

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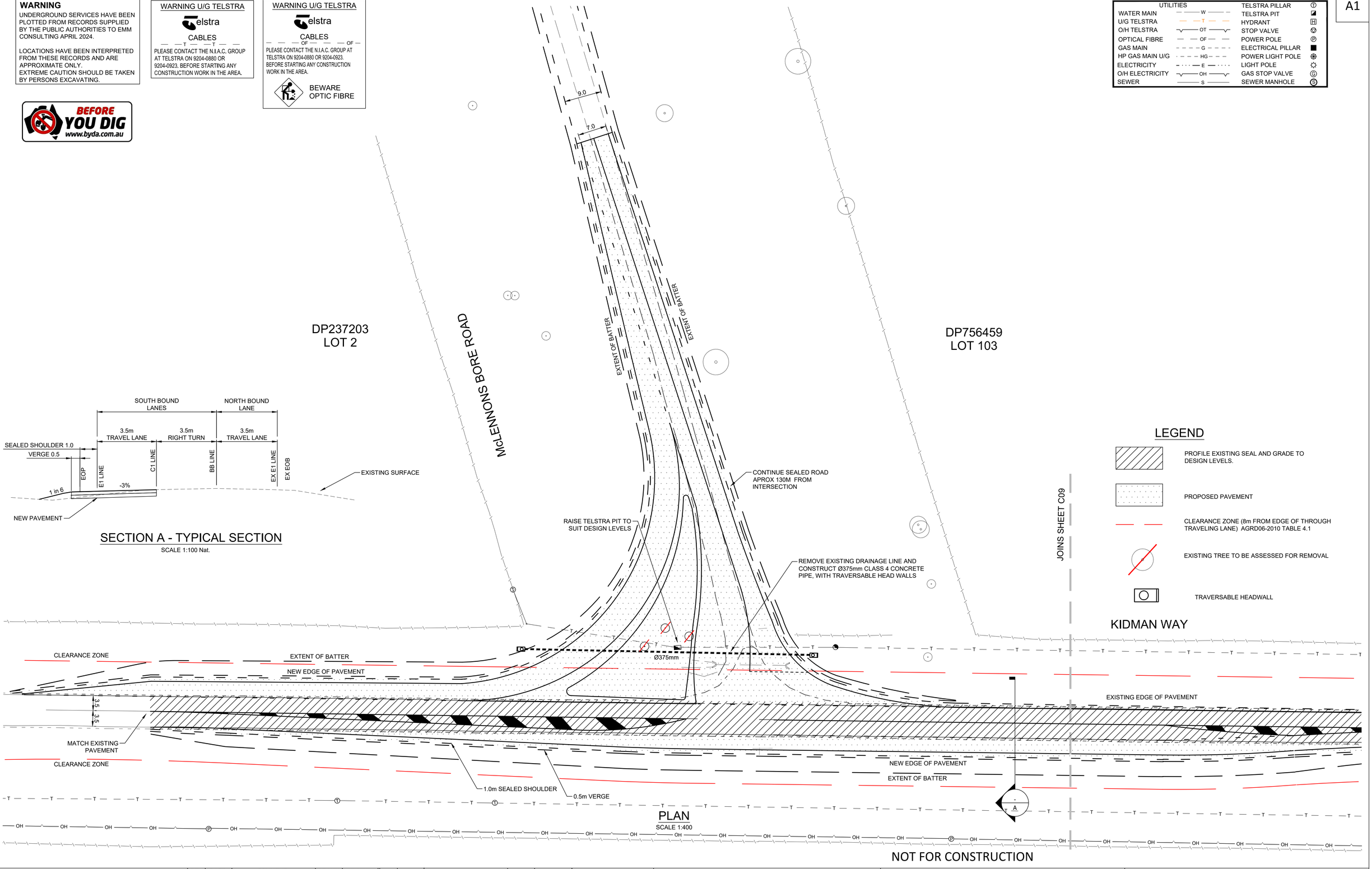
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WARNING U/G TELSTRA
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PLEASE CONTACT THE N.I.A.C. GROUP AT TELSTRA ON 9204-0880 OR 9204-0923. BEFORE STARTING ANY CONSTRUCTION WORK IN THE AREA.
BEWARE OPTIC FIBRE

UTILITIES		TELSTRA PILLAR	Ⓣ
WATER MAIN	W	TELSTRA PIT	◪
U/G TELSTRA	T	HYDRANT	Ⓗ
O/H TELSTRA	OT	STOP VALVE	Ⓥ
OPTICAL FIBRE	OF	POWER POLE	Ⓟ
GAS MAIN	G	ELECTRICAL PILLAR	■
HP GAS MAIN U/G	HG	POWER LIGHT POLE	❄
ELECTRICITY	E	LIGHT POLE	☼
O/H ELECTRICITY	OH	GAS STOP VALVE	Ⓖ
SEWER	S	SEWER MANHOLE	Ⓢ

SECTION A - TYPICAL SECTION
SCALE 1:100 Nat.



PLAN
SCALE 1:400

LEGEND

- PROFILE EXISTING SEAL AND GRADE TO DESIGN LEVELS.
- PROPOSED PAVEMENT
- CLEARANCE ZONE (8m FROM EDGE OF THROUGH TRAVELING LANE) AGRD06-2010 TABLE 4.1
- EXISTING TREE TO BE ASSESSED FOR REMOVAL
- TRAVERSABLE HEADWALL

NOT FOR CONSTRUCTION

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REV	DATE	COMMENT	DRAWN	REVIEWED
-	10/4/25	STRATEGIC CONCEPT DESIGN	C.J.	A.U.

PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - INTERSECTION
KIDMAN WAY & MCLENNONS BORE ROAD ID101

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN CONSTRUCTION PLAN - SOUTH

CLIENT: SPARK RENEWABLES
DRG. #: EMM - C08
PROJECT #: E240775
SCALE: AS SHOWN

REV: -

A1

WARNING
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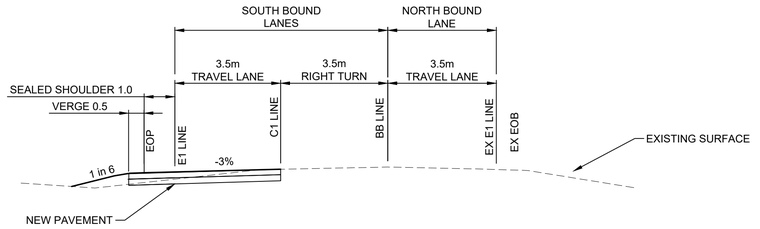
WARNING U/G TELSTRA

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CABLES

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BEWARE OPTIC FIBRE



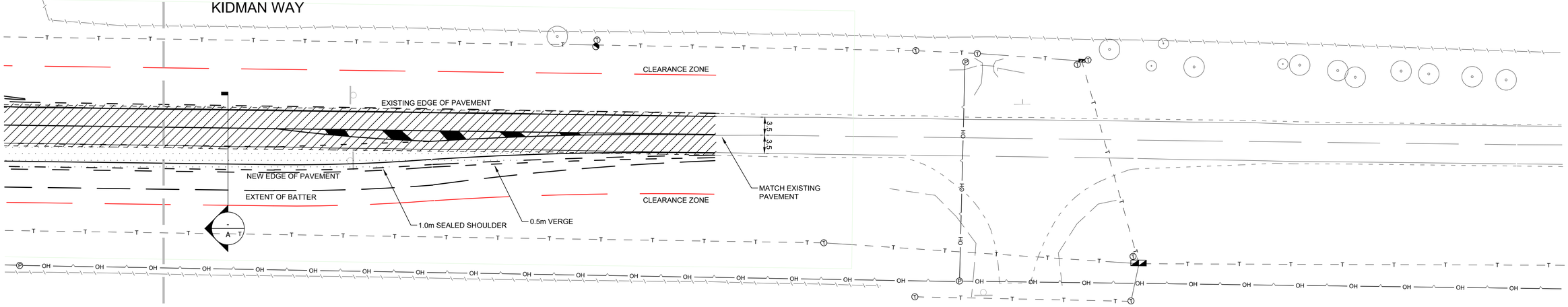
SECTION A - TYPICAL SECTION

SCALE 1:100 Nat.

UTILITIES		TELSTRA PILLAR	Ⓣ
WATER MAIN	W	TELSTRA PIT	◪
U/G TELSTRA	T	HYDRANT	Ⓗ
O/H TELSTRA	OT	STOP VALVE	Ⓥ
OPTICAL FIBRE	OF	POWER POLE	Ⓟ
GAS MAIN	G	ELECTRICAL PILLAR	■
HP GAS MAIN U/G	HG	POWER LIGHT POLE	❋
ELECTRICITY	E	LIGHT POLE	☼
O/H ELECTRICITY	OH	GAS STOP VALVE	Ⓖ
SEWER	S	SEWER MANHOLE	Ⓢ

DP756459
LOT 103

KIDMAN WAY



JOINS SHEET C08

GRAHAM RD.

PLAN

SCALE 1:400

LEGEND

PROFILE EXISTING SEAL AND GRADE TO DESIGN LEVELS.

PROPOSED PAVEMENT

CLEARANCE ZONE (8m FROM EDGE OF THROUGH TRAVELING LANE) AGRD06-2010 TABLE 4.1

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-	10/4/25	STRATEGIC CONCEPT DESIGN	C.J.	A.U.

PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - INTERSECTION
KIDMAN WAY & MCLENNONS BORE ROAD ID101

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN CONSTRUCTION PLAN - NORTH

CLIENT: SPARK RENEWABLES

DRG. #: EMM - C09

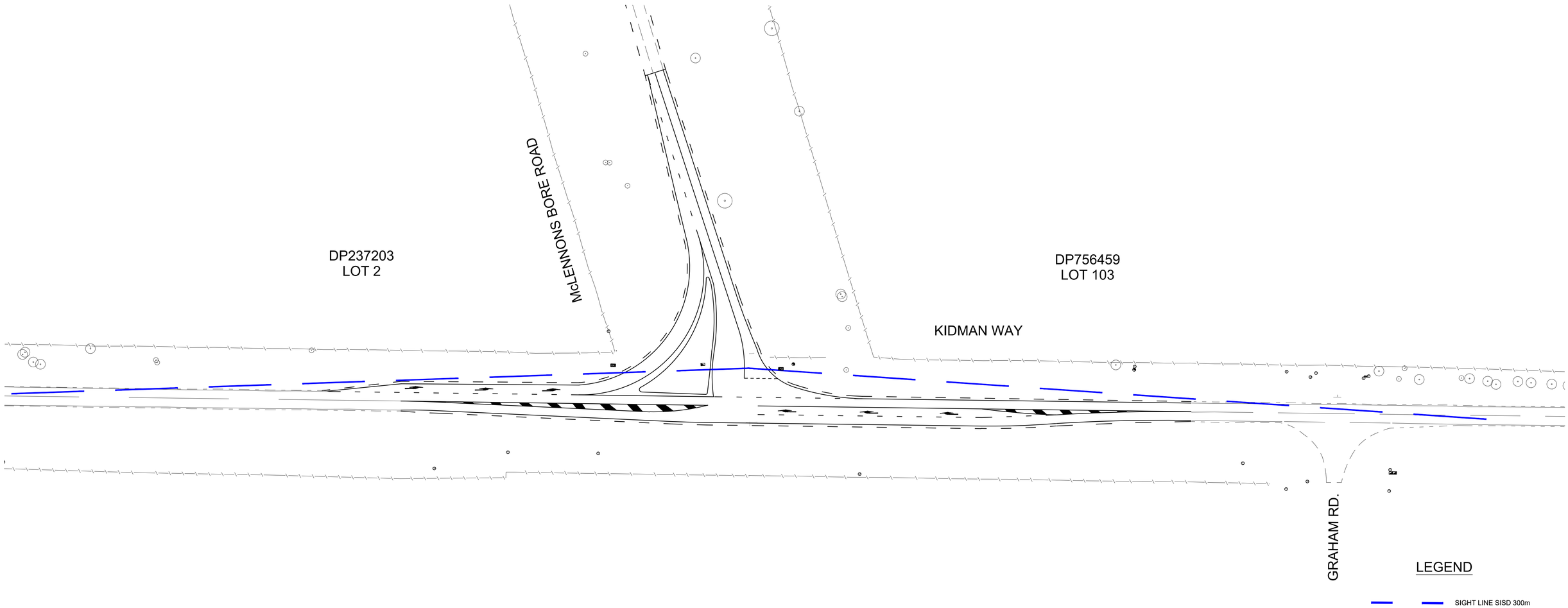
PROJECT #: E240775

SCALE: AS SHOWN

REV: -

A1

UTILITIES		TELSTRA PILLAR	
WATER MAIN	W	TELSTRA PIT	
U/G TELSTRA	T	HYDRANT	
O/H TELSTRA	OT	STOP VALVE	
OPTICAL FIBRE	OF	POWER POLE	
GAS MAIN	G	ELECTRICAL PILLAR	
HP GAS MAIN U/G	HG	POWER LIGHT POLE	
ELECTRICITY	E	LIGHT POLE	
O/H ELECTRICITY	OH	GAS STOP VALVE	
SEWER	S	SEWER MANHOLE	



PLAN
SCALE 1:800

NOT FOR CONSTRUCTION

COMMENTS

NOTES:
1. SISD calculated in accordance Austroads guides to traffic engineering practice
2. Posted speed 100km/h, design speed is 110km/h and through lanes typically 3.5m wide.
3. Driver reaction time of 2.5sec.

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REV	DATE	COMMENT	DRAWN	REVIEWED	REV	DATE	COMMENT	DRAWN	REVIEWED
-	10/4/25	STRATEGIC CONCEPT DESIGN	C.J.	A.U.					

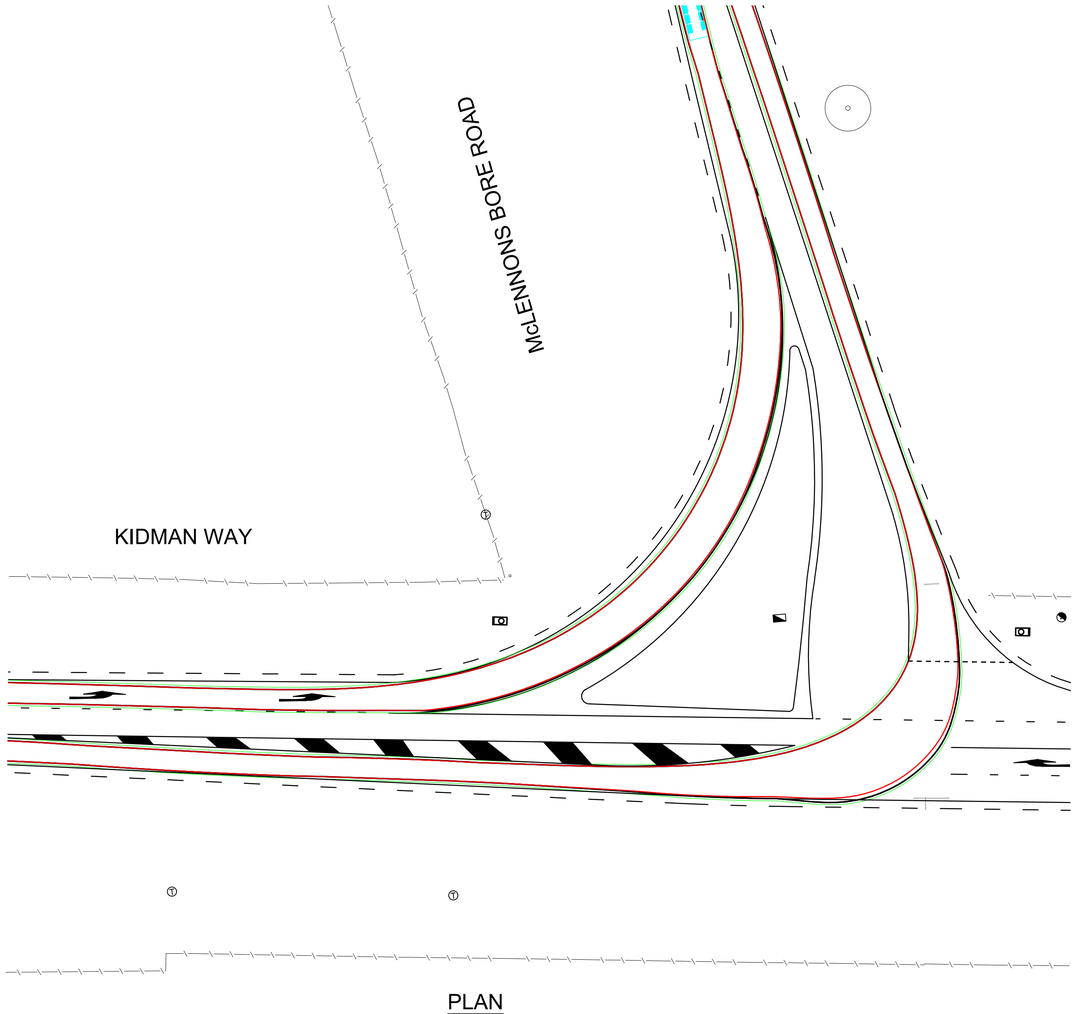
PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - INTERSECTION
KIDMAN WAY & MCLENNONS BORE ROAD ID101

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN
SAFE INTERSECTION SITE DISTANCE PLAN

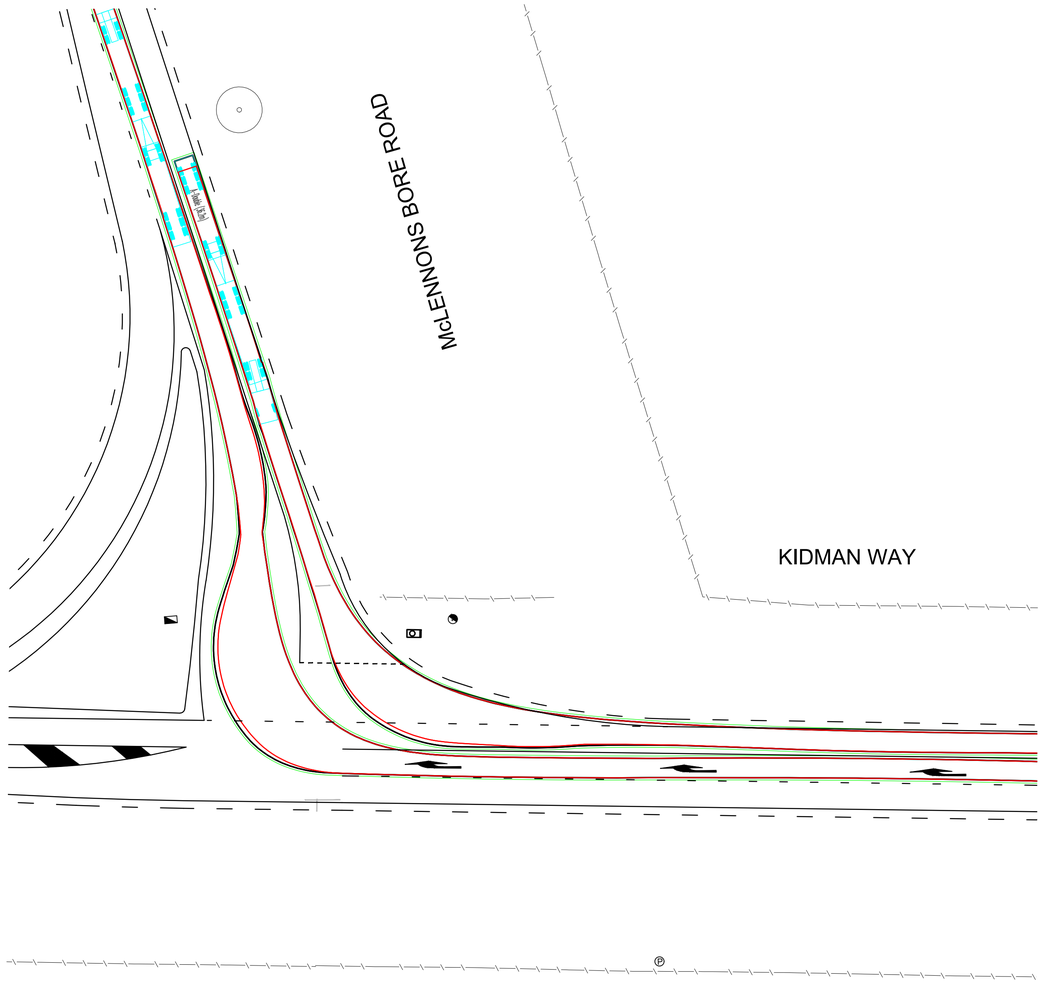
CLIENT: SPARK RENEWABLES
DRG. #: EMM - C10
PROJECT #: E240775
SCALE: AS SHOWN

REV: -

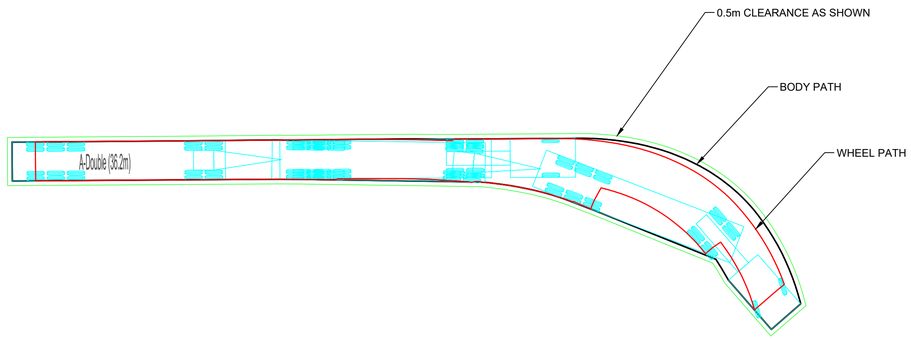
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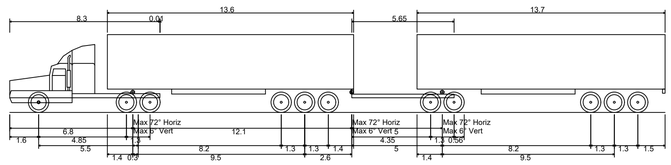


PLAN
SCALE 1:400



PLAN
SCALE 1:400





A-Double (36.2m)

Overall Length	36.200m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.540m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	15.000m

- The design speed used for the swept paths is **15kmh** and no initial lock, lock to lock or turn on spot has been utilised to produce the swept paths shown.
- The turning paths illustrated in this drawing have been prepared using the AutoCAD Vehicle tracking modelling software in conjunction with AutoCAD Civil3D.
- The vehicle model was prepared by Vehicle Tracking based upon vehicle data provided by Austroads.
- While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

NOT FOR CONSTRUCTION

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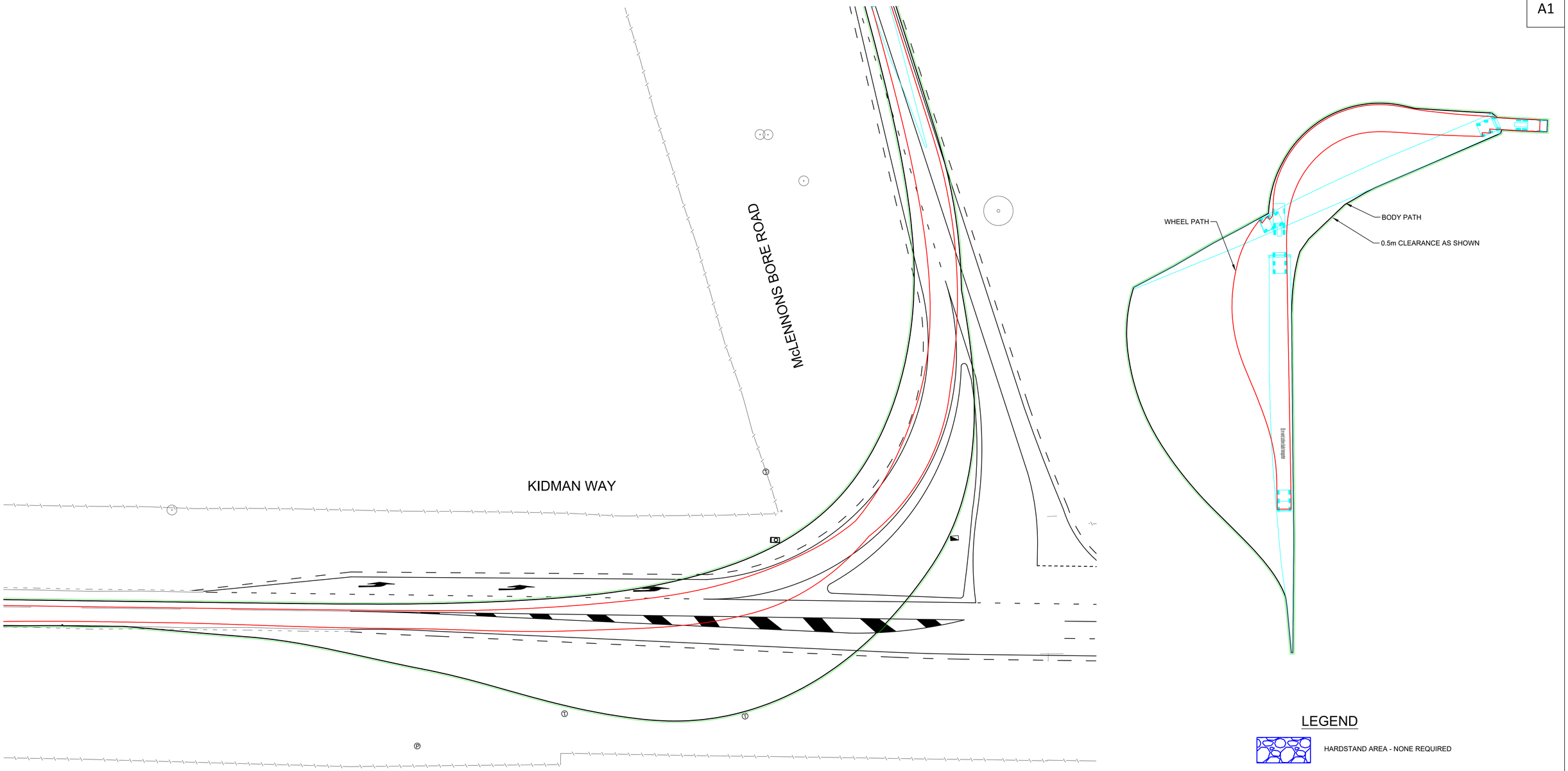
PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - INTERSECTION
KIDMAN WAY & MCLENNONS BORE ROAD ID101

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN
SWEPT PATH PLAN
A-DOUBLE

CLIENT: SPARK RENEWABLES
DRG. #: EMM - C11
PROJECT #: E240775
SCALE: AS SHOWN

REV: -

A1

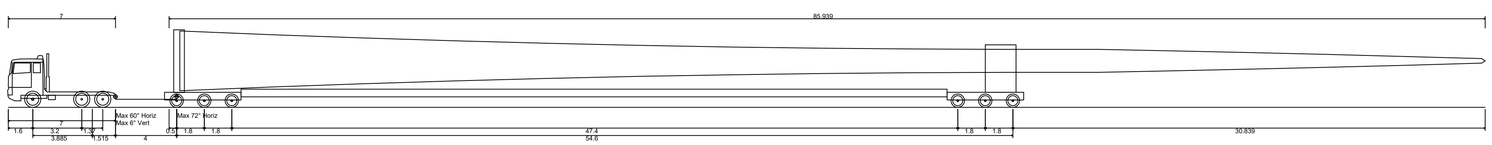


LEGEND

HARDSTAND AREA - NONE REQUIRED

PLAN

SCALE 1:400



85 m wind turbine blade transporter

Overall Length	96.439m
Overall Width	5.089m
Overall Body Height	5.069m
Min Body Ground Clearance	0.424m
Max Track Width	3.000m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m

- The design speed used for the swept paths is **15kmh** and no initial lock, lock to lock or turn on spot has been utilised to produce the swept paths shown.
- The turning paths illustrated in this drawing have been prepared using the AutoCAD Vehicle tracking modelling software in conjunction with AutoCAD Civil3D.
- The vehicle model was prepared by Vehicle Tracking based upon vehicle data provided by Austroads.
- While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

NOT FOR CONSTRUCTION

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REV	DATE	COMMENT	DRAWN	REVIEWED	REV	DATE	COMMENT	DRAWN	REVIEWED
-	10/4/25	STRATEGIC CONCEPT DESIGN	C.J.	A.U.					

PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - INTERSECTION
KIDMAN WAY & MCLENNONS BORE ROAD ID101

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN
SWEPT PATH PLAN
OSOM VEHICLE

CLIENT: SPARK RENEWABLES

DRG. #: EMM - C12

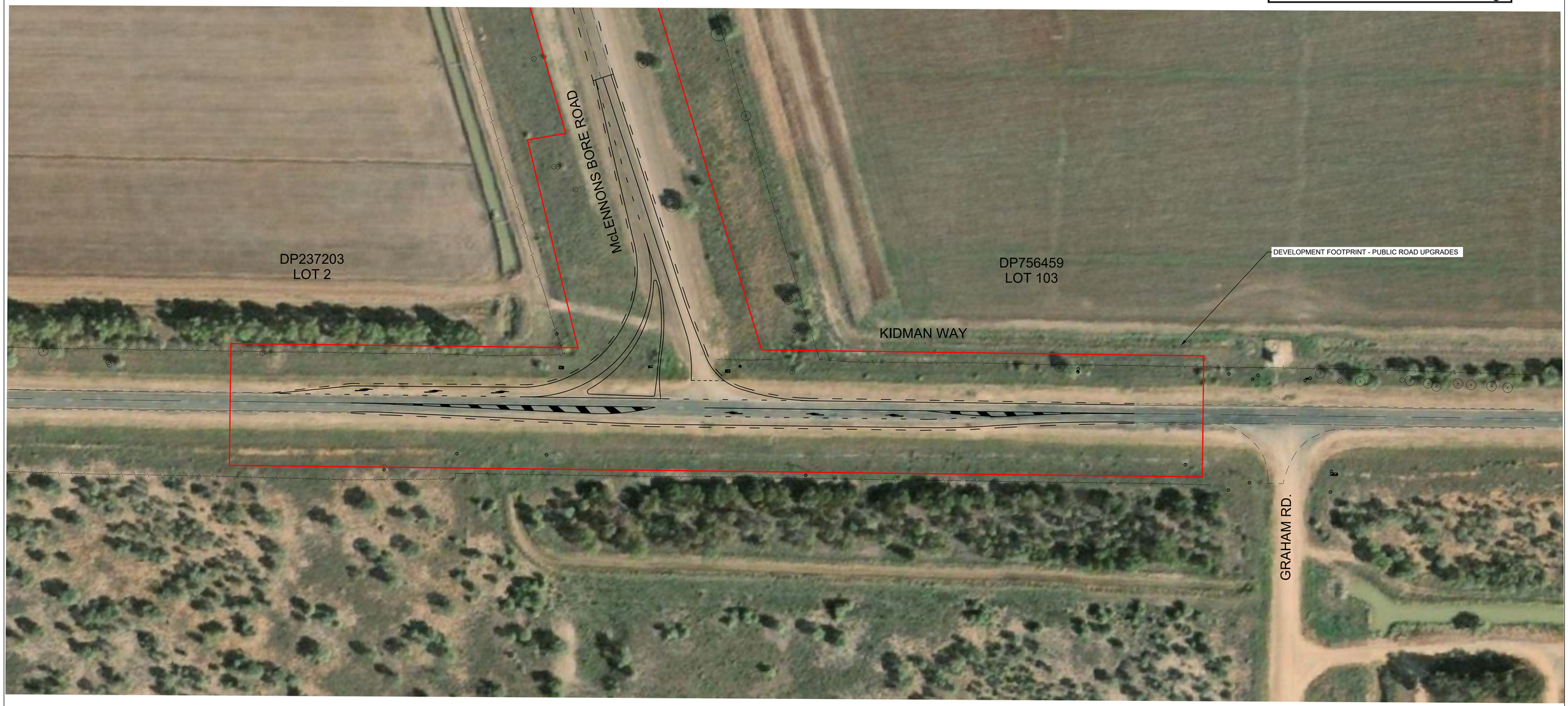
PROJECT #: E240775

SCALE: AS SHOWN

REV: -

A1

UTILITIES		TELSTRA PILLAR	
WATER MAIN	W	TELSTRA PIT	
U/G TELSTRA	T	HYDRANT	
O/H TELSTRA	OT	STOP VALVE	
OPTICAL FIBRE	OF	POWER POLE	
GAS MAIN	G	ELECTRICAL PILLAR	
HP GAS MAIN U/G	HG	POWER LIGHT POLE	
ELECTRICITY	E	LIGHT POLE	
O/H ELECTRICITY	OH	GAS STOP VALVE	
SEWER	S	SEWER MANHOLE	



PLAN
SCALE 1:800

NOT FOR CONSTRUCTION

COMMENTS

NOTES:
1. The CHR(s) and AUL(s) Treatments have been designed based on and in accordance with Austroads guides to traffic engineering practice.
2. Posted speed 100km/h, design speed is 110km/h and through lanes typically 3.5m wide.
3. The turn bays provides for storage of a 36.2m long vehicle.
4. Radius of travel lanes are 500m or greater.

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REV	DATE	COMMENT	DRAWN	REVIEWED	REV	DATE	COMMENT	DRAWN	REVIEWED
-	10/4/25	STRATEGIC CONCEPT DESIGN	C.J.	A.U.					

PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - INTERSECTION
KIDMAN WAY & MCLENNONS BORE ROAD ID101

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN
ROAD UPGRADE CORRIDOR PLAN

CLIENT: SPARK RENEWABLES

DRG. #: EMM - C13

PROJECT #: E240775

SCALE: AS SHOWN

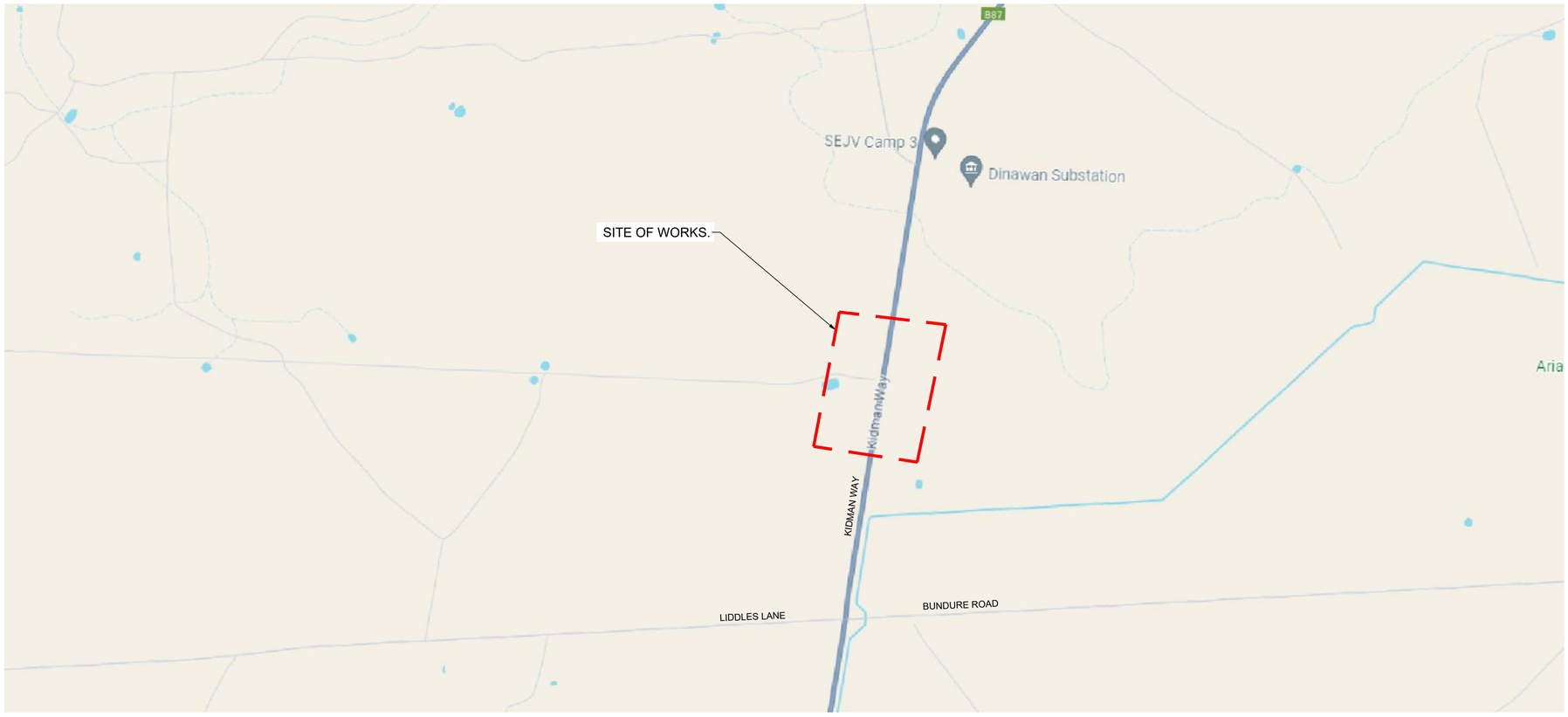
REV: -

A.2 Kidman Way site access intersection

A1

DINAWAN WIND FARM

STRATEGIC CONCEPT DESIGN - NEW SITE ACCESS INTERSECTIONS, KIDMAN WAY



OVERALL SITE PLAN

NTS.

SHEET INDEX

SHEET No	DESCRIPTION	REV
EMM - C00	COVER SHEET AND SHEET INDEX	B
EMM - C01	NOTES	B
EMM - C02	SURVEY AND SERVICES PLAN	B
EMM - C03	SURVEY AND SERVICES PLAN -SOUTH	B
EMM - C04	SURVEY AND SERVICES PLAN - NORTH	B
EMM - C05	SIGNS AND LINEMARKING PLAN SOUTH	B
EMM - C06	SIGNS AND LINEMARKING PLAN NORTH	B
EMM - C07	OVERALL CONSTRUCTION PLAN	B
EMM - C08	CONSTRUCTION PLAN SOUTH	B
EMM - C09	CONSTRUCTION PLAN NORTH	B
EMM - C10	SISD PLAN	B
EMM - C11	SISD LONGITUDINAL SECTIONS	B
EMM - C12	SISD LONGITUDINAL SECTIONS	B
EMM - C13	SWEPT PATH PLAN - EAST ACCESS B-DOUBLE	B
EMM - C14	SWEPT PATH PLAN - WEST ACCESS B-DOUBLE	B
EMM - C15	ROAD UPGRADE CORRIDOR PLAN	B

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REV	DATE	COMMENT	DRAWN	REVIEWED	REV	DATE	COMMENT	DRAWN	REVIEWED
B	10/4/25	TfNSW COMMENTS	C.J.	A.U.					
A	18/10/24	TfNSW COMMENTS	C.J.	A.U.					
-	8/7/24	STRATEGIC CONCEPT DESIGN	C.J.	A.U.					

PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - NEW SITE ACCESS INTERSECTIONS, KIDMAN WAY

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN
COVER SHEET AND SHEET INDEX

CLIENT: SPARK RENEWABLES

DRG. #: EMM - C00

PROJECT #: E220305

SCALE: AS SHOWN

REV: B

A1

GENERAL

1. THE DRAWINGS ARE A DIAGRAMMATIC REPRESENTATION ONLY OF THE WORK TO BE CARRIED OUT AND DIMENSIONS SHALL NOT BE OBTAINED BY SCALING.
2. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT MURRUMBIDGEE COUNCIL (MC) GUIDELINES AND SPECIFICATIONS. TfNSW THEN AUSTRALIAN STANDARDS TO BE USED IN OTHER INSTANCES.
3. PROVISION FOR TRAFFIC DURING CONSTRUCTION TO BE IN ACCORDANCE WITH MC CONSTRUCTION SPECIFICATION C201 - CONTROL OF TRAFFIC.
4. ALL LOCATION, ORIENTATION AND LEVELS SHALL BE VERIFIED ON SITE BEFORE COMMENCING ANY WORK. ANY DISCREPANCIES IN THE DRAWINGS AND/OR SPECIFICATIONS SHALL BE REFERRED TO THE PRINCIPAL FOR CLARIFICATION BEFORE PROCEEDING. NATURAL SURFACE LEVELS ARE INDICATIVE ONLY.
5. ALL INVESTIGATION & WORK TO BE UNDERTAKEN IN ACCORDANCE WITH MC CONSTRUCTION SPECIFICATION - DEVELOPMENT CONSTRUCTION - GENERAL
6. PRIOR TO COMMENCEMENT OF WORKS THE CONTRACTOR SHALL SATISFY HIMSELF OF THE CORRECT LOCATION OF EXISTING SERVICES WHETHER INDICATED OR NOT ON THE DRAWINGS.
7. ADJUST ALL UTILITY SERVICE COVERS TO SUIT NEW GRADES & LEVELS, FLUSH WITH SURROUNDING AREA.
8. EXISTING STATE SURVEY MARKS AFFECTED BY THE WORKS ARE TO BE RECOVERED IN ACCORDANCE WITH SURVEYOR GENERAL'S DIRECTION No. 11 - "PRESERVATION OF SURVEY INFRASTRUCTURE".

SITE MANAGEMENT:

1. PROVIDE BARRIERS AROUND ALL CONSTRUCTION WORKS WITHIN THE FOOTPATH AREA TO PROVIDE SAFE ACCESS FOR PEDESTRIANS.
2. CONCRETE PUMPS AND CRANES ARE TO OPERATE FROM WITHIN THE DESIGNATED WORK AREA AND ARE NOT TO OPERATE FROM THE PUBLIC ROADWAY UNLESS SPECIFIC COUNCIL PERMISSION IS OBTAINED.
3. DELIVERY VEHICLES MUST NOT STAND WITHIN THE PUBLIC ROADWAY FOR MORE THAN 20 MINUTES AT A TIME.
4. TOILET FACILITIES MUST BE EITHER FLUSHING TYPE OR APPROVED PORTABLE CHEMICAL CLOSET. CHEMICAL CLOSETS ARE TO BE MAINTAINED AND SERVICES ON A REGULAR BASIS SO THAT OFFENSIVE ODOUR IS NOT EMITTED.
5. TRAFFIC MANAGEMENT MEASURES ARE REQUIRED TO BE IMPLEMENTED AND MAINTAINED DURING CONSTRUCTION IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE RMS TRAFFIC CONTROL AT WORKSITES MANUAL AND AS1742, MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
6. PEDESTRIAN CONTROL MEASURES ARE REQUIRED TO BE IMPLEMENTED AND MAINTAINED DURING CONSTRUCTION IN ACCORDANCE WITH AS1742, MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
7. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT ALL WORK CARRIED OUT AT THE SITE IS IN ACCORDANCE WITH COUNCIL'S WORK HEALTH & SAFETY POLICY.
8. DO NOT STORE OR PLACE MATERIALS INSIDE THE DRIP LINE OF ANY TREE. CONSTRUCTION ACTIVITIES, VEHICLE PARKING OR MAINTENANCE, MATERIALS STORAGE OR LOCATING OF CONTAINERS AND SITE SHEDS MUST NOT OCCUR WITHIN THE DRIP LINE OF ANY TREES OR WITHIN 5M OF TREES WHERE THE DRIP LINE RADIUS IS LESS THAN 5M.
9. THE CONTRACTOR SHALL EFFECT TEMPORARY DRAINAGE MEASURES TO AVOID LOCALISED PONDING.

EARTHWORKS:

1. EARTHWORKS ARE TO BE CARRIED OUT IN ACCORDANCE WITH THE DRAWINGS AND GEOTECHNICAL ENGINEERS RECOMMENDATIONS. THE DESIGN AS DETAILED ON THESE DRAWINGS ASSUMES A PROPERLY PREPARED UNIFORM AND STABLE SUBGRADE.
2. THE DRAWINGS SHOULD BE READ IN CONJUNCTION WITH ANY GEOTECHNICAL REPORT PREPARED FOR THE WORKS.
3. STRIP OFF ALL VEGETATION, RUBBISH AND TOPSOIL CONTAINING ORGANIC OR ROOT MATTER FROM THE AREA OF THE WORKS AND REMOVE FROM SITE/STOCKPILE FOR RE-USE.
4. PRIOR TO ANY FILLING, THE EXPOSED SUBGRADE SHALL BE PROOF ROLLED WITH A MINIMUM OF 10 PASSES OF A 5 TONNE (MIN) DEAD WEIGHT VIBRATING ROLLER IN THE PRESENCE OF THE SUPERINTENDENT OR GEOTECHNICAL ENGINEER AND ANY SOFT OR YIELDING MATERIALS REMOVED AND REPLACED WITH APPROVED FILLING COMPACTED AS HEREAFTER SPECIFIED.
5. FILL SHALL BE SOUND WELL GRADED MATERIAL WITH A HIGH GRANULAR CONTENT AND SHALL BE THE BEST OF EXCAVATED MATERIALS FROM THE SITE, OR APPROVED SOUND IMPORTED MATERIAL FREE OF RUBBISH, PLASTIC CLAY OR LARGE PIECES THAT WOULD PRECLUDE COMPACTION.
6. FILL SHALL BE SPREAD IN LAYERS NOT EXCEEDING 200MM AND COMPACTED USING SUITABLE MECHANICAL EQUIPMENT AT OPTIMUM MOISTURE CONTENT ±2 % TO NOT LESS THAN 98% MAXIMUM STANDARD DRY DENSITY (MSDD) IN ACCORDANCE WITH AS1289 - E11 UNLESS OTHERWISE NOTED.
7. FINISH FILLING LEVELS TO SUIT CONSTRUCTION OVER, ALLOWING FOR MIN 75MM OF BASE COURSE (DGB20) COMPACTED TO 98% MAXIMUM MODIFIED DRY DENSITY (MMDD) WHERE NOTED ON DRAWINGS.
8. DENSITY TESTING OF FILLING (AND BASE COURSE WHERE APPLICABLE) SHALL BE CARRIED OUT AT THE RATE OF 1 TEST PER 200 SQUARE METRES EACH LAYER (MINIMUM 2 TESTS). TESTING SHALL BE BY A NATA REGISTERED LABORATORY AND SHALL BE ALLOWED FOR BY THE CONTRACTOR.
9. THE CONTRACTOR SHALL PROGRAM AND UNDERTAKE THE EARTHWORKS OPERATIONS SUCH THAT WORKING AREAS ARE ADEQUATELY DRAINED DURING CONSTRUCTION. THE SURFACE SHALL BE GRADED AND SEALED OFF TO REMOVE DEPRESSIONS WHICH WOULD ALLOW WATER TO POND AND PENETRATE THE UNDERLYING MATERIAL. ANY DAMAGE RESULTING FROM FAILURE TO COMPLY WITH THESE REQUIREMENTS SHALL BE RECTIFIED AT THE CONTRACTORS EXPENSE.

DEMOLITION:

1. CARRY OUT ALL DEMOLITION WORK IN ACCORDANCE WITH AS 2601.
2. UNTIL PERMANENT SUPPORT IS PROVIDED, PROVIDE TEMPORARY SUPPORT FOR SECTIONS OF EXISTING STRUCTURES WHICH ARE TO BE ALTERED AND WHICH NORMALLY RELY FOR SUPPORT ON WORK TO BE DEMOLISHED.
3. SUPPORT EXCAVATIONS FOR DEMOLITION OF UNDERGROUND SERVICES.
4. PROVIDE SUPPORT TO ADJACENT STRUCTURES WHERE NECESSARY, SUFFICIENT TO PREVENT DAMAGE RESULTING FROM THE WORKS.
   - LATERAL SUPPORTS: PROVIDE LATERAL SUPPORT AT LEAST EQUAL TO THAT GIVEN BY THE STRUCTURE TO BE DEMOLISHED, USING SHORING.
   - VERTICAL SUPPORTS: PROVIDE SUPPORT WHERE NECESSARY USING PILING OR UNDERPINNING, OR BOTH.
5. PROVIDE DUST PROOF SCREENS, BULKHEADS AND COVERS TO PROTECT EXISTING FINISHES AND THE IMMEDIATE ENVIRONMENT FROM DUST AND DEBRIS.
6. DO NOT USE EXPLOSIVES.
7. HAZARDOUS MATERIALS. GIVE NOTICE IMMEDIATELY IF HAZARDOUS MATERIALS OR CONDITIONS ARE FOUND, INCLUDING THE FOLLOWING:
   - ASBESTOS OR MATERIAL CONTAINING ASBESTOS.
   - FLAMMABLE OR EXPLOSIVE LIQUIDS OR GASES.
   - TOXIC, INFECTIVE AND CONTAMINATED MATERIALS.
   - RADIATION OR RADIOACTIVE MATERIALS.
   - NOXIOUS OR EXPLOSIVE CHEMICALS.
   - TANK OR OTHER CONTAINERS WHICH HAVE BEEN USED FOR STORAGE OF EXPLOSIVE, TOXIC, INFECTIVE OR CONTAMINATED SUBSTANCES.

ROAD WORKS

GENERAL

1. EXISTING VEGETATION TO BE REMOVED WITHIN EXTENTS OF WORKS UNLESS NOTED OTHERWISE
2. ALL PIT GRATES TO SUIT KMC STANDARDS KERB INLET ARRANGEMENTS SHOWING KMC STANDARDS DRAWINGS
3. KERB TYPES AND KERB RAMPS REFER TO KMC STANDARDS.

SET OUT PLANS AND COORDINATES TABLES

4. DESIGN HAS BEEN BASED ON LAND SURVEY COMPLETED BY EMM.
5. SURVEY DATUM IS AHD.
6. SURVEY AZIMUTH IS BASED ON MGA ZONE 56.
7. SURVEY MARKS ARE NOT TO BE DISTURBED BEFORE ASSESSMENT BY SURVEYOR
8. ALL LOCATIONS, ORIENTATION AND LEVELS SHALL BE VERIFIED ON SITE BEFORE COMMENCING ANY WORK. ANY DISCREPANCIES IN THE DRAWINGS AND/OR SPECIFICATIONS SHALL BE REFERRED TO THE PRINCIPAL FOR CLARIFICATION BEFORE PROCEEDING. NATURAL SURFACE LEVELS ARE INDICATIVE ONLY.
9. ANY SURVEY PMS OR SSMS THAT ARE DESTROYED ARE TO BE REPLACED WITH ANOTHER PM OR SSM TO LANDS DEPARTMENT STANDARDS. IT ALSO SHOULD BE DOCUMENTED AND COORDINATED TO EQUIVALENT LANDS DEPARTMENT STANDARDS.

PAVEMENT

1. PAVEMENT INTERFACES TO BE EITHER MID LANE OR AT LANE LINE UNLESS NOTED OTHERWISE ON THESE DRAWINGS OR INSTRUCTED BY THE PRINCIPAL.
2. LOCATION AND AREA OF MILL AND RE-SHEET PAVEMENT ARE INDICATIVE ONLY. FINAL LOCATIONS AND VOLUMES ARE TO BE DETERMINED ON SITE DURING CONSTRUCTION BY THE CONTRACTOR WITH AGREEMENT FROM THE PRINCIPAL.

STORMWATER DRAINAGE

1. STORMWATER DRAINAGE SHALL BE GENERALLY IN ACCORDANCE WITH CURRENT AUSTRALIAN STANDARDS AND COUNCIL'S SPECIFICATION.
2. PIPES OF 225mm DIA. AND UNDER SHALL BE UPVC. PIPES OF 300mm DIA. AND LARGER SHALL BE FRC OR CONCRETE CLASS 2 RUBBER RING JOINTED UNO.
3. ALL FRC OR RCP STORMWATER PIPES WITHIN ROAD RESERVE AREAS TO BE CLASS 3 U.N.O.
4. PIPES SHALL GENERALLY BE LAID AT THE GRADES INDICATED ON THE DRAWINGS.
5. MINIMUM COVER TO PIPES 300mm DIA. AND OVER GENERALLY SHALL BE 600mm IN CARPARK & ROADWAY AREAS UNO.
6. PIPES UP TO 150mm DIA SHALL BE LAID AT 1.0% MIN. GRADE U.N.O. PIPES 225mm DIA AND OVER SHALL BE LAID AT 0.5% MIN. GRADE U.N.O.
7. BACKFILL TRENCHES WITH APPROVED FILL COMPACTED IN 200MM LAYERS TO 98% OF STANDARD DENSITY
8. ANY PIPES OVER 16% GRADE SHALL HAVE CONCRETE BULKHEADS AT ALL JOINTS
9. PITS SHALL BE AS DETAILED WITH METAL GRATES AT LEVELS INDICATED. ALL PITS DEEPER THAN 1000mm TO HAVE CLIMB IRONS.
10. INSTALL TEMPORARY SEDIMENT BARRIERS TO INLET PITS, TO COUNCIL'S STANDARDS UNTIL SURROUNDING AREAS ARE PAVED OR GRASSED.
11. PIT LOCATIONS AND LEVELS MAY BE VARIED TO SUIT SITE CONDITIONS AFTER CONSULTING COUNCIL'S REPRESENTATIVE.
12. HAND-EXCAVATE STORMWATER PIPES IN VICINITY OF TREE ROOTS.
13. TRENCHING AND BEDDING DETAILS TO BE IN ACCORDANCE WITH AS3500 TO HS2 DETAIL UNLESS OTHERWISE NOTED.

SUBSURFACE DRAINAGE

1. LOCATION OF SUBSURFACE DRAINAGE SHOWN ON PLANS IS INDICATIVE ONLY. DRAWINGS TO BE READ IN CONJUNCTION WITH PAVEMENT DETAILS SECTIONS AND PLANS AND KMC CONSTRUCTION SPECIFICATION.
2. CONSTRUCTION OF TRENCH DRAINS TO BE IN ACCORDANCE WITH KMC CONSTRUCTION SPECIFICATION
3. DEPTH OF TRENCH AND PAVEMENT INTERFACE DRAINS TO BE CONFIRMED ONSITE BY THE CONTRACTOR WITH AGREEMENT FROM THE PRINCIPAL AND TO BE MEASURED FROM LOWEST POINT OF THE EXISTING OF NEW PAVEMENT SMZ.
4. GEOTEXTILE FOR TRENCH AND PAVEMENT INTERFACE DRAINS TO BE LAPPED ON THE TOP FACE.
5. MINIMUM GRADE OF SUBSURFACE DRAINAGE TO BE 0.5%.

REINFORCEMENT:

1. REINFORCEMENT SYMBOLS:
   - R DENOTES GRADE 250 R HOT ROLLED PLAIN BARS TO AS1302
   - F DENOTES GRADE 450 F HARD-DRAWN WIRE REINFORCING FABRIC TO AS1304
   - W DENOTES GRADE 450 W HARD-DRAWN PLAIN WIRE TO AS1303
   - N DENOTES DEFORMED BAR NORMAL DUCTILITY TO AS/NZS 4671 GRADE D500N
   - L DENOTES DEFORMED BAR LOW DUCTILITY TO AS/NZS 4671 GRADE D500L
   - RN DENOTES RECTANGULAR WIRE MESH NORMAL DUCTILITY TO AS/NZS 4671
   - RL DENOTES RECTANGULAR WIRE MESH LOW DUCTILITY
   - SN DENOTES SQUARE WIRE MESH NORMAL DUCTILITY
   - SL DENOTED SQUARE WIRE MESH LOW DUCTILITY TO AS/NZS 4671
2. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND NOT NECESSARILY IN TRUE PROJECTION.
3. THE SPLICES IN REINFORCEMENT SHALL BE MADE ONLY IN POSITIONS SHOWN OR OTHERWISE APPROVED IN WRITING BY THE ENGINEER.
4. R4. LAPS SHALL BE IN ACCORDANCE WITH AS 3600 AND NOT LESS THAN THE DEVELOPMENT LENGTH FOR EACH BAR.
5. WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED UNLESS SHOWN ON THE DRAWINGS OR APPROVED BY THE SUPERINTENDENT.
6. MINIMUM FABRIC LAP SHALL BE TWO TRANSVERSE WIRES PLUS 50MM. WHERE FABRIC LAPS, SHEETS TO HAVE MAXIMUM 2 LAYERS AT ANY POINT, CUT BACK FABRIC AT CORNERS AS REQUIRED.
7. WHERE TRANSVERSE TIE BARS ARE NOT SHOWN PROVIDE N12-400 SPLICED WHERE NECESSARY AND LAP WITH MAIN BARS 400MM UNLESS NOTED.
8. ALL REINFORCEMENT SHALL BE FIRMLY SUPPORTED ON PLASTIC CHAIRS OR CONCRETE CHAIRS, AT NOT GREATER THAN 1 METRE CENTRES BOTH WAYS, AND 800 EACH WAY FOR FABRIC. WHEN POURED ON GROUND AS FORMWORK PROVIDE PLATES UNDER ALL BAR CHAIRS. PLASTIC TIPPED STEEL CHAIRS SHALL NOT BE USED ON EXPOSED FACES IN EXPOSURE CLASSIFICATION B2 AND C.

CONCRETE:

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 3600 AND AS 3610 CURRENT EDITIONS WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
2. ALL CEMENT TO BE TYPE GP, GENERAL PURPOSE CEMENT IN ACCORDANCE WITH AS3972
3. PROJECT CONTROL TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 3600
4. DETAILS OF THE PROPOSED MIX ARE TO BE SUBMITTED & APPROVAL OBTAINED PRIOR TO POURING ANY CONCRETE.
5. NO ADMIXTURES SHALL BE USED IN CONCRETE UNLESS APPROVED IN WRITING.
6. MINIMUM CLEAR COVER TO ALL REINFORCEMENT SHALL BE AS FOLLOWS UNLESS SHOWN OTHERWISE:

ELEMENT	STRENGTH GRADE (MPa)	SLUP (mm)	MAX. AGGREG. SIZE (mm)	CAST AGAINST GROUND (mm)	CAST IN FORMS AND NOT EXPOSED (mm)	CAST IN FORMS AND EXPOSED (mm)
PATH	25	80	20	40	40	40

7. CONCRETE SIZES/DIMENSIONS SHOWN DO NOT INCLUDE THE THICKNESS OF ANY APPLIED FINISHES. NO FINISH THAT DECREASES COVER IS PERMITTED WITHOUT THE WRITTEN APPROVAL OF THE SUPERINTENDENT/ENGINEER.
8. MAINTAIN COVER TO REINFORCEMENT AT CHAMFERS, DRIP GROOVED, REGLETS ETC
9. NO HOLES, CHASES, BLOCKOUT, DUCTS OR EMBEDMENT OF PIPES OTHER THAN THOSE SHOWN ON THE DRAWINGS SHALL BE MADE IN CONCRETE MEMBERS WITHOUT THE PRIOR WRITTEN APPROVAL OF THE SUPERINTENDENT/ENGINEER.
10. CONSTRUCTION JOINTS WHERE NOT SHOWN SHALL BE LOCATED TO THE APPROVAL OF THE SUPERINTENDENT/ENGINEER.
11. ALL CONCRETE MEMBERS SHALL BE MECHANICALLY VIBRATED TO ACHIEVE A DENSE HOMOGENEOUS MASS, COMPLETELY FILLING THE FORMWORK AND THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS.
12. CURING OF ALL CONCRETE IS TO BE ACHIEVED BE KEEPING SURFACES CONTINUOUSLY WET FOR A PERIOD OF THREE DAYS, AND THE PREVENTION OF LOSS OF MOISTURE FOR A TOTAL OF 7 DAYS FOLLOWED BY A GRADUAL DRYING OUT.
13. CONSTRUCTION SUPPORT PROPPING IS TO BE LEFT IN PLACE WHERE NEEDED TO AVOID OVERSTRESSING THE STRUCTURE DUE TO CONSTRUCTION LOADING.
14. ALL CONCRETE SHALL BE PLACED IN SUCH A MANNER SO AS TO AVOID SEGREGATION OR LOSS OF MATERIALS.
15. UNDER NO CIRCUMSTANCES SHALL EXCESS CONCRETE BE DISPOSED OF ON-SITE. ALL EXCESS CONCRETE MUST BE CARTED FROM SITE AND DISPOSED OF IN AN APPROPRIATE MANNER.
16. WATER USED FOR FLUSHING CHUTES AND FOR CLEANING OF CONCRETE TRUCKS AND EQUIPMENT MUST BE DISCHARGED IN AN AREA DESIGNATED FOR THAT PURPOSE AND WHICH HAS EROSION AND SEDIMENT CONTROL MEASURES IN PLACE.

FORMWORK:

1. RESPONSIBILITY FOR DESIGN, CERTIFICATION, CONSTRUCTION AND PERFORMANCE OF FORMWORK AND FALSEWORK LIES WITH CONTRACTOR.
2. DO NOT SUPPORT OR RESTRAIN FORMWORK ON PERMANENT WORKS WITHOUT SUPERINTENDENTS WRITTEN APPROVAL.
3. CONSTRUCT FORMWORK TO COMPLY WITH AS3610 AND CLAUSE 19.6.2 OF AS3600 WHERE THIS IS MORE STRINGENT SO CONCRETE WILL HAVE DIMENSIONS, SHAPE, LOCATION AND FINISH SPECIFIED. PROVIDE OPENINGS OR REMOVABLE PANELS FOR INSPECTION AND CLEANING. APPLY RELEASE AGENT COMPATIBLE WITH CONTACT SURFACES TO INTERIOR OR FORMWORK (EXCEPT WHERE CONCRETE IS TO RECEIVE AND APPLIED FINISH FOR WHICH THERE IS NO COMPATIBLE RELEASE AGENT). WHERE NECESSARY CLEAN REINFORCEMENT TO REMOVE TRACES OF RELEASE AGENT. SEAL JOINT BETWEEN FORMWORK PANELS, AND TO HARDENED CONCRETE WITH FLEXIBLE RUBBER STRIP. SET OUT FORMWORK TO GIVE A REGULAR ARRANGEMENT OF PANELS, JOINT, BOLT HOLES ETC.
4. DO NOT USE FORMWORK HARDWARE THAT FORMS A COMPLETE HOLE THROUGH CONCRETE ELEMENTS. DO NOT USE REINFORCEMENT TO SUPPORT FORMWORK.
5. PROVIDE HOLES IN REBATE FORMERS ETC AS REQUIRED TO PREVENT AIR ENTRAPMENT.
6. CONSTRUCTION TOLERANCES TO BE TO AS3610.
7. STRIP FORMWORK TO AS3600 CLAUSE 19.6. REMOVE FROM TIE BOLTS WITHOUT DAMAGING CONCRETE. PARTS OF BOLTS LEFT IN CONCRETE MUST NOT INTRUDE INTO COVER CONCRETE. FLUSH FILL HOLES USING PRE-MIXED NON-SHRINK CEMENTITIOUS REPAIR MORTAR MATCHING CONCRETE SURFACE COLOUR, STRENGTH AND DURABILITY AND ADEQUATE BOND.

WORK NEAR EXISTING TREES AND TREE PROTECTION

GENERAL:

- TREES MUST NOT BE REMOVED OR LOPPED OR OTHERWISE DAMAGED, UNLESS SPECIFIED AND APPROVAL TO DO SO IS GIVEN BY THE SUPERINTENDENT. ALL CARE MUST BE TAKEN NOT TO DAMAGE OR INJURE ANY EXISTING TREES THAT ARE TO BE RETAINED. A QUALIFIED ARBORIST OR TREE PRESERVATION OFFICER IS TO BE CONSULTED PRIOR TO ANY EARTHWORKS BEING CONDUCTED NEAR EXISTING TREES WITHIN THE CONSTRUCTION ZONE. ANY DAMAGE INCURRED TO TREES THAT ARE TO BE RETAINED IS TO BE MADE GOOD AS SOON AS POSSIBLE FOLLOWING ADVICE BY AN APPROVED ARBORIST.

PROTECTION:

- IT IS THE SITE SUPERVISOR'S RESPONSIBILITY TO PROTECT ALL TREES IDENTIFIED FOR RETENTION.
- TREES TO BE RETAINED ARE TO BE PROTECTED WITH FENCING AND/OR TREE ARMOUR AS INDICATED ON THE DRAWINGS.
- COMPACTION OF SOIL IS TO BE AVOIDED WITHIN THE TREE PROTECTION ZONES SHOWN ON THE DRAWINGS.
- WHERE WORK IS REQUIRED TO BE UNDERTAKEN WITHIN THE TREE PROTECTION ZONES, TREE ARMOUR IS TO BE ERECTED AROUND THE TRUNK OF THE TREES AS INDICATED ON PLAN.

TREE PROTECTION FENCING:

- TREES ARE TO BE PROTECTED BY TEMPORARY CHAIN-WIRE CONSTRUCTION FENCING INSTALLED AT THE DRIPLINE IF POSSIBLE. TEMPORARY SIGNAGE LABELLED "TREE PROTECTION AREA. NO STORAGE OF MATERIALS OR MACHINERY" IS TO BE INSTALLED ON ALL TREE PROTECTION FENCING.

TREE ARMOUR:

- PROVIDE TREE ARMOUR AROUND TRUNKS OF TREES AS INDICATED ON PLAN BEFORE COMMENCEMENT OF ANY WORKS. ARMOUR IS TO CONSIST OF JUTE MATTING AND TIMBER BATTENS WRAPPED AROUND TREE TRUNKS AS INDICATED IN DRAWINGS.
- INSTALL A PROTECTIVE LAYER OF JUTE MAT AROUND TREE TRUNKS PRIOR TO INSTALLING TIMBER BATTENS AROUND TREE TRUNKS.
- TIMBER BATTENS ARE TO BE 1800 X 90 X 20mm. SECURE BATTENS INTO POSITION WITH THREE STRANDS OF WIRE OR NYLON WEBBING STAPLED OR NAILED TO CREATE A CONTINUOUS STRING, LONG ENOUGH TO SURROUND EACH TREE.
- ENSURE ARMOUR IS ATTACHED SECURELY AROUND THE TREE. AMOUR SHOULD BE ATTACHED TO ITSELF. NAILS OR FASTENERS ARE NOT TO BE ATTACHED DIRECTLY TO THE TREE TRUNK. ARMOUR IS TO REMAIN IN PLACE AS LONG AS MACHINERY IS REQUIRED ON SITE.

STORAGE OF MATERIALS:

- DO NOT STORE OR OTHERWISE PLACE BULK MATERIALS AND HARMFUL MATERIALS UNDER OR NEAR TREES WITHIN THE TREE PROTECTION ZONE. STORAGE OF MATERIALS, MIXING OF MATERIALS, VEHICLE PARKING, DISPOSAL OF LIQUIDS, MACHINERY REPAIRS AND REFUELLING, SITE OFFICE AND SHEDS MUST NOT OCCUR WITHIN THE DRIP LINE OF ANY EXISTING TREES, OR WITHIN 5M OF ANY EXISTING TREES WHERE THE DRIP LINE RADIUS IS LESS THAN 5m.
- DO NOT PLACE SPOIL FROM EXCAVATIONS AGAINST TREE TRUNKS, EVEN FOR SHORT PERIODS. PREVENT WIND-BLOWN MATERIALS SUCH AS CEMENT FROM HARMING TREES AND PLANTS.

WORK UNDER TREES:

- MINIMISE EXCAVATION OR FILLING AROUND TREES. IF CONSTRUCTION WORKS ARE NECESSARY AROUND TREES THEN MINIMISE THE USE OF MACHINERY. LEAVE TRENCHES OR EXCAVATED AREAS EXPOSED FOR AS SHORT A PERIOD AS POSSIBLE.

ROOTS:

- TREE ROOTS EXCEEDING 100mm DIAMETER ARE NOT TO BE CUT UNLESS ADVICE IS FIRST SOUGHT FROM AN ARBORIST.
- USE HAND TOOLS OR A CHAINSAW TO MAKE CLEAN CUTS TO ROOTS THAT REQUIRE CUTTING.

BACKFILLING:

- MINIMISE CHANGES TO SOIL SURFACE LEVELS AROUND TREES.
- RETURN NATURAL SOILS TO EXCAVATED AREAS OR USE OTHER VIRGIN EXCAVATED NATURAL MATERIAL (VENM) TO BACKFILL.
- ROAD MILLINGS, WASTE CONCRETE, ASPHALT OR OTHER FOREIGN MATERIALS ARE NOT TO BE USED FOR BACKFILLING WITHIN TREE ROOT ZONES.
- DO NOT BACKFILL AROUND TREE TRUNKS TO A HEIGHT GREATER THAN 300MM ABOVE THE ORIGINAL GROUND SURFACE UNLESS AUTHORISED.
- THOROUGHLY WATER THE SOIL FOLLOWING EXCAVATION WITHIN TREE ROOT ZONES.

REMOVAL OF TREES:

- WHEN REMOVING TREES, TAKE CARE NOT TO DAMAGE ANY ADJACENT EXISTING STRUCTURES, SERVICES OR TREES TO BE RETAINED.
- WHERE TREES BEING REMOVED ARE LOCATED IN FUTURE PLANTING AREAS AS SHOWN ON THE PLANTING PLAN, FULLY REMOVE THE TREES AND ALL THEIR PARTS INCLUDING THE ROOT SYSTEM.
- WHERE THIS IS NOT PRACTICAL CUT TRUNKS CLOSE TO THE EXISTING SOIL SURFACE LEVEL AND IMMEDIATELY APPLY UNDILUTED GLYPHOSATE HERBICIDE TO THE CUT SURFACES.

UTILITIES

1. THE LOCATION OF EXISTING UTILITIES SHOWN ON THE PLANS ARE INDICATIVE ONLY. THE CONTRACTOR IS TO REFER TO UTILITY RELOCATION PLANS APPROVED BY APPROPRIATE AUTHORITY FOR DETAILS ON PROPOSED UTILITY WORKS.
2. THE CONTRACTOR IS TO CONFIRM THE PRESENCE OF ALL UTILITIES ON SITE PRIOR TO THE COMMENCEMENT OF ROAD WORKS, REFERENCE MUST BE MADE TO THESE DRAWINGS PRIOR TO THE COMMENCEMENT OF ROAD WORKS, AND THE RELEVANT UTILITY PLANS OBTAINED BY CONTACTING DIAL BEFORE YOU DIG. CAUTION SHALL BE EXERCISED WHEN WORKING IN THE VICINITY OF ALL UTILITY SERVICES.
3. LOCATION AND LEVEL OF ALL SERVICES CROSSING THE PROPOSED WORKS MUST BE OBTAINED PRIOR TO CONSTRUCTION. ALL LEVELS MUST BE CHECKED FOR CONFLICT WITH ANY SERVICES, AND ANY CONFLICTS TO BE RAISED WITH PRINCIPAL.
4. PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION ON THE SITE, THE RELEVANT AUTHORITY SHOULD BE CONTACTED FOR POSSIBLE LOCATION OF FURTHER UNDERGROUND SERVICES AND DETAILED LOCATIONS OF ALL SERVICES.
5. UNDERGROUND SERVICES HAVE BEEN PLOTTED FROM RECORDS SUPPLIED BY THE PUBLIC AUTHORITIES TO SHIRE CIVIL DESIGN IN DECEMBER 2019 LOCATIONS HAVE BEEN INTERPRETED FROM THESE RECORDS AND ARE APPROXIMATE ONLY. EXTREME CAUTION SHOULD BE TAKEN BY PERSONS EXCAVATING.

EROSION AND SEDIMENT CONTROL

1. GENERAL MEASURES
   - SOIL EROSION AND SEDIMENTATION CONTROL MEASURES DURING CONSTRUCTION SHALL CONFORM WITH GUIDELINES IN ACCORDANCE WITH "MANAGING URBAN STORMWATER: SOILS AND CONSTRUCTION - VOLUME 1, LANDCOM 2004" AND COUNCIL'S POLICY
   - PERIMETER CONTROL MEASURES SHALL BE PLACED PRIOR TO OR IN CONJUNCTION WITH THE FIRST PHASE OF THE EARTHWORKS. THESE MEASURES SHALL BE APPLIED TO PROTECT ADJOINING PROPERTIES FROM EROSION AND SILT DAMAGE.
   - EARTH STOCKPILES SHALL BE CONFINED TO ONE CENTRAL AREA WHERE POSSIBLE. ALL STOCKPILES OF EXCAVATED OR CONSTRUCTION SOILS MUST HAVE A SILT FENCE ERECTED IMMEDIATELY DOWNHILL FOR THE FULL EXTENT OF THE STOCKPILE. WHERE SITE REGRADING OR FILLING IS BEING UNDERTAKEN PROVISION SHALL BE MADE TO ENSURE THAT NO WATER IS PONDED IN ANY LOT.
   - ALL AREAS NOT SUBJECT TO CONSTRUCTION WORKS SHALL BE RETAINED FREE FROM DISTURBANCE OR DAMAGE DURING THE CURRENCY OF THE WORK. SHOULD THESE AREAS BECOME DISTURBED OR DAMAGED THEY SHALL BE REINSTATED AS DIRECTED BY THE SUPERINTENDENT.
2. SEDIMENT CONTROL DEVICES (S.C.D.)
   - THESE DEVICES SHALL BE CONSTRUCTED AT INLETS TO STORMWATER SYSTEMS TO TRAP THE SEDIMENT IN RUN-OFF.
3. STABILISATION OF DISTURBED AREAS
   - STABILISATION OF DISTURBED AREAS SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS INDICATED IN GENERAL NOTES ABOVE.
   - THE FOLLOWING SHALL BE APPLIED FOR THE CONTROL OF EROSION AND SEDIMENTATION:-
     a. STABILISATION OF DENUDED AREAS SHALL COMMENCE AS SOON AS POSSIBLE AFTER THE AREAS HAVE BEEN DISTURBED.
     b. STABILISATION OF ALL CUT AND FILL SLOPES SHALL BE COMMENCED AS SOON AS PRACTICABLE AFTER COMPLETION OF FORMATION.
     c. ALL STABILISATION MEASURES SHALL BE TAKEN PRIOR TO THE END OF THE MAINTENANCE PERIOD.
4. MAINTENANCE
   - ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE MAINTAINED IN A SATISFACTORY WORKING ORDER THROUGHOUT THE CONTRACT, MAINTENANCE AND DEFECTS LIABILITY PERIODS OR UNTIL SUCH EARLIER TIME AS THE AREA HAS BEEN STABILISED AND COUNCIL'S ENGINEER DIRECTS THAT THE DEVICE BE REMOVED.
   - ALL DEVICES SHALL BE INSPECTED AFTER EACH STORM FOR STRUCTURAL DAMAGE OR CLOGGING BY SILT AND OTHER DEBRIS AND MAKE PROMPT REPAIRS OR REPLACEMENT.

SIGNAGE AND LINEMARKING

1. INSTALLATION OF PAVEMENT MARKING RRPM'S AND SIGNAGE TO BE IN ACCORDANCE WITH KMC CONSTRUCTION SPECIFICATION, GUIDELINES AND STANDARDS.
2. CONTRACTOR TO OBTAIN WRITTEN APPROVAL FROM KMC PRIOR TO INSTALLATION OF ANY SIGNAGE OR LINEMARKING.
3. LOCATION OF ALL SIGNAGE TO BE CONFIRMED ON SITE IN COORDINATION WITH THE PRINCIPAL PRIOR TO MANUFACTURE.
4. ALL SIGNS TO BE SIZE 'B' UNLESS NOTED OTHERWISE.
5. EXISTING SIGNS DESIGNATED REMOVAL TO BE STORED IN CONTRACTOR'S COMPOUND FOR WCC RECOVERY.
6. SIGNAGE TO BE LOCATED IN ACCORDANCE WITH AS1742 APPENDIX B
7. SIGNS TO BE MOUNTED A MINIMUM 2.5M ABOVE FSL.
8. CONTRACTOR TO CONFIRM LOCATION OF ALL SERVICES, DRAINAGE WORKS AND UNDERGROUND INFRASTRUCTURE PRIOR TO COMMENCING WORK. CONTRACTOR TO ENSURE ADOPTED METHOD OF CONSTRUCTION AND PROPOSED WORK WILL AVOID DAMAGE TO ALL SERVICES AND DRAINAGE WORKS, INCLUDING CLEARANCE TO OVERHEAD POWERLINES.
9. INSTALL PAINTED CHEVRONS IN ACCORDANCE WITH RMS DELINEATION GUIDELINES.
10. ALL PERMANENT ROAD LINEMARKING AND PAVEMENT MESSAGES INCLUDING ARROWS TO BE NON-PROFILE REFLECTIVE THERMO-PLASTIC MATERIAL IN ACCORDANCE WITH WCC CONSTRUCTION SPECIFICATIONS.
11. ALL TEMPORARY LINEMARKING TO BE WATERBORNE PAINT.

A1

THIS PLAN IS PREPARED FROM A COMBINATION OF FIELD SURVEY AND EXISTING RECORDS.

THE POSITION OF STRUCTURES , SERVICES TREES ETC. ARE DIAGRAMMATIC ONLY AND MAY REQUIRE ADDITIONAL SURVEY WHERE CRITICAL.

PRIOR TO ANY CONSTRUCTION ON OR NEAR A PROPERTY BOUNDARY, THE LOCATION OF THE PROPERTY BOUNDARY SHOULD BE DETERMINED BY A REGISTERED SURVEYOR.

VISIBLE SERVICES ONLY HAVE BEEN LOCATED AS PART OF THIS SURVEY. ALL CARE HAS BEEN TAKEN IN THE FIELD SURVEY TO IDENTIFY VISIBLE SERVICES AND STRUCTURES. IN SOME CASES THE VISIBLE SERVICES HAVE NOT BEEN IDENTIFIED. IT IS RECOMMENDED THAT A FIELD INSPECTION WITH THE RELEVANT SERVICE AUTHORITY REPRESENTATIVE BE UNDERTAKEN TO CONFIRM THE IDENTITY OF SERVICES SHOWN ON THIS PLAN.

PRIOR TO EXCAVATION THE CONTRACTOR MUST:
CONTACT "BEFORE YOU DIG AUSTRALIA"
PH: 1100
WEB: https://smarterwx.1100.com.au

PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION ON THE SITE, THE RELEVANT AUTHORITY SHOULD BE CONTACTED FOR POSSIBLE LOCATION OF FURTHER UNDERGROUND SERVICES AND DETAILED LOCATIONS OF ALL SERVICES.

WARNING
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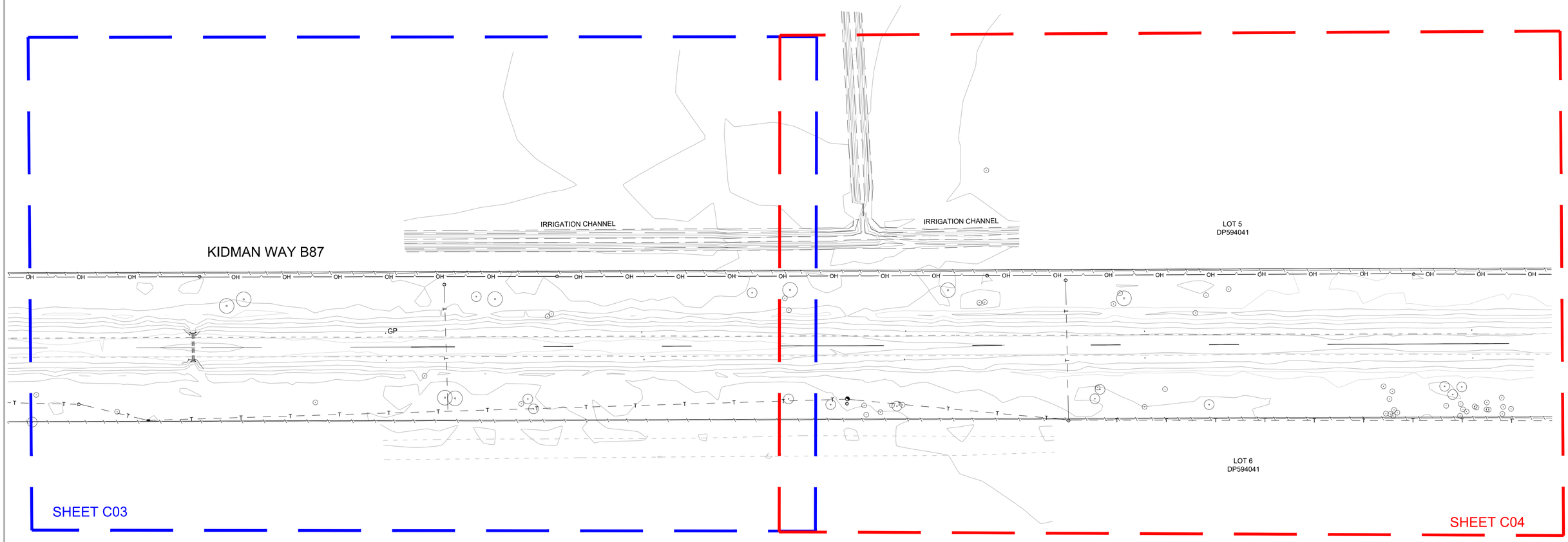
WARNING U/G TELSTRA
Telstra
CABLES
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BEWARE OPTIC FIBRE

SURVEY STATION MARKS

STATION No.	EASTING	NORTHING	R.L.	DESCRIPTION
2690	389648.311	6118704.532	113.407	STN
2691	389639.260	6118634.126	113.400	STN
3039	389626.752	6118536.958	113.433	STN
3248	389640.191	6118463.904	113.445	STN
3255	389614.232	6118444.170	113.600	STN
3481	389603.559	6118358.534	113.729	STN
3671	389592.264	6118273.121	113.767	STN
3672	389628.954	6118383.518	113.643	STN
3673	389572.586	6118394.774	113.577	STN
4102	389580.176	6118181.128	113.769	STN

UTILITIES		TELSTRA PILLAR	
WATER MAIN	W	TELSTRA PIT	
U/G TELSTRA	T	HYDRANT	
O/H TELSTRA	OT	STOP VALVE	
OPTICAL FIBRE	OF	POWER POLE	
GAS MAIN	G	ELECTRICAL PILLAR	
HP GAS MAIN U/G	HG	POWER LIGHT POLE	
ELECTRICITY	E	LIGHT POLE	
O/H ELECTRICITY	OH	GAS STOP VALVE	
SEWER	S	SEWER MANHOLE	



PLAN
SCALE 1:800
0.2m CONTOUR INTERVAL

NOTES:
EXISTING STATE SURVEY MARKS AFFECTED BY THE WORKS ARE TO BE RECOVERED IN ACCORDANCE WITH SURVEYOR GENERAL'S DIRECTION No. 11 - "PRESERVATION OF SURVEY INFRASTRUCTURE".
INVESTIGATIONS WERE UNDERTAKEN AND ALL SURVEY MARKS WERE INVESTIGATED AND IDENTIFIED ON SITE.
AT THIS STAGE THE LOCATION OF THE MARKS ARE WELL CLEAR OF THE WORKS AND SURVEY AREA AND SHOULD NOT BE IMPACTED BY THE WORKS.

EMM creating opportunities
SYDNEY | Suite 01
Ground Floor
20 Chandos Street,
St Leonards NSW 2065
Phone # 02 9493 9500
www.emmconsulting.com.au

REV	DATE	COMMENT	DRAWN	REVIEWED
B	10/4/25	TfNSW COMMENTS	C.J.	A.U.
A	18/10/24	TfNSW COMMENTS	C.J.	A.U.
-	8/7/24	STRATEGIC CONCEPT DESIGN	C.J.	A.U.

PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - NEW SITE ACCESS INTERSECTIONS, KIDMAN WAY

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN
OVERALL SURVEY AND SERVICES PLAN

CLIENT: SPARK RENEWABLES
DRG. #: EMM - C02
PROJECT #: E220305
SCALE: AS SHOWN

REV: B

A1

WARNING
UNDERGROUND SERVICES HAVE BEEN PLOTTED FROM RECORDS SUPPLIED BY THE PUBLIC AUTHORITIES TO EMM CONSULTING MARCH 2024

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WARNING U/G TELSTRA

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BEWARE
OPTIC FIBRE

LOT 5
DP594041

IRRIGATION CHANNEL

KIDMAN WAY B87

LOT 6
DP594041

JOINS SHEET C04

UTILITIES		TELSTRA PILLAR	Ⓣ
WATER MAIN	W	TELSTRA PIT	◪
U/G TELSTRA	T	HYDRANT	Ⓗ
O/H TELSTRA	OT	STOP VALVE	Ⓥ
OPTICAL FIBRE	OF	POWER POLE	Ⓟ
GAS MAIN	G	ELECTRICAL PILLAR	■
HP GAS MAIN U/G	HG	POWER LIGHT POLE	❋
ELECTRICITY	E	LIGHT POLE	☼
O/H ELECTRICITY	OH	GAS STOP VALVE	Ⓖ
SEWER	S	SEWER MANHOLE	Ⓢ

PLAN

SCALE 1:400
0.2m CONTOUR INTERVAL

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-	8/7/24	STRATEGIC CONCEPT DESIGN	C.J.	A.U.					

PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - NEW SITE ACCESS INTERSECTIONS, KIDMAN WAY

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN
SURVEY AND SERVICES PLAN - SOUTH

CLIENT: SPARK RENEWABLES
DRG. #: EMM - C03
PROJECT #: E220305
SCALE: AS SHOWN

REV: B

A1

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Telstra

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BEWARE OPTIC FIBRE

UTILITIES		TELSTRA PILLAR	Ⓣ
WATER MAIN	W	TELSTRA PIT	◪
U/G TELSTRA	T	HYDRANT	Ⓗ
O/H TELSTRA	OT	STOP VALVE	Ⓥ
OPTICAL FIBRE	OF	POWER POLE	Ⓟ
GAS MAIN	G	ELECTRICAL PILLAR	■
HP GAS MAIN U/G	HG	POWER LIGHT POLE	❋
ELECTRICITY	E	LIGHT POLE	☼
O/H ELECTRICITY	OH	GAS STOP VALVE	Ⓖ
SEWER	S	SEWER MANHOLE	Ⓢ

IRRIGATION CHANNEL

LOT 5
DP594041

KIDMAN WAY B87

LOT 6
DP594041

JOINS SHEET C03

PLAN

SCALE 1:400
0.2m CONTOUR INTERVAL

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PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - NEW SITE ACCESS INTERSECTIONS, KIDMAN WAY

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN
SURVEY AND SERVICES PLAN - NORTH

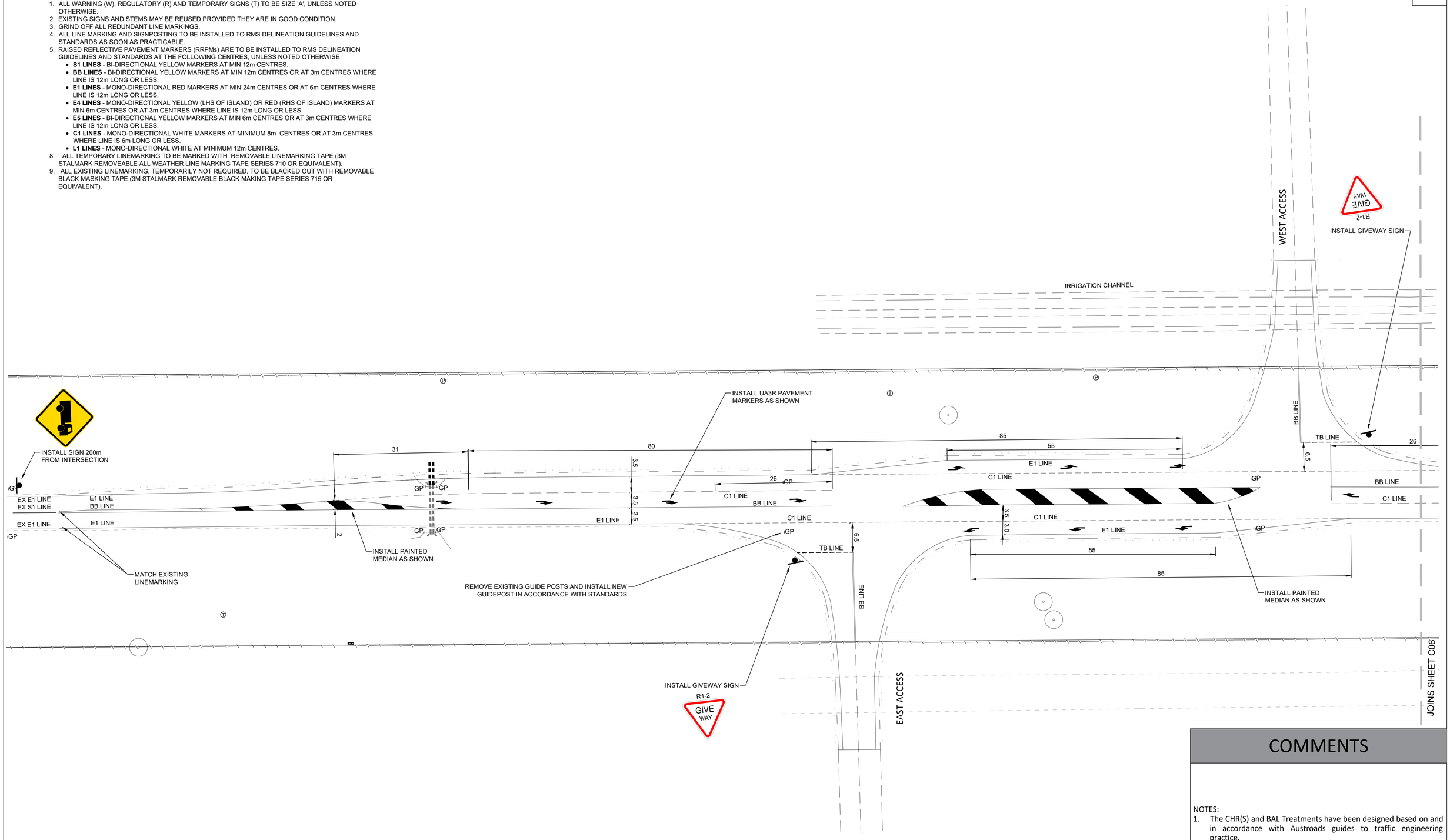
CLIENT: SPARK RENEWABLES
DRG. #: EMM - C04
PROJECT #: E220305
SCALE: AS SHOWN

REV: B

A1

SIGNPOSTING AND LINEMARKING

1. ALL WARNING (W), REGULATORY (R) AND TEMPORARY SIGNS (T) TO BE SIZE 'A', UNLESS NOTED OTHERWISE.
2. EXISTING SIGNS AND STEMS MAY BE REUSED PROVIDED THEY ARE IN GOOD CONDITION.
3. GRIND OFF ALL REDUNDANT LINE MARKINGS.
4. ALL LINE MARKING AND SIGNPOSTING TO BE INSTALLED TO RMS DELINEATION GUIDELINES AND STANDARDS AS SOON AS PRACTICABLE.
5. RAISED REFLECTIVE PAVEMENT MARKERS (RRPMs) ARE TO BE INSTALLED TO RMS DELINEATION GUIDELINES AND STANDARDS AT THE FOLLOWING CENTRES, UNLESS NOTED OTHERWISE:
   - **S1 LINES** - BI-DIRECTIONAL YELLOW MARKERS AT MIN 12m CENTRES.
   - **BB LINES** - BI-DIRECTIONAL YELLOW MARKERS AT MIN 12m CENTRES OR AT 3m CENTRES WHERE LINE IS 12m LONG OR LESS.
   - **E1 LINES** - MONO-DIRECTIONAL RED MARKERS AT MIN 24m CENTRES OR AT 6m CENTRES WHERE LINE IS 12m LONG OR LESS.
   - **E4 LINES** - MONO-DIRECTIONAL YELLOW (LHS OF ISLAND) OR RED (RHS OF ISLAND) MARKERS AT MIN 6m CENTRES OR AT 3m CENTRES WHERE LINE IS 12m LONG OR LESS.
   - **E5 LINES** - BI-DIRECTIONAL YELLOW MARKERS AT MIN 6m CENTRES OR AT 3m CENTRES WHERE LINE IS 12m LONG OR LESS.
   - **C1 LINES** - MONO-DIRECTIONAL WHITE MARKERS AT MINIMUM 8m CENTRES OR AT 3m CENTRES WHERE LINE IS 6m LONG OR LESS.
   - **L1 LINES** - MONO-DIRECTIONAL WHITE AT MINIMUM 12m CENTRES.
8. ALL TEMPORARY LINEMARKING TO BE MARKED WITH REMOVABLE LINEMARKING TAPE (3M STALMARK REMOVEABLE ALL WEATHER LINE MARKING TAPE SERIES 710 OR EQUIVALENT).
9. ALL EXISTING LINEMARKING, TEMPORARILY NOT REQUIRED, TO BE BLACKED OUT WITH REMOVABLE BLACK MASKING TAPE (3M STALMARK REMOVABLE BLACK MAKING TAPE SERIES 715 OR EQUIVALENT).



PLAN
SCALE 1:400

NOT FOR CONSTRUCTION

COMMENTS

NOTES:
1. The CHR(S) and BAL Treatments have been designed based on and in accordance with Austroads guides to traffic engineering practice.
2. Posted speed 100km/h, design speed is 110km/h and through lanes typically 3.5m wide.
3. The right turn bay provides for storage of a 26m long vehicle.
4. Radius of travel lanes are 500m or greater.

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PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - NEW SITE ACCESS INTERSECTIONS, KIDMAN WAY

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN
SIGNS AND LINEMARKING PLAN SOUTH

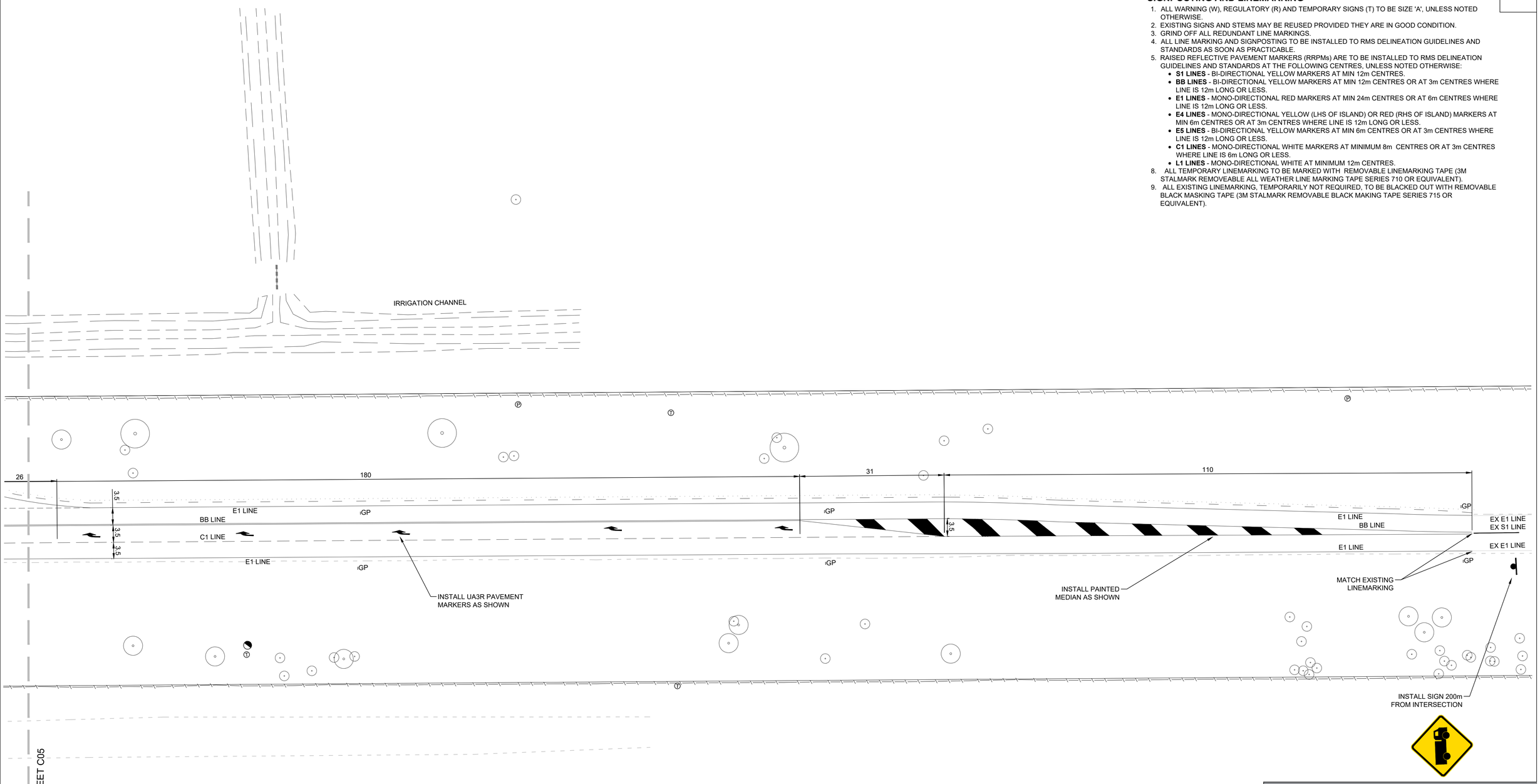
CLIENT: SPARK RENEWABLES
DRG. #: EMM - C05
PROJECT #: E220305
SCALE: AS SHOWN

REV: B

A1

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PLAN
SCALE 1:400

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PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - NEW SITE ACCESS INTERSECTIONS, KIDMAN WAY

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN
SIGNS AND LINEMARKING PLAN NORTH

CLIENT: SPARK RENEWABLES
DRG. #: EMM - C06
PROJECT #: E220305
SCALE: AS SHOWN

REV: B

A1

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UTILITIES		TELSTRA PILLAR	
WATER MAIN	W	TELSTRA PIT	
U/G TELSTRA	T	HYDRANT	
O/H TELSTRA	OT	STOP VALVE	
OPTICAL FIBRE	OF	POWER POLE	
GAS MAIN	G	ELECTRICAL PILLAR	
HP GAS MAIN U/G	HG	POWER LIGHT POLE	
ELECTRICITY	E	LIGHT POLE	
O/H ELECTRICITY	OH	GAS STOP VALVE	
SEWER	S	SEWER MANHOLE	

KIDMAN WAY B87

IRRIGATION CHANNEL

IRRIGATION CHANNEL

LOT 5
DP594041

LOT 6
DP594041

SHEET C08

SHEET C09

PLAN
SCALE 1:800

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B	10/4/25	TfNSW COMMENTS	C.J.	A.U.					
A	18/10/24	TfNSW COMMENTS	C.J.	A.U.					
-	8/7/24	STRATEGIC CONCEPT DESIGN	C.J.	A.U.					

PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - NEW SITE ACCESS INTERSECTIONS, KIDMAN WAY

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN
OVERALL CONSTRUCTION PLAN

CLIENT: SPARK RENEWABLES
DRG. #: EMM - C07
PROJECT #: E220305
SCALE: AS SHOWN

REV: B

A1

WARNING
UNDERGROUND SERVICES HAVE BEEN PLOTTED FROM RECORDS SUPPLIED BY THE PUBLIC AUTHORITIES TO EMM CONSULTING APRIL 2024.

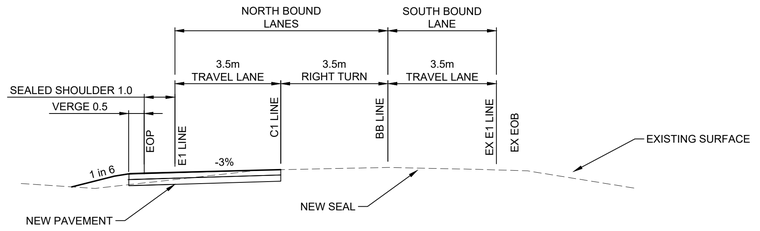
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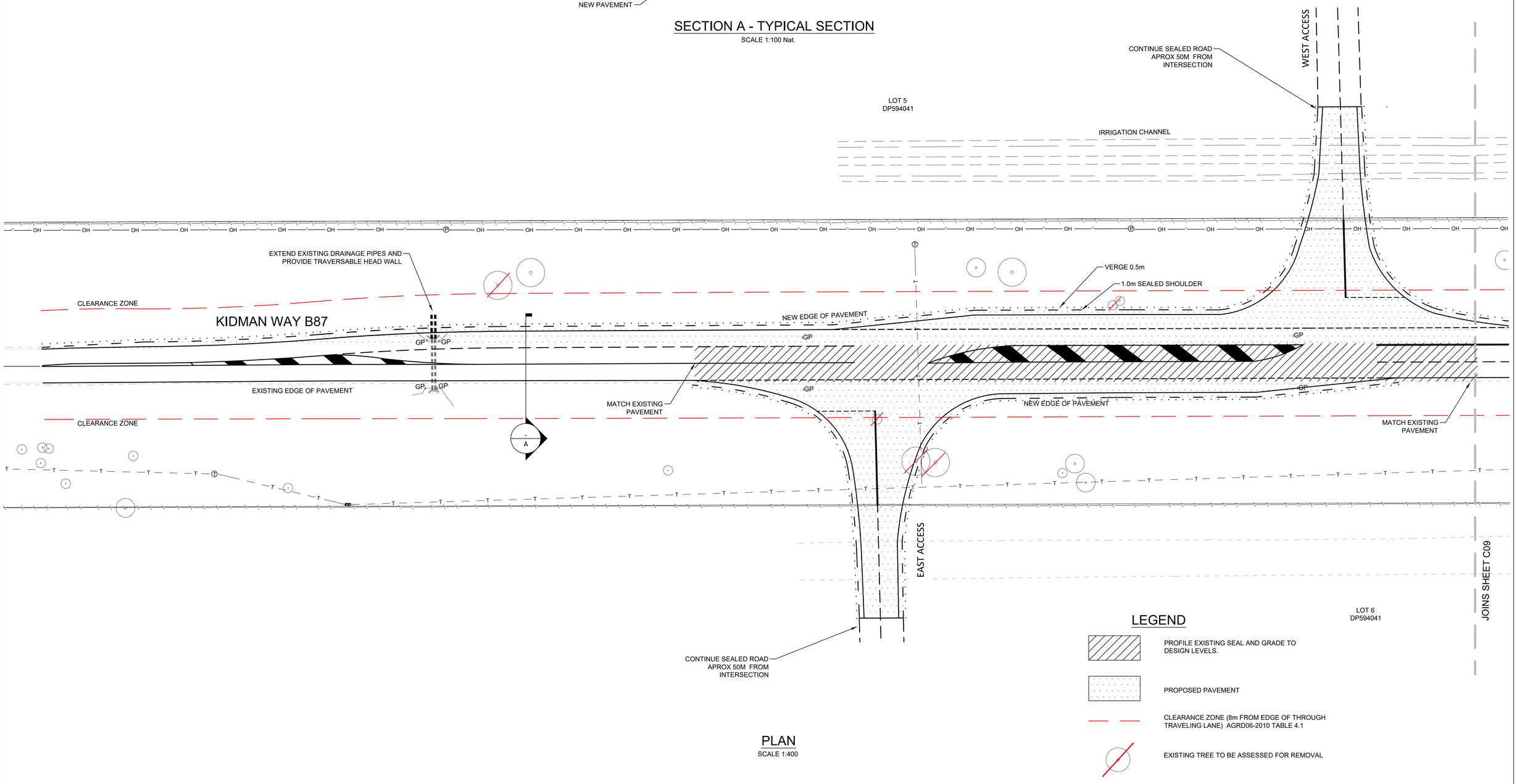
WARNING U/G TELSTRA
Telstra
CABLES
PLEASE CONTACT THE N.I.A.C. GROUP AT TELSTRA ON 9204-0880 OR 9204-0923. BEFORE STARTING ANY CONSTRUCTION WORK IN THE AREA.

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BEWARE OPTIC FIBRE

UTILITIES		TELSTRA PILLAR
WATER MAIN	W	TELSTRA PIT
U/G TELSTRA	T	HYDRANT
O/H TELSTRA	OT	STOP VALVE
OPTICAL FIBRE	OF	POWER POLE
GAS MAIN	G	ELECTRICAL PILLAR
HP GAS MAIN U/G	HG	POWER LIGHT POLE
ELECTRICITY	E	LIGHT POLE
O/H ELECTRICITY	OH	GAS STOP VALVE
SEWER	S	SEWER MANHOLE



SECTION A - TYPICAL SECTION
SCALE 1:100 Nat.



PLAN
SCALE 1:400

LEGEND

- PROFILE EXISTING SEAL AND GRADE TO DESIGN LEVELS.
- PROPOSED PAVEMENT
- CLEARANCE ZONE (8m FROM EDGE OF THROUGH TRAVELING LANE) AGRD06-2010 TABLE 4.1
- EXISTING TREE TO BE ASSESSED FOR REMOVAL

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B	10/4/25	TfNSW COMMENTS	C.J.	A.U.
A	18/10/24	TfNSW COMMENTS	C.J.	A.U.
-	8/7/24	STRATEGIC CONCEPT DESIGN	C.J.	A.U.

PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - NEW SITE ACCESS INTERSECTIONS, KIDMAN WAY

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN CONSTRUCTION PLAN 1.

CLIENT: SPARK RENEWABLES
DRG. #: EMM - C08
PROJECT #: E220305
SCALE: AS SHOWN

REV: B

A1

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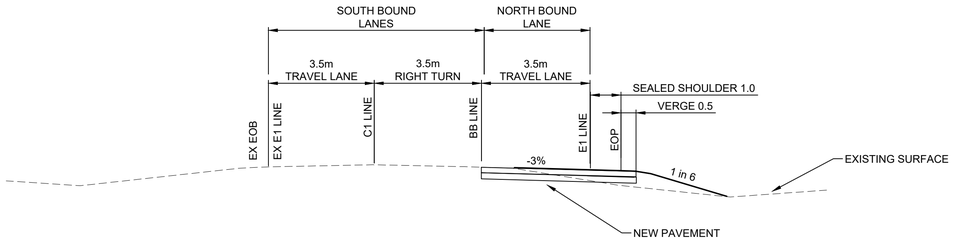
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BEWARE OPTIC FIBRE

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UTILITIES		TELSTRA PILLAR	
WATER MAIN	W	TELSTRA PIT	
U/G TELSTRA	T	HYDRANT	
O/H TELSTRA	OT	STOP VALVE	
OPTICAL FIBRE	OF	POWER POLE	
GAS MAIN	G	ELECTRICAL PILLAR	
HP GAS MAIN U/G	HG	POWER LIGHT POLE	
ELECTRICITY	E	LIGHT POLE	
O/H ELECTRICITY	OH	GAS STOP VALVE	
SEWER	S	SEWER MANHOLE	



SECTION A - TYPICAL SECTION
SCALE 1:100 Nat.

LOT 5
DP594041

IRRIGATION CHANNEL

KIDMAN WAY B87

VERGE 0.5m
SEALED SHOULDER 1.0m
NEW EDGE OF PAVEMENT
CLEARANCE ZONE
EXISTING EDGE OF PAVEMENT
MATCH EXISTING PAVEMENT
A

JOINS SHEET C08

LOT 6
DP594041

LEGEND
- PROFILE EXISTING SEAL AND GRADE TO DESIGN LEVELS.
- PROPOSED PAVEMENT
- CLEARANCE ZONE (8m FROM EDGE OF THROUGH TRAVELING LANE) AGRD06-2010 TABLE 4.1
- EXISTING TREE TO BE ASSESSED FOR REMOVAL

PLAN
SCALE 1:400

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A	18/10/24	TfNSW COMMENTS	C.J.	A.U.
-	8/7/24	STRATEGIC CONCEPT DESIGN	C.J.	A.U.

PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - NEW SITE ACCESS INTERSECTIONS, KIDMAN WAY

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN CONSTRUCTION PLAN 2.

CLIENT: SPARK RENEWABLES
DRG. #: EMM - C09
PROJECT #: E220305
SCALE: AS SHOWN

REV: B

A1

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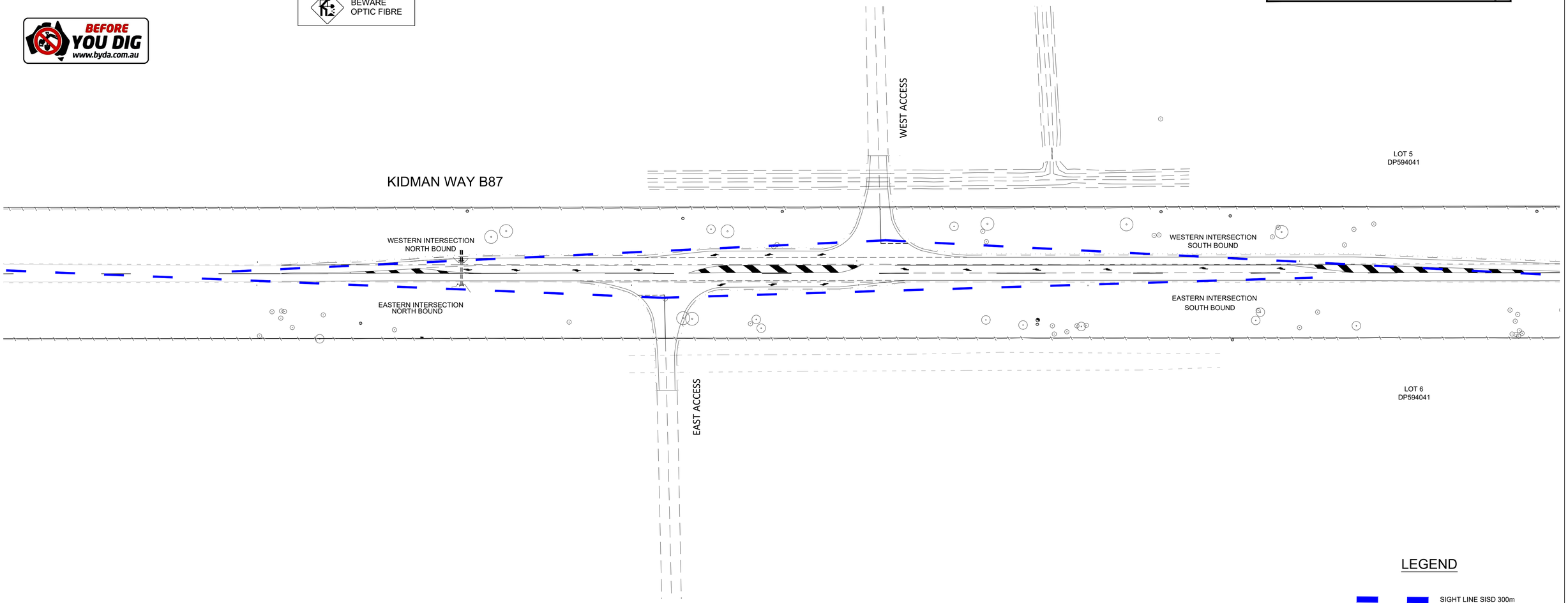
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BEWARE OPTIC FIBRE

UTILITIES		TELSTRA PILLAR	Ⓣ
WATER MAIN	W	TELSTRA PIT	◪
U/G TELSTRA	T	HYDRANT	Ⓗ
O/H TELSTRA	OT	STOP VALVE	Ⓥ
OPTICAL FIBRE	OF	POWER POLE	Ⓟ
GAS MAIN	G	ELECTRICAL PILLAR	■
HP GAS MAIN U/G	HG	POWER LIGHT POLE	❋
ELECTRICITY	E	LIGHT POLE	☼
O/H ELECTRICITY	OH	GAS STOP VALVE	Ⓖ
SEWER	S	SEWER MANHOLE	Ⓢ



PLAN
SCALE 1:900

LEGEND
SIGHT LINE SISD 300m

REFER TO SHEET C11 & C12 FOR LONGITUDINAL SECTIONS

NOT FOR CONSTRUCTION

COMMENTS

NOTES:
1. SISD calculated in accordance Austroads guides to traffic engineering practice
2. Posted speed 100km/h, design speed is 110km/h and through lanes typically 3.5m wide.
3. Driver reaction time of 2.5sec.

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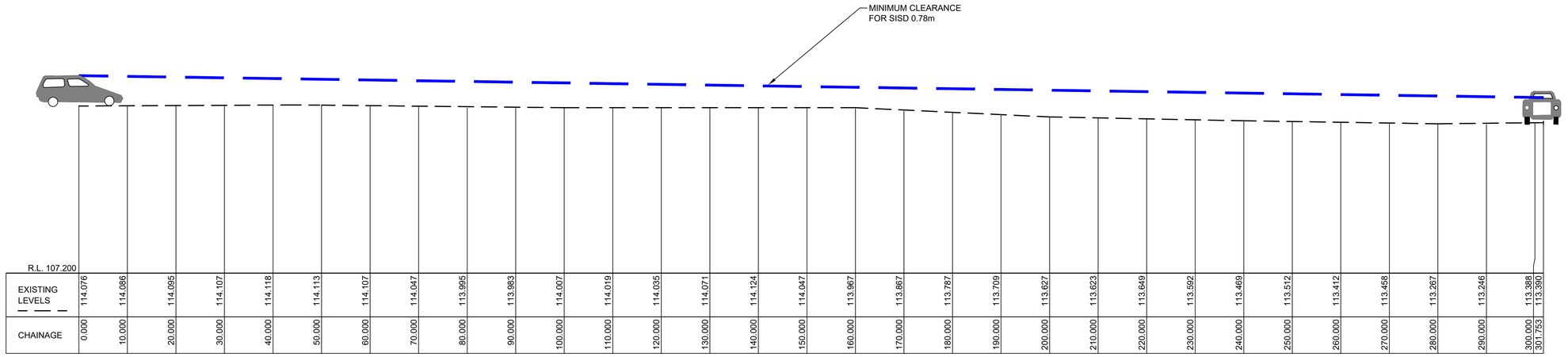
PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - NEW SITE ACCESS INTERSECTIONS, KIDMAN WAY

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN
SISD PLAN

CLIENT: SPARK RENEWABLES
DRG. #: EMM - C10
PROJECT #: E220305
SCALE: AS SHOWN

REV: B

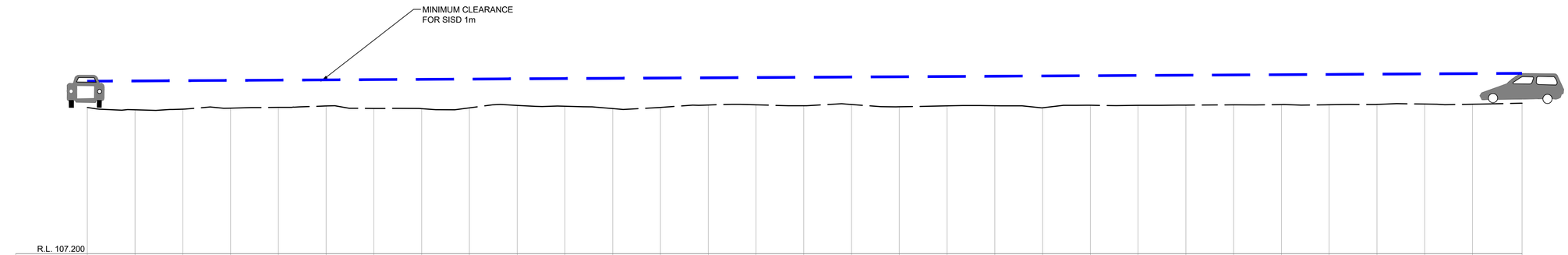
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	R.L. 107.200																														
EXISTING LEVELS	114.076	114.086	114.095	114.107	114.118	114.113	114.107	114.047	113.995	113.983	114.007	114.019	114.035	114.071	114.124	114.047	113.967	113.867	113.767	113.709	113.627	113.623	113.649	113.592	113.469	113.512	113.412	113.458	113.267	113.246	113.388	113.390
CHAINAGE	0.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	110.000	120.000	130.000	140.000	150.000	160.000	170.000	180.000	190.000	200.000	210.000	220.000	230.000	240.000	250.000	260.000	270.000	280.000	290.000	300.000	307.753

SISD LONGITUDINAL SECTION - EASTERN INTERSECTION - NORTH BOUND APPROACH

SCALES: HORIZONTAL 1:500 VERTICAL 1:100



	R.L. 107.200																														
EXISTING LEVELS	113.322	113.223	113.251	113.294	113.324	113.383	113.282	113.272	113.304	113.408	113.372	113.276	113.322	113.424	113.433	113.394	113.445	113.351	113.388	113.393	113.308	113.414	113.410	113.421	113.430	113.441	113.436	113.447	113.466	113.458	113.498
CHAINAGE	0.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	110.000	120.000	130.000	140.000	150.000	160.000	170.000	180.000	190.000	200.000	210.000	220.000	230.000	240.000	250.000	260.000	270.000	280.000	290.000	300.000

SISD LONGITUDINAL SECTION - EASTERN INTERSECTION - SOUTH BOUND APPROACH

SCALES: HORIZONTAL 1:500 VERTICAL 1:100

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A	18/10/24	TfNSW COMMENTS	C.J.	A.U.					
-	8/7/24	STRATEGIC CONCEPT DESIGN	C.J.	A.U.					

PROJECT:

DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN -
NEW SITE ACCESS INTERSECTIONS,
KIDMAN WAY

DRAWING TITLE:

STRATEGIC CONCEPT DESIGN
SISD LONGITUDINAL SECTIONS
EAST ACCESS

CLIENT: SPARK RENEWABLES

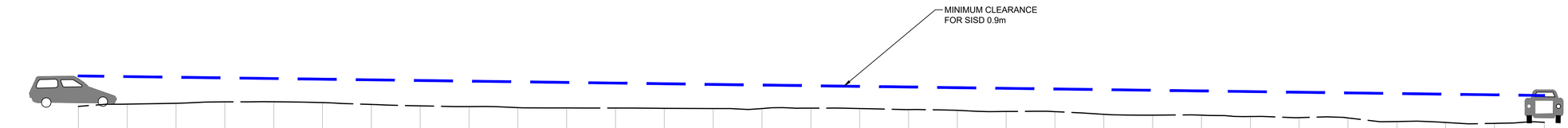
DRG. #: EMM - C11

PROJECT #: E220305

SCALE: AS SHOWN

REV: B

A1

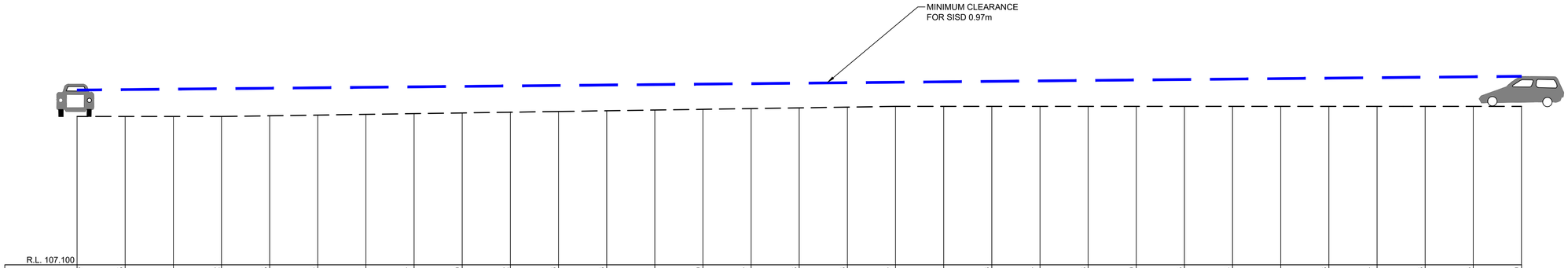


R.L. 107.200

CHAINAGE	EXISTING LEVELS
0.000	113.995
10.000	114.088
20.000	114.123
30.000	114.180
40.000	114.183
50.000	114.150
60.000	114.074
70.000	114.017
80.000	113.987
90.000	113.944
100.000	113.929
110.000	113.927
120.000	113.916
130.000	113.905
140.000	113.908
150.000	113.922
160.000	113.907
170.000	113.864
180.000	113.835
190.000	113.785
200.000	113.780
210.000	113.670
220.000	113.636
230.000	113.633
240.000	113.579
250.000	113.534
260.000	113.521
270.000	113.374
280.000	113.335
290.000	113.297
300.000	113.343

SISD LONGITUDINAL SECTION - WESTERN INTERSECTION - NORTH BOUND APPROACH

SCALES: HORIZONTAL 1:500 VERTICAL 1:100



R.L. 107.100

CHAINAGE	EXISTING LEVELS
0.000	113.257
10.000	113.145
20.000	113.171
30.000	113.152
40.000	113.285
50.000	113.274
60.000	113.311
70.000	113.347
80.000	113.410
90.000	113.452
100.000	113.466
110.000	113.506
120.000	113.481
130.000	113.530
140.000	113.537
150.000	113.568
160.000	113.648
170.000	113.637
180.000	113.611
190.000	113.606
200.000	113.587
210.000	113.618
220.000	113.640
230.000	113.673
240.000	113.684
250.000	113.681
260.000	113.688
270.000	113.677
280.000	113.648
290.000	113.663
300.000	113.679

SISD LONGITUDINAL SECTION - WESTERN INTERSECTION - SOUTH BOUND APPROACH

SCALES: HORIZONTAL 1:500 VERTICAL 1:100

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REV	DATE	COMMENT	DRAWN	REVIEWED

PROJECT:

DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN -
NEW SITE ACCESS INTERSECTIONS,
KIDMAN WAY

DRAWING TITLE:

STRATEGIC CONCEPT DESIGN
SISD LONGITUDINAL SECTIONS
WEST ACCESS

CLIENT: SPARK RENEWABLES

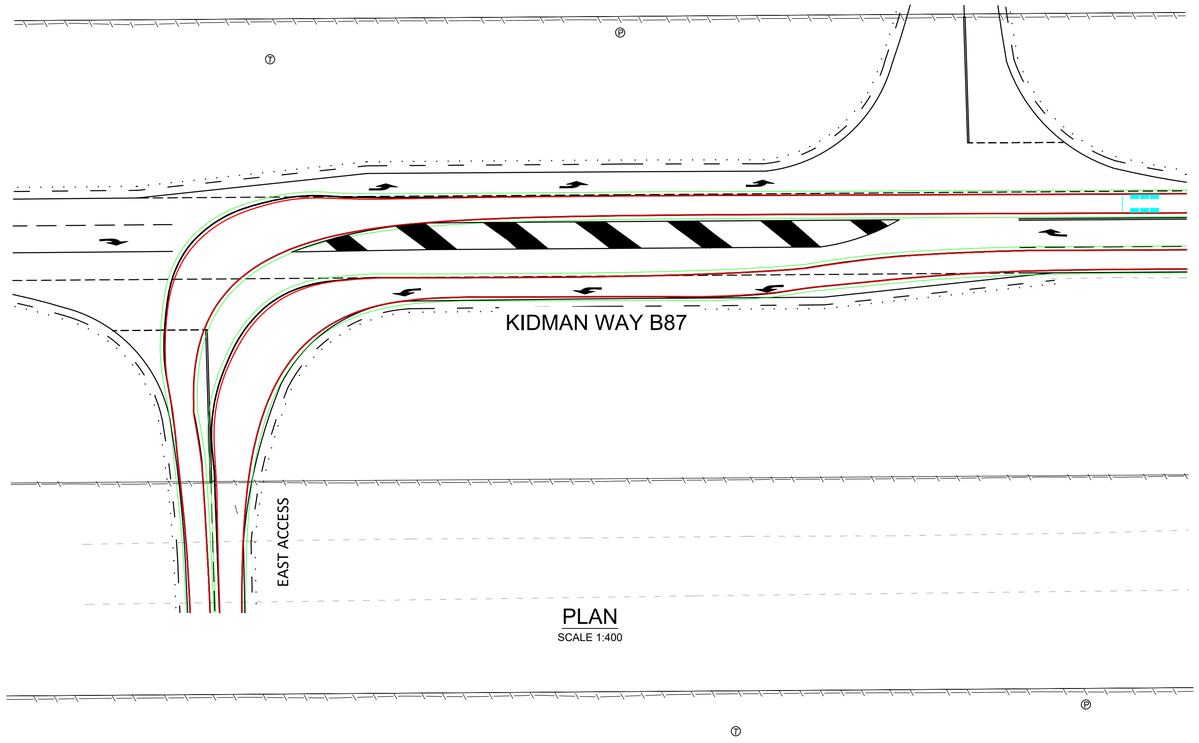
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PROJECT #: E220305

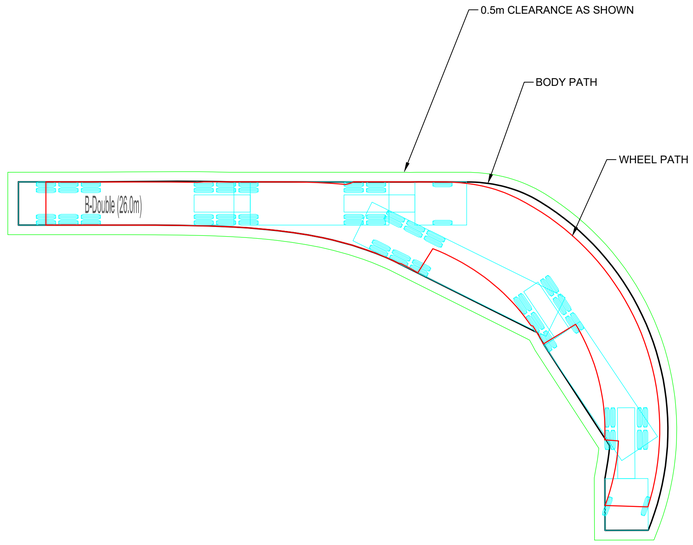
SCALE: AS SHOWN

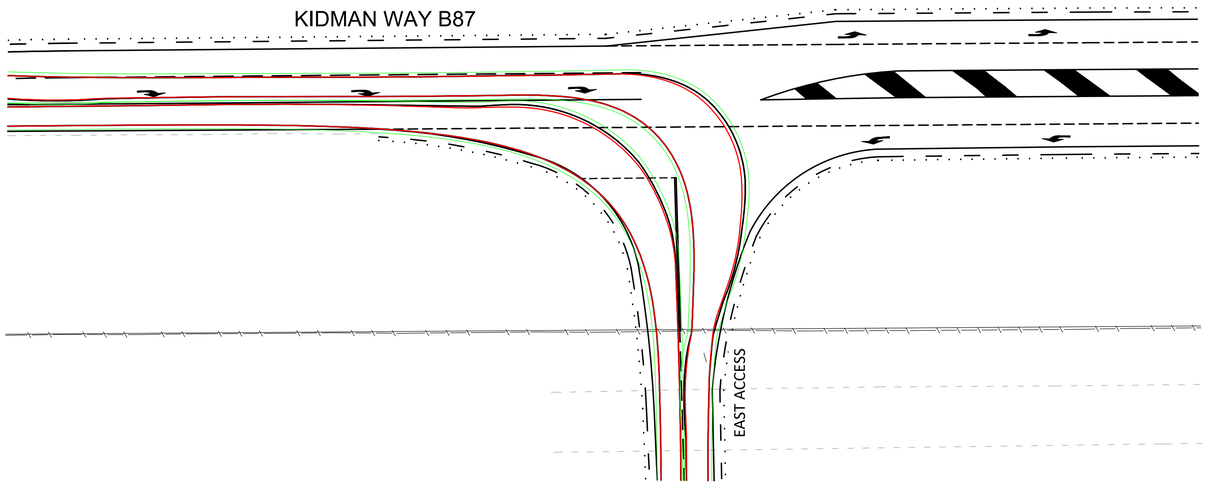
REV: B

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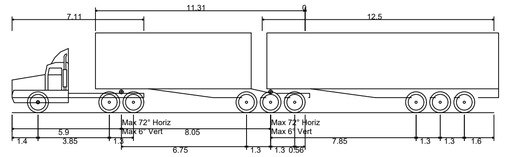


PLAN
SCALE 1:400





PLAN
SCALE 1:400



B-Double (26.0m)	
Overall Length	26.000m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.540m
Track Width	2.500m
Lock-to-lock time	6.00s

NOTES:

- The design speed used for the swept paths is **15kmh** and no initial lock, lock to lock or turn on spot has been utilised to produce the swept paths shown.
- The turning paths illustrated in this drawing have been prepared using the AutoCAD Vehicle tracking modelling software in conjunction with AutoCAD Civil3D.
- The vehicle model was prepared by Vehicle Tracking based upon vehicle data provided by Austroads.
- While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

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-	8/7/24	STRATEGIC CONCEPT DESIGN	C.J.	A.U.					

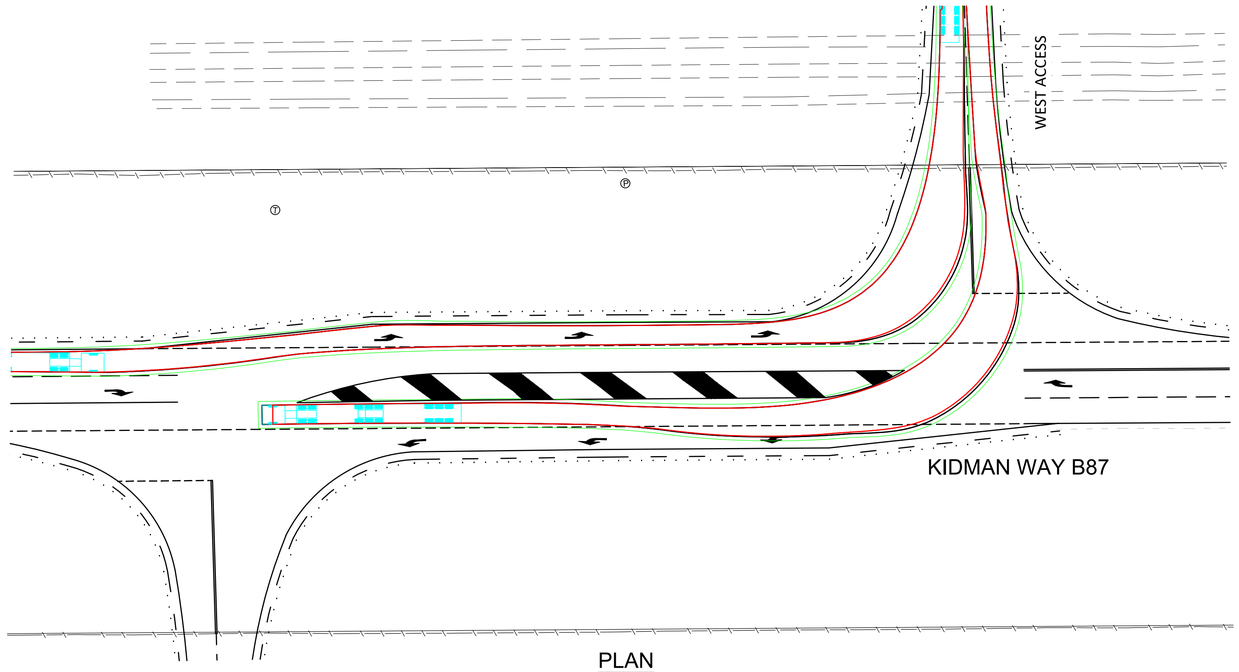
PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - NEW SITE ACCESS INTERSECTIONS, KIDMAN WAY

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN
SWEPT PATH PLAN - EAST ACCESS
B-DOUBLE

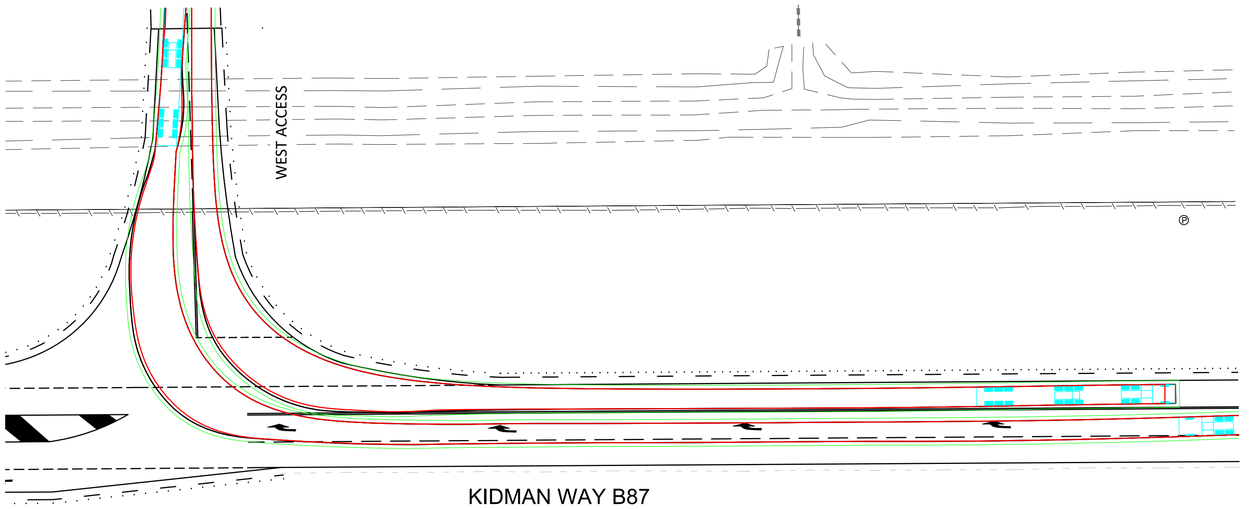
CLIENT: SPARK RENEWABLES
DRG. #: EMM - C13
PROJECT #: E220305
SCALE: AS SHOWN

REV: B

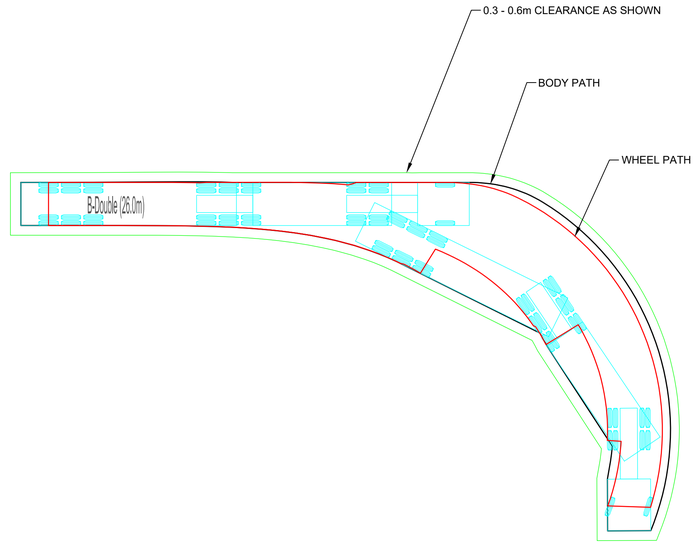
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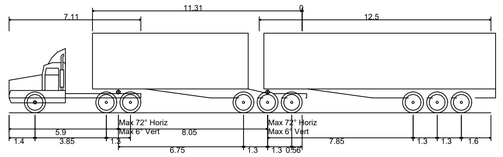


PLAN
SCALE 1:400



PLAN
SCALE 1:400





B-Double (26.0m)	
Overall Length	26.000m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.540m
Track Width	2.500m
Lock-to-lock time	6.00s

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REV	DATE	COMMENT	DRAWN	REVIEWED
B	10/4/25	TfNSW COMMENTS	C.J.	A.U.
A	18/10/24	TfNSW COMMENTS	C.J.	A.U.
-	8/7/24	STRATEGIC CONCEPT DESIGN	C.J.	A.U.

PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - NEW SITE ACCESS INTERSECTIONS, KIDMAN WAY

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN
SWEPT PATH PLAN - WEST ACCESS
B-DOUBLE

CLIENT: SPARK RENEWABLES
DRG. #: EMM - C14
PROJECT #: E220305
SCALE: AS SHOWN

REV: B

A1

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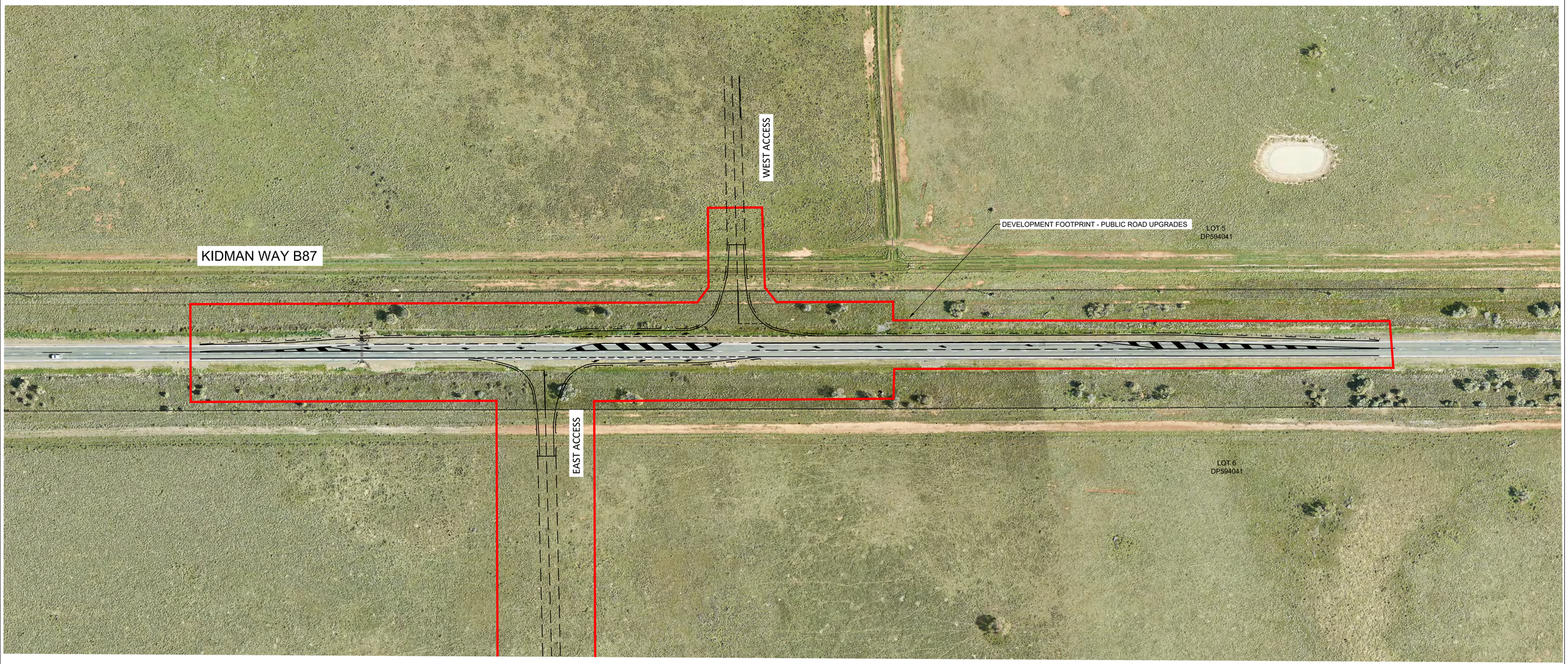
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U/G TELSTRA	T	HYDRANT	
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OPTICAL FIBRE	OF	POWER POLE	
GAS MAIN	G	ELECTRICAL PILLAR	
HP GAS MAIN U/G	HG	POWER LIGHT POLE	
ELECTRICITY	E	LIGHT POLE	
O/H ELECTRICITY	OH	GAS STOP VALVE	
SEWER	S	SEWER MANHOLE	



PLAN
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EMM creating opportunities
SYDNEY | Suite 01
Ground Floor
20 Chandos Street,
St Leonards NSW 2065

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REV	DATE	COMMENT	DRAWN	REVIEWED	REV	DATE	COMMENT	DRAWN	REVIEWED
B	10/4/25	TfNSW COMMENTS	C.J.	A.U.					
A	18/10/24	TfNSW COMMENTS	C.J.	A.U.					
-	8/7/24	STRATEGIC CONCEPT DESIGN	C.J.	A.U.					

PROJECT:
DINAWAN WIND FARM
STRATEGIC CONCEPT DESIGN - NEW SITE ACCESS INTERSECTIONS, KIDMAN WAY

DRAWING TITLE:
STRATEGIC CONCEPT DESIGN
ROAD UPGRADE CORRIDOR PLAN

CLIENT: SPARK RENEWABLES
DRG. #: EMM - C15
PROJECT #: E220305
SCALE: AS SHOWN

REV: B

Annexure B

OSOM route assessment

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REX J ANDREWS
ENGINEERED TRANSPORTATION

ROUTE STUDY

PROJECT: DINAWAN ENERGY HUB WINDFARM

EX NEWCASTLE PORT

TURBINE SIZE: V172 – 85M BLADE, 150M HUB HEIGHT

27/06/2025 REV 04

Rev	Date	Change	Responsible	Checked
00	07/08/23	Route Assessed	W Andrews	✓
00	16/12/24	Report Compiled	E Novak	✓
00	17/12/24	Report Completed	W Andrews	✓
01	02/04/25	Revisions	W Andrews	✓
02	15/04/25	Revisions	E Novak	✓
03	02/05/25	Revisions	W Andrews	✓
04	27/06/25	Revisions	W Andrews	✓

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1.0 Introduction

Spark Renewables are in the early stages of investigating a potential windfarm as part of the Dinawan Energy Hub in the Southwest Renewable Energy Zone in Southwestern NSW.

This study has been prepared to provide an understanding of the transport route constraints for the proposed components as listed in the report and provide route options in order to assist in planning of the project.

This document utilises observations gained from route surveys, as well as previous experience on route and outlines the requirements for the transport of wind turbine equipment from Newcastle port to the Dinawan Energy Hub.

The study is based on a V172, 85-metre blade with a hub height of 150 metres and a tower diameter of up to 6.0 metres.

2.0 Project Data

Date of latest Route Study. 02/04/2025
Survey undertaken by. Rex J Andrews Engineered Transportation P/L
Project name. Dinawan Energy Hub
Port of import. Newcastle (NSW)
Project location. Dinawan (NSW)

Turbine types undertaken in the study:

- Vestas V172 with an 85 Metre blade, on a 3x8-3x8 Blade transporter.
- Tower type: Vestas 150 metre tower.

3.0 Evaluation

Assessment of the proposed routes was conducted by Rex J Andrews Engineered Transportation based on onsite route surveys as well as previous experience on sections of the identified routes and transporting turbine equipment similar to the proposed turbine that is used on various other projects. The assessment was conducted utilising the knowledge, experience and intellectual property of Rex J Andrews Engineered Transportation on purpose-built equipment and is not intended for use by other parties.

The assessment considered the key constraints encountered on the routes and an estimation of the amount of work required to make the route viable based on previous experience. Table 1 shows the evaluation of each route and provides an overall ranking to give guidance on the most suitable route for the development from a transport perspective. The assessment was based on operational factors and equipment capability and does not consider external factors such as regulatory, landholder, environmental, cultural or any other external factors beyond the knowledge or control of Rex J Andrews Engineered Transportation.

1	No Cost
2	Some Work
3	Moderate Amount of Work
4	Large Amount of Work

		Harbour	Road Modification	Road Furnishings	Vegetation	Site Entrance	Bridge Calculations	Overhead utilities	Overall Work Required
Route 1	Blades & Loads under 5.0m High	**2**	**4**	**4**	**2**	**4**	**2**	**2**	**3.5**
Route 1A	Blades Wagga Wagga Bypass	**1**	**3**	**4**	**2**	**1**	**3**	**2**	**3.0**
Route 2	Towers & Loads up to 6.1m high	**1**	**4**	**3**	**3**	**4**	**4**	**4**	**3.5**
Route 3	Motors & Loads up to 5.3m high	**1**	**1**	**1**	**1**	**4**	**2**	**1**	**2.0**

Table 1 - Route Evaluation

For Dinawan Energy Hub the largest design vehicles are associated with transportation of WTG blades and towers to site. Analysis by RJA engineered Transportation identifies that the largest design vehicles will need to cross into the incorrect lane at select intersections and corners (as indicated by the swept paths).

Limiting the largest design vehicles to the correct lane for these intersections and corners would result in unnecessary environmental impacts and encroachment onto private land to accommodate short term OSOM vehicle movements.

On this basis for Dinawan Energy Hub it is proposed to use the complete intersection where needed i.e. the largest design vehicles would cross onto the incorrect side of the road (as indicated by the swept paths) with local traffic controlled by Police and Pilots etc. Further, and as indicated by the swept paths, the largest design vehicles will remain well within the existing pavement and within existing intersection treatments (where applicable) at the majority of intersections and corners. However, new hardstands are proposed as documented in this Route Options Assessment. The largest design vehicles will remain well within the proposed pavement and intersection treatments (where applicable).

Throughout the report, references to making roundabouts, kerbs, median strips or islands 'trafficable' means physically modifying these structures to allow the truck to drive over them. While the scope of work required in each location will be determined during detailed design, in consultation with the relevant road authority, this may include partial or total removal of these structures and reconstruction or replacement with painted lines.

4.0 Port of Import

The wind turbine equipment will be imported from various countries and will arrive on ships into the Port of Newcastle.

The client may alternately source local towers. The ideal berth for these shipments is the Mayfield No.4 Berth.

This facility has a hardstand storage area of roughly 100,000 s/q meters, adjacent to the berth.

Access from the storage to the public roads is via a port operated road onto Selwyn Street. There will need to be a small amount of road modifications within the port.



Figure 1 – Newcastle Port, Mayfield No. 4 berth



Figure 2 - Mayfield No.4 Port Storage Area

5.0 Dinawan Windfarm Site Location

This proposed Dinawan Energy Hub development is located approximately 30 kilometres (km) Southwest of Darlington Point, in southwest New South Wales. Access is via Kidman Way. The Project Area is within the Murray Region of New South Wales (NSW). 3T

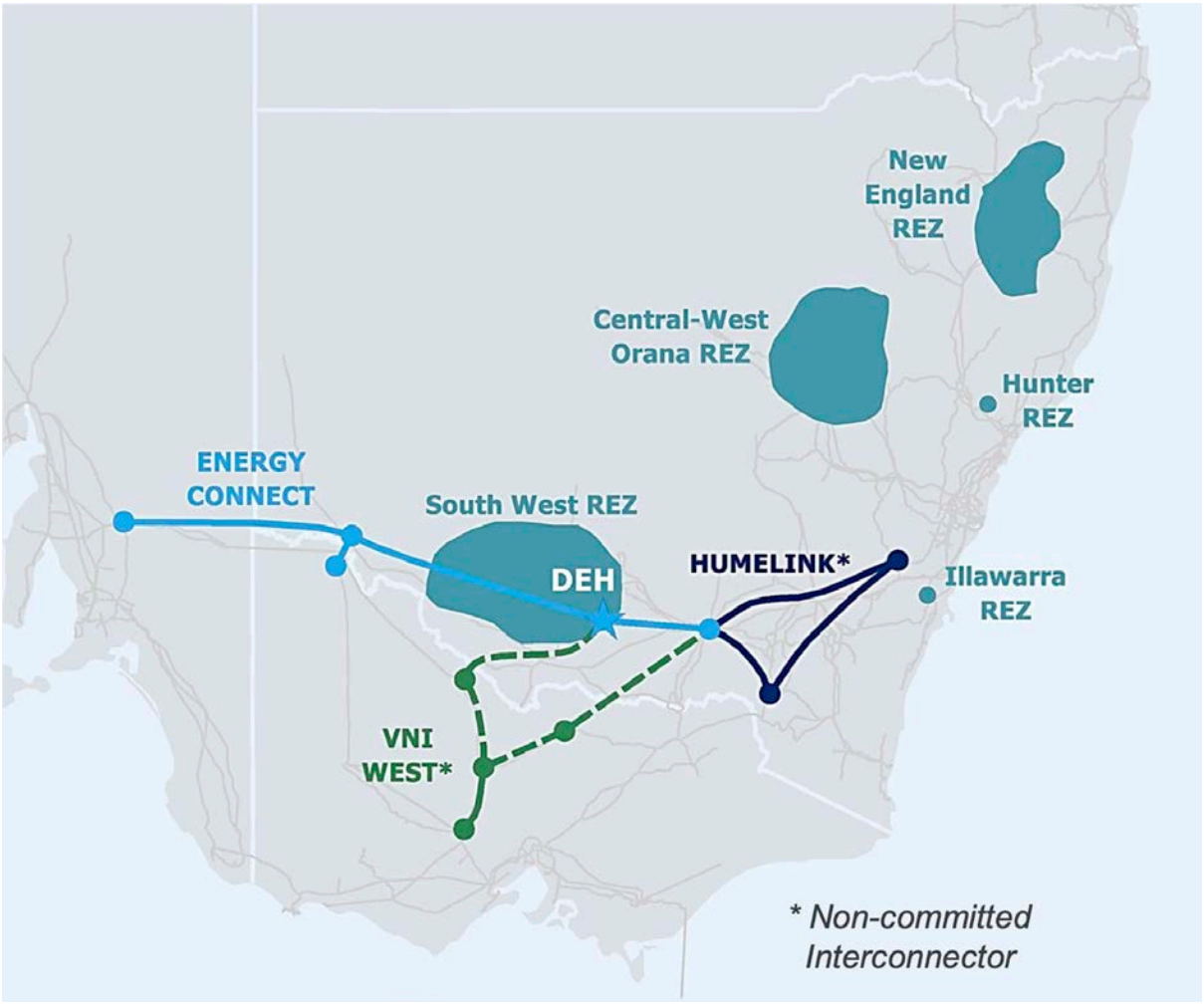


Figure 3 - Dinawan Energy Hub Location

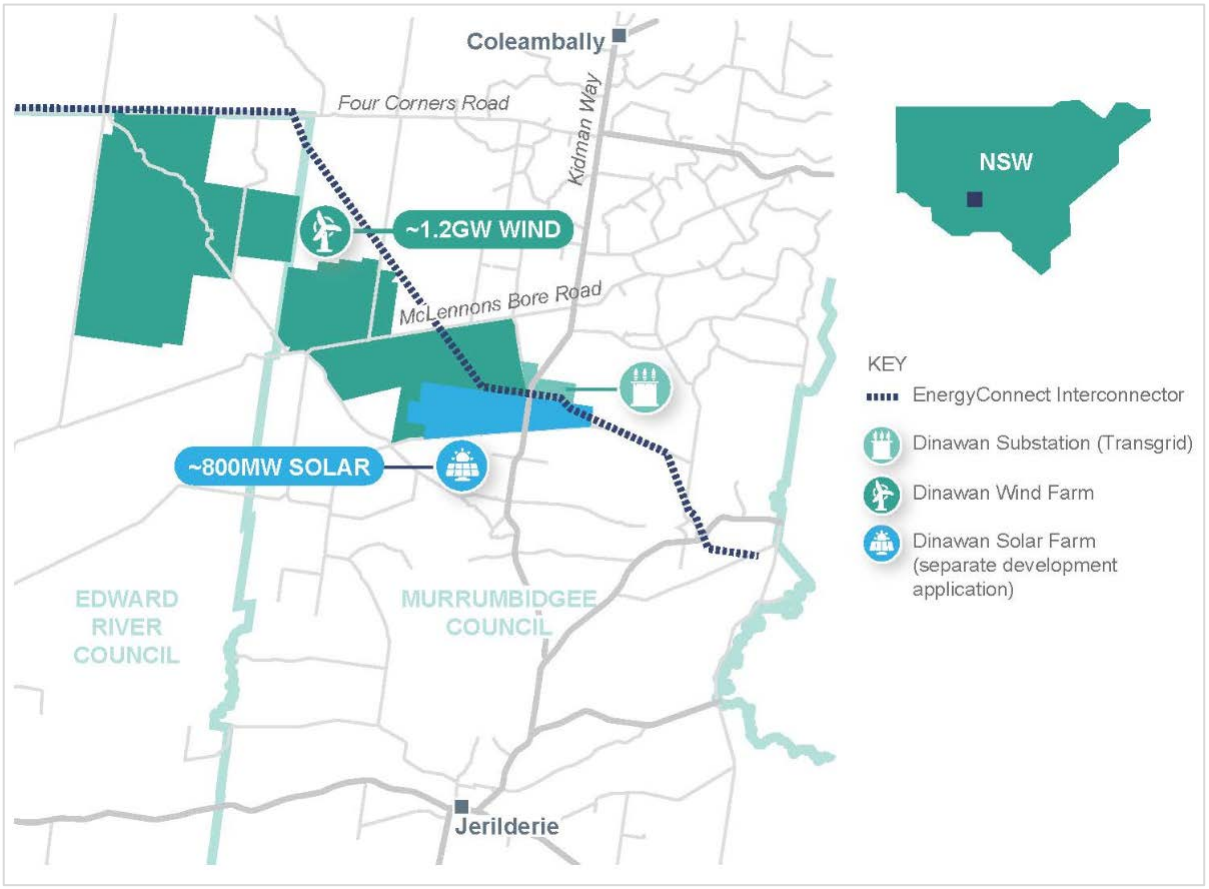


Figure 4 - Dinawan Energy Hub Site Layout

6.0 Transport Summary

The study is based on the turbine components and imported towers entering Australia via the Port of Newcastle. The study details the likely routes for these components, and the constraints that they may encounter on the proposed routes.
Route 1 - **Maximum loaded height of 5.0m** for blades to use North Connex tunnel
Route 1A – An option for the blades to detour the Wagga Wagga Rail bridge.
Route 2 - **Maximum loaded height of 6.1m** for towers
Route 3 - **Maximum loaded height of 5.3m** for all remaining loads via Pennant Hills Road.

ROUTE 1: Newcastle to Dinawan Energy Hub Windfarm
COMPONENTS: Blades (**Max loaded height 5.0m**)
DISTANCE: 864 kilometres
GPS LINK: https://maps.app.goo.gl/7mWV31sG8KwouGAw9
ROUTE: Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, M1, NorthConnex tunnel, M2, M7, M5, Hume Highway, Sturt Hwy, Newell Hwy, Kidman Way, Mclennons Bore Rd, Wilson Rd.

ROUTE 1A: Wagga Wagga Blade Detour Option
COMPONENTS: Blades
DISTANCE: 21.2 kilometres
GPS LINK: https://maps.app.goo.gl/CdtuHfj4V8AeYQFSA
ROUTE: Sturt Highway, Eunony Bridge Road, Byrnes Road, West Bomen Road, Merino Road, Olympic Hwy, Sturt Highway.

ROUTE 2: Newcastle to Dinawan Energy Hub Windfarm (High load route)
COMPONENTS: Towers (**Max loaded height 6.1m)**
DISTANCE: 973 kilometres
GPS LINK: https://maps.app.goo.gl/BtcLdmmbmzCUygta6
ROUTE: Selwyn street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, New England Highway, Golden Highway, Denman Road, Bengalla Road, Wybong Road, Golden Highway, Boothenba Road,Troy Bridge Road, Bunglegumbie Road, Mitchell Highway, Newell Highway, Compton Road, Showground Road, Newell Highway, Kidman Way, Mclennons Bore Rd, Wilson Rd.

ROUTE 3: Newcastle to Dinawan Energy Hub Windfarm

COMPONENTS: Nacelles, Generators, Drive Trains, Hubs and smaller components (**Max loaded height 5.3m**)

DISTANCE: 858 kilometres

GPS LINK: https://maps.app.goo.gl/EMqQtqZYyAPhHBq48

ROUTE: Quayside Close, Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, M1, Pennant Hills Road, M2, M7, Hume Motorway, Hume Highway, Sturt Highway, Newell Hwy, Kidman Way, Cadell Rd, Mclennons Bore Rd, Wilson Rd.

7.0 Route 1 Study: Newcastle to Dinawan Energy Hub

COMPONENTS: Blades (**Max loaded height 5.0m**)
DISTANCE: 864 kilometres
GPS LINK: https://maps.app.goo.gl/7mWV31sG8KwouGAw9
ROUTE: Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, M1, NorthConnex tunnel, M2, M7, M5, Hume Highway, Sturt Hwy, Newell Hwy, Kidman Way, Mclennons Bore Rd, Wilson Rd.

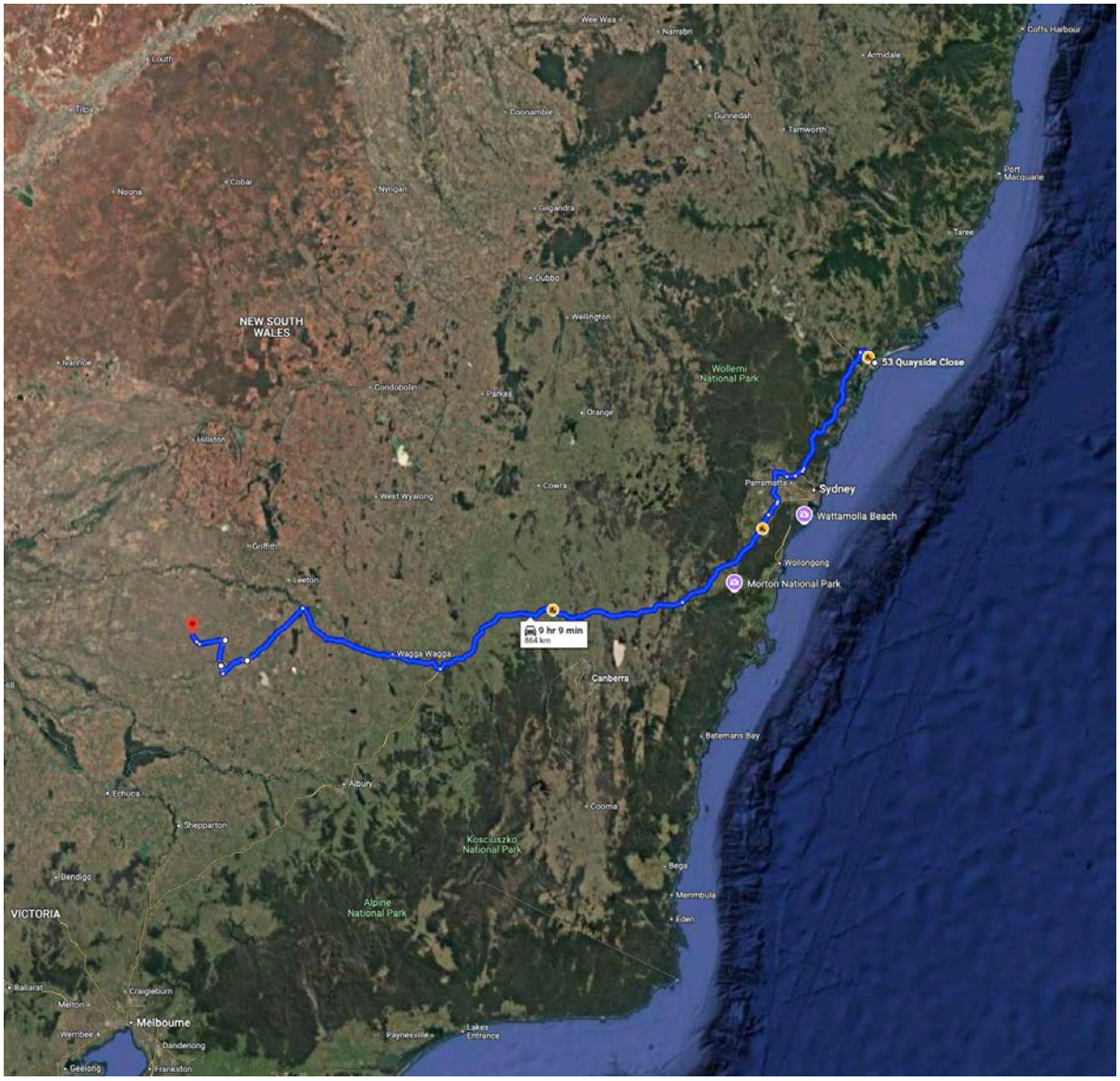


Figure 5 - Route 1

KEY	
MODIFICATIONS REQUIRED	
PINCH POINT	
EMERGENCY PARKING	

KM index	Location	Section of road	Current clearance	Procedure	Comments
0.0	Mayfield	Mayfield No.4 berth onto Selwyn Street https://goo.gl/maps/afLwPYKuNdm	Length: 80.0m Width: 8.0m	Right hand turn	Hardstand to be installed on exit of corner. Blade to oversail fence.
0.4	Mayfield	Selwyn Street rail crossing https://goo.gl/maps/864FhMSaF9P2	Width: 9.0m	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
1.3	Mayfield	Selwyn Street onto Industrial Drive via George Street https://goo.gl/maps/brPRAckLr572	Length: 80.0m Width: 8.0m	Right hand turn	Hardstand to be installed on inside of corner on entry.
4.9	Mayfield	Industrial Drive under traffic signals https://goo.gl/maps/5DpD3b7KnT72	Clearance: Height: 5.4m	Travel directly ahead	The blades will pass under the overhead traffic signal with sufficient clearance.
5.5	Mayfield West	Industrial Drive onto Pacific Hwy https://goo.gl/maps/Kn49dhWG2qG2	Length: 80.0m Width: 8.0m	Right hand turn	The blades will need to cross to the incorrect side of the intersection 200 metres prior, before crossing back over to the correct side 120 metres to the north of the intersection. Island to be made trafficable/replaced with painted lines.
14.2	Tarro	Gantry on New England Highway https://maps.app.goo.gl/LkhLdicHHeJE6gPo8	Clearance: Height: 6.2	Travel directly ahead	No problems with this section of road.
14.8	Tarro	Bend on New England Highway https://goo.gl/maps/hkKqsZMfdVJncRdu6	Length: 100.0m Width: 12.0m	Left hand bend	No problems with this section of road.
15.4	Tarro	New England Highway under Tarro interchange https://maps.app.goo.gl/JaXPAxHGozGs8GR17	Clearance: Height: 6.14	Travel directly ahead	No problems with this section of road.
17.4	Tarro	New England Highway onto John Renshaw Drive https://goo.gl/maps/SRDr5JigkBp	Length: 120.0m Width: 12.0m	Left hand merge	No problems with this section of road.
18.4	Beresfield	John Renshaw Drive onto the M1 https://goo.gl/maps/A34ihxCjM5wfRDdq6	Length: 100.0m Width: 8.0m	Left hand bend	Light pole to be relocated out of swept path. Blade to oversail sign or sign to be relocated.
113.0	Mt White	M1 Motorway under Mt White overpass https://goo.gl/maps/K3fPPe4fNx63xB3j7	Height clearances: Left Lane: 5.38m Centre Lane: 5.35m Right Lane: 5.37ms	Travel directly ahead	Loads that exceed 5.3 metres high are not to travel under this structure. Loads over 5.2 metres high are to travel under the bridge in the far-right lane, and at a speed of no more than 5 km's per hour. Spotter to guide load through this section of road.
146.0	Wahroonga	M1 Motorway onto M11 Motorway (Northconnex) https://goo.gl/maps/bskC8kD4CdW9xmwYA	Length: 110.0m Width: 8.0m	Merge to left and proceed towards the M11 tunnel	Approval required from Northconnex to travel through the tunnel. Maximum loaded height of 4.9 metres is allowable through the tunnel.

KM index	Location	Section of road	Current clearance	Procedure	Comments
154.0	West Pennant Hills	M11 Motorway (Northconnex) onto M2 Motorway https://goo.gl/maps/cCsJwSt1NsRi5cSs6	Length: 75.0m Width: 7.0m	Merge to right	No problems with this section of road.
163.0	Winston Hills	M2 Motorway onto M7 Motorway https://goo.gl/maps/PC96cBq2xqtW85vG7	Width: 10.0m	Travel directly ahead	No problems with this section of road.
238.0	Wilton	Hume Highway under Farm access overpass https://goo.gl/maps/2ZsVqYJ9j9gPTGqa9	Height clearances: Left Lane: 5.5 mtrs Centre Lane: 5.4 mtrs Right Lane: 5.3 mtrs	Travel directly ahead	Loads that exceed 5.3 metres high are not to travel under this structure. Loads over 5.2 metres high are to travel under the bridge in the left lane, and at a speed of no more than 5 km's per hour. Spotter to guide load through this section of road.
300.0	Sutton Forest	Hume Highway Parking https://goo.gl/maps/uT1ubtSuawS2	150.0 long x 10.0 wide	Merge to left	Large parking area. Sutton Forest.
353.0	Goulburn	Windellama/Bungonia Road Overpass GPS Link: Windellama Rd OP	5.44 Metres clearance	Travel directly ahead	No problems with this section of road
372.0	Breadalbane	Hume Highway Parking https://goo.gl/maps/UWjx3XndLejWG1UD9	140.0 long x 14.0 wide	Merge to left	Large parking area. Mystery Boulders.
480.0	Berremangra	Hume Highway Parking https://maps.app.goo.gl/mEr4qYsCmXciynSu8	180.0 long x 10.0 wide	Merge to left	Large parking area. Reddy Creek.
508.0	Jugiong	Hume Highway Parking https://goo.gl/maps/QzzfyAAnixQn3nwx8	140.0 long x 14.0 wide	Merge to left	Large parking area. Mungi Mungi Hill.
541.0	South Gundagai	Hume Highway Parking https://maps.app.goo.gl/hExjVM75QHiRZmSG7	150.0 long x 12.0 wide	Merge to left	Large parking area. Big Ben Creek.
573.70	Tarcutta	Hume Hwy onto Sturt Hwy GPS Link: https://goo.gl/maps/ruqNDSw5vanJDd4x5	200m long	Left Hand Merge	Merge left to left lane to exit Hume Hwy, follow road right onto overpass onto Sturt Hwy. No problems with this section of road.
574.0	Tarcutta	Sturt Hwy Parking https://maps.app.goo.gl/95cwTYQv6ztpBaEL9	210.0 long x 7.5 wide	Merge to left	Large parking area. Hume Highway exit stopping bay.
614.6	Wagga Wagga	Sturt Hwy GPS Link: https://goo.gl/maps/7VDWUyW8KnUhCEdd7	80m long	Second Exit on Round-about	Sign to be removed in the middle of the roundabout. Roundabout made trafficable.
617.3	Wagga Wagga	Sturt Hwy GPS Link: https://goo.gl/maps/VeavHs6e4AjLaggDA	80m long	Second Exit on Round-about	Sign to be removed in the middle of the roundabout. Handstand to be installed on roundabout and roundabout made trafficable.
618.4	Wagga Wagga	Sturt Hwy GPS Link: https://goo.gl/maps/dBrte5RBvHyvcGSr5	80m long	Second Exit on Round-about	The truck will need to cut across the centre of the roundabout. The existing pavement is ok to drive on without any extra work. 2x signs to be removed in the middle of the roundabout.

KM index	Location	Section of road	Current clearance	Procedure	Comments
618.75	Wagga Wagga	Sturt Hwy under rail overpass GPS Link: https://goo.gl/maps/JPkJBAyzJuMAiHUz8	Height clearances: L: 5.5m R:5.4m	Travel under rail overpass	Detailed vertical curve assessment required to determine whether blade loads can travel under the rail bridge and maintain clearance, as well as maintaining tip clearance to the ground on entry and the bridge on exit while travelling through the dip. **NOTE:** This is critical for this project to use the Port of Newcastle. If the blade cannot make it through the dip then the Wagga Wagga Bypass option that has been provided would need to be used.
621.5	Wagga Wagga	Sturt Hwy GPS Link: https://goo.gl/maps/fx388veUAjbykivPA	80m long	Second Exit on Round-about	Signs to be removed in the middle of the roundabout. Roundabout made trafficable.
679.0	Galore	Sturt Hwy Parking https://maps.app.goo.gl/3YJccdx7avFJ2io96	110.0 metres long 18.0 metres wide	Merge to left	Large parking area. Kywong.
711.0	Gillenbah	Sturt Hwy GPS Link: https://goo.gl/maps/C7qJ8ouDVdpcH5Rz7	80m long	Left Hand Turn	A lightpole will need to be relocated. Several signs to be relocated or made removable. Traffic island to be made trafficable or removed and replaced with chevrons.
712.0	Gillenbah	Sturt Hwy Parking GPS Link: https://maps.app.goo.gl/Foiproji1VwfiFox7	140.0 metres long 11.5 metres wide	Merge to right	Large parking area. Gillenbah at Newell Highway. Incorrect side of road.
712.0	Gillenbah	Sturt Highway onto Newell Highway GPS Link: https://maps.app.goo.gl/f19ZqoVET8dcRwku9	85.0 metres long 8.0 metres wide	Left Hand Turn	No problems with this section of road.
802.0	Bundure	Newell Hwy onto Kidman Way GPS Link: https://maps.app.goo.gl/XtpjkT5CaFwPe4u26	35.0 metres long 8.0 metres wide	Right hand turn	Hardstand to be installed on inside and outside of corner. Sign to be relocated or made removable.
833.0	Coleambally	Kidman Way onto McLennons Bore Road GPS Link: https://maps.app.goo.gl/2gzv3nwccZbg1i1NA	Length: 25 Metres Width: 5.5 Metres	Left hand turn	Signs to be relocated and hardstand installed on inside of corner. Dry weather road only.
NOTE: MCLENNONS BORE ROAD IS A DRY WEATHER ROAD ONLY. PEOPLE USING THE ROAD WHILST CLOSED DUE TO WET WEATHER WILL BE MADE RESPONSIBLE FOR ALL REPAIR COSTS. SITE ENTRIES, ACCESS ROADS AND UNSEALED ROADS TO BE UPGRADED, WIDENED & VEGETATION TRIMMED TO ACCOMMODATE THE HEIGHT, WEIGHT, VERTICAL CURVE AND SWEPT PATH REQUIREMENTS OF ALL PROPOSED LOADS. UNSEALED ROADS TO BE MAINTAINED FOR THE DURATION OF DELIVERIES AND MAY BECOME UN TRAFFICABLE DURING PERIODS OF WET WEATHER					
838.0	Bundure	McLennons Bore Road at Cadell Road GPS Link: https://maps.app.goo.gl/dthzSXNVAnGQaQYMA	Width: 6.0 Metres	Travel directly ahead	Vertical curve to be suitable for all proposed loads
854.0	Argoon	Bend on McLennons Bore Road GPS Link: https://maps.app.goo.gl/6EkHFDPu9HDFZ4dX7	Length: 120 Metres Width: 6.0 Metres	Left hand bend	No problem with this section of road.
855.0	Argoon	Mclennons Bore Rd onto Wilsons Rd GPS Link: https://goo.gl/maps/zSfwKKyXzHs9m9nb7	40 metres	Right hand turn	Hardstand to be installed on inside and outside of corner. Overhead conductor clearance to be confirmed.

KM index	Location	Section of road	Current clearance	Procedure	Comments
856.0	Argoon	Bend on Wilsons Rd GPS Link: https://maps.app.goo.gl/Vq7BcMS9mx2bMZNP8	100 metres	Right hand bend	No problems with this section of road.
863.9	Argoon	Wilsons Rd Stock Grid GPS Link: https://maps.app.goo.gl/Mo6o2EoLw8Q2kreX7	5.8 M Wide	Travel straight ahead	All stock grids to be upgraded to accommodate all proposed loads.
864.0	Argoon	End Route			All site roads to be constructed to accommodate the vertical curve, swept path, weight and height of all proposed loads.

0.0 Km's: Mayfield No.4 berth onto Selwyn Street

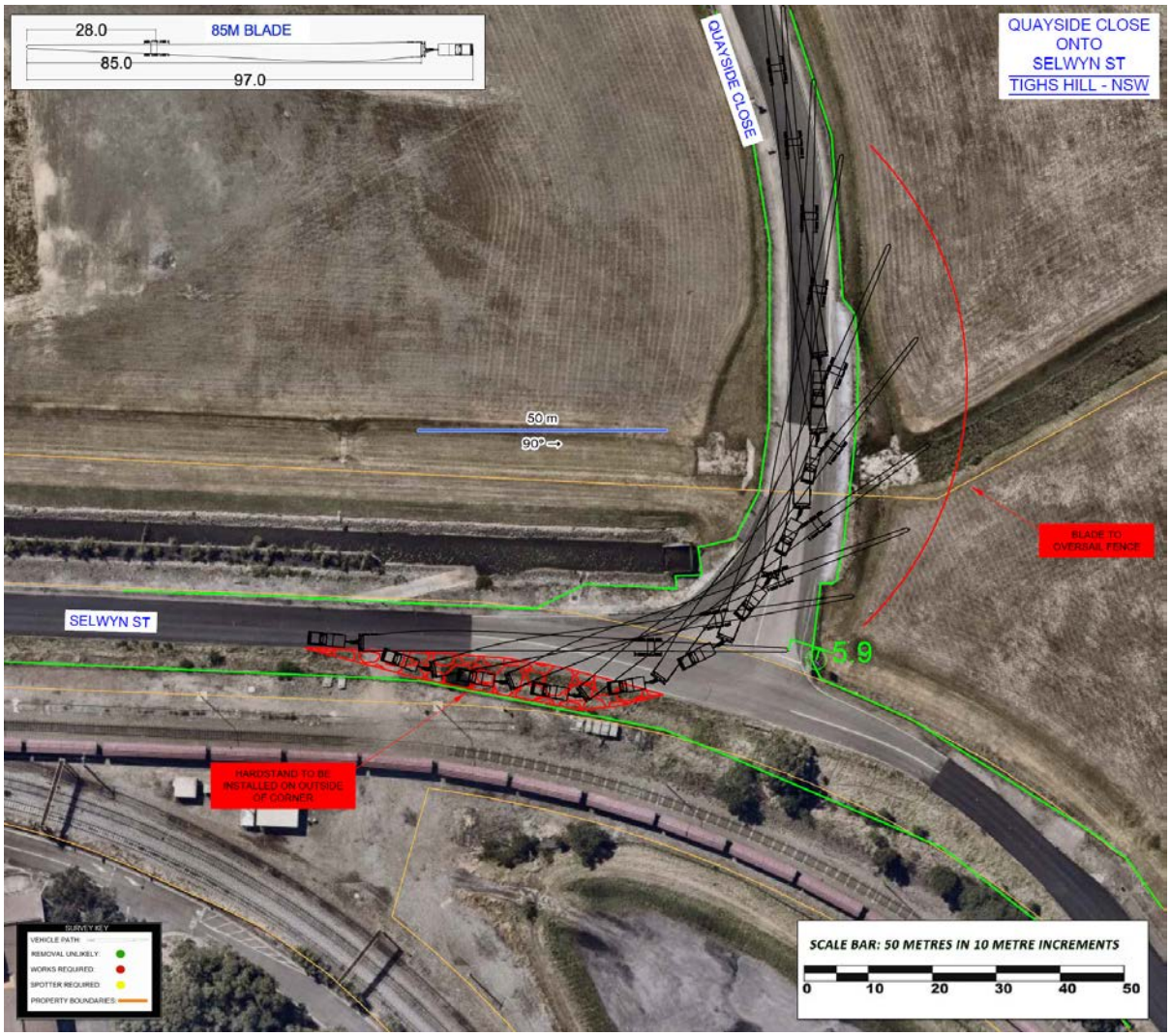


Figure 6 - Mayfield No.4 berth onto Selwyn Street

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/afLwPYKuNdm

PROCEDURE: Right hand turn. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Hardstand to be installed on exit of corner. Blade to oversail fence.

1.3 Km's: Selwyn Street onto Industrial Drive via George Street

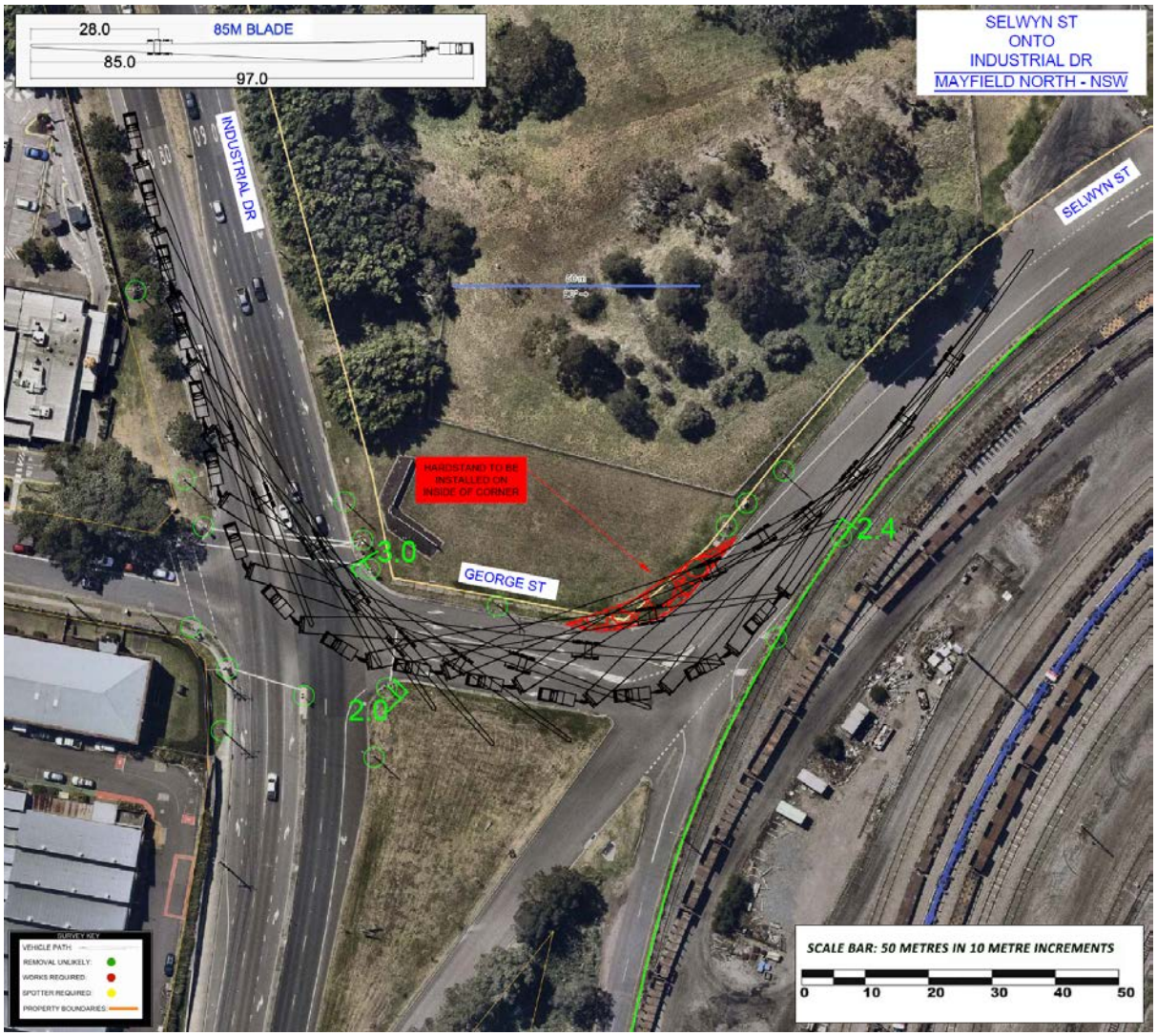


Figure 7 - Selwyn Street onto Industrial Drive via George Street

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/brPRAckLr572
PROCEDURE: Right hand turn. Police to control traffic, pilots to warn all traffic.
ROAD MODIFICATIONS: Hardstand to be installed on inside of corner on entry.

5.5 Km's: Industrial Drive onto Pacific Highway

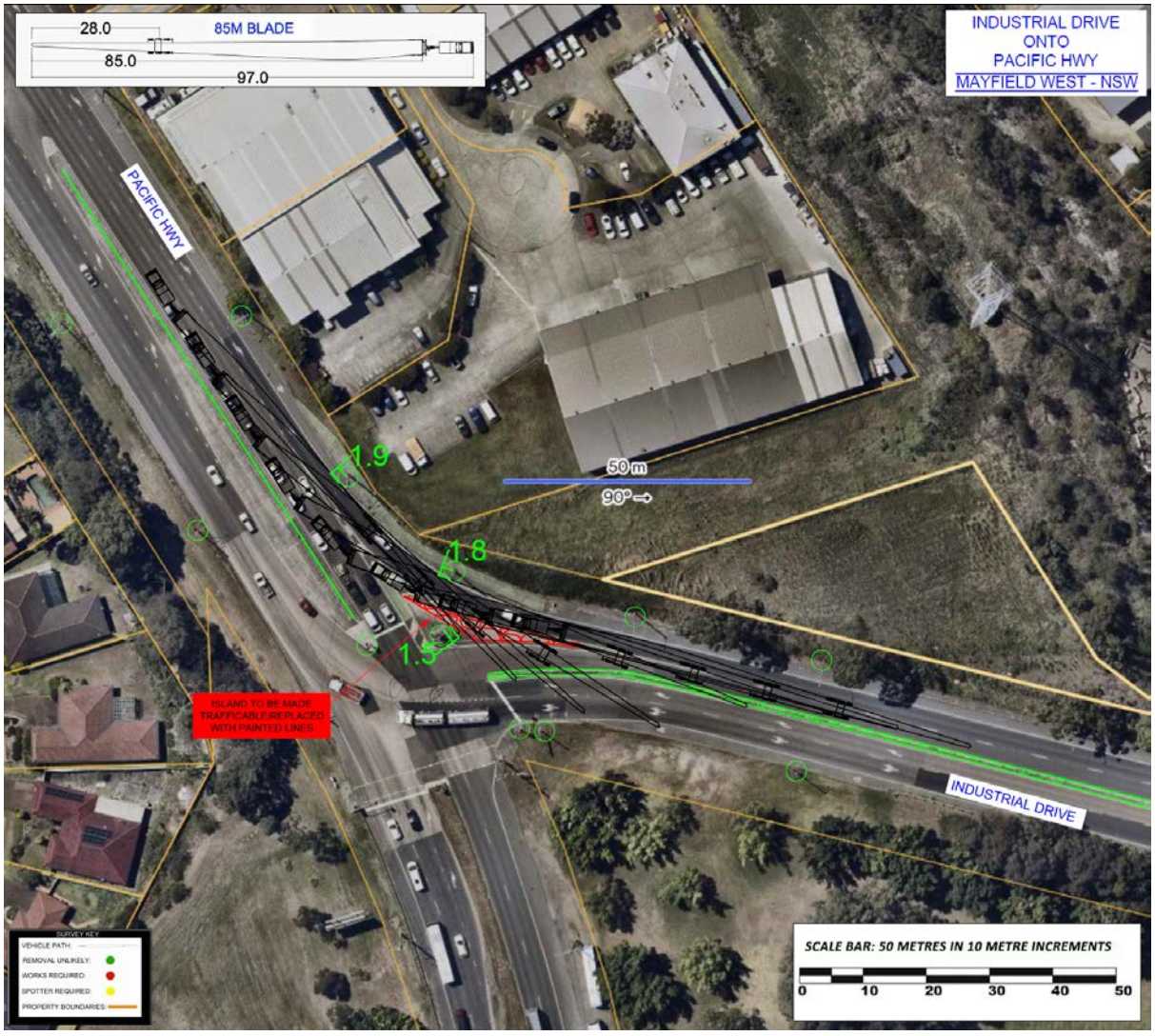


Figure 8 - Industrial Drive onto Pacific Hwy

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/Kn49dhWG2qG2

PROCEDURE: Right hand turn. The blades will need to cross to the incorrect side of the intersection 200 metres prior, before crossing back over to the correct side 120 metres to the north of the intersection. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Island to be made trafficable/replaced with painted lines.

14.8 Km's: Bend on New England Highway



Figure 9 - Bend on New England Highway

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/hkKgsZMfdVJncRdu6
PROCEDURE: Left hand bend.
ROAD MODIFICATIONS: No problems with this section of road.

18.4 Km's: John Renshaw Drive onto the M1

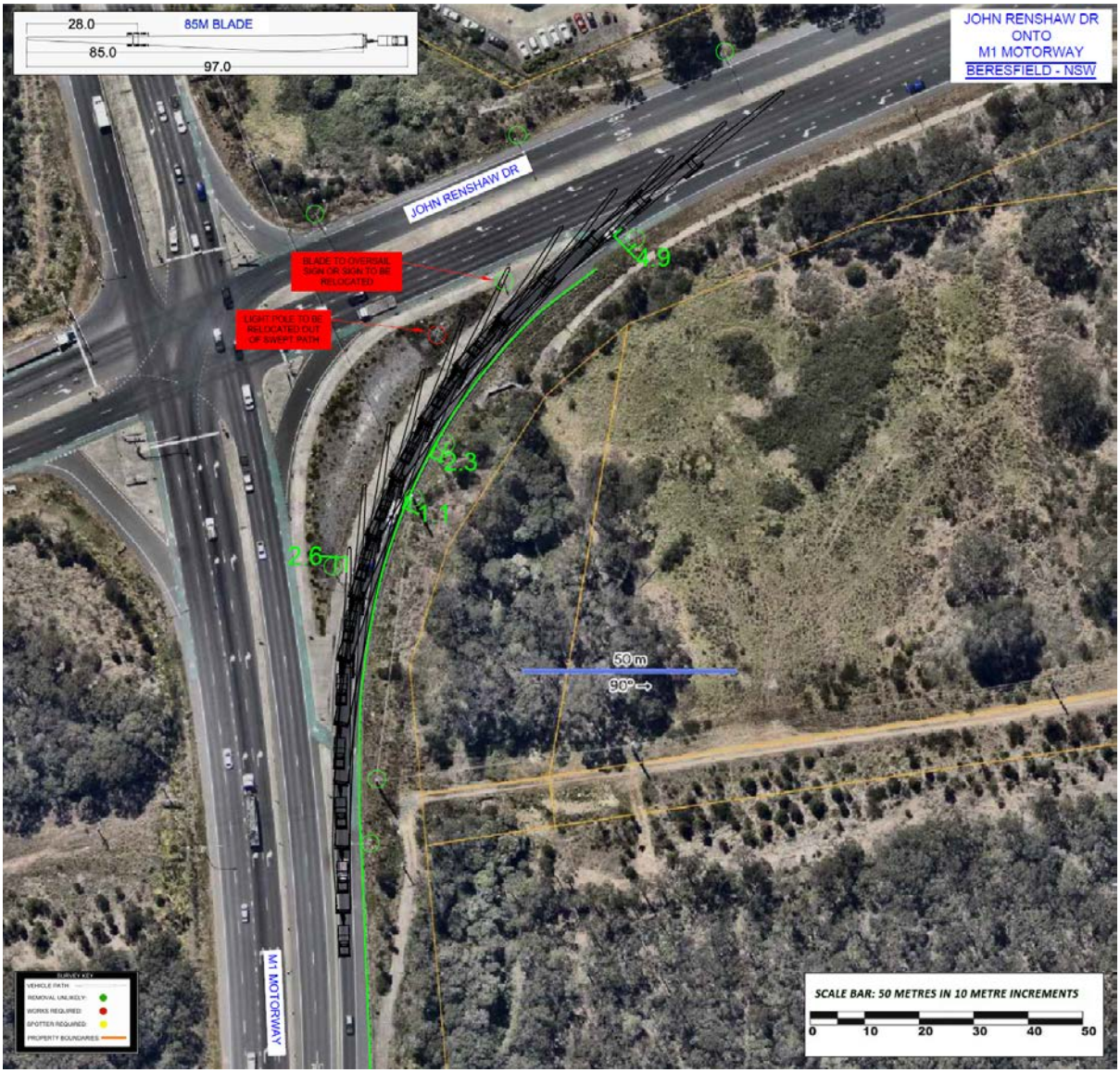


Figure 10 - John Renshaw Drive onto the M1

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/A34ihxCjM5wfRDdq6

PROCEDURE: Left hand bend via slip lane. Police to control traffic, pilots to warn all traffic.

ROAD MODIFICATIONS: Light pole to be relocated out of swept path. Blade to oversail sign or sign to be relocated.

146.1 – 155.9 Km's: M1 Motorway onto M2 Motorway Through the North Connex Tunnel

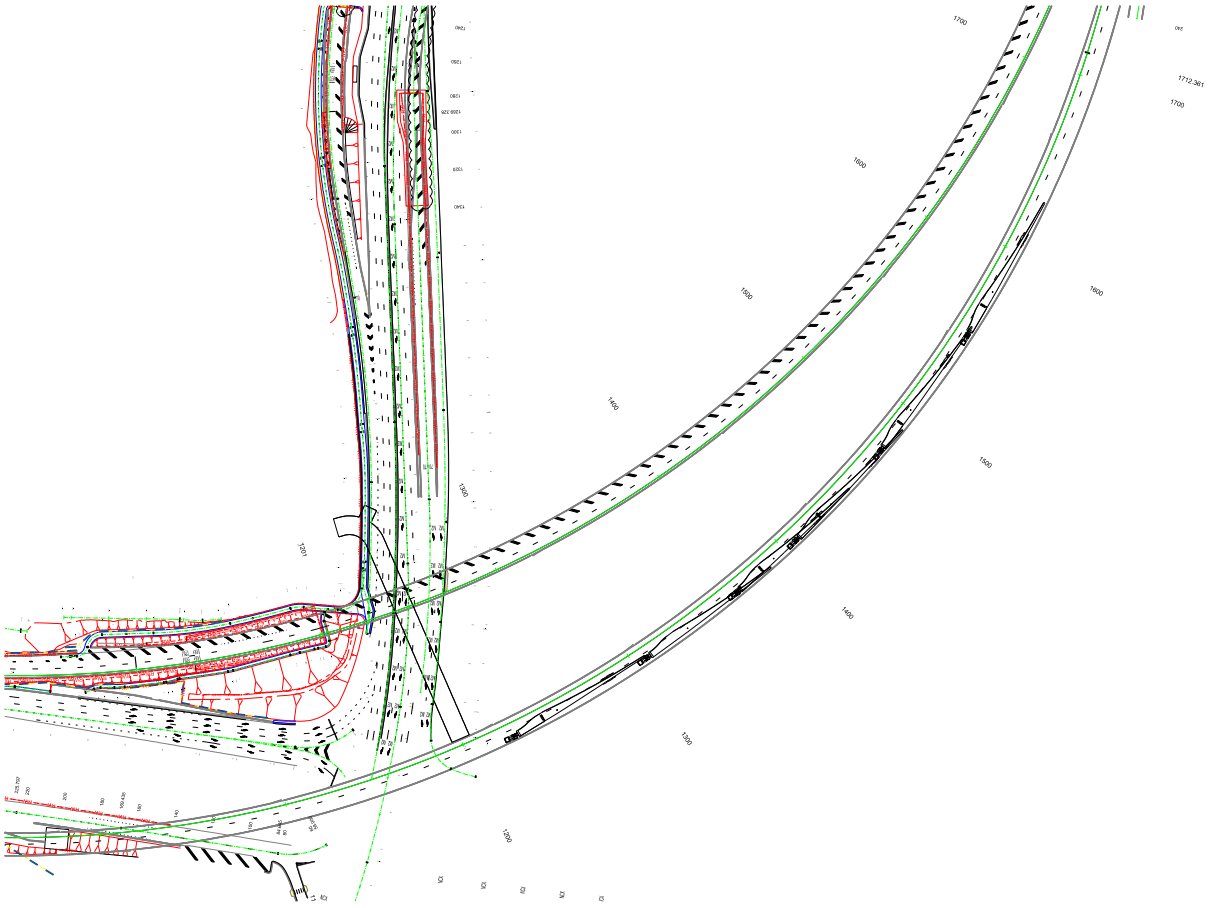


Figure 11 - M2 Motorway Through the North Connex Tunnel

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/BZaXJ5V6CmT2Pt8v8
PROCEDURE: Travel through the North Connex tunnel.
COMMENTS: The tunnel has very large radius corners that will be no issues for the blades. The tightest section is shown above.
Spotter to guide the load throughout the intersection. Police to control traffic, pilots to warn all traffic. Maximum height of 5.0 metres.
ROAD MODIFICATIONS: No works are required.

614.6 Km's: 1st Roundabout on the Sturt Highway at Wagga Wagga

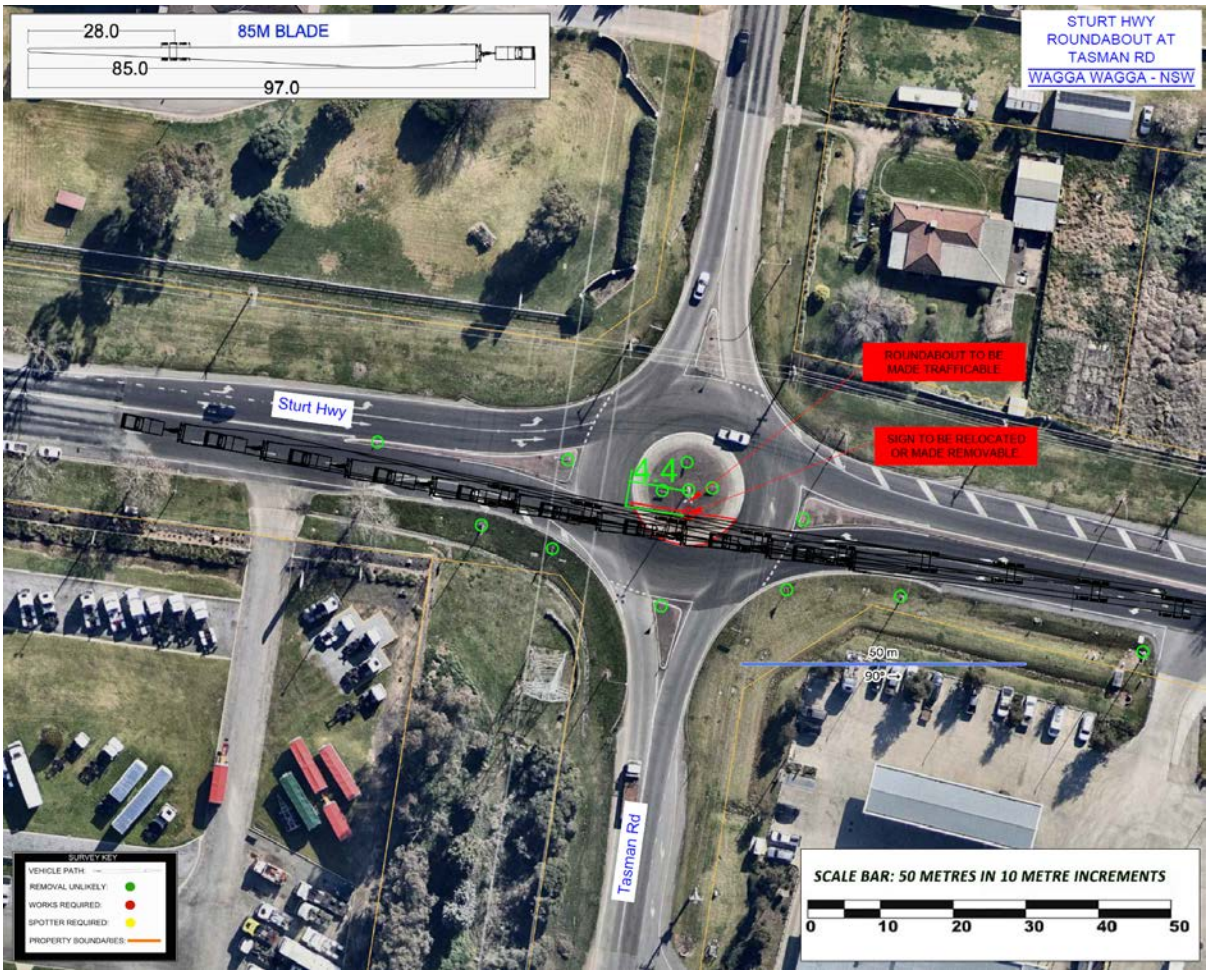


Figure 12 - Sturt Hwy Roundabout at Tasman Rd

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/7VDWUyW8KnUhCEdd7
PROCEDURE: Continue straight ahead. The truck will need to cut across the centre of the roundabout. Police to control traffic, pilots to warn all traffic.
ROAD MODIFICATIONS: Sign to be removed in the middle of the roundabout. Roundabout made trafficable.

617.3 Km's: 2nd Roundabout on the Sturt Highway at Wagga Wagga

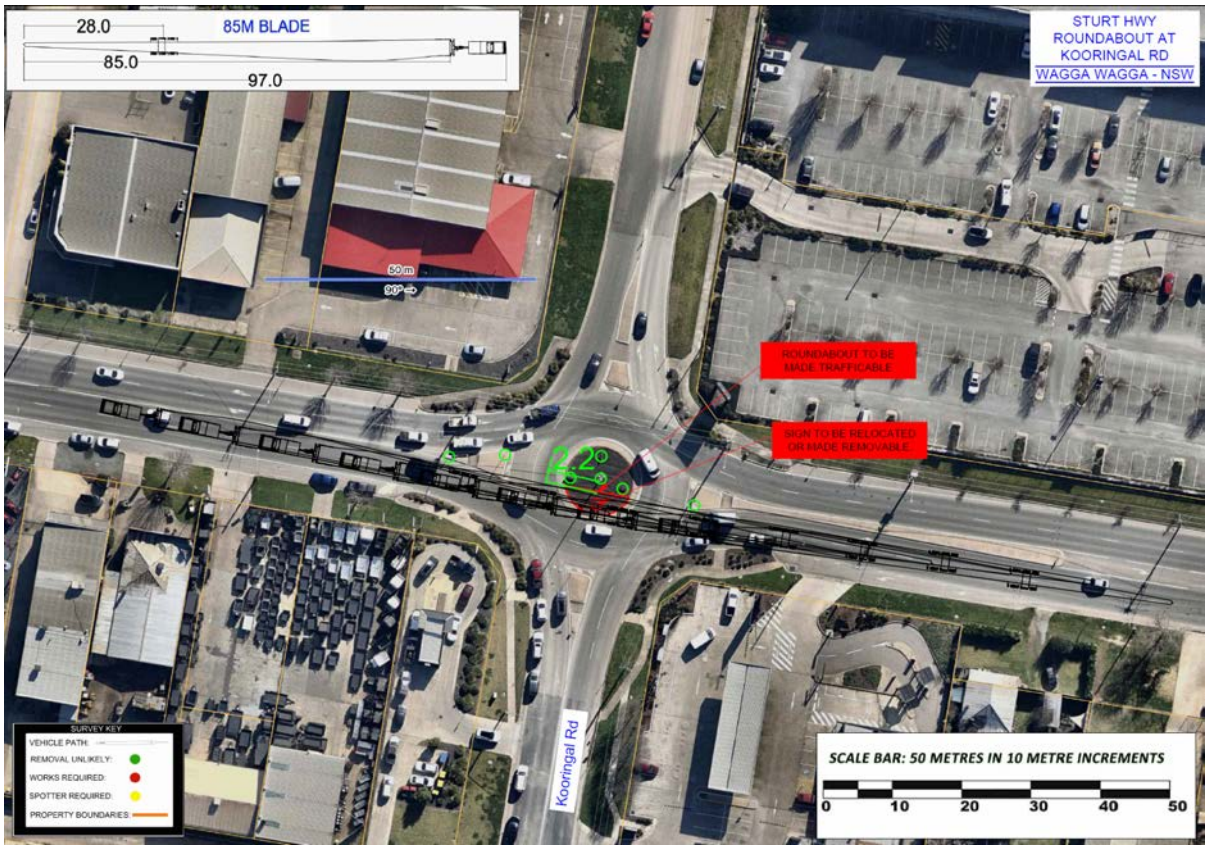


Figure 13 - Sturt Hwy Roundabout at Kooringal Rd

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/VeavHs6e4AjLaggDA
PROCEDURE: Continue straight ahead. The truck will need to cut across the centre of the roundabout. Police to control traffic, pilots to warn all traffic.
ROAD MODIFICATIONS: Sign to be removed in the middle of the roundabout. Handstand to be installed on roundabout and roundabout made trafficable.

618.4 Km's: 3rd Roundabout on the Sturt Highway at Wagga Wagga



Figure 14 - Sturt Hwy Roundabout at Norton St

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/dBrte59BvHyvcGSr5
PROCEDURE: Continue straight ahead. The truck will need to cut across the centre of the roundabout. Police to control traffic, pilots to warn all traffic.
ROAD MODIFICATIONS: Sign to be removed in the middle of the roundabout. Roundabout made trafficable.

618.75 Km's: Sturt Highway under Edward Street Rail Bridge

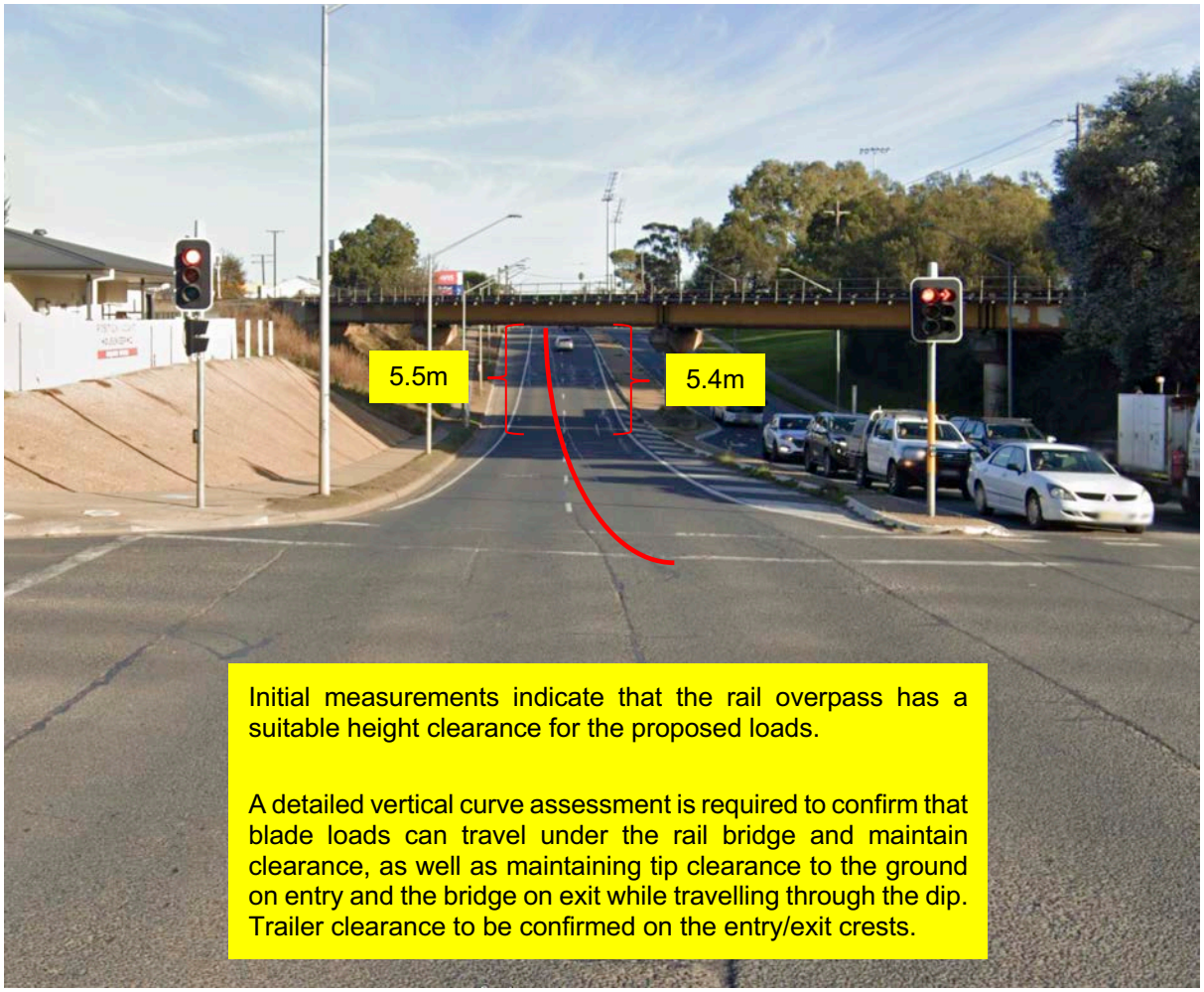


Figure 15 - Sturt Highway under Edward St Rail Bridge

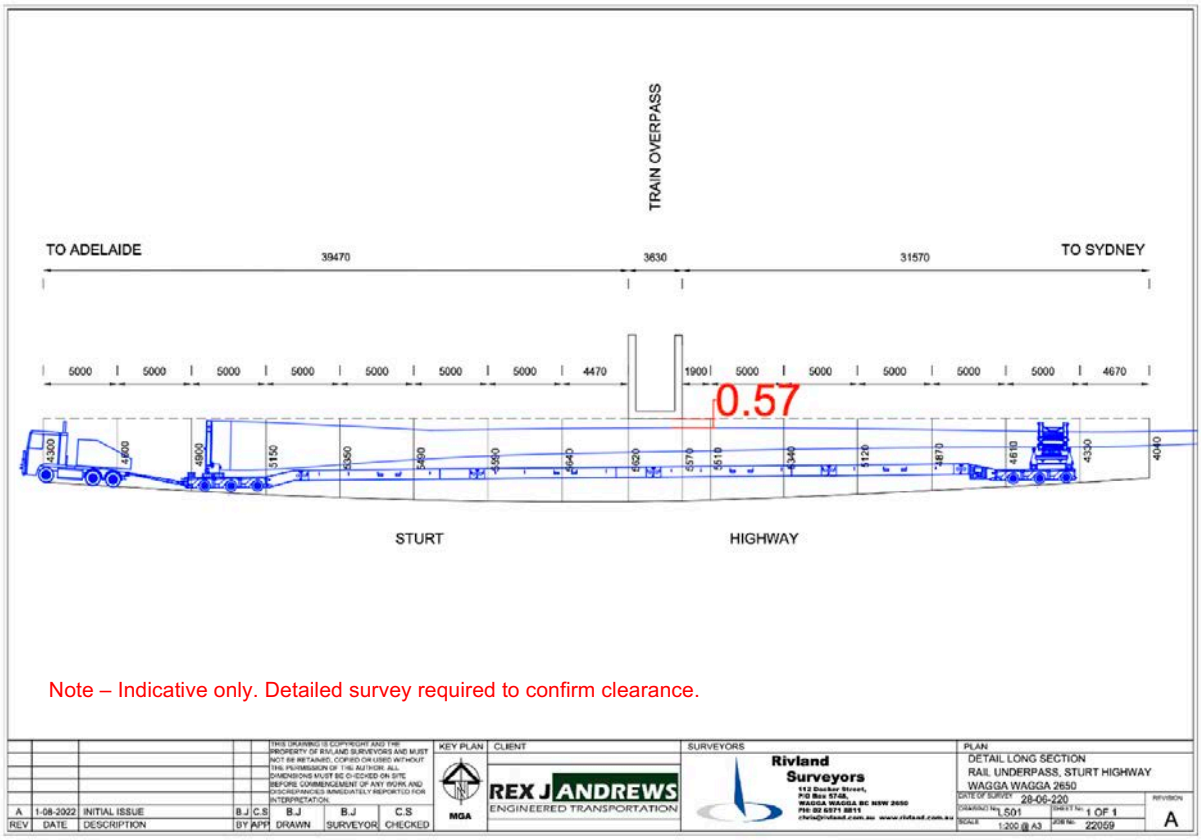


Figure 16 - Sturt Highway under Edward St Rail Bridge

621.5 Km's: 4th Roundabout on the Sturt Highway at Wagga Wagga

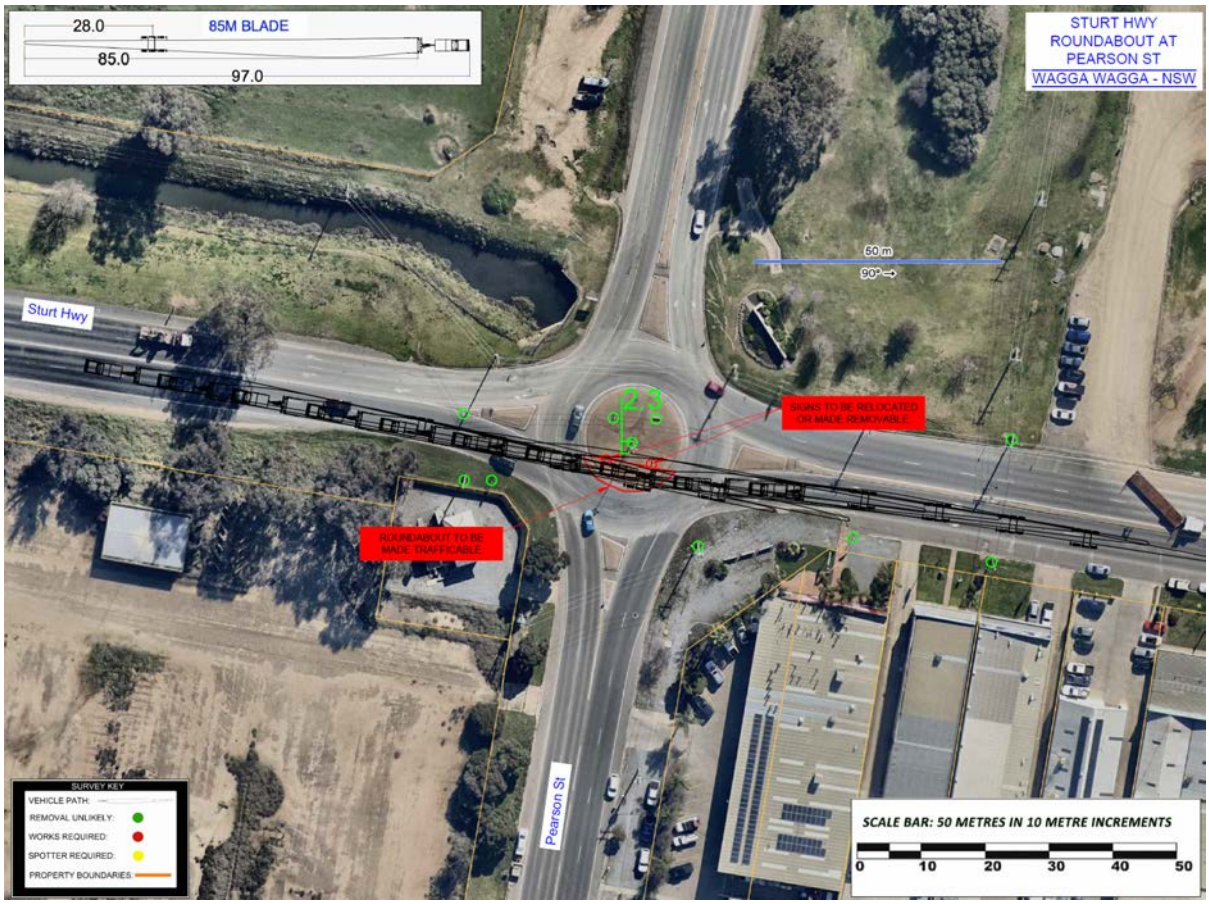


Figure 17 - Sturt Hwy Roundabout at Pearson St

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/fx388veUAjbykiyPA
PROCEDURE: Continue straight ahead. The truck will need to cut across the centre of the roundabout. Police to control traffic, pilots to warn all traffic.
ROAD MODIFICATIONS: Signs to be removed in the middle of the roundabout. Roundabout made trafficable.

711.0Km's: Left Hand Bend on the Sturt Highway at Gillenbah

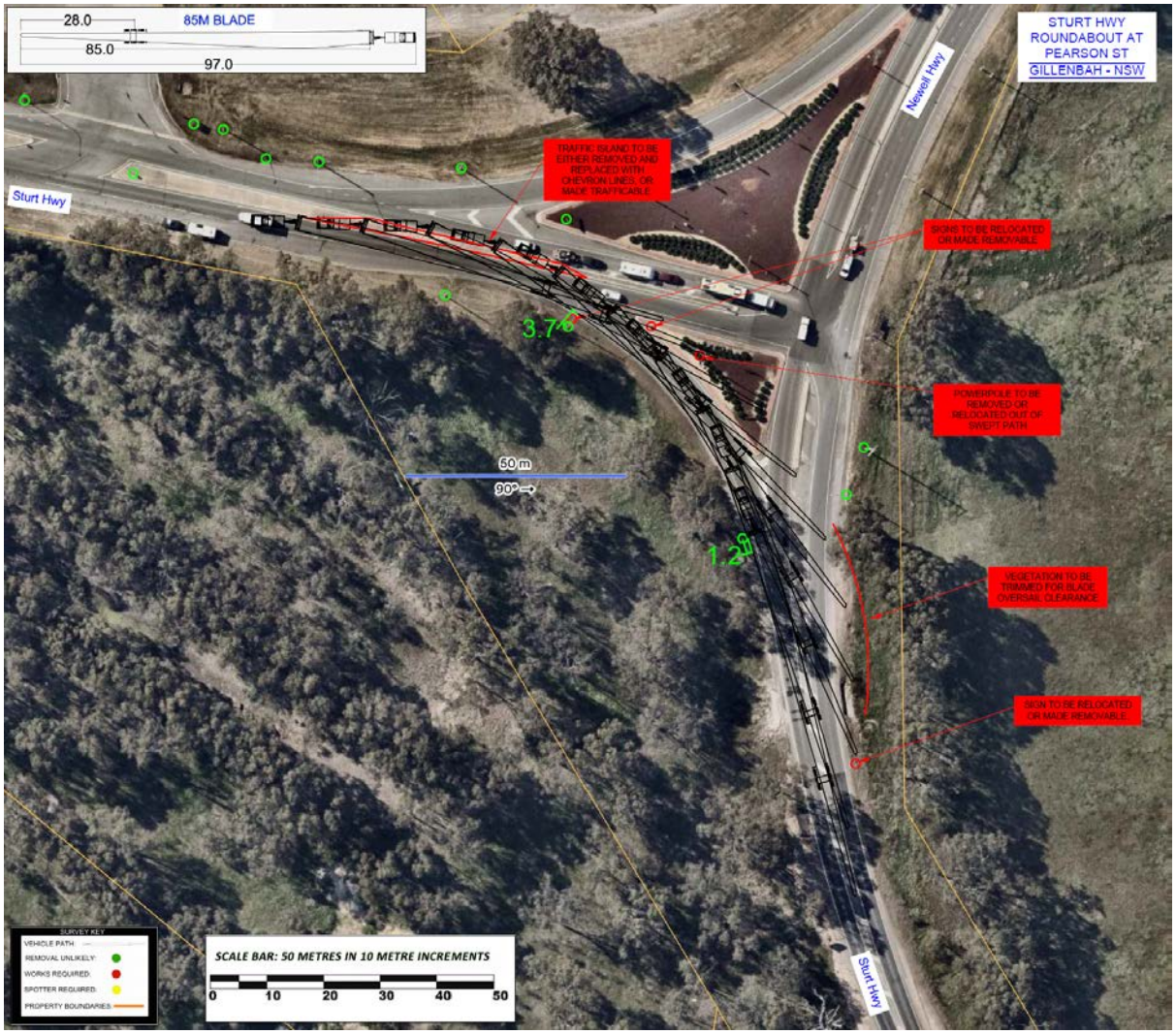


Figure 18 - Left hand bend on the Sturt Highway at Gillenbah

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/C7gJ8ouDVdpcH5Rz7
PROCEDURE: Left hand Turn. The truck will need to cross onto the wrong side of the road for about 100m by cutting across the medium strip. Police to control traffic, pilots to warn all traffic.
ROAD MODIFICATIONS: A Light pole needs to be relocated and several signs to be relocated or made removable. Traffic island to be removed and replaced with paint to make trafficable.

712.0 Km's: Sturt Highway onto Newell Highway

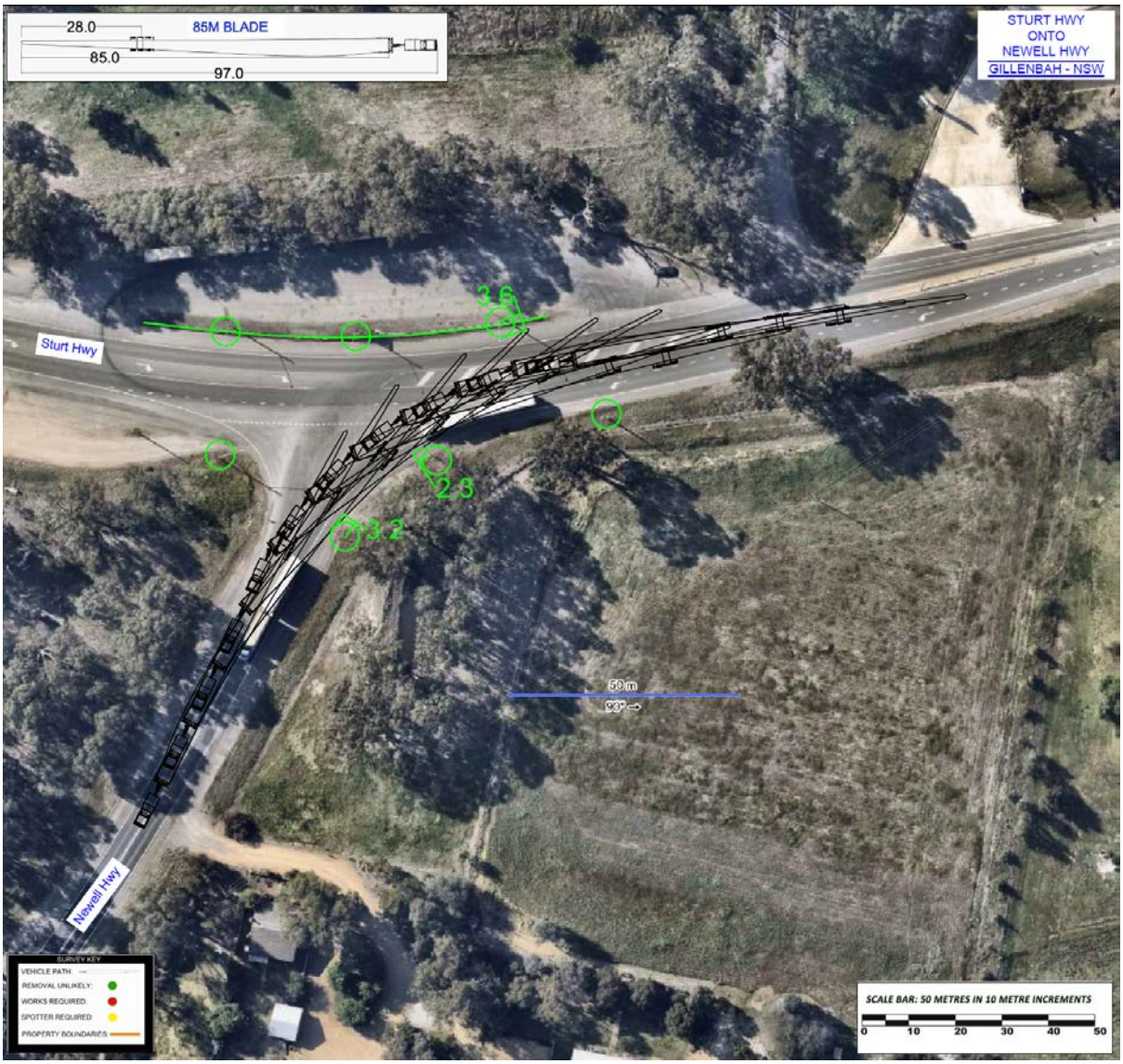


Figure 19 - Sturt Highway onto Newell Highway

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/f19ZqoVET8dcRwku9
PROCEDURE: Left hand turn. Police to control traffic, pilots to warn all traffic.
ROAD MODIFICATIONS: nil.

802.0 Km's: Newell Highway onto Kidman Way

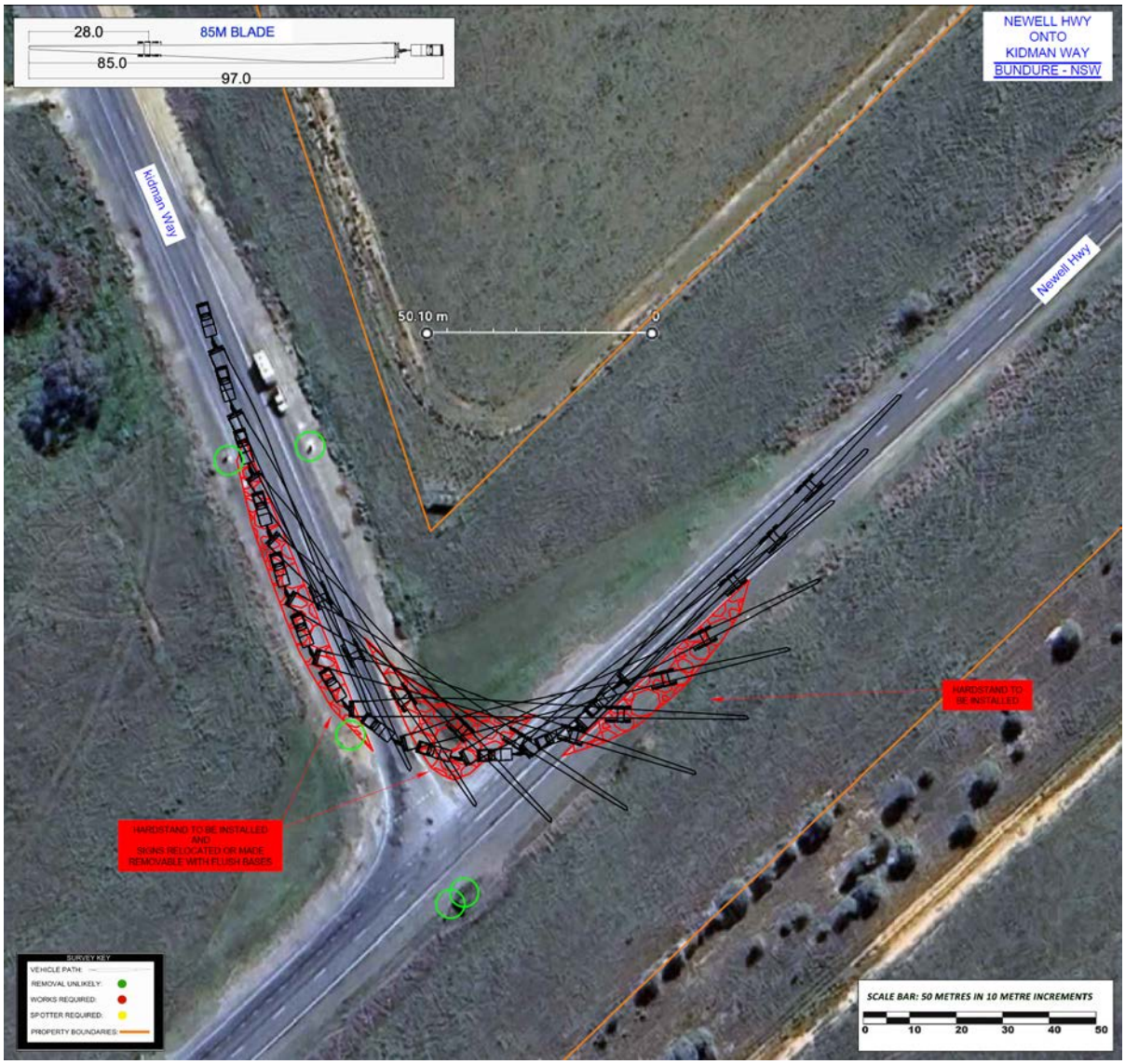


Figure 20 - Newell Hwy onto Kidman Way

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/XtpjkT5CaFwPe4u26
PROCEDURE: Right hand turn. Police to control traffic, pilots to warn all traffic.
ROAD MODIFICATIONS: Hardstand to be installed on inside and outside of corner. Sign to be relocated or made removable.

833.0 Km's: Kidman Way onto Mclennons Bore Road

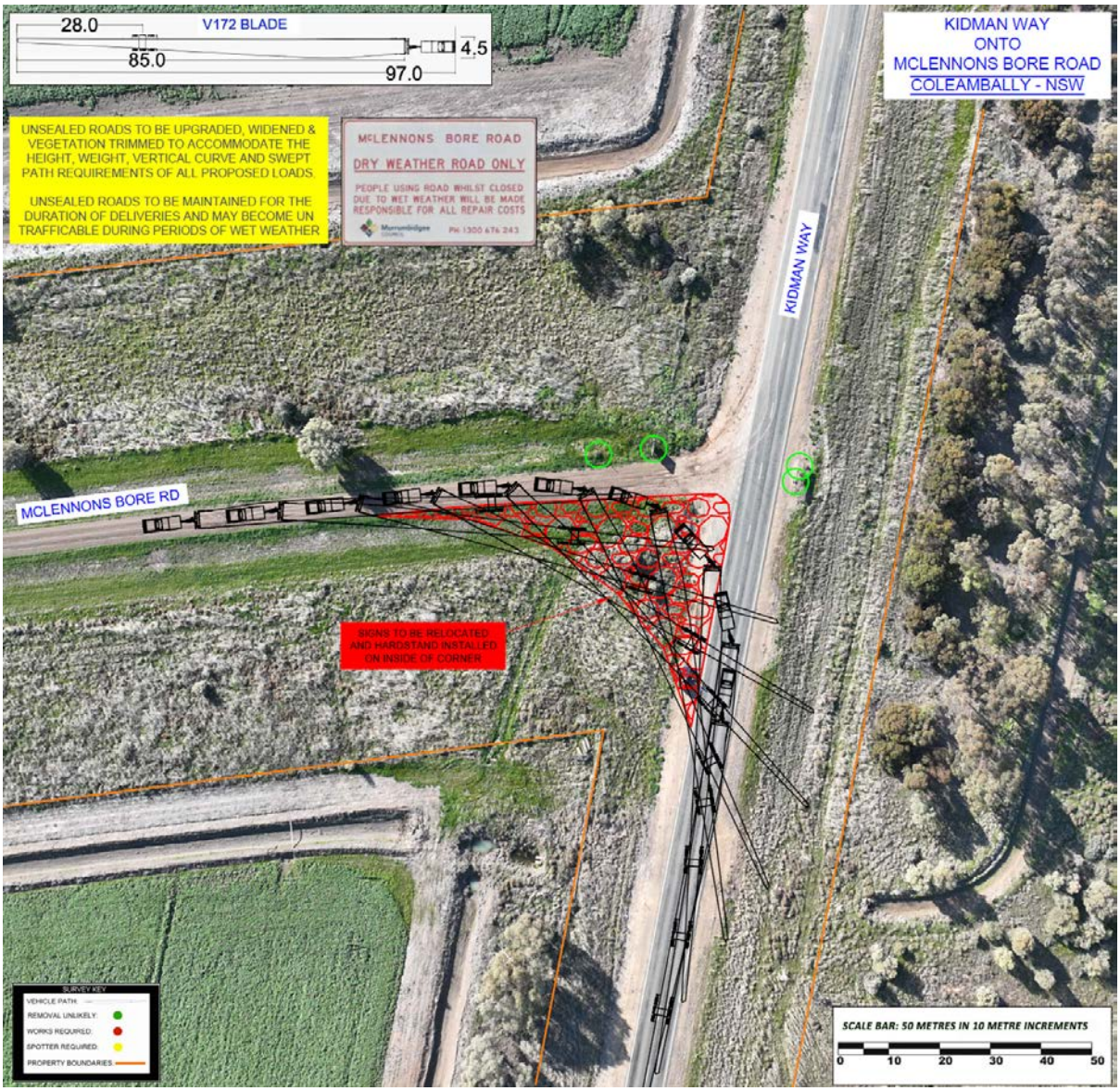


Figure 21 - Kidman Way onto McLennons Bore Road - Blades

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/ewHD15uXPpuS2whg9
PROCEDURE: Left hand turn. Police to control traffic, pilots to warn all traffic.
ROAD MODIFICATIONS: Hardstand to be installed on outside of corner. Vegetation to be trimmed for blade oversail clearance.

855.0 Km's: Mclennons Bore Road onto Wilsons Road

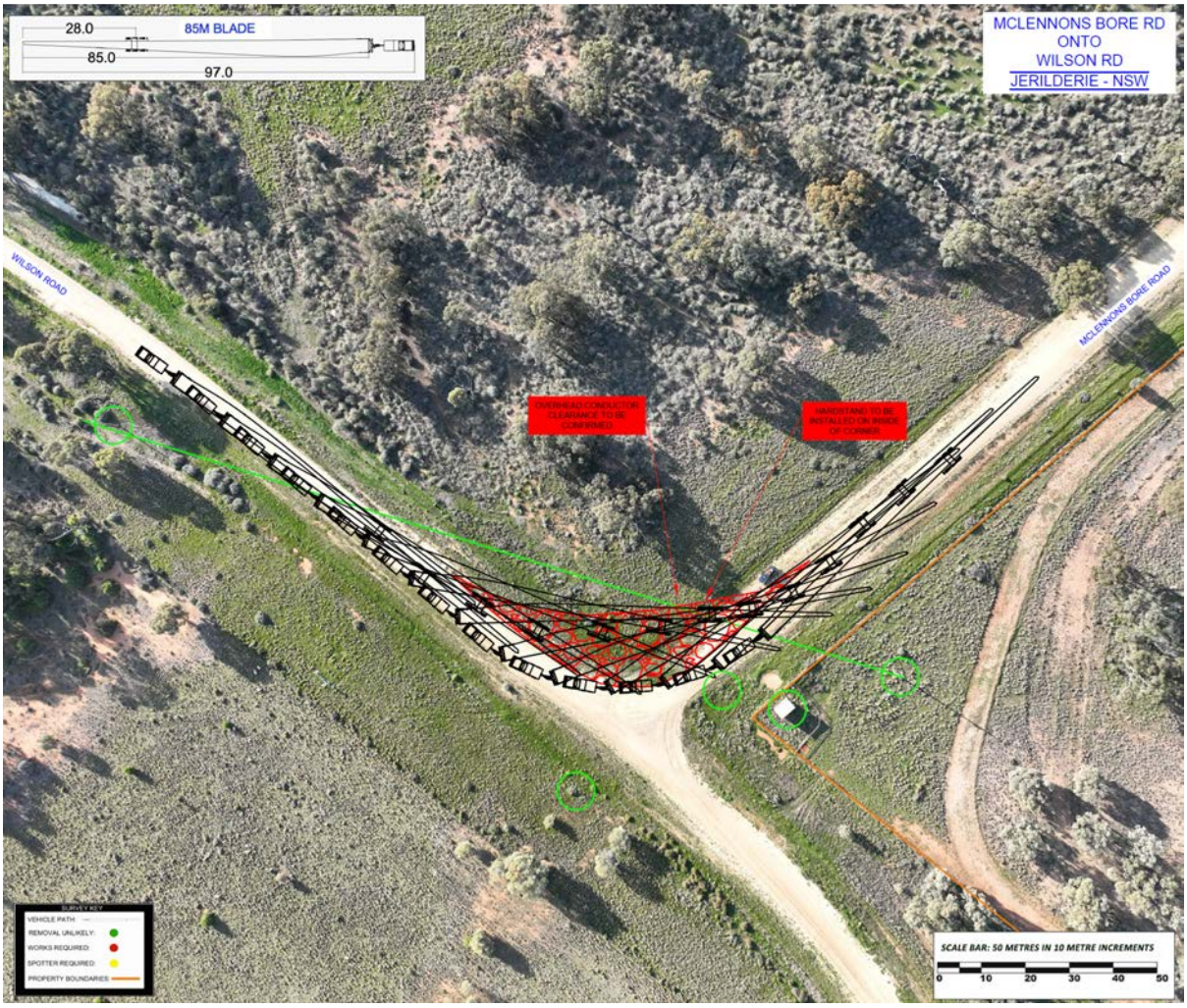


Figure 22 - Mclennons Bore Rd onto Wilsons Rd

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/zSfwKKyXzHs9m9nb7
PROCEDURE: Right hand turn. Police to control traffic, pilots to warn all traffic.
ROAD MODIFICATIONS: Hardstand to be installed on inside and outside of corner. Overhead conductor clearance to be confirmed.

856.0 Km's: Bend on Wilsons Road



Figure 23 - Bend on Wilsons Rd

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/Vg7BcMS9mx2bMZNP8
PROCEDURE: Right hand bend. Police to control traffic, pilots to warn all traffic.
ROAD MODIFICATIONS: No problems with this section of road.

863.9 Km's: Wilsons Road Stock Grid



Figure 24 - Wilsons Rd Stock Grid

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/Mo6o2EoLw8Q2treX7
PROCEDURE: Travel straight ahead
ROAD MODIFICATIONS: All stock grids to be upgraded to accommodate all proposed loads.

All site roads to be constructed to accommodate the vertical curve, swept path, weight and height of all proposed loads.

8.0 Route 1: Rail crossing conflicts

01 Selwyn St, Mayfield North
GPS: https://goo.gl/maps/AmohE54hKSz
Type: Level crossing
Asset Owner: Private, but managed by ARTC
Line: Port Waratah – BHP Lines

Maximum width clearance: 11.5 Metres

Conflict: Non



9.0 Route 1: Parking areas

KEY	
MODIFICATIONS REQUIRED	
EMERGENCY PARKING	

KM index	Location	Section of road	Rest area dimensions	Procedure	Comments
120.0	Mooney Mooney	Hawkesbury South rest area on the M1 motorway. https://maps.app.goo.gl/hvhanShRnZ3ArbjS9	Length: 125.0m Width: 6.7m	Merge to left	Emergency use only
236.0	Wilton	Hume Highway Parking area https://maps.app.goo.gl/2Hoq6eA9598NGAWA6	Length: 210.0m Width: 9.0m	Merge to left	Can be used for overnight parking or fatigue breaks.
300.0	Sutton Forest	Hume Highway Parking area https://goo.gl/maps/uT1ubtSuawS2	Length: 175.0m Width: 12.5m	Merge to left	Large parking area. Sutton Forest.
372.0	Breadalbane	Mystery Boulders rest area on the Hume Highway https://goo.gl/maps/UWjx3XndLejWG1UD9	Length: 140.0m Width: 14.0m	Merge to left	Large parking area. Mystery Boulders.
480.0	Berremangra	Reddy Creek rest area on the Hume Highway https://maps.app.goo.gl/mEr4qYsCmXcivnSu8	Length: 180.0m Width: 10.0m	Merge to left	Large parking area. Reddy Creek.
508.0	Jugiong	Mungi Mungi Hill rest area on the Hume Highway https://goo.gl/maps/QzzfyAAnixQn3nwx8	Length: 140.0m Width: 14.0m	Merge to left	Large parking area. Mungi Mungi Hill.
541.0	South Gundagai	Big Ben rest area on the Hume Highway https://maps.app.goo.gl/hExiVM75QHiRZmSG7	Length: 150.0m Width: 12.0m	Merge to left	Large parking area. Big Ben Creek.
574.0	Tarcutta	Sturt Hwy Parking area https://maps.app.goo.gl/95cwTYQv6ztpBaEL9	Length: 210.0m Width: 7.5m	Merge to left	Large parking area. Hume Highway exit stopping bay.
679.0	Galore	Kywong rest area on the Sturt Hwy https://maps.app.goo.gl/3YJccdx7avFJ2io96	Length: 110.0m Width: 18.0m	Merge to left	Large parking area.

120.0 Km's: Hawkesbury rest area southbound at Mooney Mooney



Figure 25 – Hawkesbury River Rest Area

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/hvhanShRnZ3ArbjS9
PROCEDURE: Merge to left
COMMENTS: To be used in emergencies only. Police and pilots to control all traffic.
ROAD MODIFICATIONS: Nil.

236.0 Km's: Hume Highway rest area at Wilton



Figure 26 – Wilton rest area

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/2Hog6eA9598NGAWA6

PROCEDURE: Merge to left

COMMENTS: Can be used for overnight parking or fatigue breaks. Police and pilots to control all traffic.

ROAD MODIFICATIONS: Nil.

300.0 Km's: Hume Highway rest area at Sutton Forest.

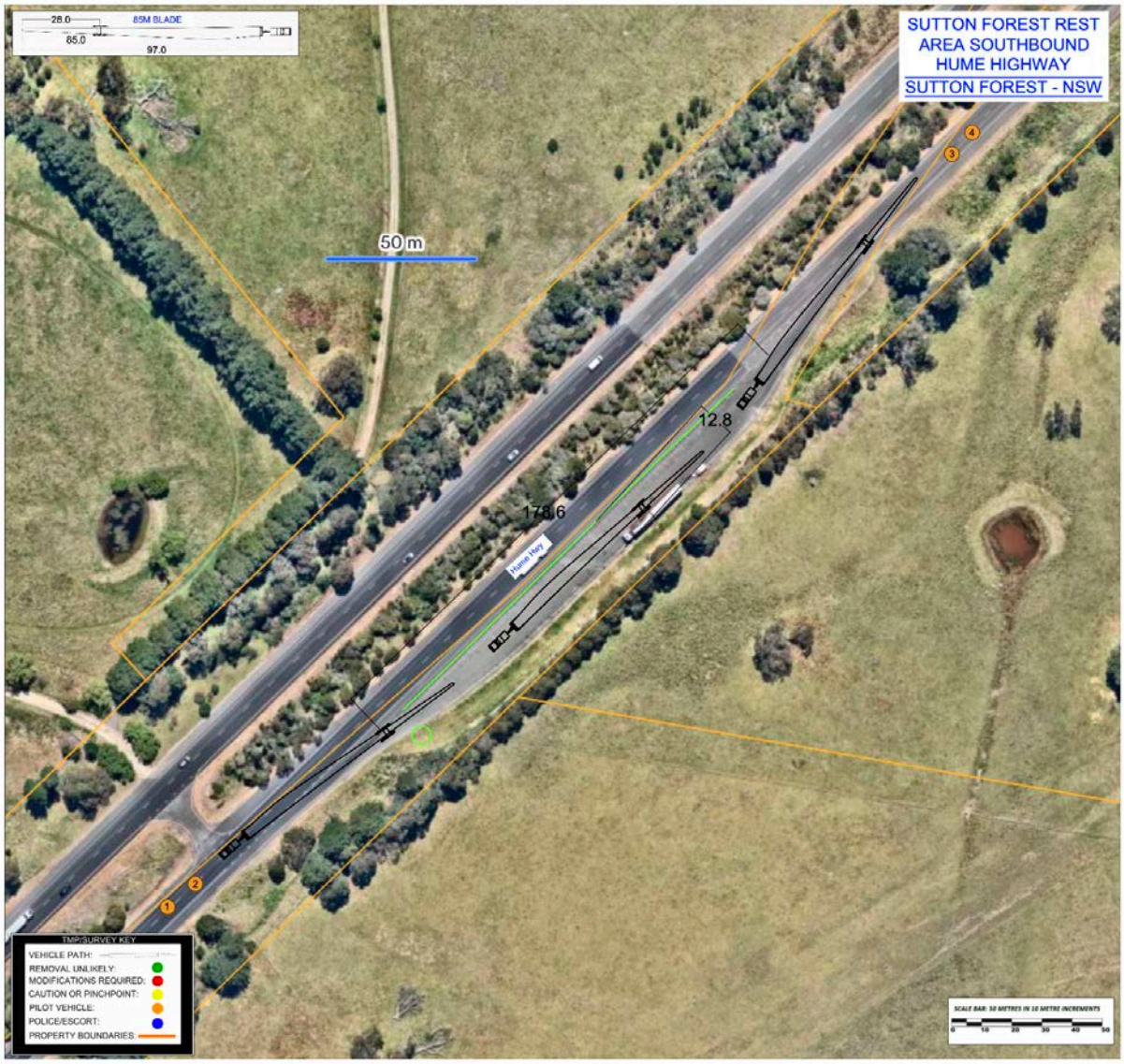


Figure 27 – Sutton Forest rest area

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/uT1ubtSuawS2

PROCEDURE: Merge to left

COMMENTS: Can be used for overnight parking or fatigue breaks. Sutton Forest Rest Area. Police and pilots to control all traffic.

ROAD MODIFICATIONS: Nil.

372.0 Km's: Hume Highway rest area at Parkesbourne

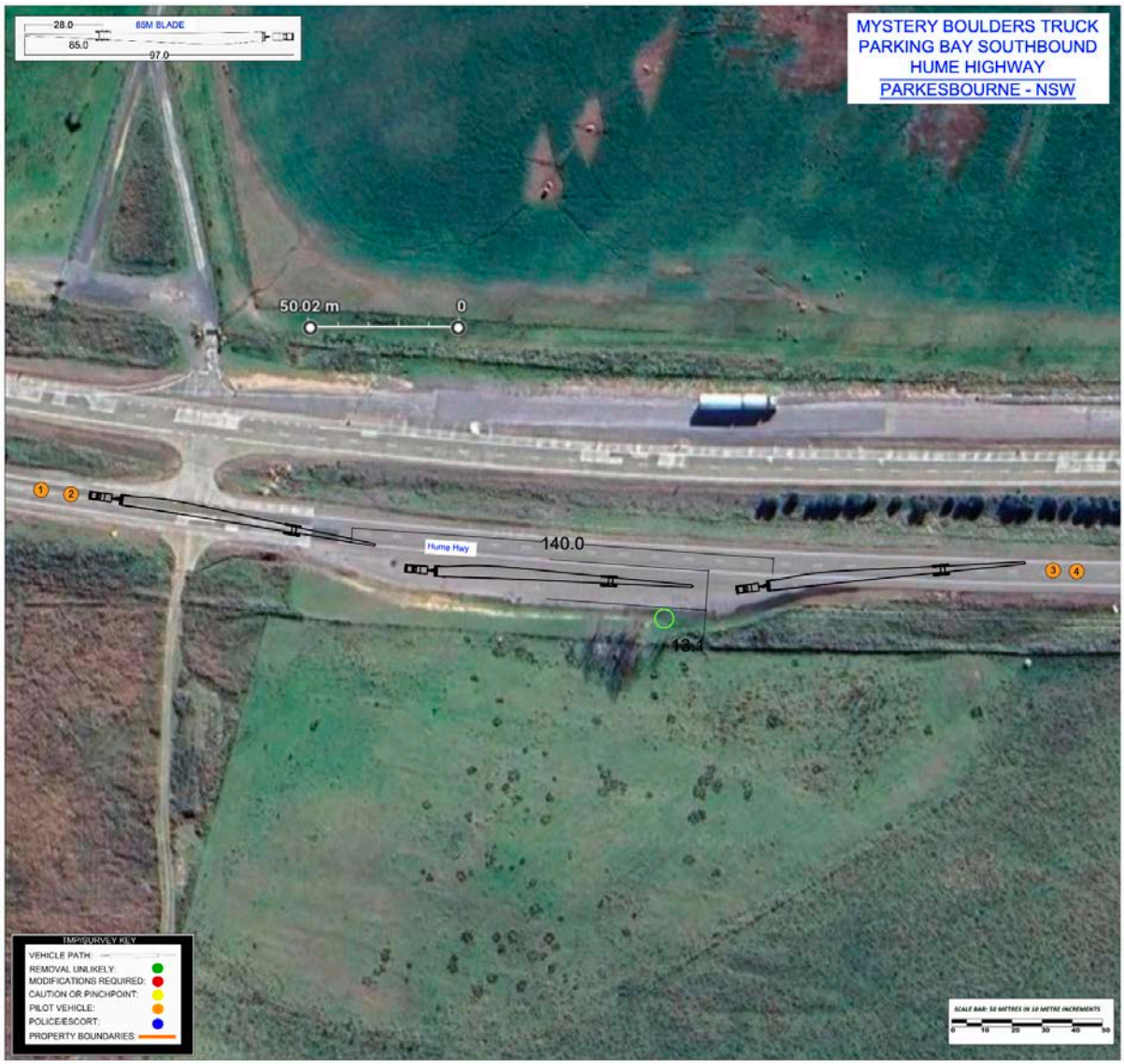


Figure 28 – Mystery Boulders rest area

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/UWjx3XndLejWG1UD9

PROCEDURE: Merge to left

COMMENTS: Can be used for overnight parking or fatigue breaks. Mystery Boulders Rest area. Police and pilots to control all traffic.

ROAD MODIFICATIONS: Nil.

480.0 Km's: Hume Highway rest area at Berremangra



Figure 29 – Reedy Creek rest area

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/mEr4gYsCmXciynSu8
PROCEDURE: Merge to left
COMMENTS: Can be used for overnight parking or fatigue breaks. Reddy Creek Rest Area. Police and pilots to control all traffic.
ROAD MODIFICATIONS: Nil.

508.0 Km's: Hume Highway rest area at Coolac



Figure 30 – Mungi Mungi Hill rest area

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/QzzfyAAnixQn3nwx8
PROCEDURE: Merge to left
COMMENTS: Can be used for overnight parking or fatigue breaks. Mungi Mungi Hill Rest Area. Police and pilots to control all traffic.
ROAD MODIFICATIONS: Nil.

541.0 Km's: Hume Highway rest area at South Gundagai



Figure 31 – Big Ben Creek Rest area

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/hExjVM75QHiRZmSG7
PROCEDURE: Merge to left
COMMENTS: Can be used for overnight parking or fatigue breaks. Big Ben Creek Rest Area. Police and pilots to control all traffic.
ROAD MODIFICATIONS: Nil.

574.0 Km's: Sturt Highway rest area at Tarcutta



Figure 32 - Sturt Highway rest area Tarcutta

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/95cwTYQy6ztpBaEL9
PROCEDURE: Merge to left
COMMENTS: Can be used for overnight parking or fatigue breaks. Sturt Highway stopping bay. Police and pilots to control all traffic.
ROAD MODIFICATIONS: Nil.

679.0 Km's: Sturt Highway rest area at Galore



Figure 33 – Kywong rest area

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/3YJccdx7avFJ2io96
PROCEDURE: Merge to left
COMMENTS: Can be used for overnight parking or fatigue breaks. Kywong Rest Area. Police and pilots to control all traffic.
ROAD MODIFICATIONS: Nil.

10.0 Route 1: Conclusion

After studying all options and undertaking a route study, the route in its current condition will require a moderate amount of upgrading before it could be deemed suitable for transporting the proposed components.

The following are the key points that need to be taken into consideration, if the project moves forward with this route.

SWEPT PATH:

- There are numerous sections along the route that will require a moderate amount of work in order to accommodate the proposed blade size.
- The corners that have been identified in the report as requiring work should be investigated early in the planning stages to avoid delays or rejections.

VERTICAL CURVE:

- Vertical curves were checked for the entire route and only 1 location required further investigating. This is the Wagga Wagga rail underpass on the Sturt Highway.
- A survey has been undertaken off this bridge, and the V172 blade was modelled travelling into, under and out of the bridge. The initial measurements of the rail underpass showed a minimum clearance of 500mm for this blade, which we believe is acceptable if transported on equipment listed in this report.
- A more detailed follow up lidar study is been undertaken on this structure to confirm that the initial measurements are correct.

OVERHEAD STRUCTURES: (5.0 Maximum loaded height)

- The lowest structure is the M11 tunnel (North Connex). This structure has a maximum safe clearance of 5.0 Metres.
- Loads higher than 5.0m cannot use this route and will need to travel along Route 2 (high load route) or Route 3.

OVERHEAD UTILITIES:

- This route will need to be checked by an authorised scoping company. It is likely that this route will require at least a 5.0 metres loaded height. 5.0 Metres has been approved on this route in the past.

BRIDGES:

- Majority of the bridges have been used previously for similar loads so it is expected they will be ok. Bridge assessments will still be required for the entire route.

RAIL ASSETS:

- There are a number of rail overbridges and one crossings on route that will require approval from authorities before loads can access the routes.

VEGETATION:

- The route requires a moderate amount of vegetation clearing at various locations as listed in the report.

PAVEMENT:

- Pavement on the route is of highway standard up to the site entry. Bypasses or modifications will be required at several corners and are to be constructed to suitable standards and maintained for the duration of deliveries if not sealed.
- All site access roads to be constructed to appropriate standards in order to accommodate the weight, height and swept path of all proposed loads. Roads to be maintained for the duration of deliveries if not sealed.

ROADWORKS:

- The project will need to start discussions with government authorities at least 18 months prior to turbine transport to understand if the project would conflict with any upcoming roadworks. Once a Transport Management Plan “TMP” has been approved for the transport of the turbines, then the exact movement dates need to be communicated with all relevant authorities to make all road stakeholders are aware of the scheduled movements for each day.
- The project will need to regularly check on any new upgrades not listed in the report. If upgrades have taken place on a section of route after this report has been completed, then a swept path study would need to be undertaken on that section of road to confirm that it can still be used.

SITE ACCESS ROADS:

- All site access roads to be constructed to appropriate standards in order to accommodate the height, weight, vertical curves and swept path of all proposed roads.
- Roads to be made all weather and maintained for the duration of deliveries.

POSSIBLE ALTERNATE ROUTE FOR BLADES AT NEWCASTLE:

- With 2 current road projects taking place at Hexham, Energy Co and TfNSW are currently constructing an alternate route from Newcastle Port through to the M1 Motorway and Hunter Expressway to take pressure off these 2 projects. This alternate route would exit Route 1 off Maitland Road at Sandgate and resume Route 1 at the M1 Motorway or Hunter Expressway at Cameron Park.

- The alternate route would use the following roads: Maitland Road, Newcastle inner City bypass, Newcastle Road, Thomas Road, Newcastle Link Road, M1 Motorway or Hunter Expressway.
- An assessment has been undertaken modelling the V172 Blade over the proposed route upgrades, and it appears that the proposed works for the 100 metre blade are adequate for the V172 blade.

POSSIBLE ALTERNATE ROUTE FOR BLADES AT WAGGA WAGGA:

- An alternate blade route option through Wagga Wagga is shown in this report as Route 1A Study. This is a backup option if the route 1 option becomes a problem while passing under the Wagga Wagga rail bridge on the Sturt Highway.

11.0 Route 1A Study: Wagga Wagga Bypass Option

COMPONENTS: Blades
DISTANCE: 21.2 kilometres
GPS LINK: https://maps.app.goo.gl/CdtuHfj4V8AeYQFSA
ROUTE: Sturt Highway, Eunony Bridge Road, Byrnes Road, West Bomen Road, Merino Road, Olympic Hwy, Sturt Highway.

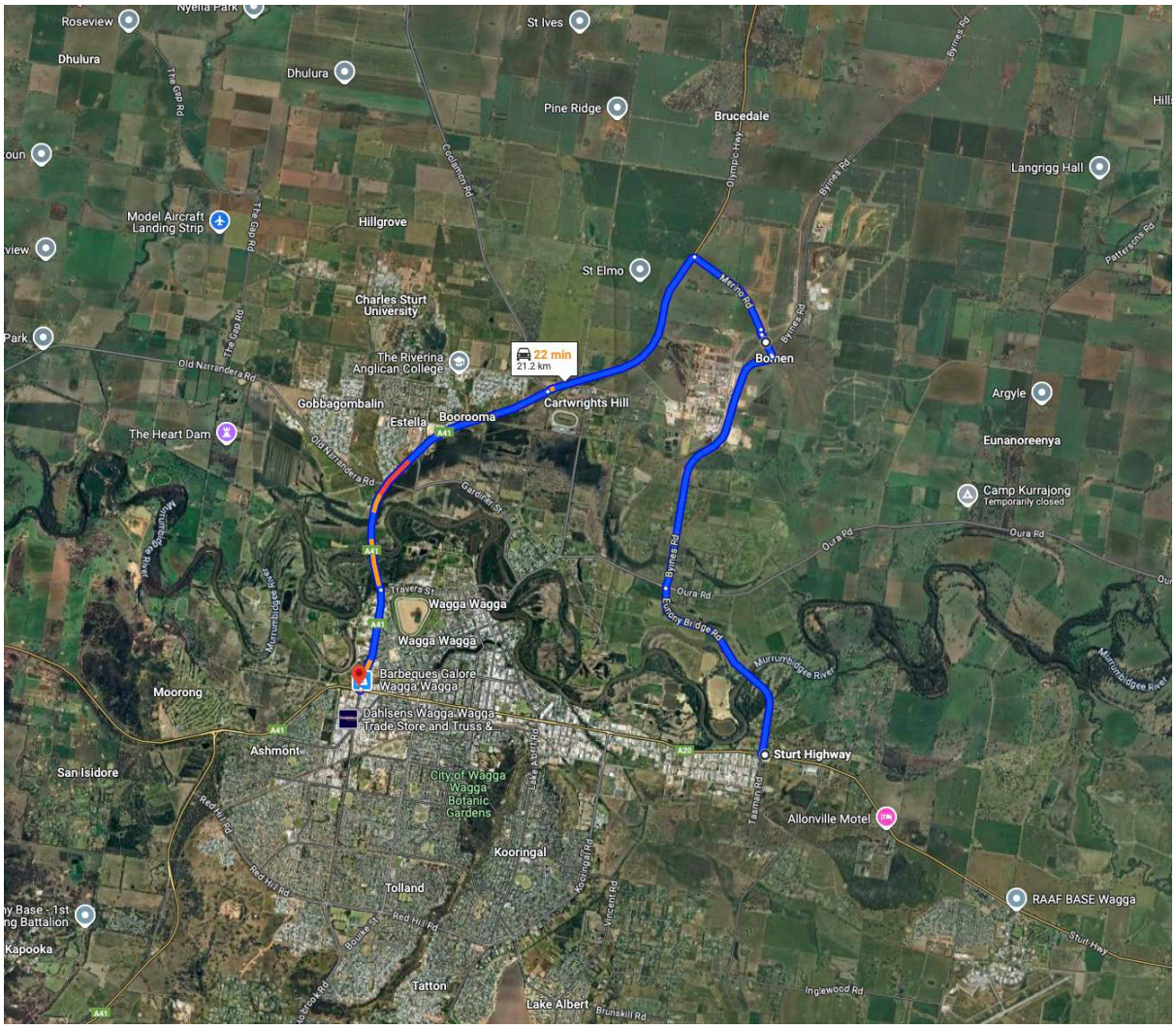


Figure 34 - Route 1A

KEY	
MODIFICATIONS REQUIRED	
PINCH POINT	
EMERGENCY PARKING	

KM index	Location	Section of road	Current clearance	Procedure	Comments
0.0	Wagga Wagga	Sturt Hwy roundabout onto Eunony Bridge Road GPS Link: https://goo.gl/maps/7VDWUvW8KnUhCEdd7	40.0 metres long 7.5 metres wide	Right hand turn on incorrect side of roundabout	Light poles to be relocated out of swept path. Signs to be relocated or made removable with flush bases and traffic islands made trafficable. Hardstand to be installed on outside of corner.
3.8	North Wagga Wagga	Eunony Bridge Road onto Byrnes Road GPS Link: https://maps.app.goo.gl/Wu5E62PDPVa4zHeL7	45.0 metres long 6.0 metres wide	Travel directly ahead over roundabout	Signs to be relocated or made trafficable with flush bases. Hardstand to be installed on roundabout and islands made trafficable.
8.4	Bomen	Byrnes Road onto West Bomen Road GPS Link: https://maps.app.goo.gl/313nBmKb1AARAhrv6	45.0 metres long 5.0 metres wide	Left Hand Turn	Blade clearance to be confirmed on outside of corner. Light poles to be relocated out of swept path. Signs to be relocated or made removable with flush bases. Traffic islands to be made trafficable. Hardstand to be installed on outside of corner.
8.7	Bomen	Rail under bridge on West Bomen Road GPS Link: https://maps.app.goo.gl/EiK6pWT8K568HfAZ7	Height clearances: Left Lane: 5.8m Centre Lane: 5.7m Right Lane: 5.8m	Travel directly ahead	No problems with this section of road.
8.9	Bomen	West Bomen Road onto Merino Road GPS Link: https://maps.app.goo.gl/z63uL9MVidDduwqc8	45.0 metres long 6.0 metres wide	Travel directly ahead over roundabout	Roundabout to be made trafficable/ concrete step reduced. Signs relocated or made removable with flush bases and traffic islands made trafficable.
10.7	Bomen	Merino Road onto Olympic Highway GPS Link: https://maps.app.goo.gl/FYwcqMYySIH5UiFU7	75.0 metres long 6.0 metres wide	Left Hand Turn	Light pole to be relocated out of swept path.
14.3	Downside	Olympic Highway (Colin Knott Dr) Roundabout at Horseshoe Road GPS Link: https://maps.app.goo.gl/WEXsqRHbV2j8Yat4A	55.0 metres long 5.0 metres wide	Travel directly ahead over roundabout	Signs to be relocated or made removable with flush bases. Roundabout to be made trafficable.
16.7	Estella	Olympic Highway Boorooma St overpass GPS Link: https://maps.app.goo.gl/BRDBv71cWp4Yo2Rk6	Height clearances: Left Lane: 5.6m Centre Lane: 5.8m Right Lane: 6.0m	Travel directly ahead	No problems with this section of road.
19.4	Moorong	Olympic Highway (Moorong St) Roundabout at Traverse Street GPS Link: https://maps.app.goo.gl/pBE2WLvGUoktVnDj8	50 .0 metres long 7.0 metres wide	Travel directly ahead over roundabout	Roundabout to be made trafficable. Signs to be relocated or made removable with flush bases.
20.6	Wagga Wagga	Olympic Highway (Moorong St) Roundabout at Kincaid Street GPS Link: https://maps.app.goo.gl/HJppyqcVdKTU1m5d7	50 .0 metres long 7.0 metres wide	Travel directly ahead over roundabout	Roundabout to be made trafficable. Signs to be relocated or made removable with flush bases.

KM index	Location	Section of road	Current clearance	Procedure	Comments
21.2	Wagga Wagga	Olympic Highway (Moorong St) onto Sturt Highway GPS Link: https://maps.app.goo.gl/vP9H5MPTKPHCpqmn9	40 .0 metres long 7.0 metres wide	Right hand turn on incorrect side of roundabout	Traffic islands to be made trafficable. Signs to be relocated or made removable with flush bases. Power pole to be relocated out of swept path. Culvert to be strengthened to edge,, fence relocated. Hardstand installed and kerbs made trafficable on inside and outside of corner.

0.0 Km's: Sturt Hwy roundabout onto Eunony Bridge Road

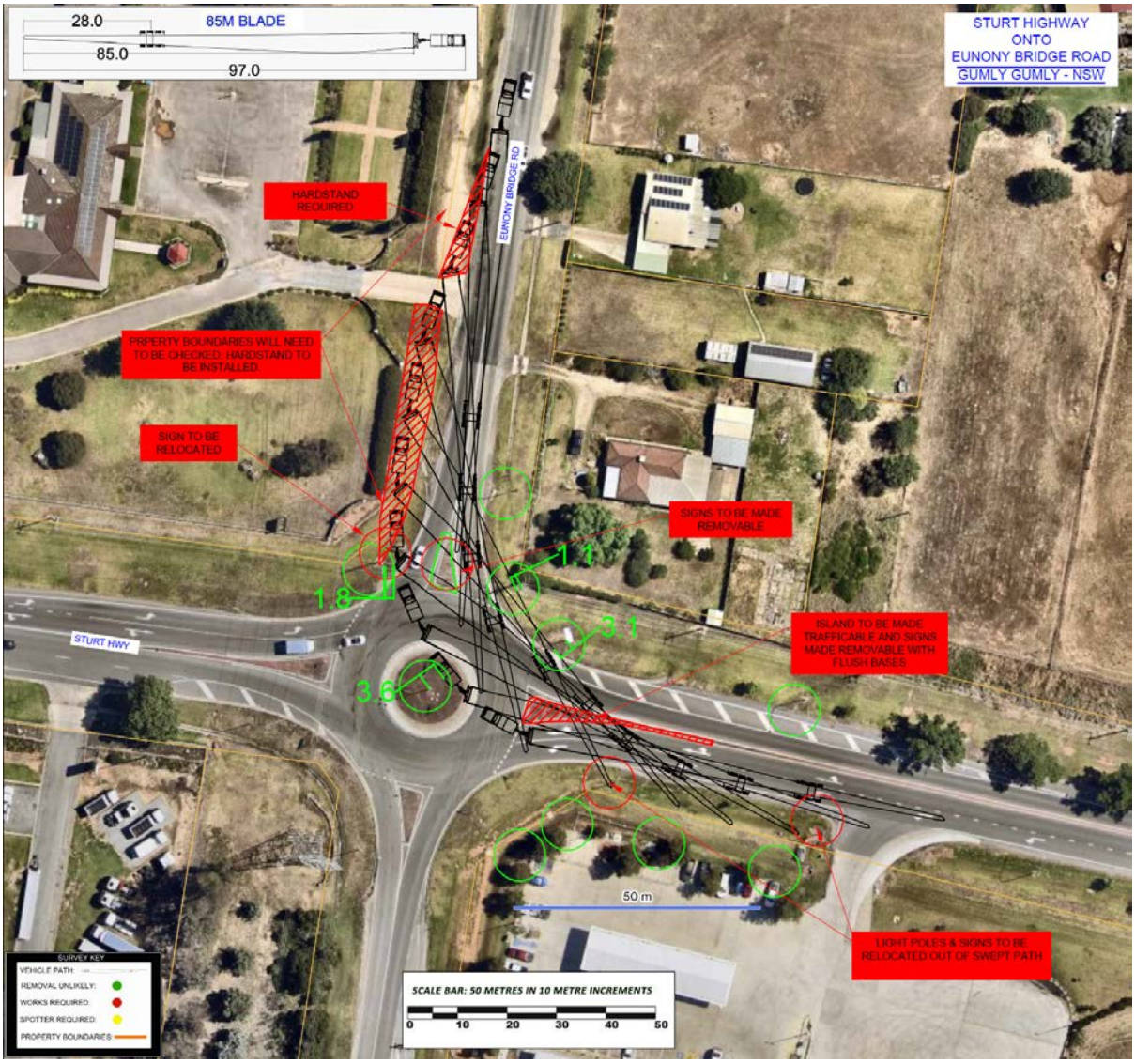


Figure 35 - Sturt Hwy roundabout onto Eunony Bridge Road

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/7VDWUyW8KnUhCEdd7
PROCEDURE: Right hand turn on incorrect side of roundabout
ROAD MODIFICATIONS: Light poles to be relocated out of swept path. Signs to be relocated or made removable with flush bases and traffic islands made trafficable. Hardstand to be installed on outside of corner.

3.8 Km's: Eunony Bridge Road onto Byrnes Road

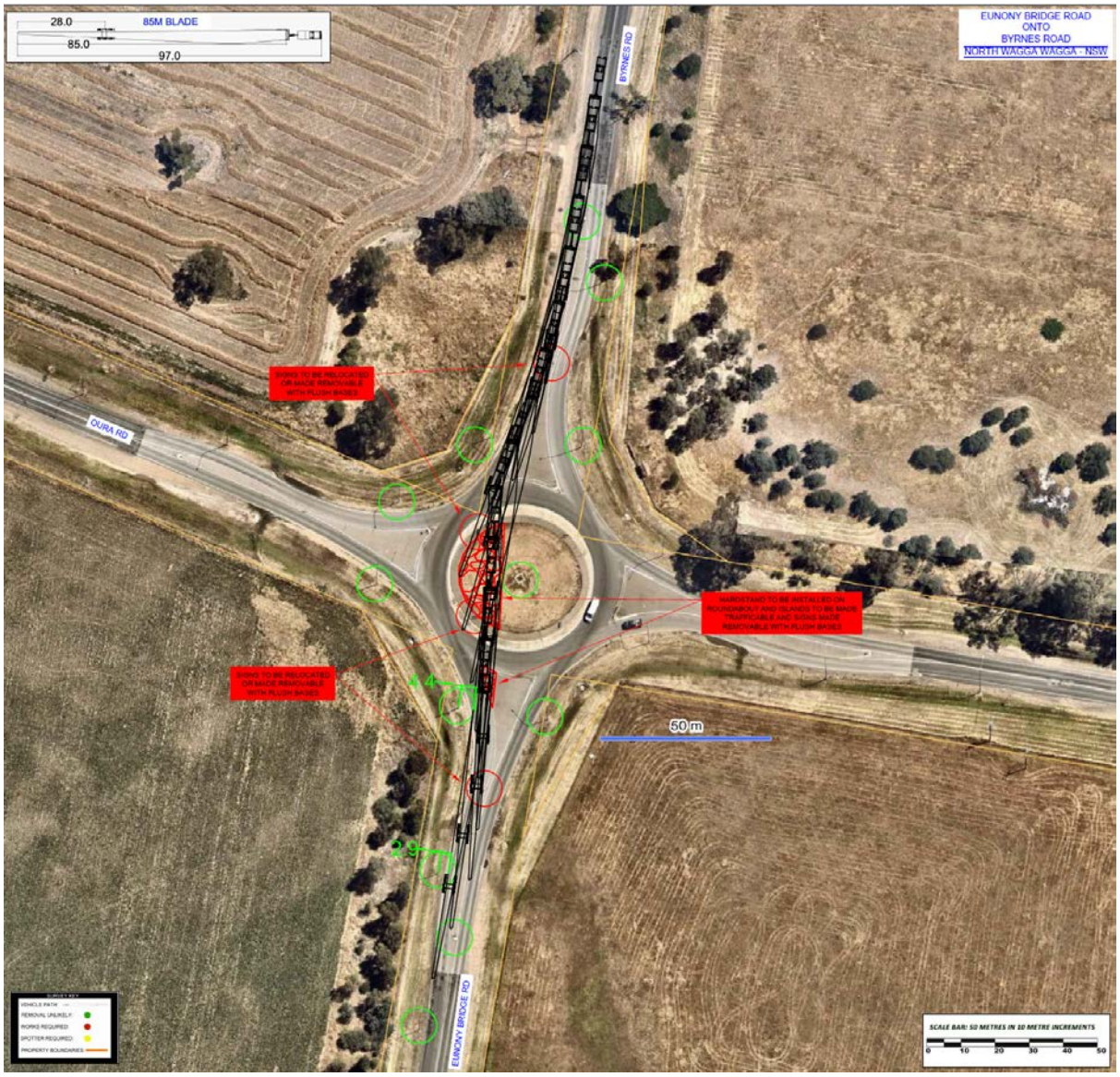


Figure 36 - Eunony Bridge Road onto Byrnes Road

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/Wu5E62PDPVa4zHeL7
PROCEDURE: Travel directly ahead over roundabout
ROAD MODIFICATIONS: Signs to be relocated or made trafficable with flush bases. Hardstand to be installed on roundabout and islands made trafficable.

8.4 Km's: Byrnes Road onto West Bomen Road

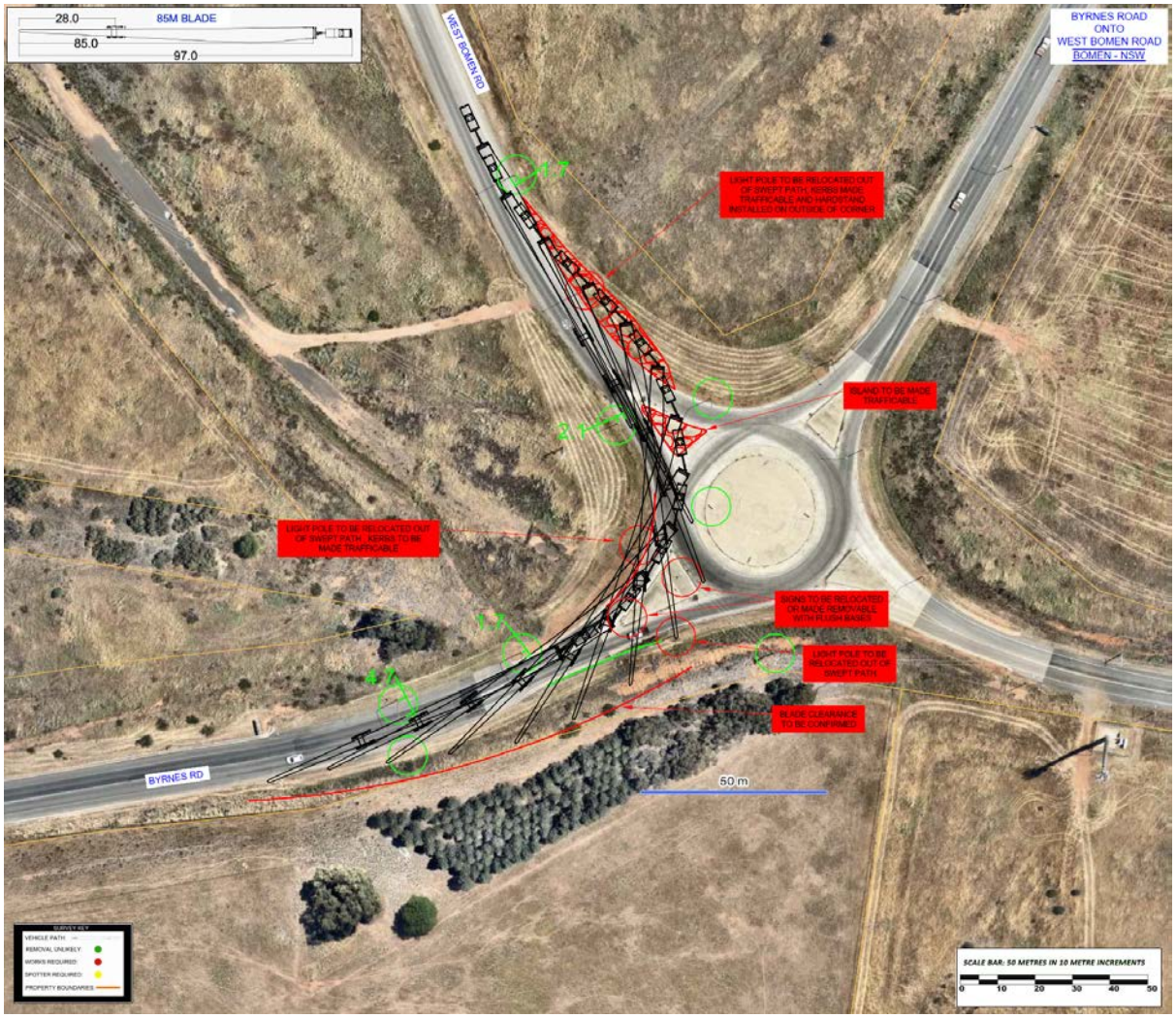


Figure 37 - Byrnes Road onto West Bomen Road

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/313nBmKb1AARAhry6
PROCEDURE: Left Hand Turn
ROAD MODIFICATIONS: Blade clearance to be confirmed on outside of corner. Light poles to be relocated out of swept path. Signs to be relocated or made removable with flush bases. Traffic islands to be made trafficable. Hardstand to be installed on outside of corner.

8.9 Km's: West Bomen Road onto Merino Road

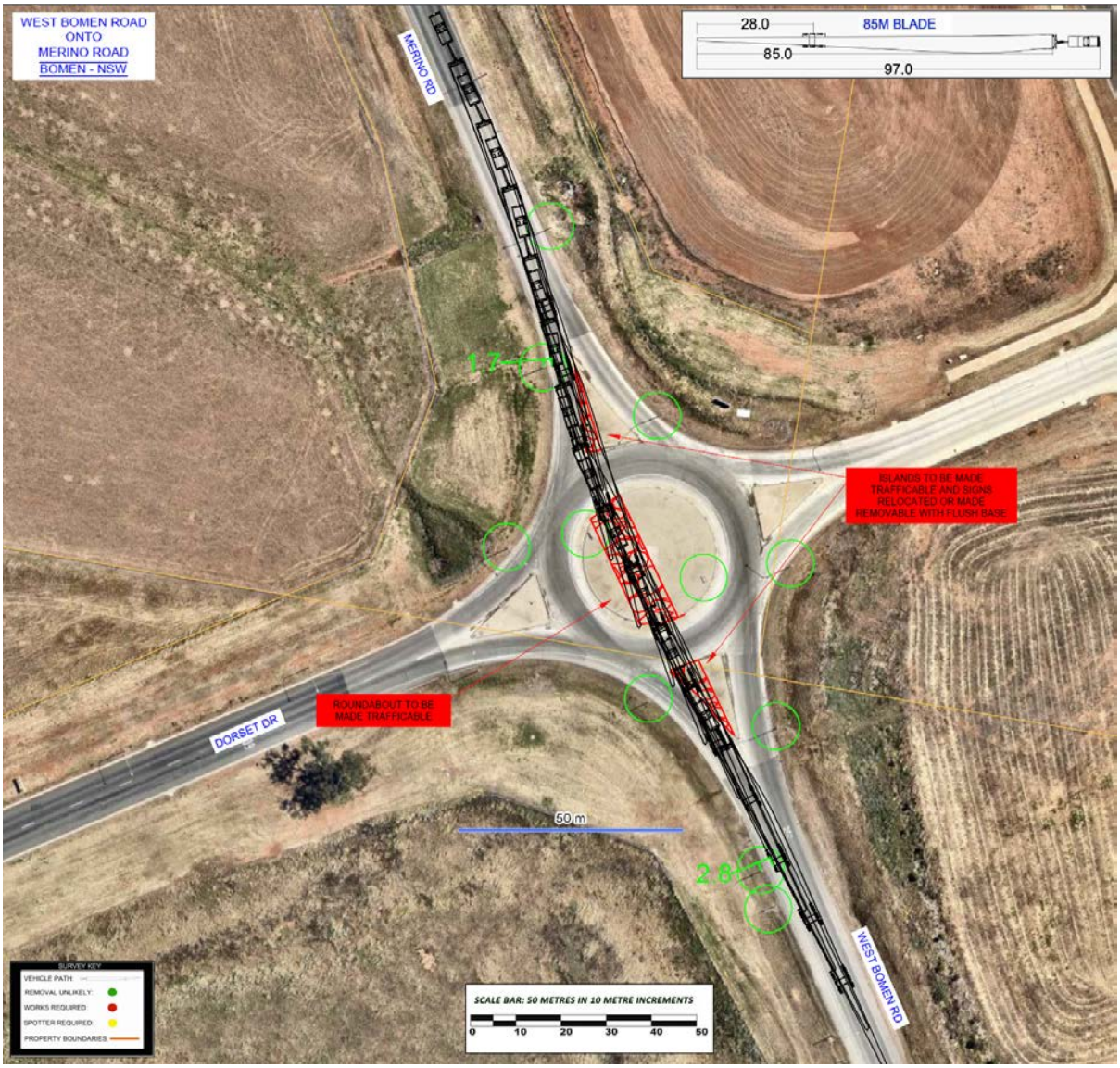


Figure 38 - West Bomen Road onto Merino Road

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/z63uL9MVidDduwqc8
PROCEDURE: Travel directly ahead over roundabout
ROAD MODIFICATIONS: Roundabout to be made trafficable/ concrete step reduced. Signs relocated or made removable with flush bases and traffic islands made trafficable.

10.7 Km's: Merino Road onto Olympic Highway

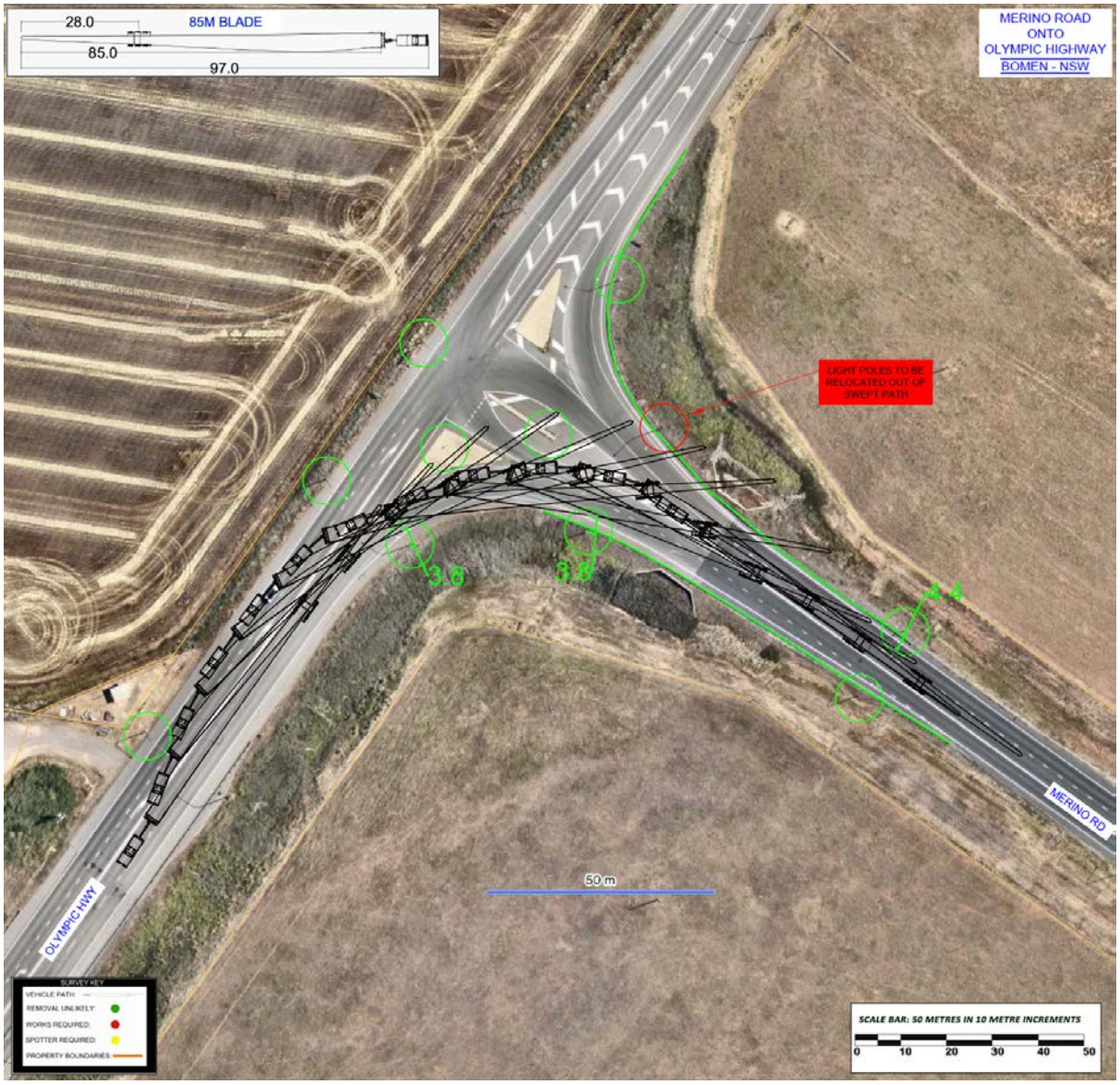


Figure 39 - Merino Road onto Olympic Highway

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/FYwcqMYyStH5UiFU7
PROCEDURE: Left Hand Turn
ROAD MODIFICATIONS: Light pole to be relocated out of swept path.

14.3 Km's: Olympic Highway (Colin Knott Dr) Roundabout at Horseshoe Road

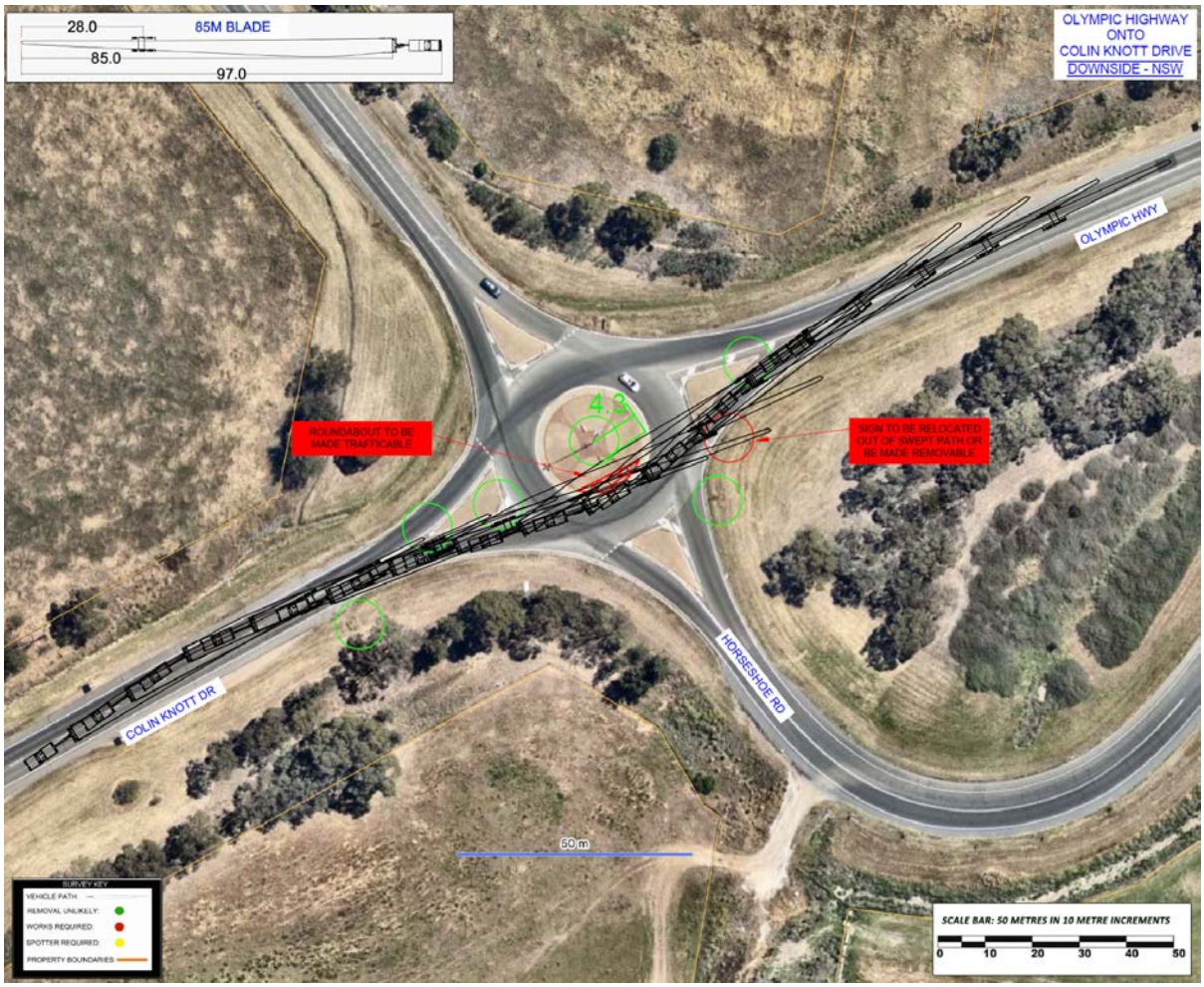


Figure 40 - Olympic Highway (Colin Knott Dr) Roundabout at Horseshoe Road

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/WEXsgRHhV2j8Yat4A
PROCEDURE: Travel directly ahead over roundabout
ROAD MODIFICATIONS: Signs to be relocated or made removable with flush bases. Roundabout to be made trafficable.

19.4 Km's: Olympic Highway (Moorong St) Roundabout at Traverse Street

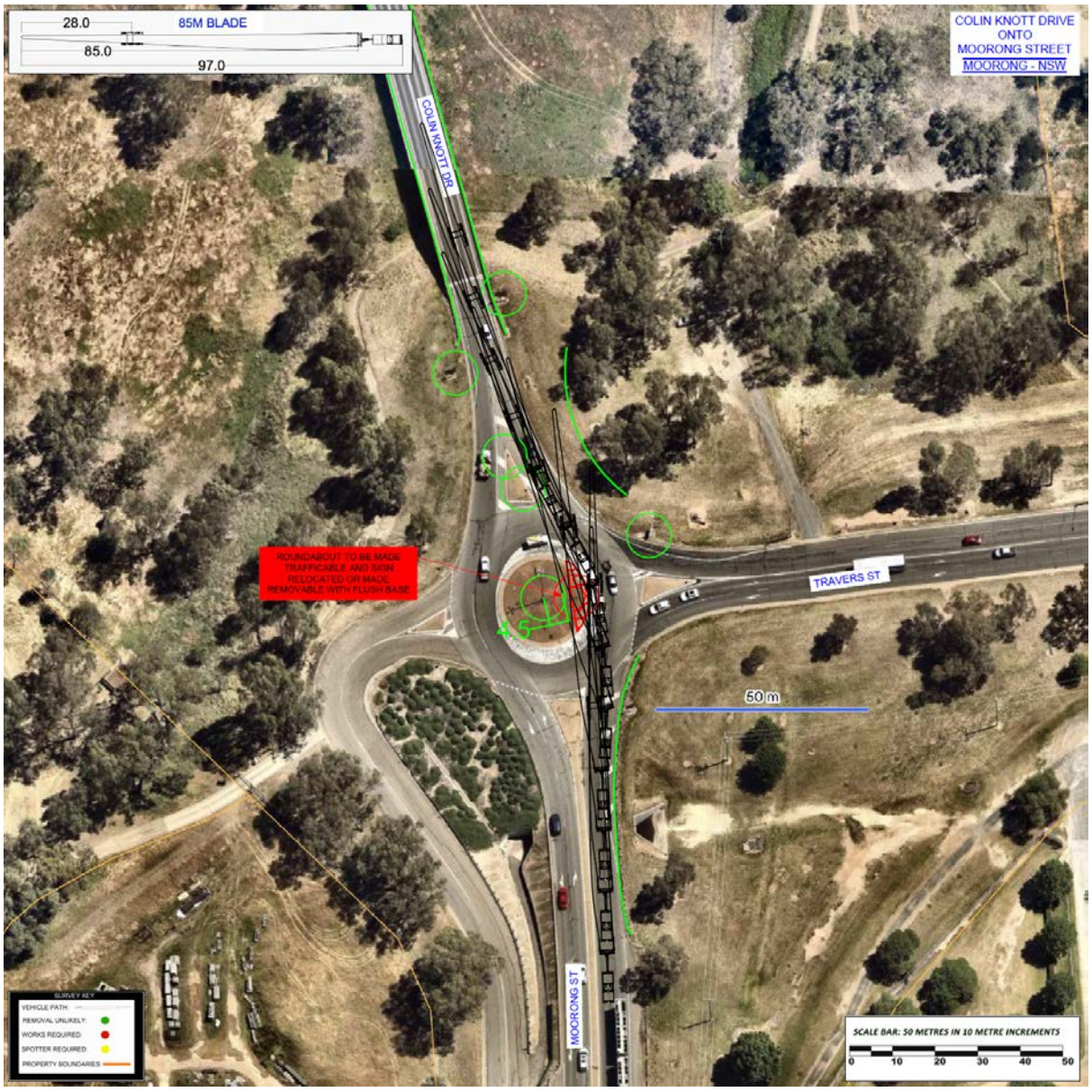


Figure 41 - Olympic Highway (Moorong St) Roundabout at Traverse Street

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/pBE2WLyGUoktVnDj8
PROCEDURE: Travel directly ahead over roundabout
ROAD MODIFICATIONS: Roundabout to be made trafficable. Signs to be relocated or made removable with flush bases.

20.6 Km's: Olympic Highway (Moorong St) Roundabout at Kincaid Street

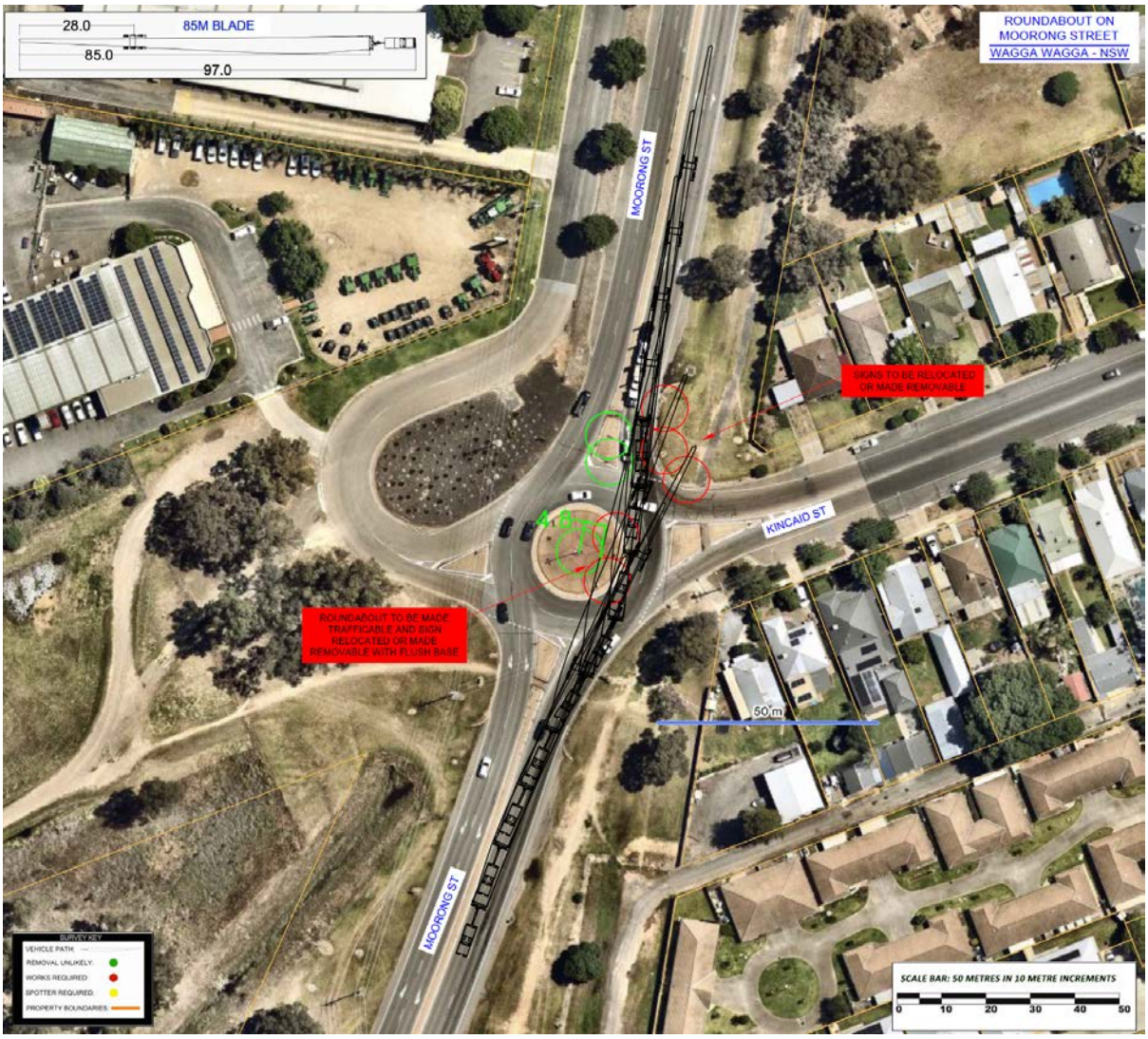


Figure 42 - Olympic Highway (Moorong St) Roundabout at Kincaid Street

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/HJppygcVdKTU1m5d7
PROCEDURE: Travel directly ahead over roundabout
ROAD MODIFICATIONS: Roundabout to be made trafficable. Signs to be relocated or made removable with flush bases.

21.2 Km's: Olympic Highway (Moorong St) onto Sturt Highway

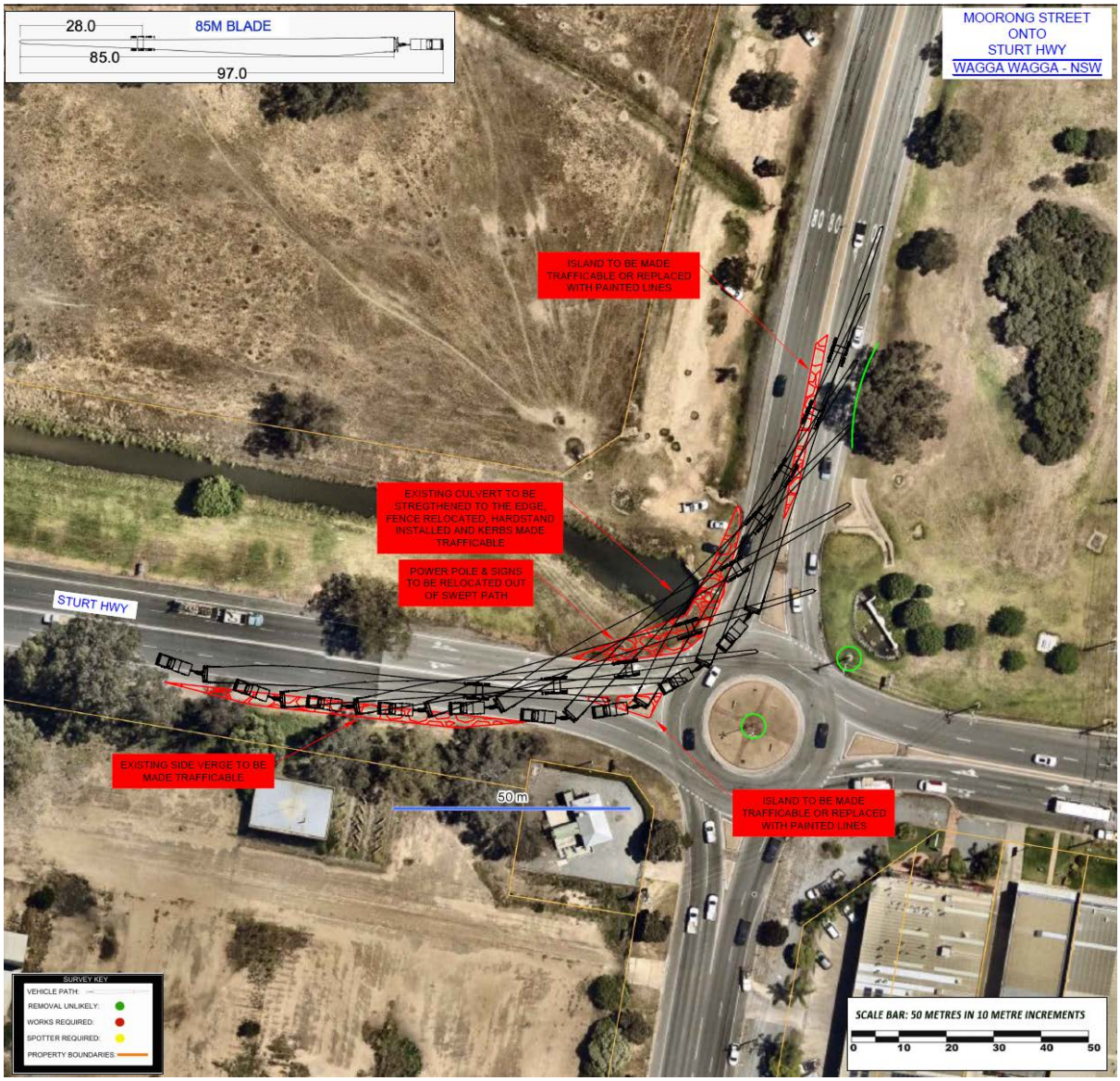


Figure 43 - Olympic Highway (Moorong St) onto Sturt Highway

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/vP9H5MPTKPHCpgnn9
PROCEDURE: Right hand turn on incorrect side of roundabout
ROAD MODIFICATIONS: Traffic islands to be made trafficable. Signs to be relocated or made removable with flush bases. Power pole to be relocated out of swept path. Culvert to be strengthened to edge,, fence relocated. Hardstand installed and kerbs made trafficable on inside and outside of corner.

12.0 Route 1A: Conclusion

After studying all options and undertaking a route study, the route in its current condition will require a moderate amount of upgrading before it could be deemed suitable for transporting the proposed components.

The following are the key points that need to be taken into consideration, if the project moves forward with this route.

SWEPT PATH:

- There are numerous sections along the route that will require a moderate amount of work in order to accommodate the proposed blade size.
- The corners that have been identified in the report as requiring work should be investigated early in the planning stages to avoid delays or rejections.

VERTICAL CURVE:

- Initial measurements of the route suggest that there are no vertical curve issues along this route if the transport is undertaken with the equipment listed in this report.

OVERHEAD STRUCTURES: (5.6 Maximum loaded height)

- The lowest structure is on the Olympic Highway at the Boorooma Street overpass at 5.6 Metres. This will allow the blade to pass along this route with 600mm clearance.

OVERHEAD UTILITIES:

- This route will need to be checked by an authorised scoping company. It is likely that this route will require at least a 5.0 metres loaded height. 5.0 Metres has been approved on this route in the past.

BRIDGES:

- Bridge assessments will be required for the entire route.

RAIL ASSETS:

- There is one rail bridge that the blades will pass under. No rail approvals are required.

VEGETATION:

- The route requires a moderate amount of vegetation clearing at various locations as listed in the report.

PAVEMENT:

- Pavement on the route is of highway standard. Bypasses or modifications will be required at several corners and are to be constructed to suitable standards and maintained for the duration of deliveries if not sealed.

ROADWORKS:

- The project will need to start discussions with government authorities at least 18 months prior to turbine transport to understand if the project would conflict with any upcoming roadworks. Once a Transport Management Plan “TMP” has been approved for the transport of the turbines, then the exact movement dates need to be communicated with all relevant authorities to make all road stakeholders are aware of the scheduled movements for each day.
- The project will need to regularly check on any new upgrades not listed in the report. If upgrades have taken place on a section of route after this report has been completed, then a swept path study would need to be undertaken on that section of road to confirm that it can still be used.

13.0 Route 2 Study: Newcastle to Dinawan Energy Hub

COMPONENTS: Towers (**Max loaded height 6.1m)**
DISTANCE: 973 kilometres
GPS LINK: https://maps.app.goo.gl/BtcLdmmbmzCUygta6
ROUTE: Selwyn street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, New England Highway, Golden Highway, Denman Road, Bengalla Road, Wybong Road, Golden Highway, Boothenba Road,Troy Bridge Road, Bunglegumbie Road, Mitchell Highway, Newell Highway, Compton Road, Showground Road, Newell Highway, Kidman Way, Mclennons Bore Rd, Wilson Rd.

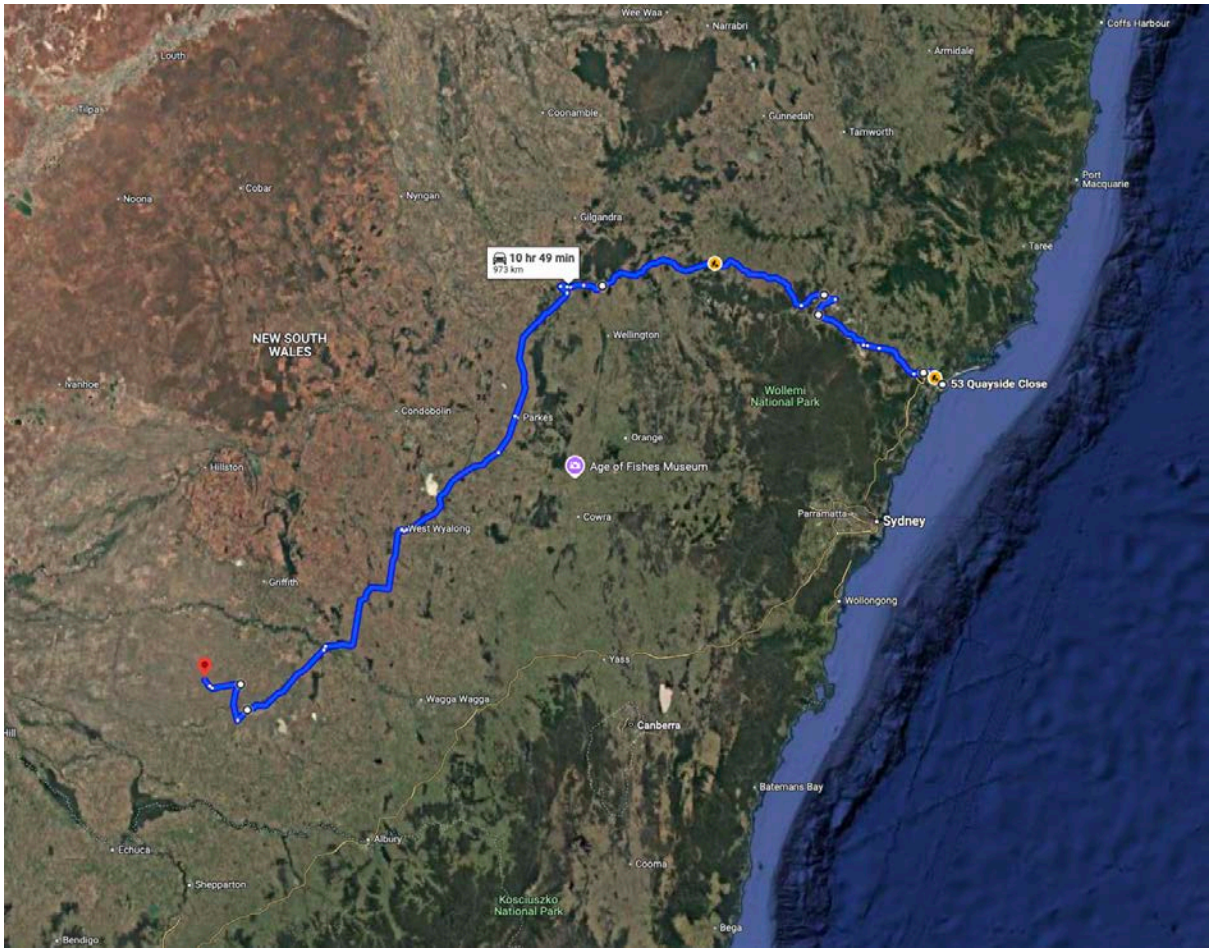


Figure 44 - Route 2

KEY	
MODIFICATIONS REQUIRED	
PINCH POINT	
EMERGENCY PARKING	

KM index	Location	Section of road	Current clearance	Procedure	Notes
0.0	Mayfield	Mayfield No.4 berth onto Selwyn Street https://goo.gl/maps/afLwPYKuNdm	Length: 70.0 Mtrs Width: 8.0 Mtrs	Right hand turn	No problems with the towers on this section of road.
0.4	Mayfield	Selwyn Street over rail crossing https://goo.gl/maps/AmohE54hKSz	Length: 90 metres Width: 9.0 Metres	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
1.3	Mayfield	Selwyn Street onto George Street https://goo.gl/maps/qXeHvBtCp4D2	Length: 40.0 Mtrs Width: 8.0 Mtrs	Right hand turn	Islands to be made trafficable/replaced with painted lines.
1.4	Mayfield	George Street onto Industrial Drive https://goo.gl/maps/s4ayrsuoAsD2	Length: 40.0 Mtrs Width: 8.0 Mtrs	Right hand turn	No problems with the towers on this section of road.
4.9	Mayfield	Industrial Drive under traffic signals https://goo.gl/maps/YmqhiS2iR582	Height: 5.4 metres	Travel directly ahead in the far right lane.	The lowest traffic signal on route is at the intersection of Steel River Blvd. Trucks that exceed 5.3 metres will need to travel in the right-hand lane. Clearance in the right end lane is 6.0 metres.
5.5	Mayfield West	Industrial Drive onto Maitland Road https://goo.gl/maps/Kn49dhWG2qG2	Length: 40.0 Mtrs Width: 7.0 Mtrs	Right hand turn	No problems with the towers on this section of road.
6.4	Sandgate	Maitland Road over rail bridge https://goo.gl/maps/W2JWWjhfqv5UMviB7	Length: 90 metres Width: 9.0 Metres	Travel directly ahead in the right-hand lane	Approval from Rail company required to cross this structure. Travel over this structure may have specific conditions.
13.9	Hexham	New England Highway under gantry https://goo.gl/maps/YTMoFe7Aick	Height: 6.2 metres	Travel directly ahead on the far left side of road	This is the lowest structure on route. There is no bypass around the gantry. A maximum loaded height of 6.2 metres should not be exceeded. Loads to lower to 6.1m and travel under gantry on the far left side of the road.
15.0	Tarro	Bend on New England Hwy https://maps.app.goo.gl/63RTZynpTRLjkSJf9	Width: 7.5 Metres	Left hand bend	No problems with the towers on this section of road.
15.1	Tarro	New England Highway over rail bridge https://goo.gl/maps/tTnWLwQC2hzSPhAp6	Width: 9.0 Metres	Travel directly ahead	Approval from Rail company required to cross this structure. Travel over this structure may have specific conditions.
15.2	Tarro	New England Highway under Tarro interchange	Height: 6.2 metres	Travel directly ahead on the far left side of road	This is the lowest structure on route. There is no bypass around the bridge. A maximum loaded height of 6.2 metres should not be exceeded. Loads to lower to 6.1m and travel under gantry on the far left side of the road.

KM index	Location	Section of road	Current clearance	Procedure	Notes
17.4	Tarro	New England Highway onto John Renshaw Drive https://goo.gl/maps/SRDr5JigkBp	Length: 100.0 Mtrs Width: 12.0 Mtrs	Left hand merge	No problems with the towers on this section of road.
18.4	Beresfield	John Renshaw Drive https://goo.gl/maps/N19vJih1Fgr	Length: 100.0 Mtrs Width: 10.0 Mtrs	Travel directly ahead	The roundabout has been removed. A set of dual lanes now takes traffic directly across the intersection.
28.7	Buchanan	John Renshaw Drive onto the Hunter Expressway https://goo.gl/maps/1STJ1PfQt9E2	Length: 65.0 Mtrs Width: 7.0 Mtrs	Right hand turn around roundabout	No problems with the towers on this section of road.
58.9	Branxton	The Hunter Expressway onto The New England Highway https://goo.gl/maps/7rauNuxzqjq	Length: 100.0 Mtrs Width: 12.0 Mtrs	Travel directly ahead	No problems with this section of road.
67.3	Whittingham	New England Highway onto the Golden Highway https://goo.gl/maps/nAnfkYfeUn42	Length: 70.0 Mtrs Width: 8.0 Mtrs	Left Hand turn than travel directly ahead through the roundabout.	No problems with this section of road.
67.4	Whittingham	Golden Highway https://goo.gl/maps/R86RFuPnmFU2	115.0 x 9.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
67.5	Whittingham	Roundabout on Golden Highway https://maps.app.goo.gl/92r3wt9cTYRQRShm8	Length: 50.0 Mtrs Width: 7.5 Mtrs	Travel directly ahead	The roundabout has been designed to accommodate windfarm projects in the Orana REZ.
68.0	Whittingham	Golden Highway over rail bridge https://goo.gl/maps/5NwDQofandvvMKfY9	Length: 90 metres Width: 9.0 Metres	Travel directly ahead in the centre of the road.	Approval from Rail company required to cross this structure. Travel over this structure may have specific conditions.
77.3	Mount Thorley	Golden Highway over rail bridge https://goo.gl/maps/qTxSbkxPu87L5hx4A	Length: 90 metres Width: 9.0 Metres	Travel directly ahead in the centre of the road.	Approval from Rail company required to cross this structure. Travel over this structure may have specific conditions.
77.4	Mount Thorley	Golden Highway intersection with the Putty Road https://goo.gl/maps/7hQdEmK1EgE2	Length: 65 metres Width: 6.0 Metres	Left hand turn	No problems with this section of road.
77.5	Mount Thorley	Golden Highway https://goo.gl/maps/zGvdupDuixx	100.0 x 10.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
80.6	Mount Thorley	Golden Highway over rail bridge https://goo.gl/maps/ipGU4USXmWZ8GkJs6	Length: 90 metres Width: 9.0 Metres Height: 5.2 metres	Travel directly ahead in the centre of the road.	Approval from Rail company required to cross this structure. Travel over this structure may have specific conditions.
80.8	Mount Thorley	Golden Highway intersection with the Putty Road https://maps.app.goo.gl/4ZksNsxZtJ6KwJMc8	Length: 60 metres Width: 6.0 Metres	Right hand turn	Right hand turn onto the incorrect side of the road. Police and pilots will need to manage the traffic at this location.
98.0	Warkworth	Golden Highway https://goo.gl/maps/Y6V6EXaCwxq	100.0 x 8.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
107.0	Jerrys Plains	Golden Highway through Jerrys Plains village https://goo.gl/maps/WqSCRsJ9ZGt	Length: 60 metres Width: 6.0 Metres	Left hand than right hand turn	No problems with this section of road.
126.0	Ogilvy	Golden Highway https://goo.gl/maps/58Tj9ojs7CC2	6% gradient	Travel directly ahead	This section of road has a steep mountain range that will require additional pull trucks to assists loads that exceed 80T gross weight.

KM index	Location	Section of road	Current clearance	Procedure	Notes
131.9	Denman	Golden Highway onto Denman Road https://goo.gl/maps/sf4PNnycxB32	Length: 55 metres Width: 6.0 Metres	Right hand turn	No problems with this section of road.
137.9	Muswellbrook	Denman Road onto Bengalla Road https://goo.gl/maps/3sK4m6YSHNHqkqn68	Length: 60 metres Width: 8.0 Metres	Left hand turn	Hardstand to be installed on inside of corner.
149.0	Bengalla	Bengalla Road onto Wybong Road https://goo.gl/maps/zfDyG4GQq6G37imB9	Length: 90 metres Width: 8.0 Metres	Left hand bend	No problems with this section of road.
158.0 to 183.0	Bengalla	Wybong Road https://goo.gl/maps/ekGZA5wFFK55Mvmc7	Length: 60 metres Width: 8.0 Metres	Travel directly ahead	This road is maintained by Muswellbrook Council. Approval will be required to travel on this section of Road.
169.0	Wybong	Mine Road over Wybong Rd https://maps.app.goo.gl/asumAbcya4cHz4EbA	Height: 6.3meters	Travel directly ahead	No problems with this section of road.
183.0	Sandy Hollow	Wybong Road onto Golden Highway https://goo.gl/maps/5ft3VnWpnPhpeN4u7	Length: 60 metres Width: 8.0 Metres	Right hand turn	Sign to be relocated or made removable with flush base & hardstand installed on inside of corner.
190.1	Sandy Hollow	Golden highway https://goo.gl/maps/2THBuV165xx	50.0 x 4.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
193.0	Sandy Hollow	Golden Highway under safety Cam https://goo.gl/maps/b7t9zH2ankJcvWpT6	Height: Left: 6.3 metres	Travel directly ahead on the correct side	No problems with this section of road.
201.0	Gungal	Golden highway https://goo.gl/maps/WDoL2LfeCoP2	70.0 x 6.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
221.0	Merriwa	Golden Highway under safety Cam https://goo.gl/maps/D92rzQ8vnUcYsqj56	Height: Right: 6.4 metres	Travel directly ahead on the correct side	No problems with this section of road.
224.0	Merriwa	Golden highway https://goo.gl/maps/NqrWzTsRmnt	100.0 x 5.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
274.0	Cassilis	Golden highway https://goo.gl/maps/vs6YMT6TxCA2	200.0 x 8.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
305.0	Leadville	Golden highway https://goo.gl/maps/ujxMGukhopeFWRhb8	200.0 x 8.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
320.0	Dunedoo	Golden Highway over rail crossing https://goo.gl/maps/wsyNKfcoAij3SosY9	Length: 90 metres Width: 7.0 Metres	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
320.1	Dunedoo	Golden Highway intersection with Wargundy Street https://goo.gl/maps/WzACUHey3jYadj1K7	Length: 60 metres Width: 6.0 Metres	Right hand bend	No problems with this section of road.
376.0	Ballimore	Golden Highway https://goo.gl/maps/RuKKrfHarw1Mjy5E9	150.0 x 8.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
388.0	Ballimore	Golden Highway over rail crossing https://goo.gl/maps/yb15Kz6R2r3E69fj6	Length: 90 metres Width: 7.0 Metres	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required for crossing this line, likely cross with caution.
396.0	Dubbo	Golden Highway onto Boothenba Road https://goo.gl/maps/TJLi5W4ir11ejqtb6	Length: 50 metres Width: 6.5 Metres	Right hand turn	No problems with this section of road.

KM index	Location	Section of road	Current clearance	Procedure	Notes
407.0	Dubbo	Boothenba Road over rail crossing https://goo.gl/maps/72ageimPLqPWYY7M9	Length: 90 metres Width: 6.5 Metres	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required for crossing this line, likely cross with caution.
407.1	Dubbo	Boothenba Road onto Troy Bridge Road https://goo.gl/maps/2u5uRf2BvKxseoFm9	Length: 90 metres Width: 6.5 Metres	Travel directly ahead	No problems with this section of road.
410.0	Dubbo	Troy Bridge Road onto Bunglegumbie road https://goo.gl/maps/6Uke9jwPypNYVPux5	Length: 90 metres Width: 6.5 Metres	Travel directly ahead	No problems with this section of road.
416.0	Dubbo	Bunglegumbie road onto the Mitchell Highway https://goo.gl/maps/jCWqmaQsd3fChp837	Length: 50 metres Width: 6.5 Metres	Left hand turn	No problems with this section of road.
422.0	Dubbo	Mitchell Highway over rail crossing https://maps.app.goo.gl/MRdp8ZYmKjcPi9zL9	Length: 90 metres Width: 9.0 Metres	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required for crossing this line, likely cross with caution.
423.0	Dubbo	Mitchell Highway onto Newell Highway https://maps.app.goo.gl/Q1xHtUznG1mENnUu5	Length: 60 metres Width: 6.5 Metres	Right hand turn	No problems with this section of road.
475.0	Tomingley	Newell Highway https://goo.gl/maps/ADMke5At2A1Uy1z4A	200.0 x 15.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
476.0	Tomingley	Newell Highway under safety Cam https://goo.gl/maps/9Vqu9xXxRwhHt4Uk6	Height: Right: 6.8 metres	Travel directly ahead on the correct side	No problems with this section of road.
478.0	South Tomingley	Newell Highway https://goo.gl/maps/1q8f6HJ2zsZSxup66	150.0 x 7.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
485.0	Peak Hill	Newell Highway under safety Cam https://goo.gl/maps/sAbh8zwZzZVMriD2A	Height: Right: 6.3 metres	Travel directly ahead on the correct side	No problems with this section of road.
490.0	Peak Hill	Newell Highway https://goo.gl/maps/orKTBB8wobK6exsc6	90.0 x 7.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
513.0	Alectown	Newell Highway https://goo.gl/maps/GMGbEJHAEkeWuRyz5	90.0 x 7.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
538.0	Parkes	Parkes Bypass Entry from existing Newell Hwy https://maps.app.goo.gl/khsedEk64JqX131y7	Width: 6.0 Metres	Travel directly ahead onto new Parkes Bypass	No problems with this section of road.
540.0	Parkes	Victoria St Underpass https://maps.app.goo.gl/PomRMQj9H41fVgAPA	Height: Right: 6.2 metres Width: 6.0 Metres	Travel directly ahead	No problems with this section of road.
541.0	Parkes	Roundabout at Henry Parkes Way https://maps.app.goo.gl/tAoi9DCdjBykqHXw6	Length: 50 metres Width: 6.0 Metres	Travel directly ahead through roundabout	No problems with this section of road.
547.0	Parkes	Parkes Bypass Return to existing Newel Hwy https://maps.app.goo.gl/S3CBh6fVnpXw6YqZ6	Width: 6.0 Metres	Travel directly ahead	No problems with this section of road.
552.0	Tichborne	Newell Highway over rail crossing https://goo.gl/maps/qxYUZLLe3jsCEJqD7	Length: 60 metres Width: 7.0 Metres	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required for crossing this line, likely cross with caution.
560.0	Daroobalgie rest area	Newell Highway https://goo.gl/maps/swec16PWh1N8ZbUR7	200.0 x 7.0 metres	Parking Bay	Suitable parking for Fatigue breaks.

KM index	Location	Section of road	Current clearance	Procedure	Notes
573.0	Forbes	Newell Highway intersection with Dowling Street https://goo.gl/maps/DqkvxH4gtWnXvLJ26	Length: 45 metres Width: 6.0 Metres	Left hand turn	Signs to be relocated or made removable with flush bases & Islands made trafficable/replaced with painted lines.
573.2	Forbes	Newell Highway https://goo.gl/maps/Hsmjs9pqvZ5UYFAH7	100.0 x 6.5 metres	Parking Bay	Suitable parking for Fatigue breaks.
579.5	Forbes	Newell Highway under safety Cam https://goo.gl/maps/hUdv6YJunC9yfoxF7	Height: Right: 6.4 metres	Travel directly ahead on the correct side	No problems with this section of road.
642.0	Marsden	Newell Highway under safety Cam https://goo.gl/maps/fRpjbRoXfup29Swx6	Height: Right: 6.9 metres	Travel directly ahead on the correct side	No problems with this section of road.
642.1	Marsden rest area	Newell Highway https://goo.gl/maps/AfAfr2wuNTjQMdKT8	200.0 x 7.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
673.0	Wyalong	Newell Highway under safety Cam https://goo.gl/maps/sudP4qYXPWbDB6sL6	Height: Centre: 6.2 metres	Travel directly ahead on the correct side	No problems with this section of road.
676.0	West Wyalong	Newell Highway onto Compton Road https://goo.gl/maps/PeM4uWq5hLiyZiPd8	Length: 55 metres Width: 6.5 Metres	Left hand turn	Spotter to assist at this pinchpoint.
678.0	West Wyalong	Compton Road onto Showground Road https://goo.gl/maps/hts5qARMMWZcvW7R7	Length: 50 metres Width: 6.5 Metres	left hand turn	No problems with this section of road.
678.1	West Wyalong	Compton Road over rail crossing https://goo.gl/maps/KQwsqDkEDASMpB9r8	Length: 50 metres Width: 6.0 Metres	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
680.0	West Wyalong	Showground Road https://goo.gl/maps/C8GevkquVtpkHjkFA	150.0 x 7.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
680.2	West Wyalong	Showground Road onto the Newell Highway https://goo.gl/maps/yAyBdrZcocEeTBnz6	Length: 50 metres Width: 6.5 Metres	Left hand turn	Spotter to assist at this pinchpoint.
699.0	Allena	Newell Highway over rail crossing https://goo.gl/maps/GMHsd5ynEFwzjmnXA	Length: 50 metres Width: 7.0 Metres	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
726.0	Mirrool	Newell Highway over rail crossing https://goo.gl/maps/kFkwMBL9nfKqL954A	Length: 50 metres Width: 6.5 Metres	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
761.0	Ardlethan rest area	Newell Highway https://goo.gl/maps/Na3rzBt25sMnsBya6	200.0 x 7.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
802.0	Grong Grong rest area	Newell Highway https://goo.gl/maps/vBTyD3zJVMcbn6wy9	200.0 x 7.0 metres	Parking Bay	Suitable parking for Fatigue breaks.
813.0	Narrandera	Newell Highway over rail bridge https://goo.gl/maps/YBWuYYyVoZfSUTJ37	Length: 50 metres Width: 7.0 Metres	Travel directly ahead	Loads to travel over the bridge in the center of the road. Approval required crossing this line, likely cross with caution.
814.0	Narrandera	Newell Highway at Whitton Street https://goo.gl/maps/EXcuuBeMsXdhVDtm8	Length: 50 metres Width: 7.5 Metres	Left hand turn	Spotter to assist at this pinchpoint.
814 to 816	Narrandera	Newell Highway (Cadell St) https://goo.gl/maps/Z3ptasM9sGGtaB5A8	Length: 50 metres Width: 7.5 Metres	Travel directly ahead	Trees to be trimmed

KM index	Location	Section of road	Current clearance	Procedure	Notes
817.0	Narrandera	Newell Highway onto Sturt Highway https://goo.gl/maps/uFiCyhp9uF147Wie8	Length: 80 metres Width: 7.5 Metres	Right hand turn.	Sign to be relocated or made removable. Spotter to assist at this pinchpoint.
818.0	Gillenbah	Sturt Highway onto Newell Highway GPS Link: https://maps.app.goo.gl/f19ZqoVET8dcRwku9	85.0 metres long 8.0 metres wide	Left Hand Turn	No problems with this section of road.
910.0	Bundure	Newell Hwy onto Kidman Way GPS Link: https://maps.app.goo.gl/XtpjkT5CaFwPe4u26	35.0 metres long 8.0 metres wide	Right hand turn	The swept path that are proposed for the blades are suitable for the towers.
941.0	Coleambally	Kidman Way onto Mclennons Bore Rd GPS Link: https://goo.gl/maps/t2ijaAnyz7w4DNQ96	30 meters	Left hand turn	The swept path that are proposed for the blades are suitable for the towers.
963.0	Jerilderie	Mclennons Bore Rd onto Wilsons Rd GPS Link: https://goo.gl/maps/zSfwKKyXzHs9m9nb7	40 metres	Right hand turn	Hardstand to be installed on inside of corner. OH conductor clearance to be confirmed. Gravel road. May become unusable in wet conditions. Spotter to assist at this pinchpoint
966.0	Argoon	Bend on Wilsons Rd GPS Link: https://maps.app.goo.gl/Vq7BcMS9mx2bMZNP8	100 metres	Right hand bend	Gravel road. May become unusable in wet conditions.
967.0	Argoon	Wilsons Rd Stock Grid GPS Link: https://maps.app.goo.gl/zfbsQxBaH8t1B8BJ7	5.8 M Wide	Travel straight ahead	All stock grids to be upgraded to accommodate all proposed loads. Spotter to assist at this pinchpoint
972.9	Argoon	Wilsons Rd Stock Grid GPS Link: https://maps.app.goo.gl/Mo6o2EoLw8Q2treX7	5.8 M Wide	Travel straight ahead	All stock grids to be upgraded to accommodate all proposed loads. Spotter to assist at this pinchpoint
973.0	Argoon	End Route			All site roads to be constructed to accommodate the vertical curve, swept path, weight and height of all proposed loads.

0.0 Km's: Mayfield No.4 berth onto Selwyn Street

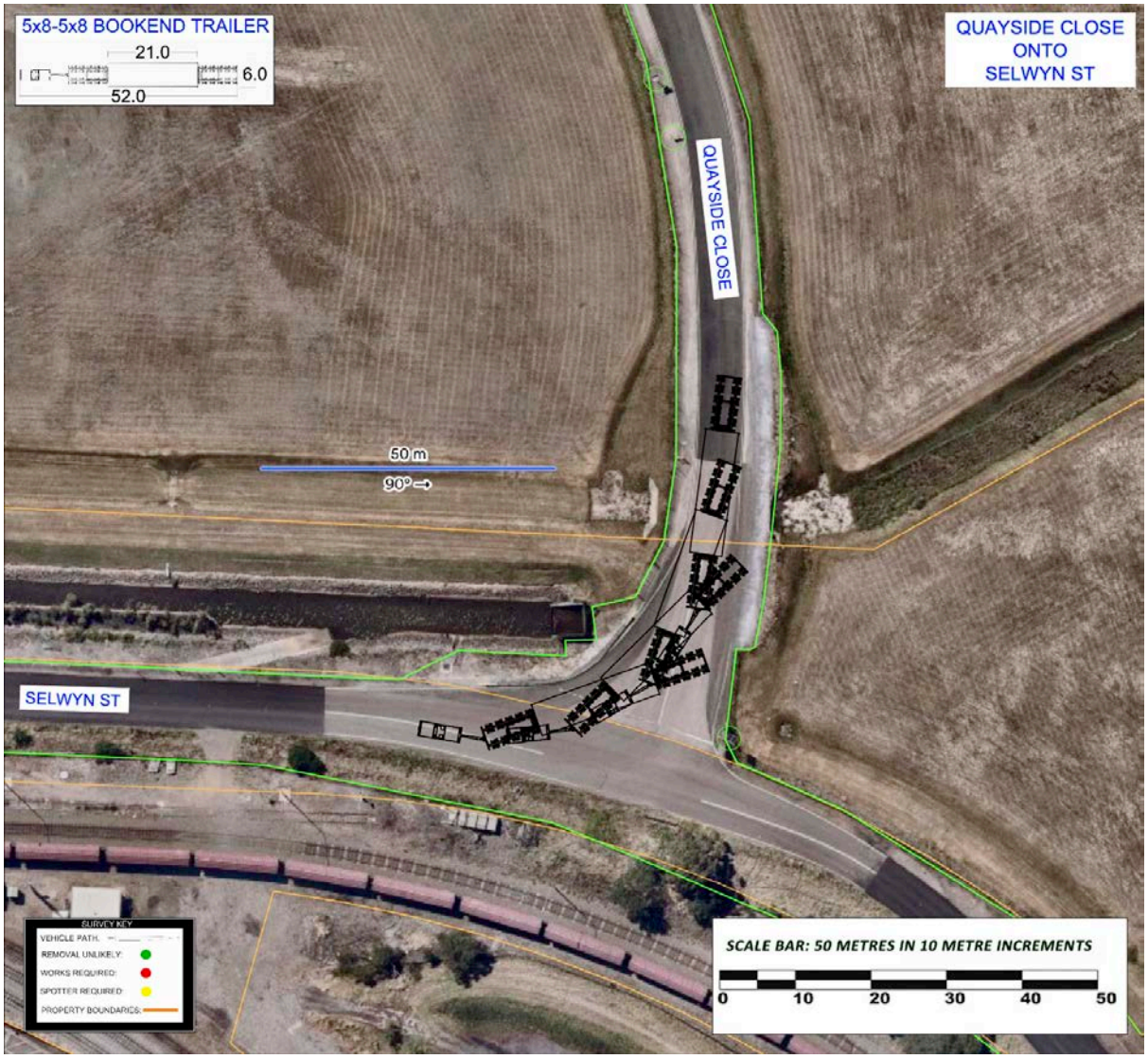


Figure 45 - Mayfield No.4 berth onto Selwyn Street

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/afLwPYKuNdm
PROCEDURE: Right hand turn.
ROAD MODIFICATIONS: No problems with this section of road.

1.3 Km's: Selwyn Street onto Industrial Drive

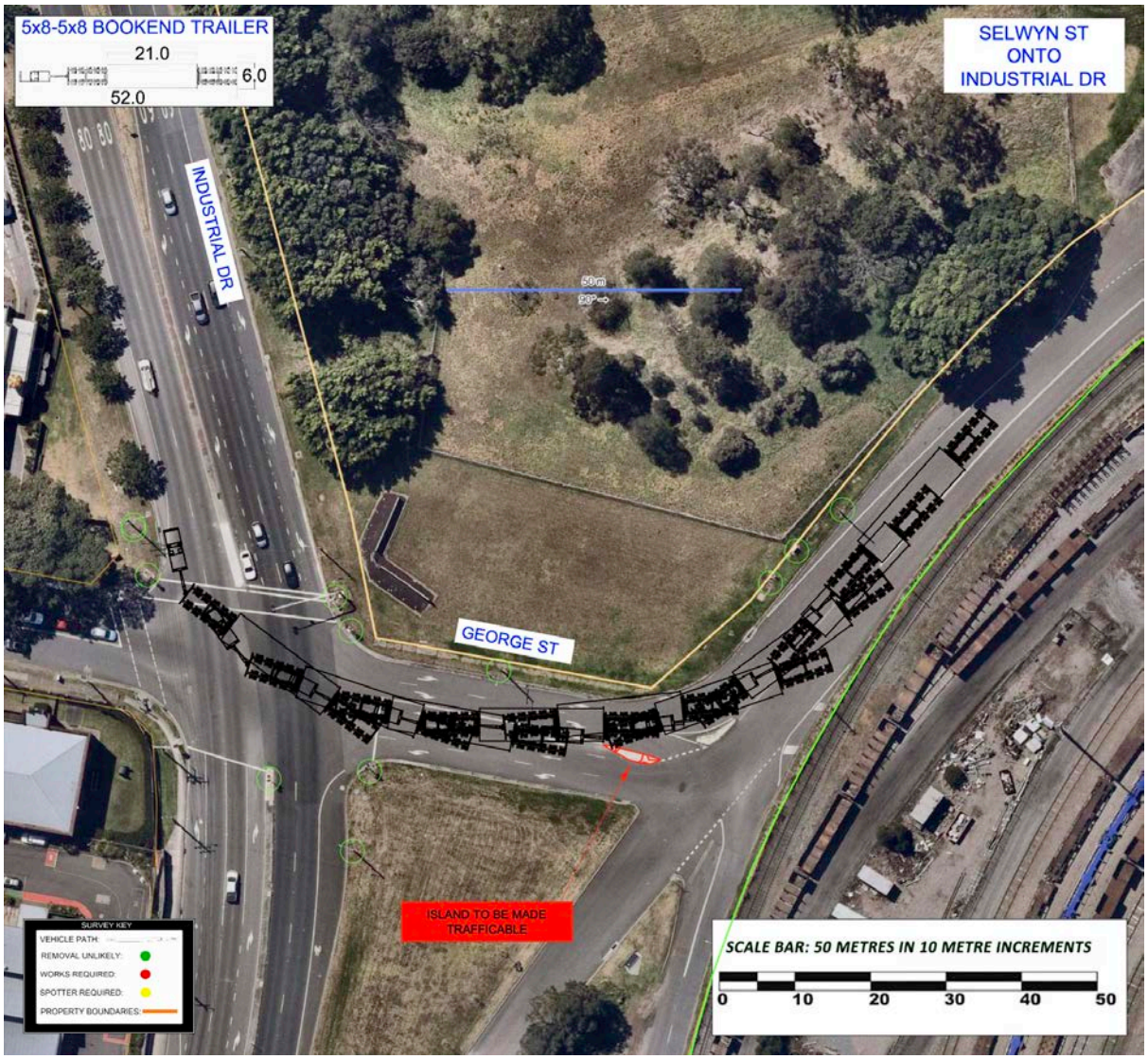


Figure 46 - Selwyn Street onto Industrial Drive

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/gXeHvBtCp4D2
PROCEDURE: Right hand turn.
ROAD MODIFICATIONS: Islands to be made trafficable/replaced with painted lines.

15.0 Km's: Bend on New England Hwy at Tarro



Figure 47 - Bend on New England Hwy at Tarro

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/63RTZynpTRLjkSJf9
PROCEDURE: Left hand bend.
ROAD MODIFICATIONS: No problems with this section of road.

28.7 Km's: John Renshaw Drive onto the Hunter Expressway

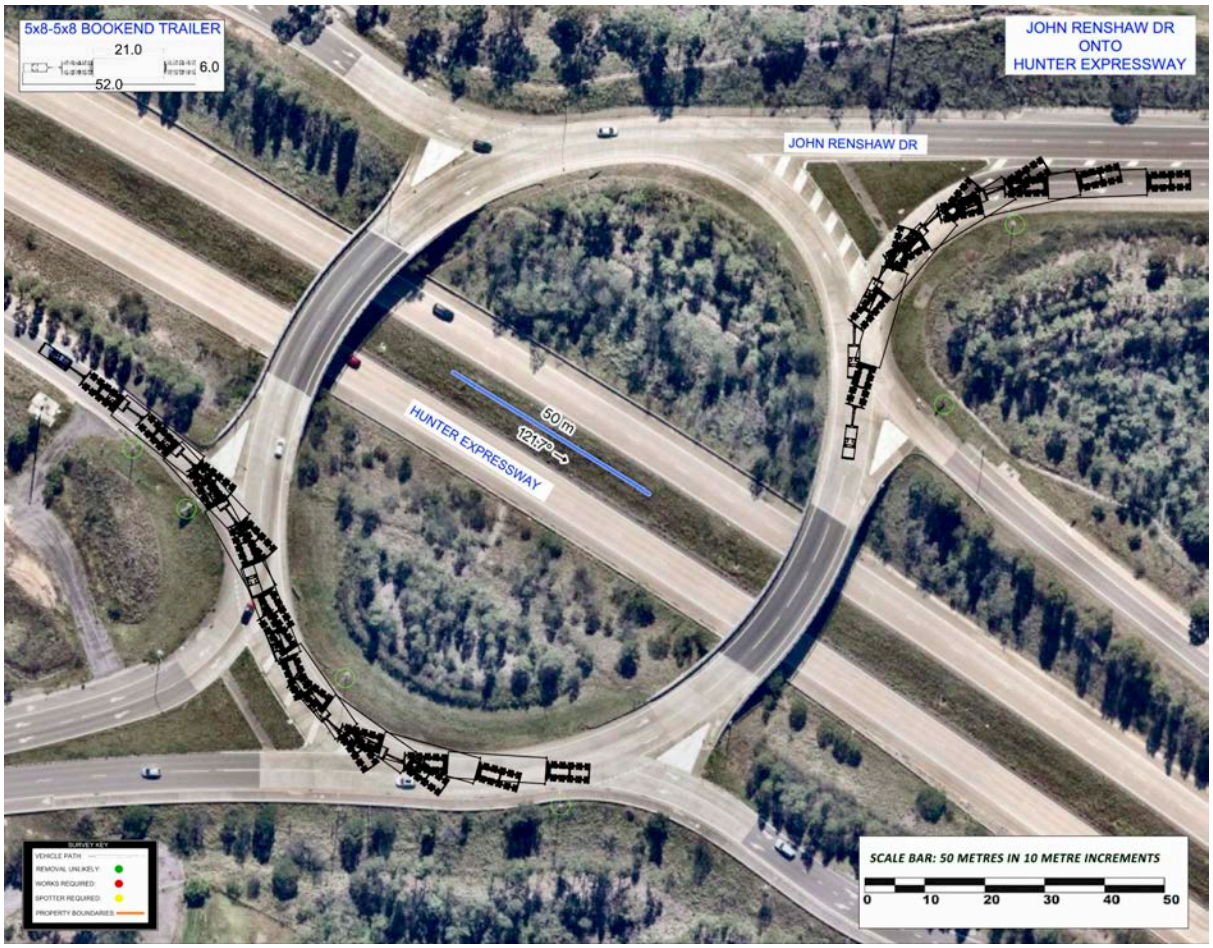


Figure 48 - John Renshaw Drive onto the Hunter Expressway

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/1STJ1PfQt9E2
PROCEDURE: Right hand turn around roundabout.
ROAD MODIFICATIONS: No problems with this section of road.

67.3 Km's: New England Highway onto the Golden Highway

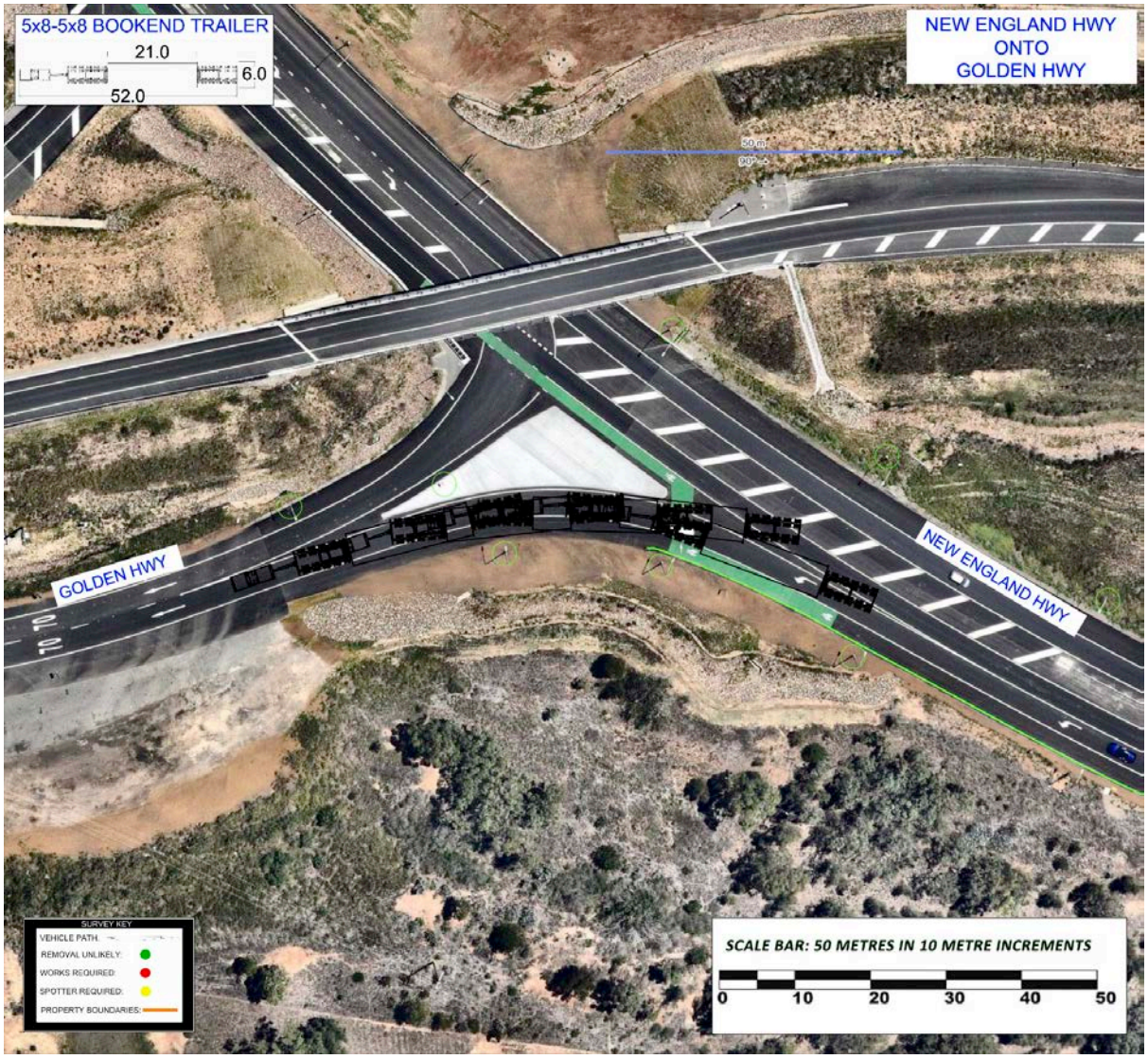


Figure 49 - New England Highway onto the Golden Highway

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/nAnfkYfeUn42
PROCEDURE: Left Hand turn than travel directly ahead through the roundabout.
ROAD MODIFICATIONS: No problems with this section of road.

67.5 Km's: Roundabout on Golden Highway

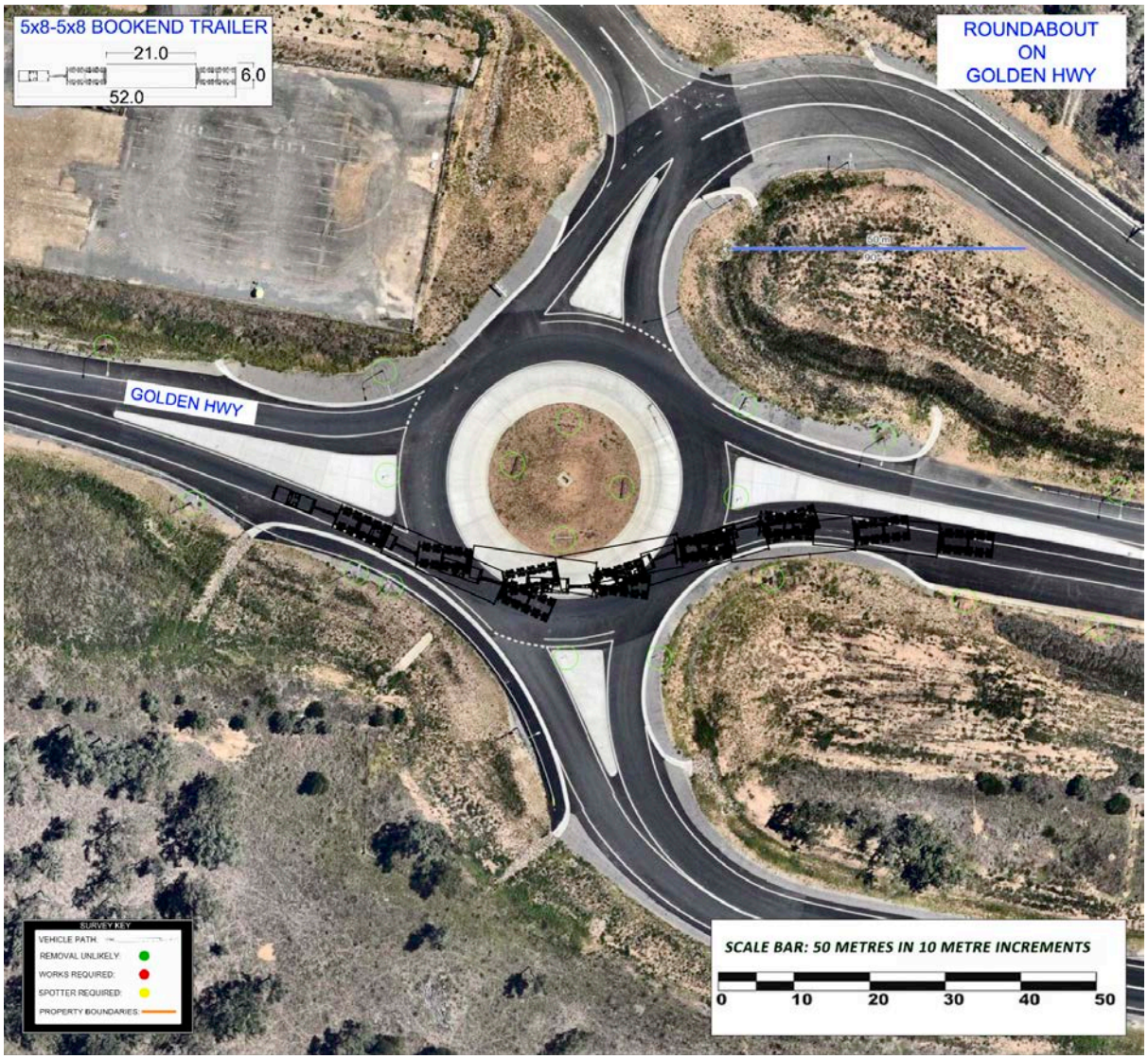


Figure 50 - Roundabout on Golden Highway

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/92r3wt9cTYRQRShm8
PROCEDURE: Travel directly ahead
ROAD MODIFICATIONS: The roundabout has been designed to accommodate windfarm projects in the Orana REZ.

77.4 Km's: Golden Highway intersection with the Putty Road

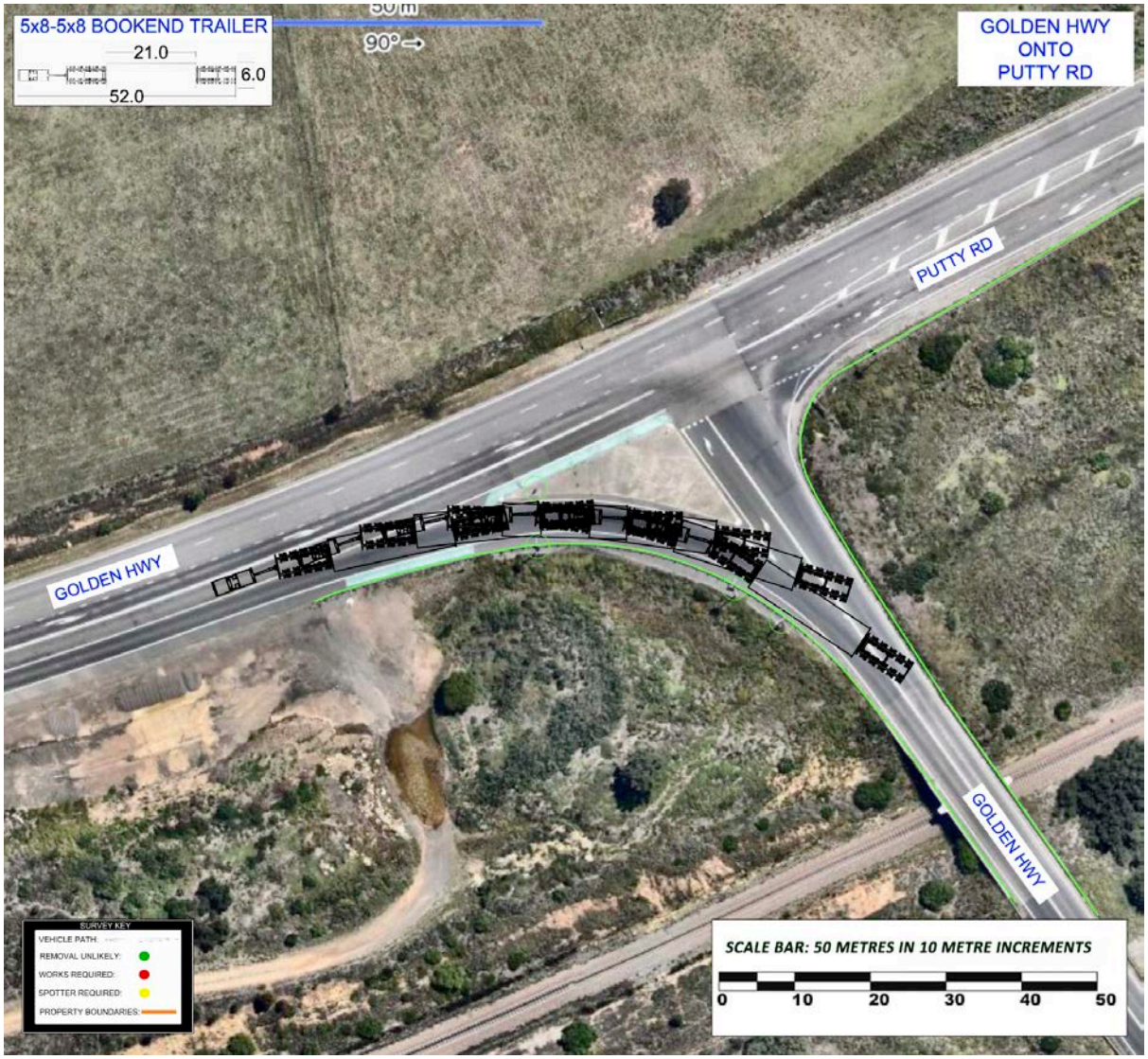


Figure 51 - Golden Highway intersection with the Putty Road

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/7hQdEmK1EgE2
PROCEDURE: Left hand turn.
ROAD MODIFICATIONS: No problems with this section of road.

80.8 Km's: Golden Highway intersection with the Putty Road

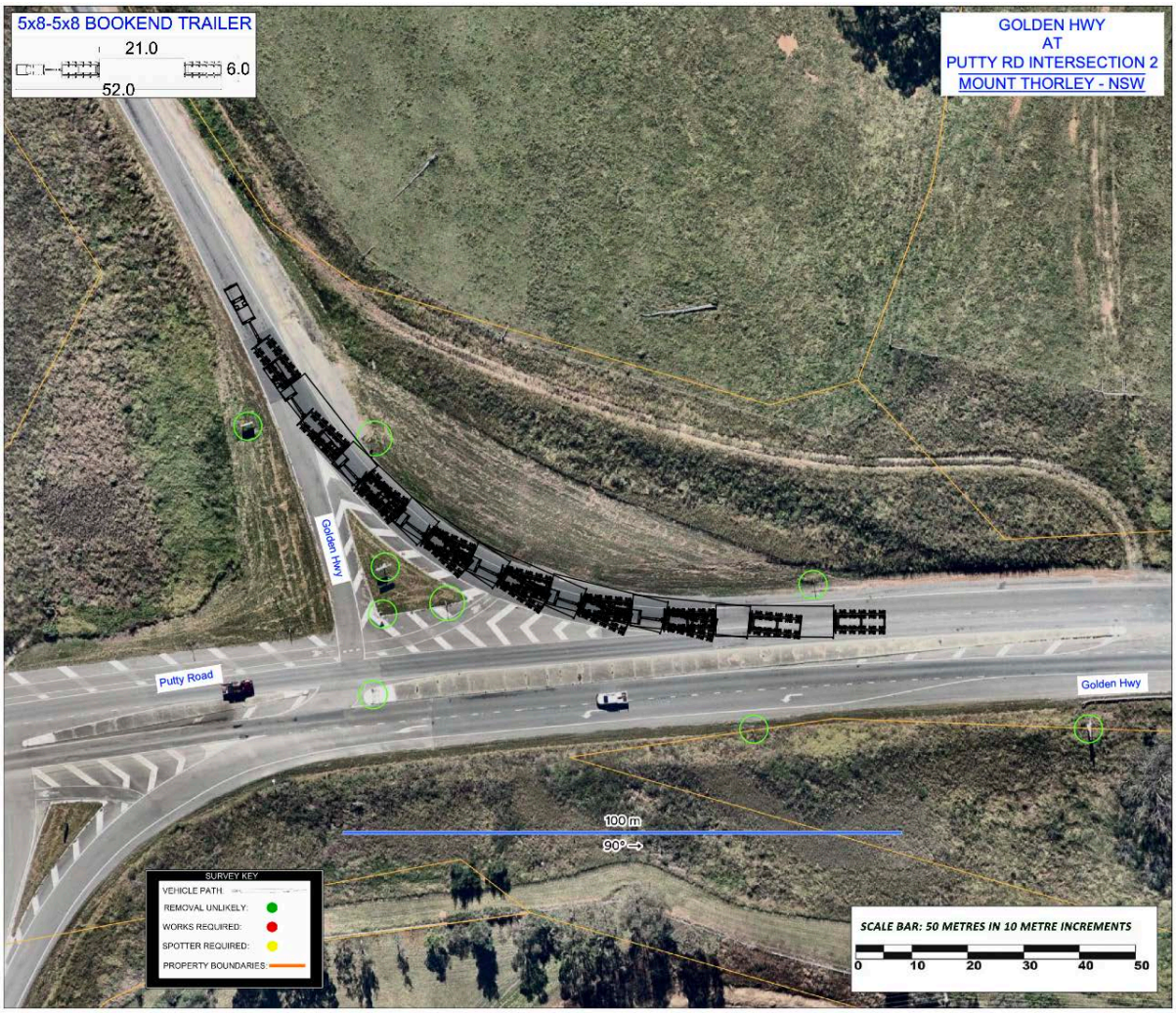


Figure 52 - Golden Highway intersection with the Putty Road

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/4ZksNsxZtJ6KwJMe8

PROCEDURE: Right hand turn onto the incorrect side of the road. Police and pilots will need to manage the traffic at this location.

ROAD MODIFICATIONS: Nil.

131.9 Km's: Golden Highway onto Denman Road

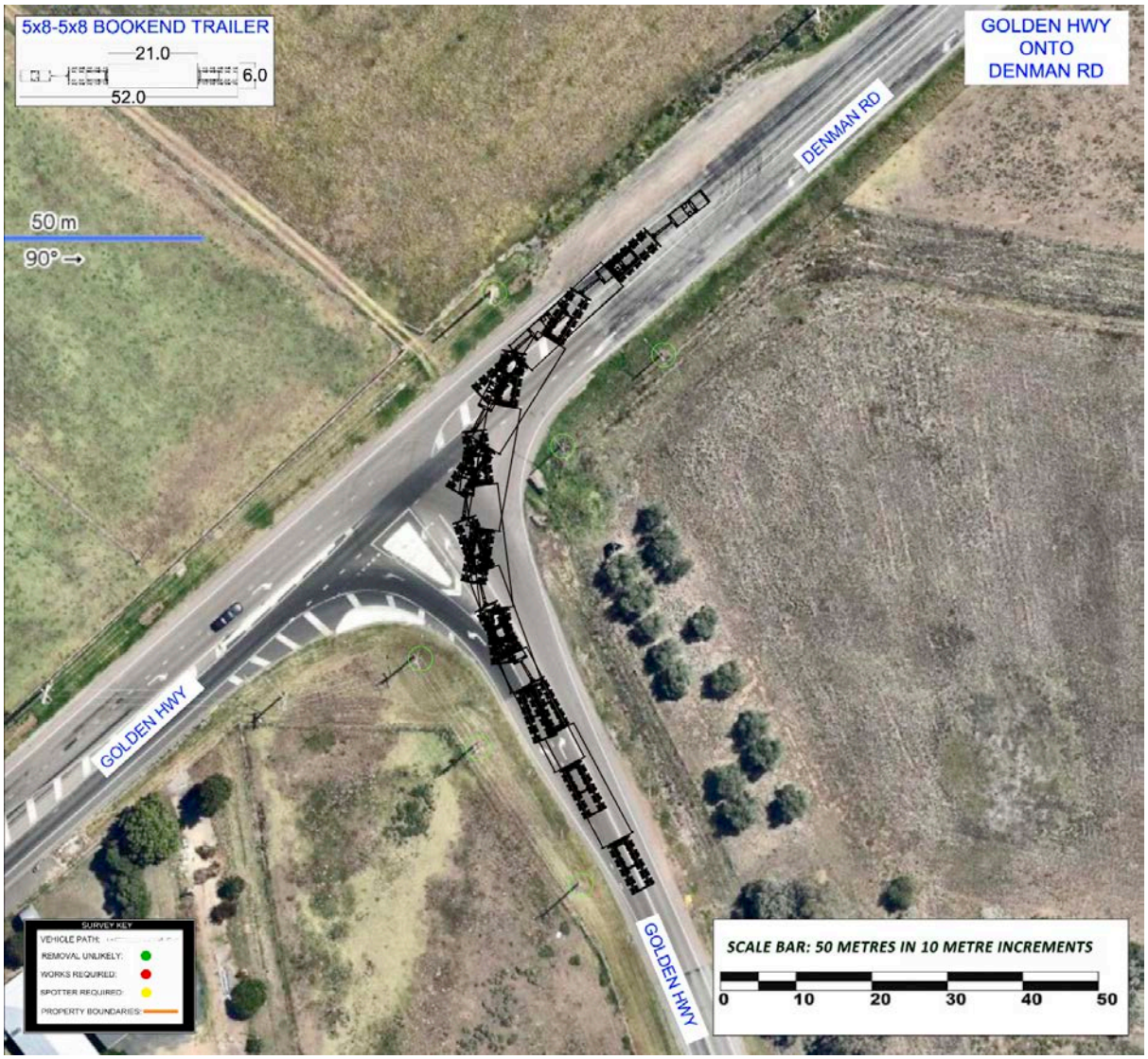


Figure 53 - Golden Highway onto Denman Road

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/sf4PNnycxB32
PROCEDURE: Right hand turn.
ROAD MODIFICATIONS: No problems with this section of road.

137.9 Km's: Denman Road onto Bengalla Road



Figure 54 - Denman Road onto Bengalla Road

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/3sK4m6YSHNHqkqn68
PROCEDURE: Left hand turn.
ROAD MODIFICATIONS: Hardstand to be installed on inside of corner.

183.0 Km's: Wybong Road onto Golden Highway

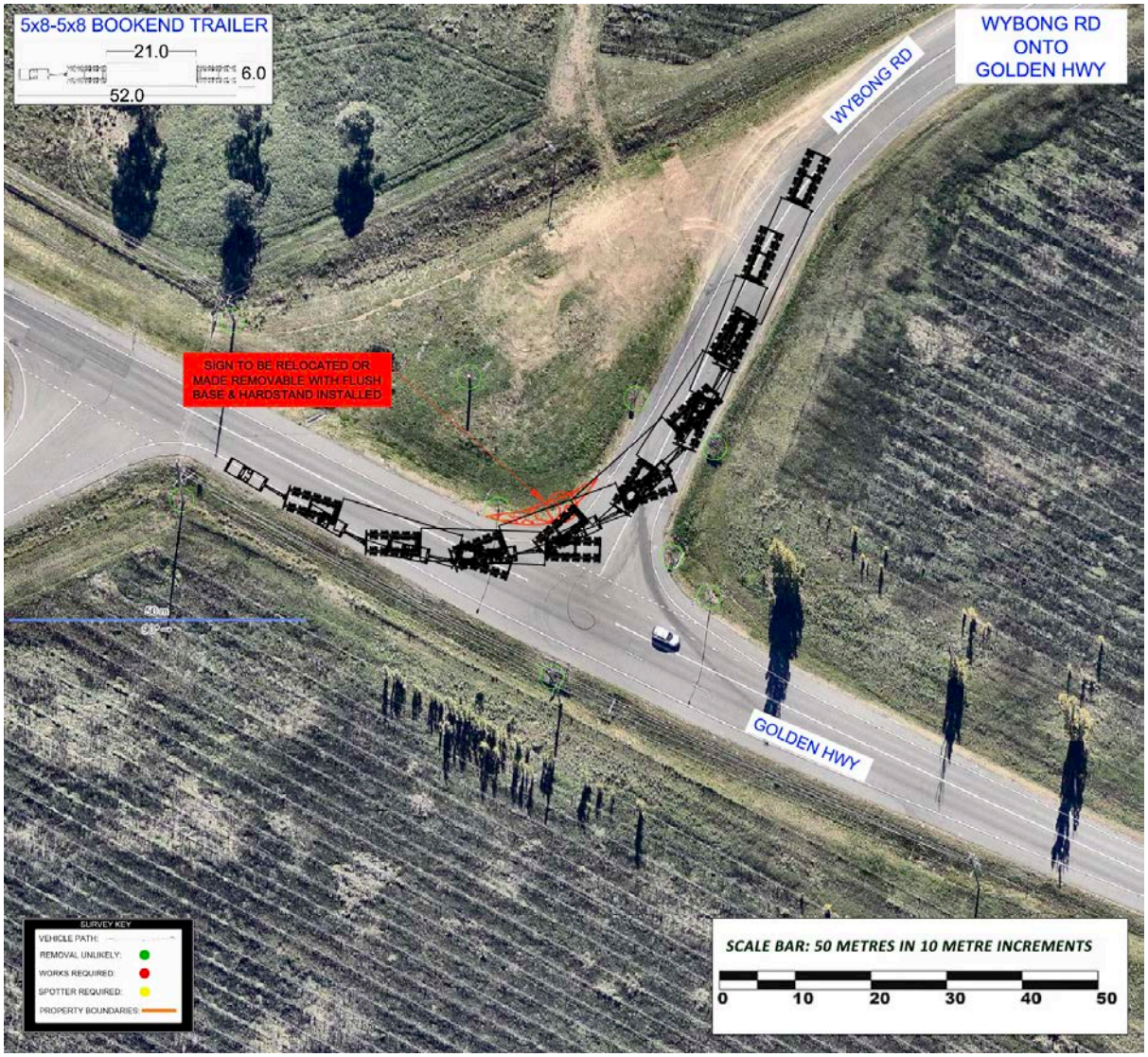


Figure 55 - Bengalla Road onto Wybong Road

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/5ft3VnWpnPhpeN4u7

PROCEDURE: Right hand turn.

ROAD MODIFICATIONS: Sign to be relocated or made removable with flush base & hardstand installed on inside of corner.

416.0 Km's: Bunglegumbie Road onto the Mitchell Highway



Figure 56 - Bunglegumbie road onto the Mitchell Highway

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/jCWqmaQsd3fChp837
PROCEDURE: Left hand turn.
ROAD MODIFICATIONS: No problems with this section of road.

423.0 Km's: Mitchell Highway onto the Newell Highway at Dubbo

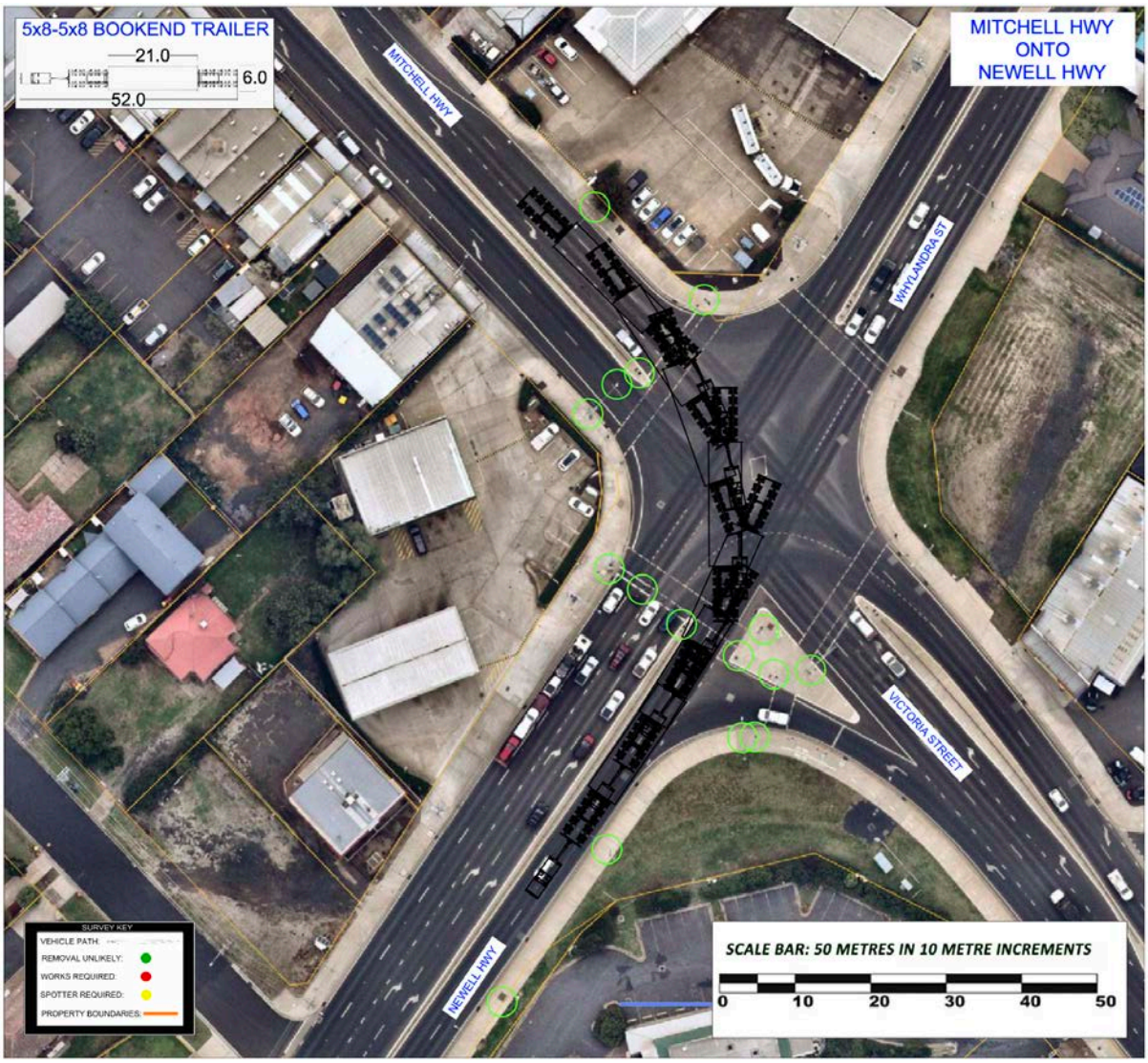


Figure 57 - Mitchell Highway onto Newell Highway

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/Q1xHtUznG1mENnUu5
PROCEDURE: Right hand turn.
ROAD MODIFICATIONS: No problems with this section of road.

573.0 Km's: Newell Highway intersection with Dowling Street in Forbes

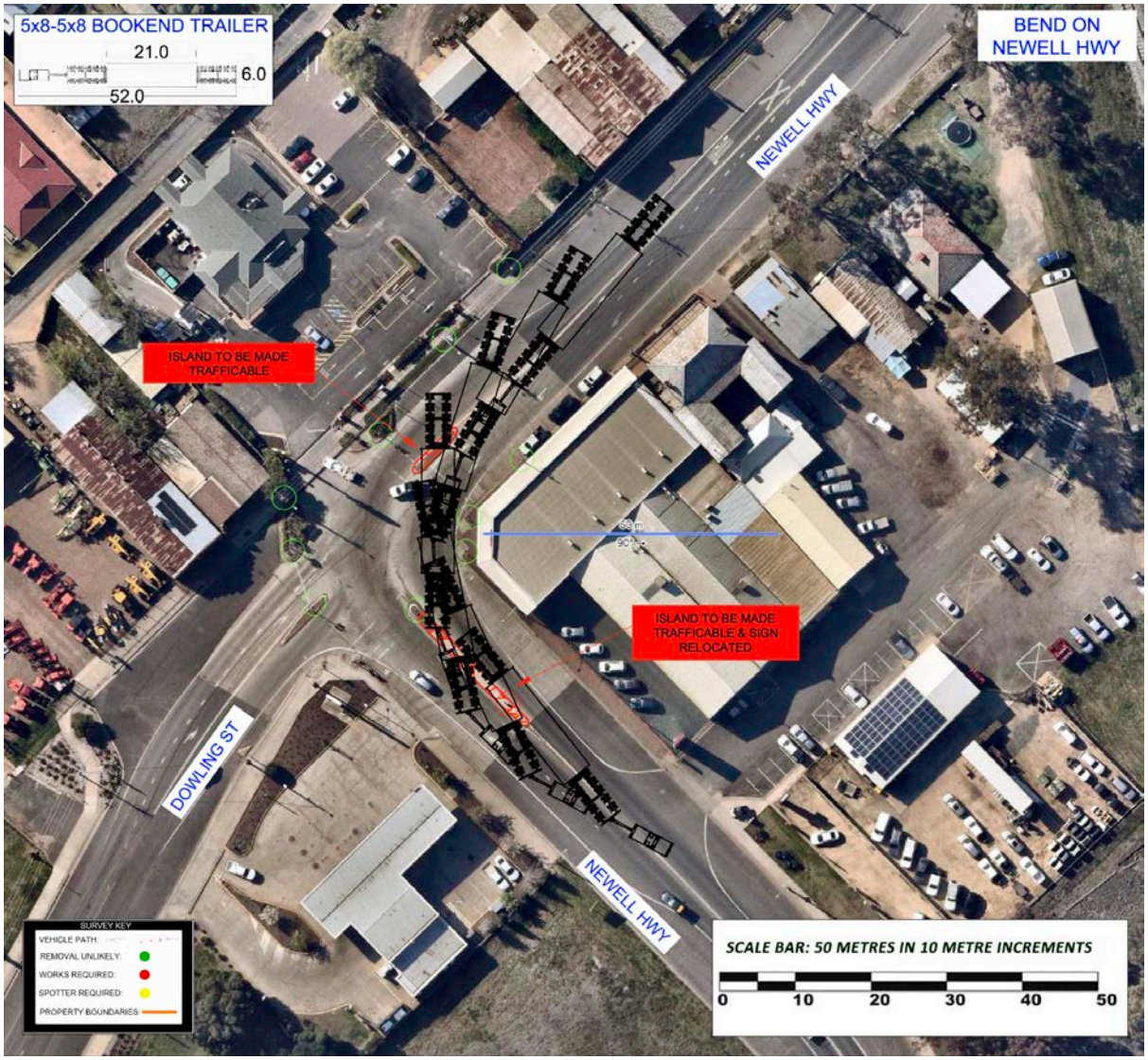


Figure 58 - Newell Highway intersection with Dowling Street

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/DqkvxH4qtWnXvLJ26

PROCEDURE: Left hand turn.

ROAD MODIFICATIONS: Signs to be relocated or made removable with flush bases & Islands made trafficable/replaced with painted lines.

676.0 Km's: The Newell Highway onto Compton Road at West Wyalong



Figure 59: Newell Highway at Compton Road

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/PeM4uWg5hLiyZiPd8

PINCHPOINT PROCEDURE: Load to turn left from the Newell Highway onto Compton Road while crossing onto the incorrect side of the road.

ROAD MODIFICATIONS: Nil.

678.0 Km's: Compton Road onto Showground Road at West Wyalong

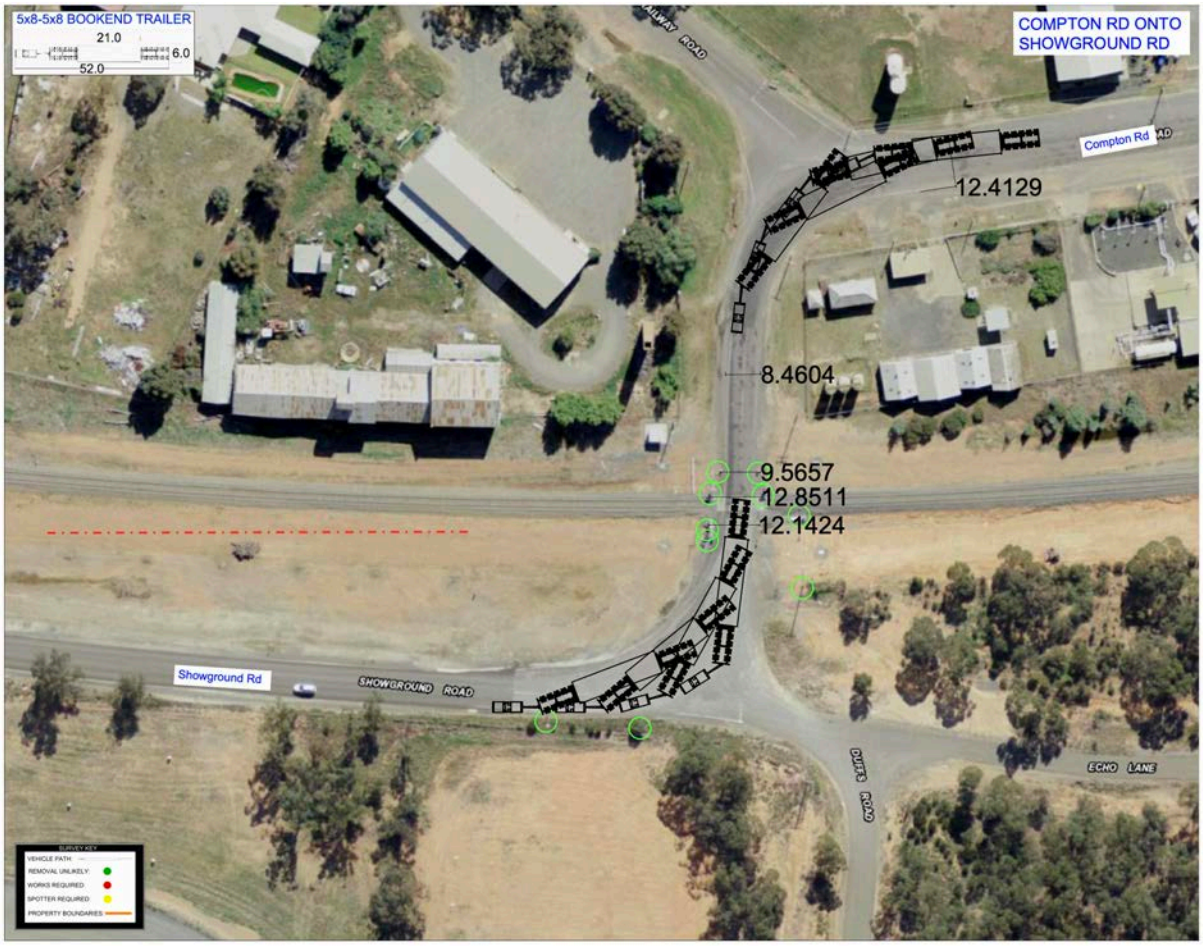


Figure 60: Compton Road onto Showground Road

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/hts5qARMMWZcvW7R7

PINCHPOINT PROCEDURE: Dogleg turn from Compton Road onto Showground Road while crossing onto the incorrect side of the road. Rail protection officer may be required to travel over the rail crossing.

ROAD MODIFICATIONS: Nil.

680.2 Km's: Showground Road onto the Newell Highway at West Wyalong



Figure 61: Showground Road onto Newell Highway

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/yAyBdrZcocEeTBnz6

PINCHPOINT PROCEDURE: Load to turn left from Showground Road onto the Newell Highway while crossing onto the incorrect side of the road.

ROAD MODIFICATIONS: Nil.

814.0 Km's: Whitton Street onto Cadell Street at Narrandera (Newell Highway)



Figure 62: Whitton Street at Cadell Street

GPS LINK FOR SECTION OF ROAD: https://goo.gl/maps/EXcuuBeMsXdhVDtm8

PINCHPOINT PROCEDURE: Load to turn left from Whitton Street onto Caddell Street while staying on the correct side of the road.

ROAD MODIFICATIONS: Nil.

817.0Km's: Newell Highway onto Sturt Highway at Gillenbah



Figure 63 – Right hand turn from the Newell Highway onto the Sturt Highway

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/C7gJ8ouDVdpcH5Rz7
PROCEDURE: Right hand turn.
ROAD MODIFICATIONS: Sign to be relocated or made removable.

910.0.0 Km's: Newell Highway onto Kidman Way

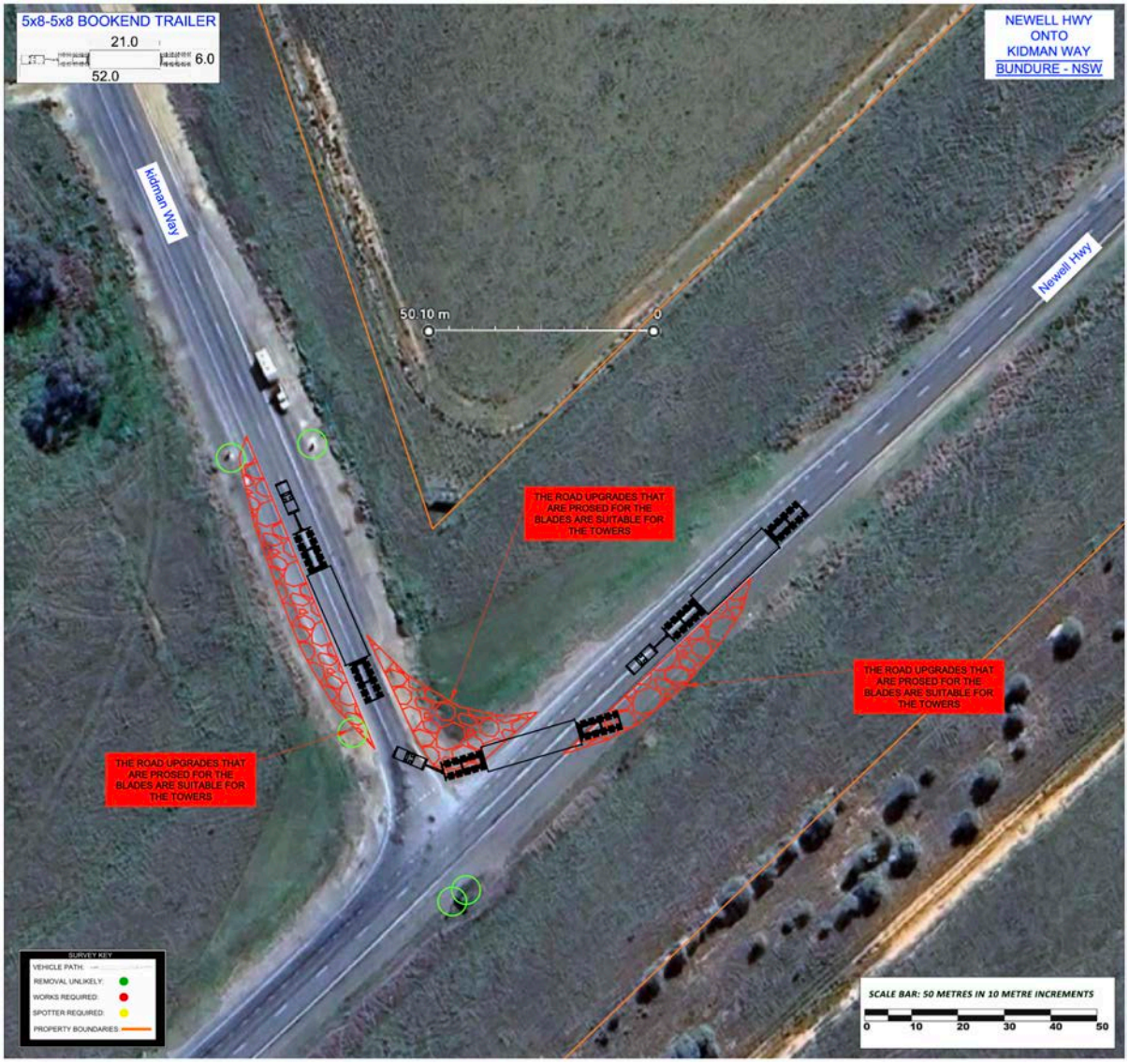


Figure 64 - Newell Hwy onto Kidman Way

GPS LINK FOR THIS LOCATION: https://maps.app.goo.gl/XtpjkT5CaFwPe4u26
PROCEDURE: Right hand turn. Police to control traffic, pilots to warn all traffic.
ROAD MODIFICATIONS: The road modifications that are proposed for the blades are suitable for the towers.

941.0Km's: Kidman Way onto Mclennons Bore Road

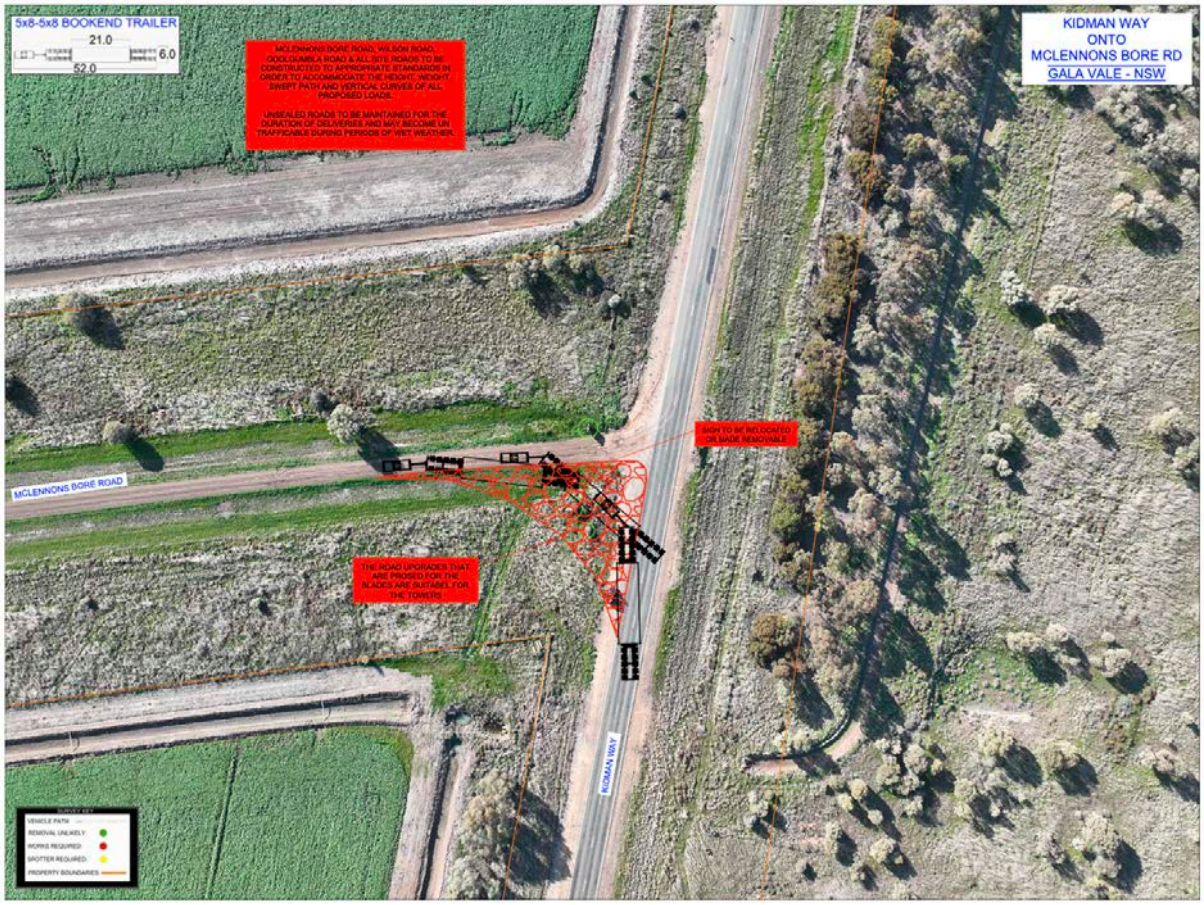


Figure 65 - Kidman Way onto Mclennons Bore Road

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/t2ijaAnyz7w4DNQ96
PROCEDURE: Right hand turn.
ROAD MODIFICATIONS: Signs to be relocated or made removable. Hardstand to be installed on outside and inside of corner. Road becomes gravel. May become unusable in wet conditions.

963.0Km's: Mclennons Bore Road onto Wilsons Road

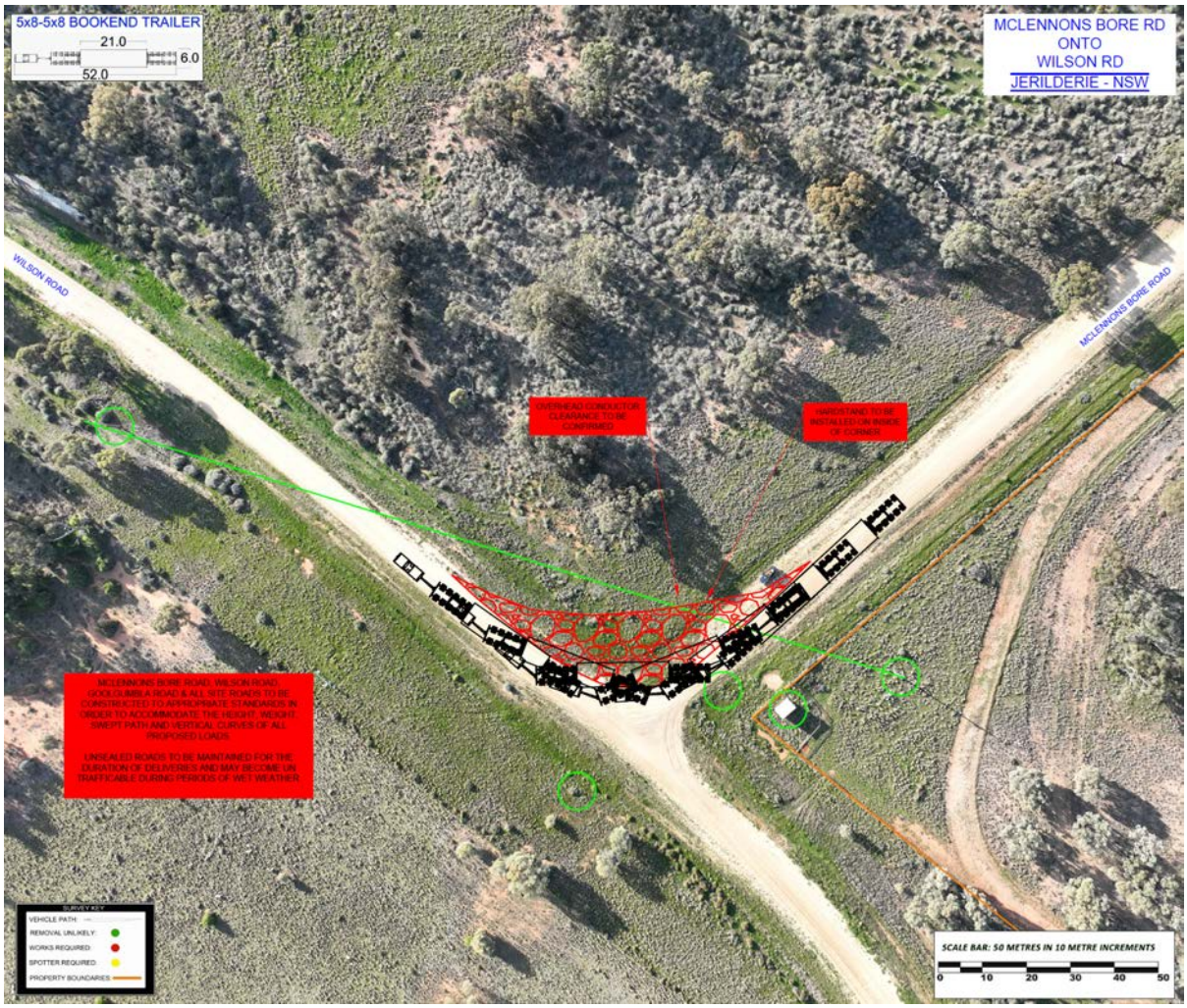


Figure 66 - Mclennons Bore Road onto Wilsons Road

GPS LINK FOR THIS LOCATION: https://goo.gl/maps/zSfwKKyXzHs9m9nb7
PROCEDURE: Right hand turn.
ROAD MODIFICATIONS: Hardstand to be installed on inside of corner. OH conductor clearance to be confirmed. Gravel road. May become unusable in wet conditions.

14.0 Route 2: Rail crossing conflicts

01 Selwyn St, Mayfield North
GPS: https://goo.gl/maps/AmohE54hKSz
Type: Level crossing
Asset Owner: Private
Line: Port Waratah – BHP Lines
LXM ID: 1659
Operational: Yes
Maximum width clearance: 11.5 Metres
Conflict: Non



02 Golden Hwy, Denman
GPS: https://goo.gl/maps/r7x7Qc685d82
Type: Level crossing
Asset Owner: ARTC
Line: Ulan
LXM ID: 1285
Operational: Yes
Maximum width clearance: 11.5 Metres
Conflict: Non



03 Golden Hwy, Dunedoo
GPS: https://goo.gl/maps/wsyNKfcoAij3SosY9
Type: Level crossing
Asset Owner: ARTC
Line: Wallerawang – Gwabegar
LXM ID: 1428
Operational: Yes
Maximum width clearance: 11.5 Metres
Conflict: Non



04 Golden Hwy, Beni
GPS: https://goo.gl/maps/yb15Kz6R2r3E69fj6
Type: Level Crossing
Asset Owner: ARTC
Line: Troy Jct – Merrygoen
LXM ID: 1260
Operational: Yes
Maximum width clearance: 11.5 Metres
Conflict: Non



05 Boothenba Rd, Dubbo
GPS: https://goo.gl/maps/72ageimPLqPWYY7M9
Type: Level crossing
Asset Owner: UGL Regional Linx
Line: Dubbo – Coonamble
LXM ID: 1256
Operational: Yes
Maximum width clearance: 11.5 Metres
Conflict: Non



06 Mitchell Highway, Dubbo
GPS: https://maps.app.goo.gl/b44zuUinZJm6rf8D8
Type: Level Crossing
Asset Owner: ARTC
Line: Main West
LXM ID: 713
Operational: Yes
Maximum width clearance: 8.0 Metres
Conflict: Non



07 Newell Highway, Tichborne
GPS: https://maps.app.goo.gl/BkyF9ZCq63KA5wQM9
Type: Level crossing
Asset Owner: ARTC
Line: Stockbingal-Parkes
LXM ID: 1164
Operational: Yes
Maximum width clearance: 9.0 Metres
Conflict: Non



08 Newell Highway, Forbes
GPS: https://maps.app.goo.gl/8nEUQgovWXcg4Qmy9
Type: Level crossing
Asset Owner: ARTC
Line: Stockbingal-Parkes
LXM ID: 1161
Operational: Yes
Maximum width clearance: 9.0 Metres
Conflict: Non



09 Showground Road, West Wyalong
GPS: https://maps.app.goo.gl/f7QZvP5NAEt9zKK26
Type: Level crossing
Asset Owner: UGL
Line: Temora-Lake Cargelligo
LXM ID: 1193
Operational: Yes
Maximum width clearance: 8.0 Metres
Conflict: Non



10 Newell Highway, Mirrool
GPS: https://maps.app.goo.gl/E2y1kPhadcnziZ716
Type: Level crossing
Asset Owner: UGL
Line: Cootamundra-Griffith
LXM ID: 227
Operational: Yes
Maximum width clearance: 14.0 Metres
Conflict: Non



Assessment of Rail Crossings advised by TFNSW

Rail Corridor	Condition	Interaction
Sturt Highway route crossing from Narrandera to Tocumwal rail corridor at Narrandera	Non operational	The route has no interaction with this rail crossing as it is a redundant line which ends at the embankment of the motorway.
Crossing Overbridge and operational rail corridor from Junee to Narrandera at Narrandera.	Non operational	The route will be crossing the overbridge. Bridge assessment will be required.
Hume Highway route crossing from Cootamundra to Gilmore rail corridor at Coolac	Non operational	The route has no interaction with this rail crossing as it is a redundant line which ends at the embankment of the motorway.
Newell Highway crossing public level crossing and non-operational Barmedman to Rankins rail corridor at Alleena.	Non operational	The route has no interaction with this rail crossing as it is a redundant line which ends at the embankment of the motorway.
Vehicle and Pedestrian Level Crossing on CRN operational rail corridor from Molong to Parkes at Parkes.	Operational	Route 2 proposes to use Parkes Bypass which is to be completed by Q4 2024.
Crossing non-operational rail corridor from Sandy Hollow to Merriwa near Maitland Street Gungal.	Non operational	The route has no interaction with this rail crossing as it is a redundant line which ends at the embankment of the motorway.

15.0 Route 2: Conclusion

After studying all the options and undertaking a route survey, the route in its current condition will require a large number of upgrades before it could be deemed suitable for transporting the proposed components.

The following are the key points that need to be taken into consideration, if the project moves forward with this route.

SWEPT PATH:

- There are numerous sections along the route that will require upgrading in order to accommodate the proposed tower size.
- The corners that have been identified in the report as requiring significant work should be investigated early in the planning stages to avoid delays or rejections.

OVERHEAD STRUCTURES: (6.1m Maximum loaded height)

- The lowest Bridge structure on the route is the Tarro overpass on the New England Highway at Tarro which has a 6.2 metre clearance. The loads must not exceed 6.1 metres in overall height and must pass under this structure in the far-left breakdown lane.
- The lowest gantry/sign on the route are along the Newell Highway and are 6.2 metres at their lowest. Again, the loads must not exceed 6.1 metres in overall height at these locations.
- Discussions with asset owners/regulators should be undertaken to ensure continued use of this temporary bypass for the proposed project.
- There are several traffic signals that will need to be lifted on route.
- Base towers will need to be lowered at a number of points along the route.

OVERHEAD UTILITIES:

- Although the highest loads have a maximum loaded height of 6.1 metres the travel height of the towers along rural roads would need to be set higher once the loads are clear of the bridge structures. We would recommend a travel height of up to 6.2 metres when trailers are at travelling height.
- This route will need to be checked by an authorised scoping company for a loaded height of 6.2 metres.
- Given the length of the route and large tower size there will likely be a significant amount of overhead utility lifting/relocation required. It is advised that the project starts discussions with all authorities that have utilities overhanging the corridor that they determine the required clearance for each type of conductor and develop suitable modifications to the overhead assets to ensure regulatory clearances are maintained.

BRIDGES:

- Bridge assessments will be required for the entire route.
- There are numerous bridges that may have restrictions placed upon them, therefore, discussions with asset owners and bridge assessments if required should be conducted as soon as possible to confirm the suitability of the route.

RAIL ASSETS:

- There are a number of rail overbridges and 10 x rail crossings on route that will require approval from authorities before loads can access the routes.
- All rail crossings were checked for conflicts, taking into account the width and vertical curve, and all crossings are suitable for the loads using this route that are listed in this report.

VEGETATION:

- The route requires a moderate amount of vegetation clearing at several intersection upgrades.
- This route will need to have a height survey undertaken for vegetation that is below the maximum travel height of 6.3 metres. During the scope there were a moderate number of locations that would require vegetation trimming but not removal for overhead vegetation.

PAVEMENT:

- The Pavement on all roads have adequate highway pavement up until the turn from Kidman Way onto Mclennons Bore Road.
- Mclennons Bore Road and Wilsons road through to site is gravel road of varying quality. The road will need to be graded before deliveries commence and regular grading will be required over the project delivery period. The road may become
- All site access roads to be constructed to appropriate standards in order to accommodate the weight, height and swept path of all proposed loads. Roads to be maintained for the duration of deliveries if not sealed.

ROADWORKS:

- The project will need to start discussions with government authorities at least 18 months prior to turbine transport to understand if the project would conflict with any upcoming roadworks. Once a Transport Management Plan “TMP” has been approved for the transport of the turbines, then the exact movement dates need to be communicated with all relevant authorities to make all road stakeholders are aware of the scheduled movements for each day.

- The project will need to regularly check on any new upgrades not listed in the report. If upgrades have taken place on a section of route after this report has been completed, then a swept path study would need to be undertaken on that section of road to confirm that it can still be used.

SITE ACCESS ROADS:

- All site access roads to be constructed to appropriate standards in order to accommodate the height, weight, vertical curves and swept path of all proposed roads.
- Roads to be made all weather and maintained for the duration of deliveries.

16.0 Route 3 Study: Newcastle to Dinawan Energy Hub Windfarm

COMPONENTS: Nacelles, Generators, Drive Trains, Hubs and smaller components (**Max loaded height 5.3m**)

DISTANCE: 866 kilometres

GPS LINK: https://maps.app.goo.gl/vsErYekeEo3j2oPMA

ROUTE: Quayside Close, Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, M1, Pennant Hills Road, M2, M7, Hume Motorway, Hume Highway, Sturt Highway, Newell Hwy, Kidman Way, Mclennons Bore Rd, Wilson Rd.

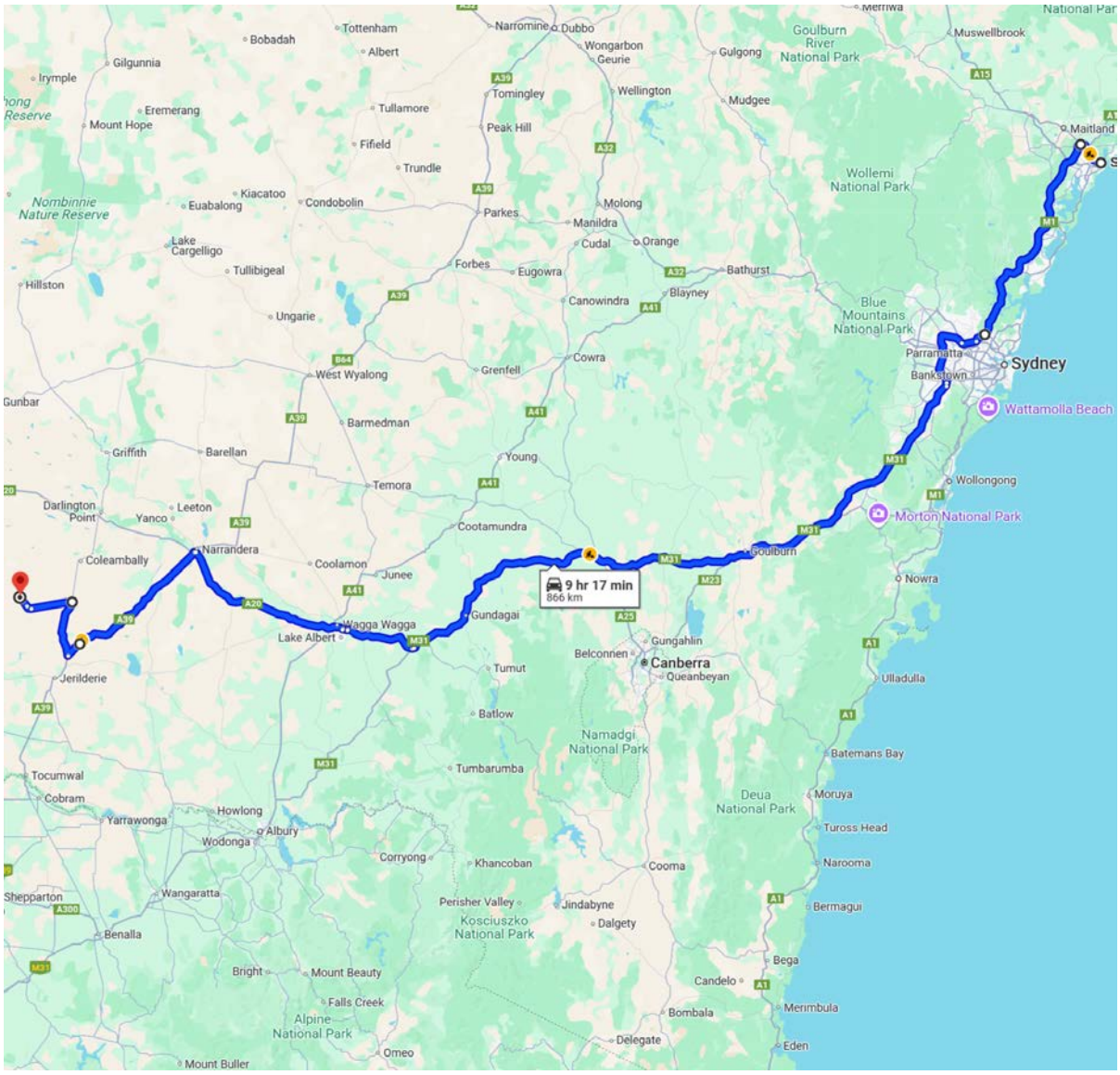


Figure 67 - Route 3

KEY	
MODIFICATIONS REQUIRED	
PINCH POINT	
EMERGENCY PARKING	

KM index	Location	Section of road	Current clearance	Procedure	Comments
0.0	Mayfield	Mayfield No.4 berth onto Selwyn Street https://goo.gl/maps/afLwPYKuNdm	Length: 80.0m Width: 8.0m	Right hand turn	No problems with this section of road.
0.4	Mayfield	Selwyn Street rail crossing https://goo.gl/maps/864FhMSaF9P2	Width: 9.0m	Travel directly ahead	Loads to travel over the crossing in the center of the road. Approval required crossing this line, likely cross with caution.
1.3	Mayfield	Selwyn Street onto Industrial Drive via George Street https://goo.gl/maps/brPRAckLr572	Length: 80.0m Width: 8.0m	Right hand turn	No problems with this section of road.
4.9	Mayfield	Industrial Drive under traffic signals https://goo.gl/maps/5DpD3b7KnT72	Clearance: Height: 5.4m	Travel directly ahead	No problems with this section of road.
5.5	Mayfield West	Industrial Drive onto Pacific Hwy https://goo.gl/maps/Kn49dhWG2qG2	Length: 80.0m Width: 8.0m	Right hand turn	No problems with this section of road.
14.2	Tarro	Gantry on New England Highway https://maps.app.goo.gl/LkhLdicHHeJE6qPo8	Clearance: Height: 6.2	Travel directly ahead	No problems with this section of road.
14.8	Tarro	Bend on New England Highway https://goo.gl/maps/hkKqsZMfdVJncRdu6	Length: 100.0m Width: 12.0m	Left hand bend	No problems with this section of road.
15.4	Tarro	New England Highway under Tarro interchange https://maps.app.goo.gl/JaXPAxHGozGs8GR17	Clearance: Height: 6.14	Travel directly ahead	No problems with this section of road.
17.4	Tarro	New England Highway onto John Renshaw Drive https://goo.gl/maps/SRDr5JiqkBp	Length: 120.0m Width: 12.0m	Left hand merge	No problems with this section of road.
18.4	Beresfield	John Renshaw Drive onto the M1 https://goo.gl/maps/A34ihxCjM5wfRDdq6	Length: 100.0m Width: 8.0m	Left hand bend	No problems with this section of road.
113.0	Mt White	M1 Motorway under Mt White overpass https://goo.gl/maps/K3fPPe4fNx63xB3i7	Height clearances: Left Lane: 5.38m Centre Lane: 5.35m Right Lane: 5.37ms	Travel directly ahead	Loads that exceed 5.3 metres high are not to travel under this structure. Loads over 5.2 metres high are to travel under the bridge in the far-right lane, and at a speed of no more than 5 km's per hour. Spotter to guide load through this section of road.
146.0	Wahroonga	M1 onto Pennant Hills Rd https://goo.gl/maps/bskC8kD4CdW9xmwYA	Length: 75.0m Width: 8.0m	Left hand turn	No problems with this section of road.

KM index	Location	Section of road	Current clearance	Procedure	Comments
147.0	Normanhurst	Pennant Hills Road under Pedestrian overpass https://goo.gl/maps/nYbjkf5AJ9D2xvUt7	Height clearances: Left Lane: 5.38m Centre Lane: 5.5m Right Lane: 5.7m	Travel directly ahead	Loads that exceed 5.3 metres high are not to travel under this structure. Loads over 5.2 metres high are to travel under the bridge in the far-right lane, and at a speed of no more than 5 km's per hour. Spotter to guide load through this section of road.
151.0	Beecroft	Pennant Hills Road under Pedestrian overpass https://goo.gl/maps/sjnLQqYRudUSKqTQ8	Height clearances: Left Lane: 5.3m Centre Lane: 5.4m Right Lane: 5.5m	Travel directly ahead	Loads that exceed 5.3 metres high are not to travel under this structure and are to travel via route B. Loads over 5.2 metres high are to travel under the bridge in the centre lane, and at a speed of no more than 5 km's per hour. Spotter to guide load through this section of road.
154.0	West Pennant Hills	Pennant Hills Rd onto M2 Motorway https://goo.gl/maps/cCsJwSt1NsRi5cSs6	Length: 75.0m Width: 7.0m	Right hand turn	No problems with this section of road.
163.0	Winston Hills	M2 Motorway onto M7 Motorway https://goo.gl/maps/PC96cBq2xqtW85vG7	Width: 10.0m	Travel directly ahead	No problems with this section of road.
238.0	Wilton	Hume Highway under Farm access overpass https://goo.gl/maps/2ZsVqYJ9j9gPTGqa9	Height clearances: Left Lane: 5.5 mtrs Centre Lane: 5.4 mtrs Right Lane: 5.3 mtrs	Travel directly ahead	Loads that exceed 5.3 metres high are not to travel under this structure. Loads over 5.2 metres high are to travel under the bridge in the left lane, and at a speed of no more than 5 km's per hour. Spotter to guide load through this section of road.
300.0	Sutton Forest	Hume Highway Parking https://goo.gl/maps/uT1ubtSuawS2	150.0 long x 10.0 wide	Merge to left	Large parking area. Sutton Forest.
356.0	Goulburn	Hume Highway under Windellama Road https://maps.app.goo.gl/etrZffriDzaudEeC9	Height clearances: Left Lane: 5.5 mtrs Centre Lane: 5.4 mtrs Right Lane: 5.4 mtrs	Travel directly ahead	Loads that exceed 5.3 metres high are not to travel under this structure.
372.0	Breadalbane	Hume Highway Parking https://goo.gl/maps/UWjx3XndLejWG1UD9	140.0 long x 14.0 wide	Merge to left	Large parking area. Mystery Boulders.
480.0	Berremangra	Hume Highway Parking https://maps.app.goo.gl/mEr4qYsCmXcivnSu8	180.0 long x 10.0 wide	Merge to left	Large parking area. Reddy Creek.
508.0	Jugiong	Hume Highway Parking https://goo.gl/maps/QzzfyAAnixQn3nwx8	140.0 long x 14.0 wide	Merge to left	Large parking area. Mungi Mungi Hill.
541.0	South Gundagai	Hume Highway Parking https://maps.app.goo.gl/hExjVM75QHiRZmSG7	150.0 long x 12.0 wide	Merge to left	Large parking area. Big Ben Creek.
573.70	Tarcutta	Hume Hwy onto Sturt Hwy GPS Link: https://goo.gl/maps/ruqNDSw5vanJDd4x5	200m long	Left Hand Merge	No problems with this section of road.
574.0	Tarcutta	Sturt Hwy Parking https://maps.app.goo.gl/95cwTYQy6ztpBaEL9	210.0 long x 7.5 wide	Merge to left	Large parking area. Hume Highway exit stopping bay.

KM index	Location	Section of road	Current clearance	Procedure	Comments
614.6	Wagga Wagga	Sturt Hwy GPS Link: https://goo.gl/maps/7VDWUyW8KnUhCEdd7	80m long	Second Exit on Round-about	No problems with this section of road.
617.3	Wagga Wagga	Sturt Hwy GPS Link: https://goo.gl/maps/VeavHs6e4AjLaqqDA	80m long	Second Exit on Round-about	No problems with this section of road.
618.4	Wagga Wagga	Sturt Hwy GPS Link: https://goo.gl/maps/dBrte59BvHyvcGSr5	80m long	Second Exit on Round-about	No problems with this section of road.
618.75	Wagga Wagga	Sturt Hwy under rail overpass GPS Link: https://goo.gl/maps/JPkJBAyzJuMAiHUz8	Height clearances: 5.40m	Travel under rail overpass	No problems with this section of road.
621.5	Wagga Wagga	Sturt Hwy GPS Link: https://goo.gl/maps/fx388veUAjbykiyPA	80m long	Second Exit on Round-about	No problems with this section of road.
679.0	Galore	Sturt Hwy Parking https://maps.app.goo.gl/3YJccdx7avFJ2io96	110.0 metres long 18.0 metres wide	Merge to left	Large parking area. Kywong.
711.0	Gillenbah	Sturt Hwy GPS Link: https://goo.gl/maps/C7qJ8ouDVdpcH5Rz7	80m long	Left Hand Turn	No problems with this section of road.
711.5	Gillenbah	Sturt Hwy Parking GPS Link: https://maps.app.goo.gl/Foiproji1VwfiFox7	140.0 metres long 11.5 metres wide	Merge to right	Large parking area. Gillenbah at Newell Highway. Incorrect side of road.
712.0	Gillenbah	Newell Hwy Turn at Sturt Hwy GPS Link: https://maps.app.goo.gl/f19ZqoVET8dcRwku9	85.0 metres long 8.0 metres wide	Left Hand Turn	No problems with this section of road.
833.0	Bundure	Newell Hwy onto Kidman Way GPS Link: https://maps.app.goo.gl/XtpjkT5CaFwPe4u26	35.0 metres long 8.0 metres wide	Right hand turn	No problems with this section of road.
918.0	Coleambally	Kidman Way onto Mclennons Bore Rd GPS Link: https://goo.gl/maps/t2ijaAnyz7w4DNQ96	30 meters	Left hand turn	The swept path that are proposed for the blades are suitable for the towers.
856.8	Jerilderie	Mclennons Bore Rd onto Wilsons Rd GPS Link: https://goo.gl/maps/zSfwKKyXzHs9m9nb7	40 metres	Right hand turn	No problems with this section of road. Gravel roads to be maintained for duration of deliveries and may become un-trafficable during periods of wet weather.
858.8	Argoon	Bend on Wilsons Rd GPS Link: https://maps.app.goo.gl/Vq7BcMS9mx2bMZNP8	100 metres	Right hand bend	No problems with this section of road. Gravel roads to be maintained for duration of deliveries and may become un-trafficable during periods of wet weather.
865.8	Argoon	Wilsons Rd Stock Grid GPS Link: https://maps.app.goo.gl/Mo6o2EoLw8Q2treX7	5.8 M Wide	Travel straight ahead	All stock grids to be upgraded to accommodate all proposed loads.
866.0	Argoon	End Route			All site roads to be constructed to accommodate the vertical curve, swept path, weight and height of all proposed loads.

17.0 Route 3: Conclusion

After studying all options and undertaking a route survey, the route in its current condition is suitable for the loads listed to use this route, as long as they do not exceed 5.3 metres in loaded height.

The following are the key points that need to be taken into consideration, if the project moves forward with this route.

SWEPT PATH:

- No issues for the loads listed to use this route.

OVERHEAD STRUCTURES: (5.3 Maximum loaded height)

- The lowest structures on this route are along the M1 Motorway, Pennant Hills Road and the Hume Highway. The loads cannot exceed 5.3 metres in overall height.

OVERHEAD UTILITIES:

- This route will need to be checked by an authorised scoping company. It is likely that a route of 5.3 metres loaded height is required for this project.

BRIDGES:

- Bridge assessments will still be required for the entire route.

RAIL ASSETS:

- There are a number of rail overbridges and crossings on route that will require approval from authorities before loads can access the routes.

VEGETATION:

- No issues for the loads listed to use this route.

PAVEMENT:

- Pavement on the route is of highway standard up to the site entry. Bypasses or modifications will be required at several corners and are to be constructed to suitable standards and maintained for the duration of deliveries if not sealed.
- All site access roads to be constructed to appropriate standards in order to accommodate the weight, height and swept path of all proposed loads. Roads to be maintained for the duration of deliveries if not sealed.

ROADWORKS:

- The project will need to start discussions with government authorities at least 18 months prior to turbine transport to understand if the project would conflict with any upcoming roadworks. Once a Transport Management Plan “TMP” has been approved for the transport of the turbines, then the exact movement dates need to be communicated with all relevant authorities to make all road stakeholders are aware of the scheduled movements for each day.
- The project will need to regularly check on any new upgrades not listed in the report. If upgrades have taken place on a section of route after this report has been completed, then a swept path study would need to be undertaken on that section of road to confirm that it can still be used.

SITE ACCESS ROADS:

- All site access roads to be constructed to appropriate standards in order to accommodate the height, weight, vertical curves and swept path of all proposed roads.
- Roads to be made all weather and maintained for the duration of deliveries.

18.0 Transport Approvals Required

Approvals will need to be sought from the following stakeholders.

- NHVR
- TfNSW
- NSW Police
- Local councils
- Motorways and private infrastructure operators
- Energy & telecommunication infrastructure owners/managers
- Rail Managers/Owners

19.0 Roadworks: Potential Conflicts with TfNSW Projects

The Dinawan windfarm project is currently planning to deliver the OSOM loads along the proposed routes between 2026 and 2027. There are several road projects that may conflict with our movements during this period. Several of these projects are known and are listed below. If new projects come to light, then they will be added to the list once known.

Transport operations are to check with these worksites daily to manage the transport movements through each of the worksites.

TfNSW Project	Project's Website:	Other relevant Weblink/s:	Project Overview:	Implications for the Dinawan Wind Farm	Recommended Mitigation Measures
Hexham Straight Widening Project*(HSW)*	Project Website link here https://www.transport.nsw.gov.au/projects/current-projects/pacific-highway-improvements-at-hexham	Project's interactive portal link here https://caportal.com.au/tfnsw/hexham-straight	The HSW Project involves the addition of an extra lane in both directions, removal of the existing bridges and construction of two new bridges at Ironbark Creek, adjustments to connecting roads as well as significant utility relocation. The Ironbark Creek/Toohrnbing is now open. The remainder of the Project is expected to be open to traffic in 2026.	Relevant for Routes 1 and 3. WTG deliveries are anticipated to commence in mid-2026, which may overlap with the final stages of HSW construction. The majority of proposed OSOM movements will occur in 2027/2028 after HSW works are completed	Monitor Project's interactive portal and consult with TfNSW during detailed design to minimise potential interactions TfNSW has advised operators of OSOM vehicles to contact the HSW Project team at least one day prior to transport to avoid delays. Note: Further consultation is required with TfNSW to address the Ironbark Bridge upgrade, which has changed from this available plan set.
M1 to Raymond Terrace Project *(M12RT)*	Project Website link here https://www.transport.nsw.gov.au/projects/current-projects/m1-pacific-motorway-extension-to-raymond-terrace	Project's interactive portal link here https://caportal.com.au/tfnsw/m1rt	The M12RT project includes 15 km of dual carriageway and provides motorway access from the existing road network from four new interchanges at Black Hill, Tarro, Tomago and Raymond Terrace. The project also includes a 2.6 km viaduct over the Hunter River and floodplain, the Main North Rail Line, and the New England Highway. It will also provide new bridge crossings over local	Relevant for Routes 1 and 3. Potential for disruption and delays, particularly during widening of the New England Highway at Tarro and construction of new and modified ramps. Once completed, the upgrades would have a beneficial impact for the Project.	Monitor Project's interactive portal and consult with TfNSW during detailed design to minimise potential interactions, particularly in relation to the New England Highway upgrade at Tarro.

			waterways at Tarro and Raymond Terrace, and an overpass for Masonite Road at Heatherbrae. Construction is underway and is expected to be completed in 2028.		
Singleton Bypass Project	Project Website link here https://www.transport.nsw.gov.au/projects/current-projects/singleton-bypass-new-england-highway	Project's interactive portal link here https://caportal.com.au/rms/singleton-bypass	Construction of a new bypass on the New England Highway, running south of Singleton and Singleton Heights.	N/A – Route 2 avoids Singleton, and runs south along the Golden Highway via Mount Thorley, Warkworth and Jerrys Plains.	N/A
Belford to Golden Highway Project *(B2GH)*	Project Website link here https://www.transport.nsw.gov.au/projects/current-projects/belford-to-golden-highway-new-england-highway	Project's interactive portal link here https://www.transport.nsw.gov.au/sites/default/files/media/documents/rww/projects/01documents/new-england-highway/belford-golden-highway/neh-upgrade-belford-golden-hwy-project-overview-diagram.pdf	The B2GH Project included widening the New England Highway to provide two lanes in each direction between Belford and the Golden Highway, replacing the existing right turn movement from the Golden Highway to the New England Highway with a flyover and a new a roundabout on the Golden Highway with a connection to the New England Highway. Work was completed in January 2024.	N/A – work now complete.	N/A
Golden Highway upgrades	Project Website link here https://www.transport.nsw.gov.au/projects/current-projects/golden-highway-upgrades	Project's interactive portal link here Golden Highway upgrades overview map	Upgrades include acceleration lanes on the Golden Highway at Putty Road and Mt Thorley, overtaking lanes at Ogilvies Hill and Winery Hill, the establishment of heavy vehicle parking bays, a rail level crossing upgrade at Denman, and flood immunity work at Uarbry Creek and Mudies Creek.	N/A – works complete with the exception of Mudies Creek flood immunity work.	N/A

20.0 Port to REZ (P2R) Upgrades

Location	Port to REZ Works	Dinawan Windfarm Works (as outlined in this Route Study	Suitable for this turbine type
Quayside Close/Selwyn Street, Mayfield North	New asphalt hardstand, new 'no parking' sign, realignment of existing fence and realignment of existing open drain	No works proposed	Yes
Selwyn Street/George Street/Industrial Drive, Mayfield North	New asphalt hardstand, tree and sign removal, new 'no parking' sign, relocation of 'no stopping' sign	Sign to be removed and replaced for each blade movement (note this sign is not identified on P2R plan and is located within proposed hardstand area).	Yes
Industrial Drive/Pacific Highway, Mayfield West	New traffic island with mountable kerb, sign removal and relocation	No works proposed – following completion of P2R works, truck can travel over mountable kerb rather than mounting existing median strip	Yes
John Renshaw Drive onto Hunter Expressway, Buchanan	New asphalt hardstand, tree and sign removal and sign relocation	No works proposed	Yes
New England Highway/Mitchell Line of Road (Golden Highway), Whittingham	Road widening within roundabout central island, sign removal and relocation	No works proposed	Yes
Golden Highway (Mitchell Line of Road)/Putty Road, Mount Thorley	Sign removal and relocation	No works proposed	Yes
Jerrys Plains Road/Putty Road, Mount Thorley	Sign removal and relocation	No works proposed	Yes
Golden Highway/Lonsdale Street and Pringle Street, Jerrys Plains	New asphalt hardstands and retaining wall, tree removal and pruning, new 'no stopping' signs, local driveway upgrades	No works proposed	Yes
Jerrys Plains Road (Golden Highway)/Denman Road, Denman	New asphalt hardstands, sign removal and relocation, tree removal and new fenceline	No works proposed	Yes
Wybong Road/Golden Highway, Sandy Hollow	New asphalt hardstand, sign removal and relocation	No works proposed	Yes
Golden Highway/Vinegaroy Road, Cassilis	Proposed dedicated right turn lane and new embankment, sign removal and relocation, tree removal and pruning and batter regrading	No works proposed	Yes
Golden Highway/Black Stump Way, Leadville	New asphalt hardstand, tree removal, sign removal and relocation	No works proposed	Yes
Golden Highway/Castlereagh Highway, Dunedoo	New asphalt hardstand, sign removal and relocation	No works proposed	Yes
Castlereagh Highway/Barneys Reek Road, Birriwa	New dedicated left and right turn lane, tree removal, sign relocation and removal	Not part of proposed transport route (no works proposed)	-
Golden Highway/Bolaro Street, Dunedoo	New asphalt hardstand, footpath and kerb ramp, new 'no parking' and 'give way' signs	No works proposed	Yes
Golden Highway/Spring Ridge Road, Cobbora	New asphalt hardstand, sign removal and relocation	No works proposed	Yes
Golden Highway/Saxa Road, Elong Elong	New asphalt hardstand, extension of culvert and replacement of headwall, new open drain, sign removal and relocation and tree pruning	No works proposed	Yes

21.0 Draft delivery schedule

WEEKLY SCHEDULE								
Component	Transport combo	DATE:TBC Sun	DATE:TBC Mon	DATE:TBC Tues	DATE:TBC Wed	DATE:TBC Thurs	DATE:TBC Fri	DATE:TBC Sat
BLADE 1	2X4-3X8 BLADE TRANSPORTER	PILOTS: 4 POLICE: 2 DRIVER: TBC						
TOWER 6	4X8-3X8 DOLLY AND JINKER	PILOTS: 3 POLICE: N/A DRIVER: TBC						
NAC	2X8-4X8 DOLLY AND LOW LOADER		PILOTS: 2 THAN 1 POLICE: N/A DRIVER: TBC					
HUB	2X8-3X8 DOLLY AND LOW LOADER		PILOTS: 2 POLICE: N/A DRIVER: TBC					
BLADE 2	2X4-3X8 BLADE TRANSPORTER			PILOTS: 4 POLICE: 2 DRIVER: TBC				
T5	4X8-5X8 EXTENDING PLATFORM TRAILER			PILOTS: 3 POLICE: N/A DRIVER: TBC				
T4	4X8-5X8 EXTENDING PLATFORM TRAILER			PILOTS: 3 POLICE: N/A DRIVER: TBC				
DRIVE TRAIN	6X8 PLATFORM			PILOTS: 2 THAN 1 POLICE: N/A DRIVER: TBC				
T1	10X8 PLATFORM TRAILER				PILOTS: 2 POLICE: N/A DRIVER: TBC			
T2	4X8-5X8 EXTENDING PLATFORM TRAILER				PILOTS: 3 POLICE: N/A DRIVER: TBC			
BLADE 3	2X4-3X8 BLADE TRANSPORTER					PILOTS: 4 POLICE: 2 DRIVER: TBC		
T3	4X8-5X8 EXTENDING PLATFORM TRAILER					PILOTS: 3 POLICE: N/A DRIVER: TBC		
Containers	SIDE LOADER	DRIVER: TBC		DRIVER: TBC		DRIVER: TBC		

22.0 References

Rex J Andrews P/L Route survey # 498 REV 04
Rex J Andrews P/L Drawings
Spark Renewables
Google Earth/Maps
Nearmaps
NHVR (OSOM)
Australian Load Restraint Guide
NHVAS Maintenance Management (NHVAS21193)
NHVAS Basic Fatigue Management (NHVAS21193)

Disclaimer: The routes contained in this study including any appendixes are provided on the basis of information only purposes and are to be used strictly as a guide only. Government approvals will be required before these routes could be deemed suitable for transporting the components over the listed routes.

Any, and all parties using the information contained in this submission do so at their own risk. RJA accepts no responsibility for the use of all information contained within this report.

Actual approved routes may differ from those surveyed. Proposed routes may change subject to approvals from authorities.

The study including any appendixes have been undertaken using data supplied by Rex J Andrews P/L. Equipment and swept paths may vary if using transport methodology other than the data supplied by Rex J Andrews. The study uses known data about the proposed turbine type at the time of conducting the study and is subject to change.

23.0 Appendix 1 – Transport Combinations (Examples)

172 TURBINE:

Blades (85.0l x 4.4w x 3.2h x 32T)
Configuration. Prime mover with 3x8-3x8 Blade trailer
Overall dimensions: 97.0l x 4.5w x 5.2h x 95.5T

Nacelles (12.7l x 4.0 w x 3.75h x 54.0T)
Configuration. Prime mover with 5x8 Low loader
Overall dimensions: 26.0l x 4.3w x 4.9h x 99.5T

Nacelle side ship container (12.2l x 2.5 w x 2.9h x 23.2T)
Configuration. Prime mover with 3x4 Semi
Overall dimensions: 19.0l x 2.5w x 4.6h x 42.5T

Power Trains (8.1l x 3.1w x 3.5h x 105.2T)
Configuration. Prime mover with 10x8 Platform with block truck
Overall dimensions with block truck: 39.9l x 4.3w x 4.9h x 190.5T

Hubs (4.8l x 4.35w x 4.05h x 64.9T)
Configuration. Prime mover with 2x8 5x8 dolly low loader
Overall dimensions: 29.9l x 4.5w x 5.2 x 100.5T

150 METRE TOWER

Base Towers (9.3l x 5.85 x 5.85 x 85T)
Configuration. Prime mover with 4x8-4x8 Bookend.
Overall dimension: 40.0l x 6.0w x 6.0h x 151.5T (+ Push truck)

Section 2 Towers (13.8l x 5.85 x 5.6 x 85T)
Configuration. Prime mover with 4x8-4x8 Bookend.
Overall dimension: 45.0l x 6.0w x 6.0h x 151.5T (+ Push truck)

Section 3 Towers (15.4l x 5.6 x 5.6 x 87T)
Configuration. Prime mover with 4x8-4x8 Bookend.
Overall dimension: 47.0l x 6.0w x 6.0h x 153.5T (+ Push truck)

Section 4 Towers (16.8l x 5.6 x 5.1 x 86T)
Configuration. Prime mover with 4x8-4x8 Bookend.
Overall dimension: 48.4l x 6.0w x 6.0h x 152.5T (+ Push truck)

Section 5 Towers (21.0l x 5.1 x 5.1 x 92T)
Configuration. Prime mover with 10x8 Low platform.
Overall dimension: 35.0l x 5.5w x 6.0h x 166.5T (+ Push truck)
Section 6 Towers (27.2l x 5.1 x 5.1 x 91T)
Configuration. Prime mover with 5x8-5x8 Low platform.
Overall dimension: 40.0l x 5.5w x 6.0h x 175.5T (+ Push truck)

Section 7 Towers (29.9l x 5.1 x 4.25 x 77T)
Configuration. Prime mover with 3x8 dolly - 4x8 low Jinker.
Overall dimension: 37.0l x 5.5w x 6.0h x 123.5T

Top Towers (30.0l x 4.25w x 4.1h x 65T)
Configuration. Prime mover with 4x4 dolly 3x8 low Jinker.
Overall dimension: 38.0l x 4.5w x 5.8h x 105.0T

ERECTION CRANES:

LG1750 carrier (19.2l x 3.0 x 4.0 x 96T)
Configuration. Prime mover with 10x8 Platform trailer + Backup truck
Overall dimensions: 36.0l x 4.2w x 5.2h x 174.5T + Backup truck

LTM1500 carrier (21.0l x 3.0 x 4.0 x 96T)
Configuration. Prime mover with 10x8 Platform trailer + Backup truck
Overall dimensions: 36.0l x 5.0w x 5.2h x 174.5T + Backup truck

TRANSFORMER:

Possible Transformer size (9.2l x 4.0 x 4.35 x 175T)
Configuration. Prime mover with 10x8-10x8 Beamset + 4 x Backup trucks
Overall dimensions: 120.0l x 6.5w x 5.2h x 324.5T + 4 x Backup trucks

Possible Transformer size (9.2l x 4.0 x 4.35 x 130T)
Configuration. Prime mover with 12x8 Platform trailer + 1 x Backup trucks
Overall dimensions: 45.0l x 4.3w x 5.4h x 222.5T

SWITCHROOM:

The largest switchroom size that is recommended for this site would be as follows.
Switchroom dimensions: 30.0l x 6.0w x 4.4h x 90.0T
Overall dimensions: 45.0l x 6.0w x 5.4h x 180.5T

24.0 Appendix 2 - Transport Drawings (Examples)

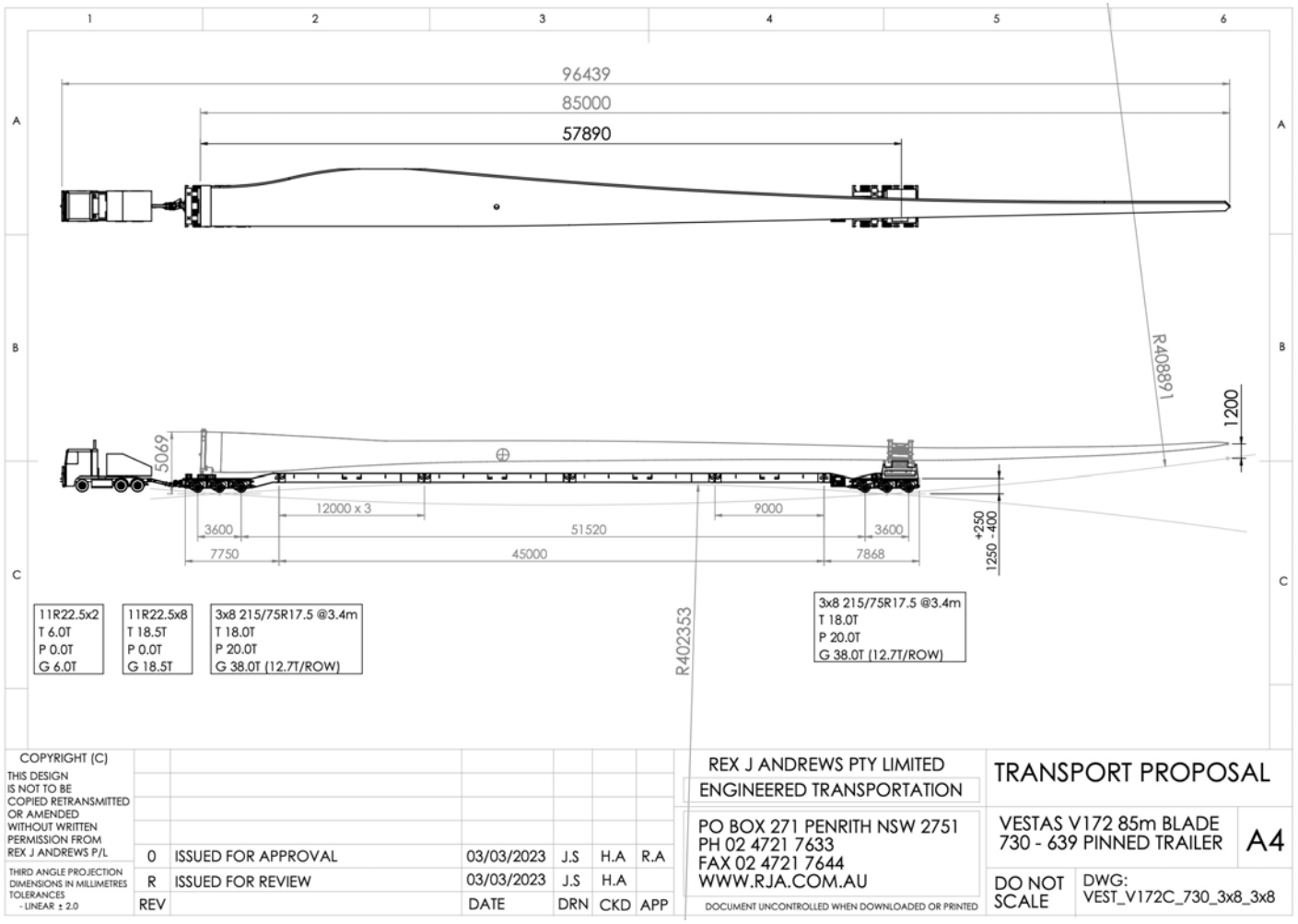


Figure 68: V172 Blade drawing

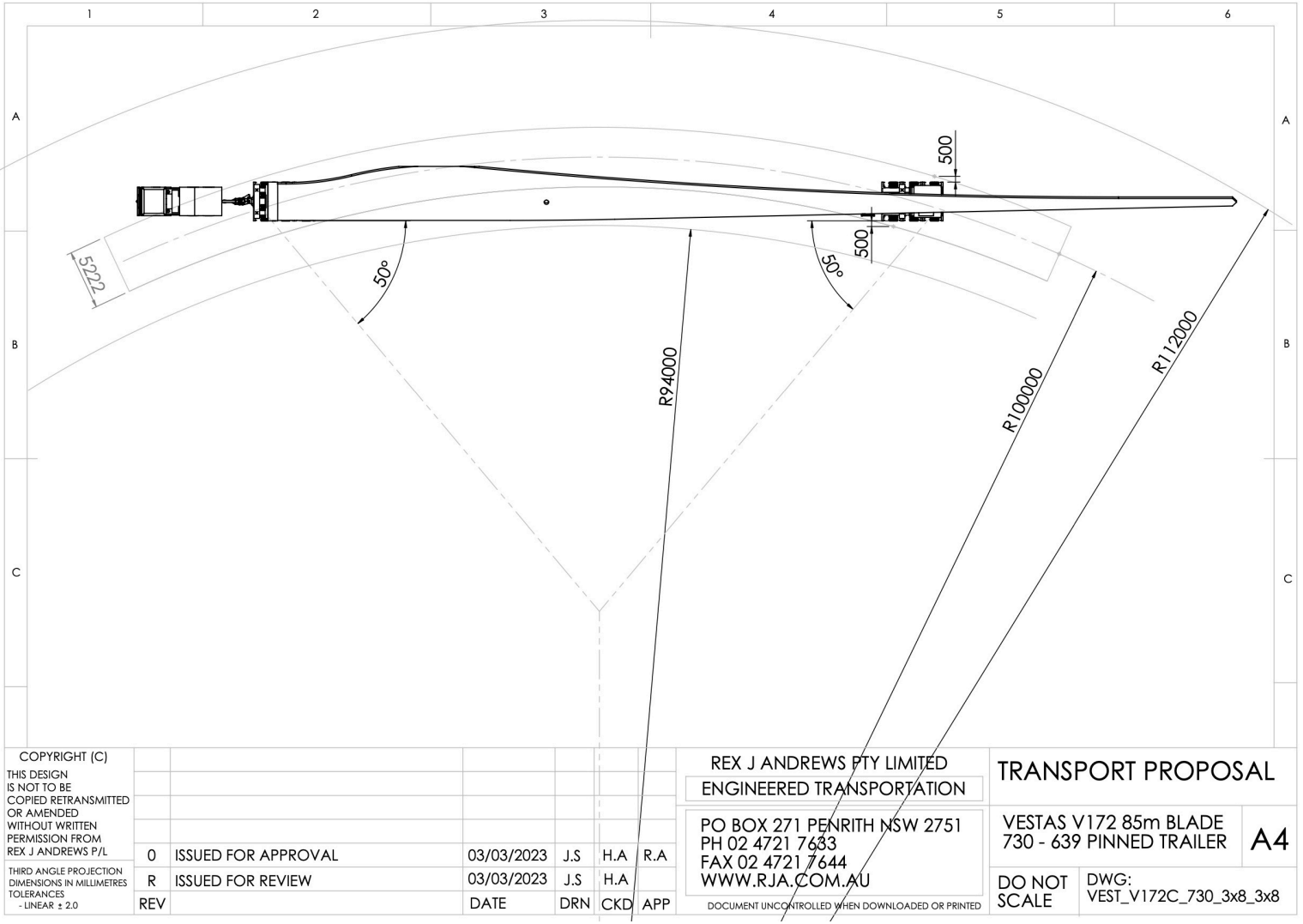


Figure 69 – V172 Blade Swept Path drawing

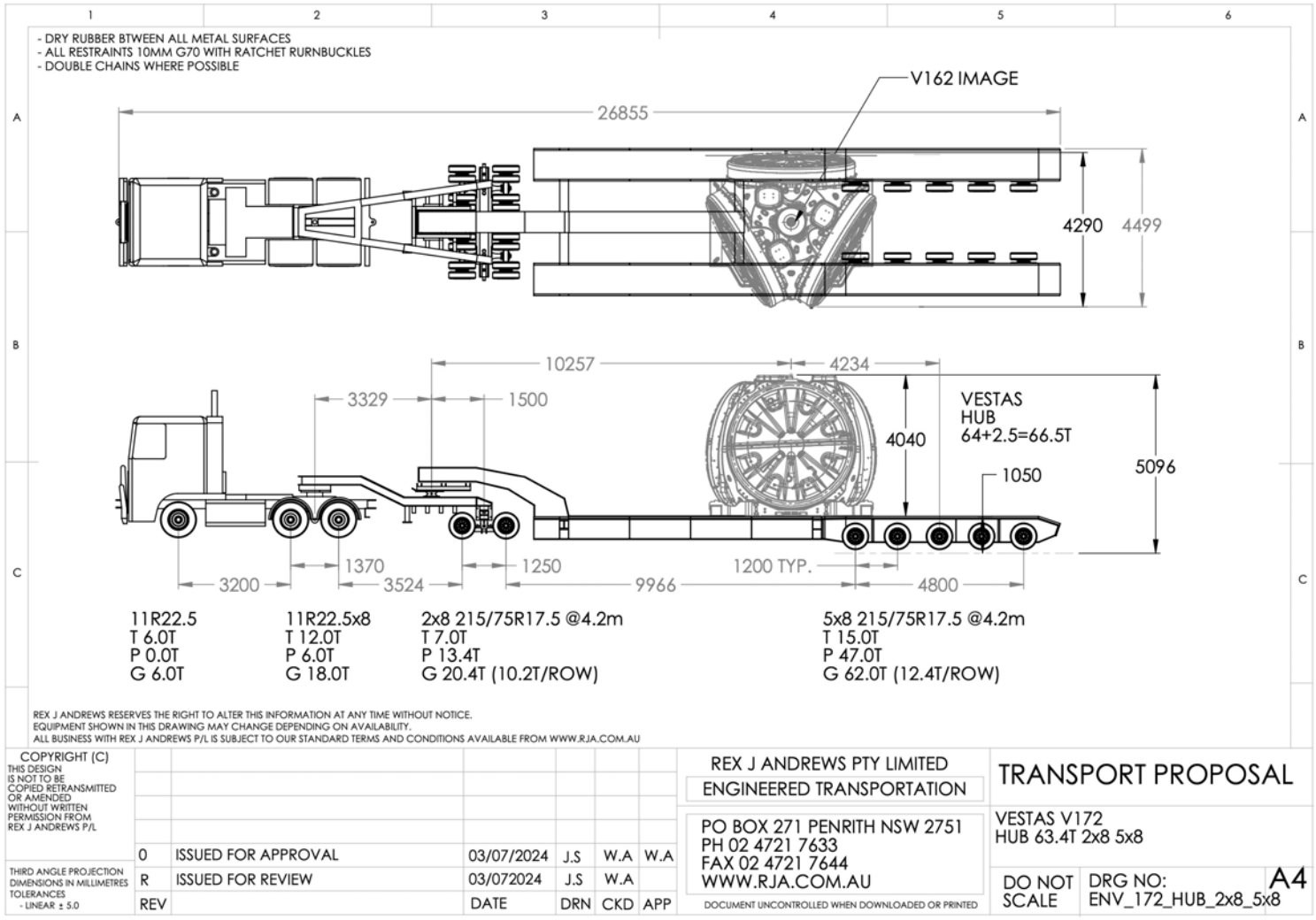


Figure 70 – Hub/Nacelle Combination Example

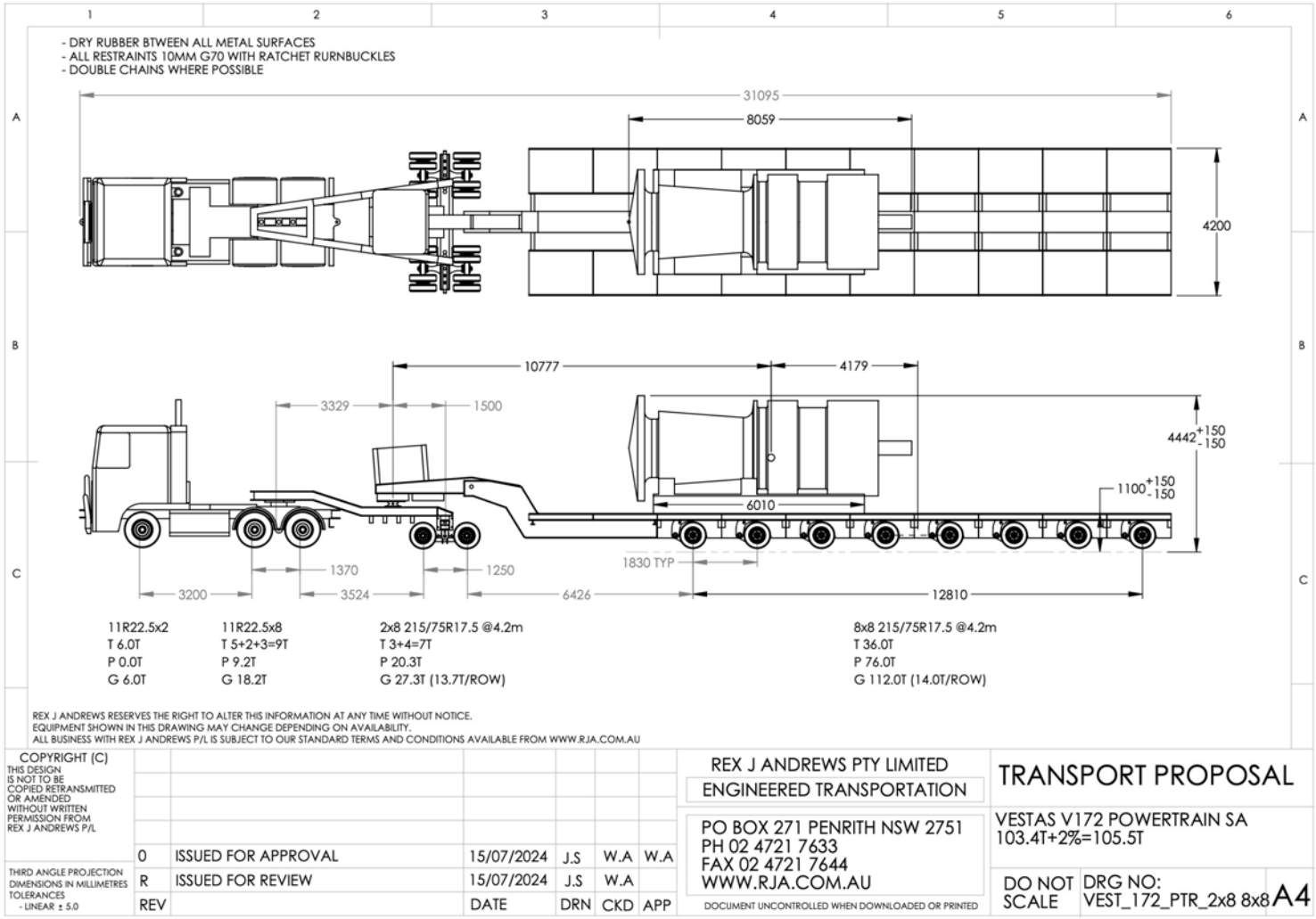


Figure 71 - Powertrain Combination Example

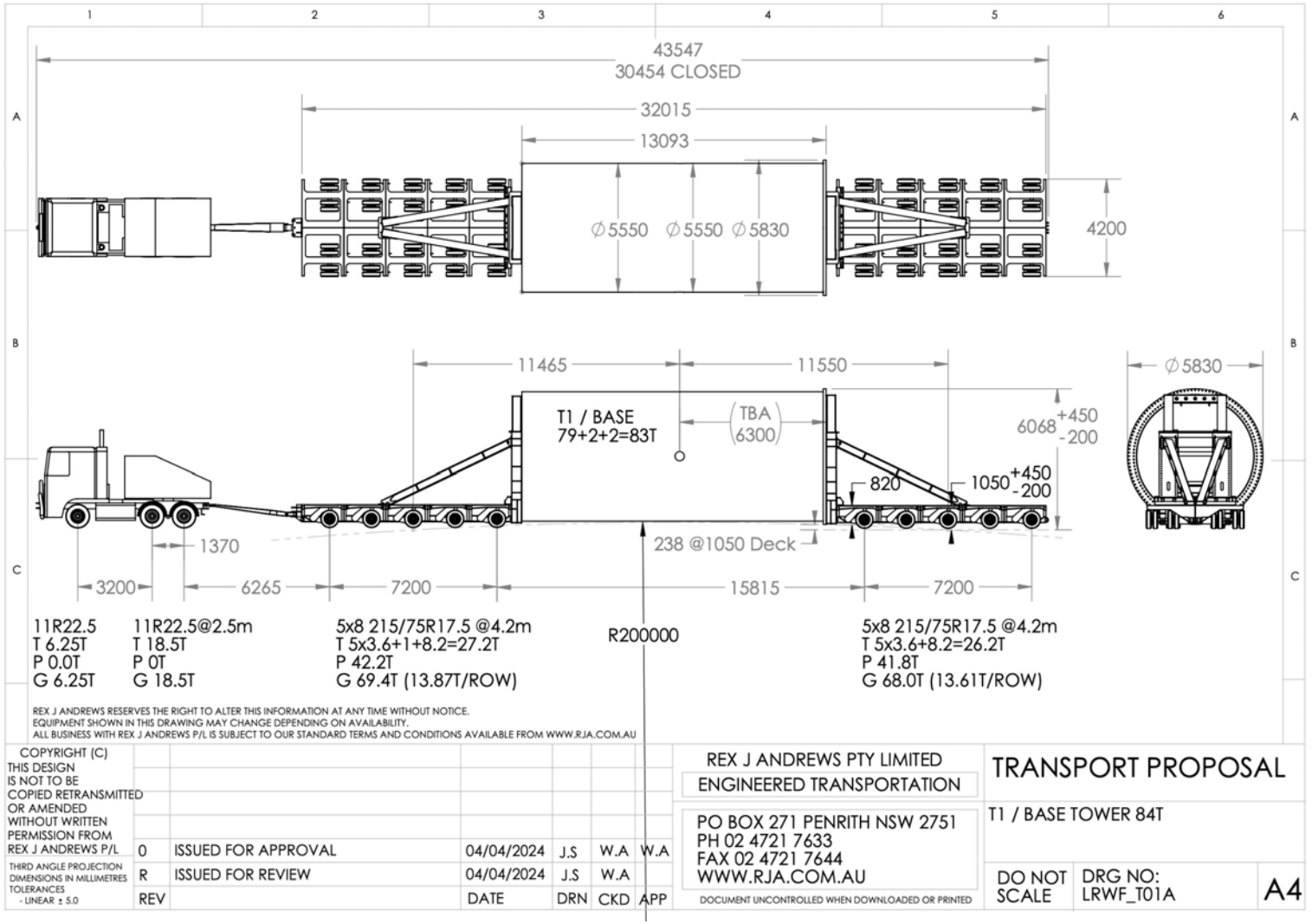


Figure 72 - Tower Trailer Bookend

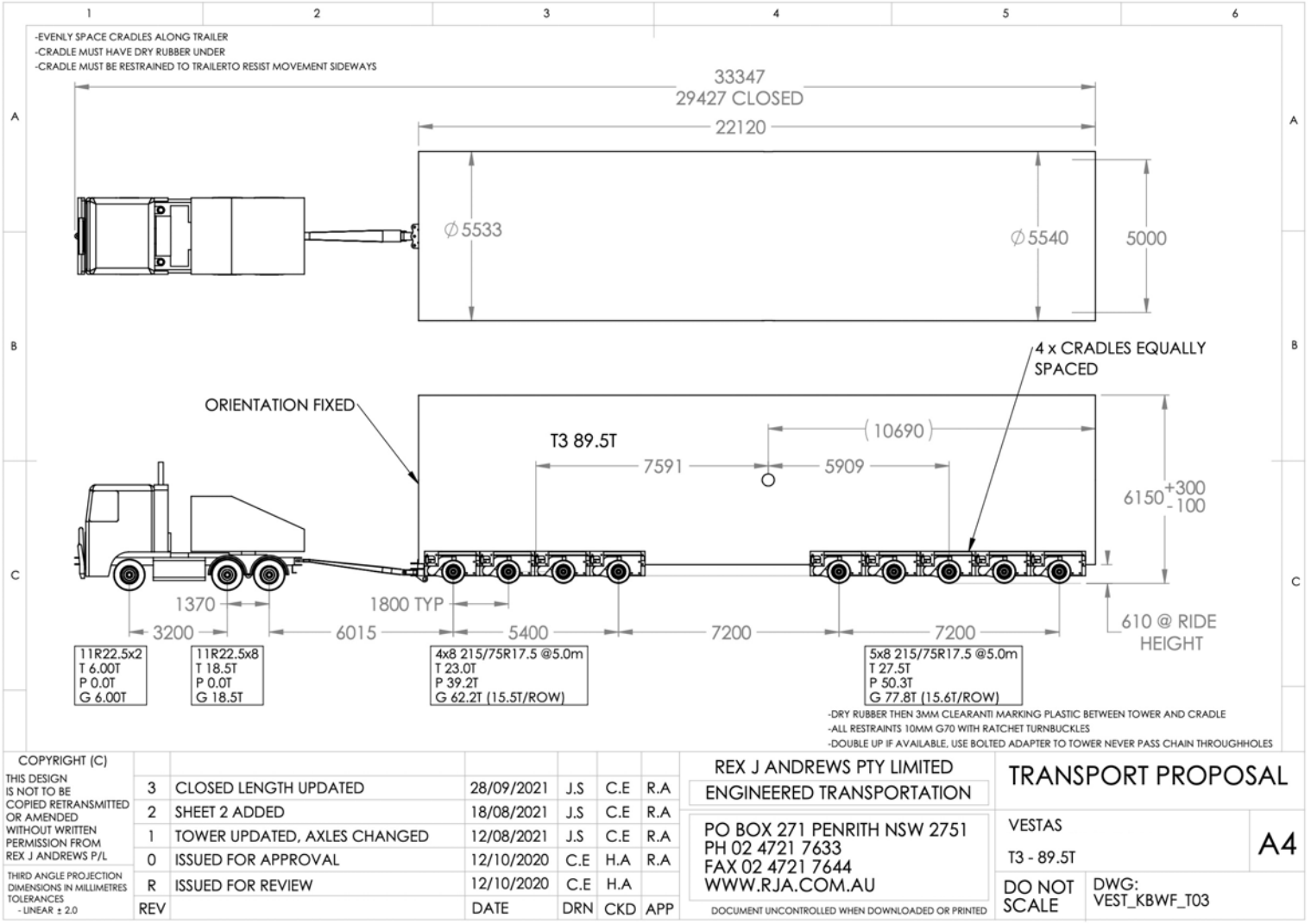


Figure 73 - Tower Trailer Extending platform

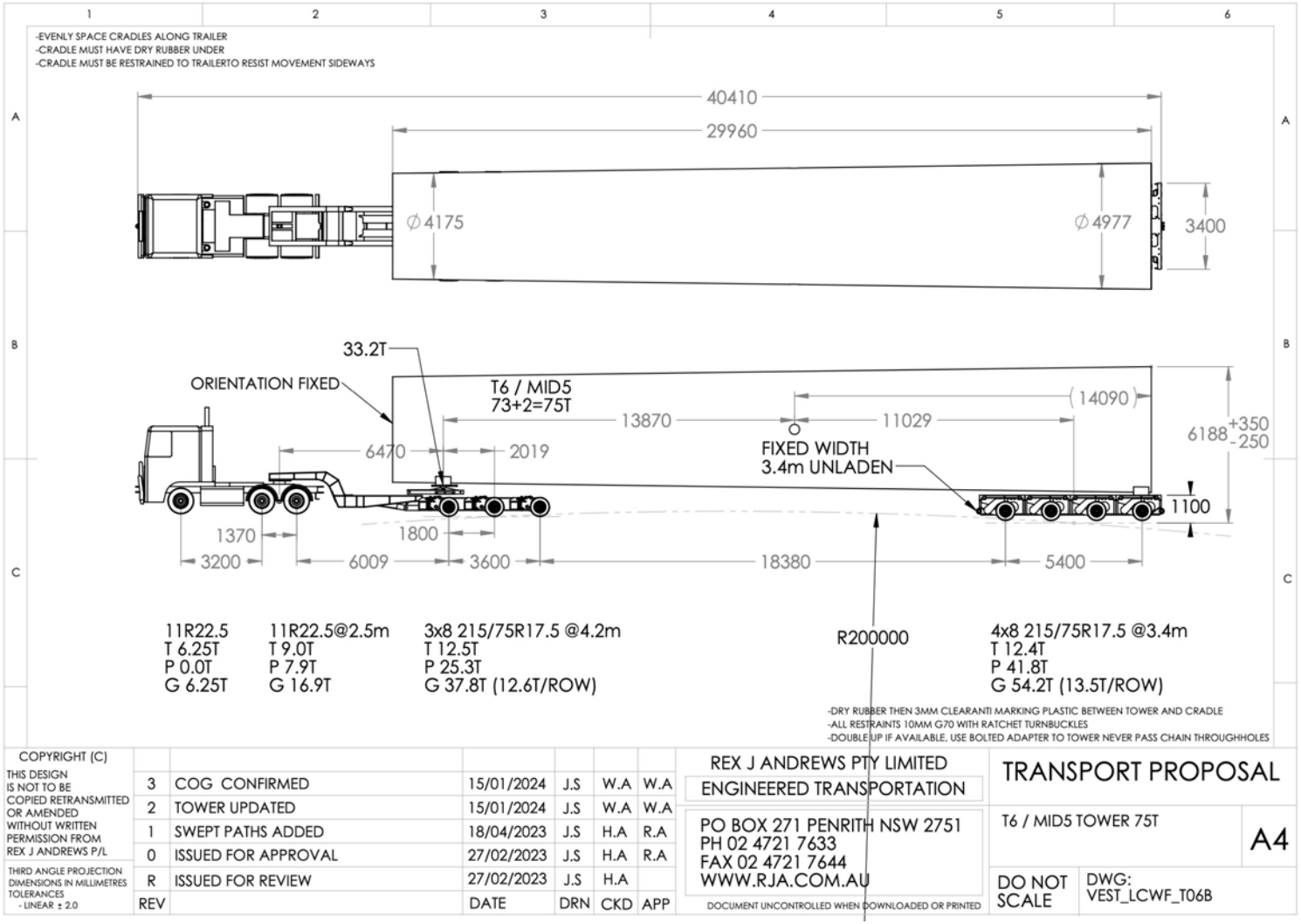


Figure 74 - Tower Trailer Dolly And Jinker

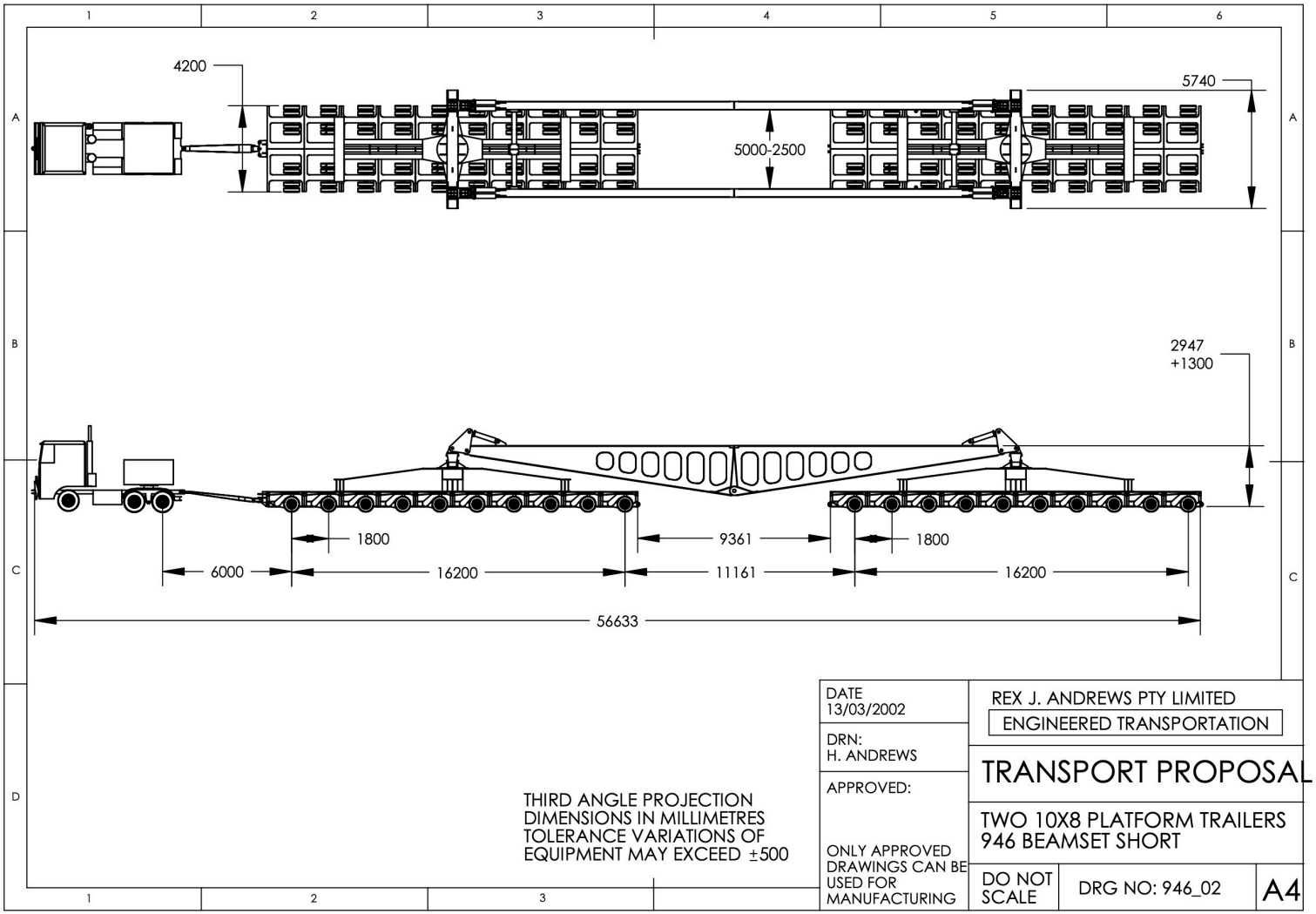


Figure 75 – 300MVA Transformer Trailer 10x8-10x8 Beamset

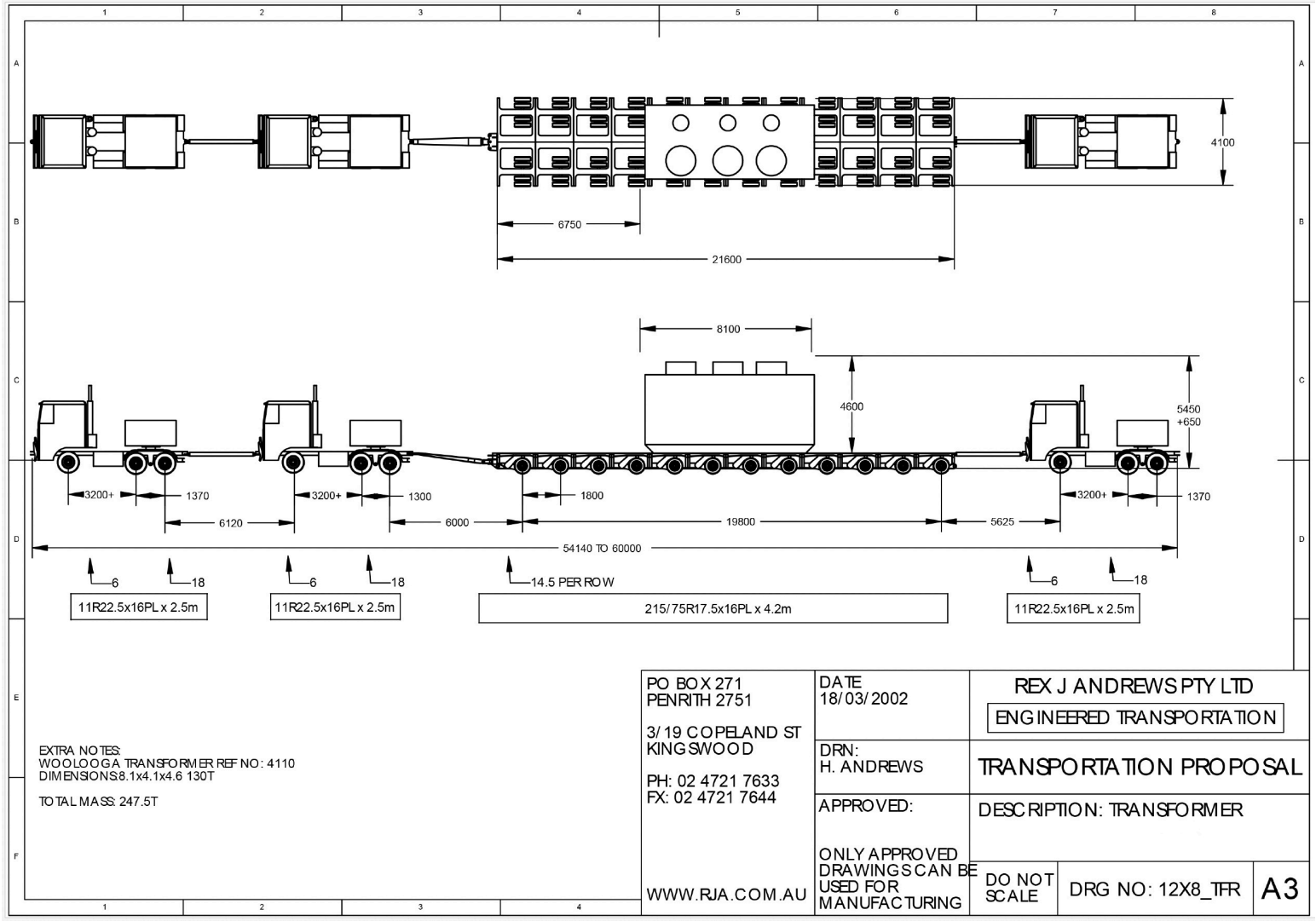


Figure 76 – 150MVA Transformer Trailer 12x8 Platform

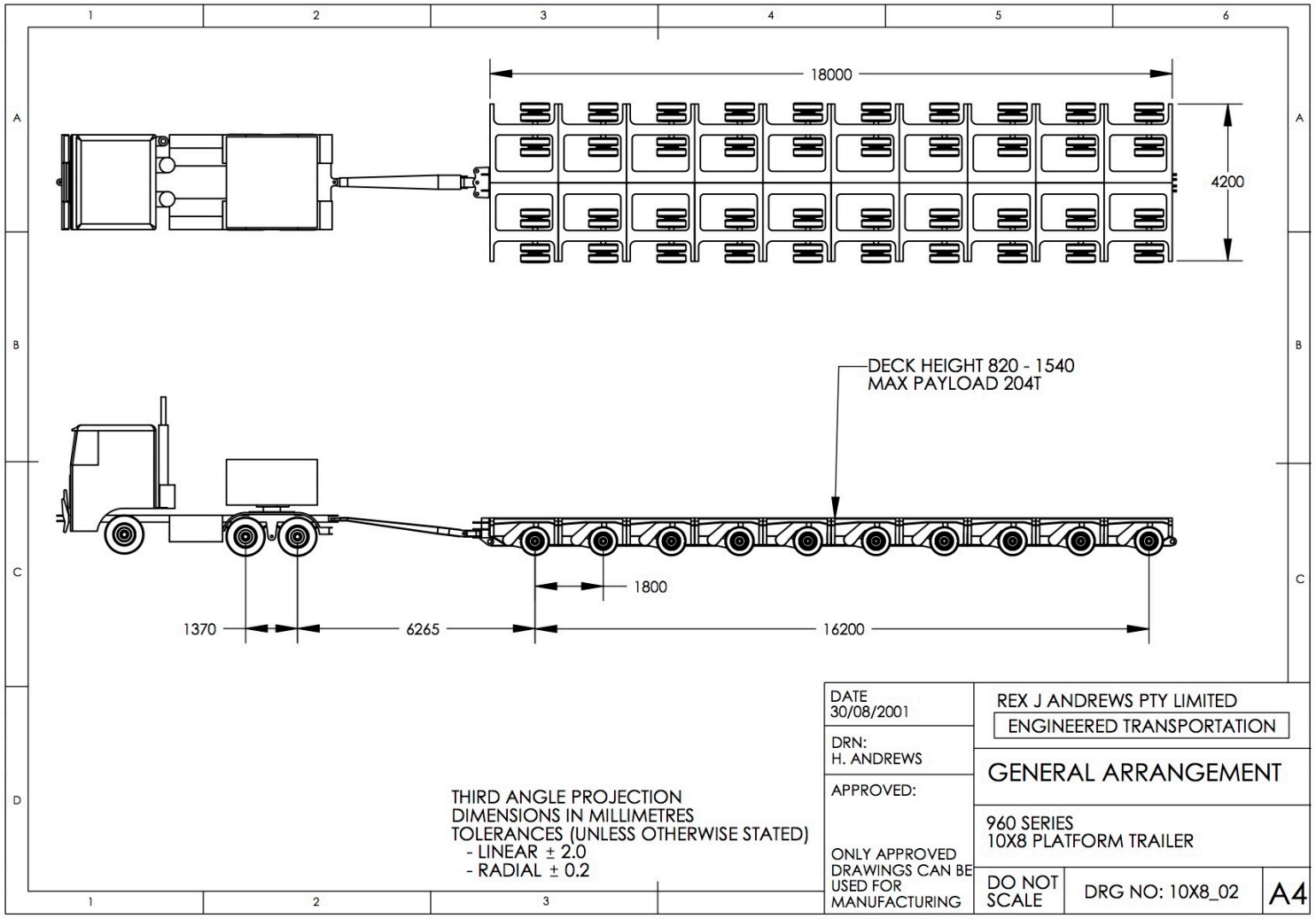


Figure 77 - Crane Trailer 10x8 Platform

Annexure C

Haulage route road upgrades

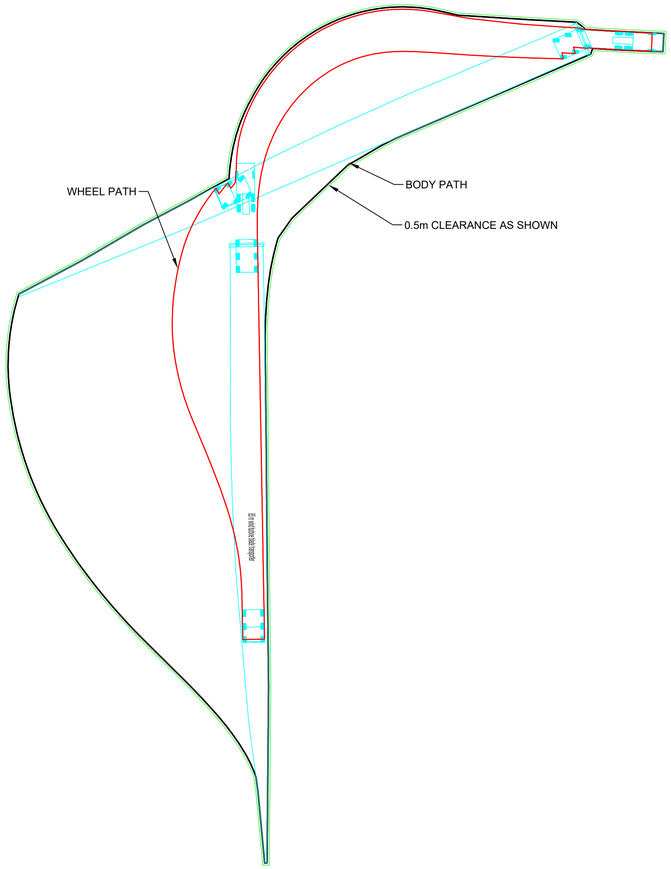
EMM
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C.1 Kidman Way/Newell Highway intersection

A1



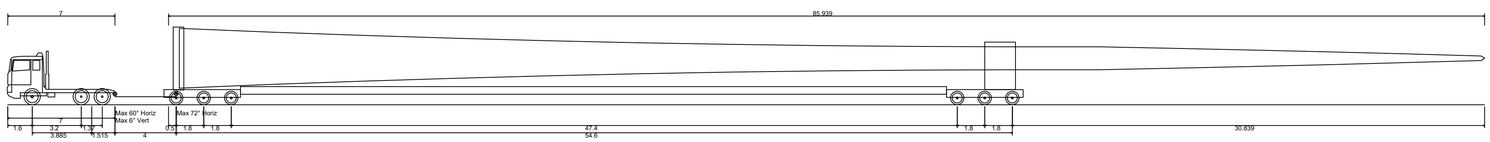
PLAN
SCALE 1:500



LEGEND

HARDSTAND AREA

EXISTING SIGN



85 m wind turbine blade transporter

Overall Length	96.439m
Overall Width	5.089m
Overall Body Height	5.069m
Min Body Ground Clearance	0.424m
Max Track Width	3.000m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m

- The design speed used for the swept paths is **15kmh** and no initial lock, lock to lock or turn on spot has been utilised to produce the swept paths shown.
- The turning paths illustrated in this drawing have been prepared using the AutoCAD Vehicle tracking modelling software in conjunction with AutoCAD Civil3D.
- The vehicle model was prepared by Vehicle Tracking based upon vehicle data provided by Austroads.
- While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

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REV	DATE	COMMENT	DRAWN	REVIEWED	REV	DATE	COMMENT	DRAWN	REVIEWED
-	15/4/25	STRATEGIC CONCEPT DESIGN	C.J.	A.U.					

PROJECT:
DINAWAN WIND FARM
HIGH LEVEL DESIGN - OSOM
HARDSTAND AREA
KIDMAN WAY & NEWELL HIGHWAY

DRAWING TITLE:
HIGH LEVEL DESIGN
HARDSTAND AREA PLAN

CLIENT: SPARK RENEWABLES

DRG. #: EMM - C00

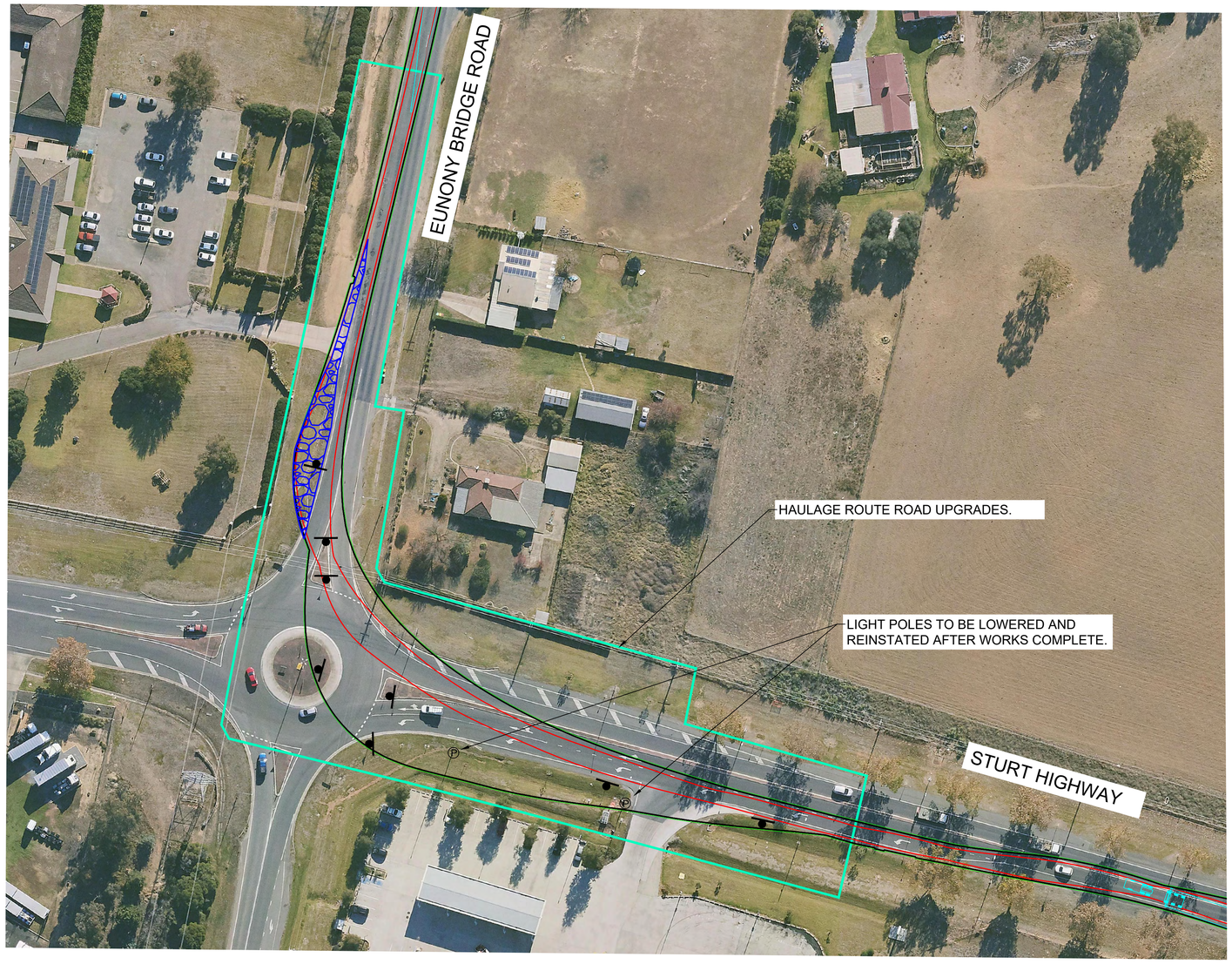
PROJECT #: E240775

SCALE: AS SHOWN

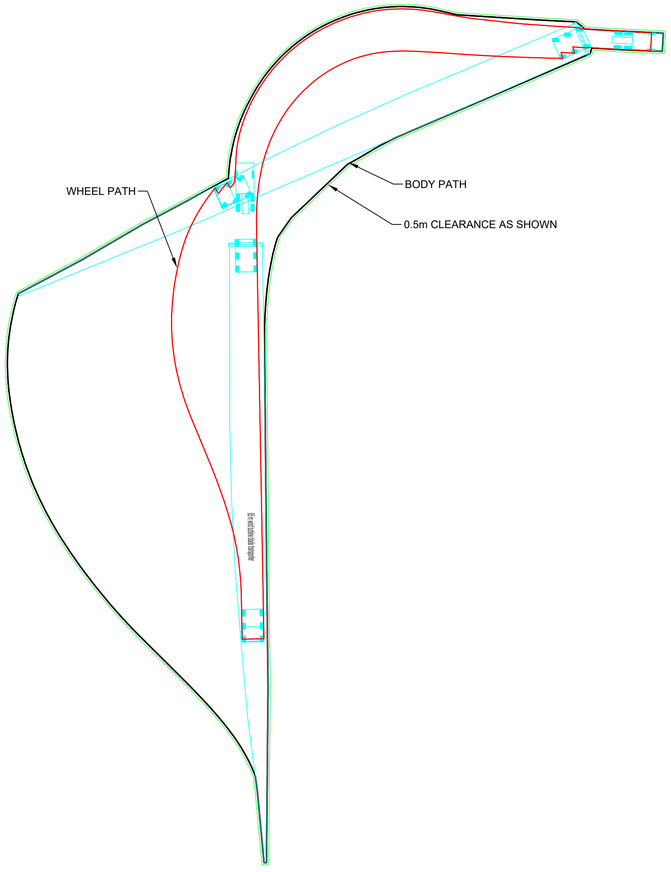
REV: -

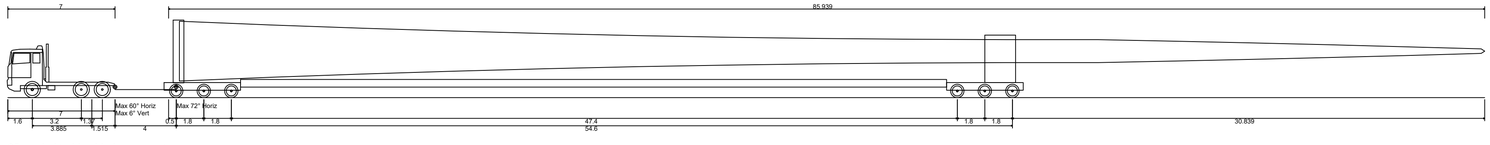
C.2 Sturt Highway/Eunony Bridge Road intersection

A1



PLAN
SCALE 1:400





85 m wind turbine blade transporter

Overall Length	96.439m
Overall Width	5.089m
Overall Body Height	5.069m
Min Body Ground Clearance	0.424m
Max Track Width	3.000m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m

LEGEND

HARDSTAND AREA

EXISTING SIGN

LIGHT POLE

- The design speed used for the swept paths is **15kmh** and no initial lock, lock to lock or turn on spot has been utilised to produce the swept paths shown.
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-	7/4/25	STRATEGIC CONCEPT DESIGN	C.J.	A.U.					

PROJECT:
DINAWAN WIND FARM
HIGH LEVEL DESIGN - OSOM
HARDSTAND AREA
EUNONY BRIDGE RD, STURT HIGHWAY

DRAWING TITLE:
HIGH LEVEL DESIGN
HARDSTAND AREA PLAN

CLIENT: SPARK RENEWABLES

DRG. #: EMM - C01

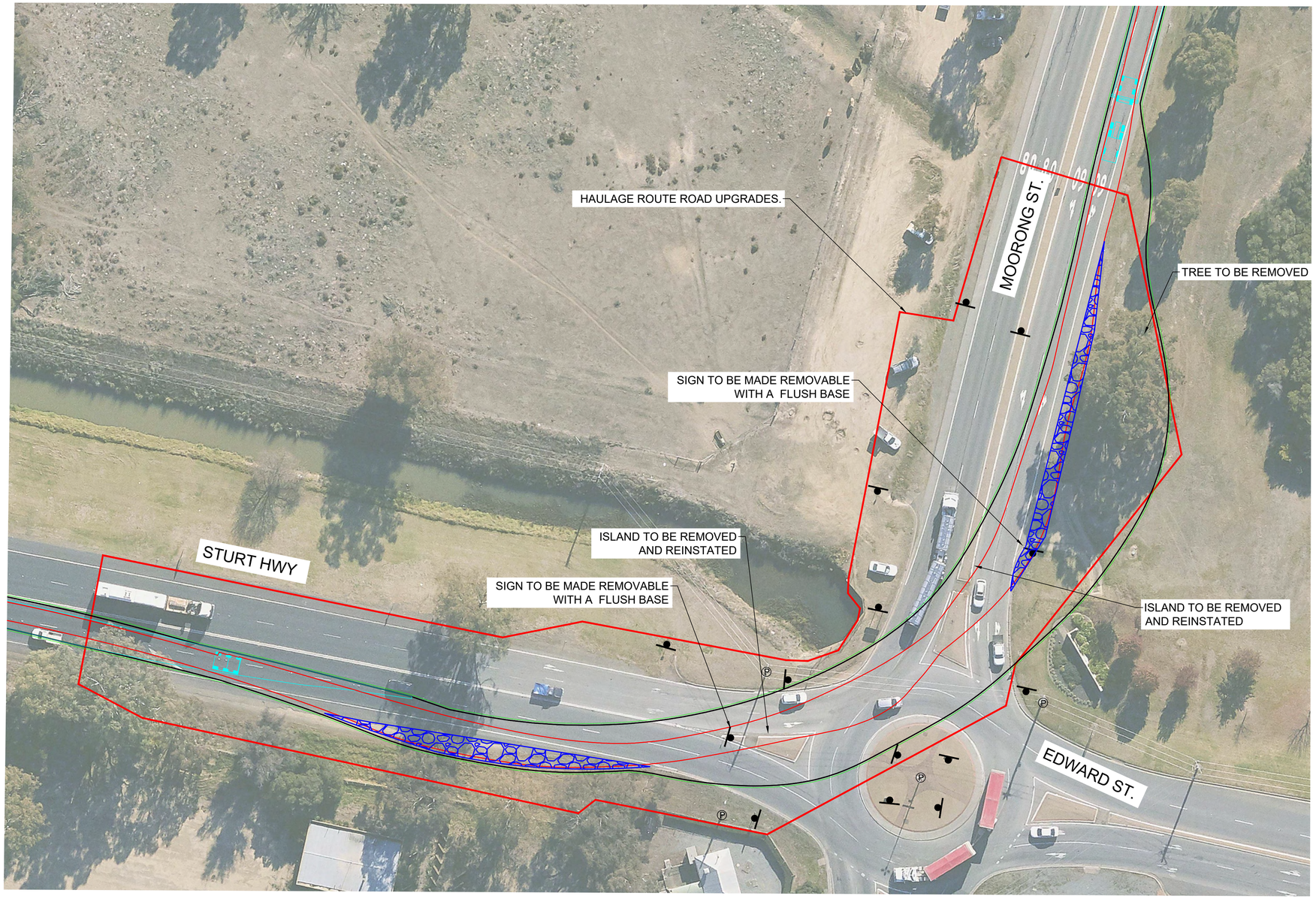
PROJECT #: E220305

SCALE: AS SHOWN

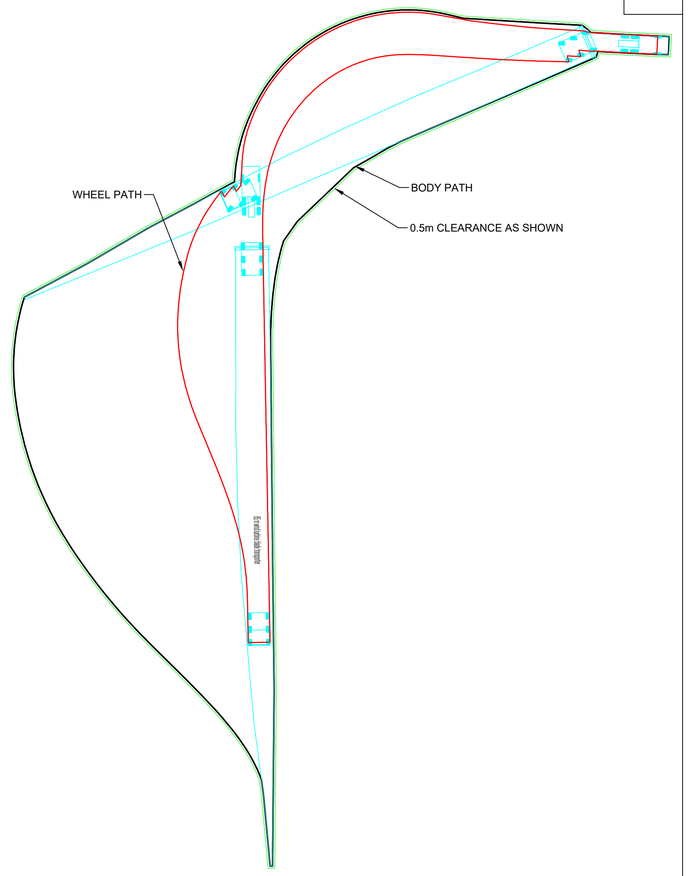
REV: -

C.3 Olympic Highway (Moorong Street)/Sturt Highway intersection

A1



PLAN
SCALE 1:400



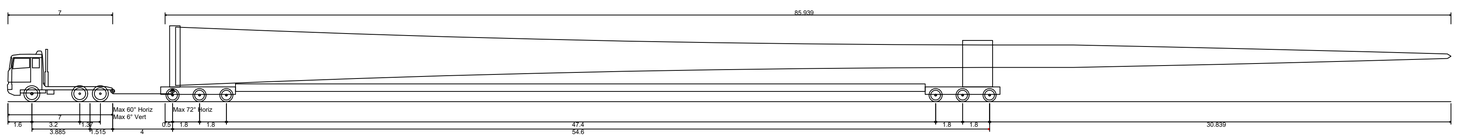
LEGEND

HARDSTAND AREA

EXISTING SIGN

LIGHT POLE

- The design speed used for the swept paths is **15kmh** and no initial lock, lock to lock or turn on spot has been utilised to produce the swept paths shown.
- The turning paths illustrated in this drawing have been prepared using the AutoCAD Vehicle tracking modelling software in conjunction with AutoCAD Civil3D.
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- While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.



85 m wind turbine blade transporter

Overall Length	96.439m
Overall Width	5.089m
Overall Body Height	5.069m
Min Body Ground Clearance	0.424m
Max Track Width	3.000m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m

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REV	DATE	COMMENT	DRAWN	REVIEWED	REV	DATE	COMMENT	DRAWN	REVIEWED
-	1/5/25	STRATEGIC CONCEPT DESIGN	C.J.	A.U.					

PROJECT:
DINAWAN WIND FARM
HIGH LEVEL DESIGN - OSOM
HARDSTAND AREA
STURT HWY. AND MOORONG ST.

DRAWING TITLE:
HIGH LEVEL DESIGN
HARDSTAND AREA PLAN

CLIENT: SPARK RENEWABLES

DRG. #: EMM - C01

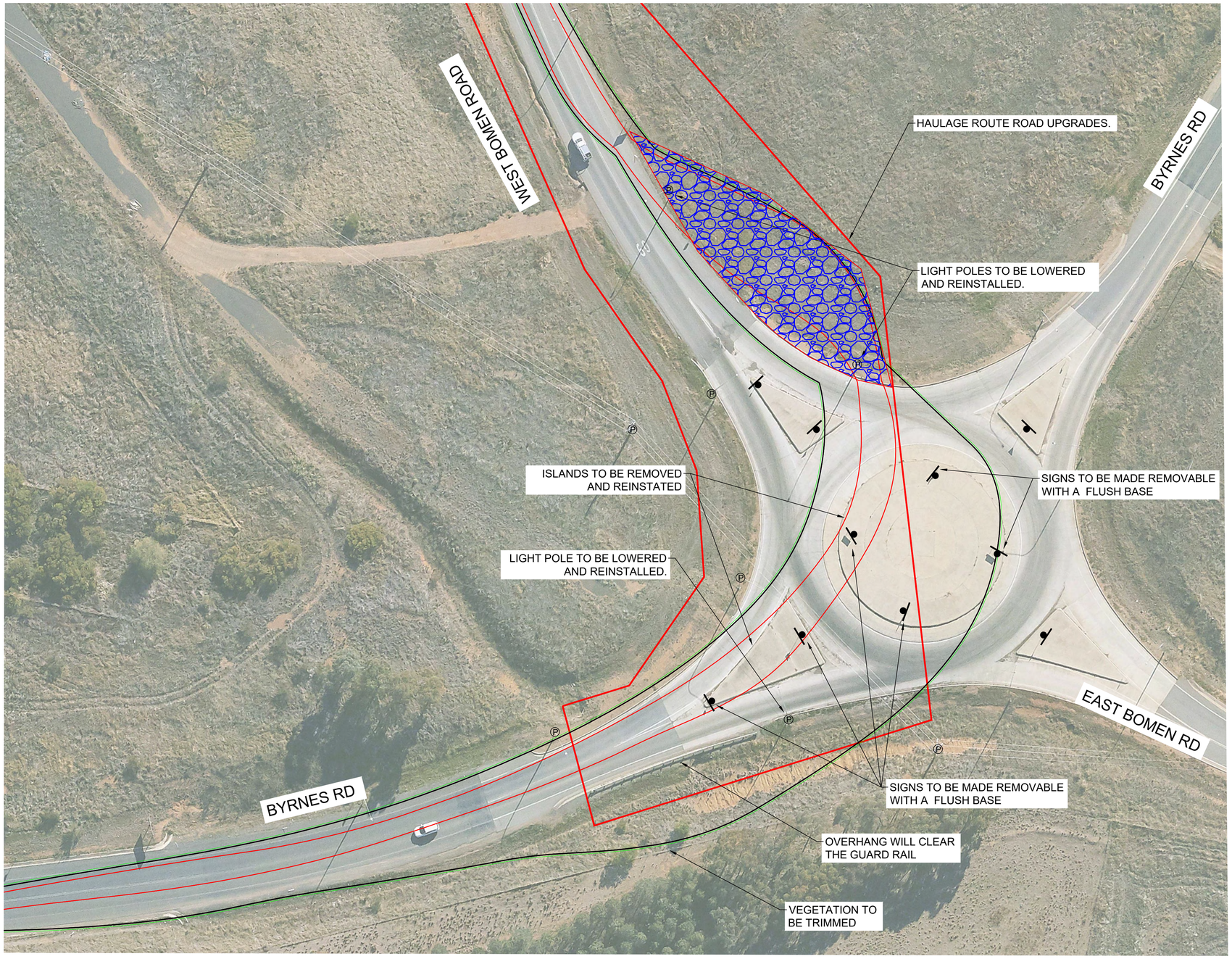
PROJECT #: E220305

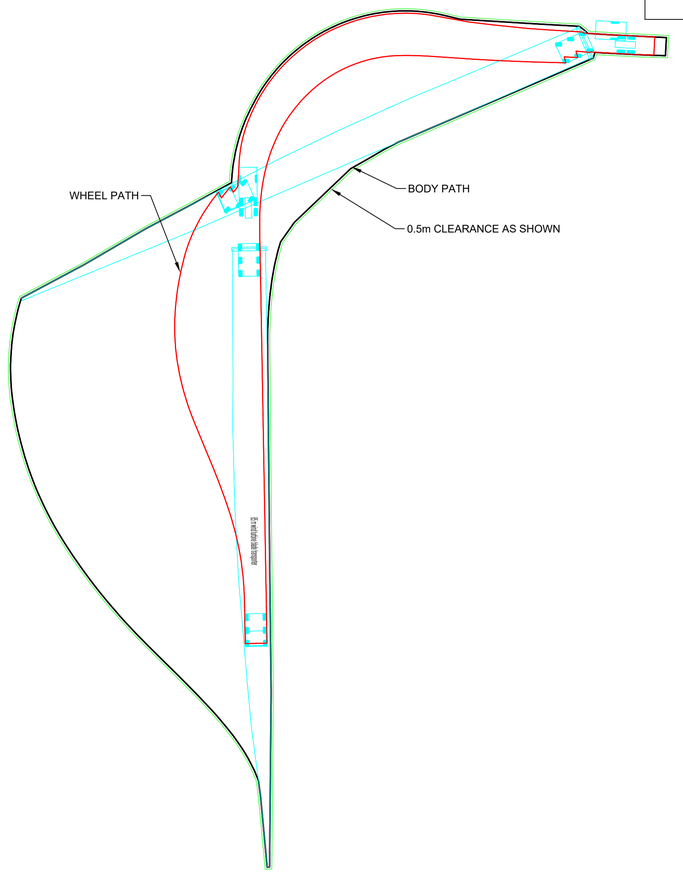
SCALE: AS SHOWN

REV: -

C.4 Byrnes Road/West Bomen Road intersection

A1





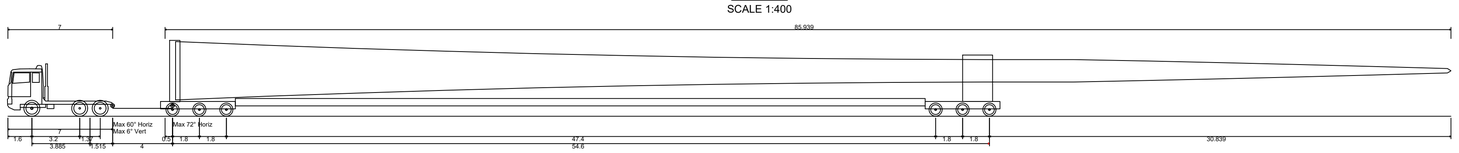
LEGEND

- HARDSTAND AREA
- EXISTING SIGN
- Ⓟ LIGHT POLE

- The design speed used for the swept paths is **15kmh** and no initial lock, lock to lock or turn on spot has been utilised to produce the swept paths shown.
- The turning paths illustrated in this drawing have been prepared using the AutoCAD Vehicle tracking modelling software in conjunction with AutoCAD Civil3D.
- The vehicle model was prepared by Vehicle Tracking based upon vehicle data provided by Austroads.
- While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

PLAN

SCALE 1:400



85 m wind turbine blade transporter	
Overall Length	96.439m
Overall Width	5.089m
Overall Body Height	5.069m
Min Body Ground Clearance	0.424m
Max Track Width	3.000m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m

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REV	DATE	COMMENT	DRAWN	REVIEWED	REV	DATE	COMMENT	DRAWN	REVIEWED
-	1/5/25	STRATEGIC CONCEPT DESIGN	C.J.	A.U.					

PROJECT:
DINAWAN WIND FARM
HIGH LEVEL DESIGN - OSOM HARDSTAND AREA
BYRNES RD, WEST BOMEN RD.

DRAWING TITLE:
HIGH LEVEL DESIGN
HARDSTAND AREA PLAN
OPTION 3.

CLIENT: SPARK RENEWABLES

DRG. #: EMM - C03

PROJECT #: E220305

SCALE: AS SHOWN

REV: -

Annexure D
SIDRA results

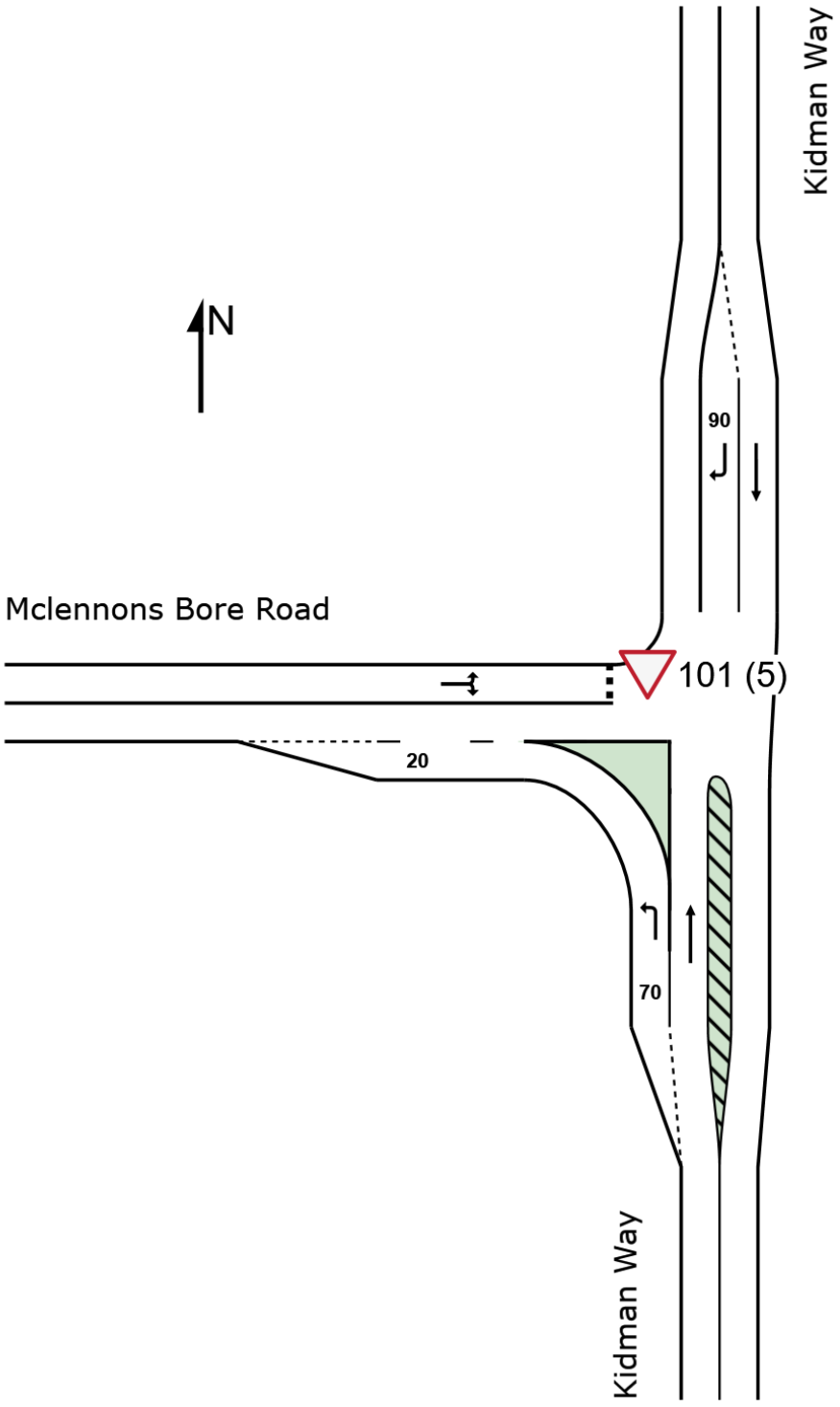
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SITE LAYOUT

Site: [101 (5)] Cumu Mth 15 AM Kidman Way/Mclennons Bore Rd (Baseline 2027 + Construction Month 15 + Cumulative)

Upgraded intersection
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: [101 (5)] Cumu Mth 15 AM Kidman Way/Mclennons Bore Rd (Baseline 2027 + Construction Month 15 + Cumulative)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Upgraded intersection
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Kidman Way															
1	L2	All MCs	125	3.4	125	3.4	0.069	9.0	LOS A	0.0	0.0	0.00	0.63	0.00	71.7
2	T1	All MCs	35	51.5	35	51.5	0.024	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
Approach			160	13.8	160	13.8	0.069	7.0	NA	0.0	0.0	0.00	0.50	0.00	76.3
North: Kidman Way															
8	T1	All MCs	177	19.6	177	19.6	0.102	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
9	R2	All MCs	88	6.0	88	6.0	0.053	7.7	LOS A	0.2	1.8	0.13	0.62	0.13	71.2
Approach			265	15.1	265	15.1	0.102	2.6	NA	0.2	1.8	0.04	0.21	0.04	88.1
West: Mclennons Bore Road															
10	L2	All MCs	5	100.0	5	100.0	0.070	10.7	LOS A	0.3	2.2	0.40	0.65	0.40	47.1
12	R2	All MCs	45	9.3	45	9.3	0.070	11.0	LOS A	0.3	2.2	0.40	0.65	0.40	66.6
Approach			51	18.8	51	18.8	0.070	11.0	LOS A	0.3	2.2	0.40	0.65	0.40	63.9
All Vehicles			476	15.0	476	15.0	0.102	5.0	NA	0.3	2.2	0.07	0.35	0.07	80.6

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: [101 (6)] Cumu Mth 15 PM Kidman Way/Mclennons Bore Rd (Baseline 2027 + Construction Month 15 + Cumulative)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

Upgraded intersection
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Kidman Way															
1	L2	All MCs	45	9.3	45	9.3	0.026	8.9	LOS A	0.0	0.0	0.00	0.63	0.00	69.9
2	T1	All MCs	166	14.6	166	14.6	0.093	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
Approach			212	13.4	212	13.4	0.093	1.9	NA	0.0	0.0	0.00	0.14	0.00	91.4
North: Kidman Way															
8	T1	All MCs	53	60.0	53	60.0	0.038	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	100.0
9	R2	All MCs	5	100.0	5	100.0	0.006	11.3	LOS A	0.0	0.3	0.35	0.62	0.35	50.2
Approach			58	63.6	58	63.6	0.038	1.0	NA	0.0	0.3	0.03	0.06	0.03	91.7
West: Mclennons Bore Road															
10	L2	All MCs	87	7.2	87	7.2	0.212	8.7	LOS A	0.9	6.8	0.39	0.66	0.39	68.9
12	R2	All MCs	125	3.4	125	3.4	0.212	10.0	LOS A	0.9	6.8	0.39	0.66	0.39	70.2
Approach			213	5.0	213	5.0	0.212	9.5	LOS A	0.9	6.8	0.39	0.66	0.39	69.6
All Vehicles			482	15.7	482	15.7	0.212	5.2	NA	0.9	6.8	0.17	0.36	0.17	80.4

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Spring Hill QLD 4000
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CANBERRA
Suite 2.04 Level 2
15 London Circuit
Canberra City ACT 2601

ADELAIDE
Level 4 74 Pirie Street
Adelaide SA 5000
T 08 8232 2253

MELBOURNE
Suite 9.01 Level 9
454 Collins Street
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