



PRELIMINARY
OSOM VEHICLE ROUTE ASSESSMENT
PROPOSED CATTLE CREEK WIND FARM

Prepared for
ATTEXO GROUP PTY LTD

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LIST OF ABBREVIATIONS

AADT	ANNUAL AVERAGE DAILY TRAFFIC
AV	ARTICULATED VEHICLE
AUL TYPE	AUSTROADS TYPE AUL AUXILIARY LEFT TURN TREATMENT TYPE
AUR	AUSTROADS TYPE AUR AUXILIARY RIGHT TURN TREATMENT
BAL	AUSTROADS TYPE BAL BASIC LEFT TURN TREATMENT
BAR	AUSTROADS TYPE BAR BASIC RIGHT TURN TREATMENT
BESS	BATTERY ENERGY STORAGE SYSTEM
CHL	AUSTROADS TYPE CHL CHANNELISED LEFT TURN TREATMENT
CHR	AUSTROADS TYPE CHR CHANNELISED RIGHT TURN TREATMENT
DSDMIS -	DEPT OF STATE DEVELOPMENT, M'FACTURING, INFRASTRUCTURE AND PLANNING
EIS -	ENVIRONMENTAL IMPACT STATEMENT
ESA	EQUIVALENT STANDARD AXLE
GTIA	GUIDE TO TRAFFIC IMPACT ASSESSMENT (2017)
HRV	HEAVY RIGID VEHICLE
HV	HEAVY VEHICLE
NHVR	NATIONAL HEAVY VEHICLE REGULATOR
OSOM	OVER SIZED OVER MASS VEHICLES
PIA	PAVEMENT IMPACT ASSESSMENT
QPS	QUEENSLAND POLICE SERVICE
RMP	TRAFFIC MANAGEMENT PLAN
RTE	RYTENSKILD TRAFFIC ENGINEERING
RPEQ	REGISTERED PROFESSIONAL ENGINEER OF QUEENSLAND
SAR	STANDARD AXLE REPETITION
SCR	STATE CONTROLLED ROAD
SIDRA	INTERSECTION MODELLING SOFTWARE
SISD	SAFE INTERSECTION SIGHT DISTANCE
TIA	TRAFFIC IMPACT ASSESSMENT
TMP	TRAFFIC MANAGEMENT PLAN
TMR	DEPARTMENT OF TRANSPORT AND MAIN ROADS
TRC	TOOWOOMBA REGIONAL COUNCIL
VPD	VEHICLES MOVEMENTS PER DAY
VPH	VEHICLES MOVEMENTS PER HOUR
WDRC	WESTERN DOWNS REGIONAL COUNCIL

1.0 INTRODUCTION

1.1 Background

Rytenskild Traffic Engineering (RTE) has been engaged by Attexo Group Pty Ltd to prepare a Preliminary Route Assessment for the proposed Cattle Creek Wind Farm being developed by RWE Cattle Creek Onshore Wind Pty Ltd.

The project is located within the Western Downs and Toowoomba Regional Council areas, approximately 25 km west of Cecil Plains and 65 km south-west of Dalby. It comprises a utility-scale wind farm development incorporating up to 135 wind turbine generators (WTGs), a Battery Energy Storage System (BESS) with up to 450 MW capacity, and associated infrastructure. The site spans twelve lots of predominantly undulating rural land currently used for grazing.

This report is a Preliminary Route Assessment and has been prepared in conjunction with the preliminary Traffic Impact Assessment report. The purpose of the report is to evaluate the physical feasibility of transporting Oversize Over-Mass (OSOM) wind turbine components from the Port of Brisbane to the proposed Cattle Creek Wind Farm.

The project is being assessed under relevant development assessment frameworks including the State Development Assessment Provisions (SDAP), including State Code 23 (wind farm development) and State Code 27 (battery storage facility development), which establishes performance requirements for OSOM haulage feasibility.

1.2 General Scope of Assessment

The following tasks have been carried out during the preparation of this Preliminary Route Assessment (PRA):

- Geometric Corridor Audit: Manual and visual inspections of the proposed haulage routes to identify physical constraints including lane widths, overhead clearances, and roadside furniture;
- Design Vehicle Definition: Establishment of a candidate transport configuration based on the Nordex N175 components, specifically the 86.2 m blade and 167 t generator loads. This turbine model has been selected as it represents the largest known design envelope currently available in the market; however, it is noted that it is a candidate reference configuration only and remains subject to final turbine selection and confirmation during subsequent project stages;
- Route Feasibility Analysis: Identification and evaluation of four potential OSOM haulage options (Options A–D) through desktop analysis and field survey;
- Intersection Geometry Assessment: Preliminary analysis of swept paths at key nodes to determine the extent of required civil works or temporary furniture removal; and
- Operational Mitigation: Identification of requirements for Police Escorts, Pilot vehicles, and designated holding points for OSOM movements.

This report focuses exclusively on the component delivery phase, as the operational phase will generate negligible OSOM movements (limited to rare maintenance activities).

1.3 Limits of Report

This preliminary report is intended to identify the physical feasibility of transport and the scope of required works. The findings are based on the Nordex N175 technical specifications provided at the time of writing. Detailed topographical surveys and Level 3 structural bridge inspections are excluded from this preliminary scope and must be completed prior to the issuance of final transport permits.

1.4 Source of Background Information

The following data sources have been utilised in this assessment:

- Nordex Energy Spain S.A.U: Technical layouts and transport configurations for N175 turbine components;
- P2P Project Solutions: OSOM vehicle route survey data and preliminary swept path findings;
- Department of Transport and Main Roads (TMR): Background traffic data, bridge asset registers, and historical crash statistics for state-controlled roads; and
- Local Government Data: Asset information and road hierarchy details from Western Downs Regional Council and Toowoomba Regional Council.

1.5 Legislative framework

This assessment has been carried out in the context of the following legislation:

- Transport Infrastructure Act 1994;
- Transport Infrastructure (State-controlled Roads) Regulation 2023;
- Transport Operations (Road Use Management) Act 1995;
- State Development Assessment Provisions (SDAP) State Code 1: Development in a State-controlled Road Environment (Version 3.5);
- State Development Assessment Provisions (SDAP) State Code 23: Wind Farm Development (Version 3.5);
- State Development Assessment Provisions (SDAP) State Code 27: Battery Storage Facility Development (Version 3.5);
- Planning Guideline to State Code 23: Wind Farm Development (July 2025);
- Planning Guideline to State Code 27: Battery Storage Facility Development (July 2025);
- State Planning Policy (SPP) (December 2023);
- Toowoomba Regional Council Planning Scheme Version 28; and
- Western Downs Planning Scheme 2017 incorporating Major Amendment No. 2 (effective 28 July 2025).

1.6 Road Jurisdiction

The Project Area is located within Western Downs Regional and Toowoomba Regional Council areas. Traffic generated by the project will travel throughout the following local Government areas and TMR regions:

- Toowoomba Regional Council;
- Western Downs Regional Council;
- TMR – Metropolitan District; and
- TMR – South West Downs region.

State controlled roads within the Western Downs Regional Council area (and east to Ipswich) are managed by the Downs South West District (Toowoomba office). State controlled roads in the area surrounding the Project Area are shown in Figure 1.1 – State Controlled Roads Surrounding the Project Area.

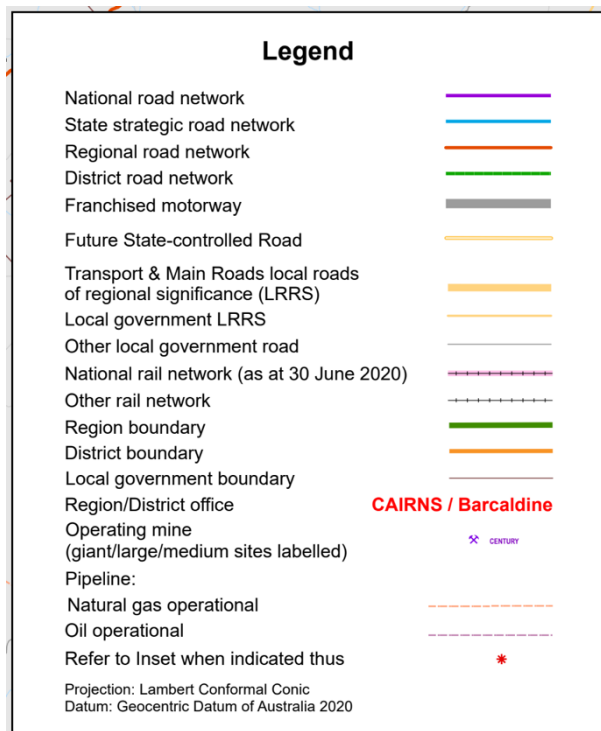
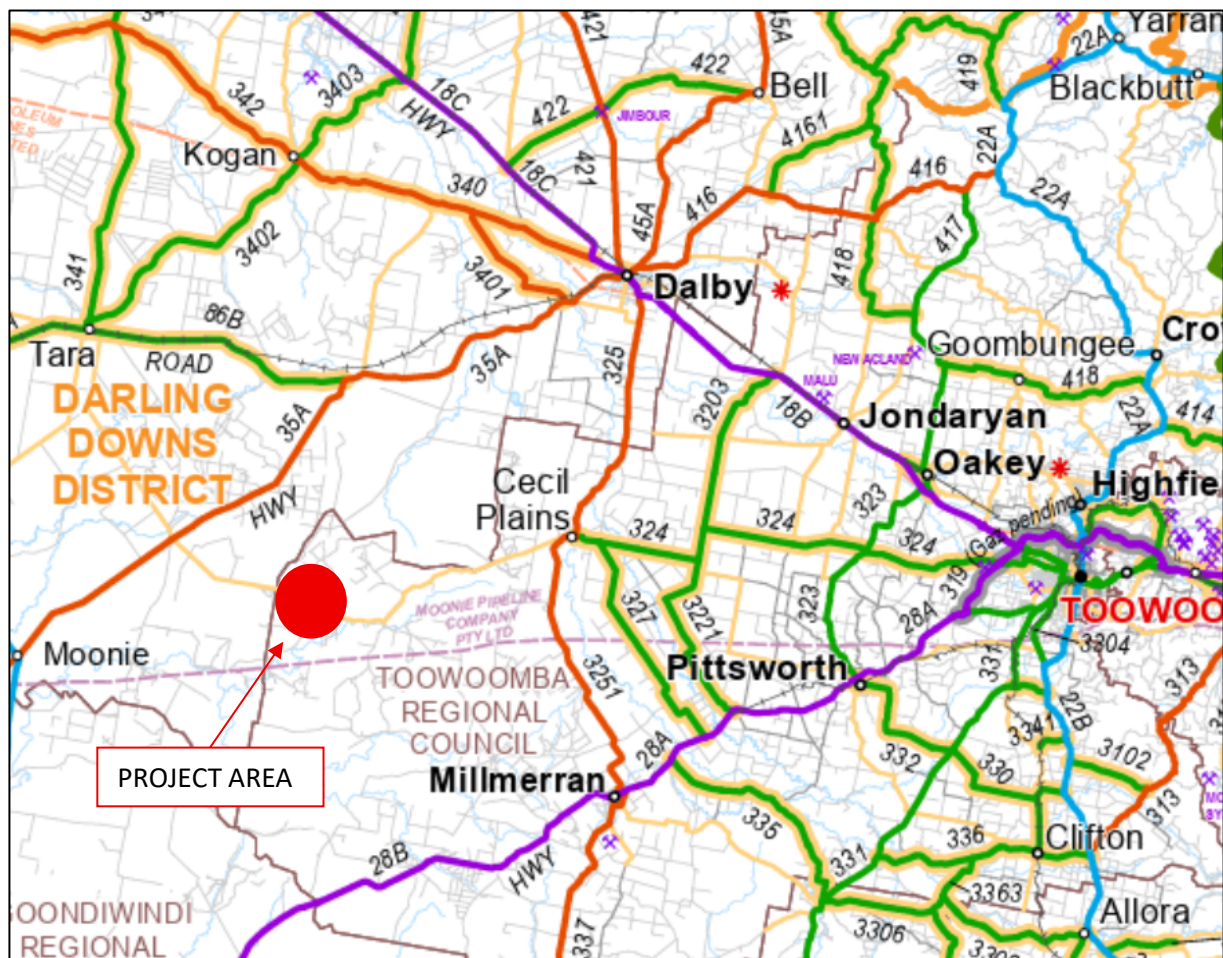


FIGURE 1.1 – STATE CONTROLLED ROADS SURROUNDING THE PROJECT AREA (SOURCE: TMR)

The Gateway Motorway and Logan Motorway form part of the go via network, which is operated by Transurban Queensland.

The Port of Brisbane Authority has jurisdiction over Port Drive and other access roads around the Port.

Toowoomba Regional Council is responsible for local roads within the Toowoomba Regional Council (TRC) area that connect to the Warrego Highway, while Western Downs Regional Council (WDRC) is responsible for local roads within the Western Downs LGA that connect to the Warrego Highway. WDRC also manages the Cecil Plains – Moonie Road.

Jurisdictions for the various roads considered to be relevant to this study are summarised in Table 1.1 – Jurisdiction of Various Road Sections.

Table 1.1 – Jurisdiction of Various Road Sections

Road	Section	Jurisdiction	Proposed use
Port Drive	Entire length	Port of Brisbane Authority	OSOM vehicles
Port of Bris Mway	Entire length	TMR – Metro	OSOM vehicles
Gateway Mway	Port Bris – Logan Mway	TMR – Metro	OSOM vehicles, and general construction traffic
Logan Mway	Gateway – Ipswich Mway	TMR – Metro	OSOM vehicles, and general construction traffic
Ipswich Mway	Logan Mway – Warrego Hwy	TMR – Metro	OSOM vehicles, and general construction traffic
Warrego Hwy	Ipswich - Marburg	TMR – Metro	OSOM vehicles, and general construction traffic
Warrego Hwy	Marburg – Withcott	TMR – Downs SW	OSOM vehicles, and general construction traffic
Toowoomba Bypass	Withcott - Charlton	TMR – Downs SW	OSOM vehicles, and general construction traffic
Warrego Hwy	Charlton - Dalby	TMR – Downs SW	Possibly OSOM vehicles, and general construction traffic
Moonie Hwy	Dalby – Cecil Plains Road intersection	TMR – Downs SW	Possibly OSOM vehicles, and general construction traffic
Toowoomba – Cecil Plains Road	Wellcamp – Cecil Plains	TMR – Downs SW	Possibly OSOM vehicles, and general construction traffic
Cecil Plains – Moonie Road	Moonie Hwy int – Cecil Plains	WDRC & TRC	Possibly OSOM vehicles, and general construction traffic
Dalby – Cecil Plains Road	Dalby to Cecil Plains	TMR – Downs SW	Possibly OSOM vehicles, and general construction traffic
Pampas – Horrane Road	Pampas to Horrane	TMR – Downs SW	Possibly OSOM vehicles, and general construction traffic
Gore Highway	Athol to Pampas	TMR – Downs SW	Possibly OSOM vehicles, and general construction traffic

Stage 1 – Project Area establishment, sub station earthworks, internal road construction (initial works only)

Stage 2 – Internal road construction, delivery of wind turbine components, sub-station construction, tower foundation construction, wind turbine structure assembly.

1.7 Stakeholder Engagement

In accordance with the requirements of State Code 23 and State Code 27, consideration has been given to the need for engagement with key stakeholders involved in the planning, assessment and delivery of transport-related aspects of the Project.

Relevant stakeholders may include, but are not limited to:

- Local government traffic and infrastructure representatives responsible for the affected road network;
- Regional officers from the Department of Transport and Main Roads (TMR), particularly in relation to state-controlled roads and OSOM movements;
- Queensland Rail, where haulage routes intersect or interface with rail infrastructure; and
- Specialist heavy haulage and OSOM transport providers involved in route planning and delivery logistics.

At the preliminary assessment stage, stakeholder consultation has been identified as a requirement for progression into detailed design and route finalisation. Any necessary engagement will be undertaken as part of the next phase of project development to confirm route suitability, identify constraints, and agree on any required mitigation measures.

1.8 Community Consultation

A Road Use Management Plan (RUMP) will be developed prior to construction. This can include a 24-hour project hotline and a digital “Works Notification” system to inform the community of scheduled OSOM convoys.

Given the 32-month construction duration, these communications will specifically target farmers and residents along Cecil Plains – Moonie Road to assist with the management of gate access and local traffic interaction. The communication protocols and notification procedures will be discussed and agreed with relevant landowners and residents along the route prior to commencement of haulage activities.

2.0 SITE & PROJECT CHARACTERISTICS

2.1 Project Location

The proposed Cattle Creek Wind Farm is located approximately 25km west of Cecil Plains and 65km southwest of Dalby. The Project Area encompasses approximately 20,000 hectares of undulating rural land. For the purposes of this Preliminary Route Assessment, the critical geographical factor is the position of the Project relative to the Western Downs and Toowoomba Regional Council boundaries, with primary access via Cecil Plains – Moonie Road.

The location of the Project Area is shown in Figure 2.1 – Location of Project Area.

2.2 Project Components & Infrastructure

The proposed development comprises a utility-scale wind farm at Cattle Creek, incorporating up to 135 wind turbine generators (WTGs), a Battery Energy Storage System (BESS) with up to 450 MW capacity, and associated infrastructure.

The project involves the delivery of wind turbine components, major electrical infrastructure and supporting construction materials. The infrastructure components that dictate the transport requirements include:

- Wind Turbine Generators (Nordex N175): requiring up to 14 separate OSOM loads per turbine, including blades, tower sections, nacelles and hub components;
- Battery Energy Storage System (BESS): comprising up to 376 battery units, 94 medium voltage (MV) transformers, two (2) main high voltage (HV) substations, and associated electrical infrastructure;
- Substations and Switchyard Infrastructure: including the delivery of transformers up to approximately 187 tonnes, representing the project's maximum mass load; and
- Collection and Electrical Infrastructure: including underground and overhead cabling, permanent meteorological masts up to 160m in height, internal access tracks and associated civil infrastructure.

The proposed layout of the project is shown in Figure 2.2 – Project Layout.

2.3 Construction Logistics & Staging

The haulage task is divided into distinct logistical phases over a 32-month period focused on OSOM component delivery:

- Project Establishment (Months 1 – 6): Enabling works and access preparation (standard heavy vehicle movements are not assessed in this report);
- Infrastructure Foundations (Months 6 – 12): Early civil works and base preparation for turbine installation (outside OSOM scope); and
- Component Delivery (Months 12 – 30): Primary OSOM phase involving wind turbine component deliveries and major electrical infrastructure deliveries, including blades, towers, nacelles, transformers, BESS battery units, MV transformers, and HV substation equipment.

Indicative construction staging is summarised in Table 2.1 – Summary of Indicative Construction Staging. This report specifically assesses OSOM transport feasibility and associated route constraints.

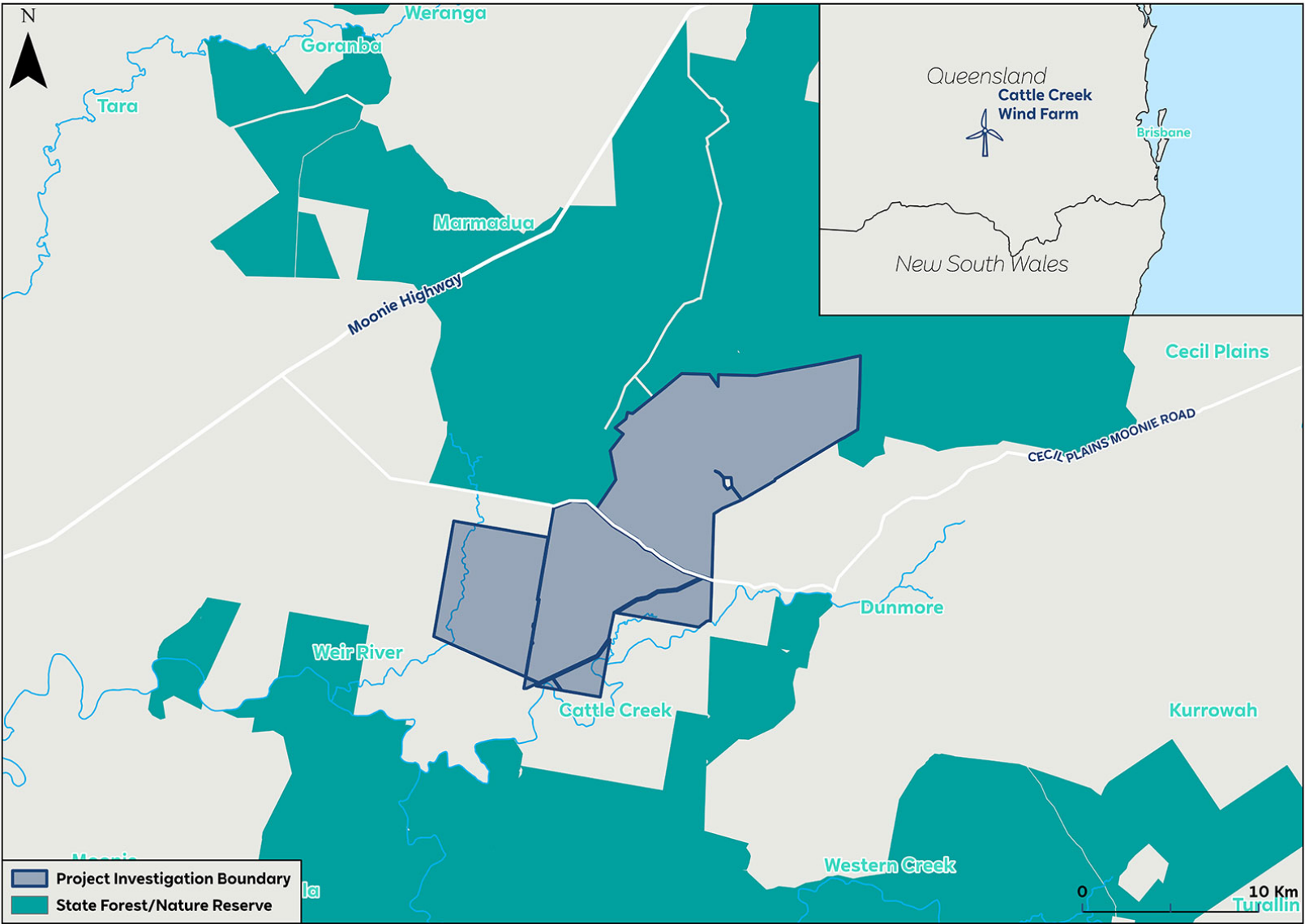


FIGURE 2.1 – LOCATION OF PROJECT AREA

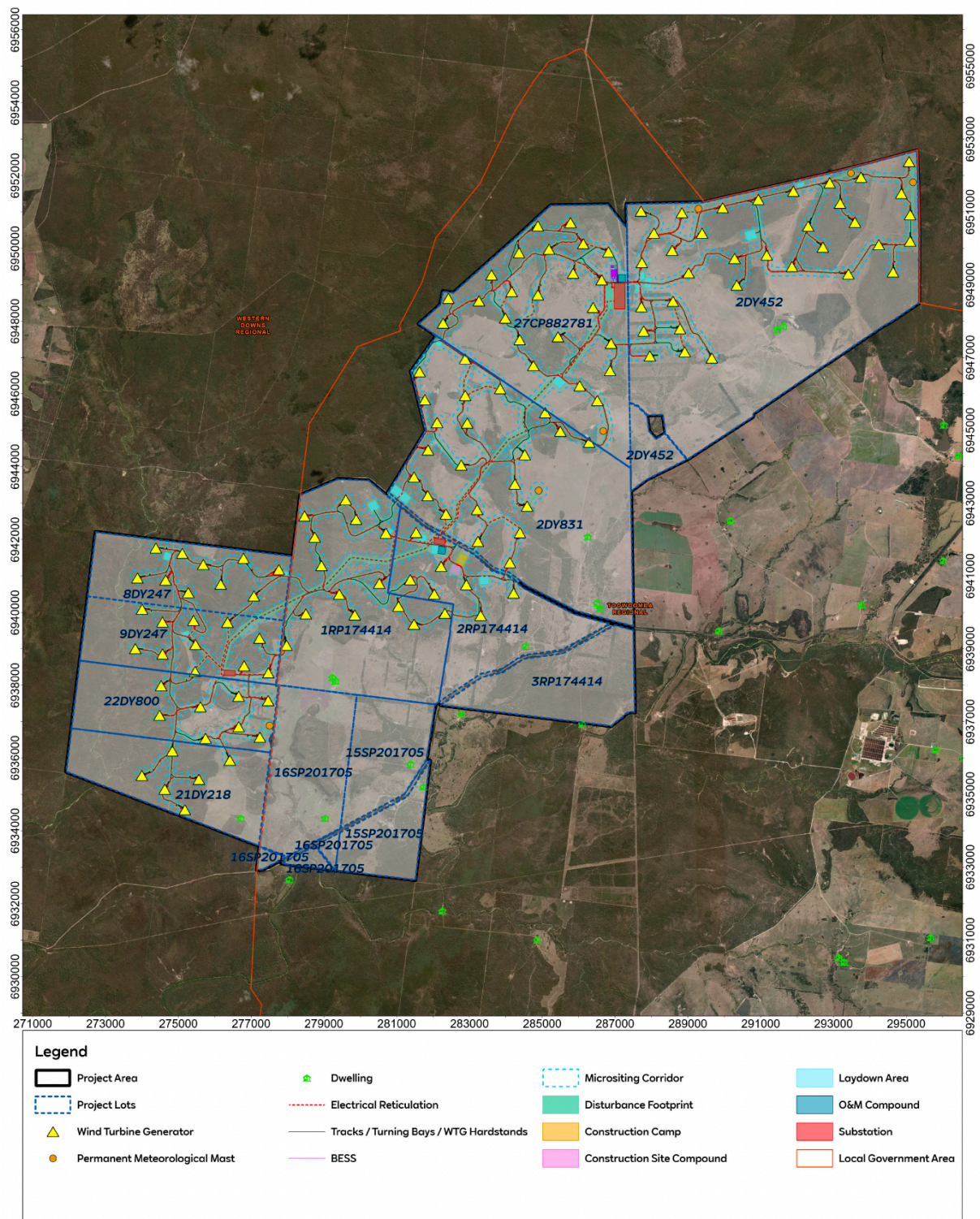


FIGURE 2.2 – PROJECT LAYOUT

TABLE 2.1 – SUMMARY OF INDICATIVE CONSTRUCTION STAGING

	Jan-28	Feb-28	Mar-28	Apr-28	May-28	Jun-28	Jul-28	Aug-28	Sep-28	Oct-28	Nov-28	Dec-28	Jan-29	Feb-29	Mar-29	Apr-29	May-29	Jun-29	Jul-29	Aug-29	Sep-29	Oct-29	Nov-29	Dec-29	Jan-30	Feb-30	Mar-30	Apr-30	May-30	Jun-30	Jul-30	Aug-30
Site Establishment																																
Civil Works																																
Electrical Works																																
WTG Delivery																																
Commissioning and Demobilisation																																

Notes

- (1) Prior to commencing construction activity, all Project access points connecting to Cecil Plains – Moonie Road will be designed and constructed in accordance with TRC requirements.

All accesses will be designed to accommodate construction traffic, including Over-size Over-mass (OSOM) turbine delivery vehicles, where applicable. Standard rural property access treatments will not be sufficient for OSOM movements and intersection treatments will need to be designed to facilitate OSOM swept paths.

- (2) The construction and commissioning program will extend over approximately 32 months, with workers generally operating on a Bus in / Bus out roster.
- (3) The indicative construction staging and haulage schedule is preliminary only and subject to refinement through detailed design development, contractor procurement, stakeholder consultation, and ongoing engagement with the Department of Transport and Main Roads, Queensland Police Service, relevant local authorities and affected landowners. Timing, sequencing and construction methodologies may therefore vary as the project progresses.

It is anticipated that turbine components will be transported over a nine-month period; however, this is subject to negotiation with TMR and the Queensland Police Service, including any required permits for OSOM movements and associated road network constraints.

2.4 OSOM Vehicle Configuration

Examples of the types of vehicle configurations that will be used to haul over -sized turbine components, and other primary haulage activities will be shown in the Transport Management Plan. It is noted that the configuration of some of the vehicles may change, depending on the appointed contractor. Final vehicle configurations will be documented in the Transport Management Plan (TMP), and Route Survey to be prepared by the appointed contractor.

A summary of the various vehicle configurations adopted for this assessment is provided in Table 2.2 – OSOM Vehicle Characteristics.

Table 2.2 – Over-Sized Over Mass (OSOM) Vehicle Characteristics

Haulage Item	No. of deliveries	Overall Length (m)	Overall Width (m)	Height (m)	GVM (tonnes)	Vehicle Type (Updated)
Tower section 1	135	39.5	5.9	6.6	85	Prime Mover + Low Loader Dolly + Jinker
Tower section 2	135	44.5	5.9	6.6	86	Prime Mover + Low Loader Dolly + Jinker
Tower section 3	135	27.5	5.55	6.6	85	Prime Mover + Low Loader + Dolly
Tower section 4	135	33.4	5.0	6.6	90	Prime Mover + Low Loader + Dolly
Tower section 5	135	38.0	5.0	6.6	90	Prime Mover + Low Loader + Dolly
Tower section 6	135	40.8	5.0	6.4	79	Prime Mover + Low Loader + Dolly
Tower section 7	135	39.0	4.2	5.6	68	Prime Mover + Semi-Trailer / Drop Deck
Blade	405	89.2	4.3	5.5	52.5	Prime Mover + Extendable Steerable Jinker (Steerable Bogie)
Generator segment 1	135	30.5	5.2	4.8	167	Prime Mover + Multi-Axle Platform (Platform Trailer)
Generator segment 2	135	30.5	5.2	4.8	167	Prime Mover + Multi-Axle Platform (Platform Trailer)
Hub	135	26.6	4.4	5.5	75	Prime Mover + Low Loader
Nacelle	135	36.6	4.9	5.9	86	Prime Mover + 4x8 Dolly + 4x8 Jinker (Drop Deck)
BESS battery units	376	12–14	2.5–3.0	3.0–3.5	30–45	Prime Mover + Extendable Platform Trailer
MV transformers	94	8–12	3.0–4.0	3.0–4.0	up to 100	Prime Mover + Multi-Axle Platform Trailer
HV substation equipment	2	Subject to final design	Subject to final design	Subject to final design	up to 200	Prime Mover + Heavy Duty Hydraulic Platform Trailer
Transformer (wind farm / grid connection)	1 – 5	8.8	4.0	4.6	187	Prime Mover + Heavy Duty Hydraulic Platform Trailer

The wind blades will be transported using a separate rear bogie with independent steering. A total of 14 separate heavy vehicle loads will be required for each wind turbine.

Figure 2.3 – Vehicle Specifications Sheets (Sheet 1 of 3), Figure 2.4 – Vehicle Specifications Sheets (Sheet 2 of 3) and Figure 2.5 – Vehicle Specifications Sheets (Sheet 3 of 3) present the representative OSOM vehicle configuration drawings adopted for this assessment, including axle arrangements, steering configurations, and overall transport envelopes. These configurations are based on typical industry equipment for the haulage of Nordex N175 components and form the basis of the swept path and geometric assessments undertaken as part of this Preliminary Route Assessment. Operators are to confirm final configurations and undertake detailed checks based on their specific equipment prior to transport.

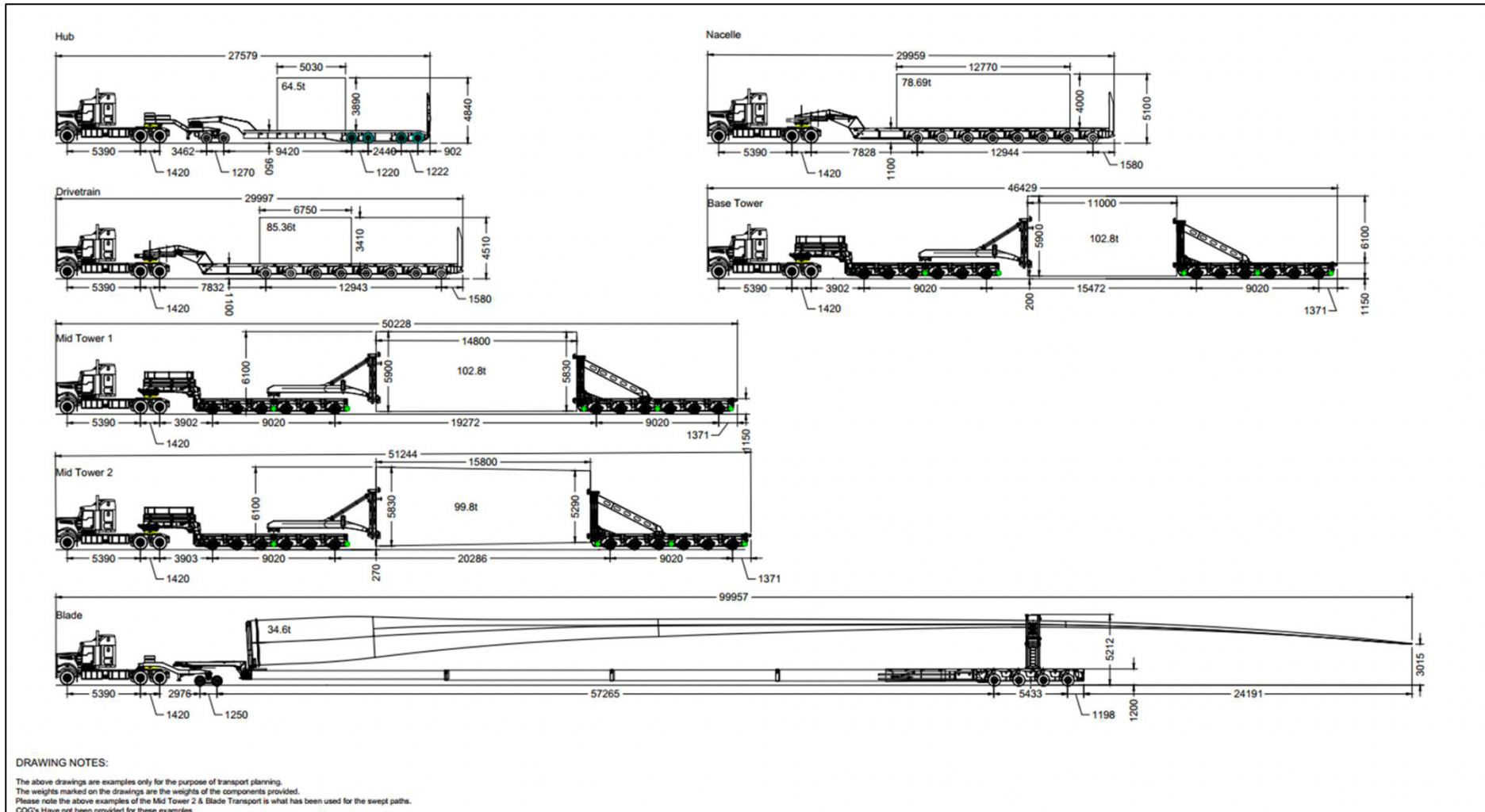


FIGURE 2.3 – VEHICLE SPECIFICATIONS SHEETS (SHEET 1/3)

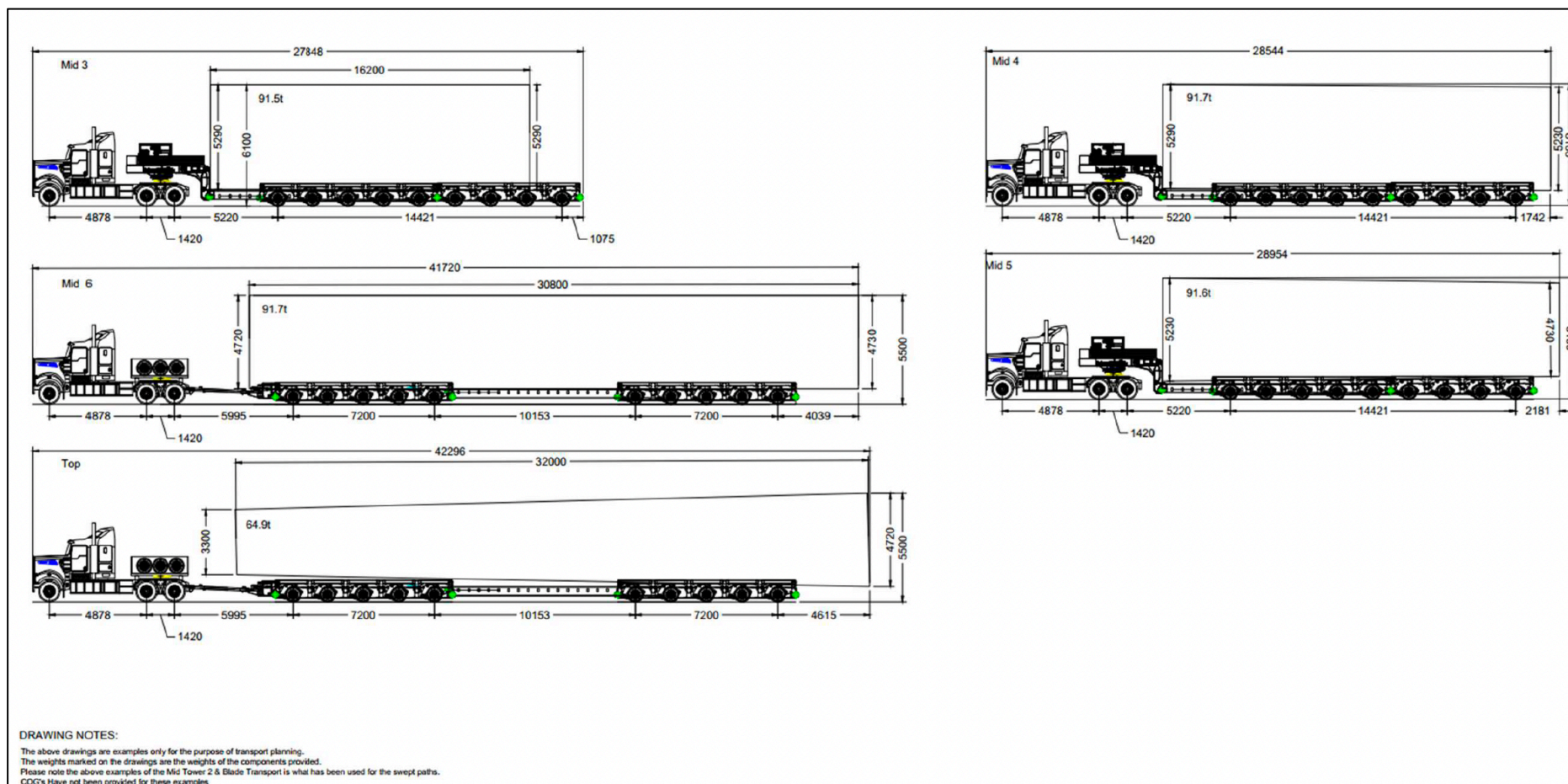


FIGURE 2.4 – VEHICLE SPECIFICATIONS SHEETS (SHEET 2/3)

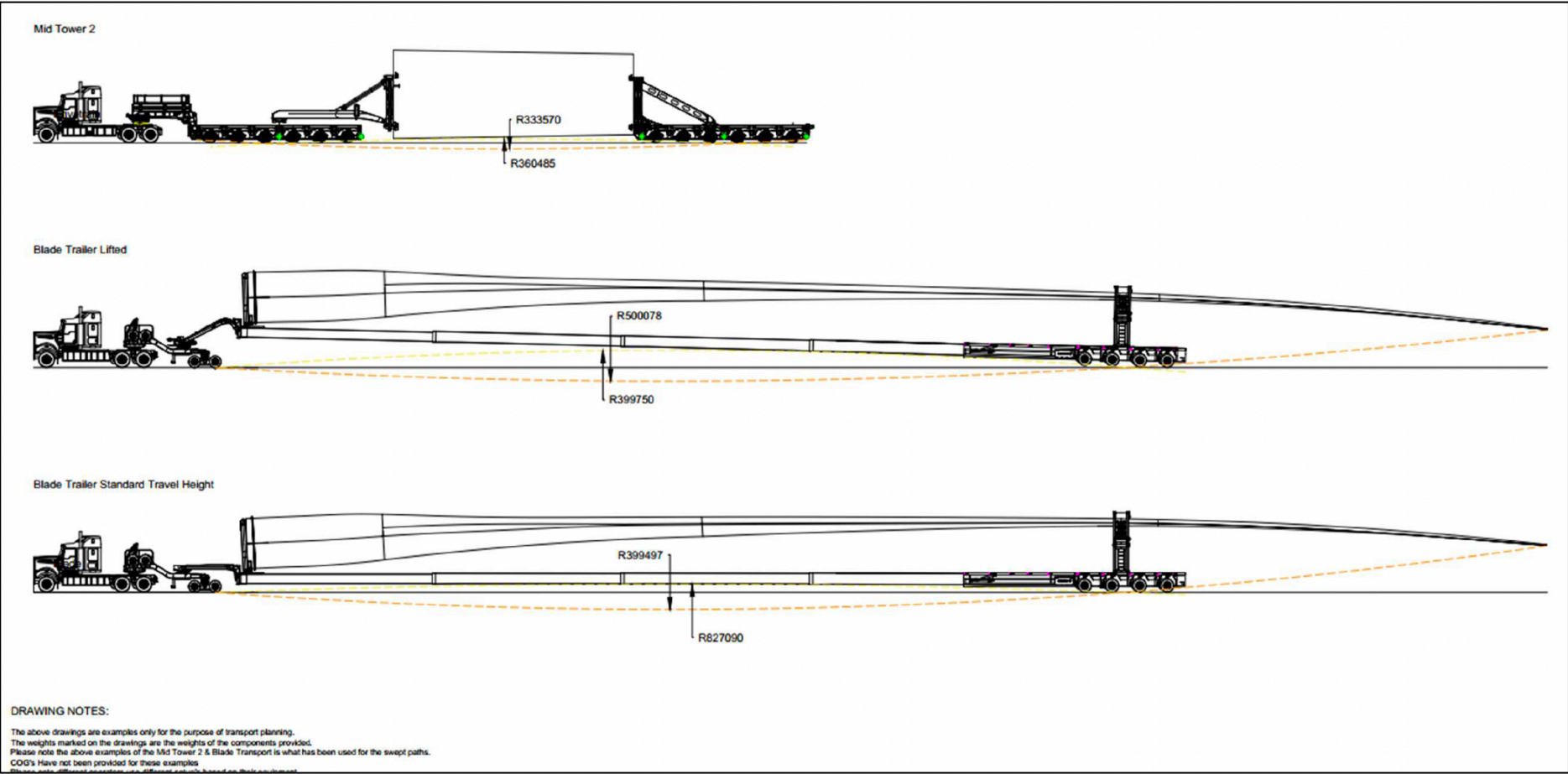


FIGURE 2.5 – VEHICLE SPECIFICATIONS SHEETS (SHEET 3/3)

2.5 OSOM Haulage Route Options

Four Oversize Over Mass (OSOM) haulage route options (Options A, B, C and D) have been identified for the delivery of wind turbine components and major BESS infrastructure to the Cattle Creek Wind Farm. The route options have been developed between the Charlton interchange (Toowoomba region) and the Project Area, with each option utilising a combination of State-controlled and local government roads.

The purpose of defining multiple route options is to provide flexibility for turbine delivery logistics, allow for variability in bridge and clearance constraints, and enable optimisation based on final turbine supplier requirements, haulage contractor capability, and permit conditions issued by the Department of Transport and Main Roads (TMR) and Queensland Police Service (QPS).

All OSOM routes ultimately converge onto Cecil Plains–Moonie Road, which forms the primary final access corridor into the Project Area. Selection of the preferred route will be confirmed during detailed design and in consultation with the appointed OSOM transport contractor.

The OSOM route options under investigation are summarised in Table 2.3 – OSOM Route Options (Charlton – Project Area) and illustrated in Figure 2.6 – Proposed Options for OSOM Haulage Routes.

Table 2.3 – OSOM Route Options (Charlton – Project Area)

Option	Key Roads	Distance (km)
A	• Warrego Hwy (Toowoomba–Dalby); • Moonie Hwy; and • Cecil Plains – Moonie Rd.	178 (346 incl. common)
B	• Warrego Hwy (Toowoomba–Dalby); • Dalby – Cecil Plains Rd; • Taylor St; and • Cecil Plains – Moonie Rd.	152 (320 incl. common)
C	• Warrego Hwy; • Gore Hwy; • Toowoomba – Cecil Plains Rd; • Taylor St; and • Cecil Plains – Moonie Rd.	115 (283 incl. common)
D	• Warrego Hwy; • Gore Hwy; • Pampas – Horrane Rd; • Toowoomba – Cecil Plains Rd; • Taylor St; and • Cecil Plains – Moonie Rd.	141 (309 incl. common)

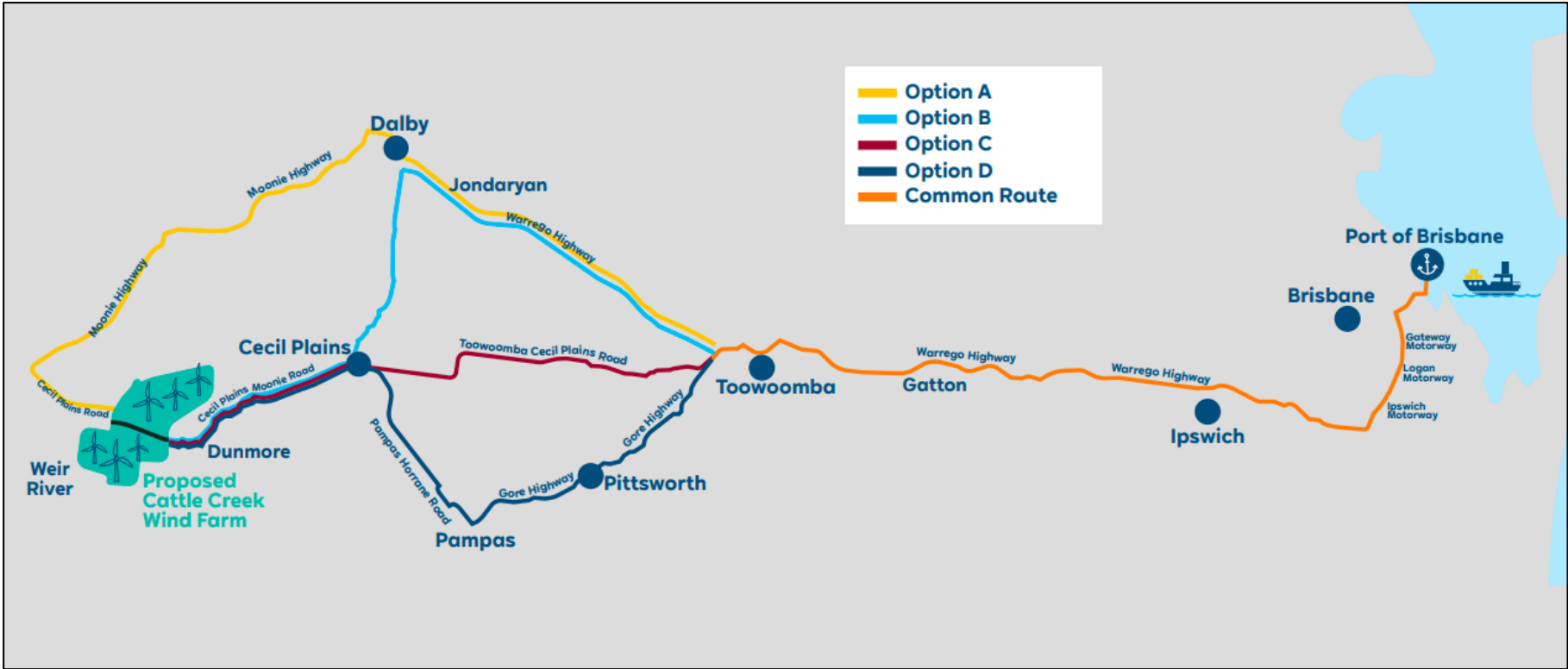


FIGURE 2.6 – PROPOSED OPTIONS FOR OSOM HAULAGE ROUTES

3.0 ROAD NETWORK

3.1 General

Identification of four potential OSOM haulage corridors (Options A–D) between Charlton and the Project Area, as shown in Figure 3.1 – OSOM Route Options Overview Map (Charlton to Project Area).

- Identification of four potential OSOM haulage corridors (Options A–D) between Charlton and the Project Area and a common route between the Port and Charlton;
- Desktop and field-based review of each corridor to identify physical constraints, including roadside furniture, overhead assets and vegetation; and
- Swept path and geometric assessment of critical intersections using the 86.2 m blade, 5.9 m tower configurations, and representative heavy haulage configurations required for BESS and electrical infrastructure deliveries.

The assessment does not include a review of the structural adequacy of bridges or drainage structures along each route.

3.2 Heavy Vehicle Route Networks

A review of the State Controlled Road (SCR) heavy vehicle network has been carried out to confirm the suitability of the primary OSOM haulage corridors between the Port of Brisbane and the Project Area.

The assessment indicates that the majority of the primary transport corridor forms part of pre-approved heavy vehicle networks, including Type 1 Road Train / PBS 3A (RT1), Higher Mass Limits (HML), and One Tonne Mass Transfer (1TMT) routes. These classifications generally permit the movement of long and heavy vehicle combinations subject to compliance with relevant permit conditions and route-specific restrictions.

The corridor from the Port of Brisbane to the western extent of the Warrego Highway (west of Toowoomba) is also included within the SCR Critical Road Network, reflecting its strategic importance for freight and OSOM movements. This provides a high level of network suitability for the transport task associated with wind turbine components.

It is noted that while the majority of the route is accommodated within approved heavy vehicle networks, localised constraints apply on sections of the broader corridor, particularly in relation to bridge structures and rural road segments approaching the Project Area.

Key network considerations include:

- The Condamine River Bridge at Cecil Plains (Toowoomba – Cecil Plains Road), which is subject to regulation mass limitations;
- The Oakey Creek Bridge (approximately 11 km south of Dalby on the Dalby – Cecil Plains Road), which is also subject to regulation mass limitations; and
- Termination or transition points for HML and 1TMT networks prior to the immediate Project Area access corridor.

Cecil Plains – Moonie Road is generally utilised as the final approach route to the Project Area. While this road is not constrained by SCR heavy vehicle network classification in the same manner as higher-

order state routes, it includes localised geometric and floodway constraints which are addressed in Section 4.2 – Floodway – Ground Clearance Constraints of this report.

3.3 Road Characteristics

The general characteristics and configuration of roads within the study area (between the Port of Brisbane and the Project Area) are summarised in Table 3.1 – General Roadway Characteristics between Port of Brisbane and Project Area.

The general configuration of intersections is described in Table 3.2 – Configuration of Intersections between the Port of Brisbane and Project Area.

Table 3.1 – General roadway characteristics between Port of Brisbane and Project Area

Road	Description	Est AADT
Port Drive	two lane access road providing local access to the Port of Brisbane	10,000
Port of Brisbane Motorway	State-controlled motorway standard road (4 lanes)	20,000
Gateway Motorway	State-controlled motorway standard road (6–8 lanes)	50,000
Logan Motorway	State-controlled motorway standard road (4 lanes)	40,000
Ipswich Motorway	State-controlled motorway standard road (4 lanes)	40,000
Warrego Highway (Ipswich–Toowoomba)	State-controlled highway standard road (4–6 lanes)	20,000 - 30,000
Warrego Highway (through Toowoomba)	State-controlled urban road (4 lanes)	20,000
Warrego Highway (Toowoomba–Dalby)	State-controlled rural highway (2–4 lanes)	3,500 – 15,000
Moonie Highway	State-controlled rural highway providing east–west regional connectivity between Dalby and St George	1,000–2,500
Cecil Plains–Moonie Road	Local road, two lane rural cross section	< 500
Dalby–Cecil Plains Road	State-controlled rural road providing for movement between Dalby and Cecil Plains	1,000
Taylor Street (Cecil Plains)	Local government road providing access through Cecil Plains township and connecting to Cecil Plains–Moonie Road	1,000
Toowoomba–Cecil Plains Road	State-controlled rural road providing connectivity between the Warrego Highway and Cecil Plains	2,000
Pampas–Horrane Road	State-controlled rural road providing connectivity between the Gore Highway and Cecil Plains	< 500
Gore Highway	State-controlled rural highway forming a key north–south freight and regional corridor between Toowoomba and Goondiwindi	6,000

Table 3.2 – Configuration of Intersections between the Port of Brisbane and Project Area

Intersection:	Layouts / Control:	Other Comments
Port of Brisbane / Gateway Motorway	Grade separated interchange	Port precinct access
Port of Brisbane Motorway / Gateway Motorway (Murarrie)	Grade separated interchange	Major motorway-to-motorway connection
Ipswich Motorway / Brisbane Road (Goodna)	At-grade intersection (signalised)	Urban arterial connection
Warrego Highway / Moonie Highway (Dalby)	At-grade intersection (signalised)	Major regional transition point
Warrego Highway / Gore Highway (Charlton)	At-grade intersection (signalised)	Key western corridor split
Toowoomba Bypass / Toowoomba Cecil Plains Road (Charlton)	Grade separated interchange (signalised)	Access to Cecil Plains corridor
Gore Highway / Pampas–Horrane Road (Pampas)	At-grade intersection (Priority-controlled)	Rural connector
Warrego Highway / Dalby – Cecil Plains Road (Dalby)	At-grade intersection (Priority-controlled)	Local/state road interface
Cecil Plains – Moonie Road / Moonie Highway (Cecil Plains)	At-grade intersection (Priority-controlled)	Rural junction
Cecil Plains – Moonie Road / Dalby Cecil Plains Road (Cattle Creek)	At-grade intersection (Priority-controlled)	Cross-catchment connection

3.4 General Pavement Conditions

General pavement conditions have been observed and are summarised in Table 3.3 – General Road Pavement Condition Along the Identified OSOM Route Network.

Table 3.3 – General Road Pavement Condition Along the Identified OSOM Route Network

Road	General Condition
Warrego Highway	Good, no significant defects
Toowoomba–Cecil Plains Road	Generally good, with some sections exhibiting edge degradation associated with heavy agricultural vehicle movements
Cecil Plains–Moonie Road	Good
Pampas–Horrane Road	Generally good, with some sections exhibiting edge degradation associated with heavy agricultural vehicle movements
Moonie Highway	Good
Gore Highway	Good

3.5 Road Network Constraints

The following constraint categories have been identified across the study corridor (Port to Project Area):

Bridge structural and mass constraints

Key bridge structures impose limitations on permissible overmass configurations, including:

- Condamine River Bridge at Cecil Plains on the Toowoomba-Cecil Plains Road, which is subject to regulated mass limits and may require permit-specific assessment for OSOM loads;
- Oakey Creek Bridge (approximately 11 km south of Dalby on the Dalby-Cecil Plains Road), which is also subject to regulated mass limitations affecting allowable axle groups and total vehicle mass; and
- The Bremer River crossing on the outbound bridge structure along the common route is subject to weight restrictions which may affect the suitability of certain OSOM configurations. The applicable load limits will require confirmation during detailed route assessment and permit approval processes to determine whether specific transport configurations can utilise this structure or whether alternative operational arrangements are required.

It is noted that OSOM movements are assessed under specific permit conditions and are not subject to standard heavy vehicle network termination rules applicable to general freight or Higher Mass Limits (HML) operations.

Network classification and termination constraints (HML / 1TMT transition points)

Sections of the State-controlled road network operate under Higher Mass Limits (HML) and One Tonne Mass Transfer (1TMT) arrangements; however, these networks do not provide continuous coverage to the Project Area. Transition points typically occur at or near bridge structures and designated network limits, requiring OSOM-specific route planning beyond these extents.

Local road network constraints

Certain lower-order roads within the broader study area (including collector and rural access roads) present constraints due to:

- Reduced pavement structural capacity;
- Limited formation width and shoulder availability; and
- Ongoing maintenance and repeated heavy vehicle exposure risks.

These roads are generally not preferred for repeated OSOM movements and are only considered where explicitly identified in a nominated route option.

Floodway constraints

Multiple floodways are present along Cecil Plains-Moonie Road, particularly in the eastern approach to the Project Area. These locations present OSOM constraints due to:

- Potential inundation depth and velocity during rainfall events;
- Reduced pavement structural performance under saturated conditions; and
- Limitations on safe traversal of low-clearance or heavy axle group configurations during adverse weather periods.

Vertical clearance constraints (overpasses and overhead structures)

Overpasses, sign gantries, utility crossings and other overhead infrastructure along the corridor present vertical clearance constraints for wind turbine components, particularly blades and tower sections. These structures require route-specific verification of:

- Available clearance envelopes;
- Temporary removal or modification of roadside infrastructure where required; and
- Oversize permit conditions governing escort and traversal methodology.

Intersection and localised geometric constraints

OSOM movements require intersection treatments at key turning locations, including:

- Temporary widening, shoulder strengthening or pavement reinforcement; and
- Vegetation clearance and geometric modification to achieve swept path requirements.

Key intersections include (but are not limited to) Pampas-Horrane Road, Dalby-Cecil Plains Road, and Moonie Highway intersections.

These constraints will be addressed through concept-level mitigation measures identified in Table 4.1 – Summary of Required Modifications (Geometric Constraints) and discussed throughout Section 4 of this report.

Final mitigation measures, construction staging requirements, and detailed route confirmation will be determined following selection of the preferred haulage route in consultation with the appointed OSOM contractor and relevant road authorities.

It is noted that all turn movements at proposed Project access locations and along Cecil Plains-Moonie Road are expected to be accommodated within BAR (Basic Right) and BAL (Basic Left) turn treatments, subject to final swept path verification and design confirmation.

3.6 School Bus Services

A number of roads within the wider study corridor are used by school bus services operating between surrounding rural localities and nearby township schools. Within the vicinity of the Project Area, school bus movements are primarily associated with services operating to and from Dalby, Pittsworth, and surrounding rural catchments accessed via the Cecil Plains–Moonie Road, Dalby – Cecil Plains Road, Warrego Highway, and adjoining local road networks.

Key schools within the broader catchment of the study corridor include:

- Dalby State School;
- Dalby South State School;
- Dalby State High School;
- Pittsworth State School;
- Pittsworth State High School;
- Cecil Plains State School.

School bus operations in these rural areas typically involve dispersed pick-up and drop-off movements along state and council-controlled roads rather than formalised bus stop infrastructure.

Whilst the daily volume of heavy vehicles travelling to and from the Project Area on each road will be relatively low (less than five vehicle movements per hour on any individual road), the various school bus services and schools will be advised of the truck patterns and schedule as part of the community consultation plan. The Proponent will liaise with the school bus operators and project heavy vehicle operators to understand their movements and avoid potential conflicts where possible. This requirement is to be addressed through construction staging and traffic management controls and is to be conditioned and resolved as part of the Construction Traffic Management Plan (CTMP) during the construction management planning phase.

As part of the CTMP, contact will be made with local schools to gather information regarding school bus operations.

4.0 ASSESSMENT OF OSOM ROUTE OPTIONS

4.1 Swept Path Analysis (Geometric Assessment)

Swept path analysis has been carried out using the largest design vehicle configuration, specifically the Nordex N175 Blade Trailer (86.2 m length) and the Tower Section 1 (5.9 m width). The assessment has been carried out for each OSOM haulage route option (Options A – D), as well as the common route, and is shown in the following appendices:

- Appendix A – Lateral Swept Path Analysis (OSOM Haulage Common Route);
- Appendix B – Lateral Swept Path Analysis (OSOM Haulage Option A);
- Appendix C – Lateral Swept Path Analysis (OSOM Haulage Option B);
- Appendix D – Lateral Swept Path Analysis (OSOM Haulage Option C); and
- Appendix E – Lateral Swept Path Analysis (OSOM Haulage Option D).

Table 4.1 – Summary of Required Modifications (Geometric Constraints)

Ref	Location	Required Modification / Mitigation
Common Route		
CR1	Bishop Drive / Lucinda Drive intersection	• Vegetation clearing • Temporary removal of light pole infrastructure
Route Option A		
A1	Warrego Hwy / Toowoomba Bypass Interchange	Temporary removal of light pole infrastructure
A4	Warrego Hwy / Nicholson Street intersection	Temporary use of opposite traffic lane and removal of light pole and other roadside furniture
A13	Moonie Hwy / Cecil Plains – Moonie Road intersection	Vegetation clearing and minor shoulder works
Route Option B		
B1	Warrego Hwy / Toowoomba Bypass Interchange	Temporary removal of light pole infrastructure
B8	Warrego Hwy / Dalby – Cecil Plains Road intersection	Vegetation clearing and minor shoulder works
B12	Taylor Street / Dalby – Cecil Plains Road intersection	Temporary removal of light pole infrastructure
Route Option C		
C1	Toowoomba – Cecil Plains Road / Toowoomba Bypass	Temporary removal of light pole infrastructure
Route Option D		
D4	Gore Highway / Pampas Horrane Road intersection	• Vegetation clearing • Temporary removal of light pole infrastructure
D11	Toowoomba – Cecil Plains Road / Pampas Horrane Road intersection	• Vegetation clearing • Temporary removal of light pole infrastructure

4.2 Floodway – Ground Clearance Constraints

The floodways along Cecil Plains – Moonie Road, between Moonie Highway and Cecil Plains, require assessment for transport suitability. This assessment is based on visual observations carried out during the site inspection on 9 April 2026. It is recommended that detailed topographical surveys be undertaken by a qualified surveyor to confirm vertical geometry, crest-to-invert relationships, and final OSOM clearance requirements. An overview of the identified floodways is shown in Figure 4.1 – Overview of Existing Floodways, with the critical floodways highlighted in red.

For Option A (western approach from Moonie Highway to the Project Area), a series of floodways were observed along the corridor. Swept path analysis has been carried out for the critical floodways (refer to Appendix F), which indicates that these locations are likely to accommodate the proposed OSOM vehicles. Detailed survey and design modelling should nevertheless be undertaken to confirm final suitability and any required works.

For Options B – D, multiple floodways were observed along Cecil Plains – Moonie Road between Cecil Plains and the Project Area. Several of these locations exhibit constrained vertical geometry and may require localised regrading or other modification works to accommodate the proposed OSOM vehicles. Further investigation, including detailed topographical survey and design modelling, is required to confirm the suitability of these locations for OSOM movements and determine the extent of any required works.

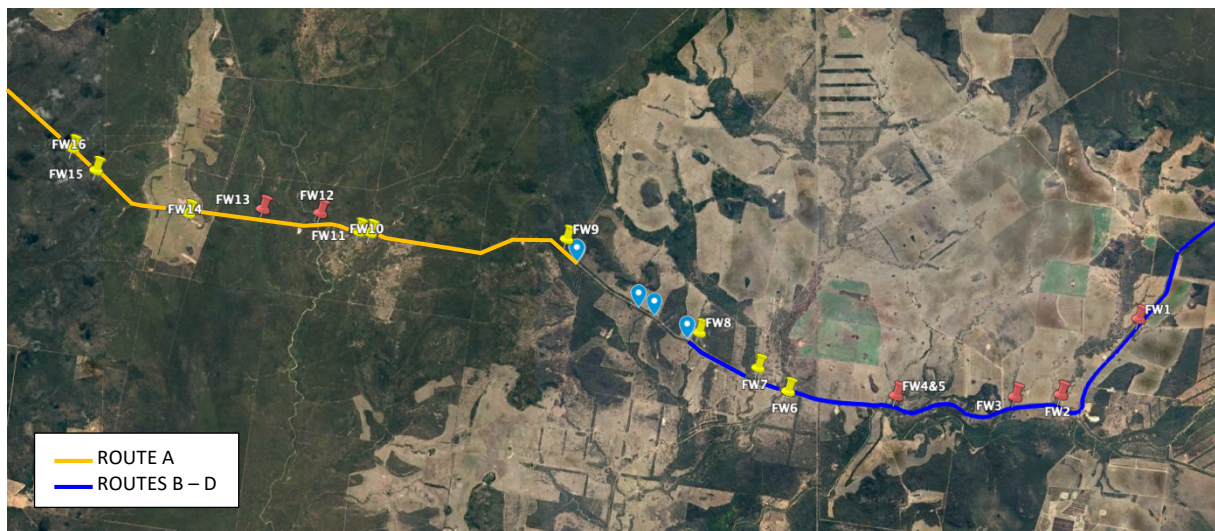


FIGURE 4.1 – OVERVIEW OF EXISTING FLOODWAYS

4.3 Overhead Clearance Assessment

As shown in Table 2.2, most of the OSOM vehicles required for the transportation of turbine components will have a height in excess of 5.4 metres and up to 6.1 metres.

4.3.1 Common Route: Port of Brisbane to Toowoomba (OSOM < 5.4 metres in height)

This section describes the common transport route for OSOM vehicles travelling from the Port of Brisbane to Charlton. The route represents the primary corridor utilised for wind farm component deliveries, with additional localised modifications required for vehicles exceeding 5.4 m in overall height.

For readability, the overhead structure assessments have been grouped into sequential route segments corresponding to the detailed mapping figures provided. Each figure identifies the location of overhead constraints and their minimum recorded vertical clearances.

A summary of all overhead structures along the route is provided in Appendix G. An overview of the common route is shown in Figure 4.2 – Overview of Common Route, which identifies the respective detail views.

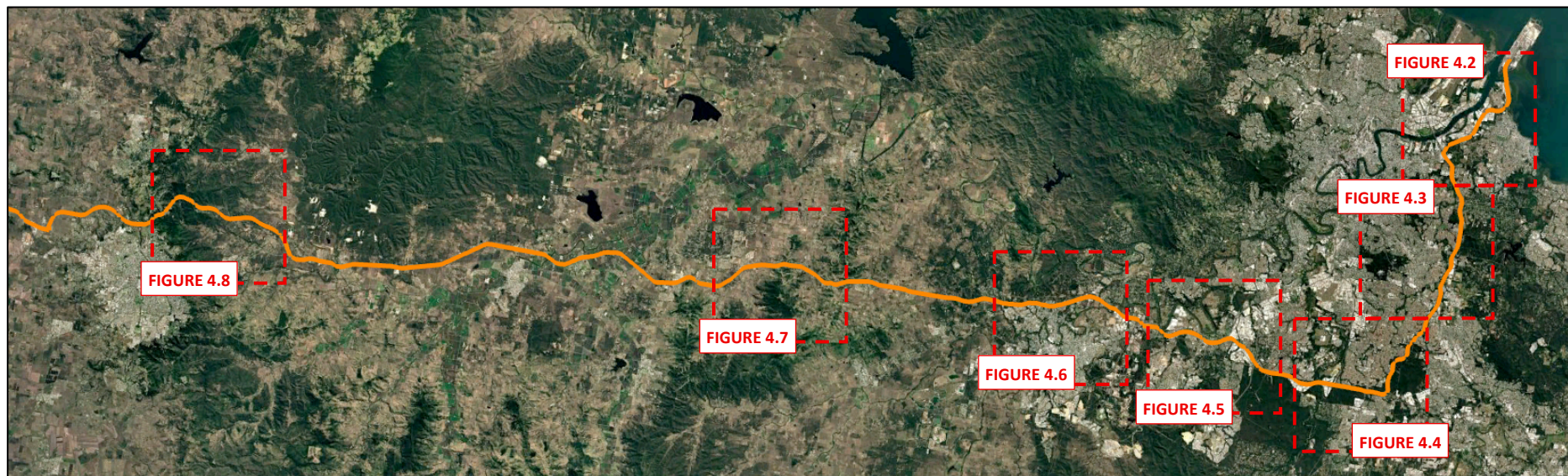


FIGURE 4.2 – OVERVIEW OF COMMON ROUTE

Structures OP1 – OP6

The initial section (refer to Figure 4.3 – Overhead Structures (Detail 1)), of the route from the Port of Brisbane includes six primary overhead structures along Port Drive and the Gateway Motorway. All structures within this section provide clearances generally above 6.2 m, with the lowest recorded clearance being approximately 6.17 m.

Accordingly, this section is generally suitable for OSOM vehicles up to 5.4 m in height without constraint.



FIGURE 4.3 – OVERHEAD STRUCTURES (DETAIL 1)

Structures OP7 – OP14

As shown in Figure 4.4 – Overhead Structures (Detail 2), this section introduces progressively reducing clearances along the Gateway and Logan Motorways. While most structures remain above 6.1 m clearance, several key constraints are present approaching the Logan Motorway corridor.

The critical constraint within this section is the Paradise Road Rail Overpass (OP14), which provides a minimum clearance of approximately 5.4 m. This structure represents the operational threshold for the 5.4 m route.

Detour requirement: Loads exceeding 5.3 m in height must exit at Paradise Road (Exit 14) prior to this structure and transition onto the designated bypass route detailed in Section 4.3.3.

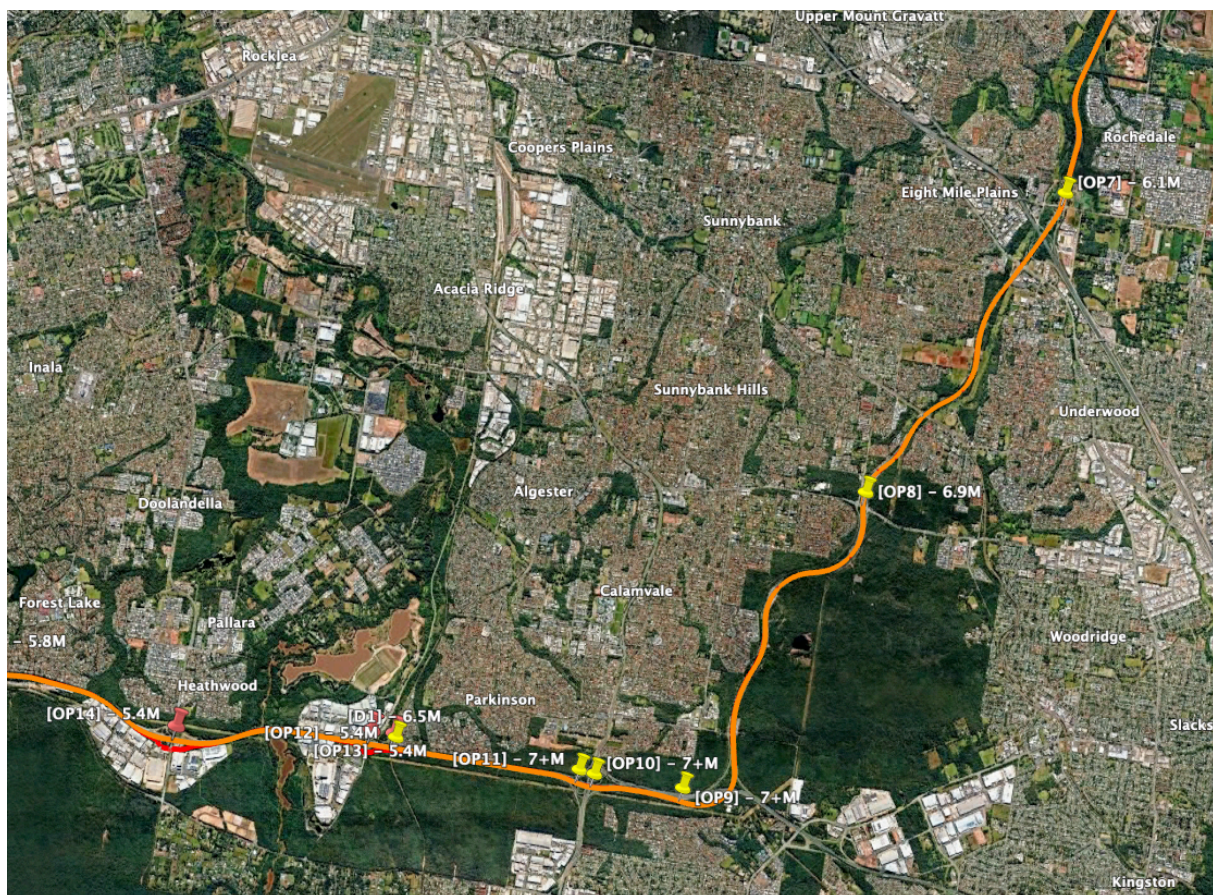


FIGURE 4.4 – OVERHEAD STRUCTURES (DETAIL 2)

Structures OP15 – OP24 (Including Detours D1 – D5)

This section (refer to Figure 4.5 – Overhead Structures (Detail 3)), includes a series of overhead structures along the Logan Motorway, Centenary Highway, and Ipswich Motorway corridors, with clearances generally ranging from approximately 5.5m to 6.9m.

Accordingly, this section is generally suitable for OSOM vehicles up to 5.4 m in height without constraint.

For OSOM vehicles exceeding 5.4 m in overall height, these constraints require the use of the alternative routing strategy described in Section 4.3.3.

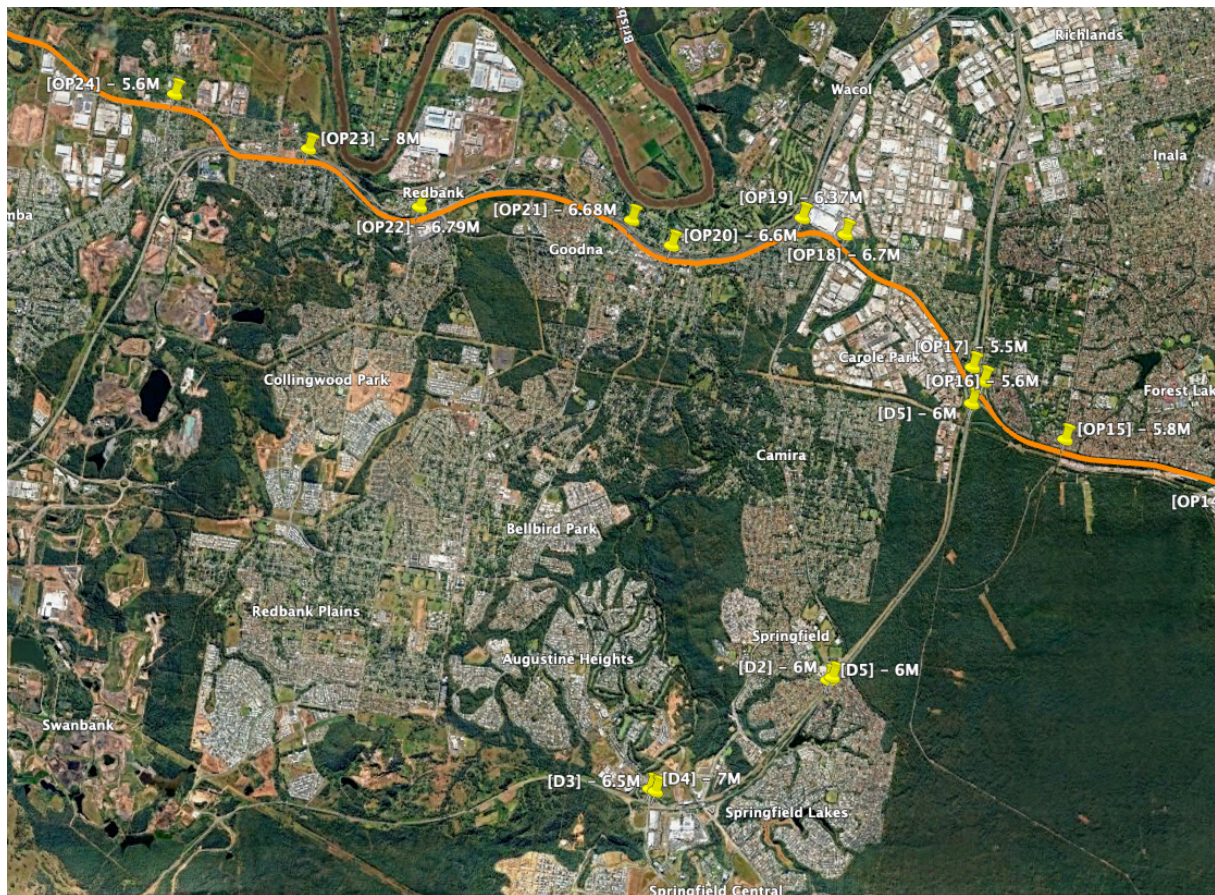


FIGURE 4.5 – OVERHEAD STRUCTURES (DETAIL 3)

Structures OP25 – OP28

This section (refer to Figure 4.6 – Overhead Structures (Detail 4)), transitions onto the Warrego Highway corridor and includes overhead structures with clearances ranging from approximately 5.9 m to 6.55 m.

Accordingly, this section is generally suitable for OSOM vehicles up to 5.4 m in height without constraint.

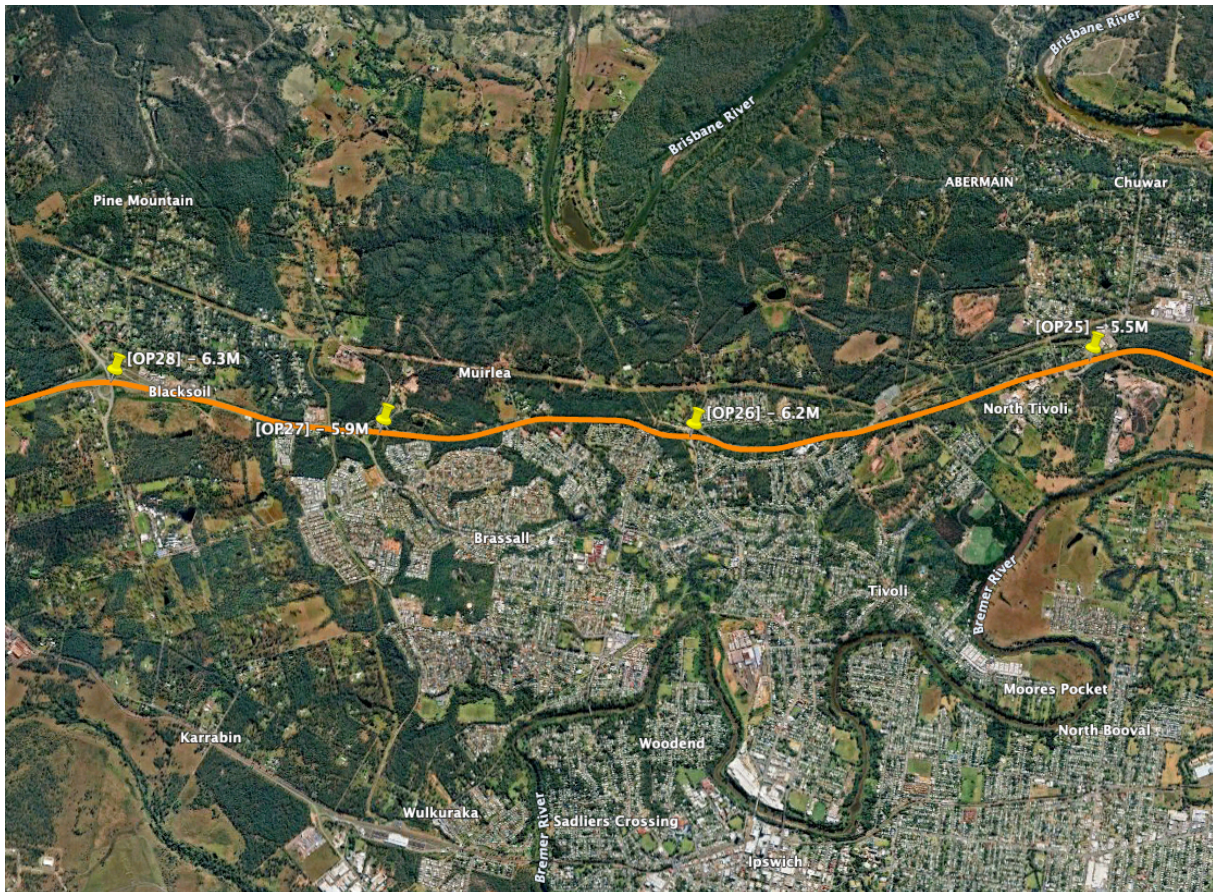


FIGURE 4.6 – OVERHEAD STRUCTURES (DETAIL 4)

Structures OP29 – OP30

This section (refer to Figure 4.7 – Overhead Structures (Detail 5)), includes major highway structures at Marburg and Laidley – Plainland Road. Both structures provide relatively high clearances of approximately 6.7 m to 7.0 m and are not considered restrictive for 5.4 m OSOM movements.



FIGURE 4.7 – OVERHEAD STRUCTURES (DETAIL 5)

Structures OP31 – OP32

This section (refer to Figure 4.8 – Overhead Structures (Detail 6)), includes overhead infrastructure on the approach to Toowoomba. The Outer Ring Road and Eastern Drive overpasses provide height clearances of approximately 5.6 m and 6.5 m.

Accordingly, this section is generally suitable for OSOM vehicles up to 5.4 m in height without constraint.



FIGURE 4.8 – OVERHEAD STRUCTURES (DETAIL 6)

Structures OP33 – OP36

The final section of the route (refer to Figure 4.9 – Overhead Structures (Detail 7)), includes overhead structures within the Toowoomba corridor and bypass network. Clearances in this segment range from approximately 6.3m to over 8.0m.

These structures, including the New England Highway overpass and Toowoomba Bypass infrastructure, are not considered restrictive for 5.4m OSOM movements.

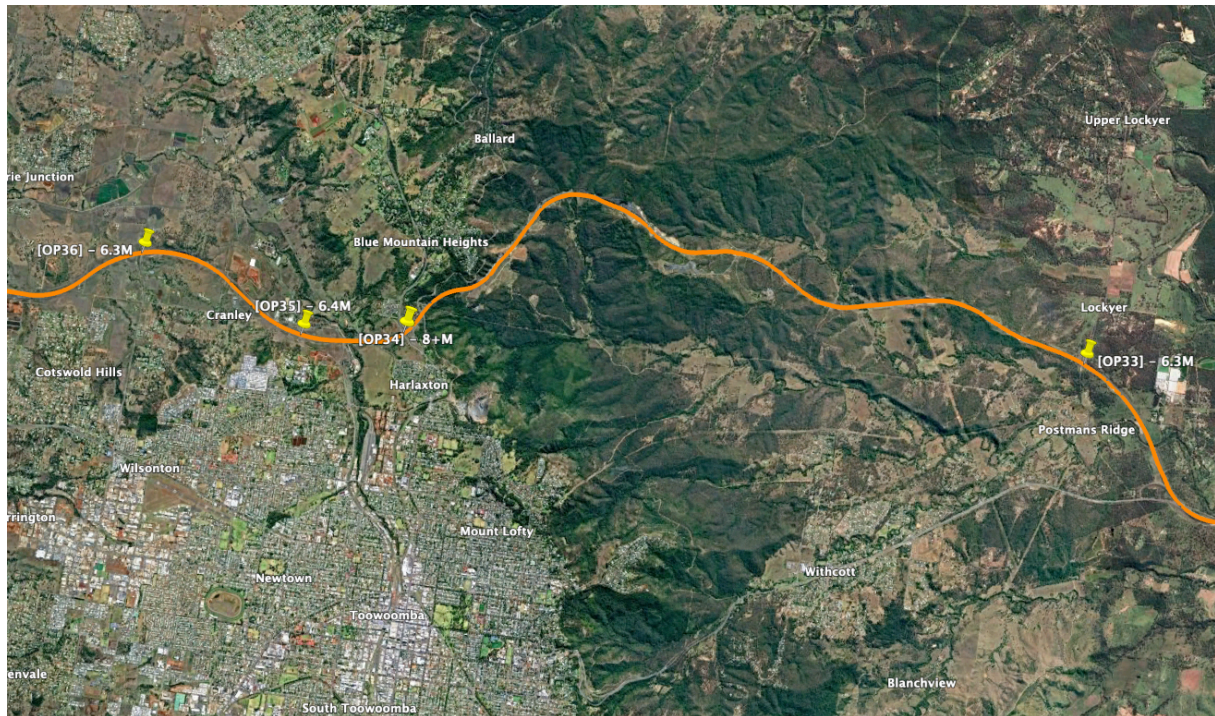


FIGURE 4.9 – OVERHEAD STRUCTURES (DETAIL 7)

4.3.2 Common Route: Port of Brisbane to Toowoomba (OSOM > 5.4 metres in height)

This section describes the alternative transport route required for OSOM vehicles exceeding 5.4 m in overall height. Due to vertical clearance constraints along the primary corridor, vehicles exceeding this height are unable to safely traverse all structures identified in Section 4.3.1.

Accordingly, a series of designated detour routes have been identified to bypass constrained overhead structures, particularly within the Logan Motorway, Centenary Highway, and Warrego Highway corridors.

The detour strategy is triggered at key constraint locations where vertical clearance reduces to approximately 5.4 – 5.6 m. At these locations, vehicles exceeding 5.4m in height are required to exit the primary corridor in advance of the constrained structure and utilise the alternative routes before re-joining the main corridor downstream.

Structure D1

This detour section (refer to Figure 4.10 – Detour Detail 1 – Low Clearance Structures OP12–OP14), provides an alternative routing path to bypass identified low-clearance infrastructures OP12 – OP14.

OSOM vehicles exceeding 5.3 m in overall height are required to exit the Logan Motorway prior to the OP12 structure at Paradise Road (Exit 14), and re-enter the Logan Motorway downstream. A second diversion is then required prior to the OP14 structure at Stapylton Road (Exit 17), after which vehicles may re-enter the motorway downstream.

Swept path assessments have been carried out for the below detour route to confirm OSOM vehicle manoeuvrability and network suitability (refer to Appendix H).



FIGURE 4.10 – OVERHEAD STRUCTURES (DETOUR DETAIL 1)

Structures D2 – D5

This detour section (refer to Figure 4.11 – Detour Detail 2 – Low Clearance Structures OP16–OP17), provides an alternative routing path to bypass identified low-clearance infrastructures OP16 and OP17.

OSOM vehicles exceeding 5.4m in overall height are required to exit the Logan Motorway prior to the OP16 structure at Centenary Motorway (Exit 22), follow the detour route and complete a U-turn at the Centenary Motorway / Wesley Way / Sandstone Boulevard roundabout at White Rock.

Swept path assessments have been carried out for the below detour route to confirm OSOM vehicle manoeuvrability and network suitability (refer to Appendix H).

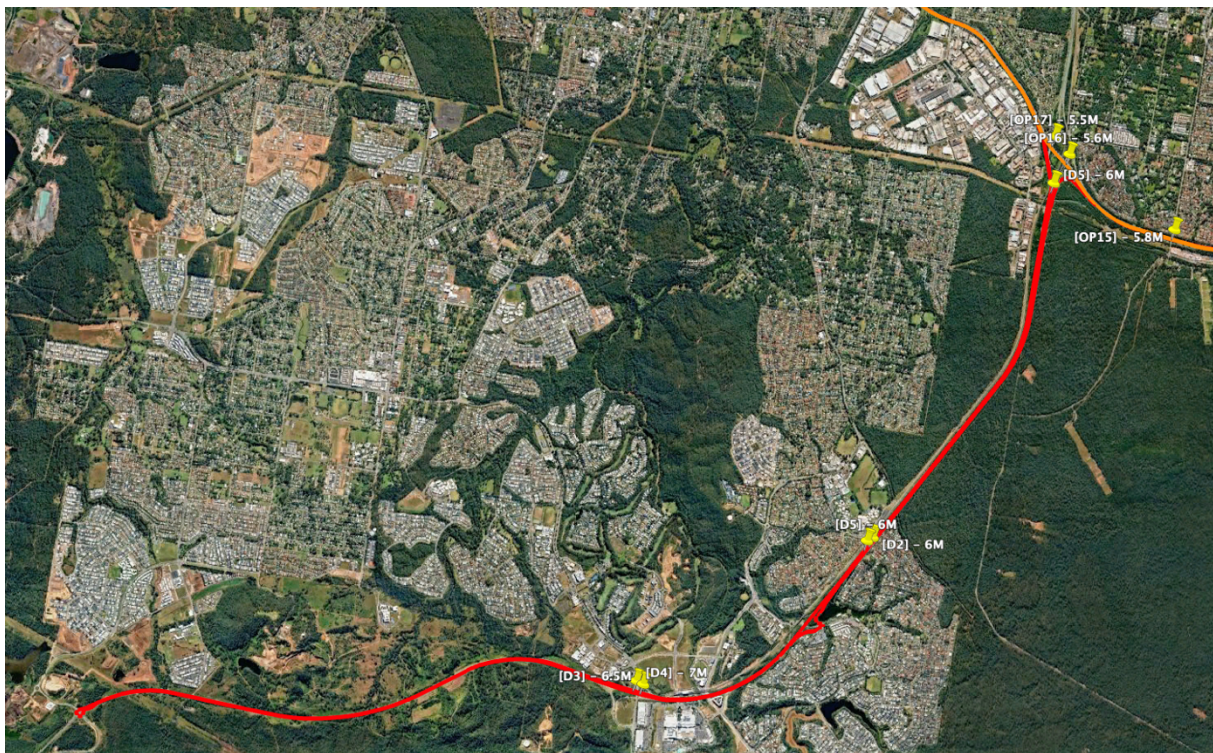


FIGURE 4.11 – OVERHEAD STRUCTURES (DETOUR DETAIL 2)

4.4 Comparative Assessment of OSOM Route Options

4.4.1 Assessment Approach

The four OSOM route options (Options A – D) have been comparatively assessed between Charlton and the Project Area based on the following criteria:

- Community interface and township exposure;
- Geometric and operational constraints (including intersections, floodways, and lane widths)
- Traffic performance considerations (including exposure to urban traffic environments and route efficiency);
- Structural constraints (noting known bridge and asset limitations); and
- Network operational considerations (including layover availability and overtaking opportunities).

4.4.2 Community Interface Assessment

All route options utilise established state-controlled road corridors; however, the level of community interface varies. Community impacts occur in Townships such as Cecil Plains where residents live close to the main road, and local areas abutting the Toowoomba – Cecil Plains Road. OSOM vehicles moving through Cecil Plains during night time periods would likely cause significant disturbance to residents who live adjacent to the road. This would also be the case for areas along the Pampas – Horrane Road and the Gore Highway. The Warrego Highway and Moonie Highway are higher order roads that are able to ‘absorb’ such impacts.

Option A has the least impact upon community, whereas Options B, C and D all require OSOM vehicles to travel through local rural townships and therefore have a high impact. Daytime OSOM movements would also potentially impact upon agricultural operations and school bus operations, particularly along the Toowoomba – Cecil Plains Road and Pampas – Horrane Road.

4.4.3 Geometric and Operational Constraints

With the exception of the Warrego Highway / Moonie Highway intersection, Option A provides the simplest route to the Project Area. Swept path analysis undertaken for the Nordex N175 blade transport configuration demonstrates that OSOM blade transport vehicles are unable to safely negotiate the left-turn movement from the Warrego Highway into the Moonie Highway, even with temporary use of opposing traffic lanes and roadside modifications (refer Appendix B – Lateral Swept Path Analysis (OSOM Haulage Option A)). Accordingly, further investigation is required to confirm an alternative alignment or transport methodology for blade deliveries if Option A is progressed.

Notwithstanding this constraint, Option A has several favourable geometric and operational characteristics compared with the other assessed route options. The section of Cecil Plains – Moonie Road between the Moonie Highway and the Project Area has favourable horizontal and vertical alignment characteristics, floodways do not appear to present significant ground clearance constraints, and only minimal intersection modifications are otherwise required to accommodate OSOM movements.

Option B requires modifications at the Warrego Highway / Dalby–Cecil Plains Road intersection and the Taylor Street / Dalby–Cecil Plains Road intersection, as identified in Table 4.1 – Summary of Required Modifications (Geometric Constraints). In addition, Option B requires OSOM vehicles to travel through Dalby and Cecil Plains, increasing community interface and operational complexity. The route is also affected by a number of floodways along Cecil Plains – Moonie Road east of Cecil Plains

which, based on the preliminary assessment, do not appear to be traversable by the design OSOM vehicles in their current configuration and may require substantial modification works to achieve suitable vertical geometry and ground clearance for OSOM movements.

Option C presents some operational constraints due to the condition of the pavement along the Toowoomba – Cecil Plains Road. There are also low-level power lines at several locations which would require lifting or other mitigation measures to accommodate OSOM movements. Similar to Options B and D, Option C is also affected by floodway constraints along Cecil Plains – Moonie Road east of Cecil Plains, which may require substantial modification works before the route can be considered suitable for OSOM transport operations.

Option D requires OSOM vehicles to utilise the Gore Highway and Pampas – Horrane Road corridor, with modifications required at the Gore Highway / Pampas – Horrane Road intersection and the Toowoomba – Cecil Plains Road / Pampas – Horrane Road intersection, as identified in Table 4.1 – Summary of Required Modifications (Geometric Constraints). Whilst the route generally follows roads with suitable horizontal alignment, it traverses lower-order rural roads with limited overtaking opportunities and increased interaction with local traffic and agricultural activities. Similar to Options B and C, Option D is also affected by floodway constraints along Cecil Plains – Moonie Road east of Cecil Plains, which may require substantial modification works and may ultimately limit the suitability of the route for OSOM transport operations.

4.4.4 Traffic Performance Considerations

All routes traverse state-controlled freight corridors; however, differences in operational performance arise from route selection:

- Option A relies primarily on higher-order freight corridors (Warrego Highway, Moonie Highway), which have greater capacity for OSOM vehicles and provide infrastructure such as overtaking facilities and areas for vehicle conveyances to stand.
- Option B is similar to Option A in that it utilises the Warrego Highway, however OSOM vehicles would avoid the Township and constraints associated with accessing the Moonie Highway.
- Options C and D have greater reliance on lower volume rural roads, where escorts will be able to manage interactions with local traffic and other road users.

4.4.5 Structural Constraints

Key known structural constraints within the broader corridor include the Condamine River Bridge (Cecil Plains) and Oakey Creek Bridge (south of Dalby). These structures impose mass and permit-specific restrictions applicable to OSOM movements.

At this preliminary stage:

- All route options are subject to similar structural verification requirements;
- No route is structurally exempt from further detailed assessment; and
- Structural constraints are considered a permit-stage issue rather than a primary differentiator between route options.

Further detailed structural assessment will be required during OSOM permit applications and final route confirmation.

4.4.6 Quantitative Summary of Key Constraints

It is noted that floodways located on the Cecil Plains – Moonie Road, east of the Project Area do not appear to be traversable by OSOM vehicles in their current configuration. Accordingly, the viability of Options B, C and D is dependent on the implementation of road upgrade works, including localised floodway modifications, to achieve suitable vertical geometry and ground clearance for OSOM movements.

Table 4.2 – Summary of Key OSOM Constraint Quantification by Route Option provides a quantitative comparison of the primary constraint types identified across each OSOM route option, enabling a direct relative assessment of floodway impacts, intersection modification requirements, township exposure, and operational opportunities between Options A – D.

The assessment is based on preliminary desktop analysis and site observations. A qualitative comparative scoring approach (1 = low constraint / 5 = high constraint) has been adopted to support relative comparison between route options.

Table 4.2 – Summary of Key OSOM Constraint Quantification by Route Option

Constraint Category	Option A	Option B	Option C	Option D
Floodway intervention locations (Cecil Plains–Moonie Rd corridor)	1	5	5	5
Intersection modifications required (swept path / widening / furniture removal)	5	4	4	4
Identified overhead structure detours (metropolitan corridor)	2	2	2	2
Township / urban interface exposure (major centres)	2	5	5	5
Overtaking / layover opportunities (qualitative density)	3	3	5	5
Total	13	19	21	21

4.4.7 Summary of Comparative Outcomes

Based on the comparative assessment:

- Option A would have the least impact upon community as OSOM vehicles would use high order roads that are regularly used by such vehicles for other projects. OSOM vehicles would mix with traffic on high volume roads and so visible impact would be reduced.
- Options B, C and D would result in OSOM vehicles impacting on small townships and rural areas, and potentially cause nuisance to farmers and general traffic on low volume rural roads where there is little opportunity for passing.
- Whilst having a shorter length than Option A, constrained road alignment, floodways, low lying power lines etc would reduce the operating speed of OSOM vehicles on Options B, C and D, such that there would be negligible travel time advantage.
- Floodways located on the Cecil Plains – Moonie Road, east of the Project Area do not appear to be traversable by OSOM vehicles.

5.0 SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The Preliminary Route Assessment confirms that transport of OSOM wind turbine and BESS components from the Port of Brisbane to the proposed Cattle Creek Wind Farm is generally feasible, subject to localised upgrades and further detailed design verification.

Four (4) OSOM route options (Options A – D) have been assessed in conjunction with the common route between the Port of Brisbane and Charlton. All assessed route options are considered physically achievable for the proposed transport task.

The swept path assessments undertaken using the Nordex N175 Blade Trailer (86.2m length) and Tower Section 1 transport configuration (5.9 m width) demonstrate that the majority of intersections and transport corridors can accommodate OSOM movements, subject to targeted mitigation measures including vegetation clearing, temporary removal of roadside furniture, and minor shoulder or pavement widening works.

Option A is also favourable as it minimises impacts on community by avoiding small rural townships and farming areas. Options B, C and D would result in OSOM vehicles travelling through small townships (e.g. Cecil Plains) during night-time periods, where houses are positioned close to the roadway, and would therefore require additional management measures to minimise potential impacts on local residents.

Floodways located on the Cecil Plains – Moonie Road, east of the Project Area do not appear to be traversable by OSOM vehicles in their current configuration. Accordingly, Options B, C and D would require additional investigation and potentially significant floodway upgrade works to achieve suitable vertical geometry and ground clearance for OSOM movements. Subject to the implementation of these upgrades, the routes are considered capable of accommodating the proposed transport task.

The common route between the Port of Brisbane and Toowoomba is generally suitable for OSOM transport vehicles up to approximately 5.4 m in height. Vehicles exceeding this height require the use of designated detour routes to avoid constrained overhead structures within the metropolitan motorway network.

Additional constraints identified throughout the assessment include:

- overhead structure clearance restrictions;
- bridge and culvert mass limitations;
- localised intersection swept path constraints; and
- the requirement for temporary traffic management and convoy control measures during OSOM movements.

Overall, the assessed road network is considered capable of accommodating the proposed OSOM transport task associated with the Project, subject to implementation of the mitigation measures and further investigations identified within this report.

5.2 Recommendations

Based on the findings of this Preliminary Route Assessment, it is recommended that:

- Option A be identified as the preferred route, noting that further investigation is required to confirm an alternative alignment for blade truck movements to avoid the left turn from the Warrego Highway to the Moonie Highway, and that all route options (Options A–D) remain subject to further detailed assessment to confirm final suitability and mitigation requirements.
- Detailed topographical survey of all identified floodways along Cecil Plains – Moonie Road should be undertaken to confirm crest profiles, vertical geometry, and final OSOM ground clearance requirements.
- Detailed design investigations should be undertaken for floodway modification works, including potential:
 - crest trimming;
 - localised regrading;
 - fill placement; and/or
 - structural improvement works.
- Further structural assessment and verification should be completed for bridges and culverts associated with high-mass transport loads, including transformer and generator haulage vehicles.
- Detailed swept path verification should be undertaken during the detailed design phase using the final haulage contractor vehicle configurations and operating methodology.
- Consultation should continue with:
 - Department of Transport and Main Roads (TMR);
 - Western Downs Regional Council (WDRC);
 - Toowoomba Regional Council (TRC);
 - Queensland Police Service (QPS); and
 - the appointed OSOM haulage contractor, to confirm route suitability, permit requirements, staging arrangements, and operational constraints.
- A Construction Traffic Management Plan (CTMP) and Road Use Management Plan (RUMP) should be prepared prior to commencement of haulage operations to address:
 - convoy management;
 - temporary traffic control;
 - school bus coordination;
 - community notification procedures; and
 - incident and emergency management protocols.
- Detailed overhead clearance verification should be completed prior to transport commencement to confirm all vertical clearance constraints and required detour arrangements for vehicles exceeding 5.4 m in height.
- Temporary roadside infrastructure protection, relocation, or removal requirements should be confirmed during detailed design for constrained intersections and urban motorway locations.
- Final OSOM route confirmation should occur in consultation with the appointed haulage contractor following completion of detailed survey, structural verification, and permit assessment processes.

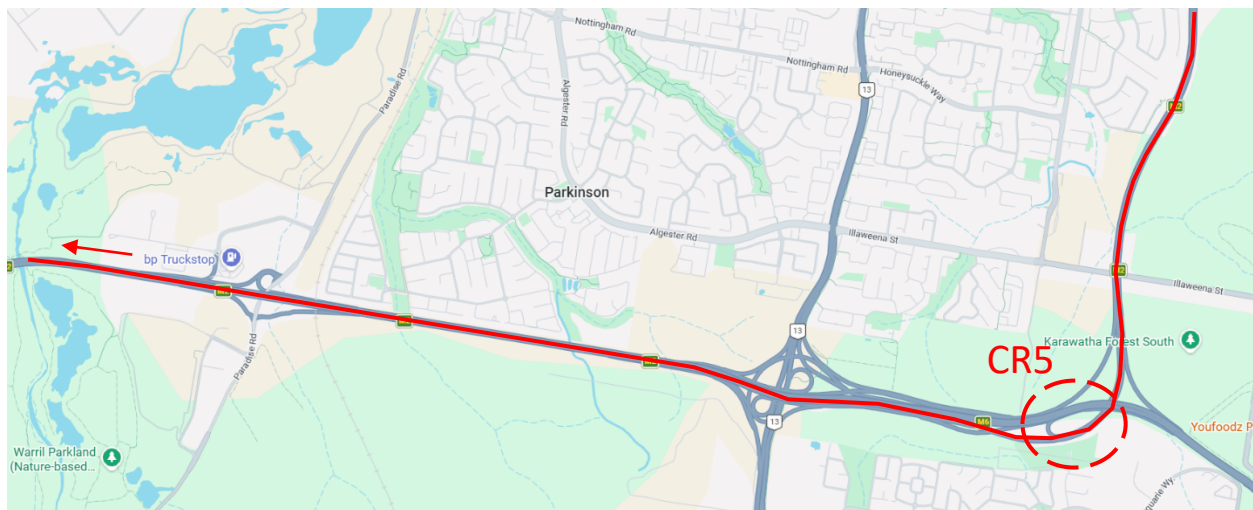
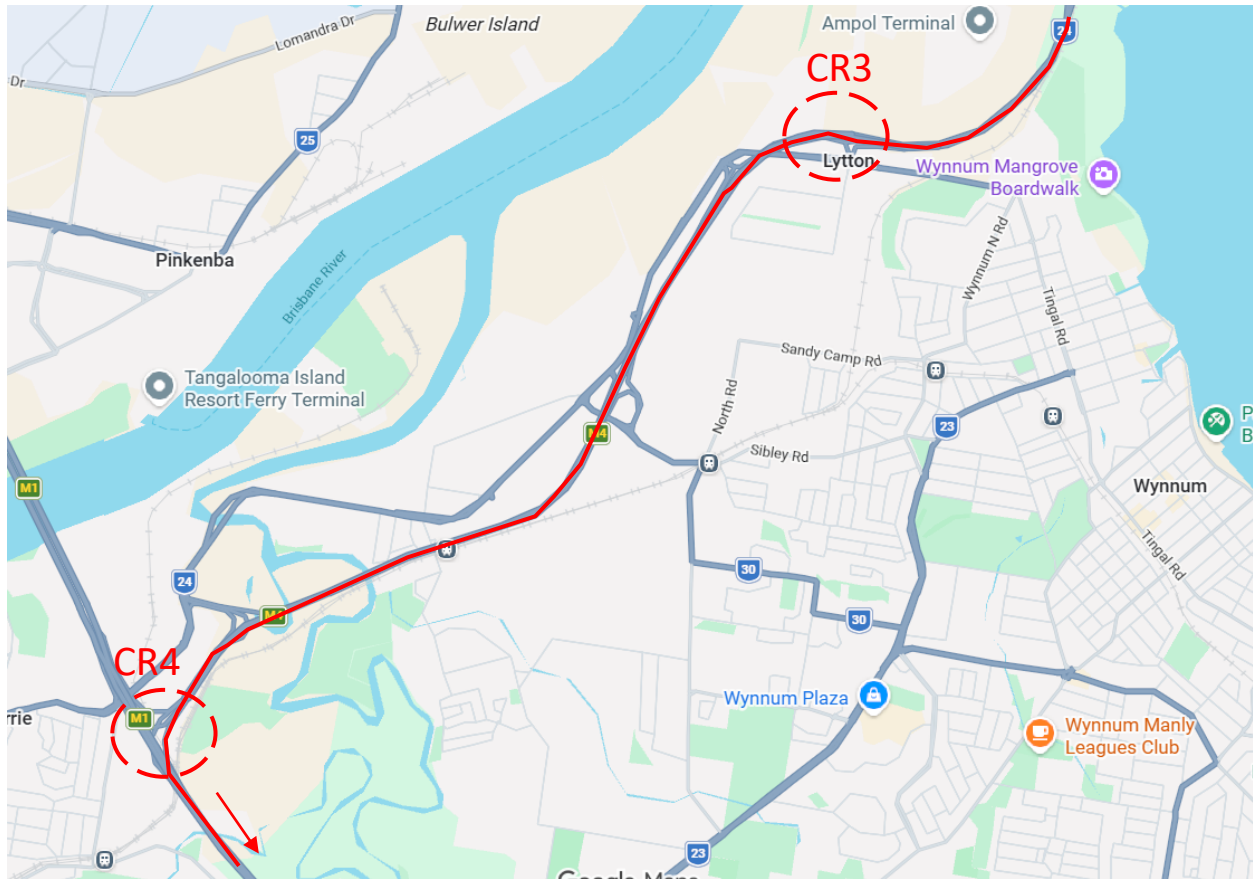
APPENDICES

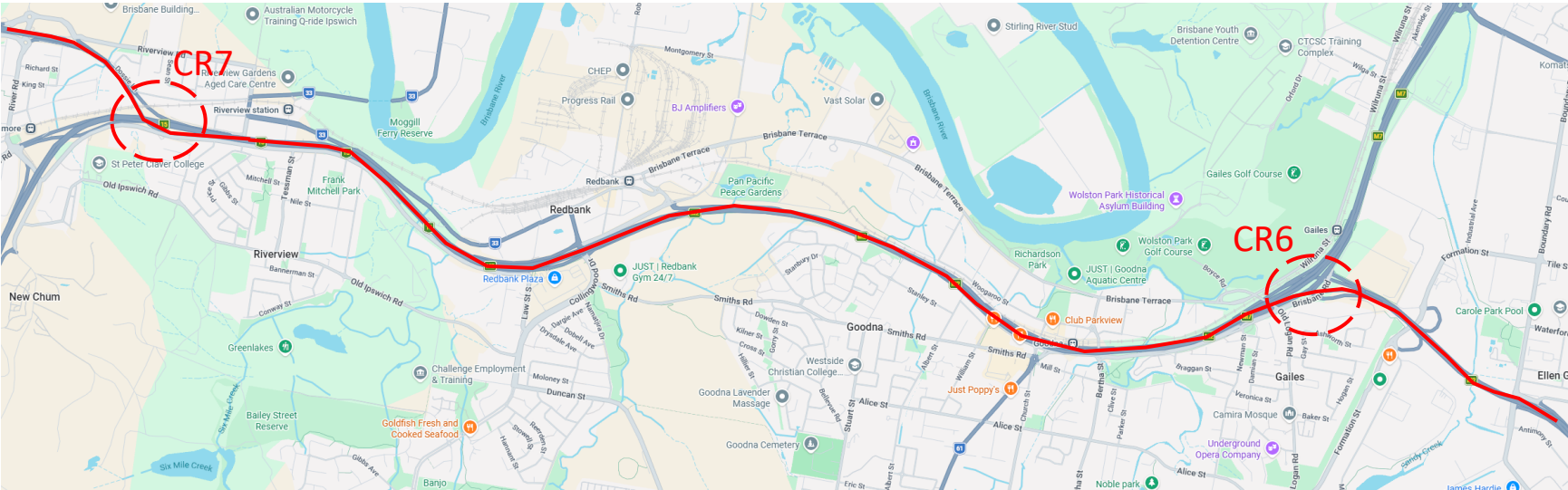
APPENDIX A – LATERAL SWEPT PATH ANALYSIS (OSOM HAULAGE COMMON ROUTE)
APPENDIX B – LATERAL SWEPT PATH ANALYSIS (OSOM HAULAGE OPTION A)
APPENDIX C – LATERAL SWEPT PATH ANALYSIS (OSOM HAULAGE OPTION)
APPENDIX D – LATERAL SWEPT PATH ANALYSIS (OSOM HAULAGE OPTION C)
APPENDIX E – LATERAL SWEPT PATH ANALYSIS (OSOM HAULAGE OPTION D)
APPENDIX F – VERTICAL SWEPT PATH ANALYSIS (FLOODWAY)
APPENDIX G – SUMMARY OF OVERHEAD STRUCTURES
APPENDIX H – LATERAL SWEPT PATH ANALYSIS (DETOUR ROUTE)

APPENDIX A – LATERAL SWEEP PATH ANALYSIS (OSOM HAULAGE COMMON ROUTE)

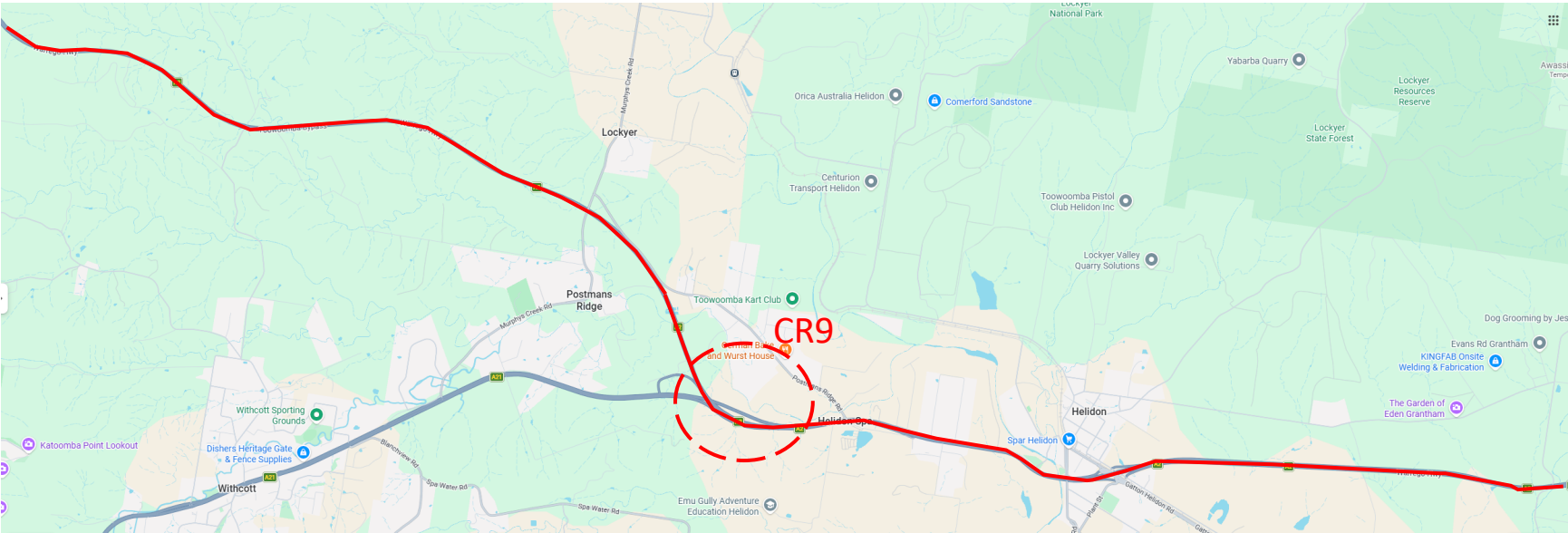
KEY MAP





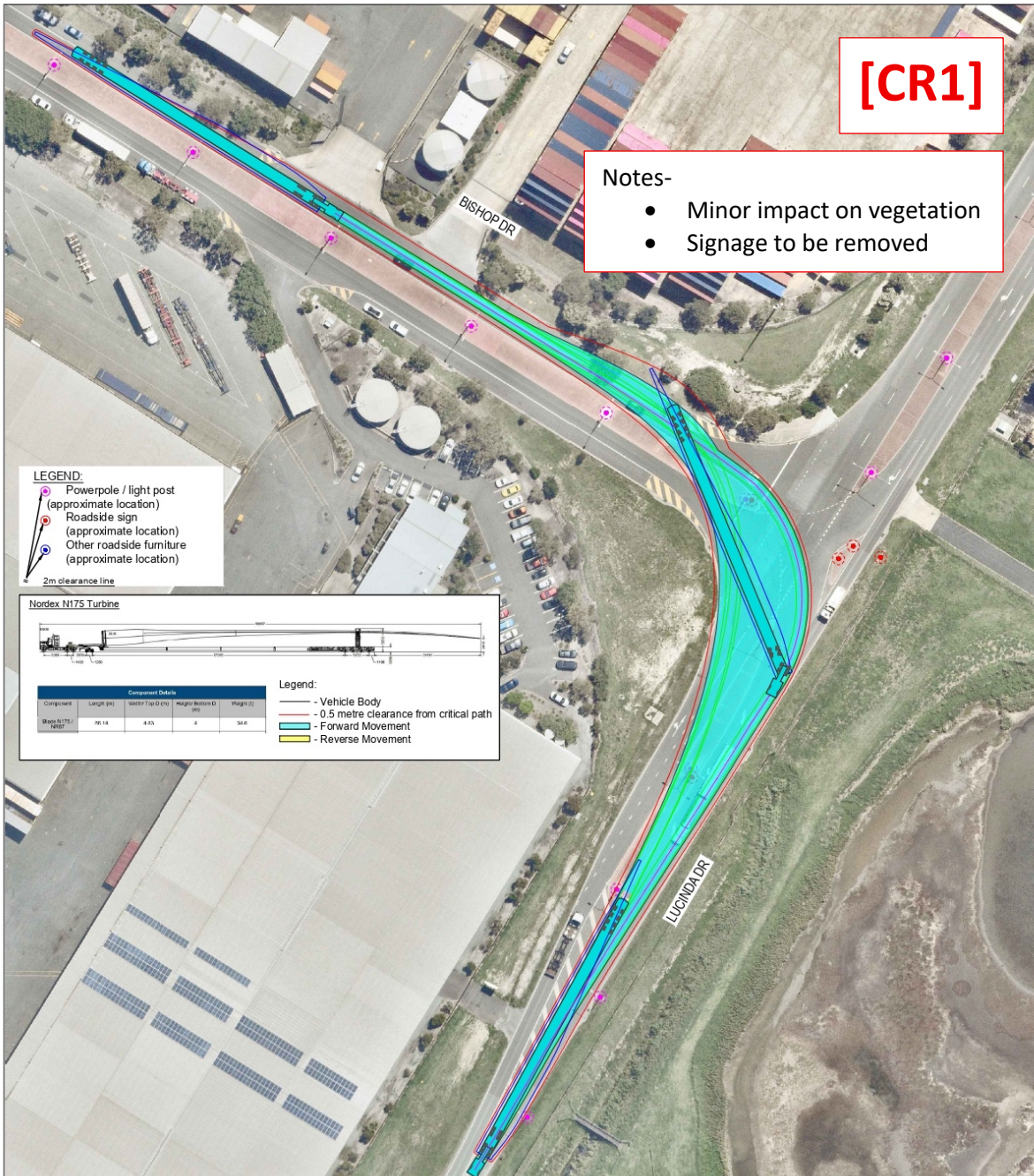




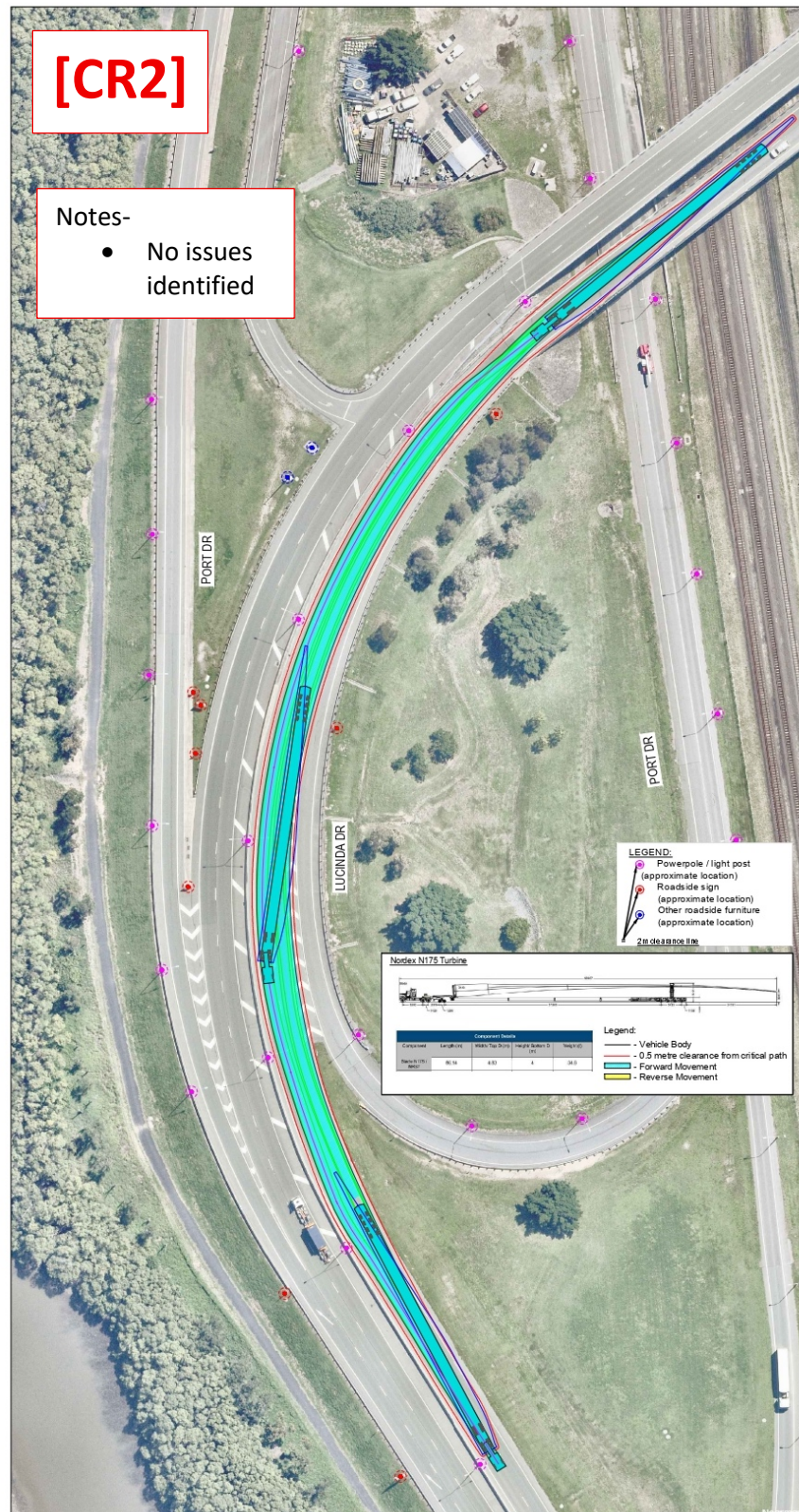


SWEPT PATH ANALYSIS

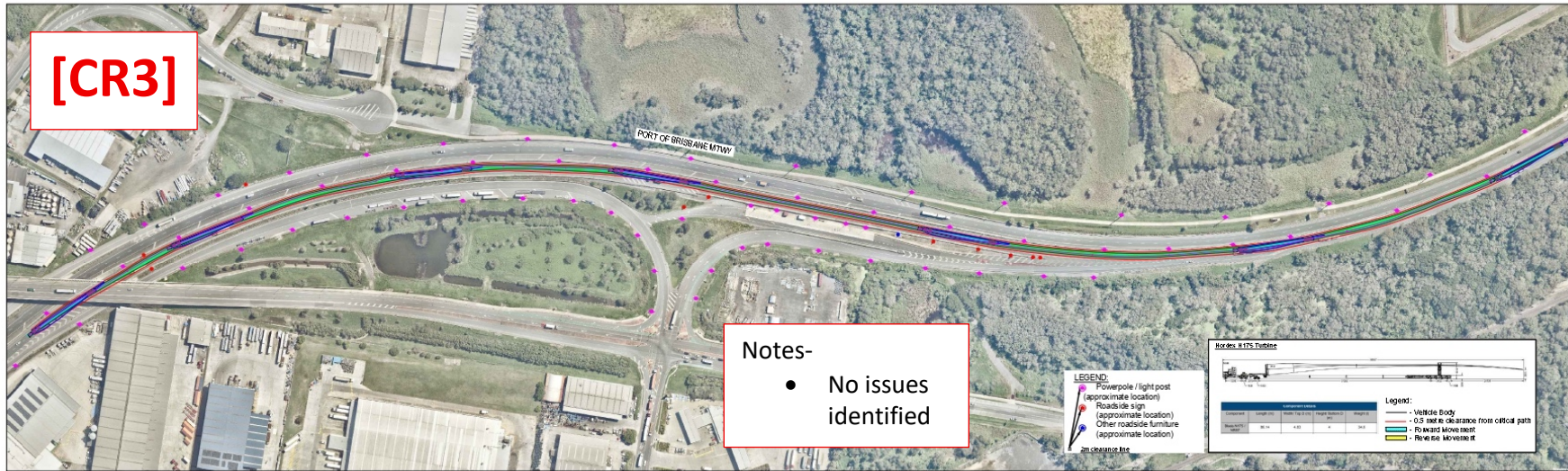
Intersection of Bishop Drive / Lucinda Drive



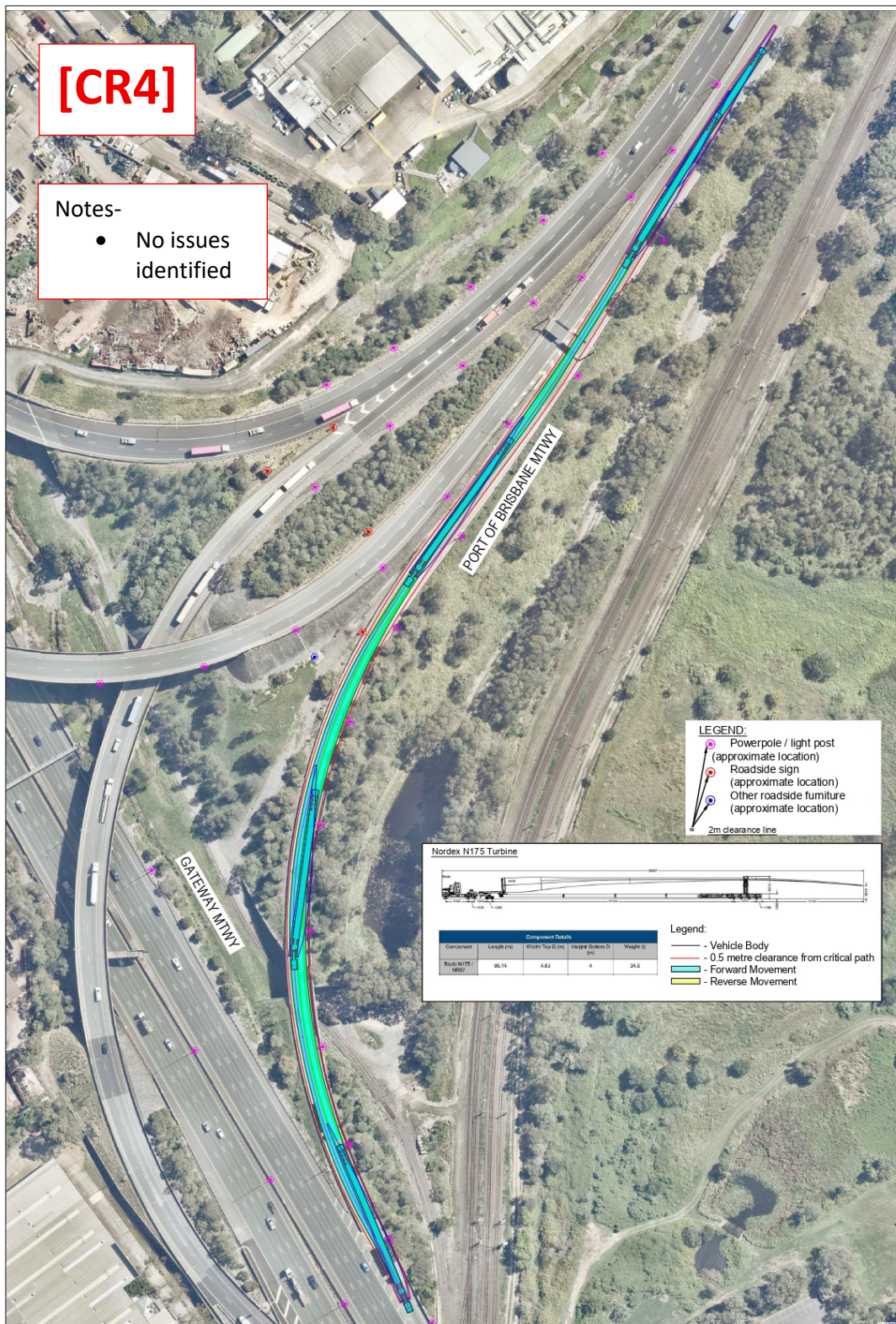
Lucinda Drive / Port Drive Interchange



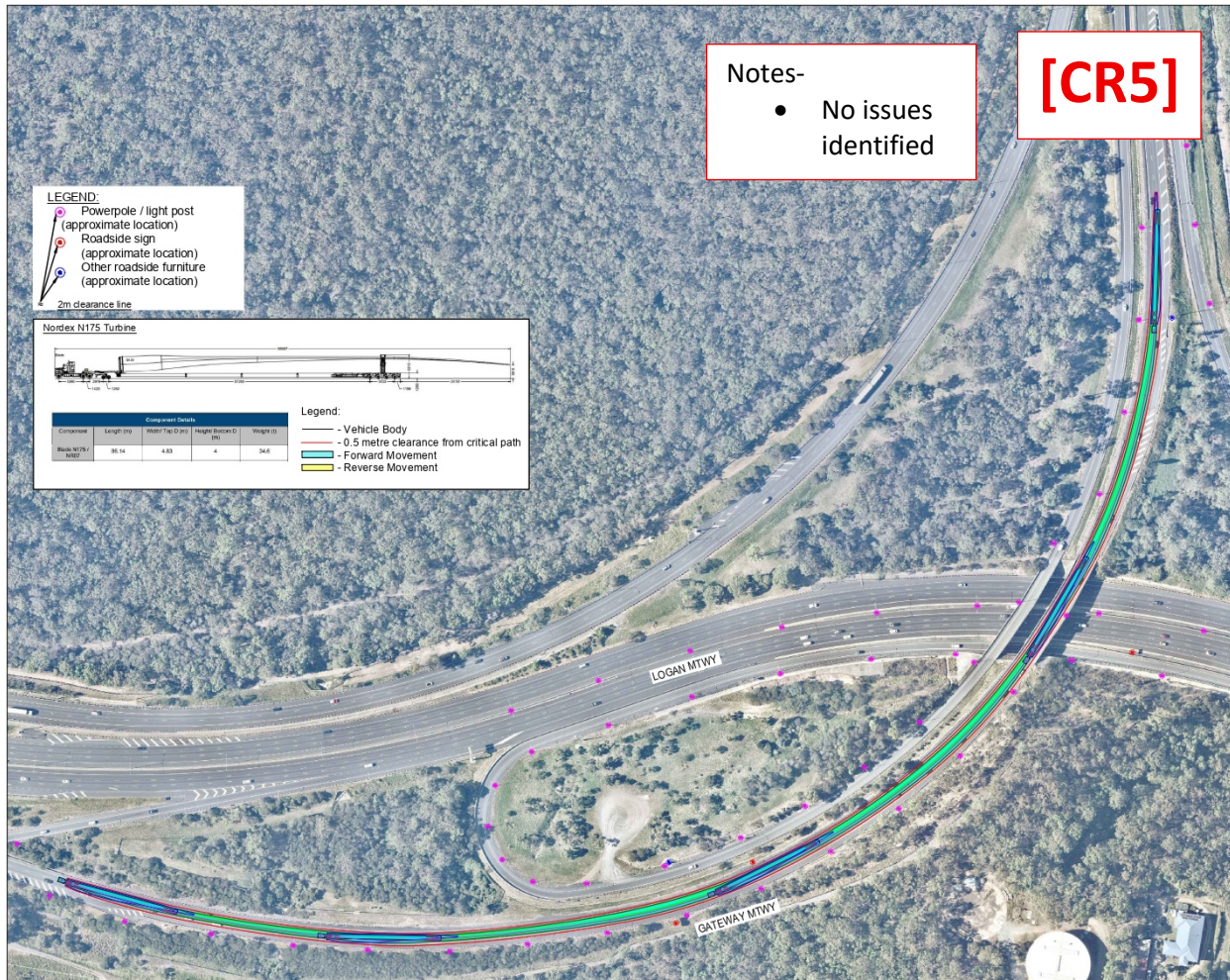
Port Drive / Port of Brisbane Interchange



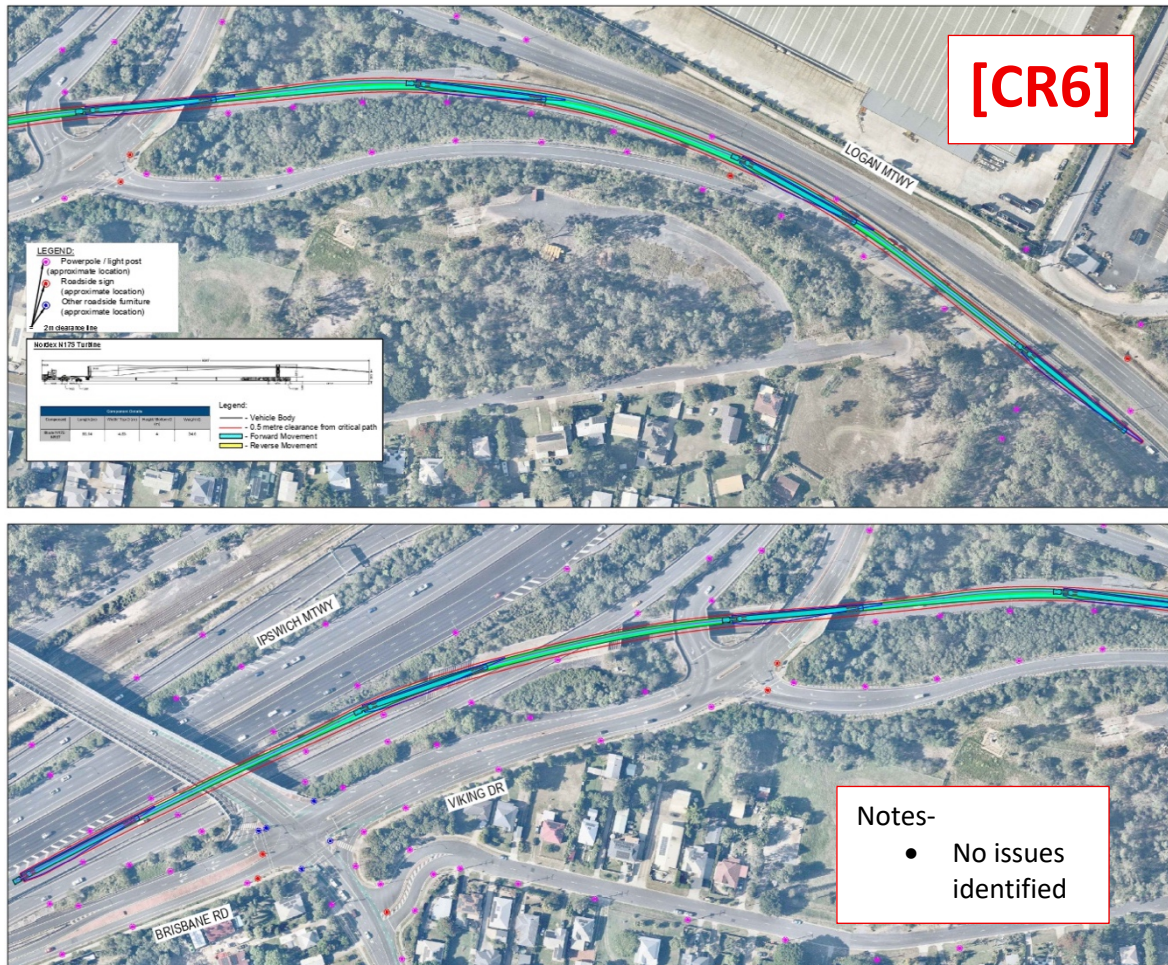
Port of Brisbane Motorway / Gateway Motorway Interchange



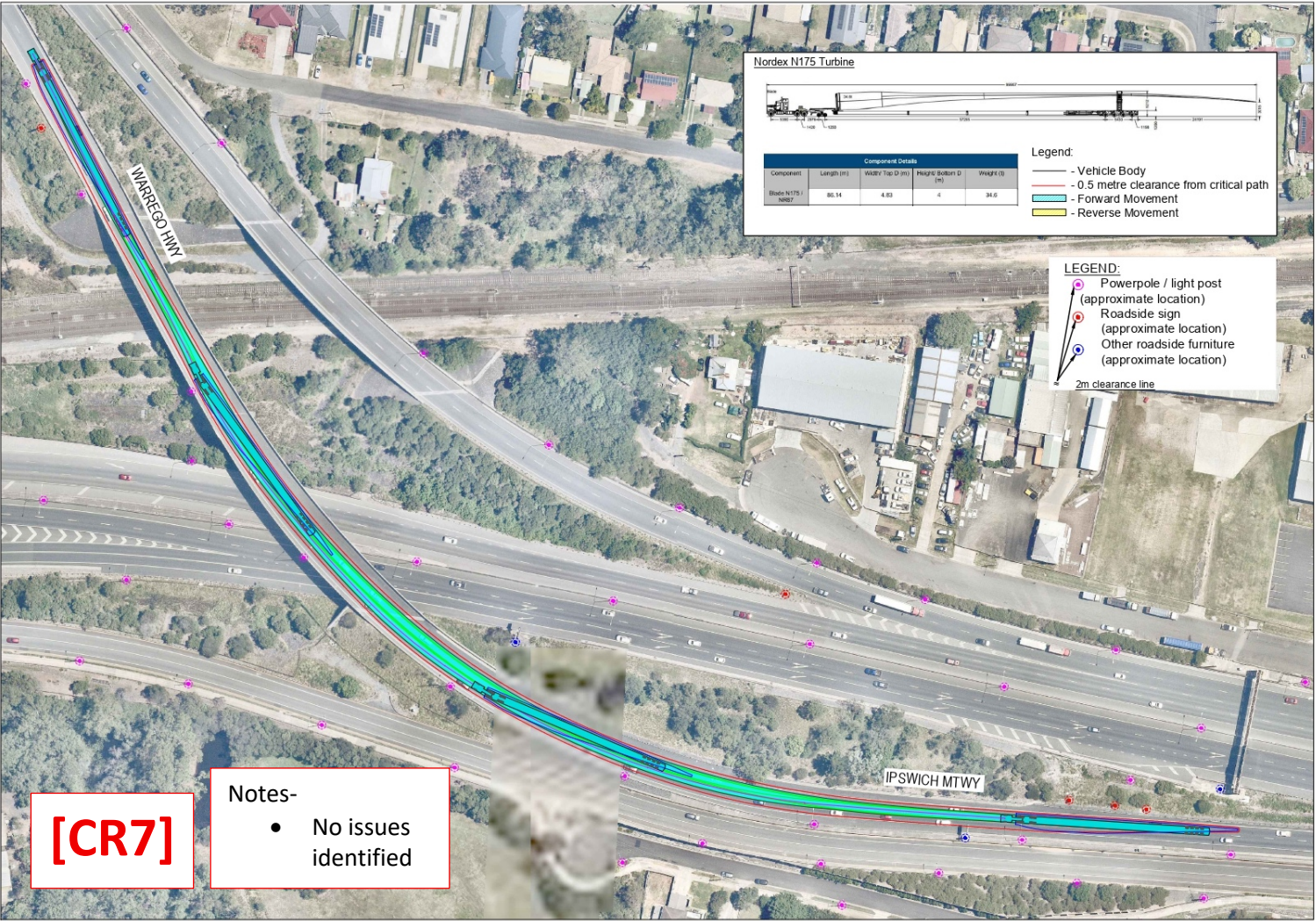
Gateway Motorway Extension / Logan Motorway Interchange



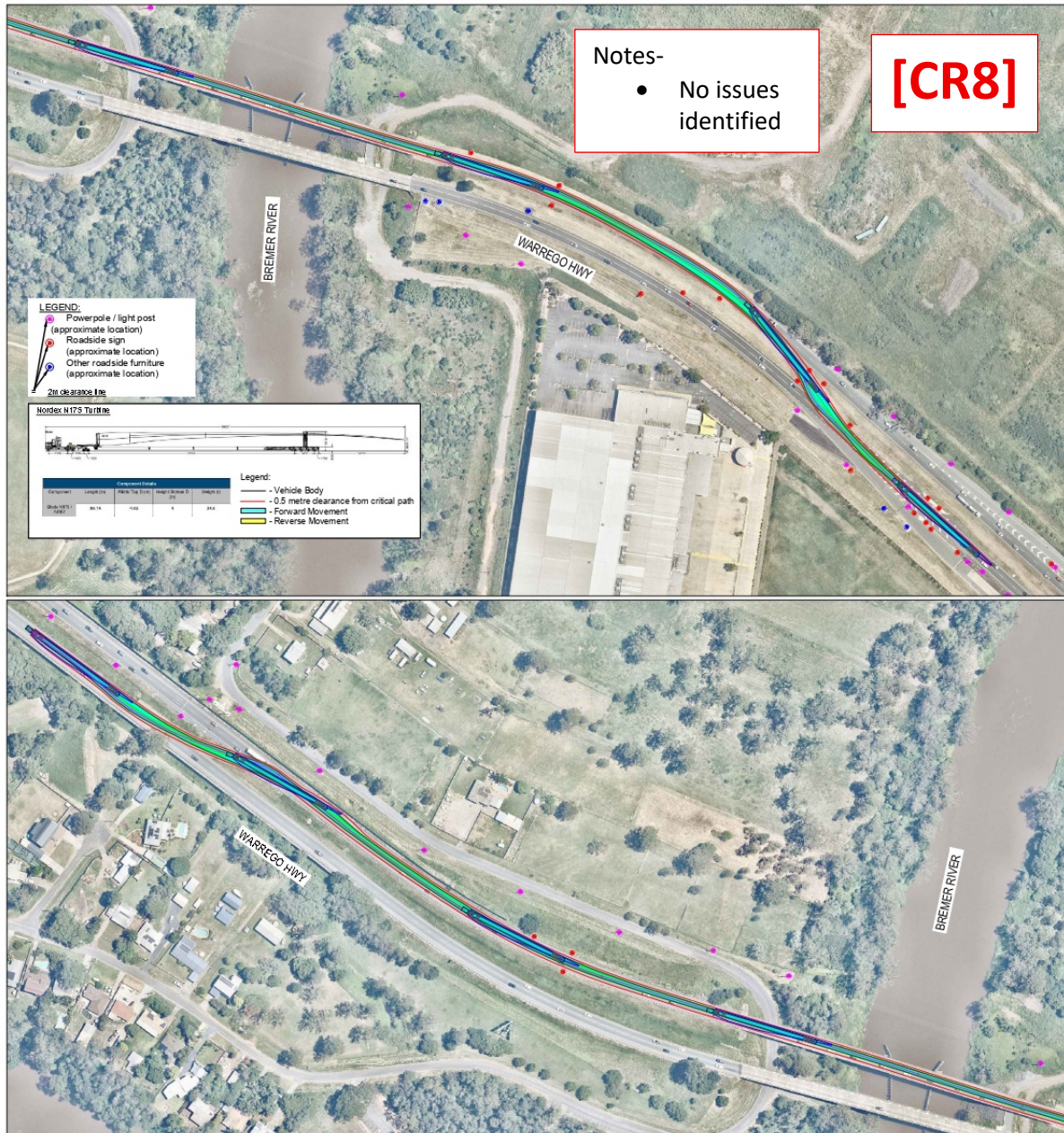
Logan Motorway / Ipswich Motorway Interchange



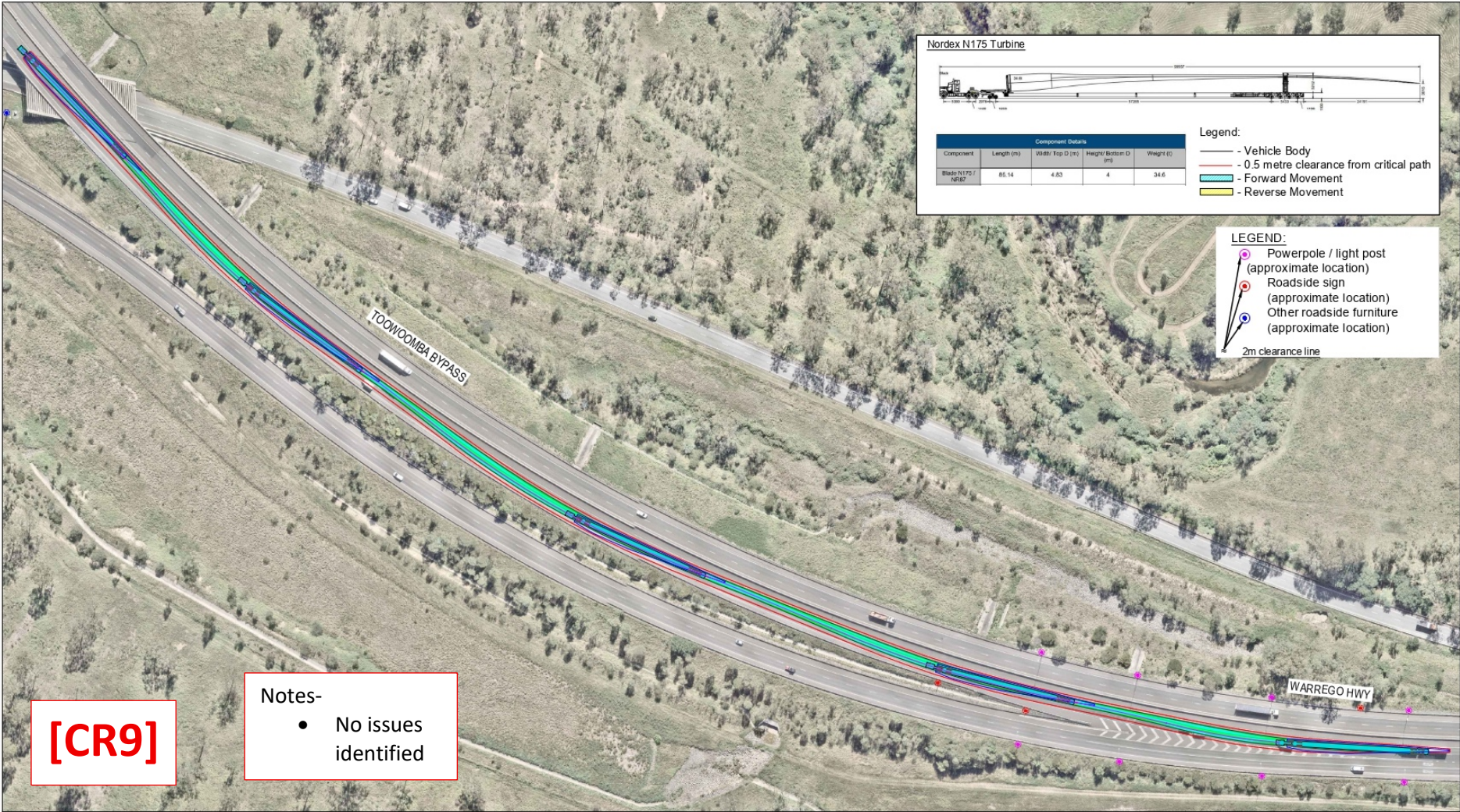
On-ramp to Warrego Highway



Bremer River Diverge to Eastbound Lane



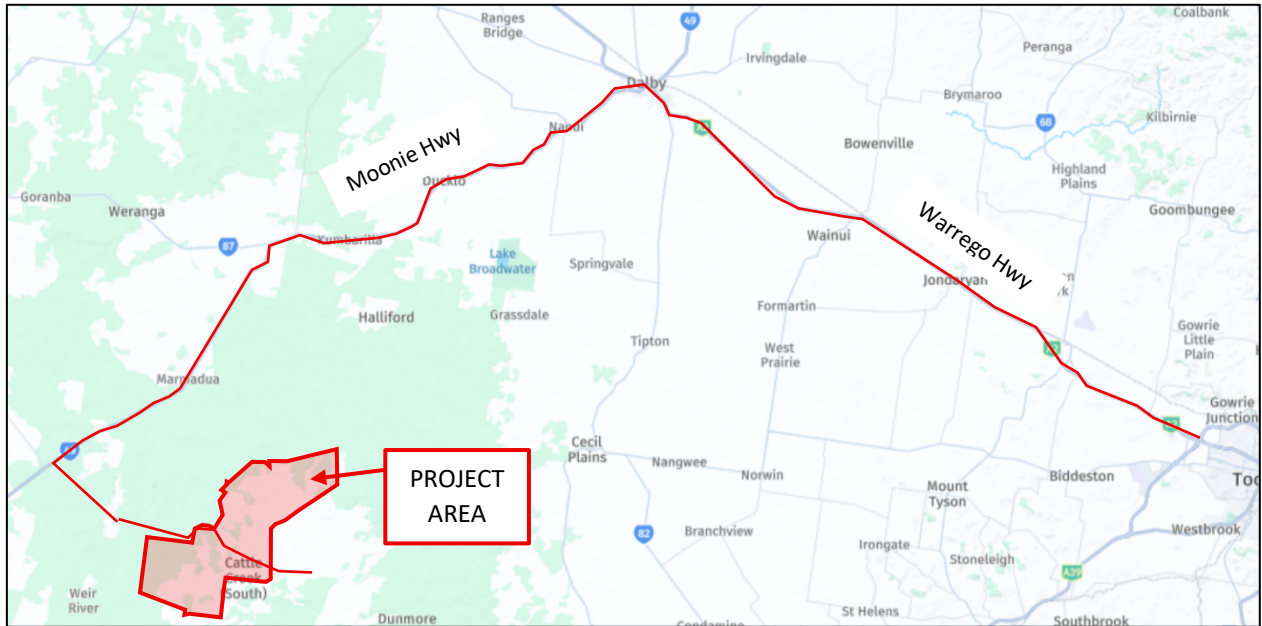
Warrego Highway / Toowoomba Bypass (Helidon Spa)



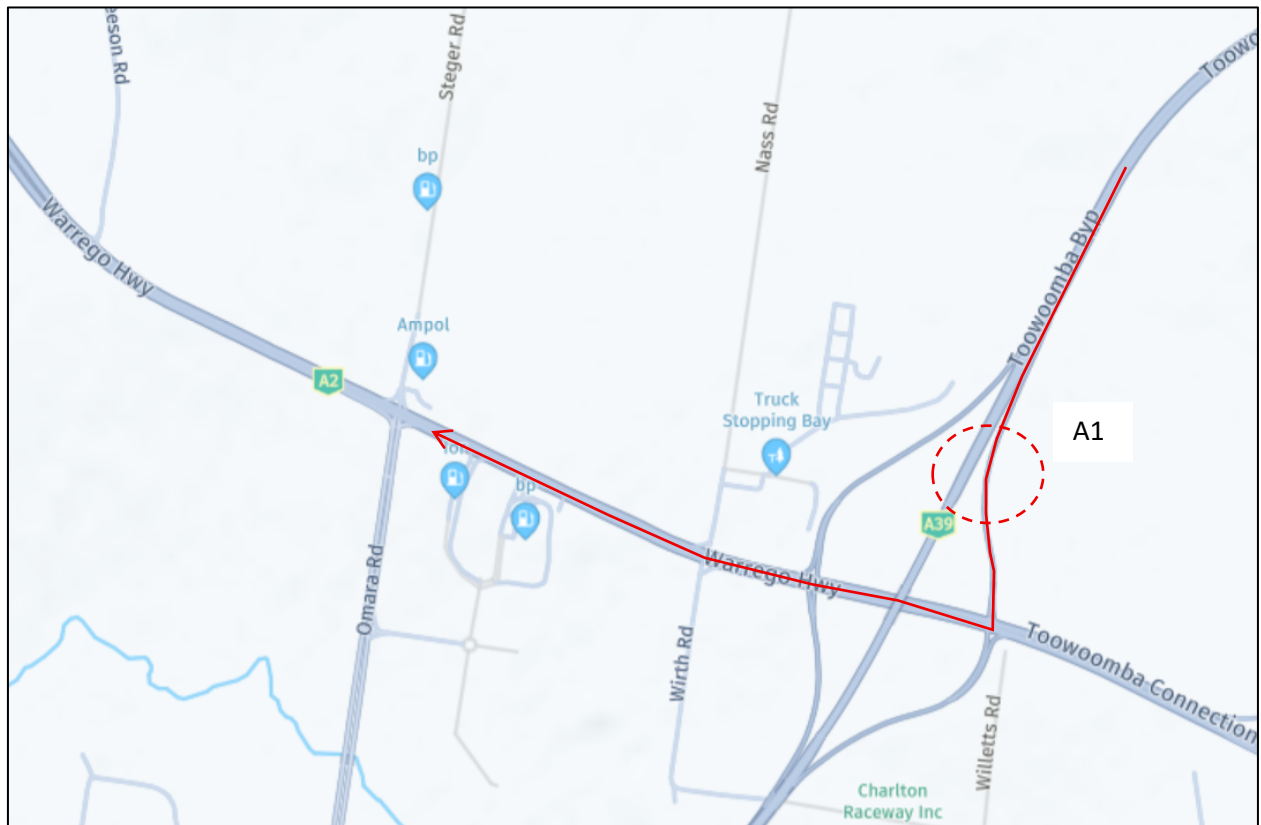
APPENDIX B – LATERAL SWEEP PATH ANALYSIS (OSOM HAULAGE OPTION A)

KEY MAP

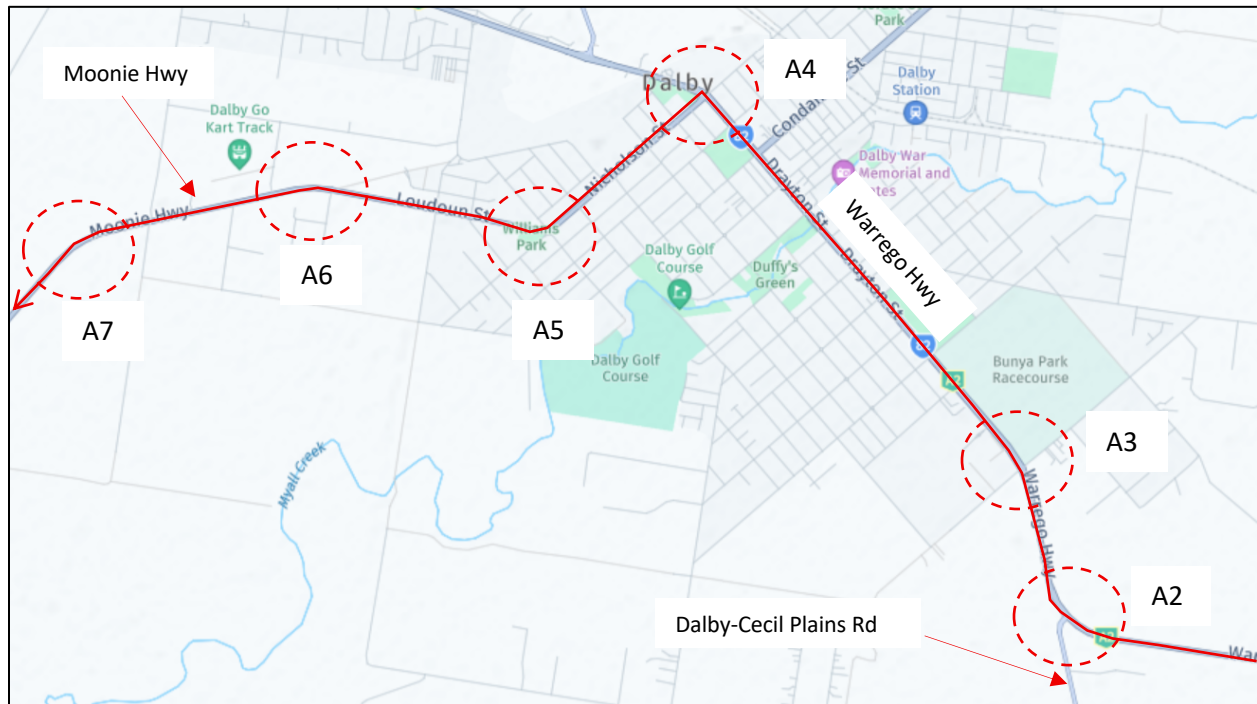
OVERVIEW



WARREGO HWY / TOOWOOMBA RANGE INTERCHANGE



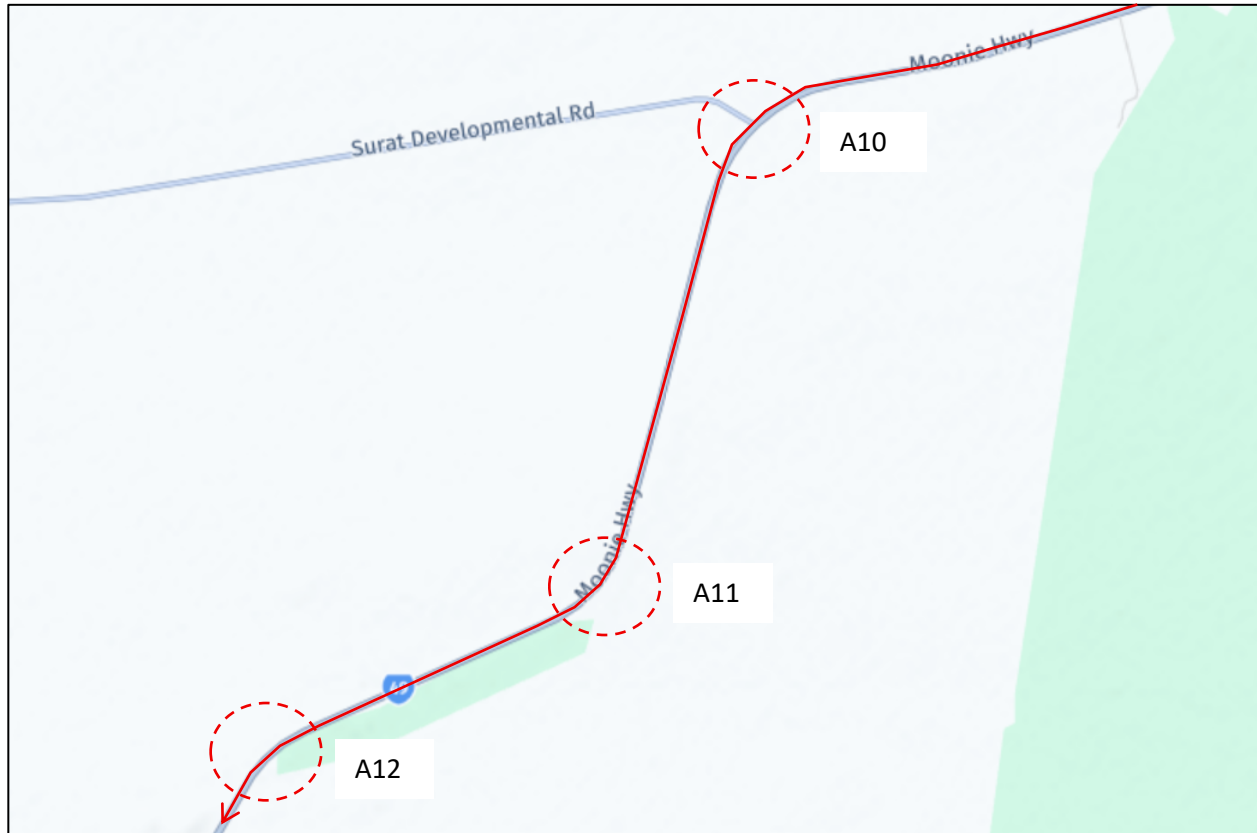
DALBY INSET



MOONIE HWY - NANDI



MOONIE HWY – SURAT DEVELOPMENTAL ROAD



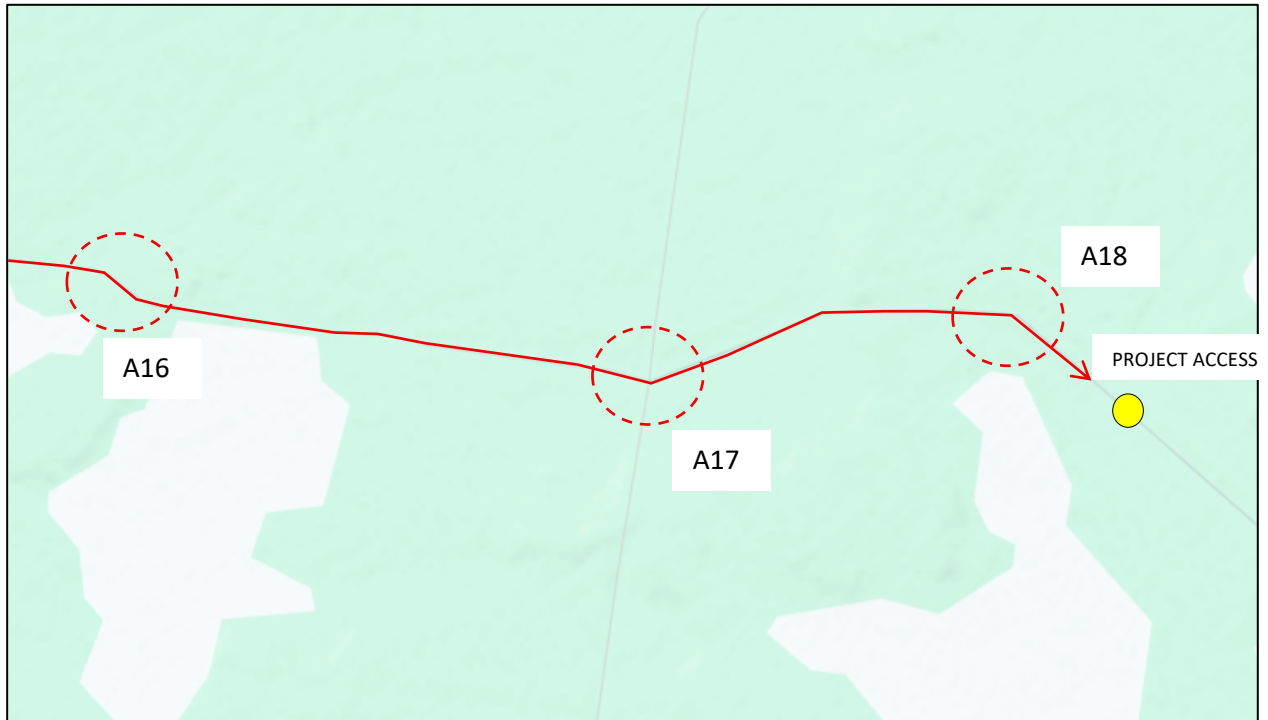
MOONIE HWY / CECIL PLAINS ROAD



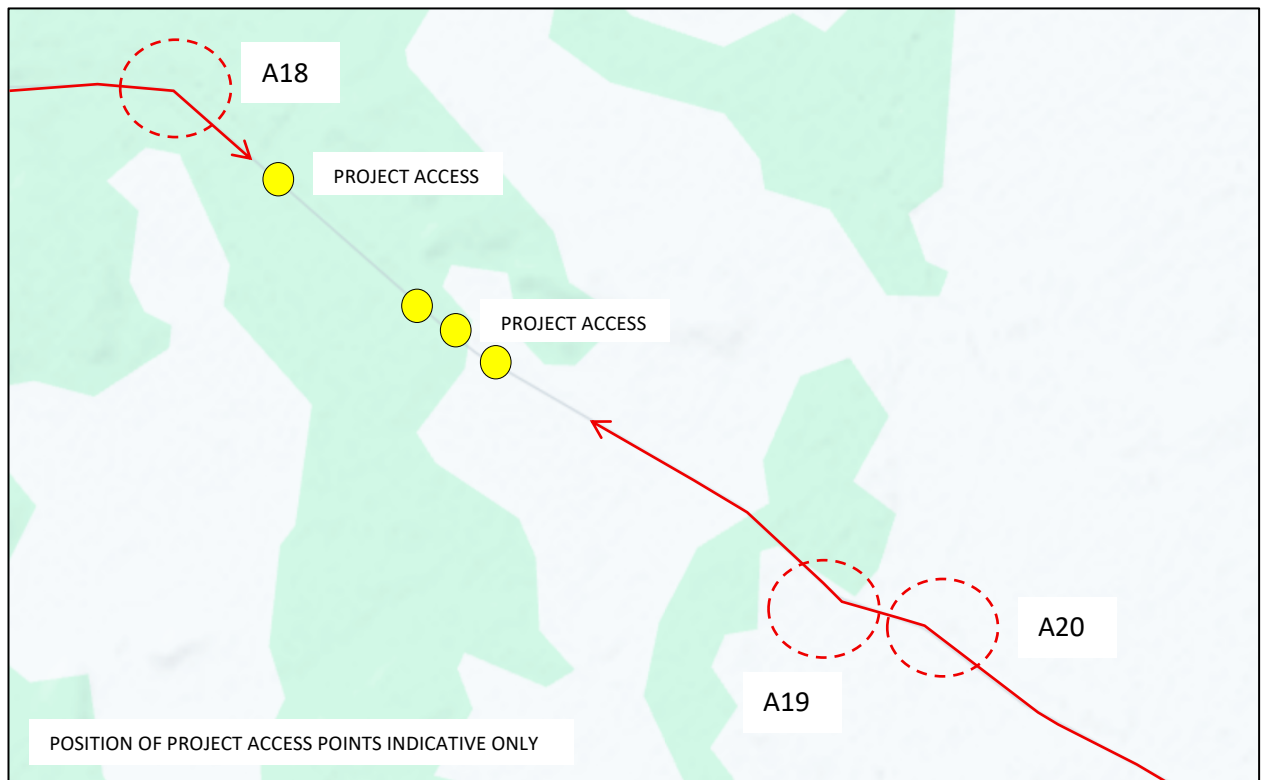
CECIL PLAINS – MOONIE ROAD



CECIL PLAINS – MOONIE ROAD

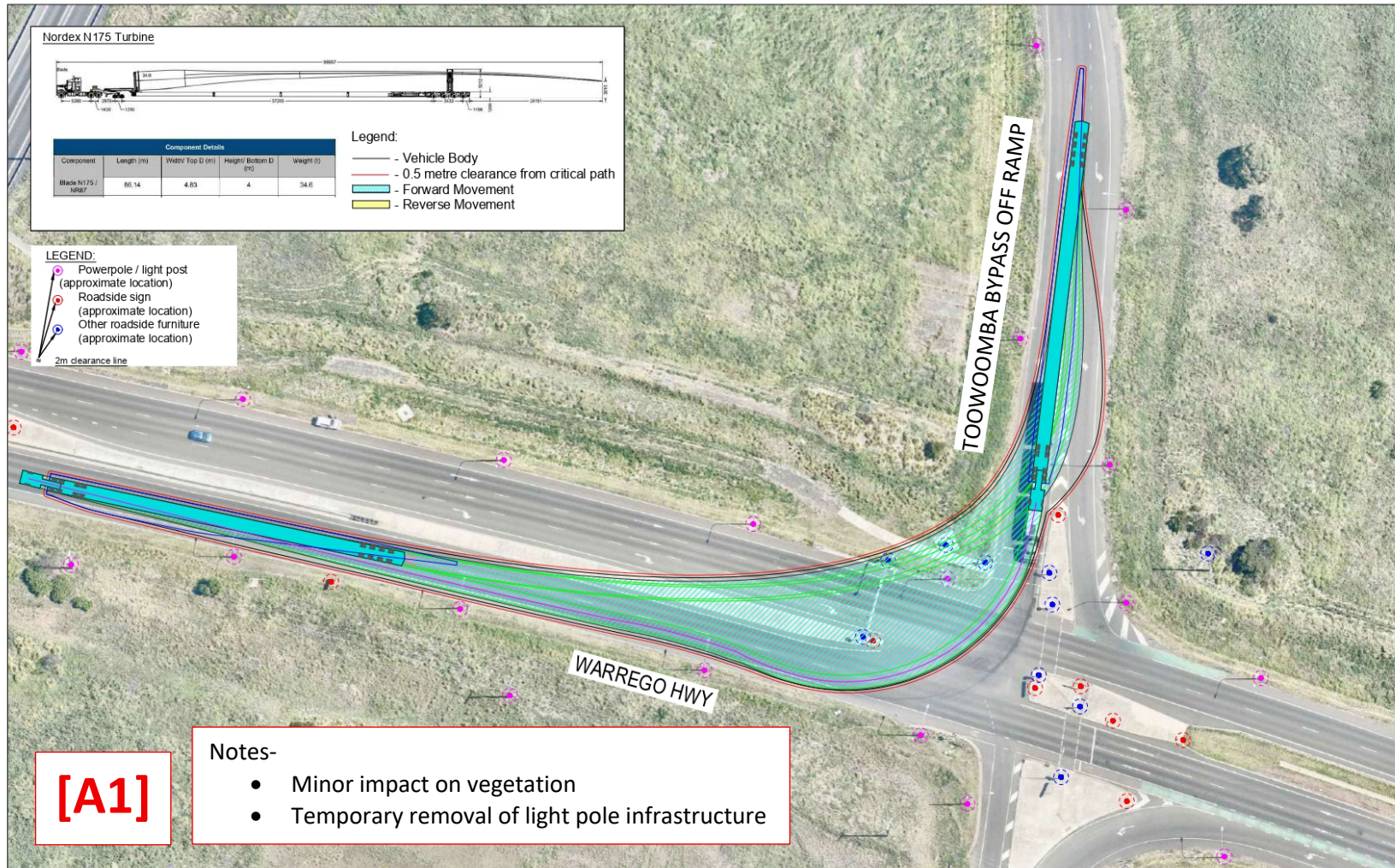


CECIL PLAINS – MOONIE ROAD

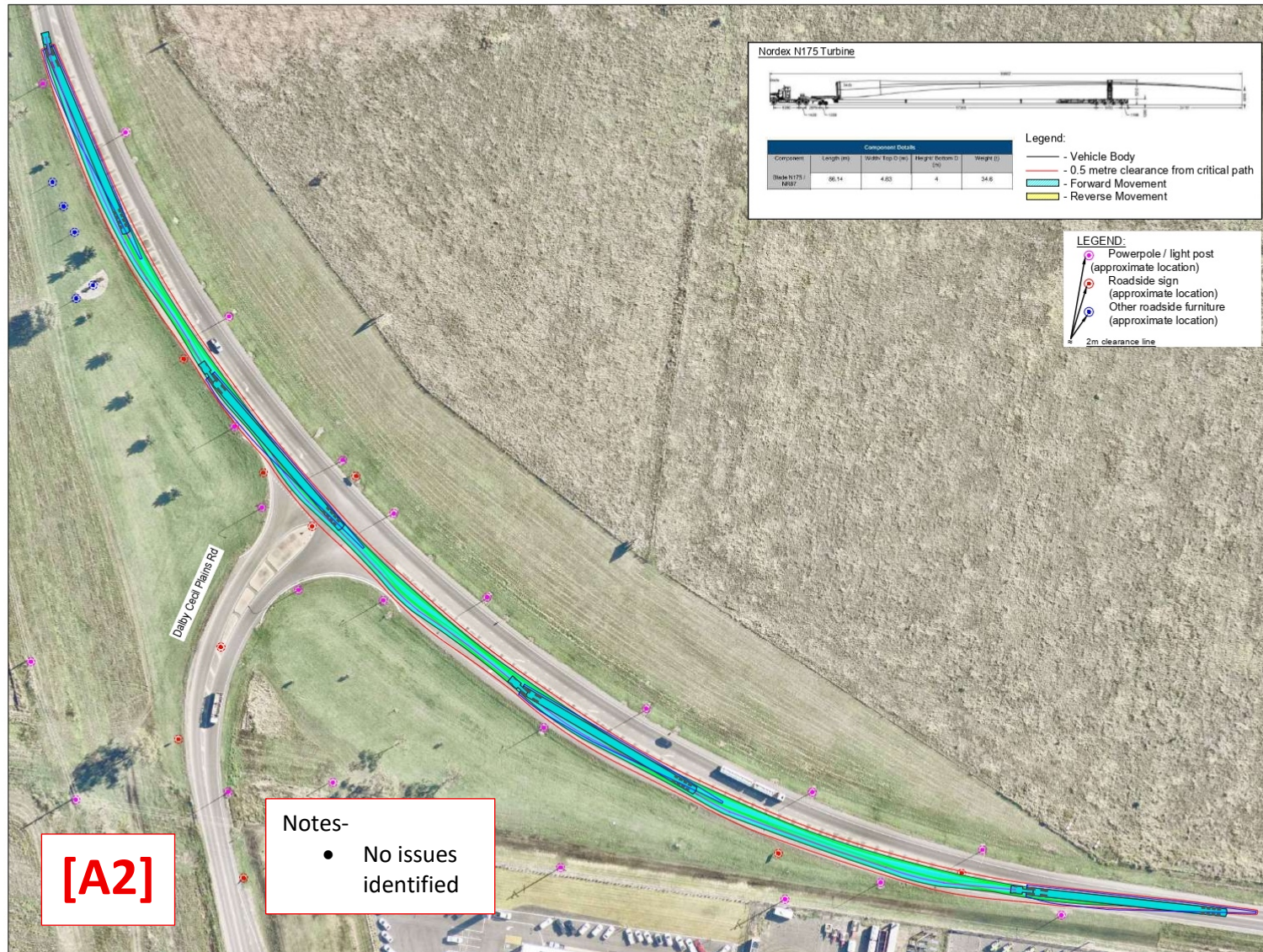


SWEPT PATH ANALYSIS [OPTION A]

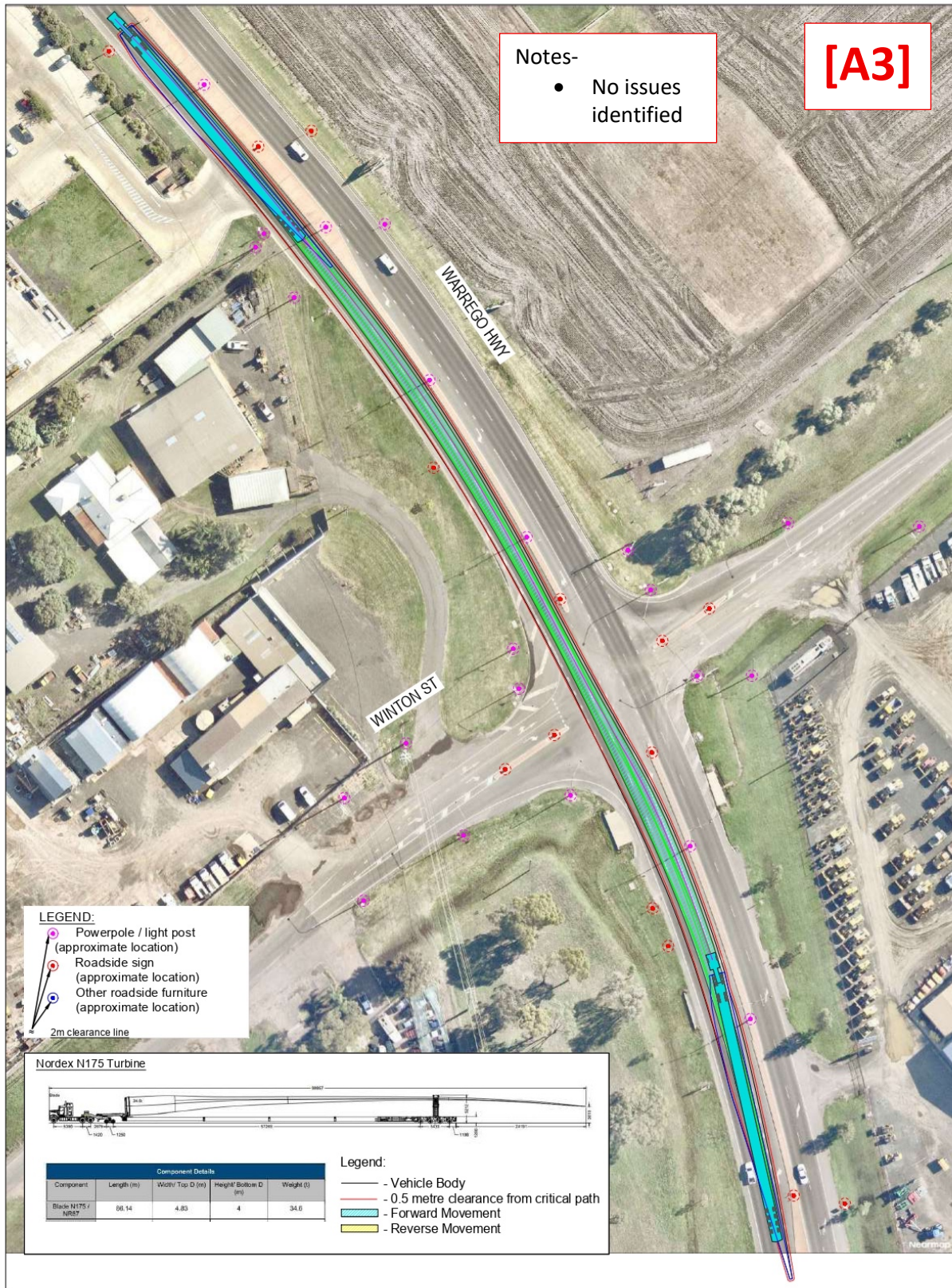
Interchange of Toowoomba Bypass Warrego Highway at Charlton



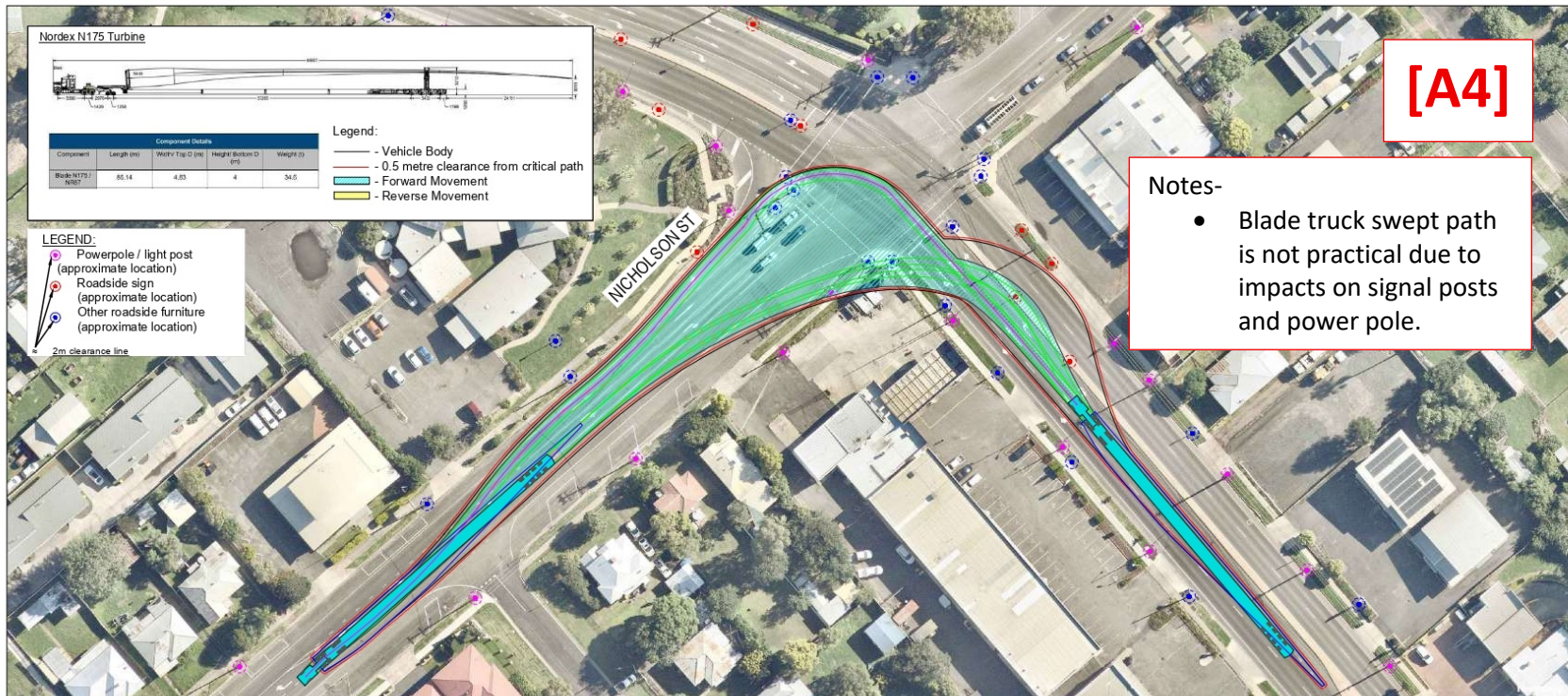
Intersection of Warrego Highway and Dalby Cecil Plains Road, Dalby



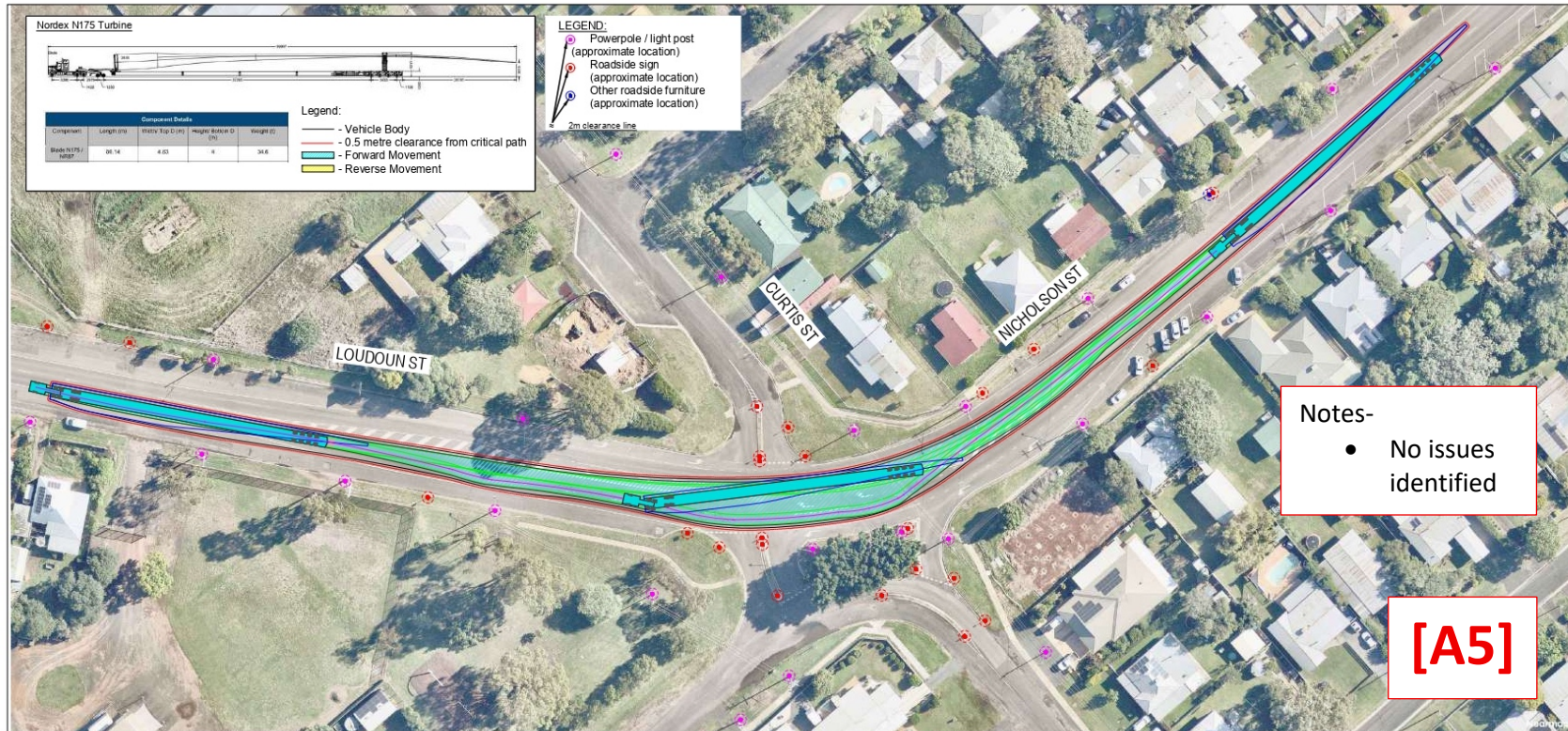
Intersection of Warrego Highway and Winton St



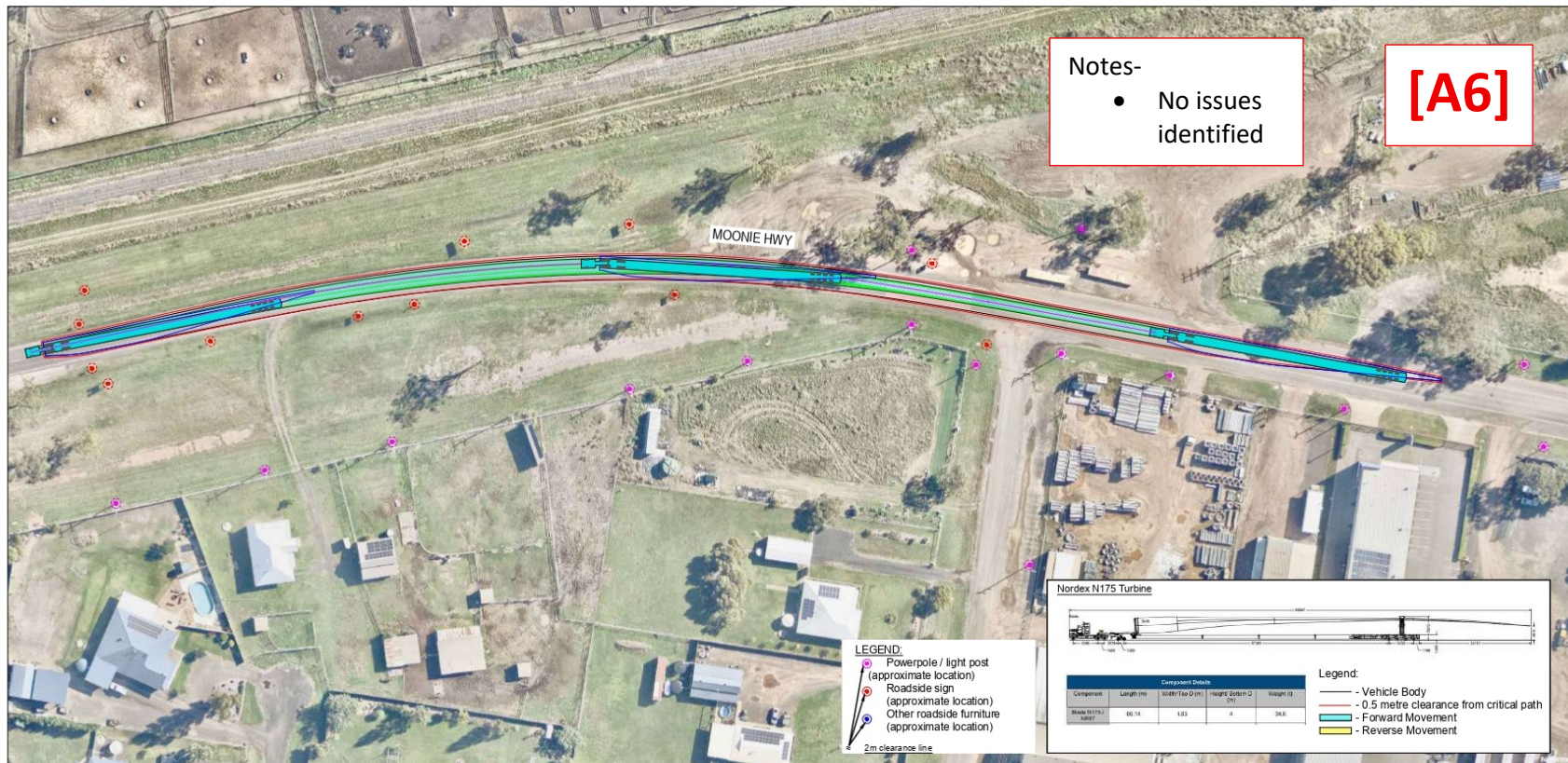
Intersection of Warrego Highway and Nicholson Street



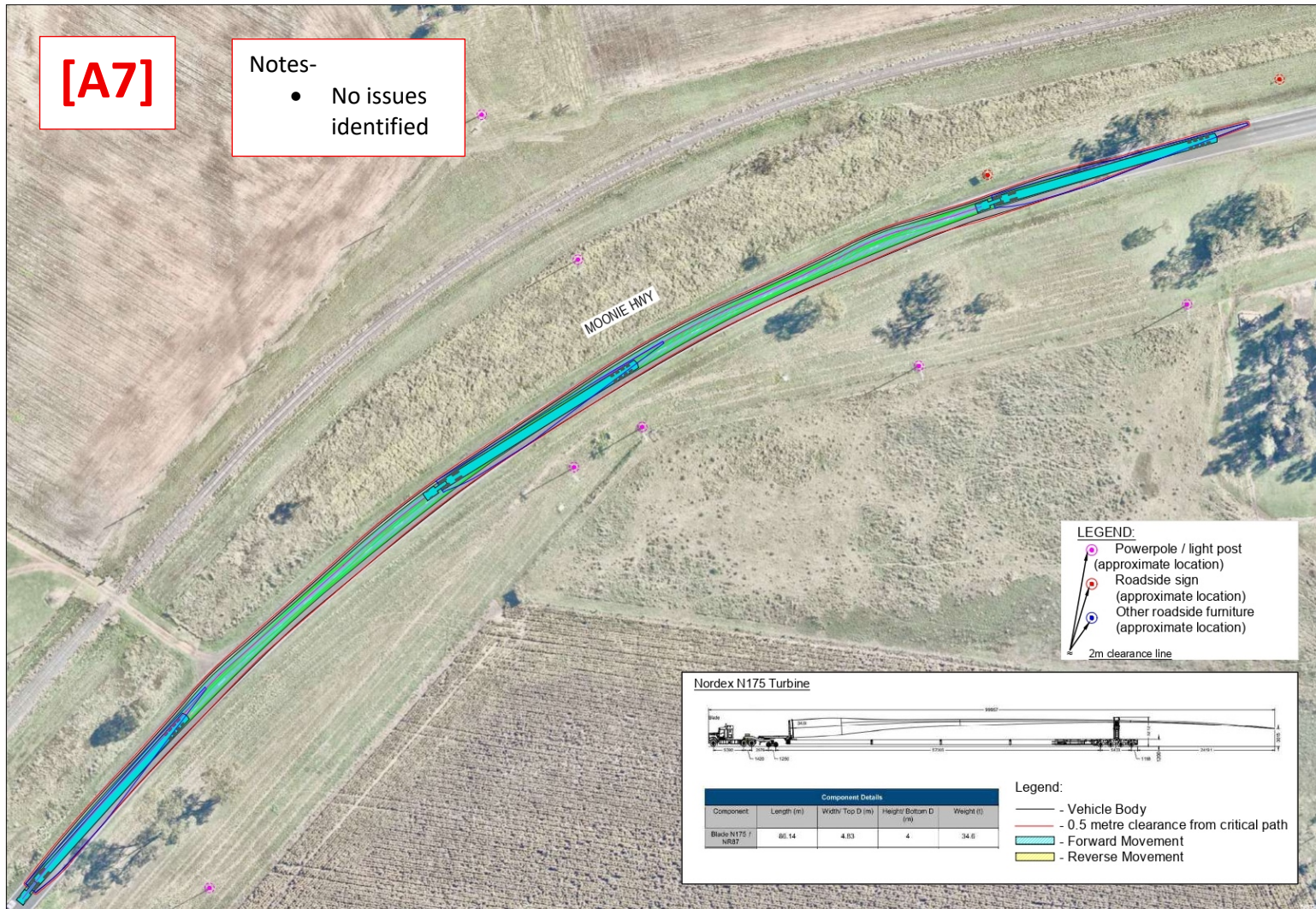
Nicholson St onto Loudoun St



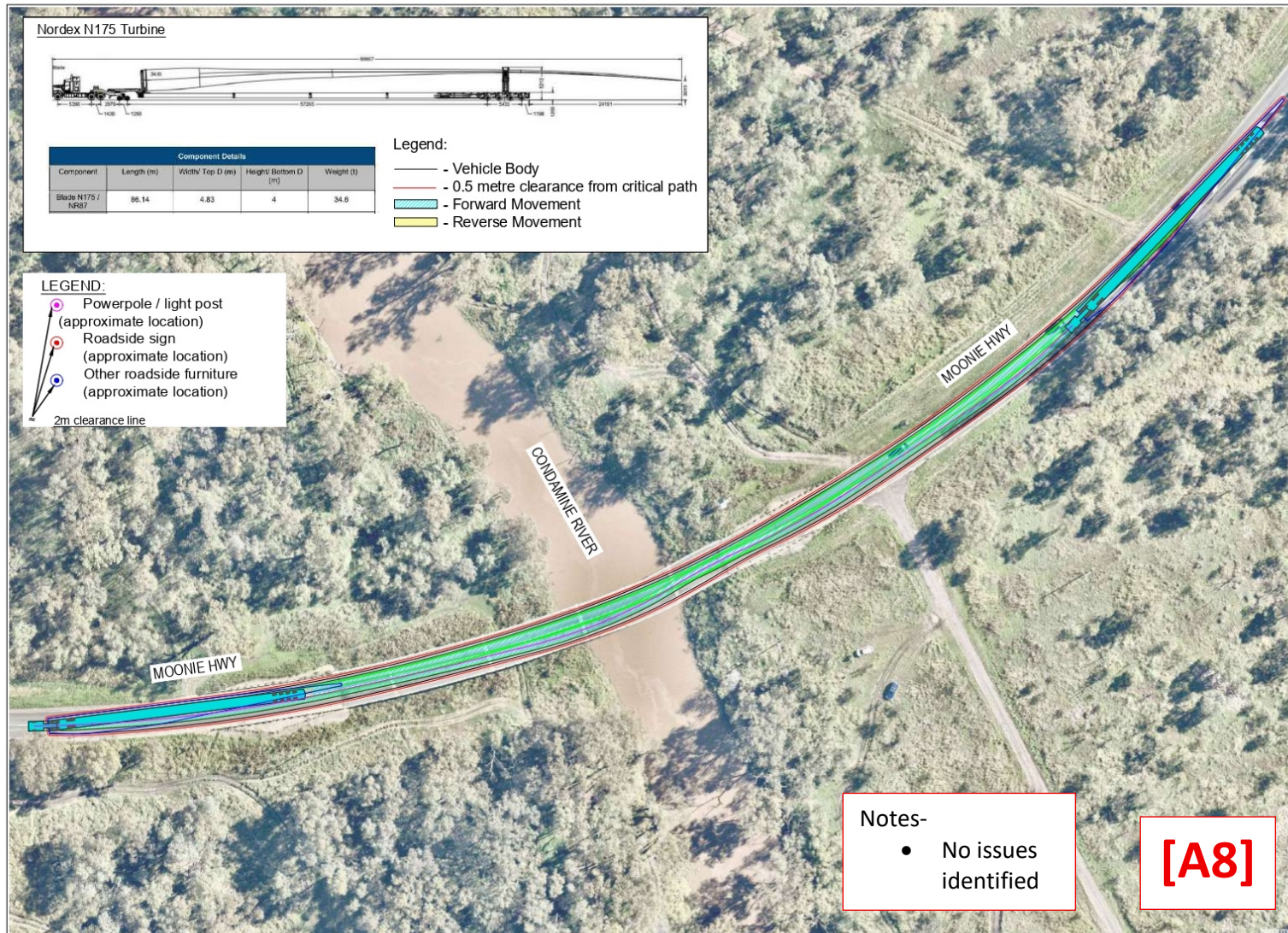
Along Moonie Hwy



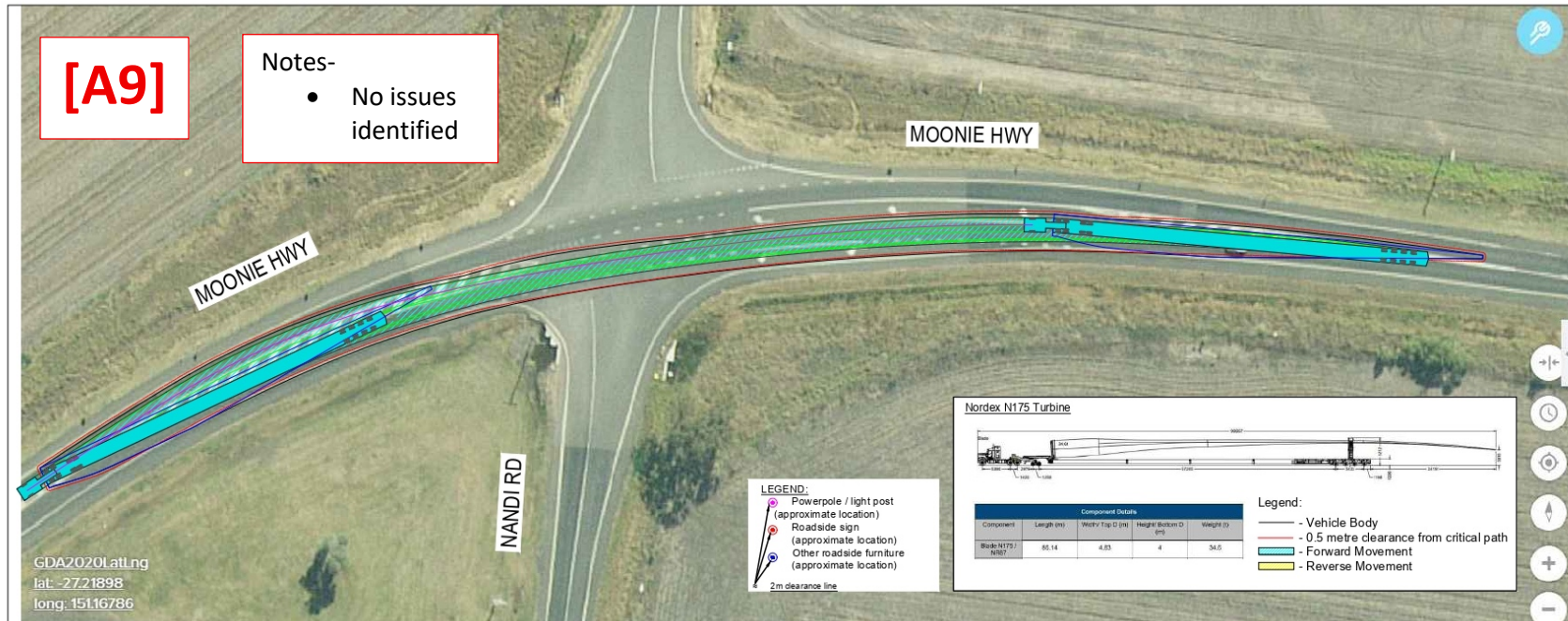
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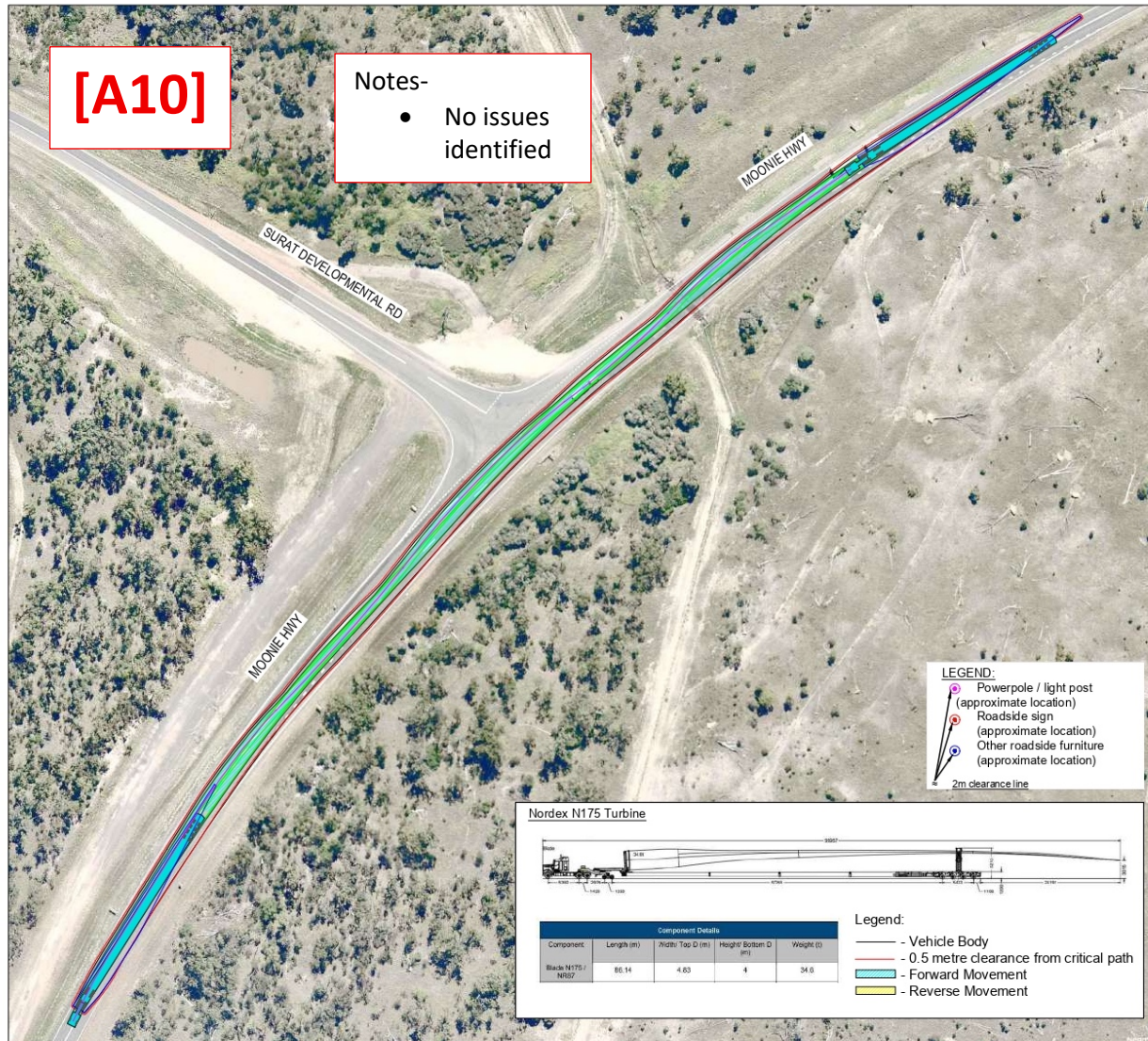
Along Moonie Hwy



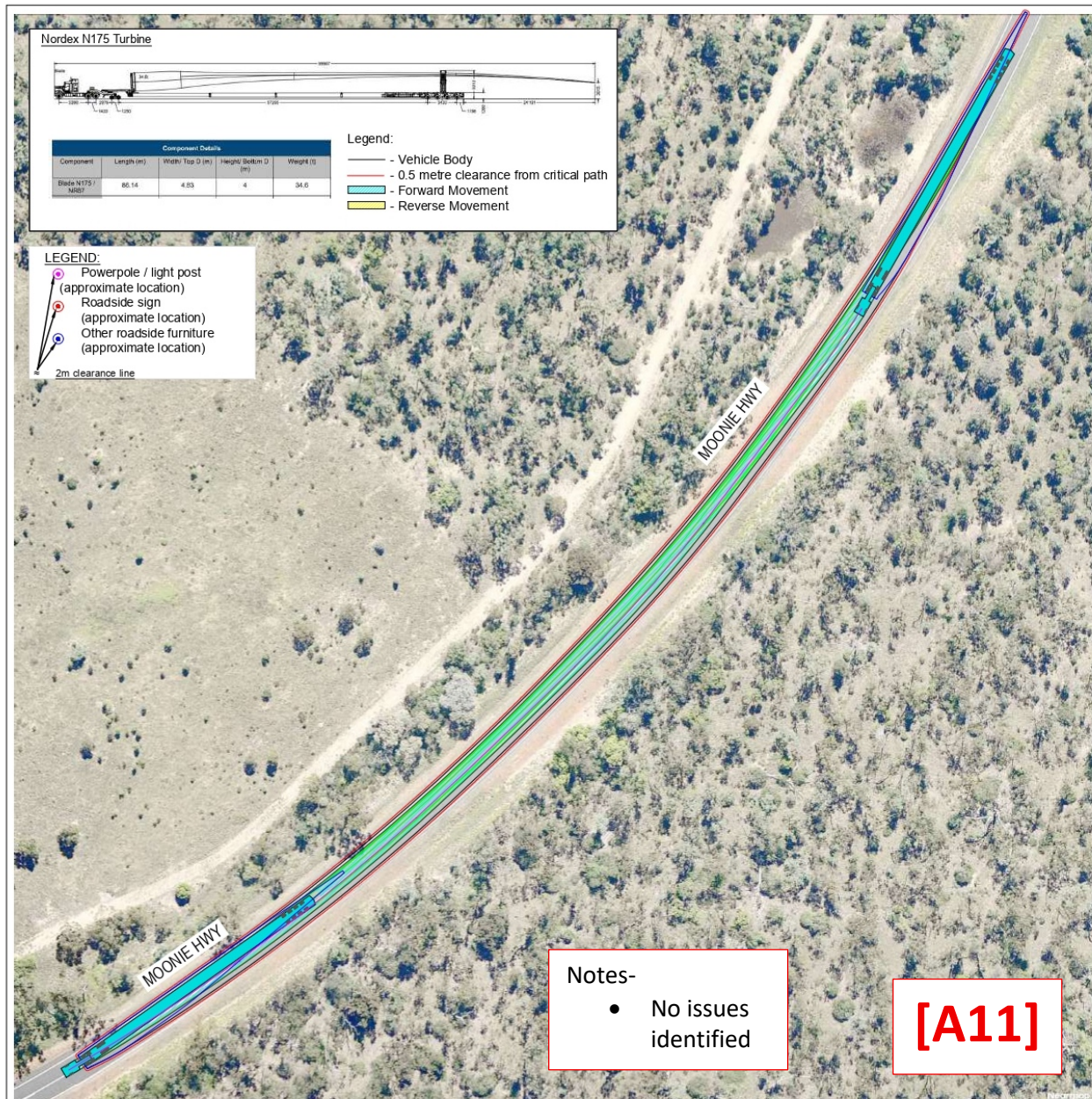
Intersection of Moonie Hwy and Nandi Rd



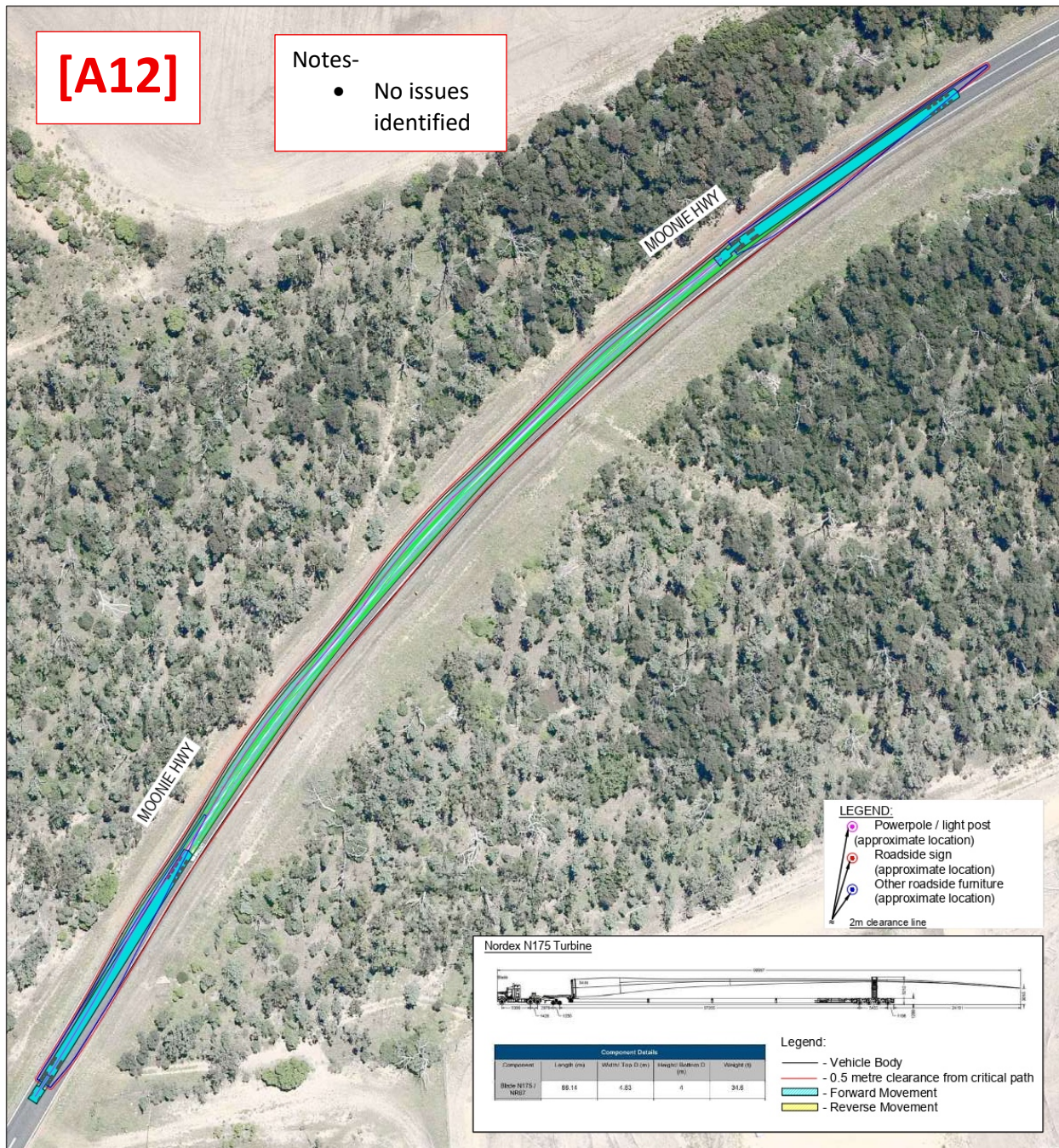
Intersection of Moonie Hwy and Surat Developmental Rd



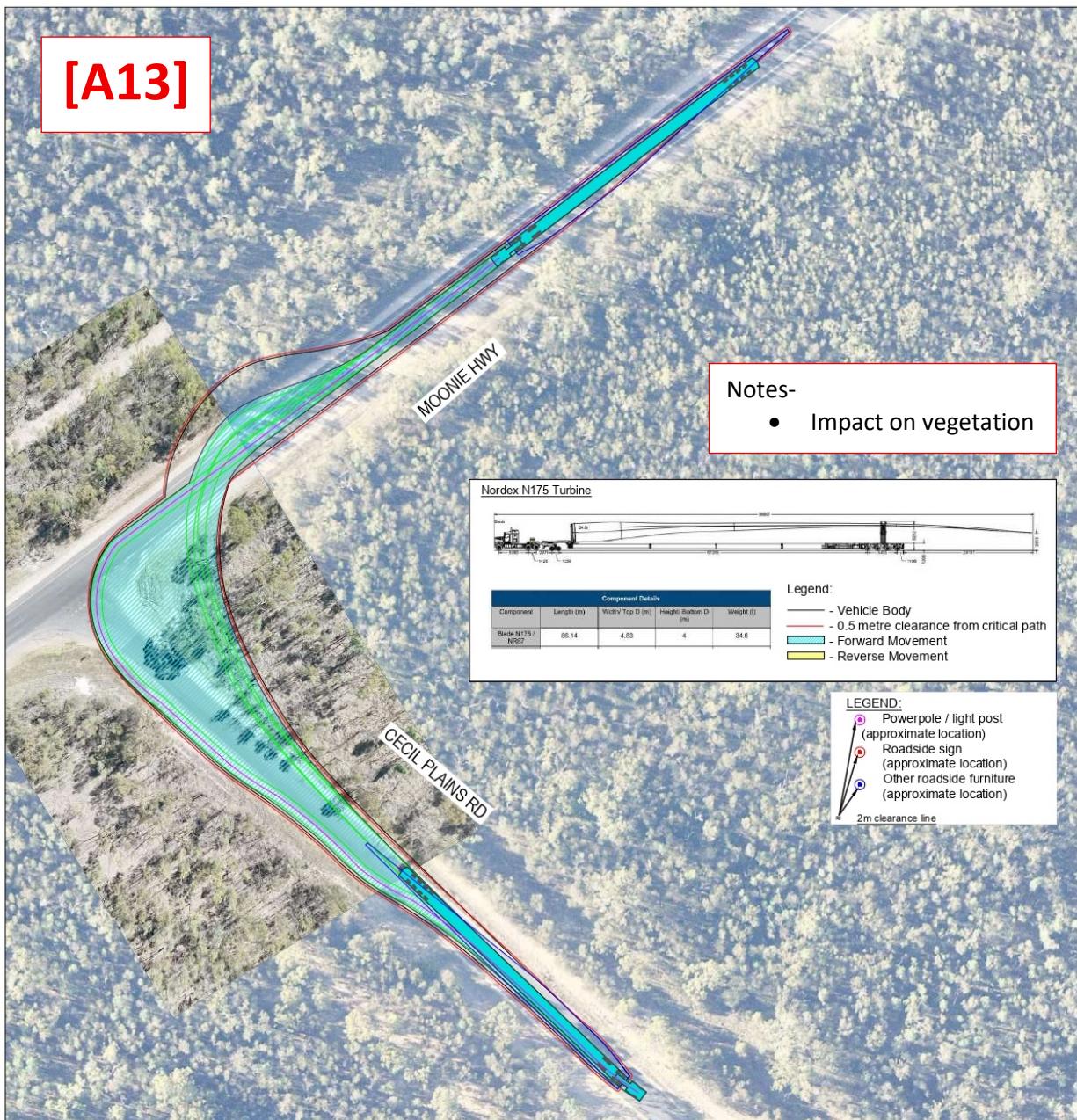
Along Moonie Hwy



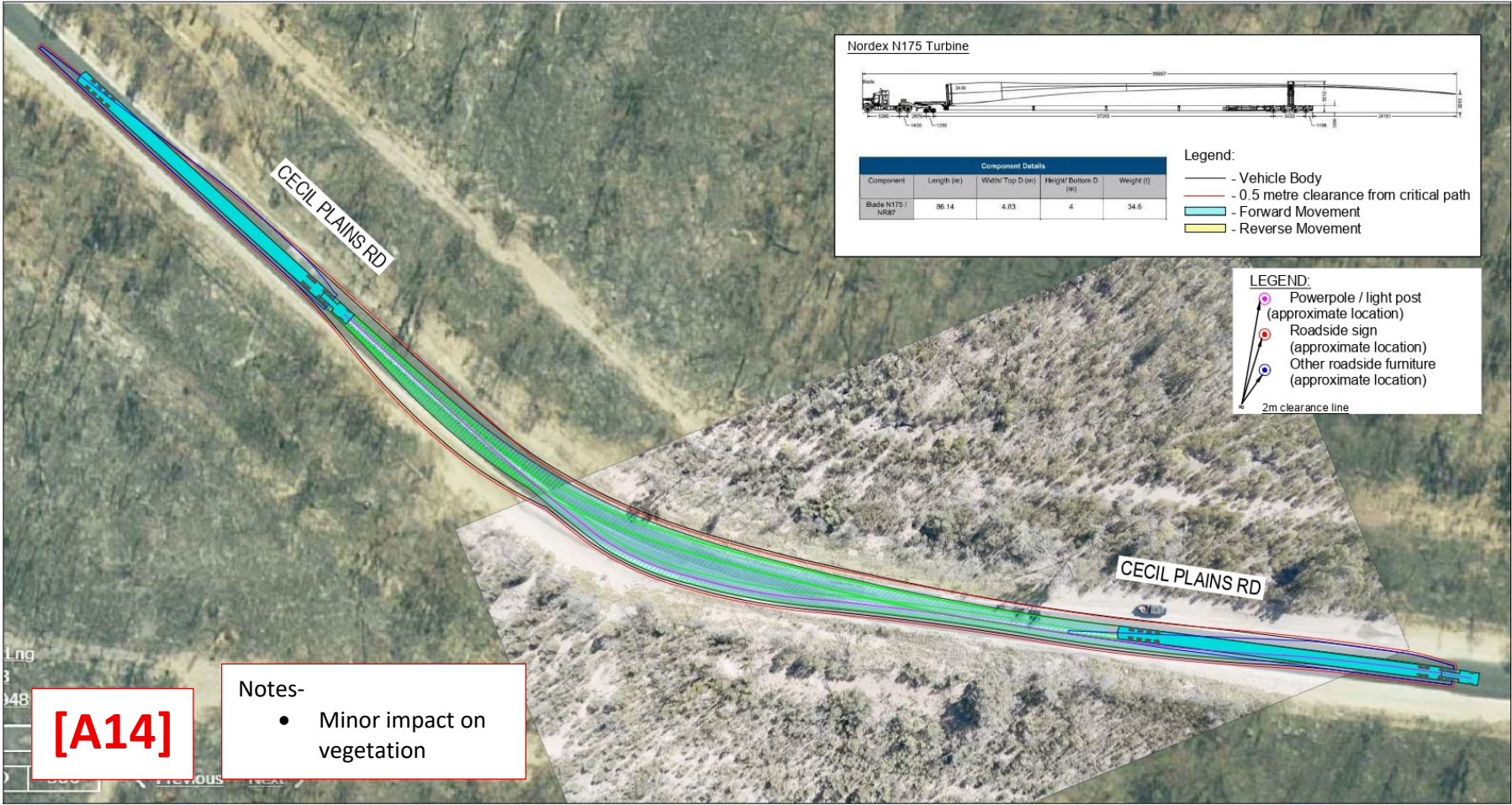
Along Moonie Hwy



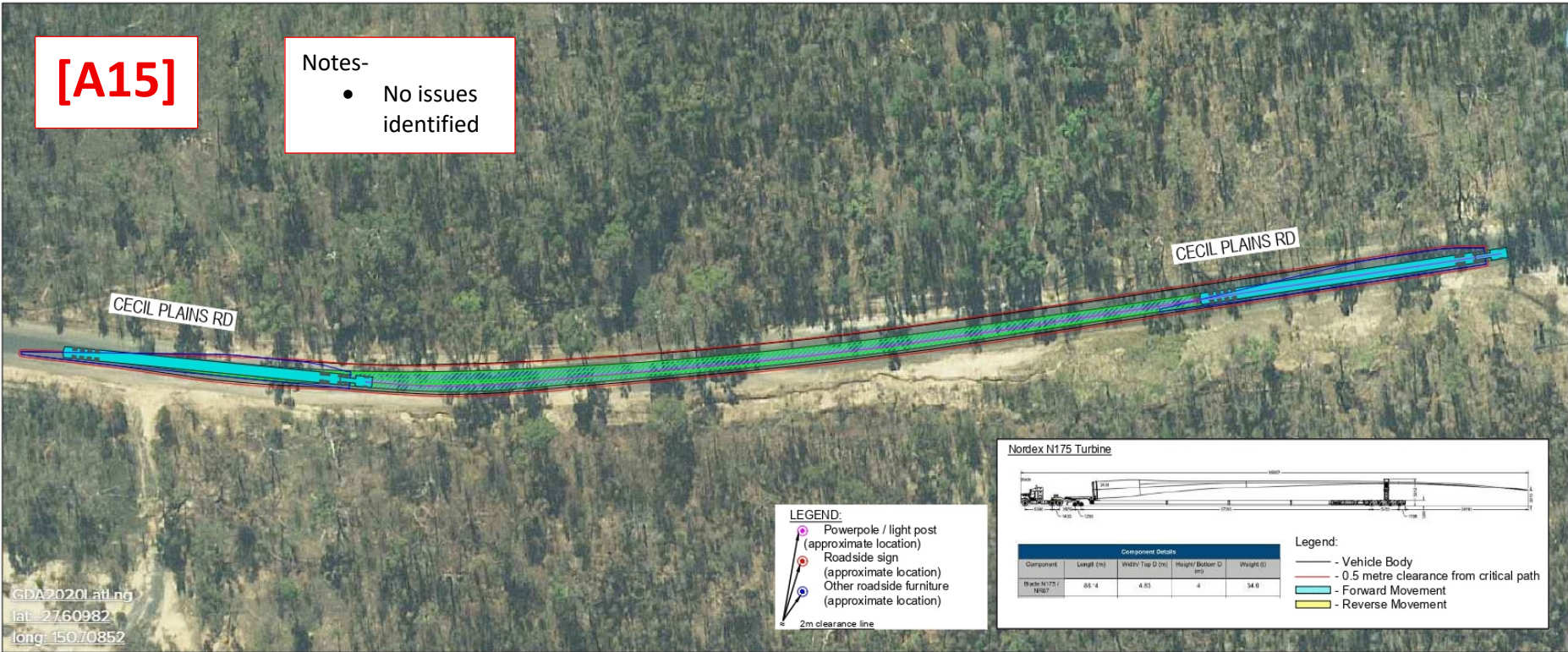
Intersection of Moonie Hwy and Cecil Plains Rd



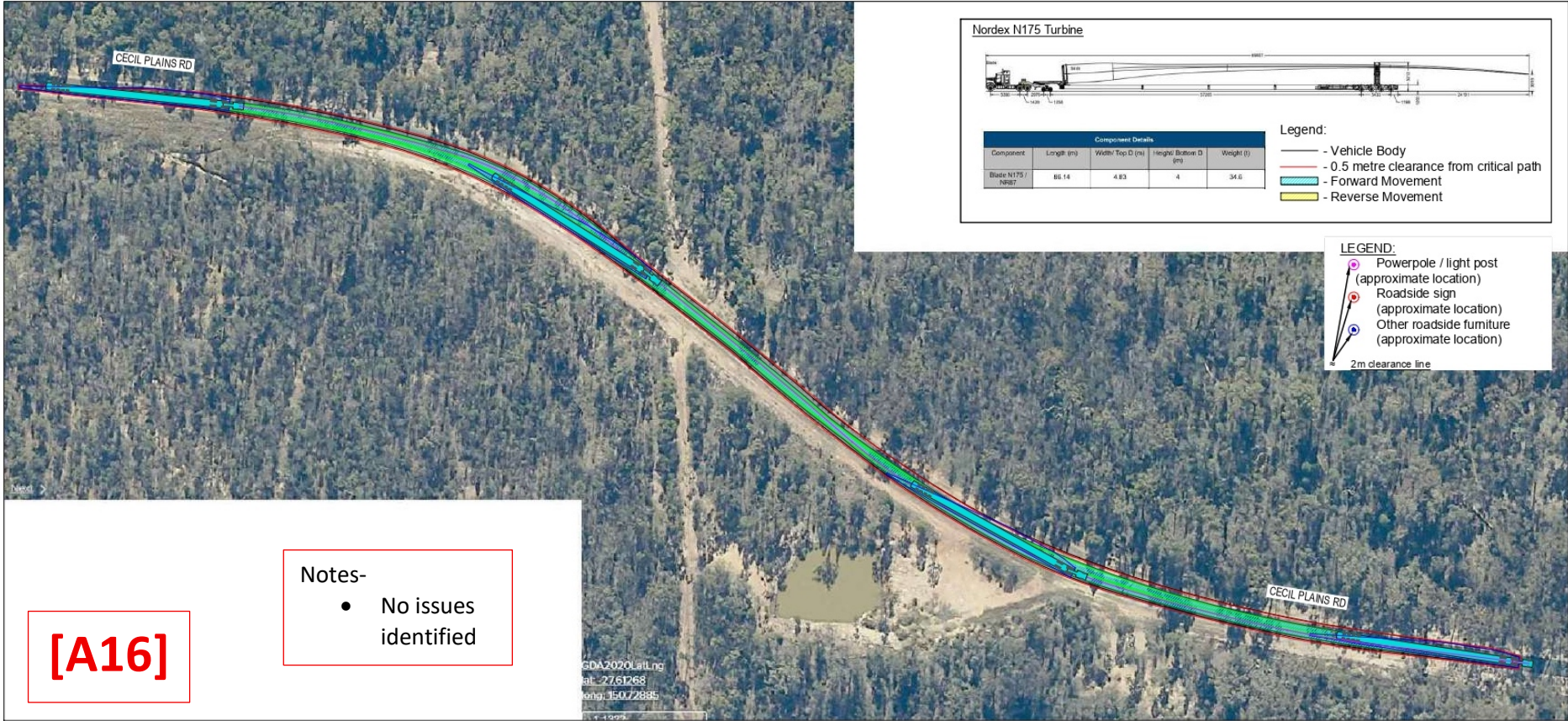
Along Cecil Plains Rd



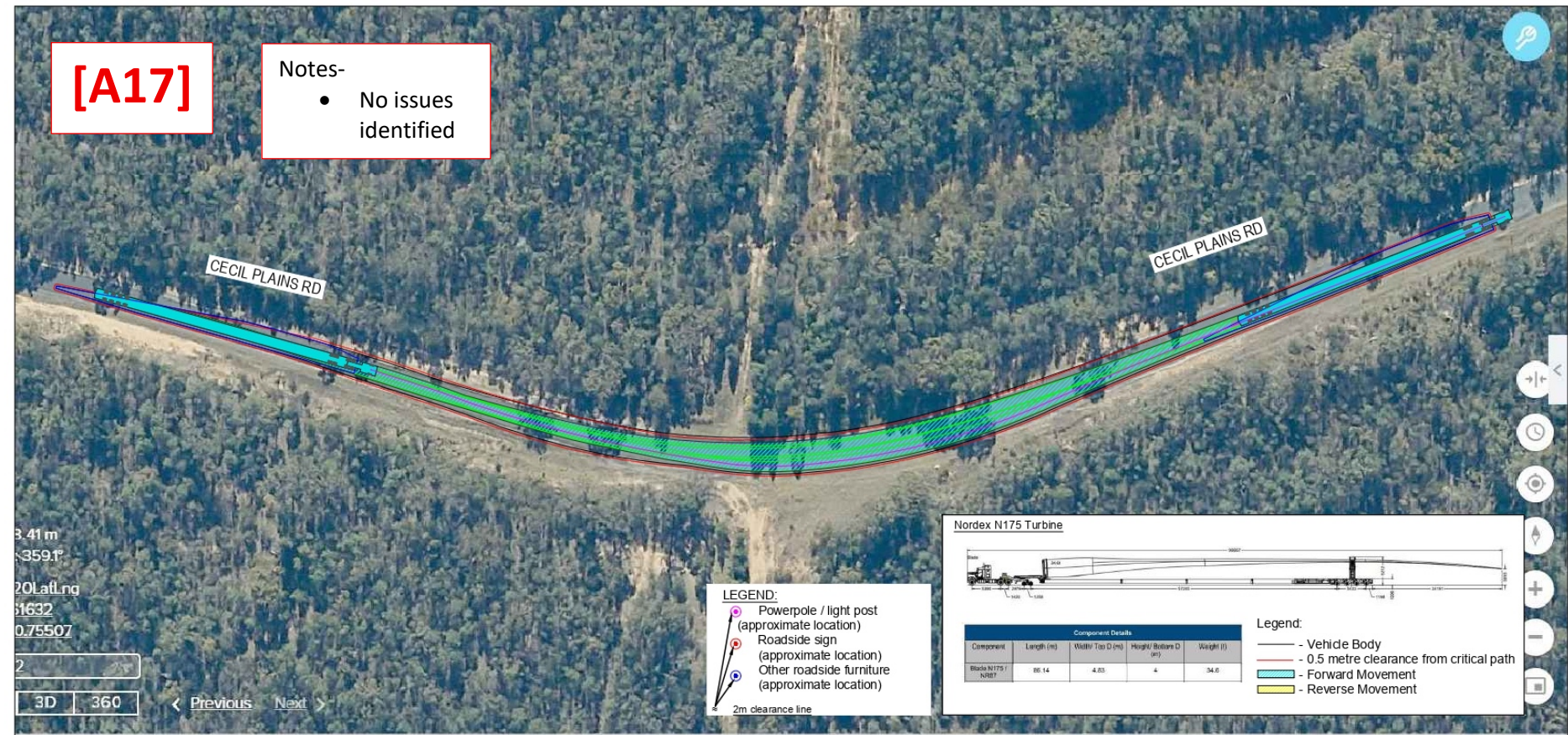
Along Cecil Plains Rd



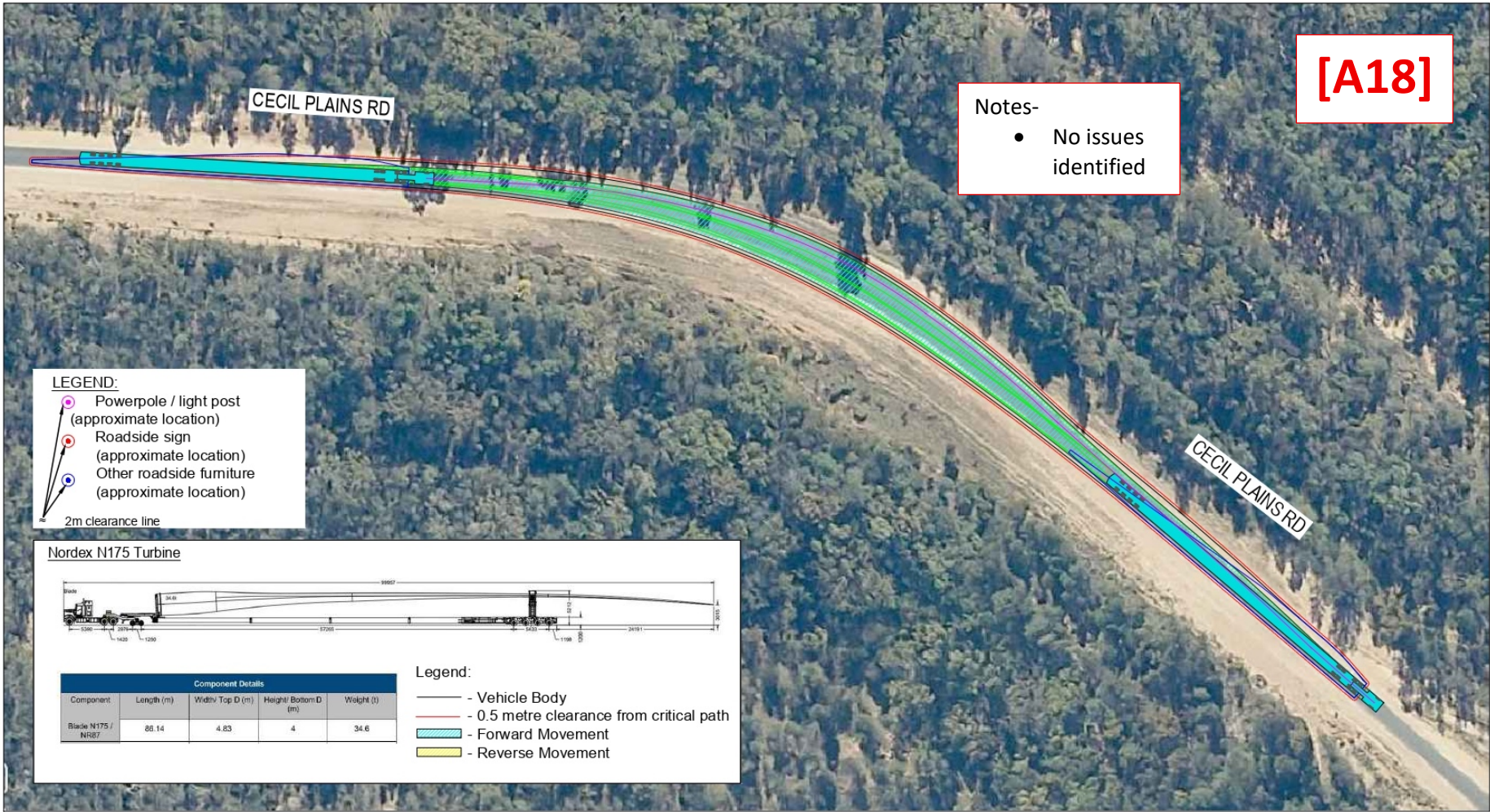
Along Cecil Plains Rd



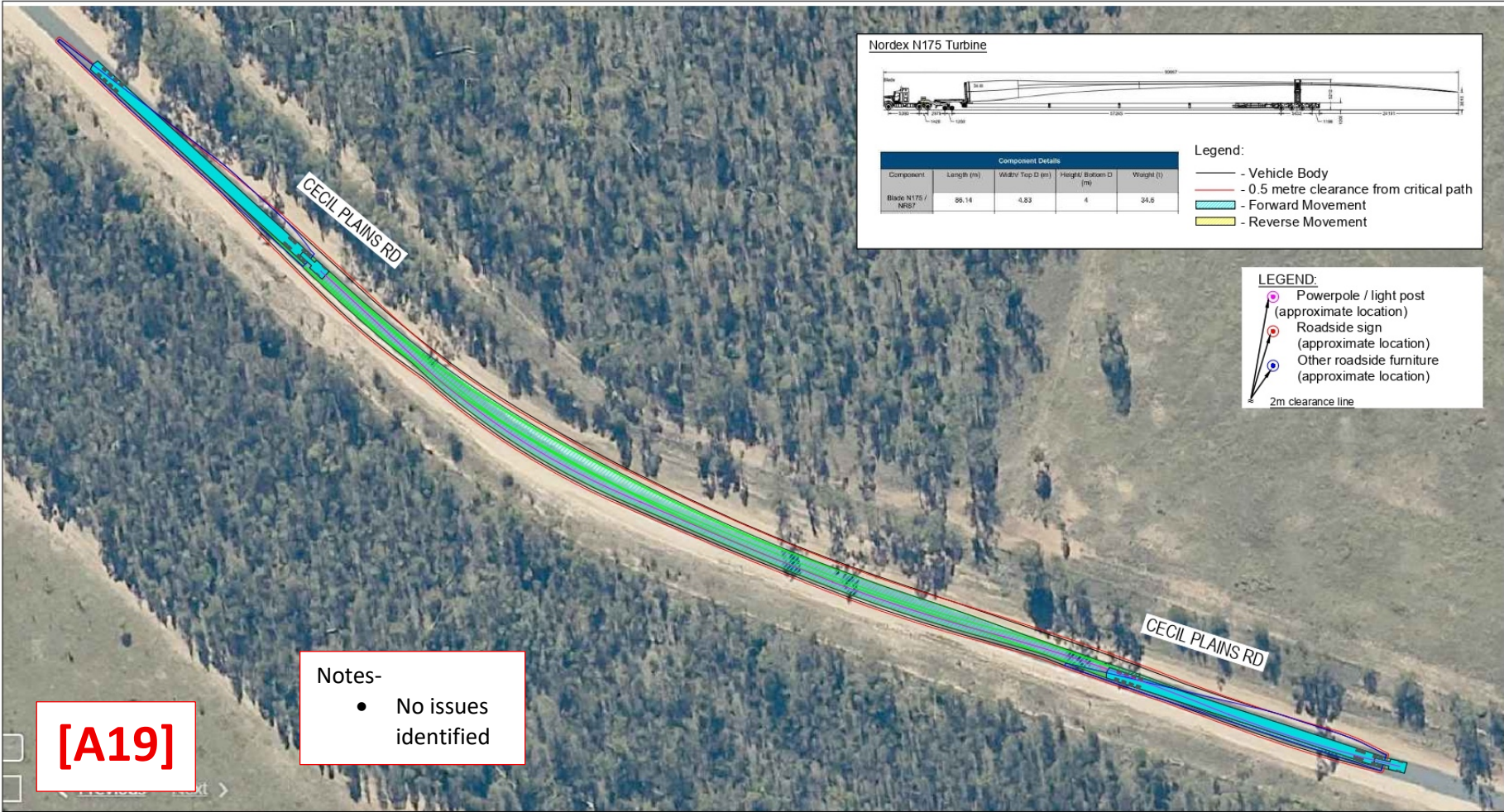
Along Cecil Plains Rd



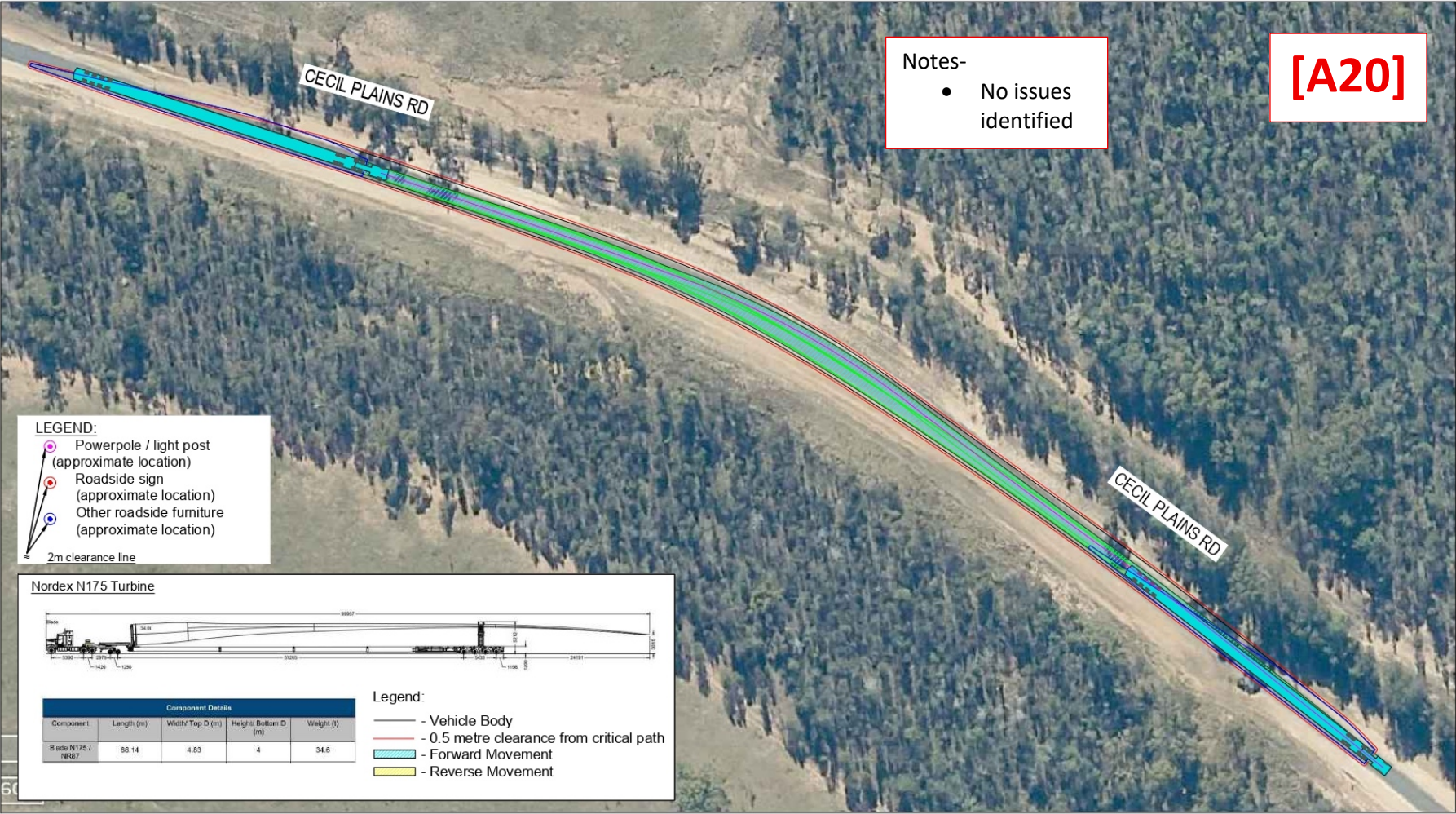
Along Cecil Plains Rd



Along Cecil Plains Rd



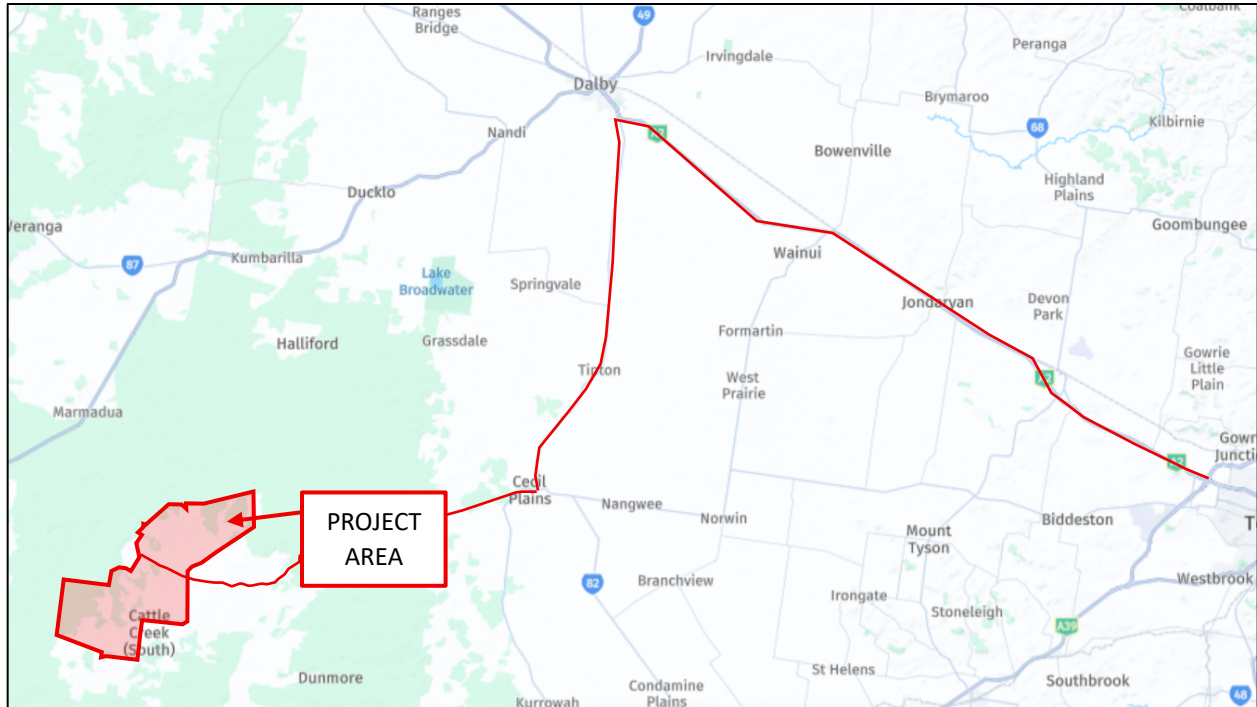
Along Cecil Plains Rd



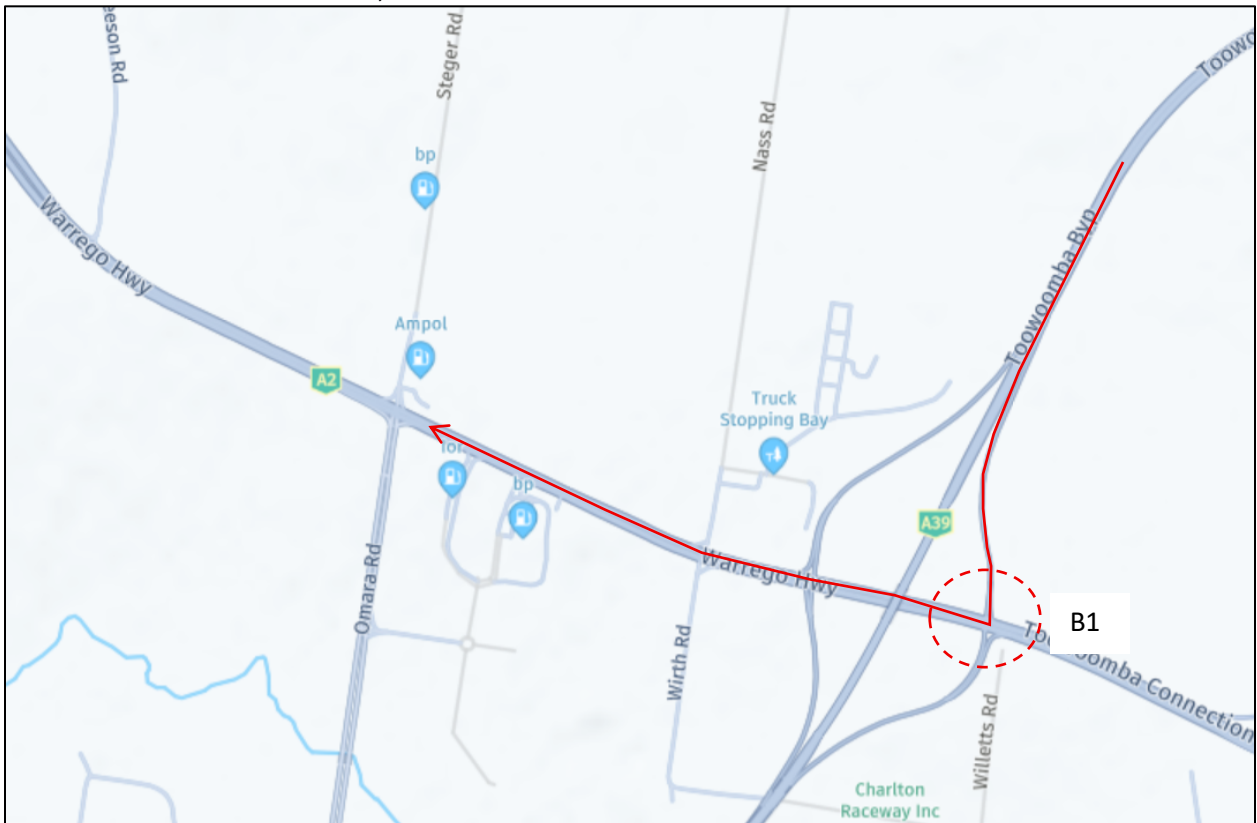
APPENDIX C – LATERAL SWEPT PATH ANALYSIS (OSOM HAULAGE OPTION B)

KEY MAP

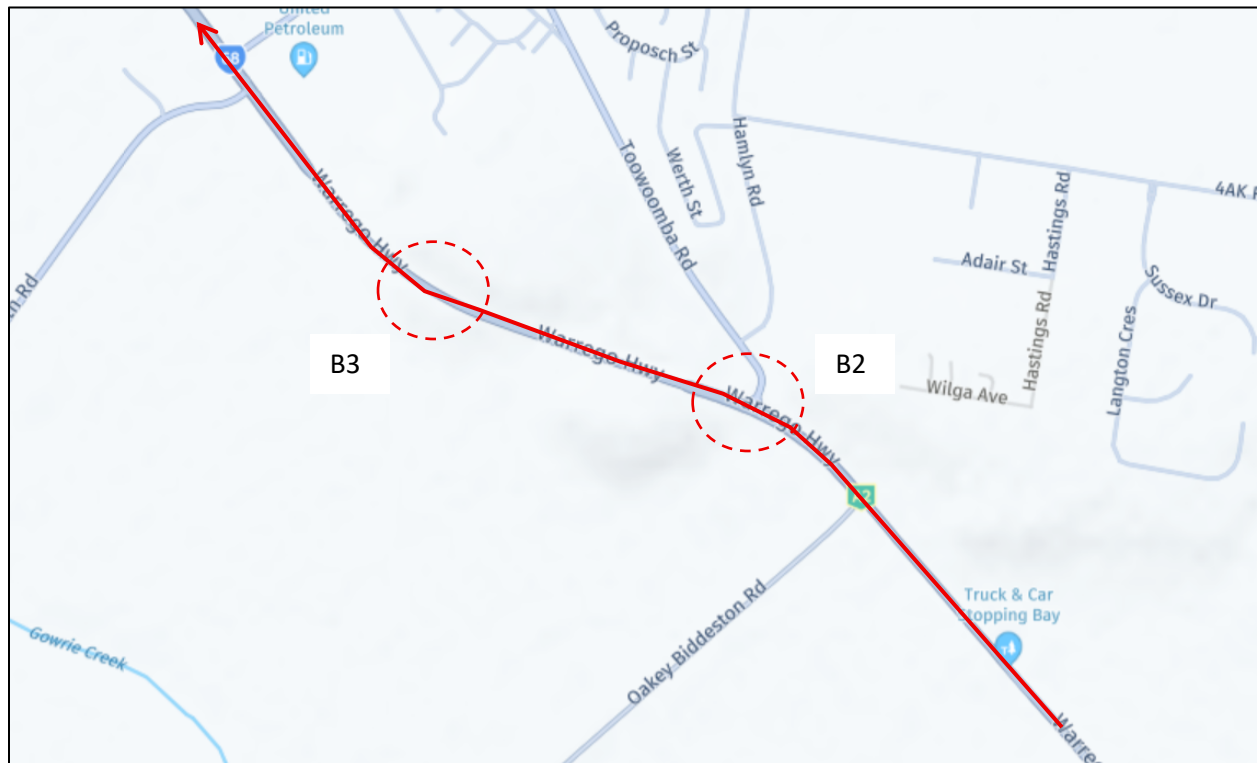
DALBY – CECIL PLAINS ROAD



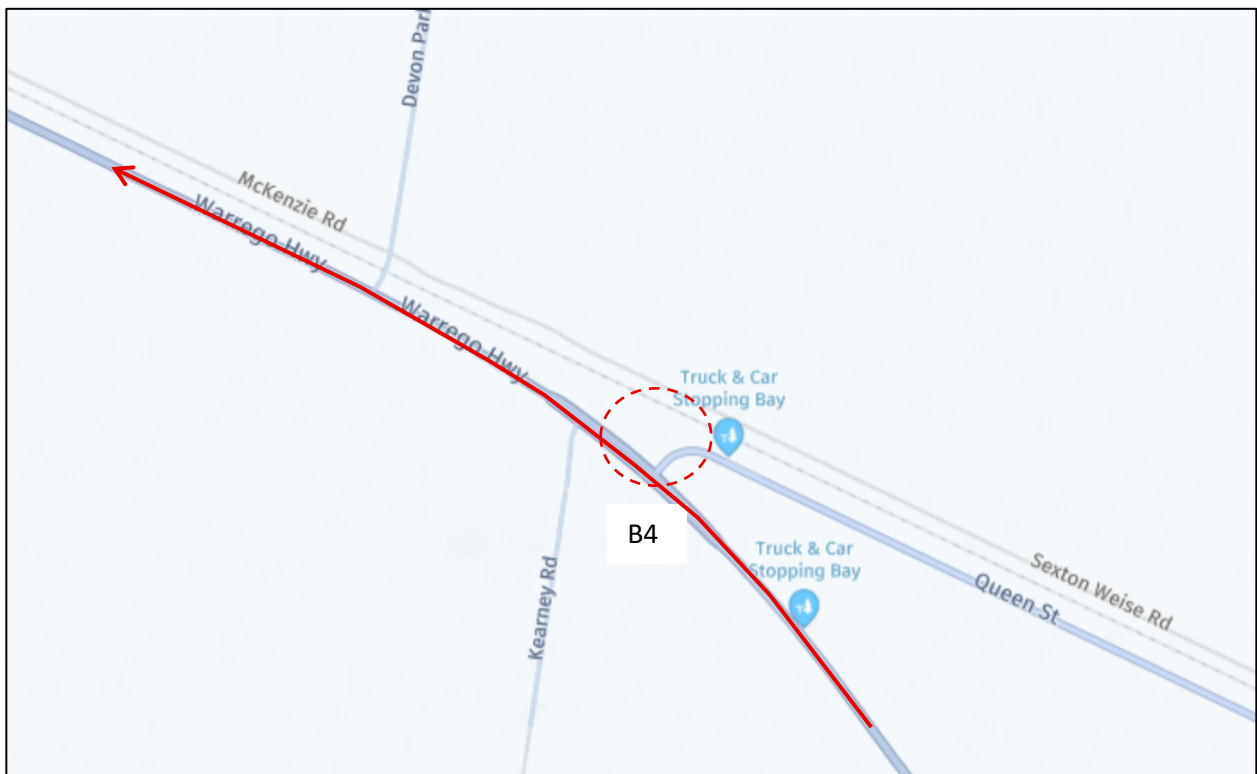
WARREGO HWY INTERCHANGE, CHARLTON



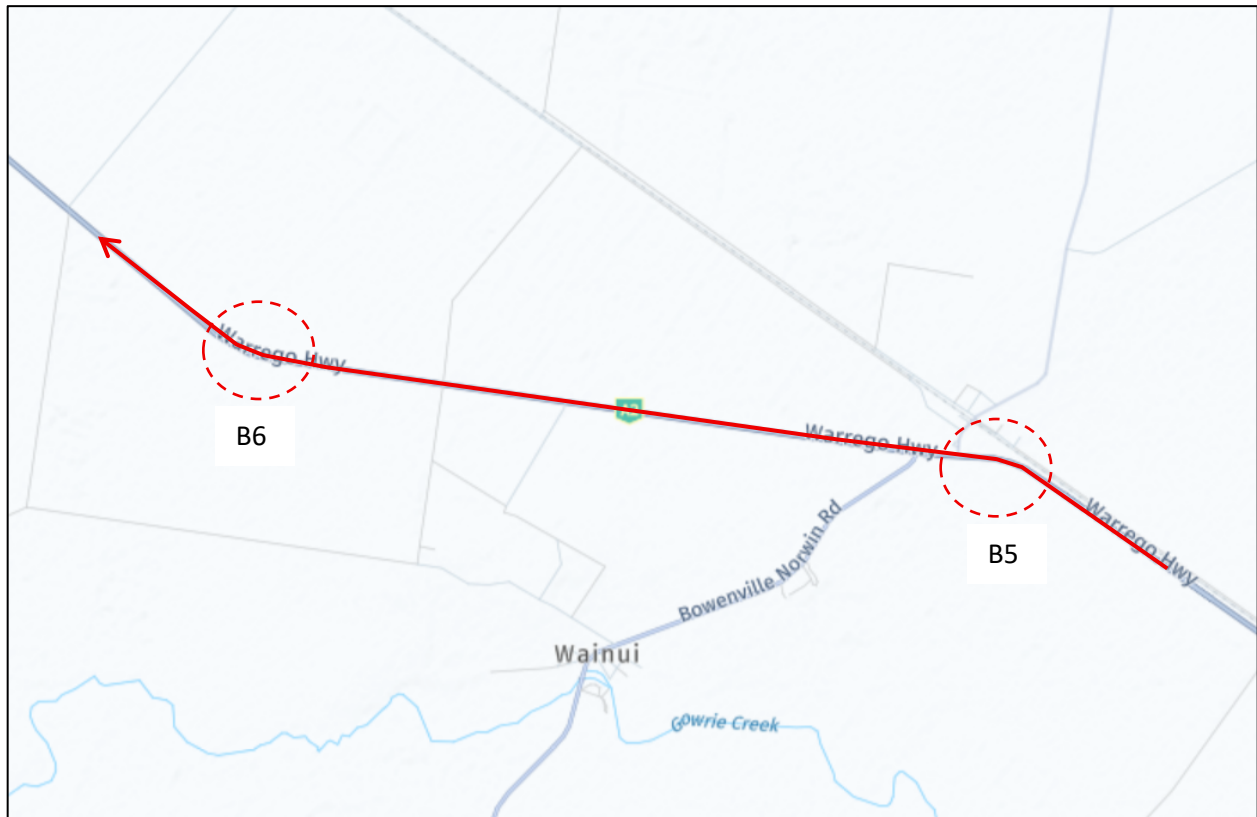
WARREGO HWY, OAKY



WARREGO HWY, OAKY WEST



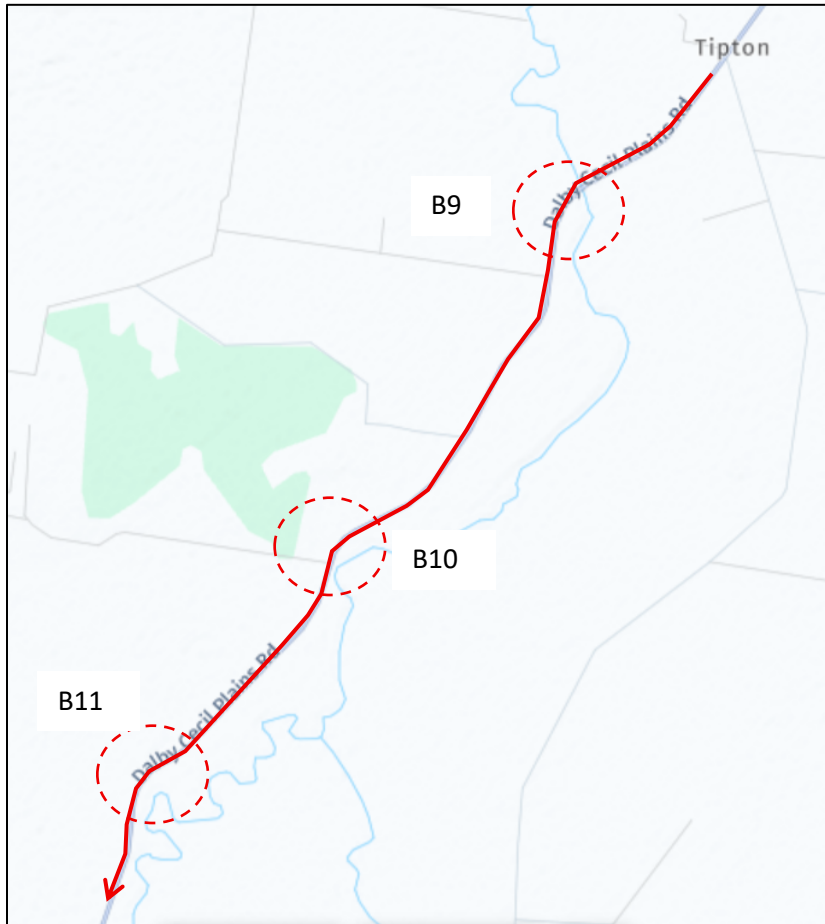
WARREGO HWY, BOWENVILLE



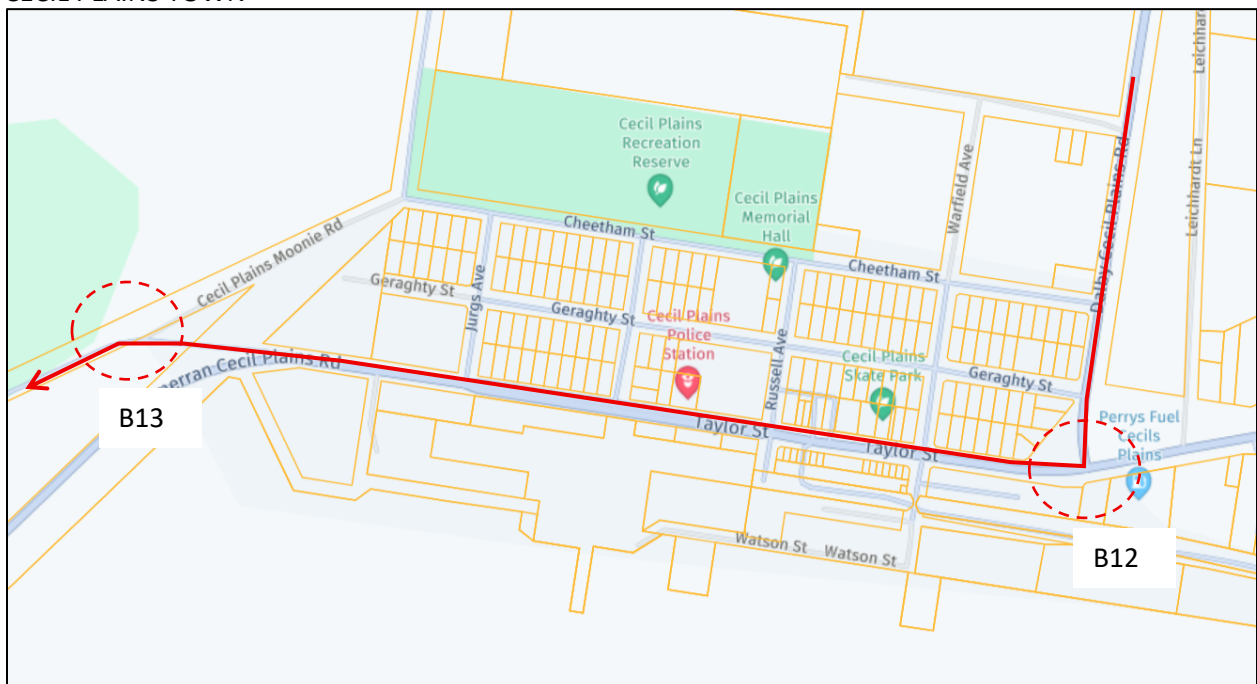
WARREGO HWY, DALBY EAST



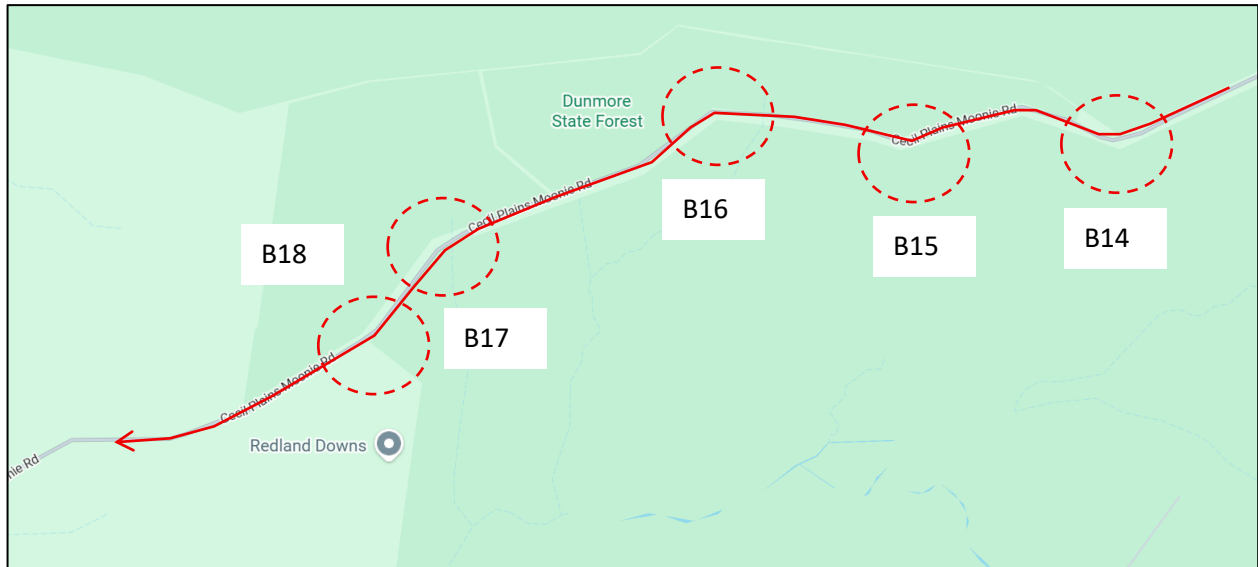
DALBY – CECIL PLAINS ROAD, TIPTON



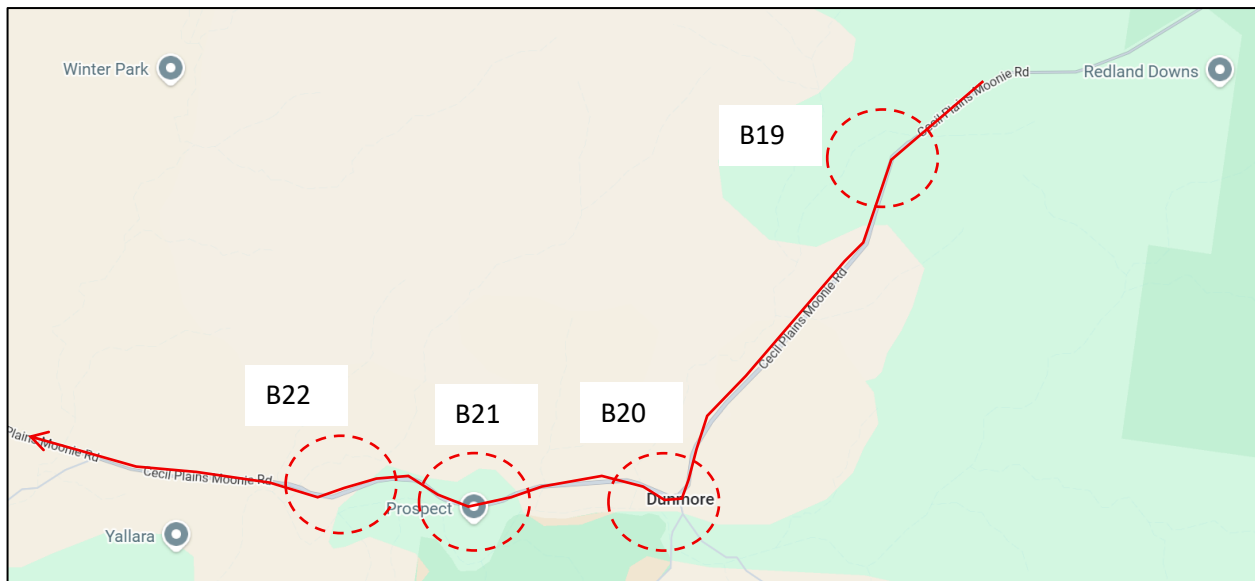
CECIL PLAINS TOWN



CECIL PLAINS – MOONIE ROAD, DUNMORE

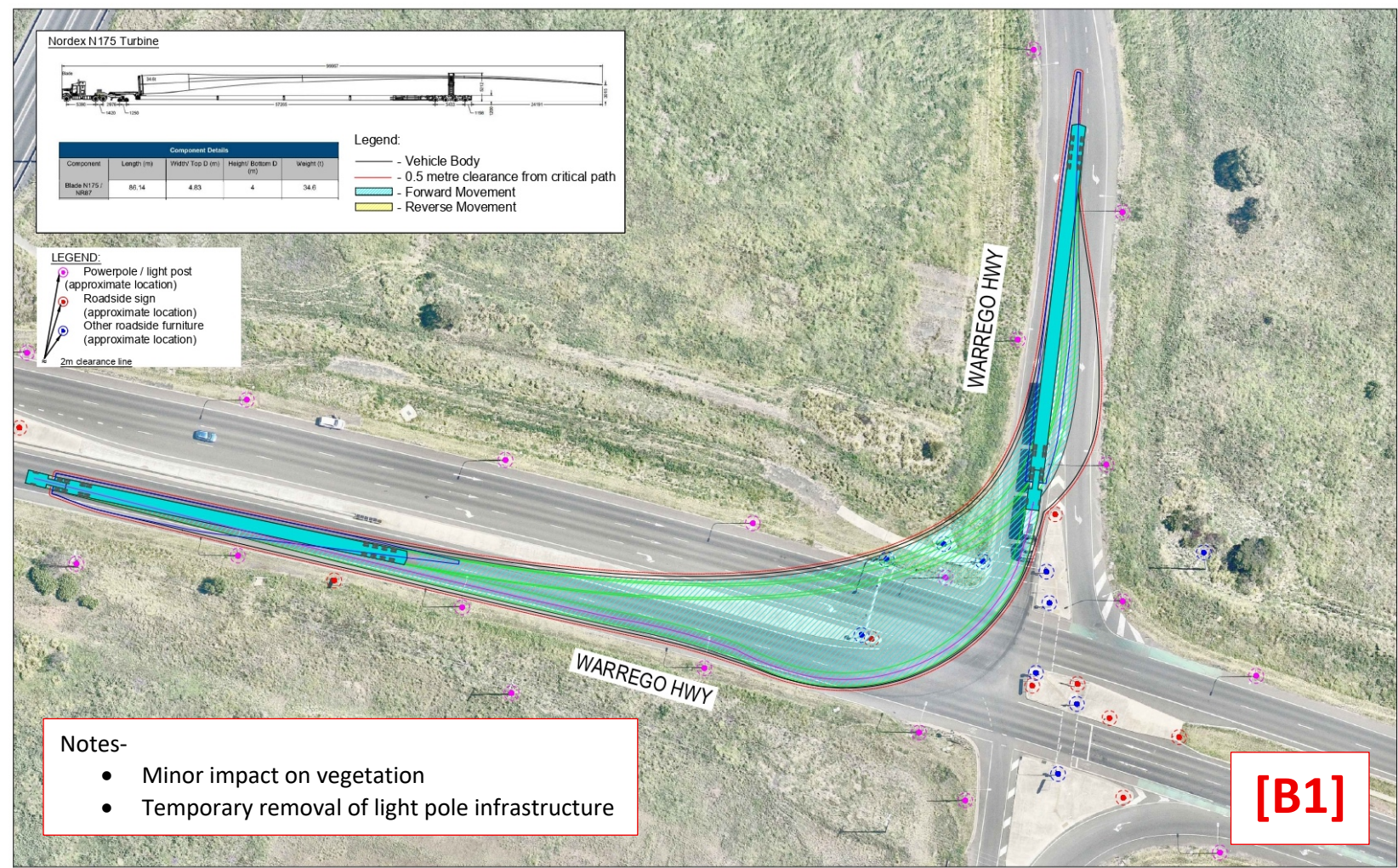


DUNMORE

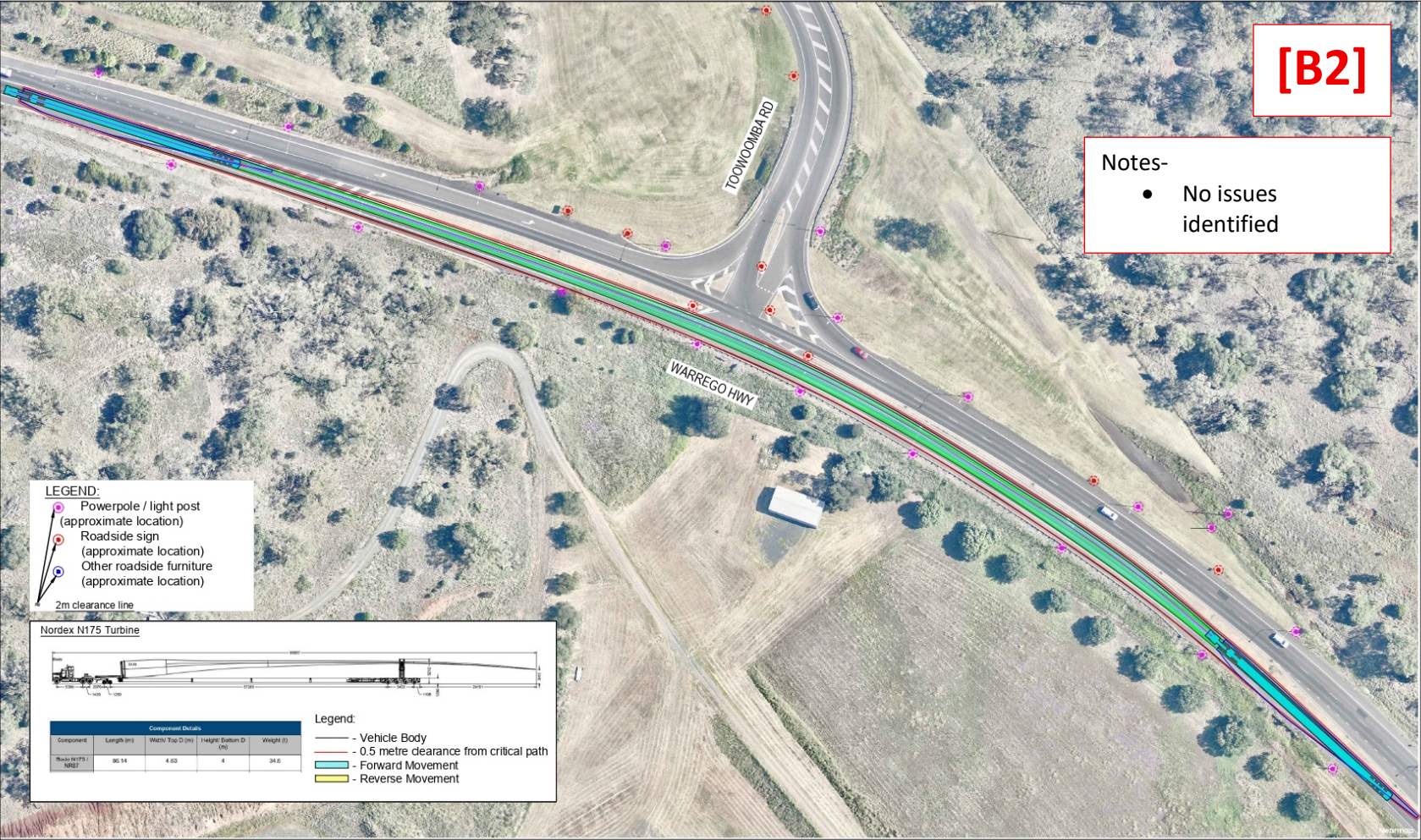


SWEPT PATH ANALYSIS [OPTION B]

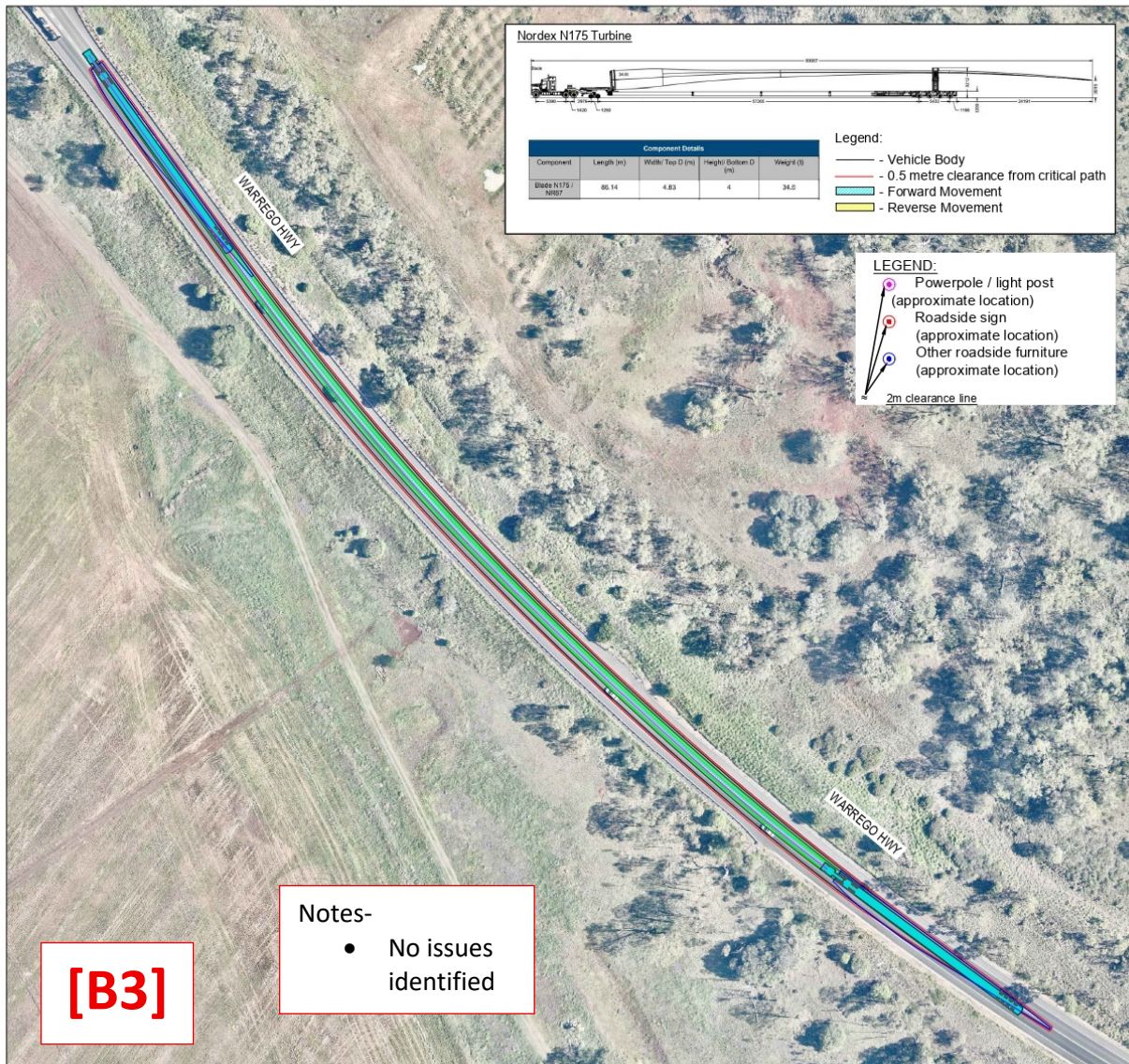
Interchange of Toowoomba Bypass Warrego Highway at Charlton



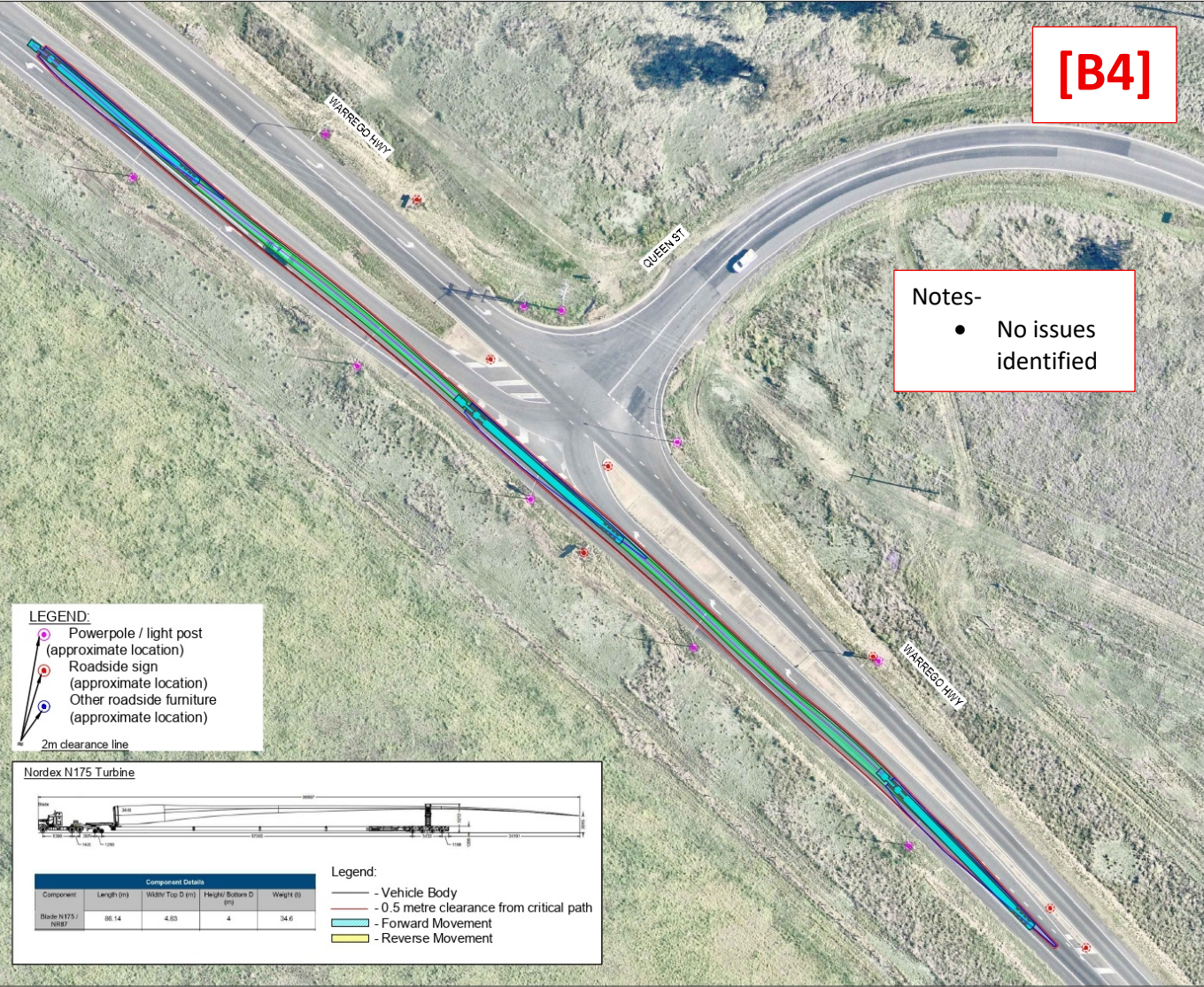
Intersection of Warrego Highway and Toowoomba Road, Oakey



Along Warrego Highway



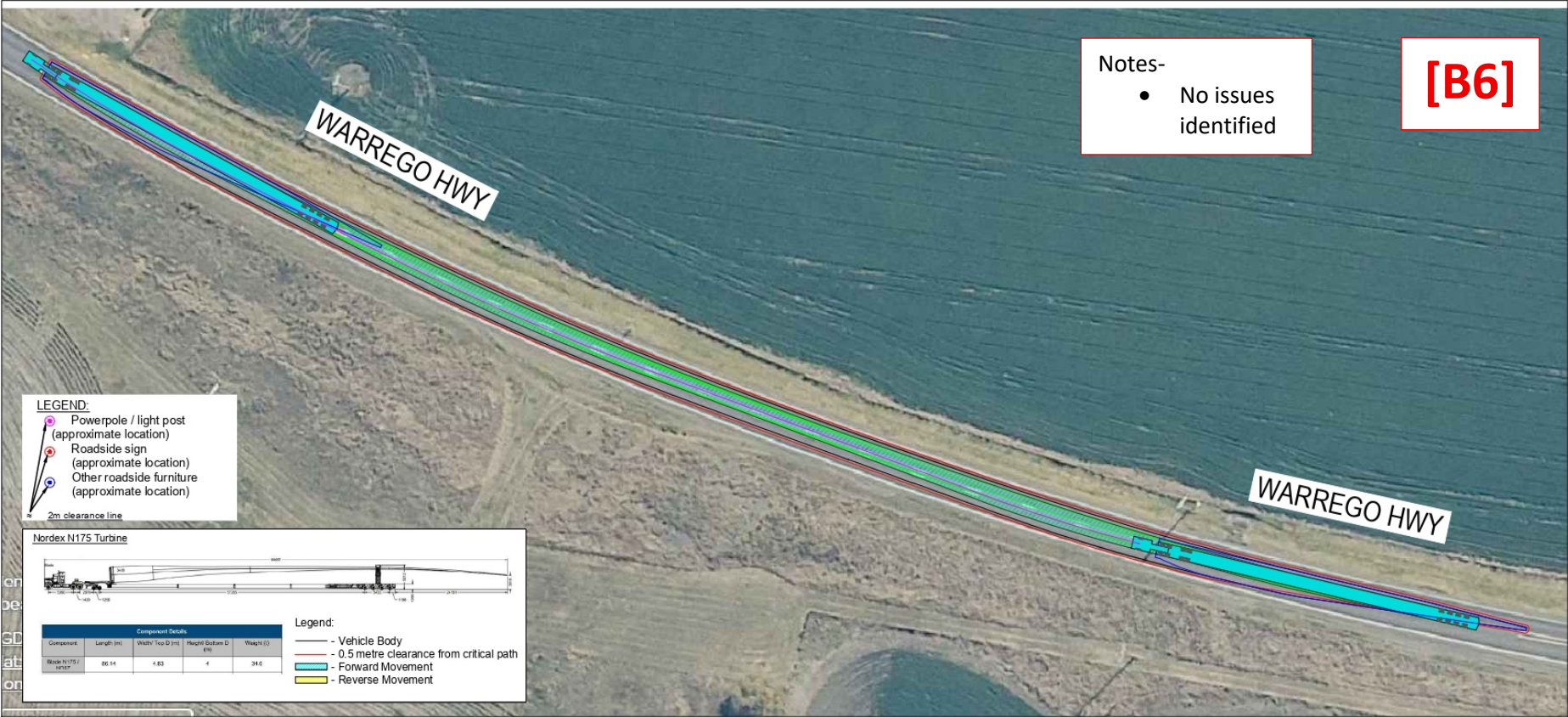
Intersection of Warrego Highway and Queen St



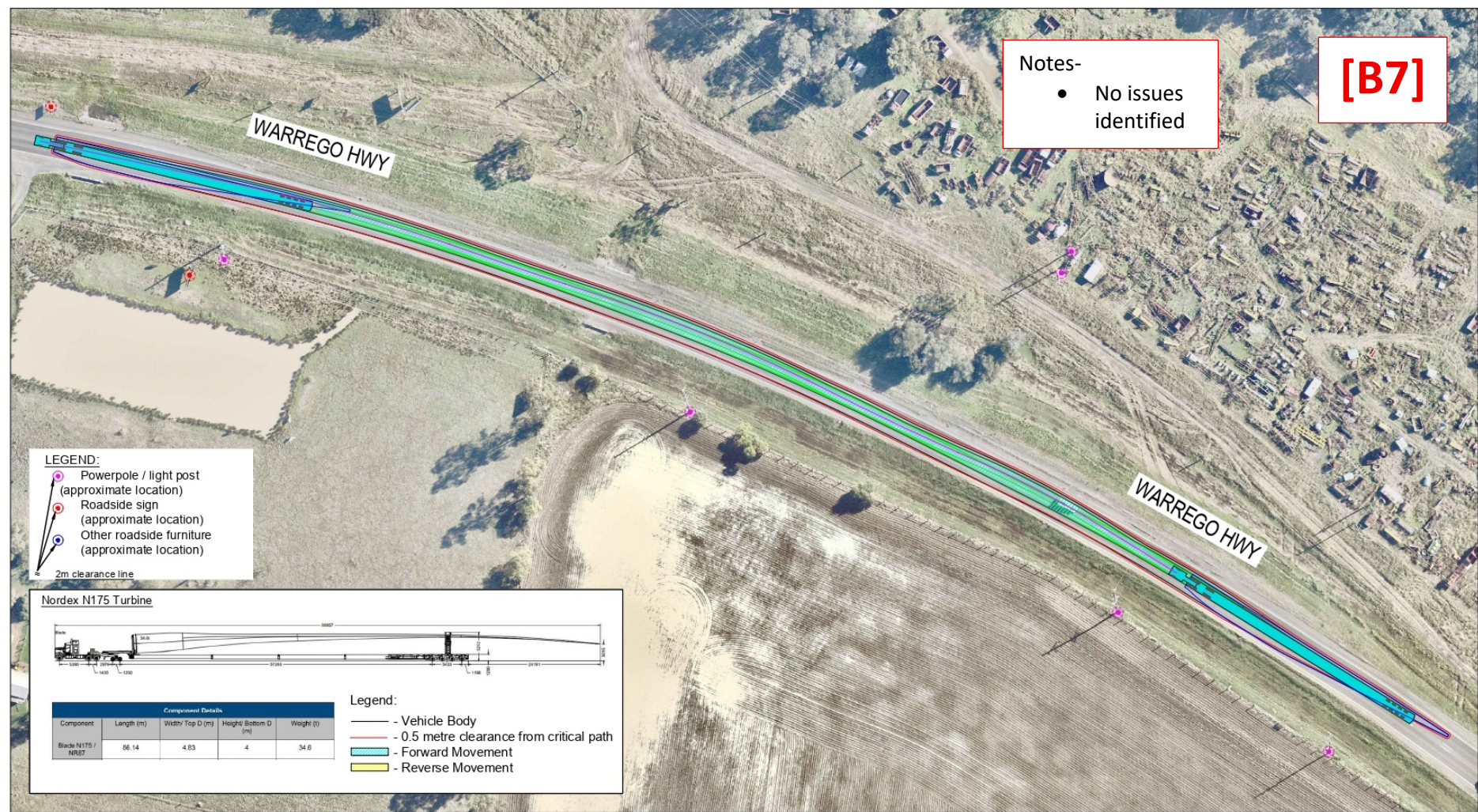
Along Warrego Highway



Along Warrego Highway



Along Warrego Highway



[B8]

- No issues identified

Component Details				
Component	Length (m)	Width/ Top D (m)	Height/ Bottom D (m)	Weight (t)
Blade N175 / NR87	86.14	4.83	4	34.6

- - Vehicle Body
- - 0.5 metre clearance from critical path
- ▨ - Forward Movement
- ▨ - Reverse Movement

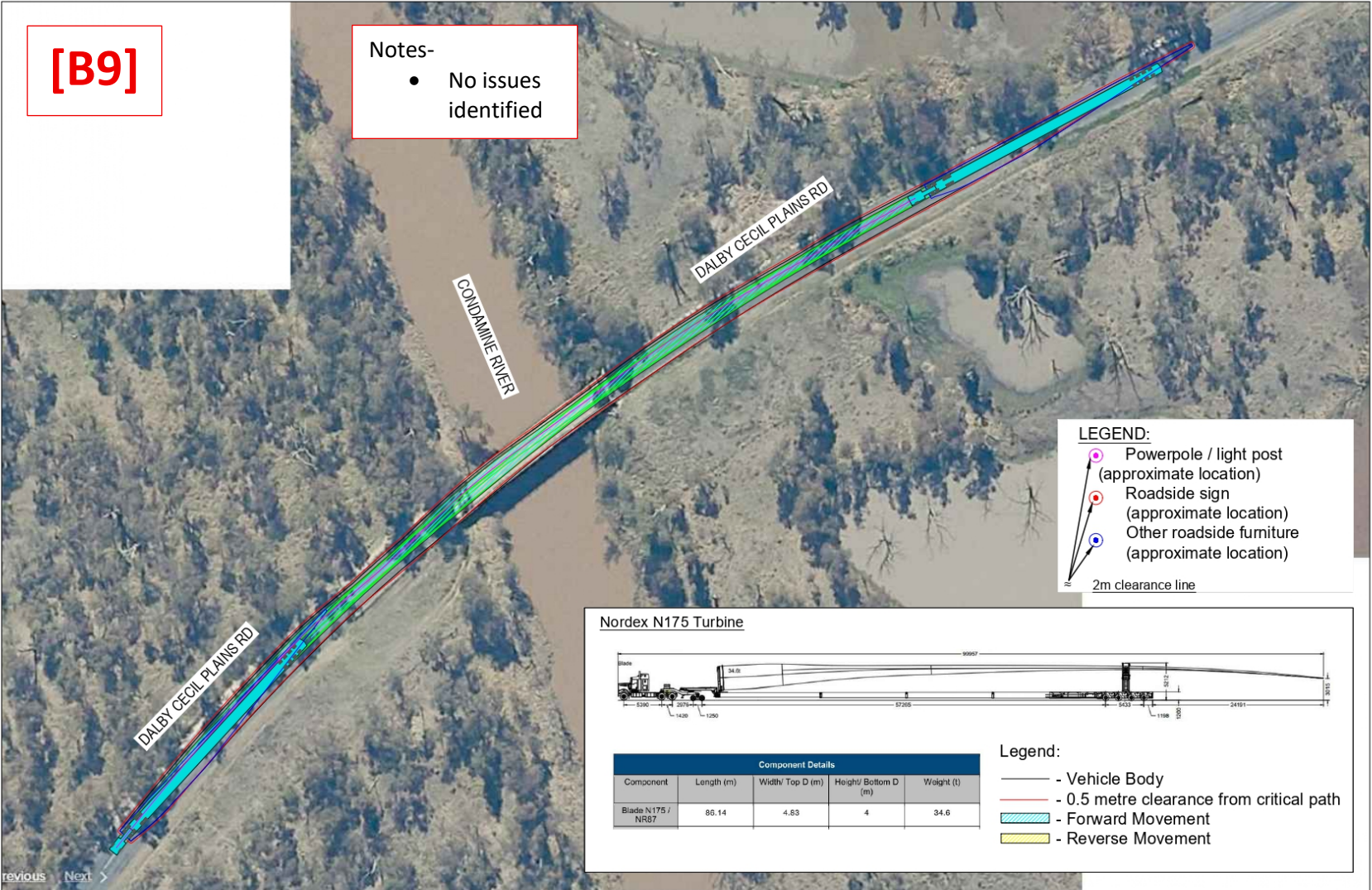
Powerpole / light post
(approximate location)

Roadside sign
(approximate location)

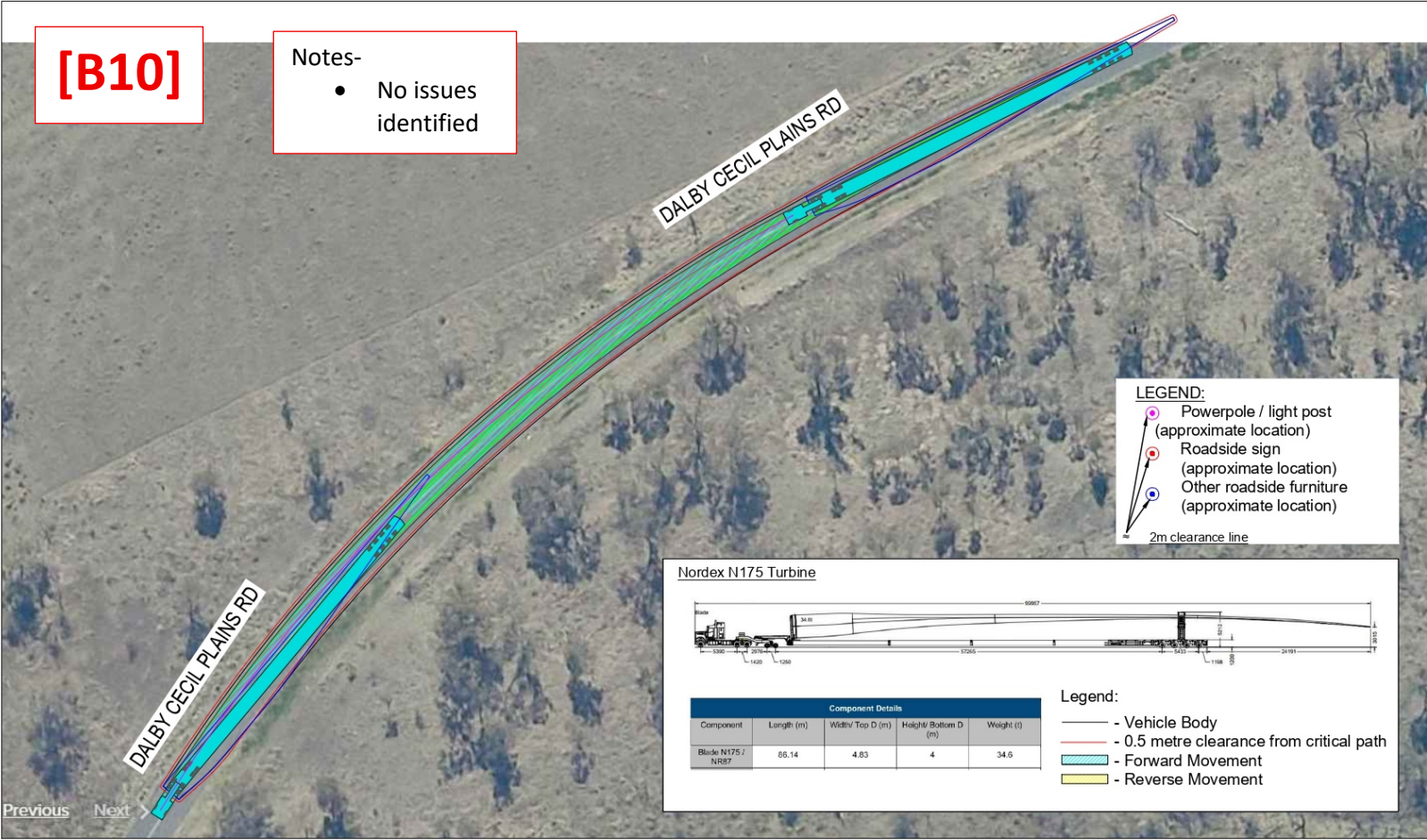
Other roadside furniture
(approximate location)

2m clearance line

Along Dalby Cecil Plains Road



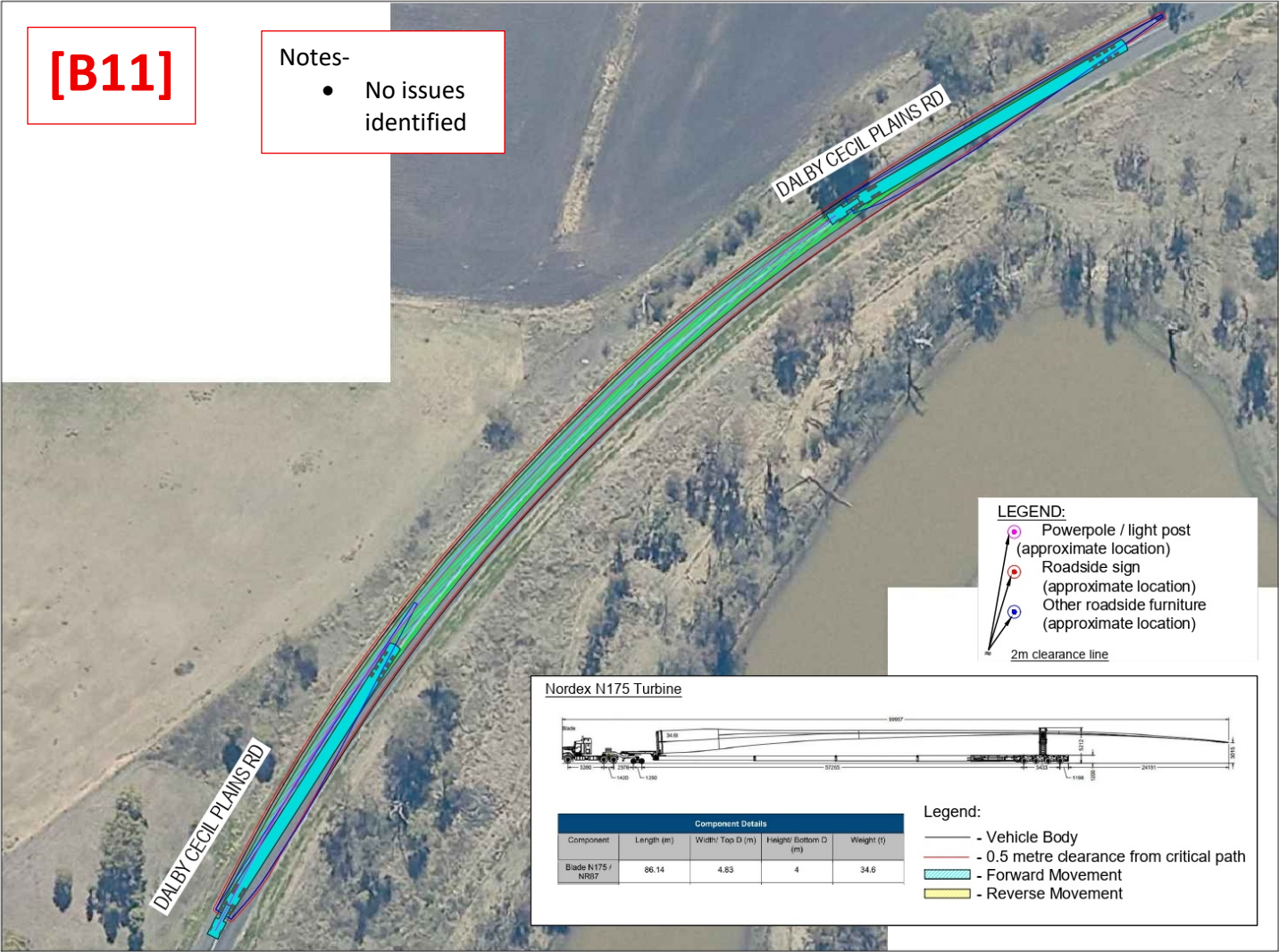
Along Dalby Cecil Plains Road



Along Dalby Cecil Plains Road

[B11]

- Notes-
- No issues identified



Nordex N175 Turbine

Component	Length (m)	Width/ Top D (m)	Height/ Bottom D (m)	Weight (t)
Blade N175 / N187	86.14	4.83	4	34.6

Legend:

- Vehicle Body
- 0.5 metre clearance from critical path
- Forward Movement
- Reverse Movement

LEGEND:

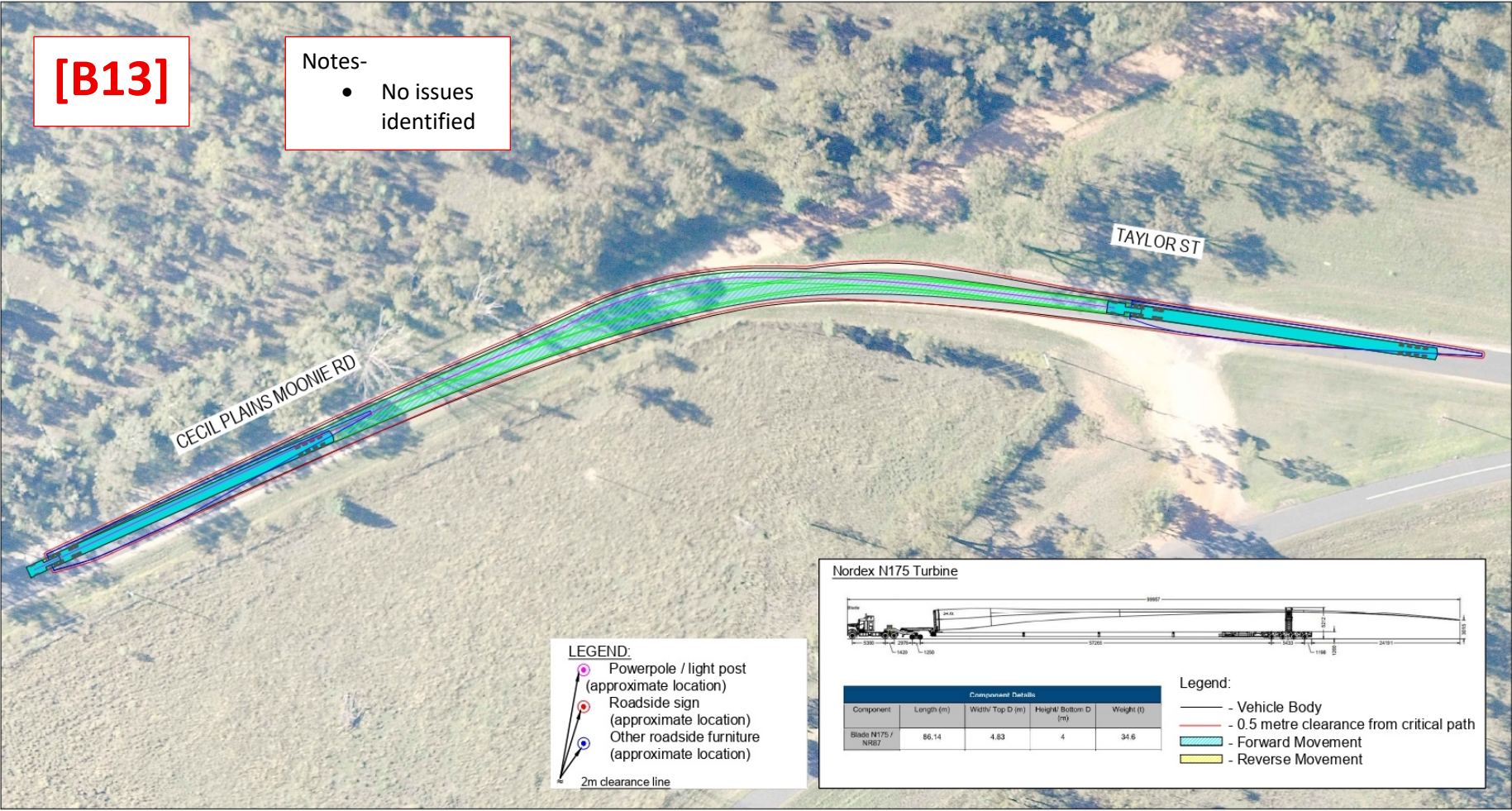
- Powerpole / light post (approximate location)
- Roadside sign (approximate location)
- Other roadside furniture (approximate location)
- 2m clearance line

Notes-

- Minor impact on vegetation
- Temporary removal of roadside infrastructure

[B12]

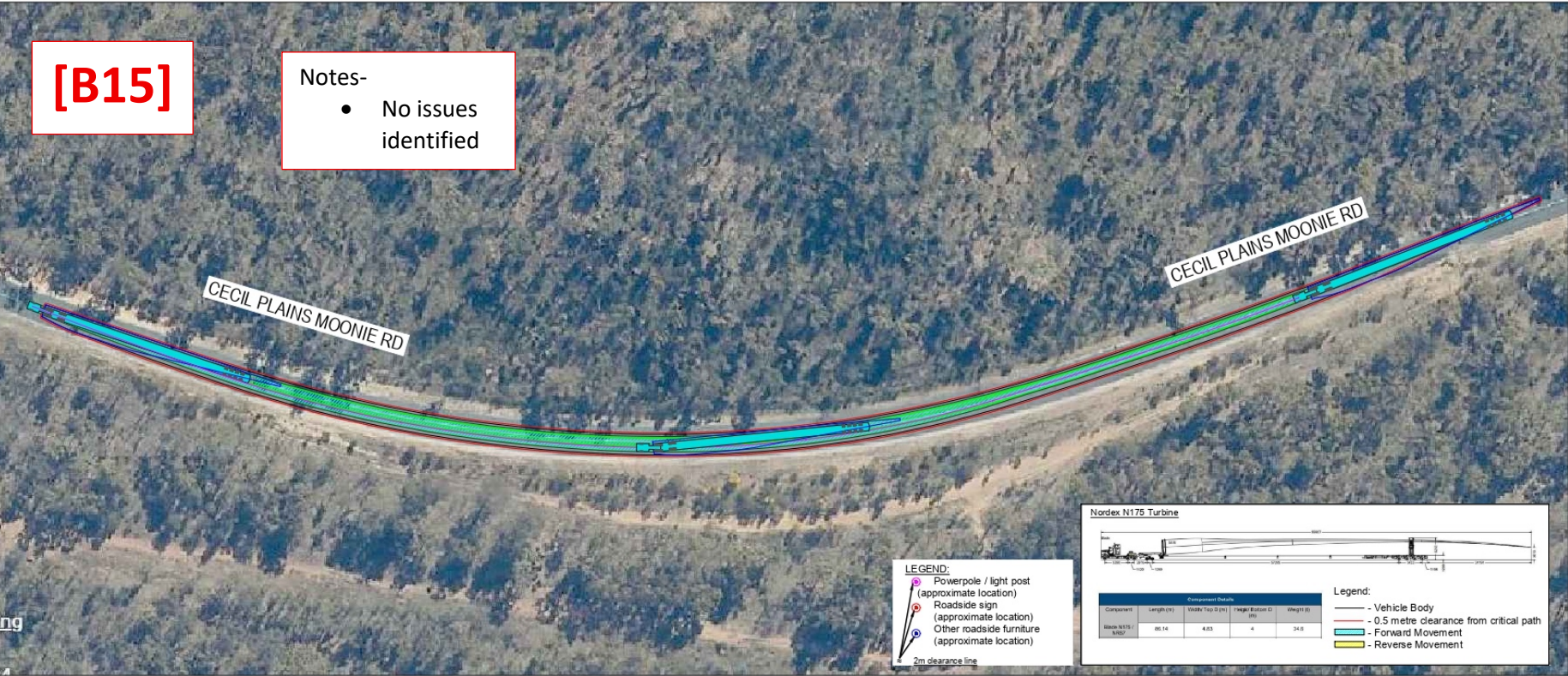
Taylor St onto Cecil Plains Moonie Road



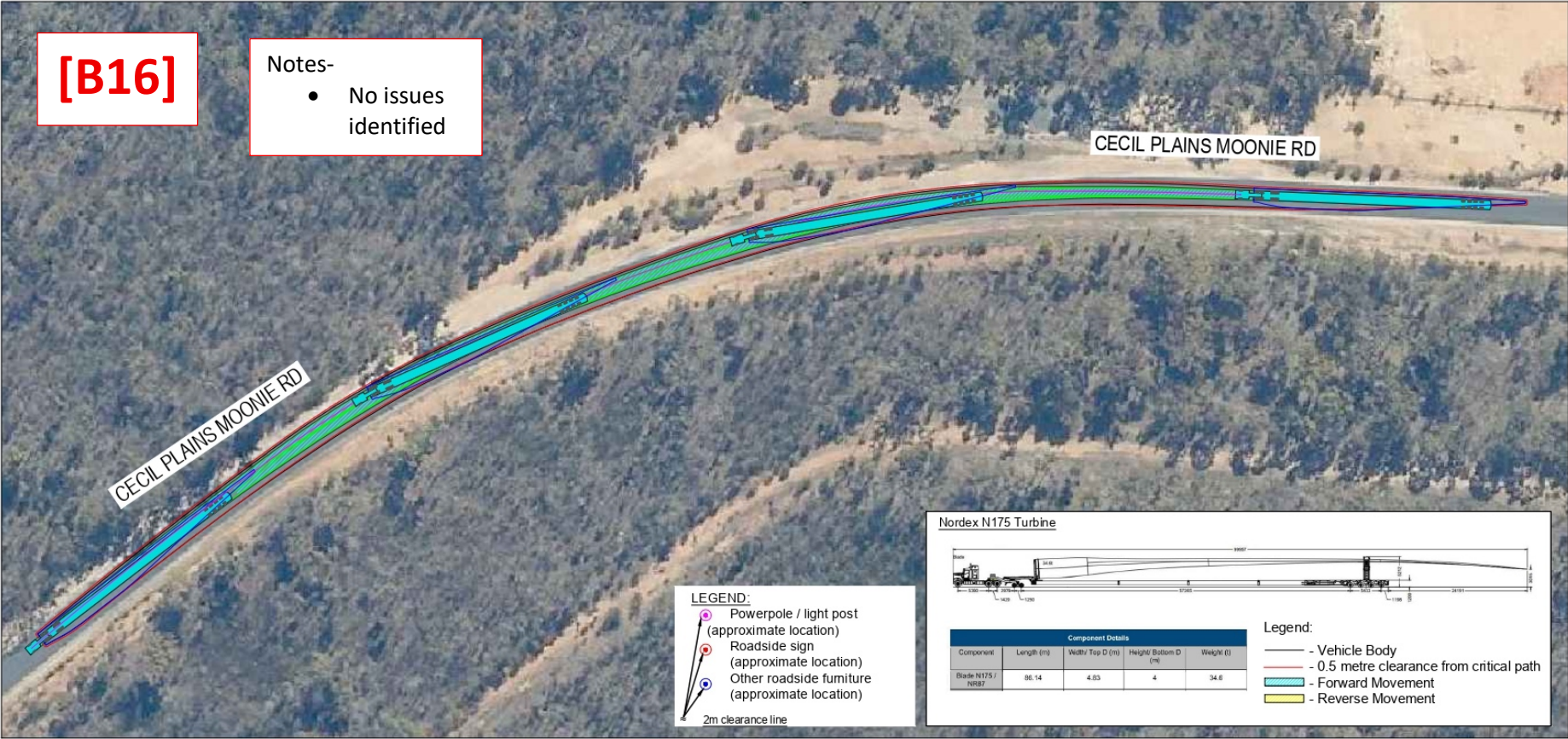
Bend on Cecil Plains Moonie Road



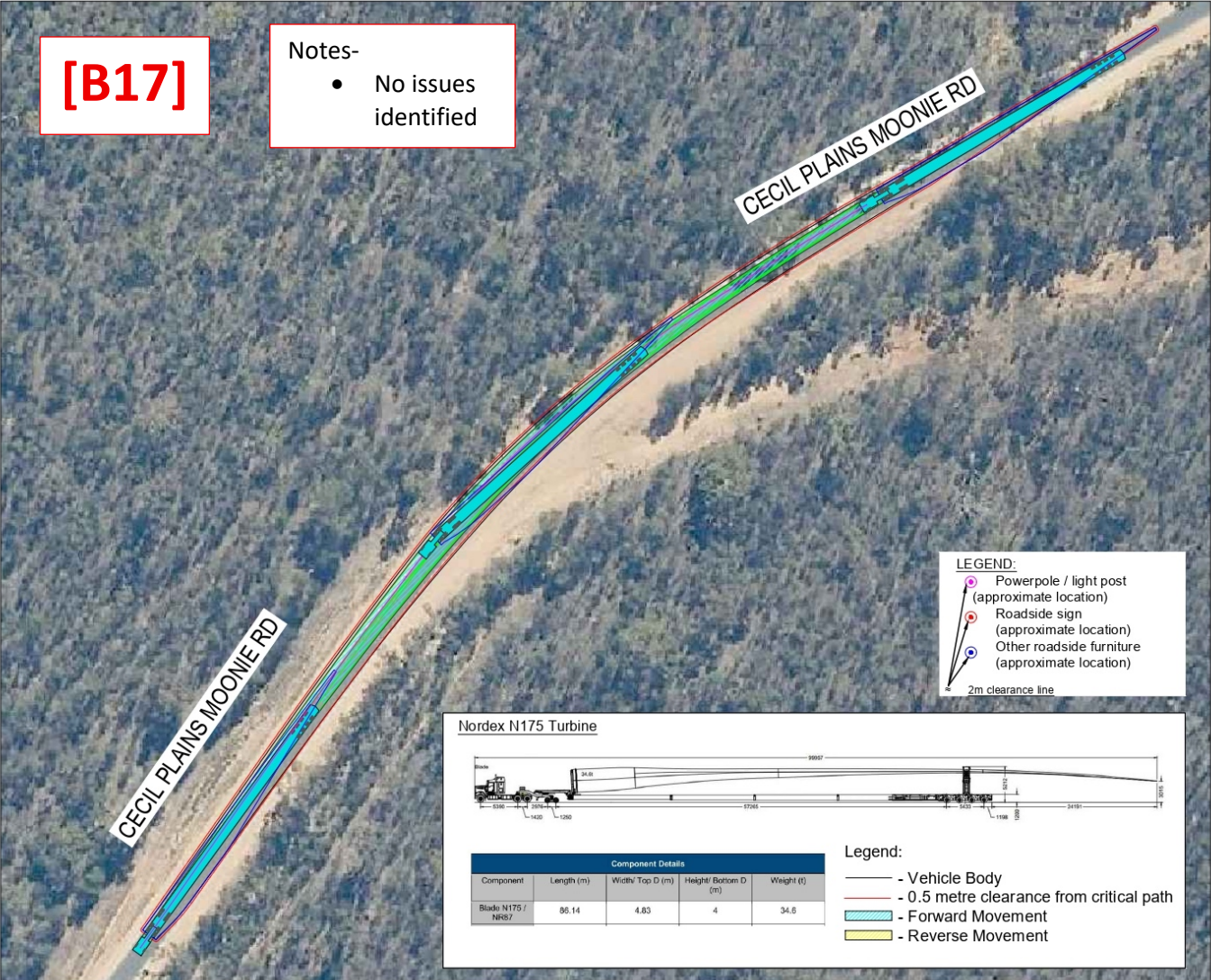
Bend on Cecil Plains Moonie Road



Bend on Cecil Plains Moonie Road



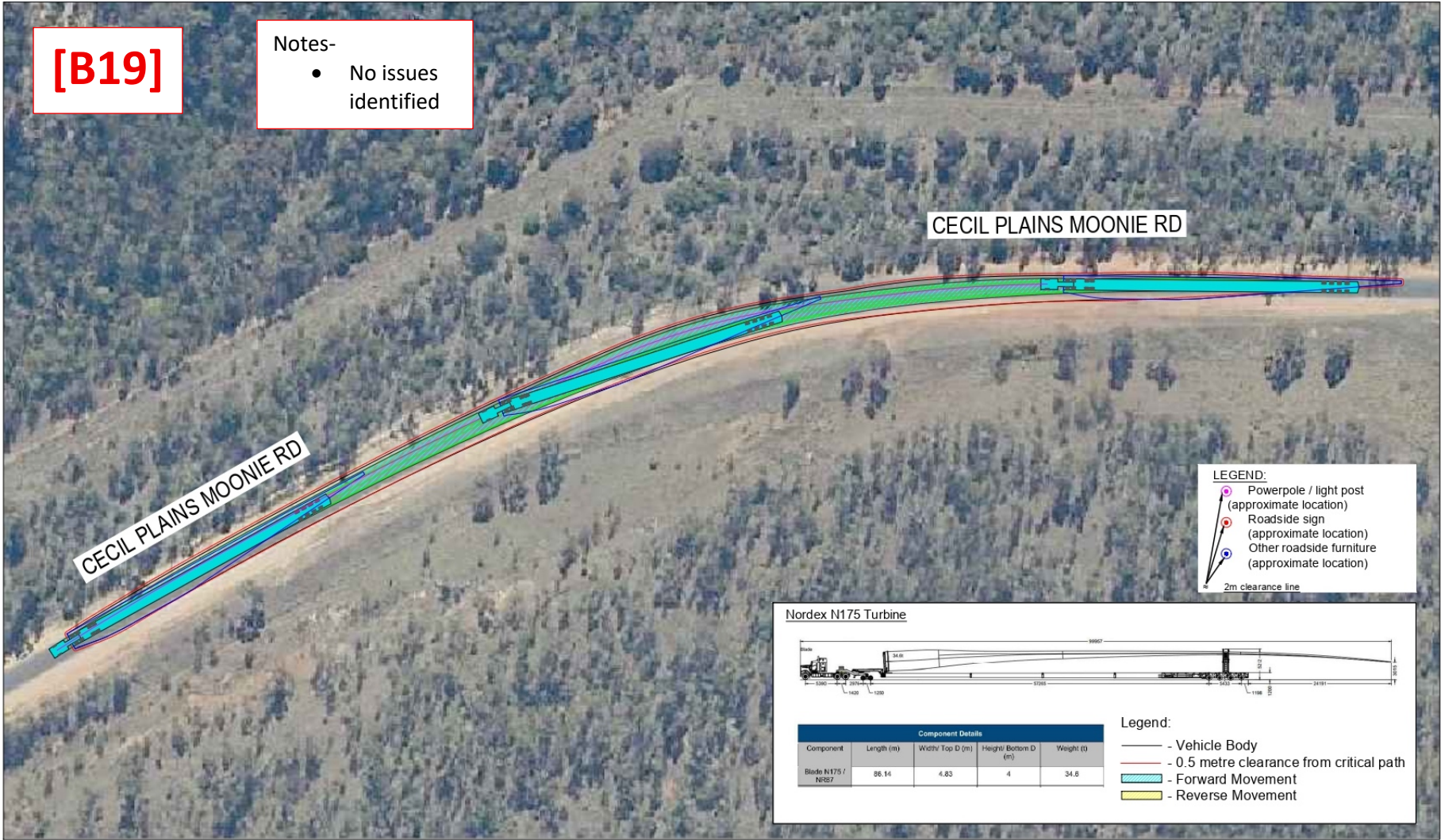
Bend on Cecil Plains Moonie Road



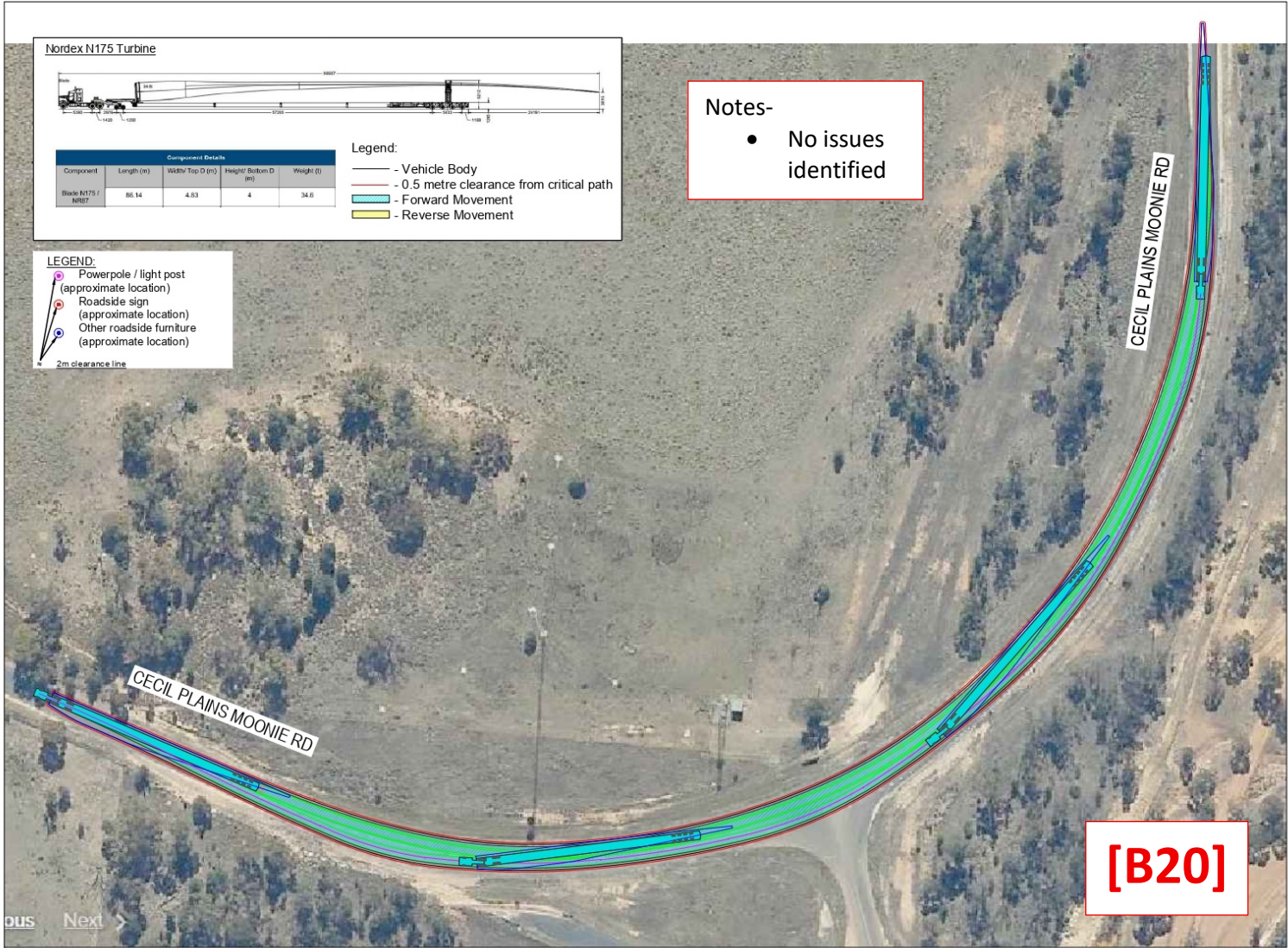
Bend on Cecil Plains Moonie Road



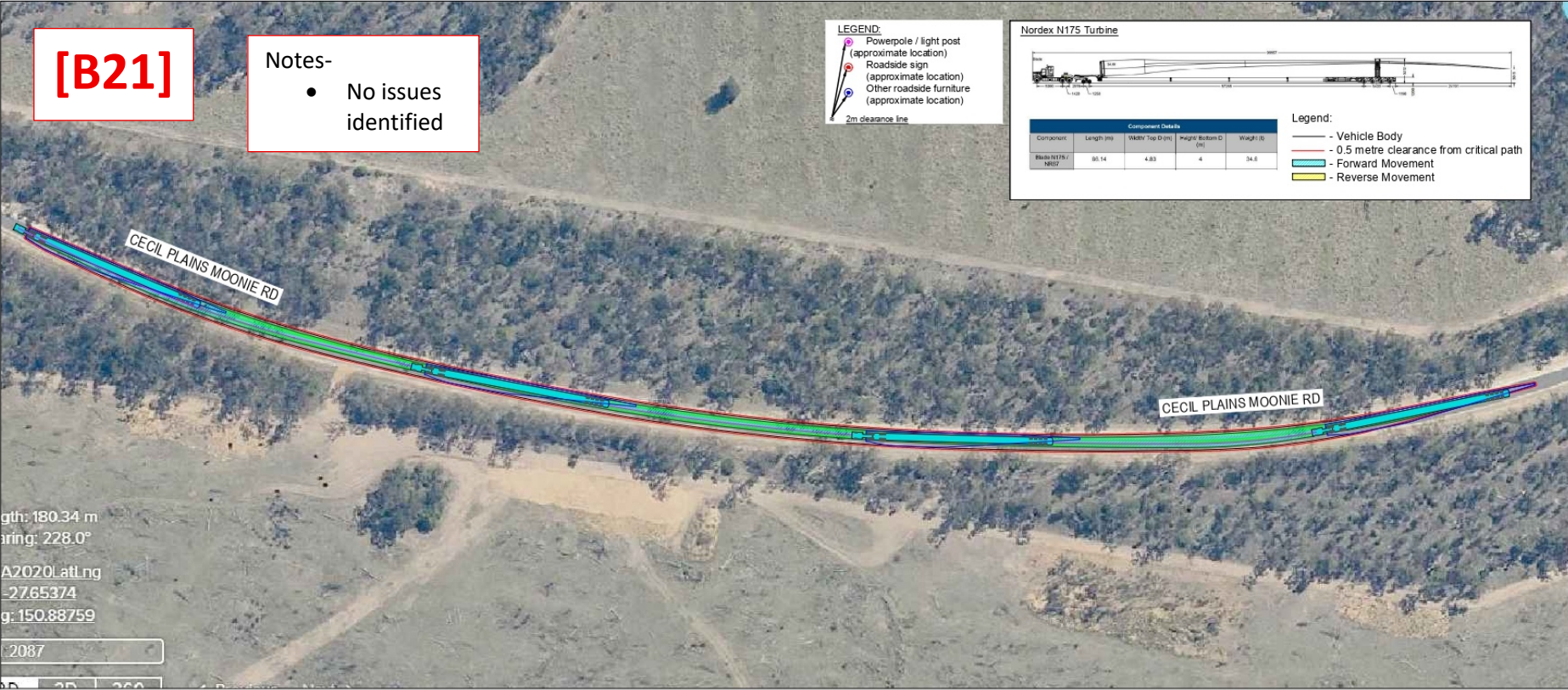
Bend on Cecil Plains Moonie Road



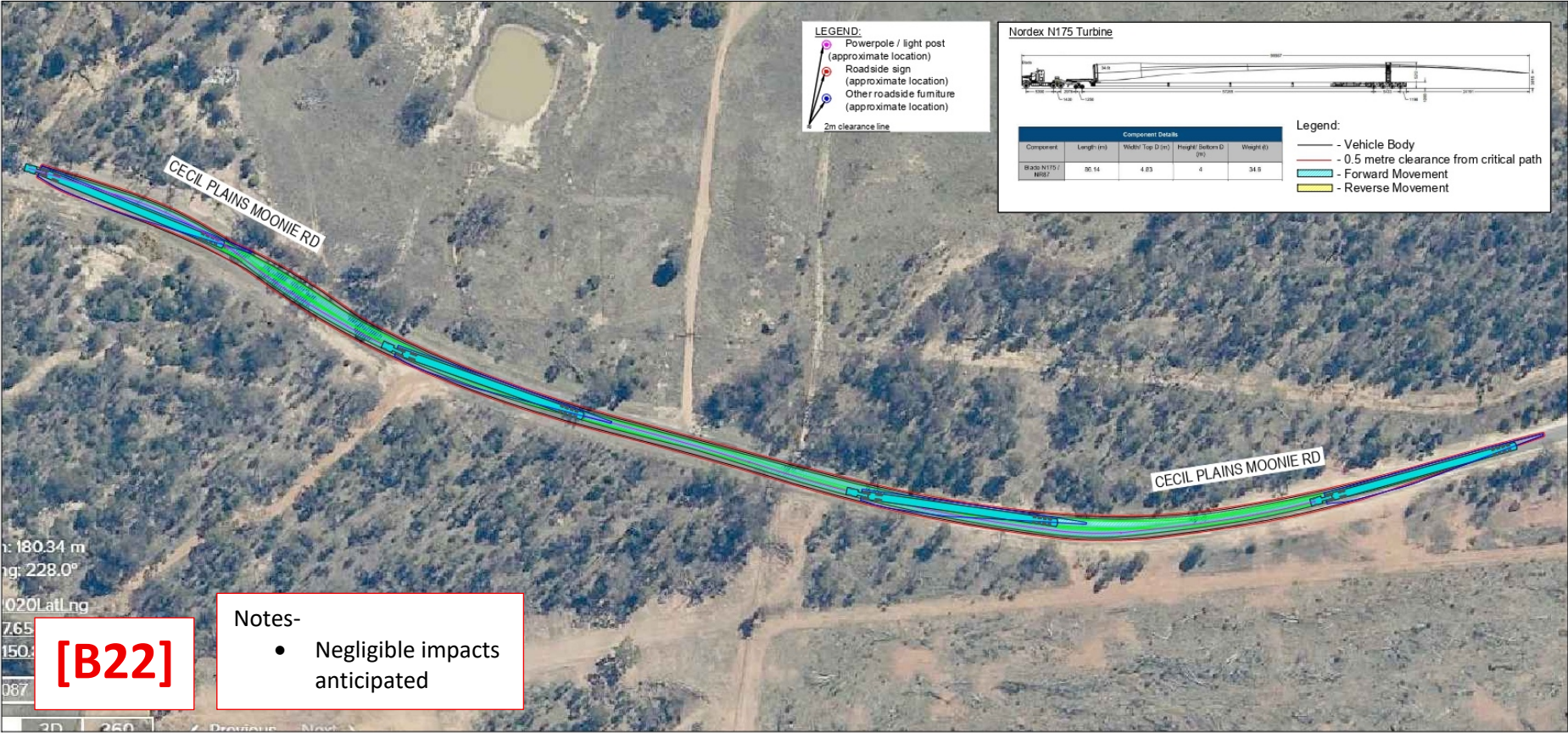
Bend on Cecil Plains Moonie Road



Bend on Cecil Plains Moonie Road



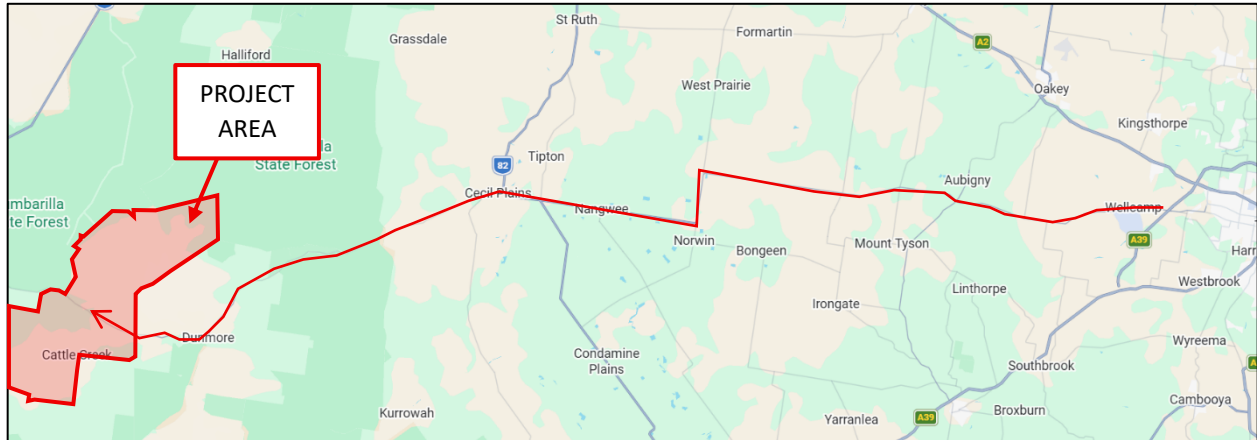
Bend on Cecil Plains Moonie Road



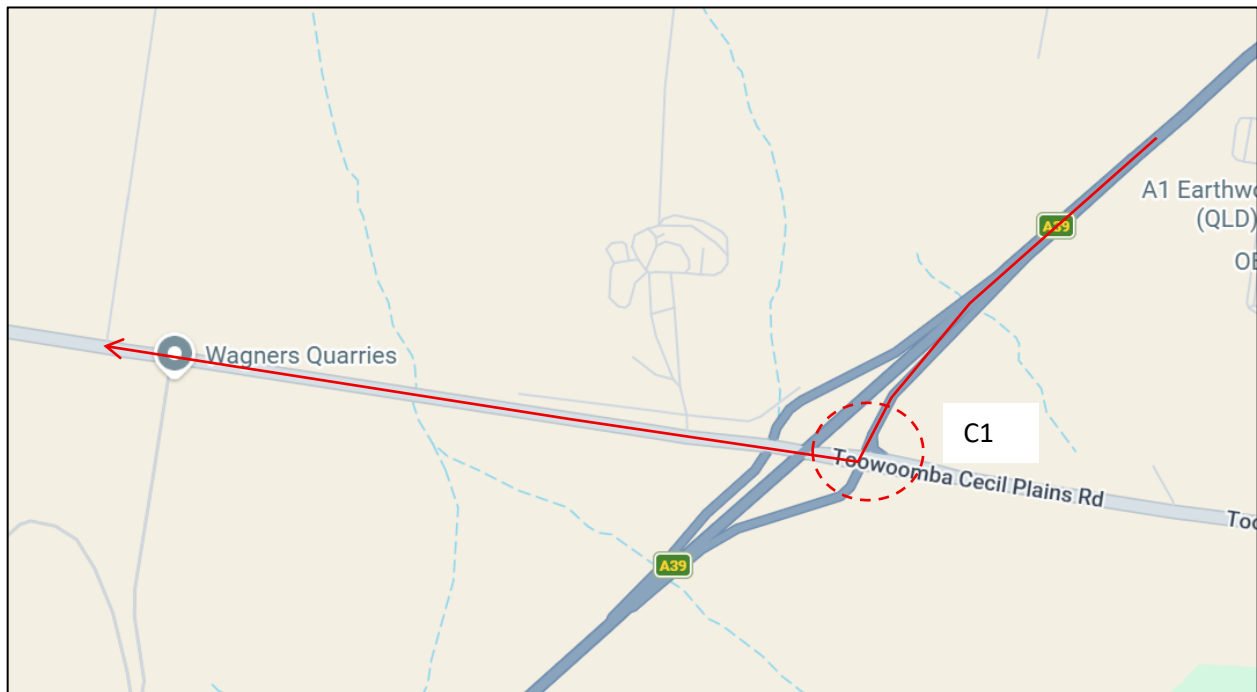
APPENDIX D – LATERAL SWEEP PATH ANALYSIS (OSOM HAULAGE OPTION C)

KEY MAP

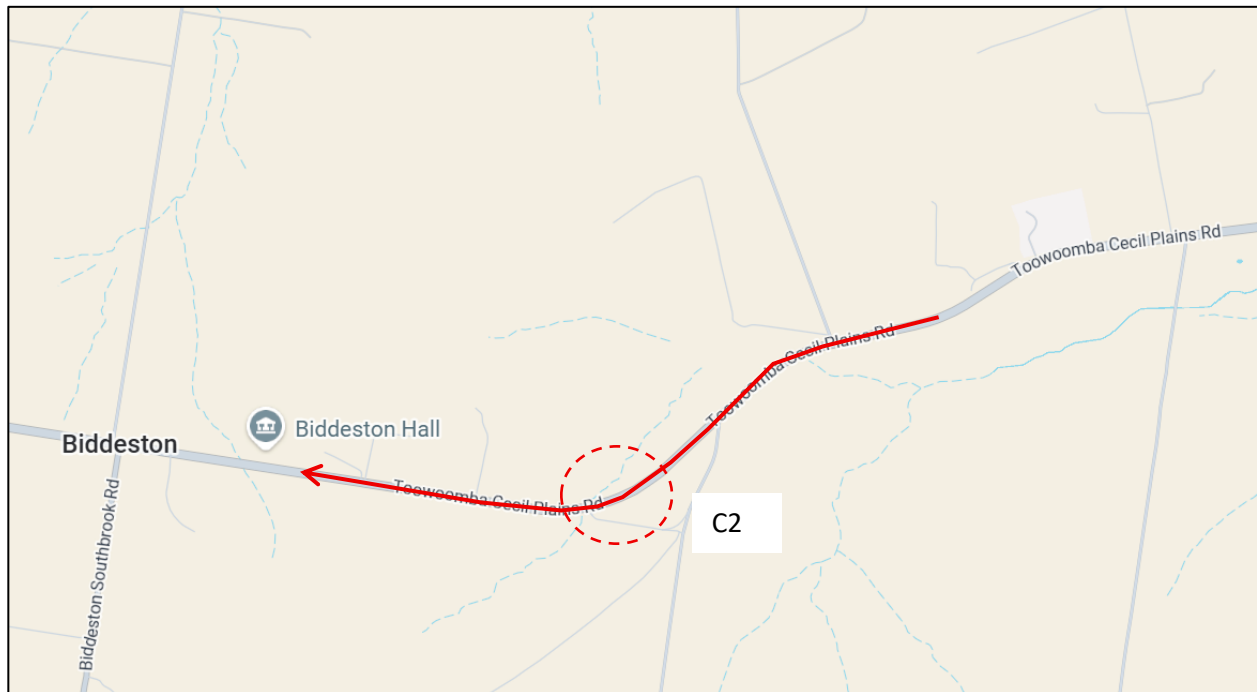
OVERVIEW



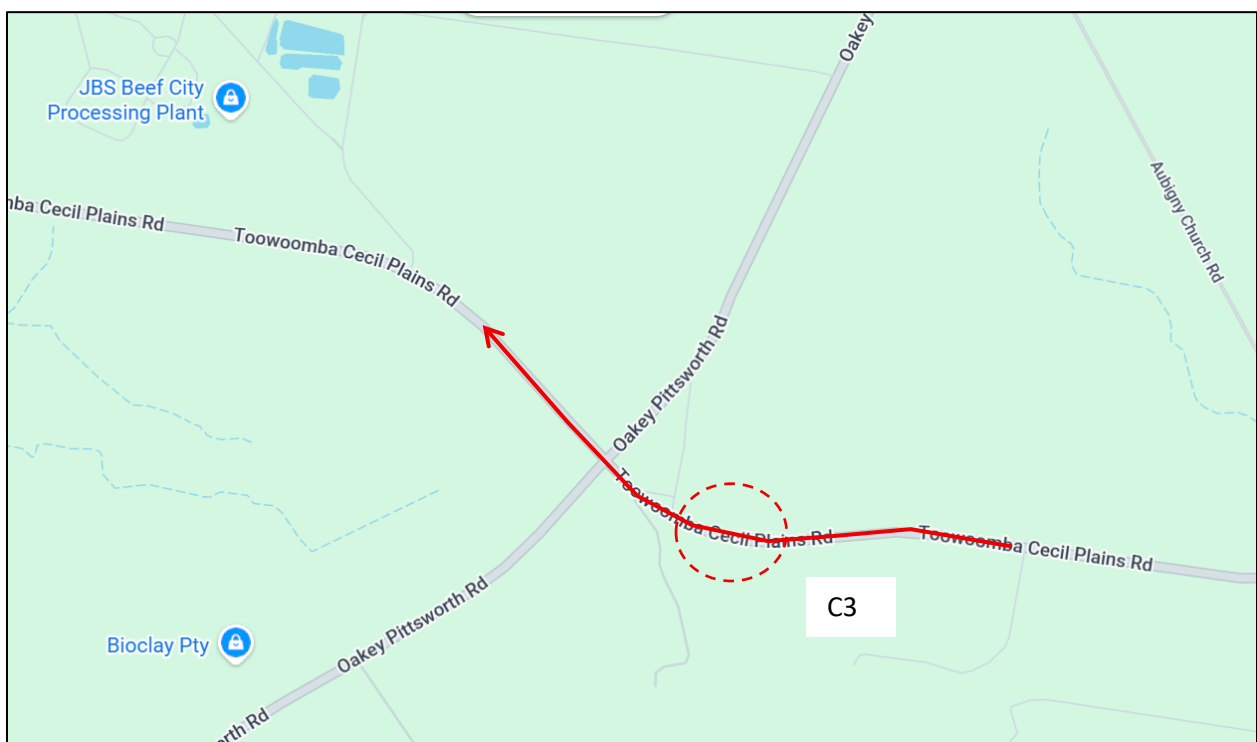
WARREGO HWY INTERCHANGE , WELLCAMP



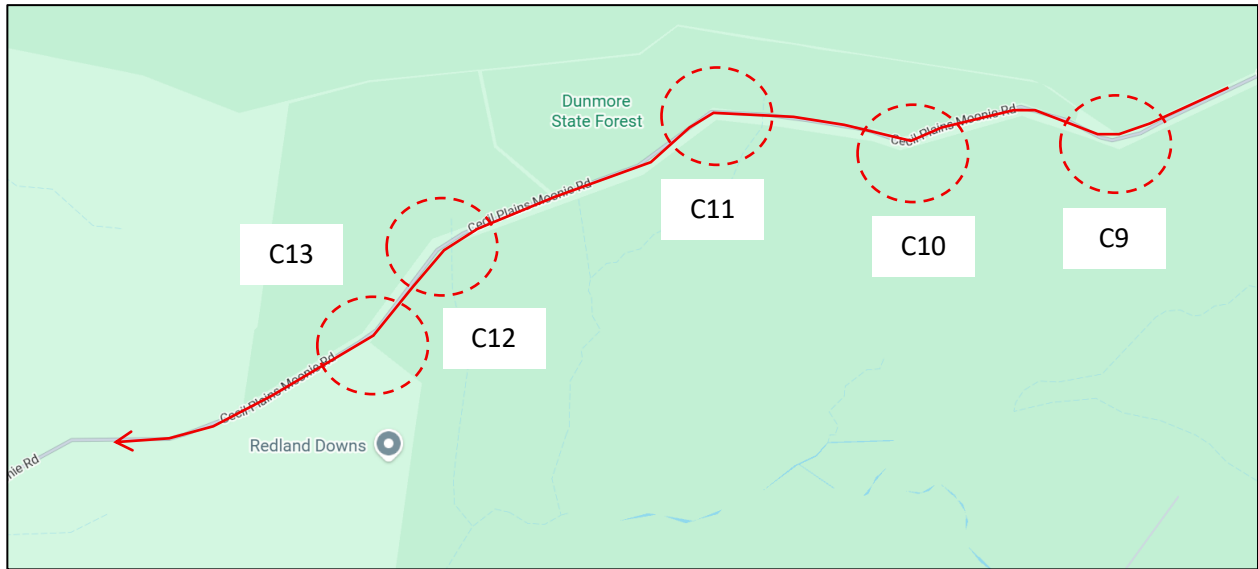
BIDDESTON



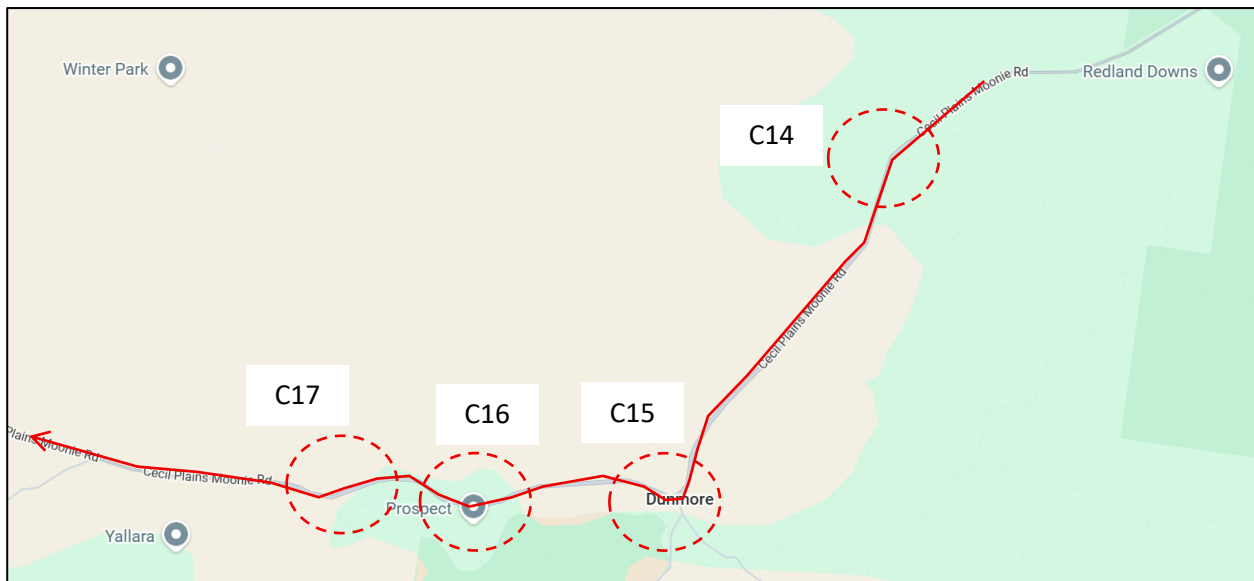
AUBIGNY



CECIL PLAINS – MOONIE ROAD, DUNMORE

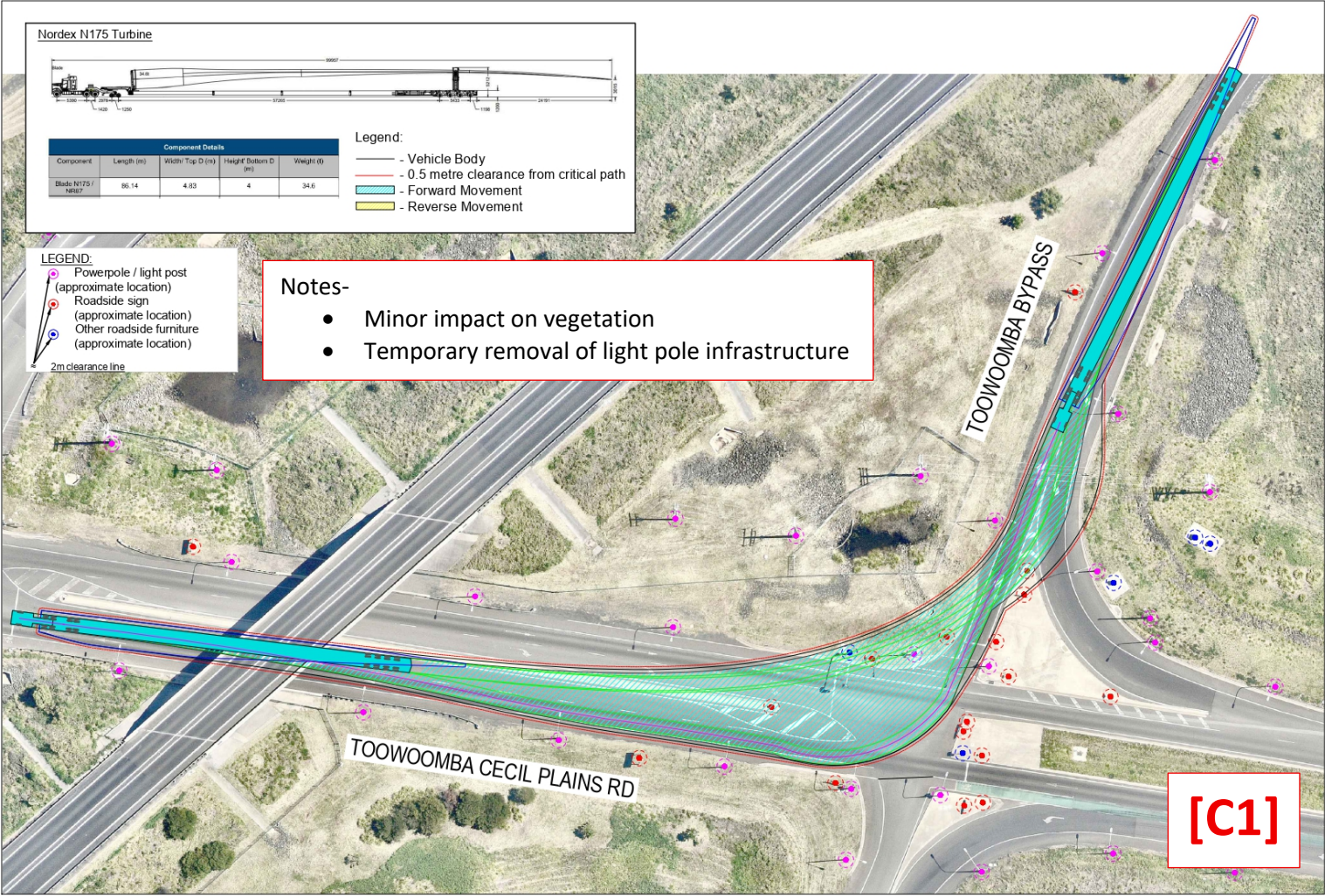


DUNMORE

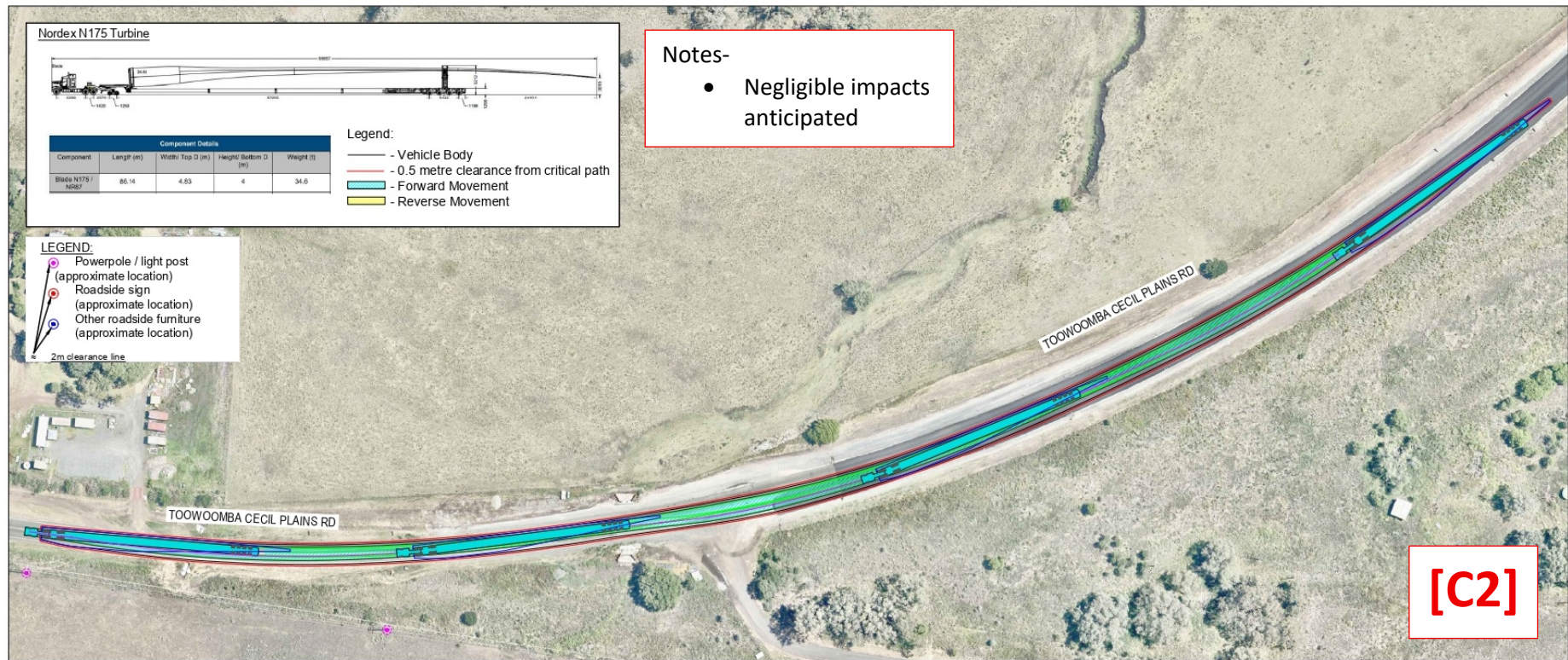


SWEPT PATH ANALYSIS [OPTION C]

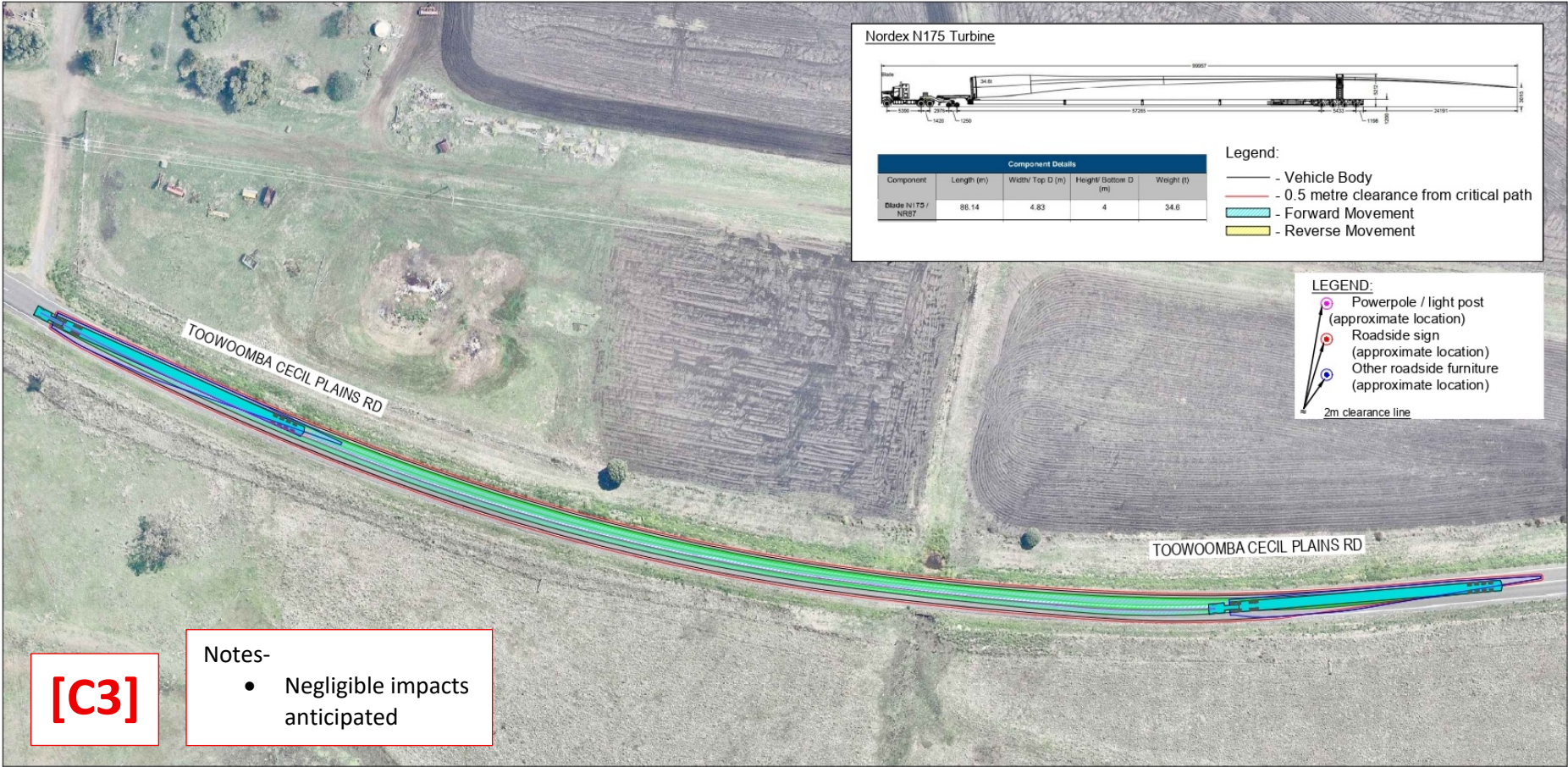
Interchange of Toowoomba Cecil Plains Rd at Wellcamp



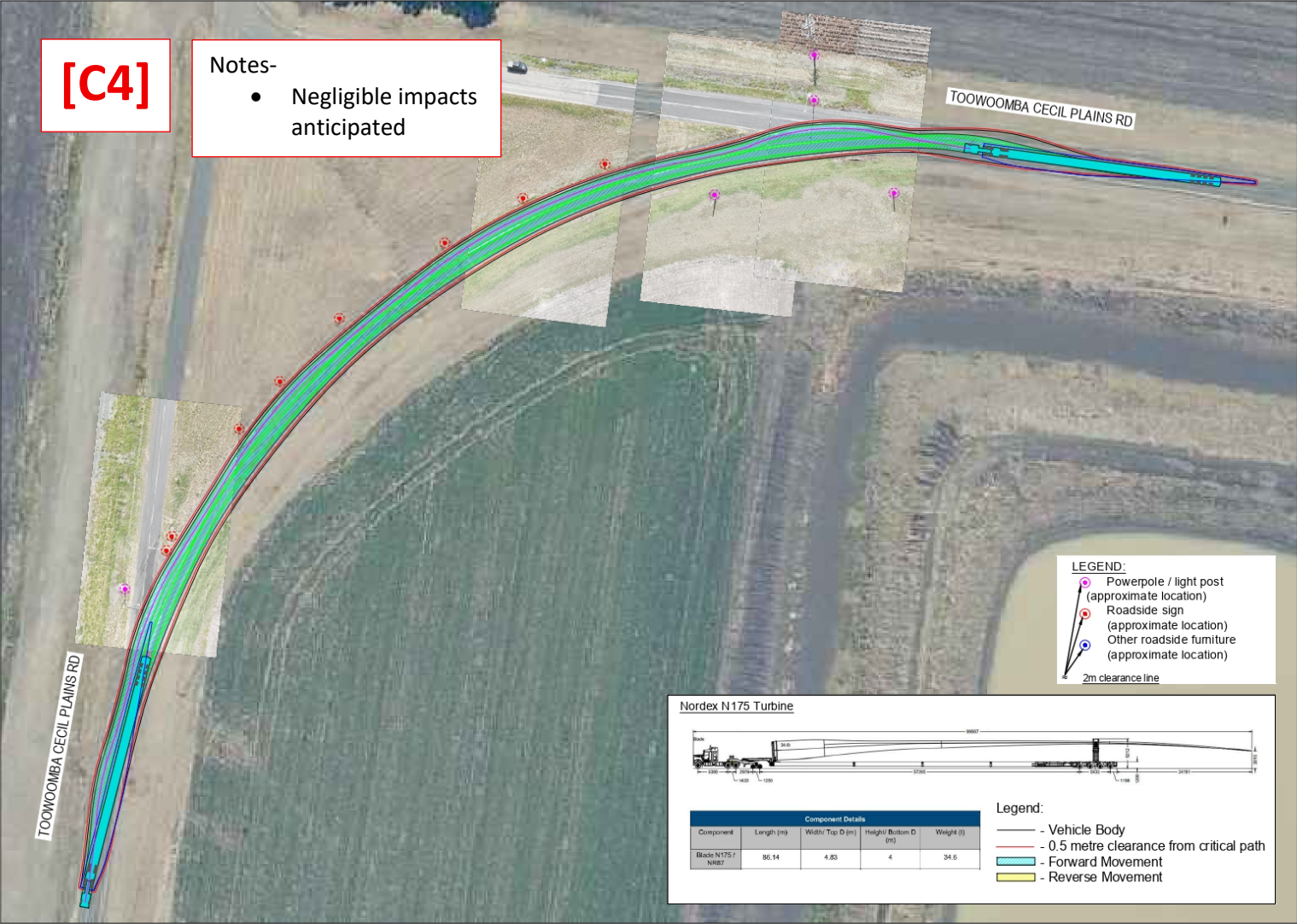
Along Toowoomba Cecil Plains Rd-Biddeston



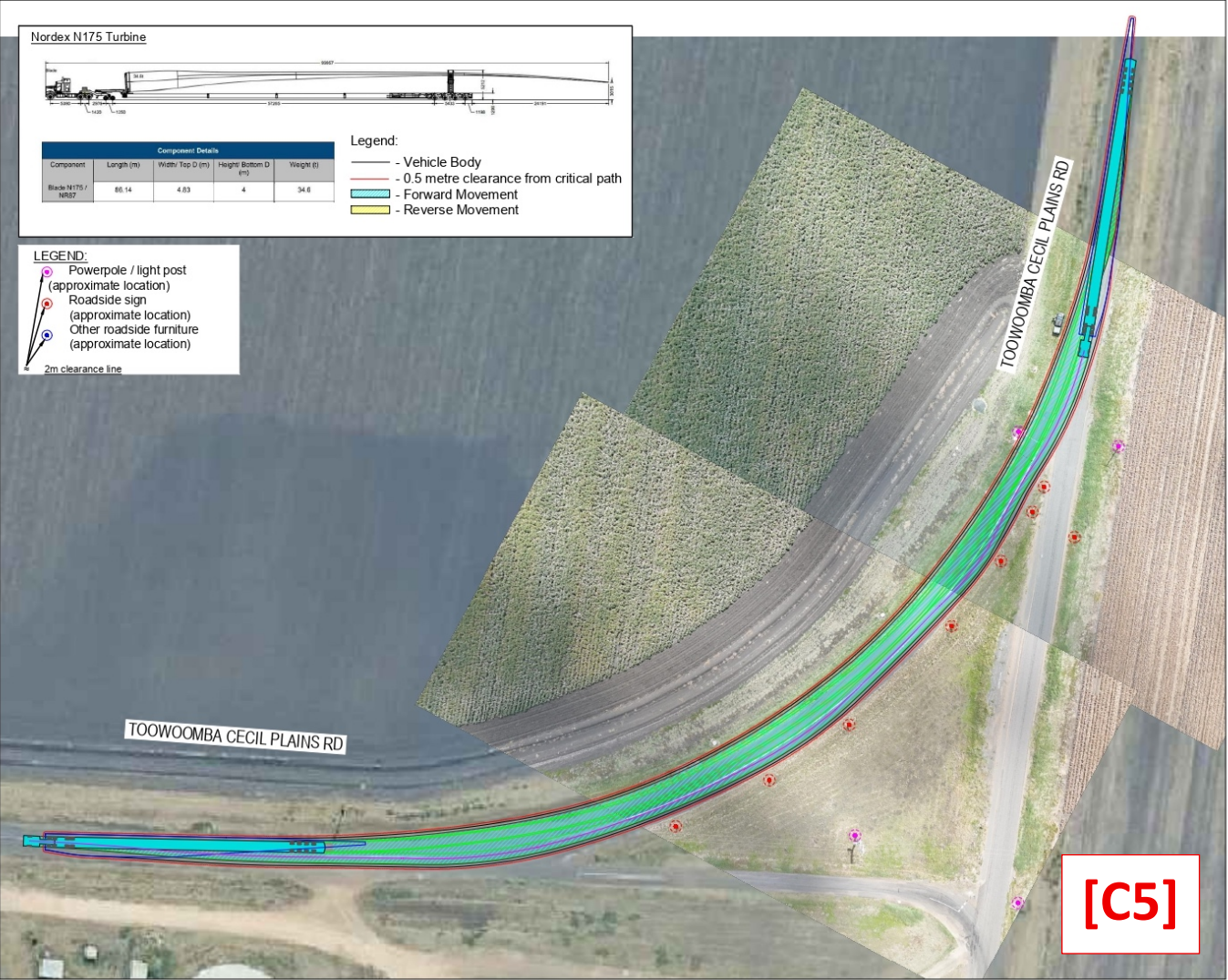
Along Toowoomba Cecil Plains Rd - Aubigny



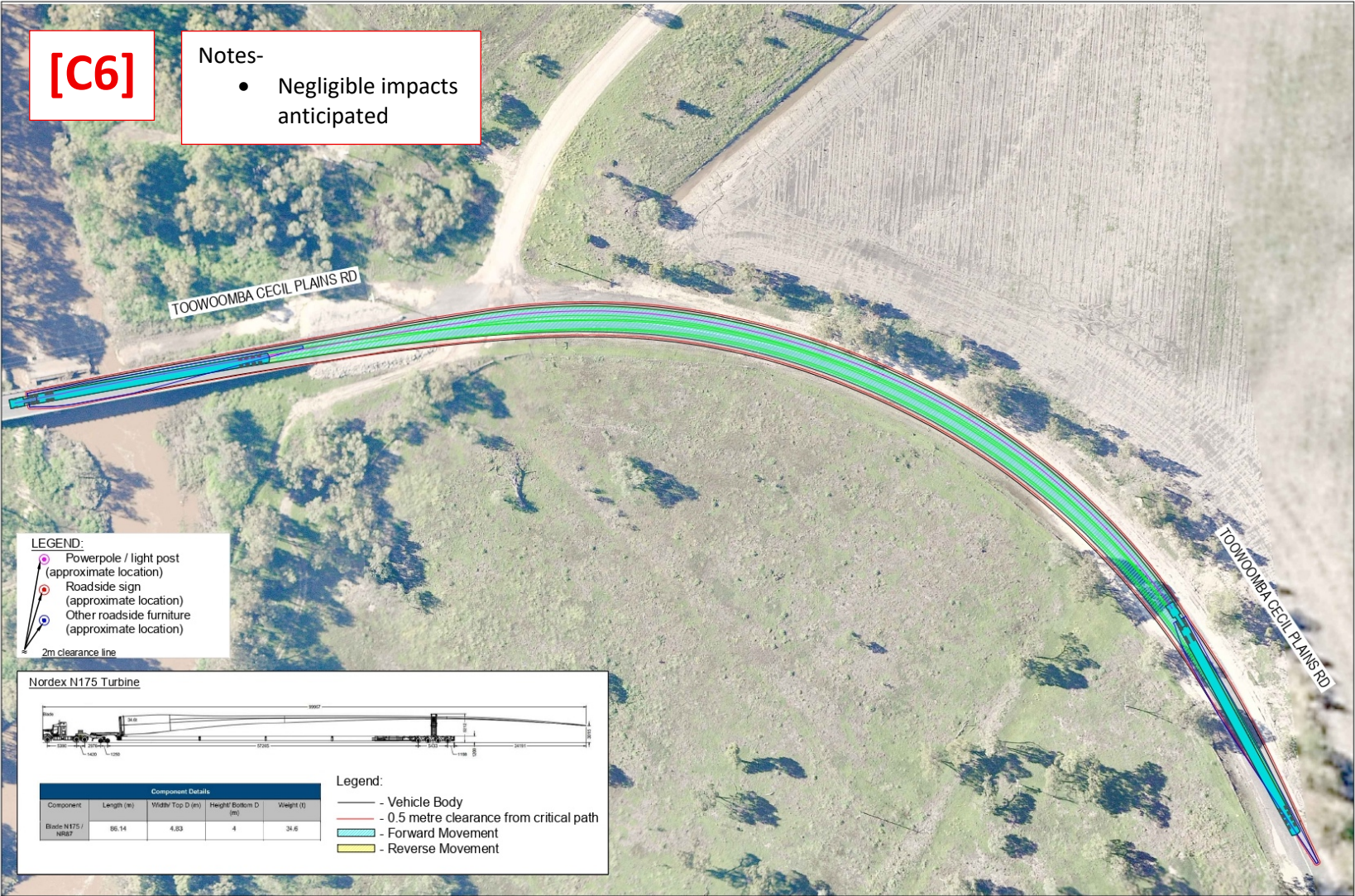
Bend on Toowoomba Cecil Plains Rd - Norwin



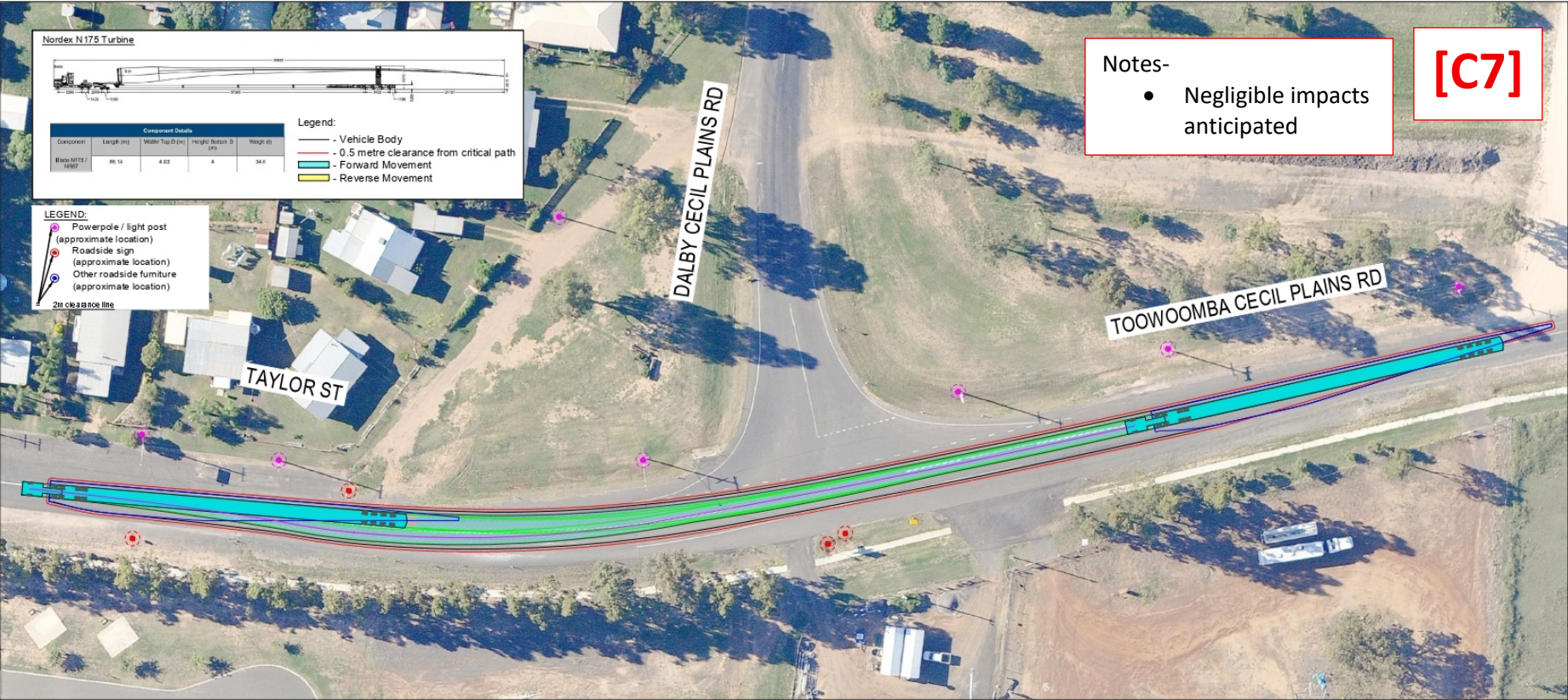
Turning Right on Toowoomba Cecil Plains Rd - Norwin



Bend on Toowoomba Cecil Plains Rd - Cecil Plains



Toowoomba Cecil Plains Rd onto Taylor St

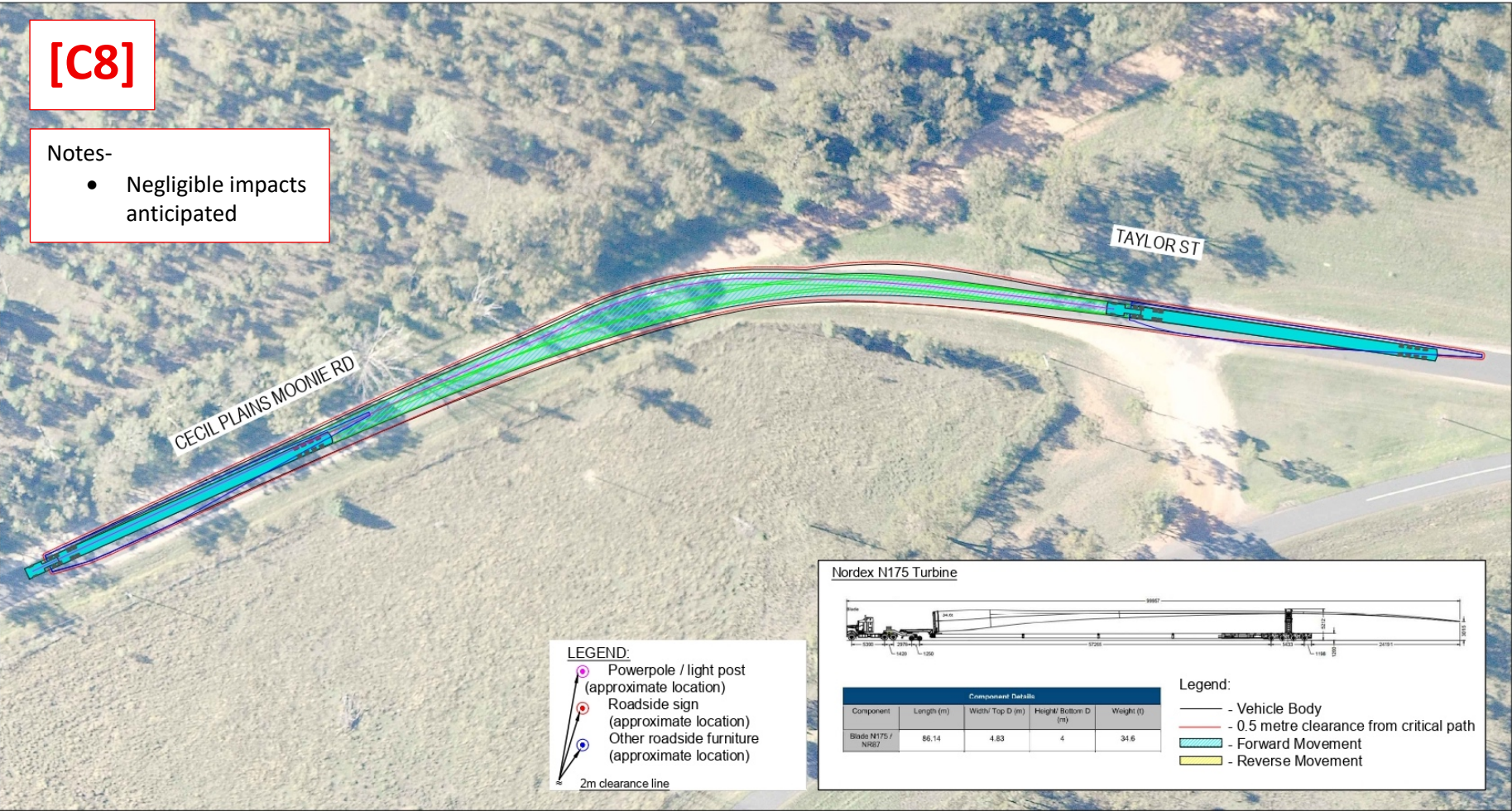


Taylor St onto Cecil Plains Moonie Road

[C8]

Notes-

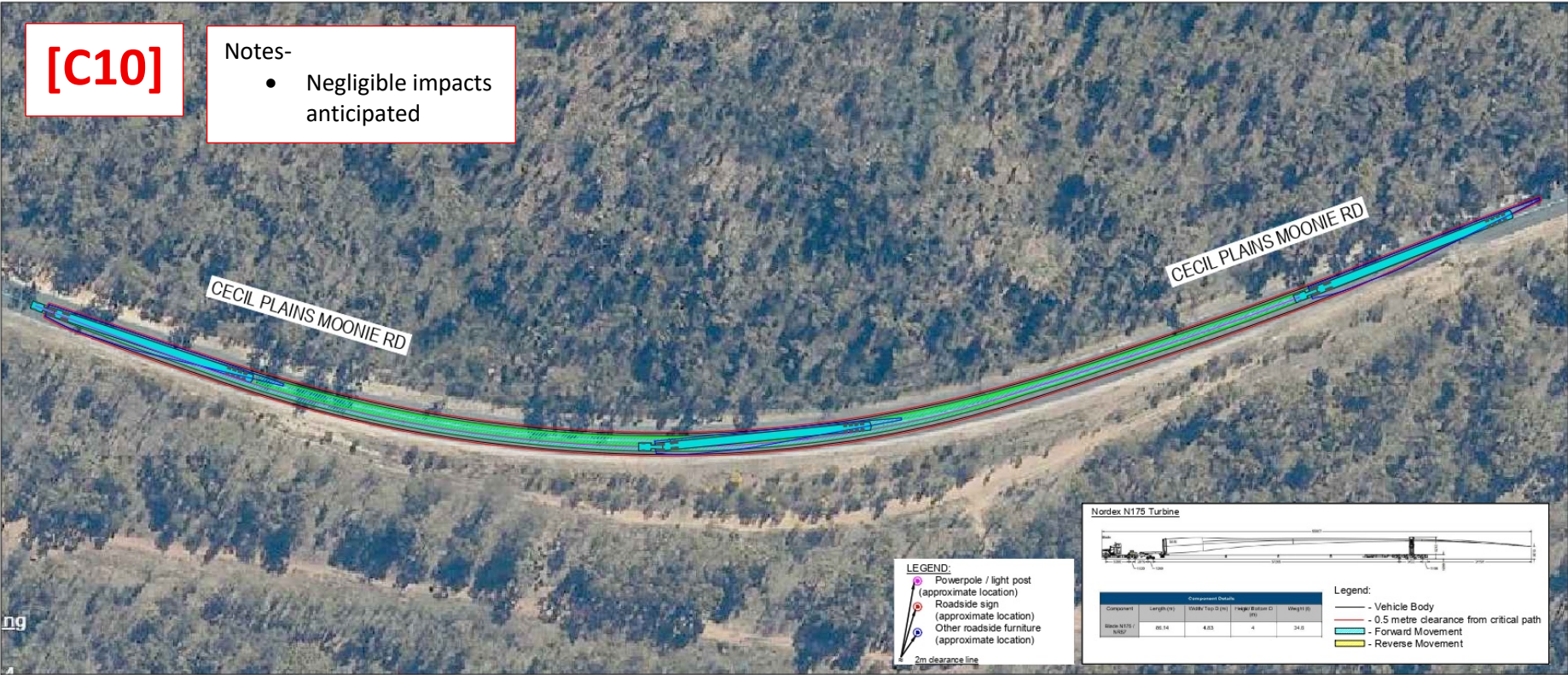
- Negligible impacts anticipated



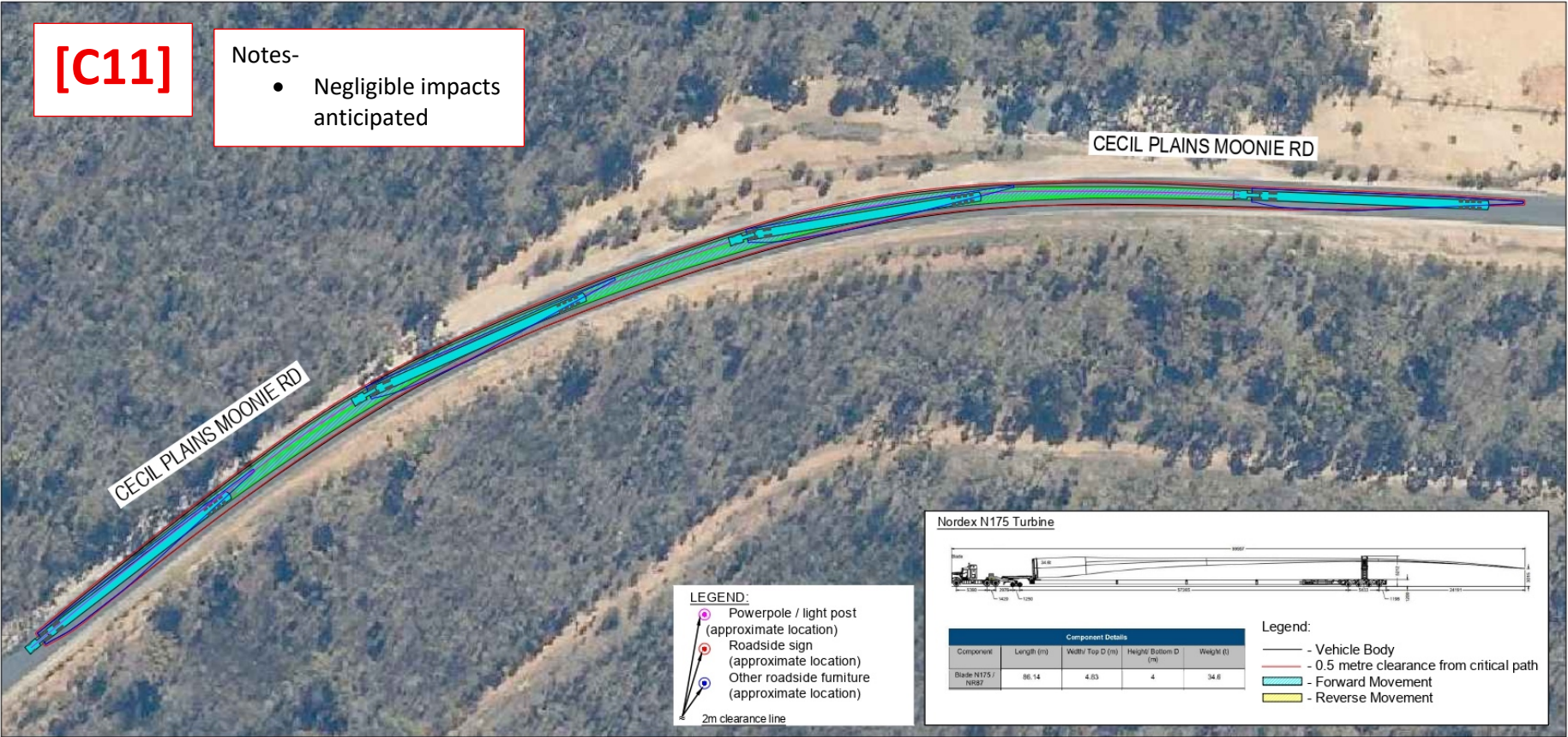
Bend on Cecil Plains Moonie Road



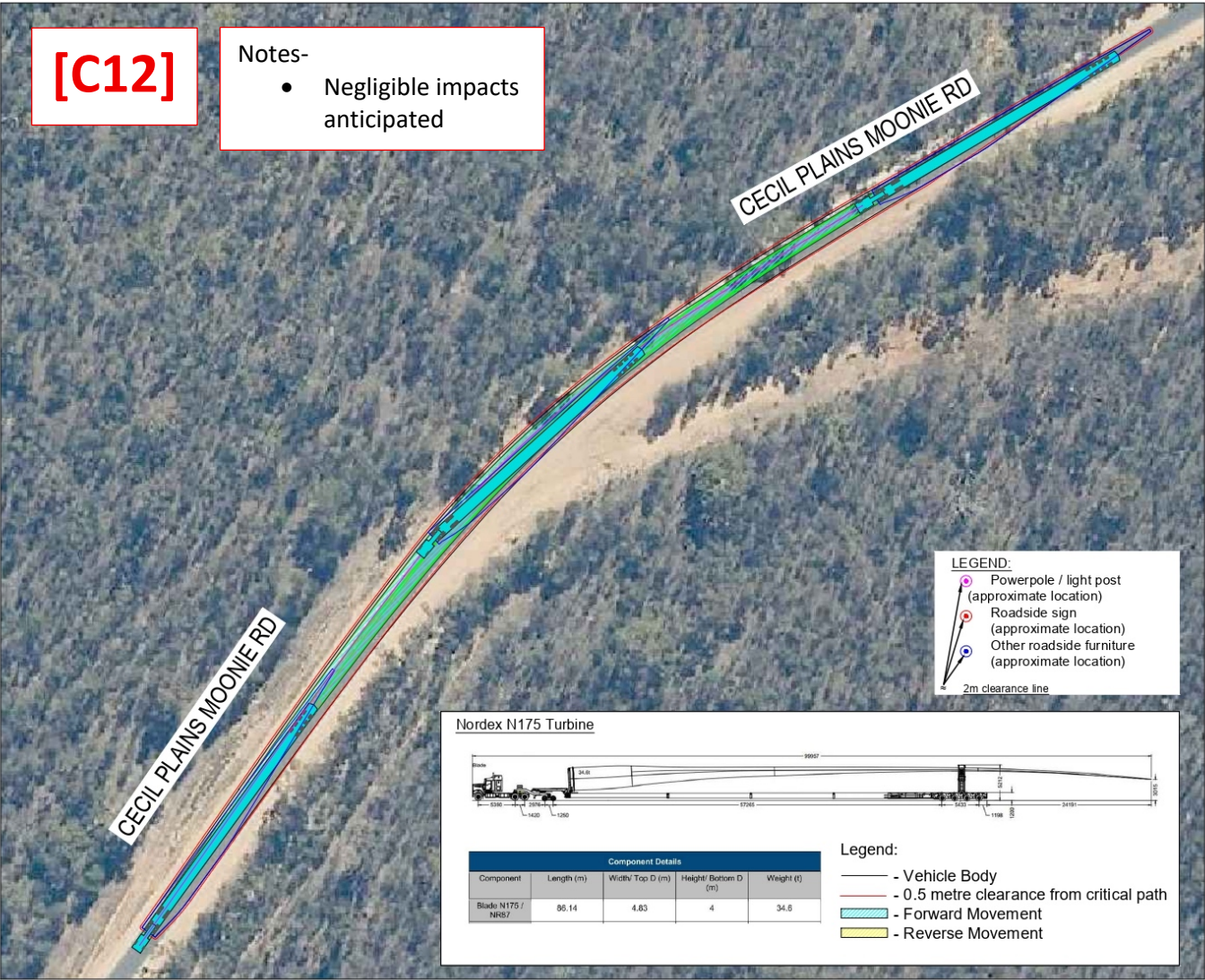
Bend on Cecil Plains Moonie Road



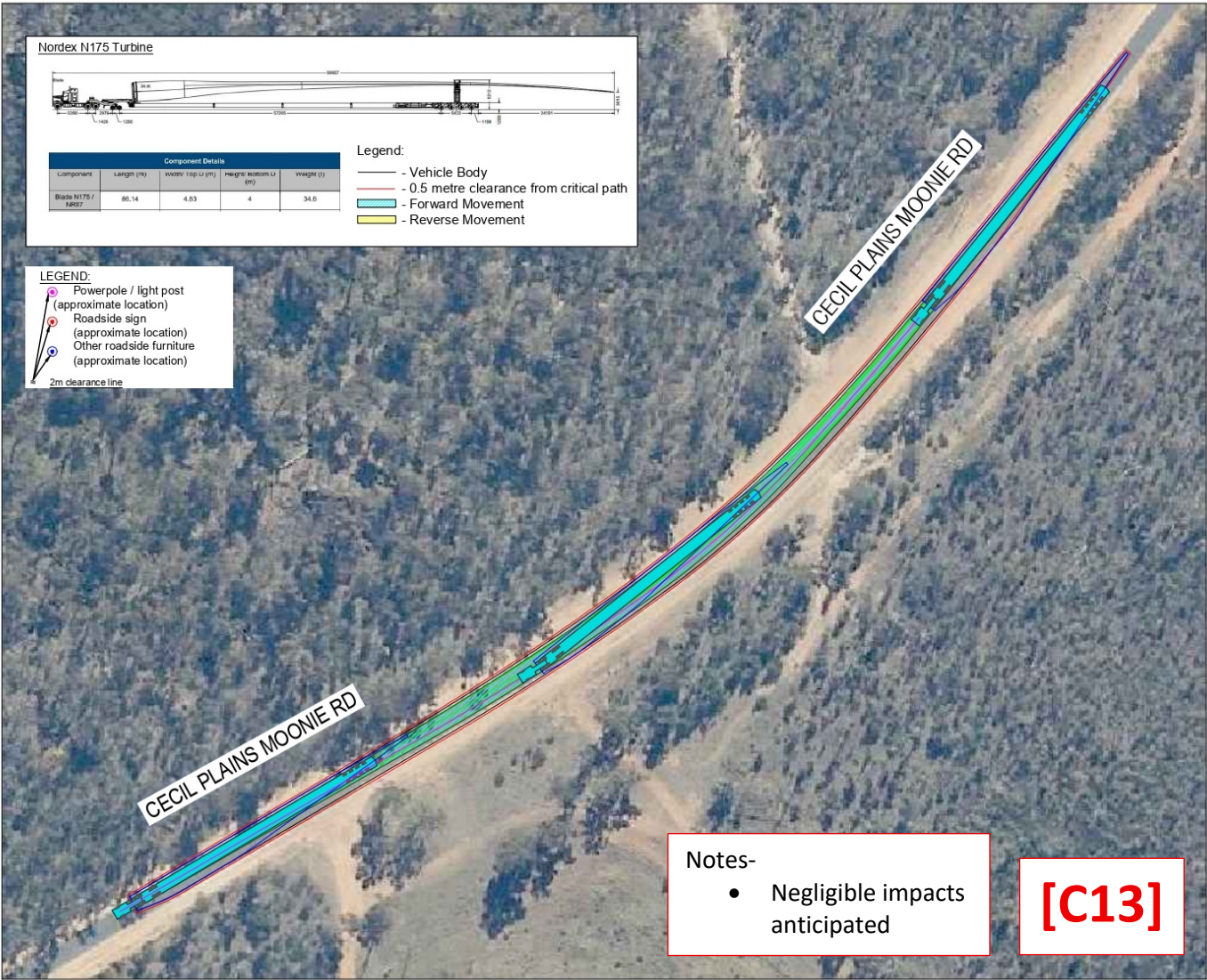
Bend on Cecil Plains Moonie Road



Bend on Cecil Plains Moonie Road



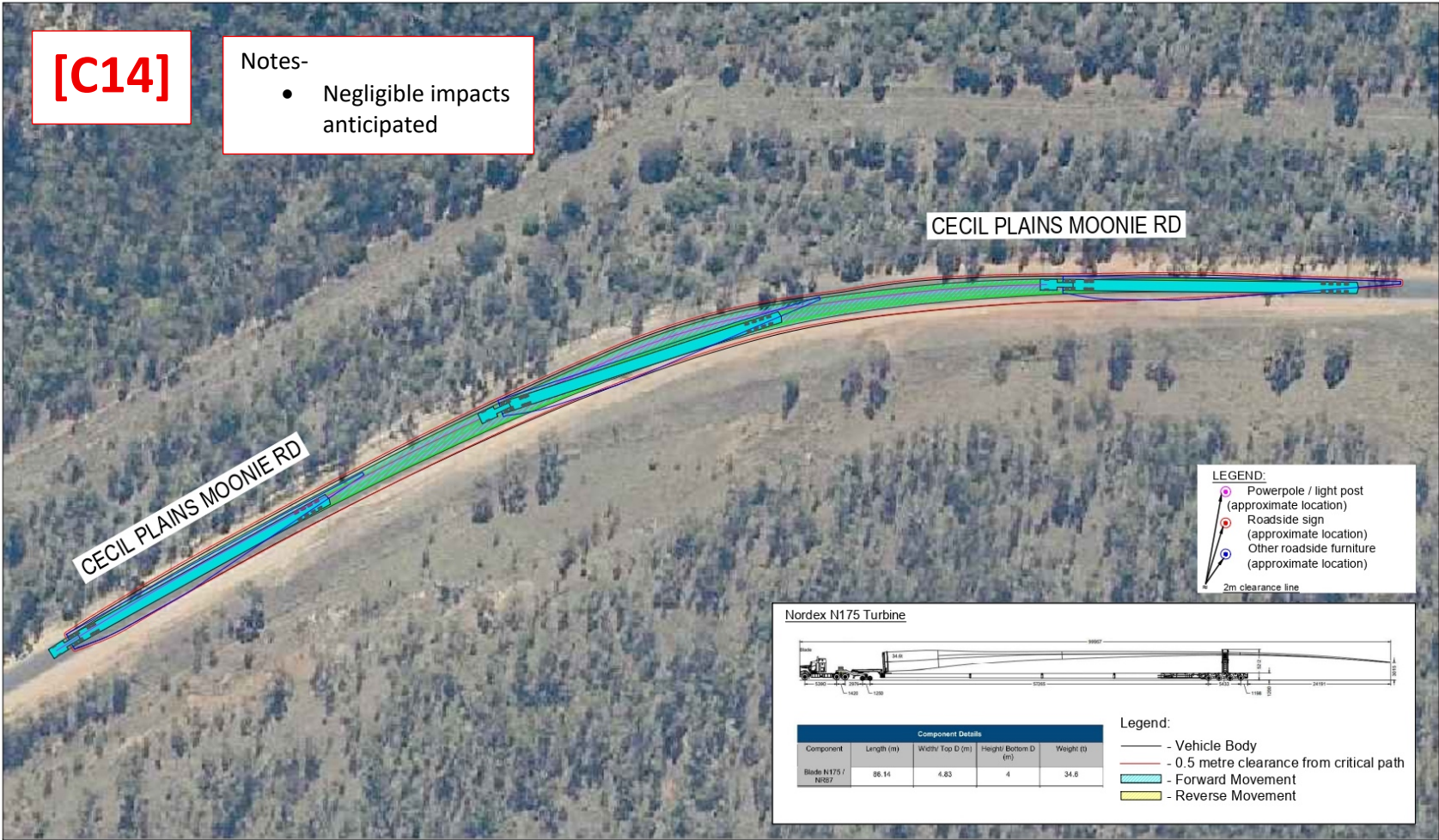
Bend on Cecil Plains Moonie Road



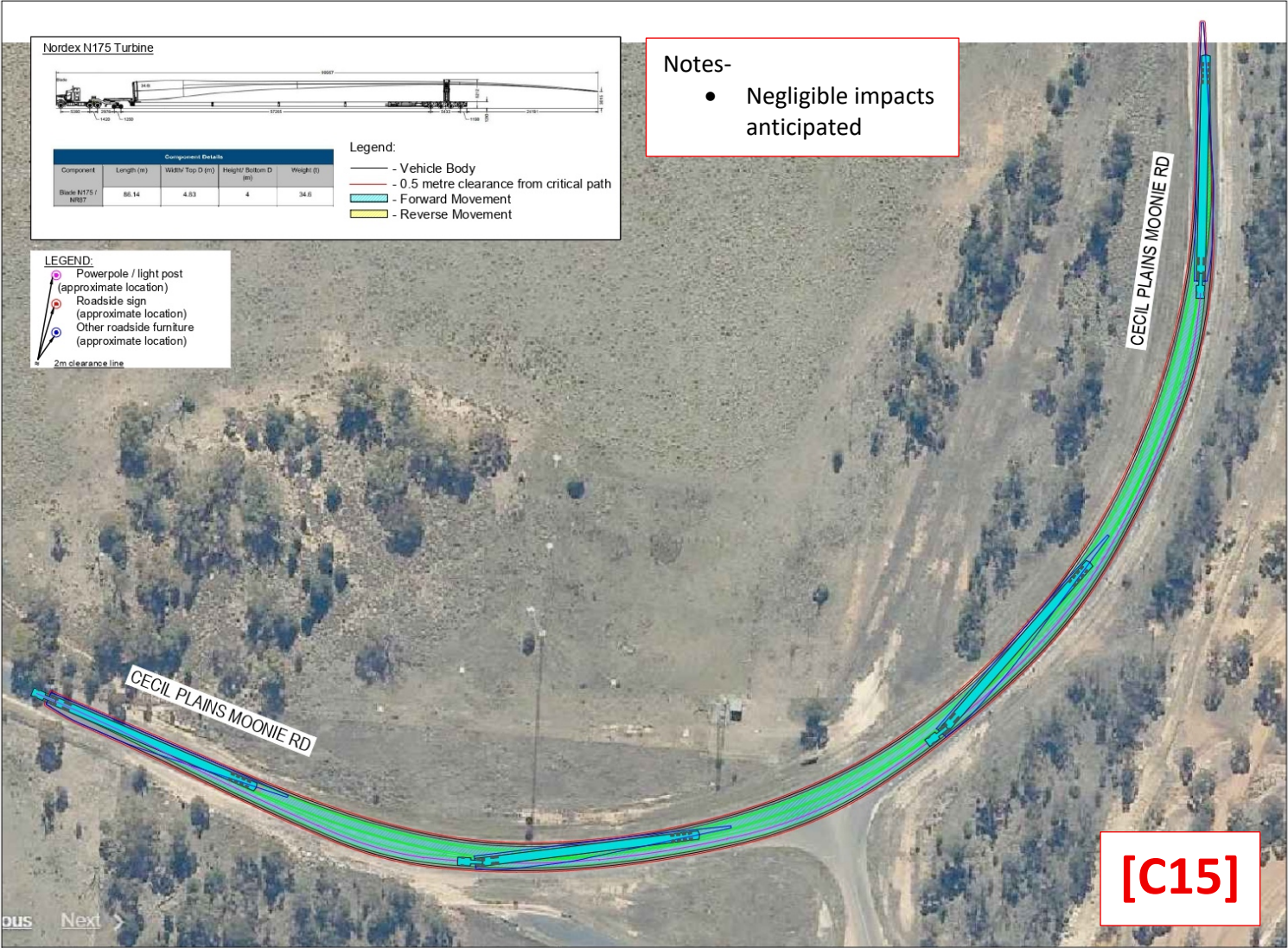
Bend on Cecil Plains Moonie Road

[C14]

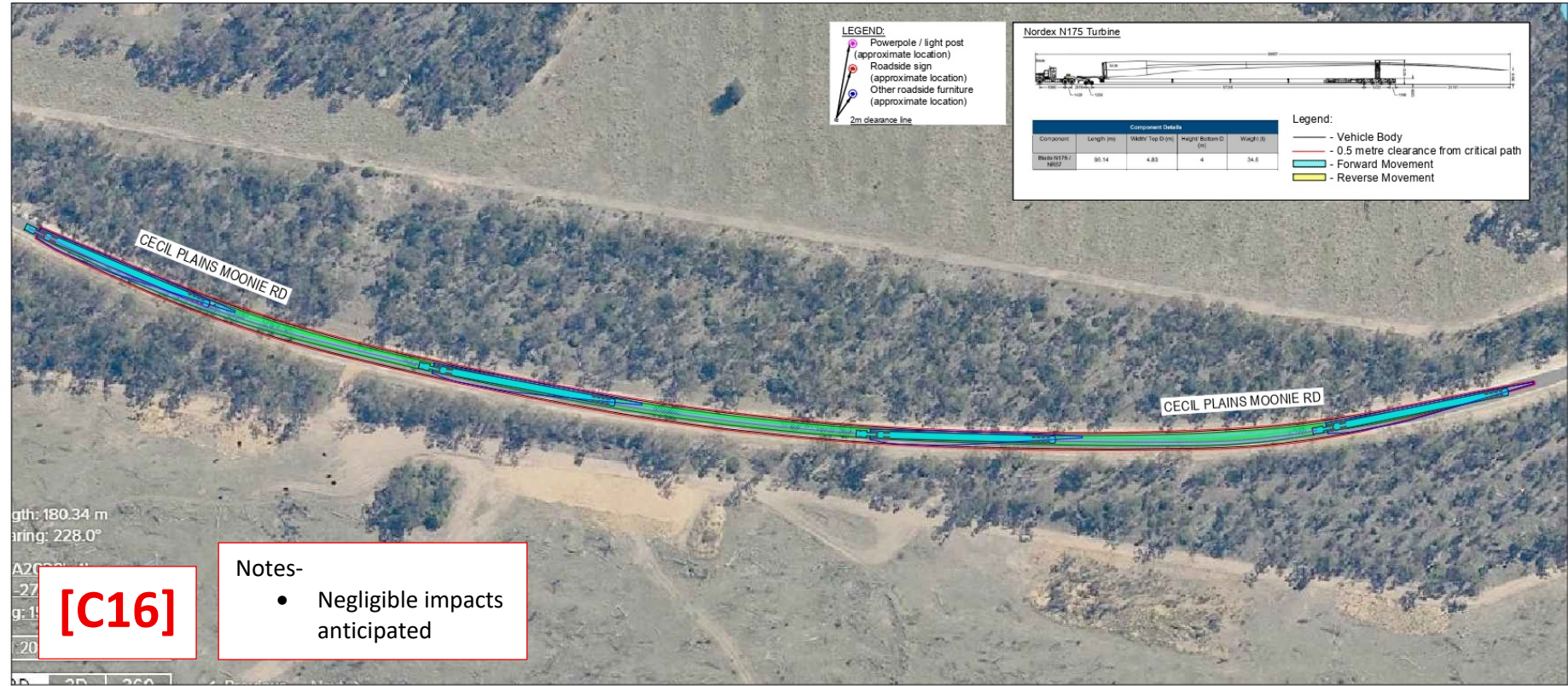
- Notes-
- Negligible impacts anticipated



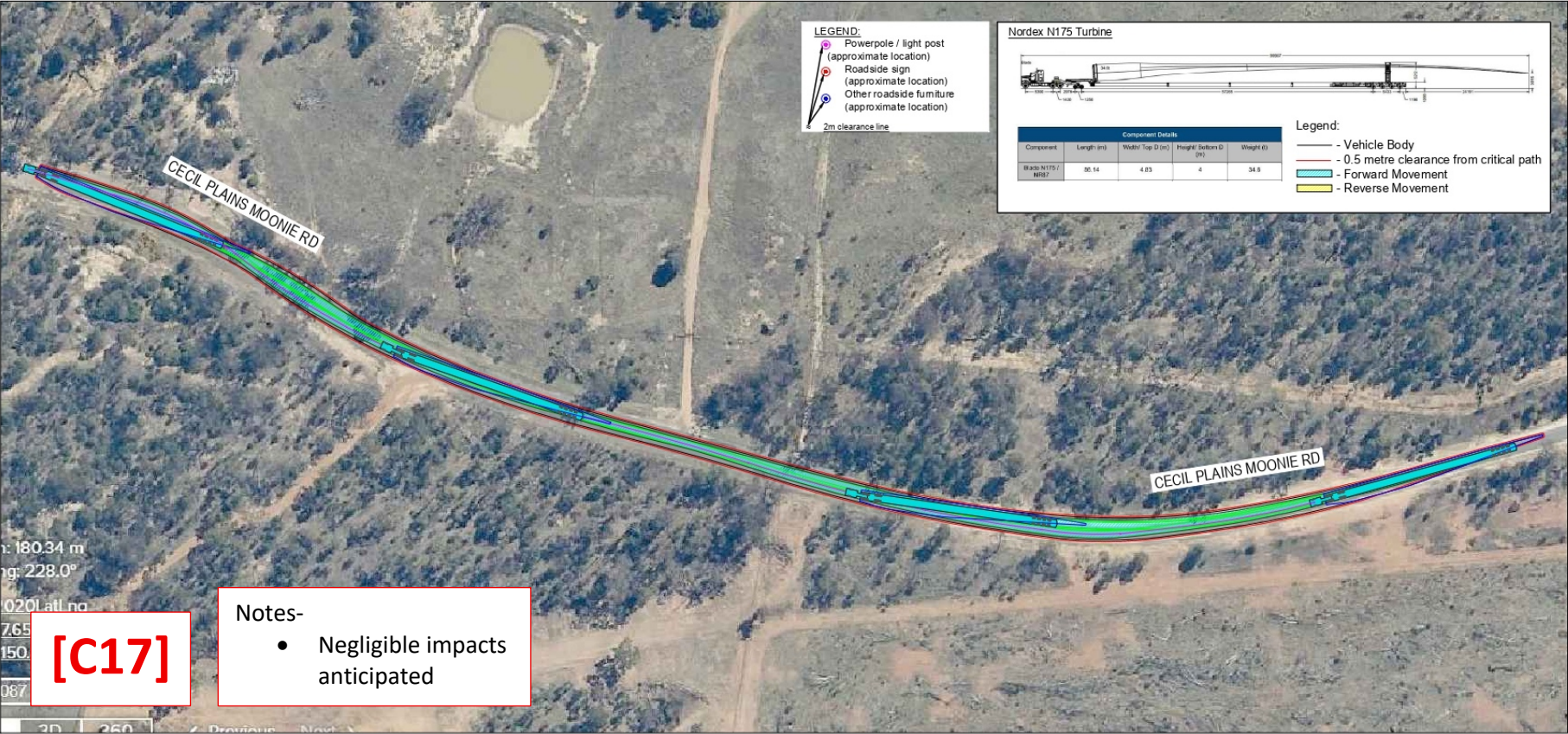
Bend on Cecil Plains Moonie Road



Bend on Cecil Plains Moonie Road



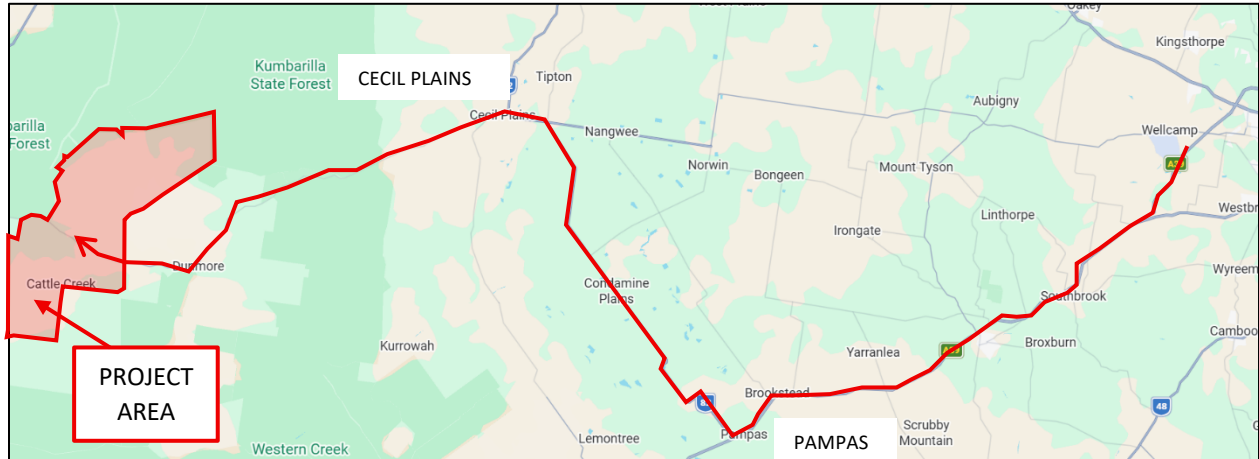
Bend on Cecil Plains Moonie Road



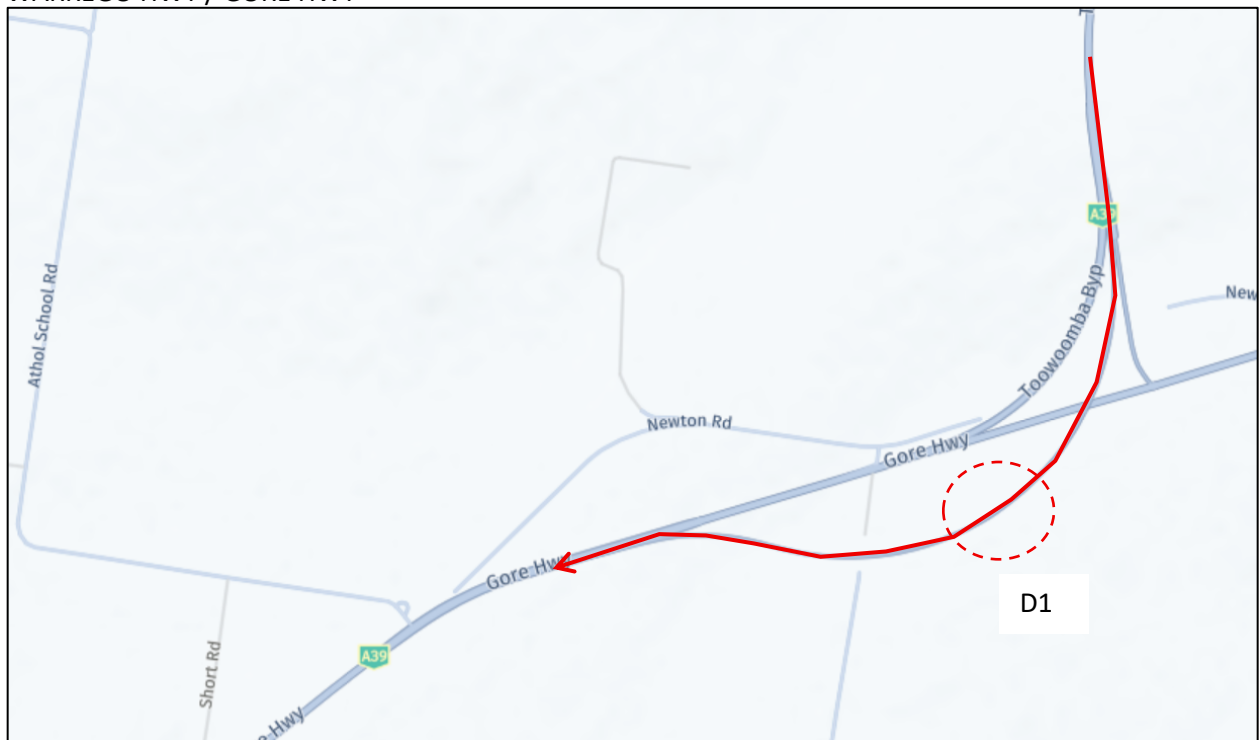
APPENDIX E – LATERAL SWEEP PATH ANALYSIS (OSOM HAULAGE OPTION D)

KEY MAP

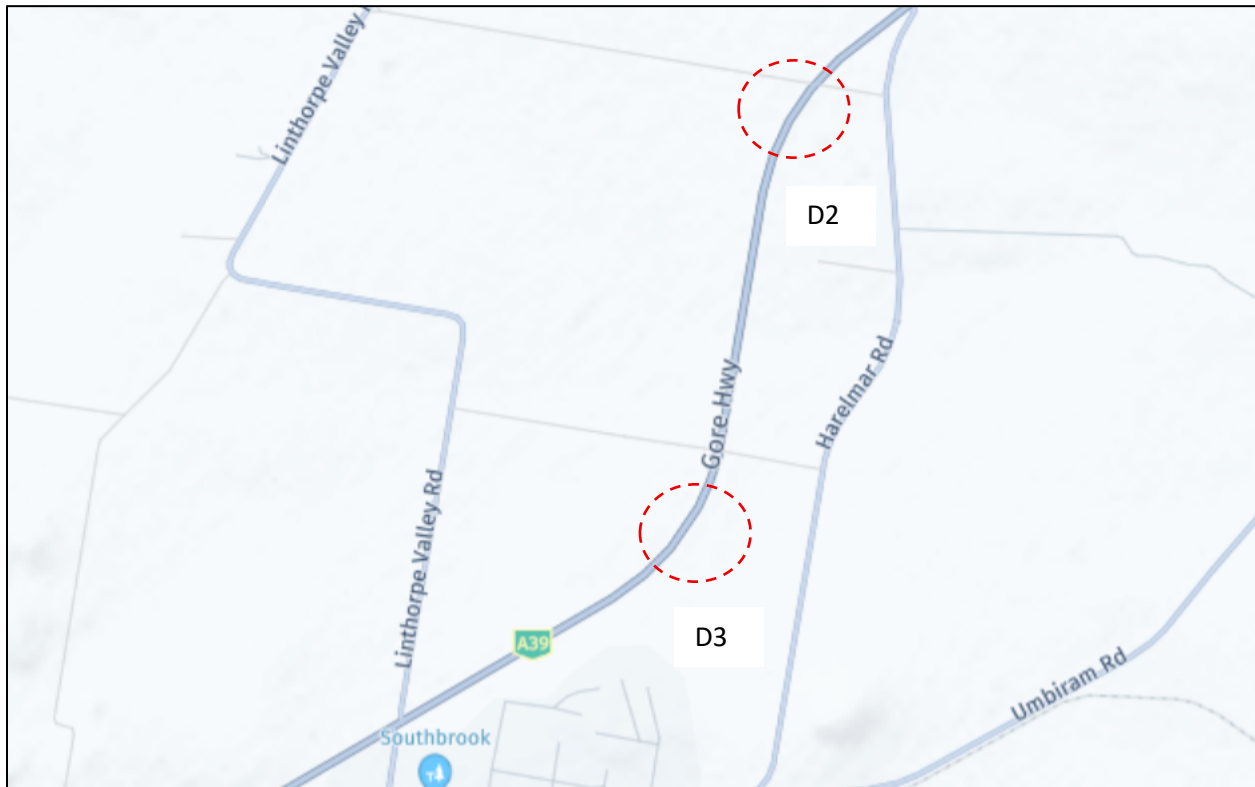
OVERVIEW



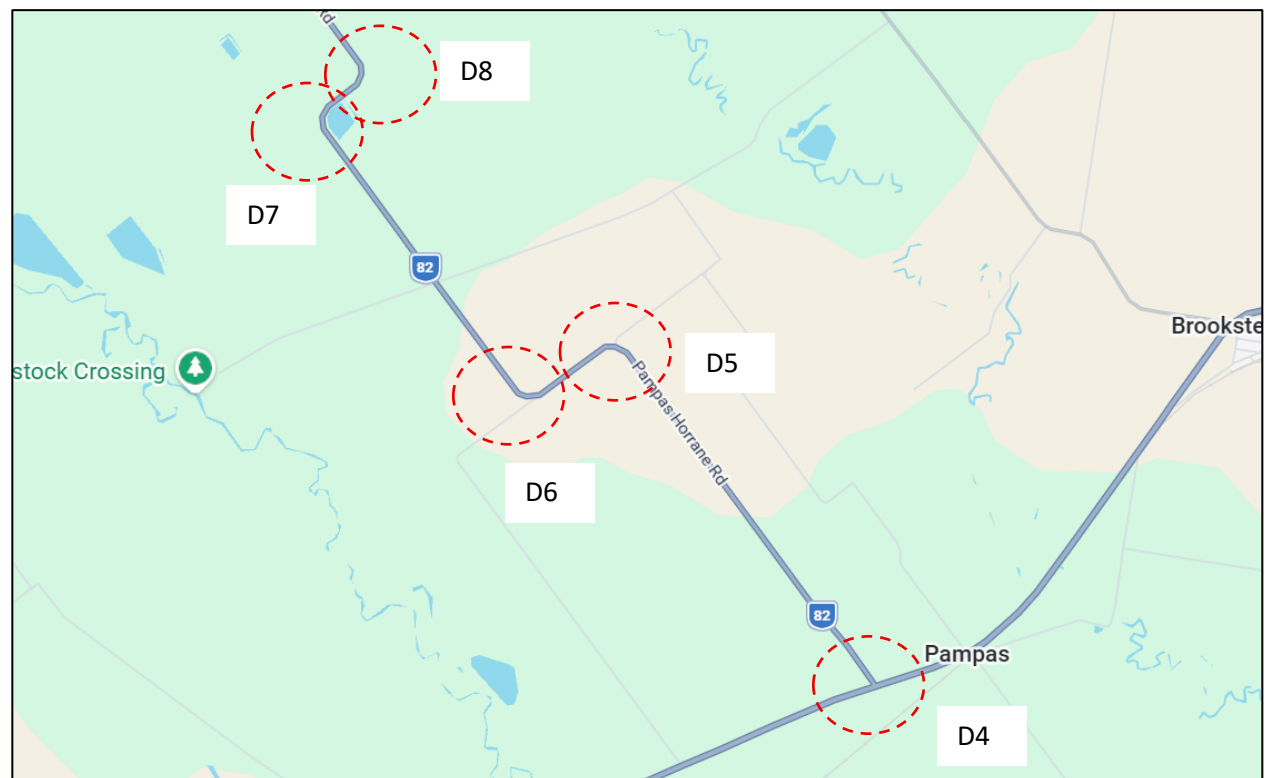
WARREGO HWY / GORE HWY



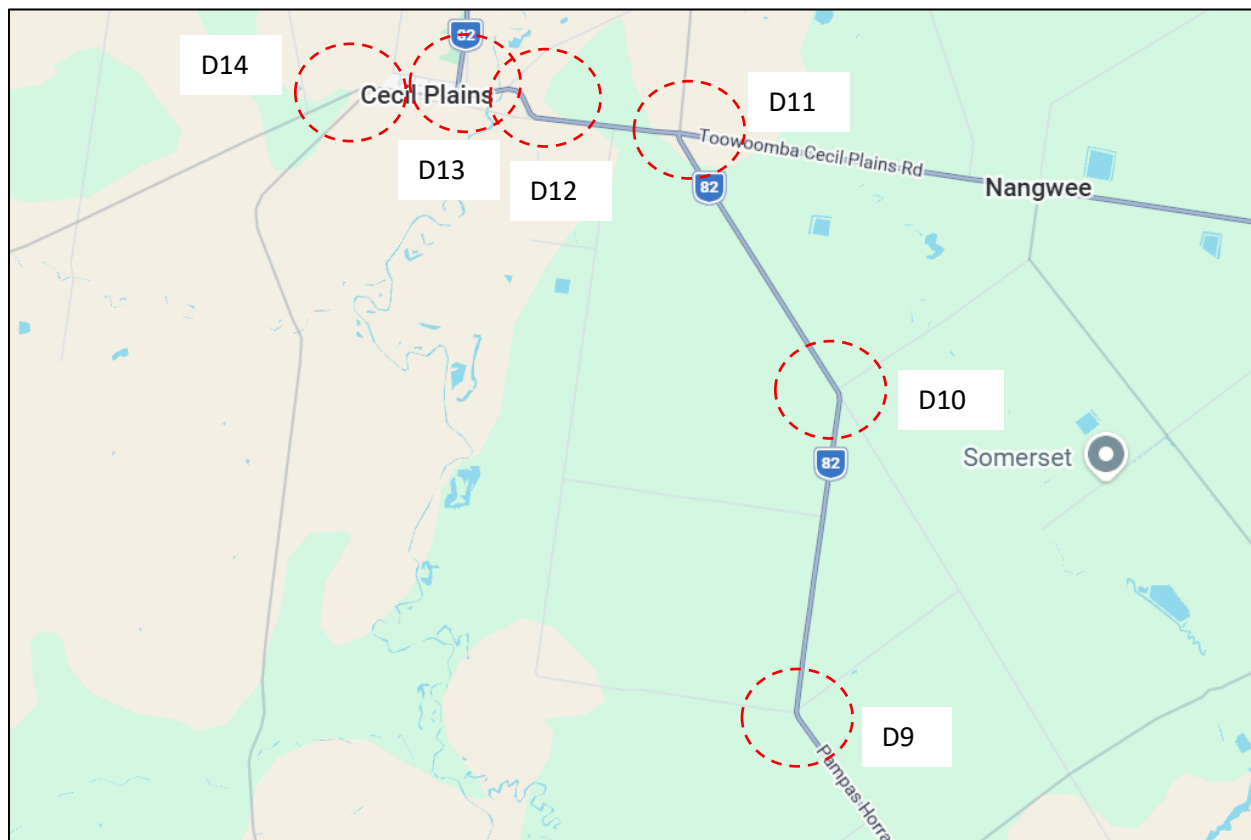
SOUTHBROOK



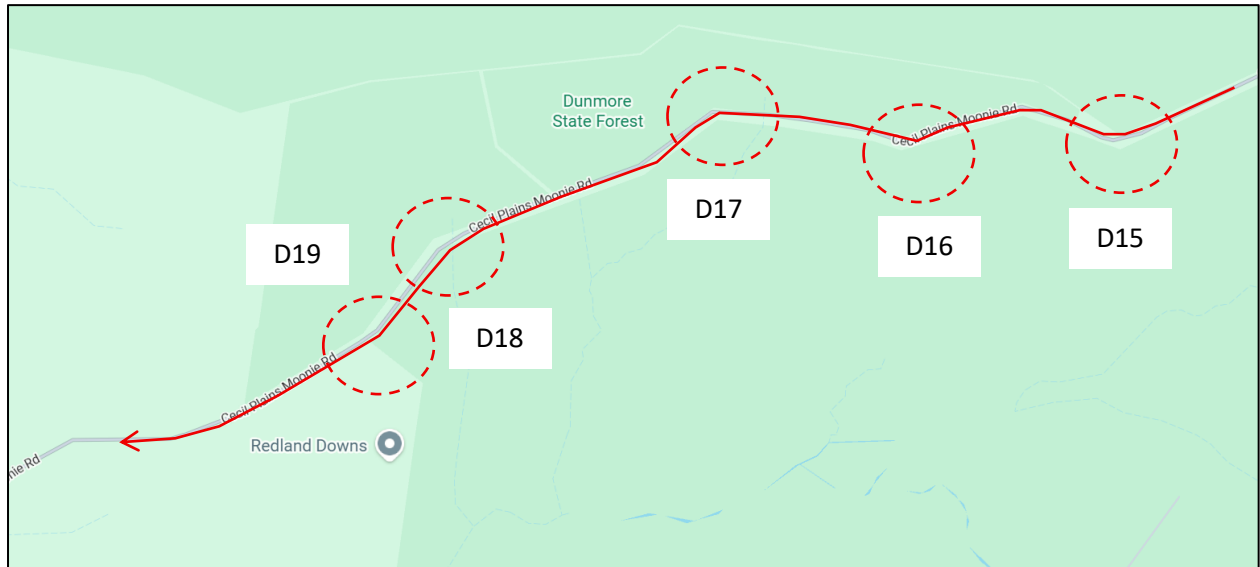
PAMPAS



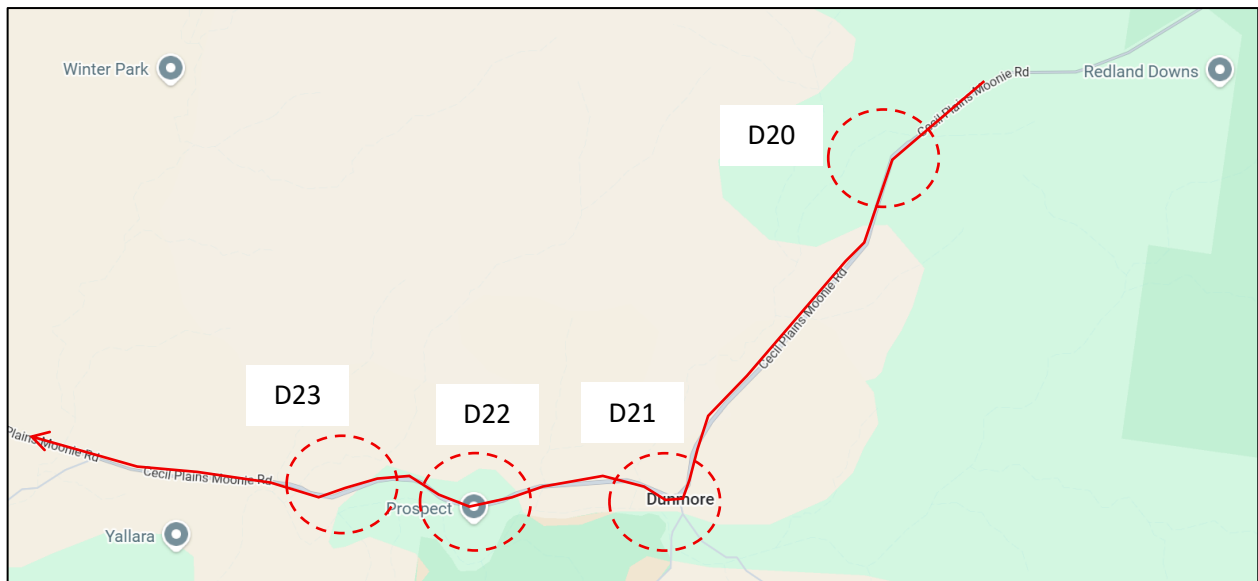
CECIL PLAINS



CECIL PLAINS – MOONIE ROAD, DUNMORE

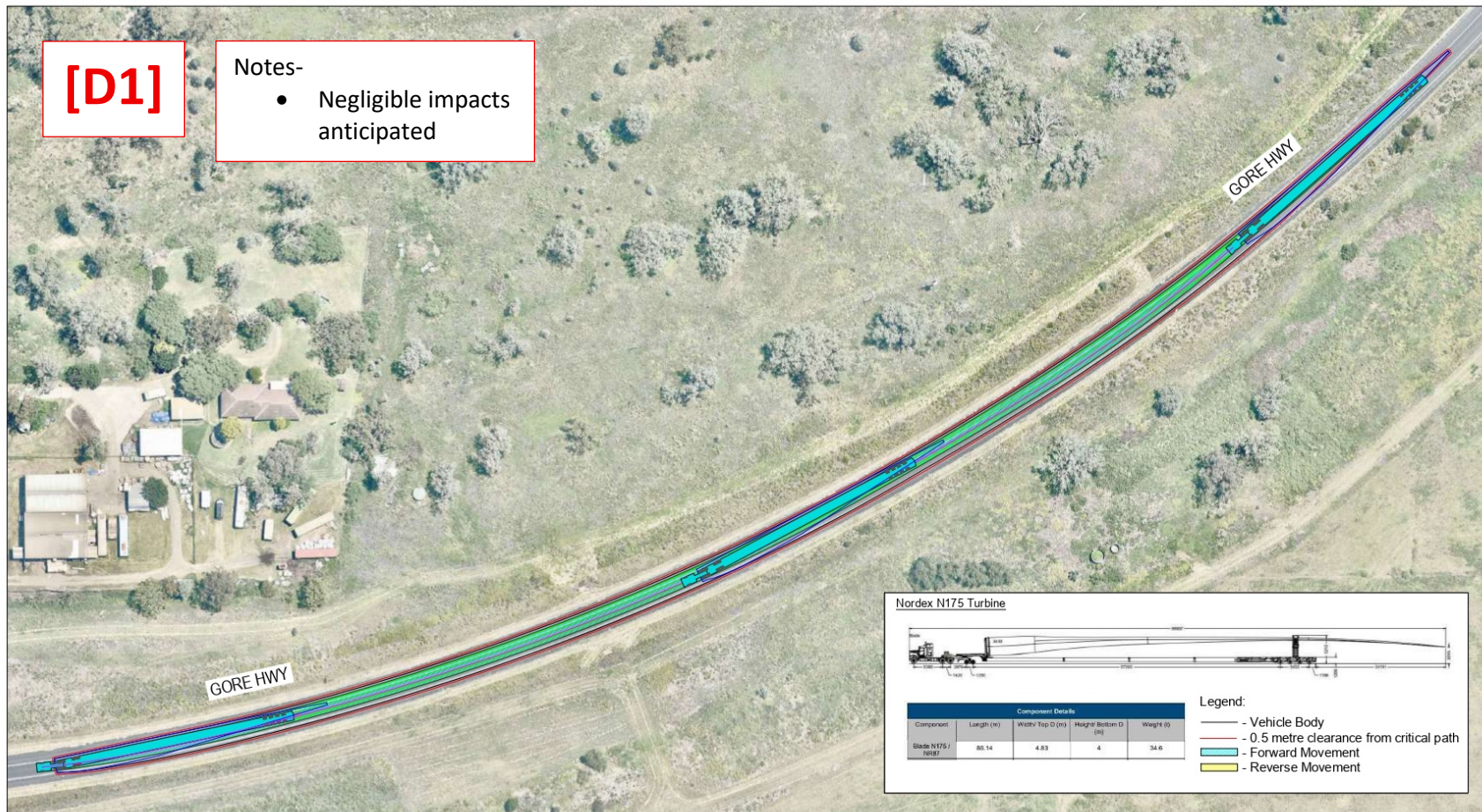


DUNMORE

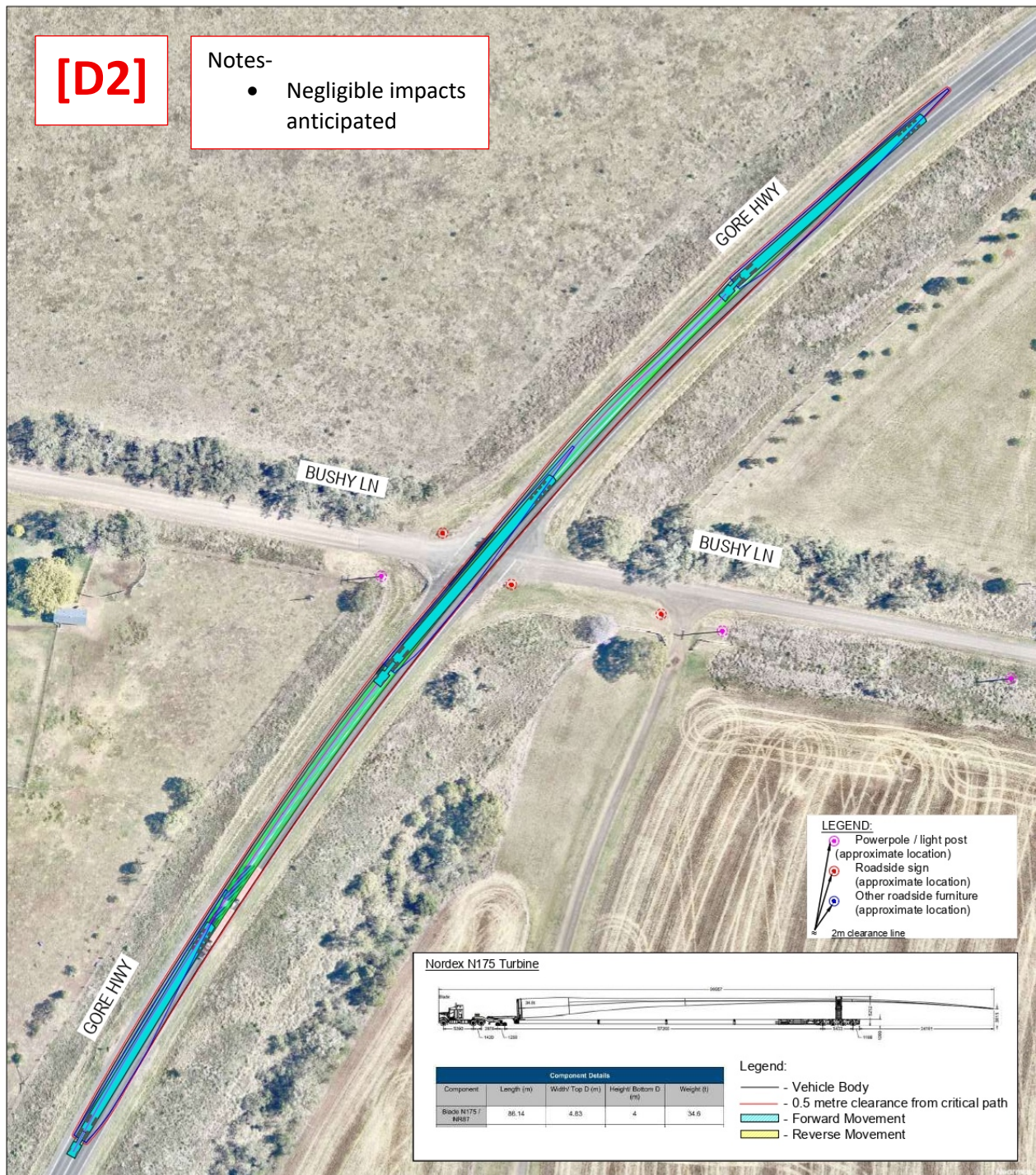


SWEPT PATH ANALYSIS [OPTION D]

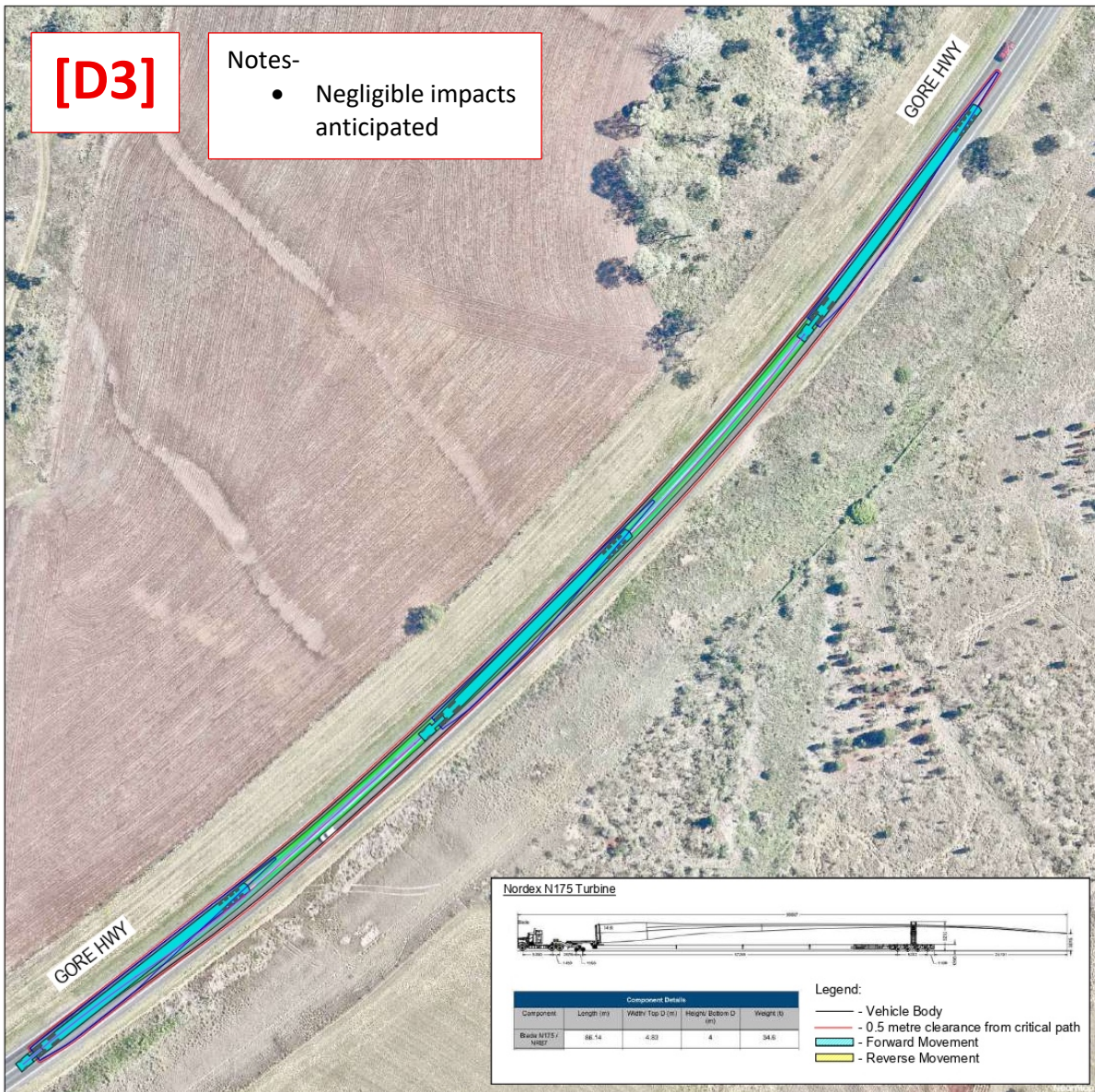
Bend on Gore Hwy



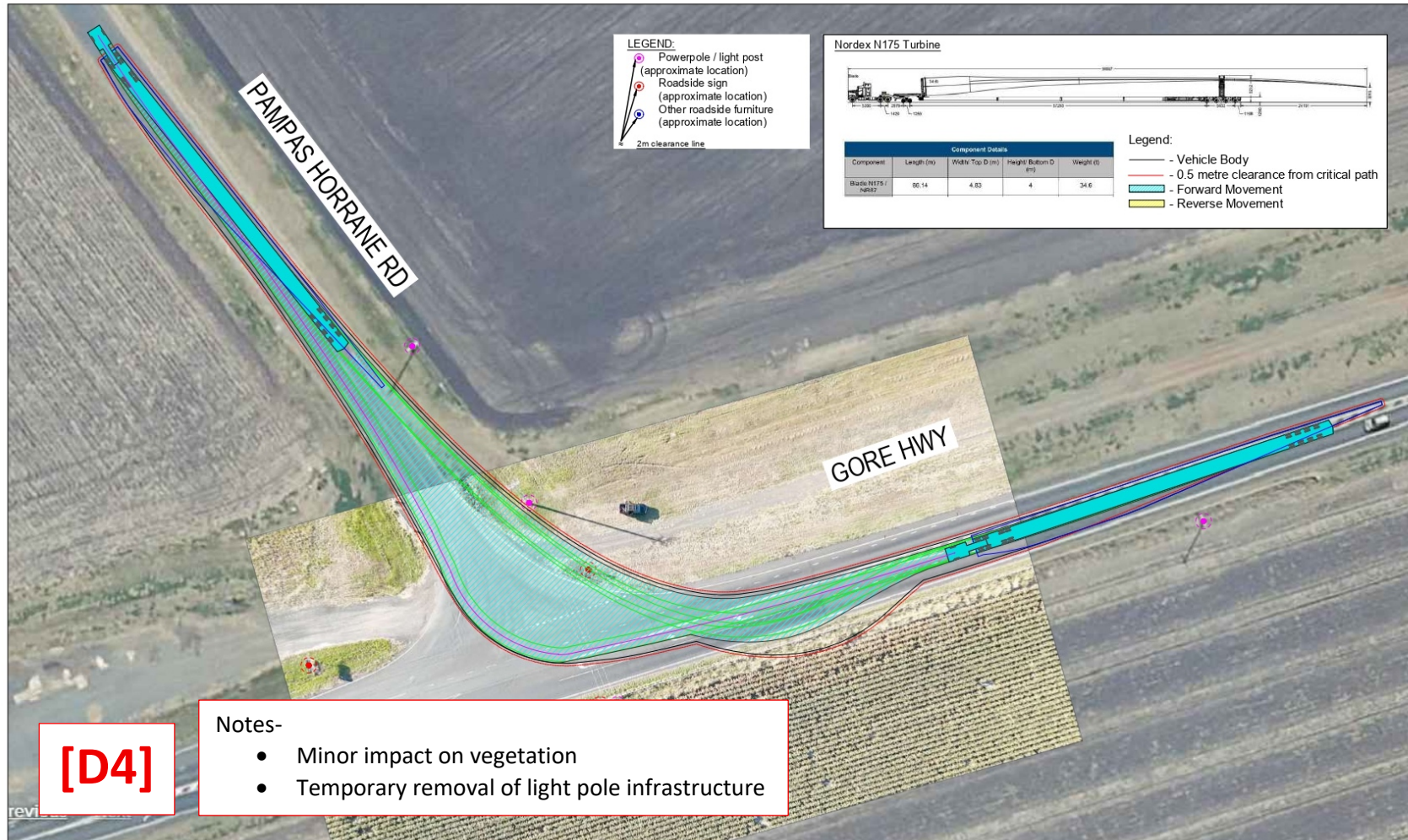
Bend on Gore Hwy-Southbrook



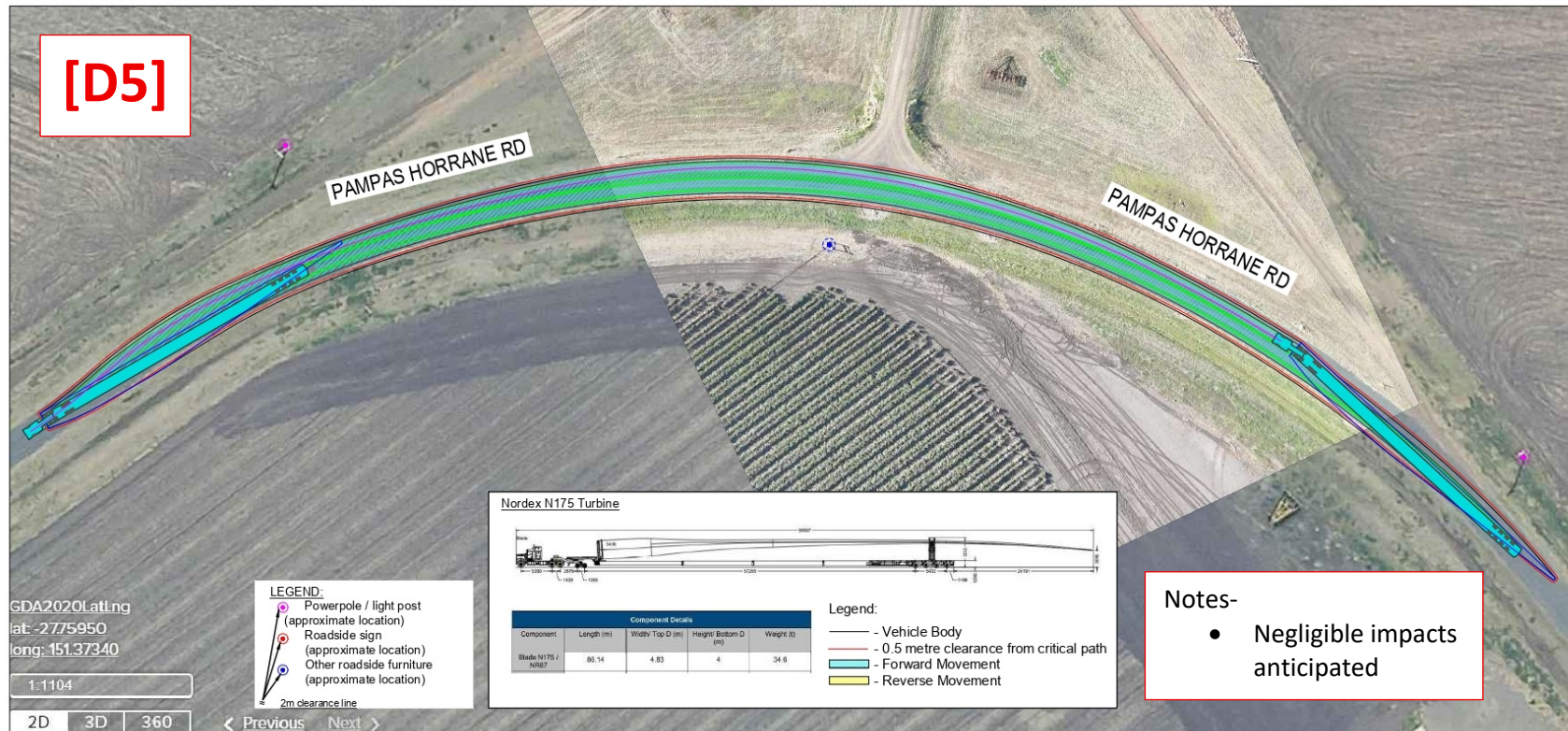
Bend on Gore Hwy-Southbrook



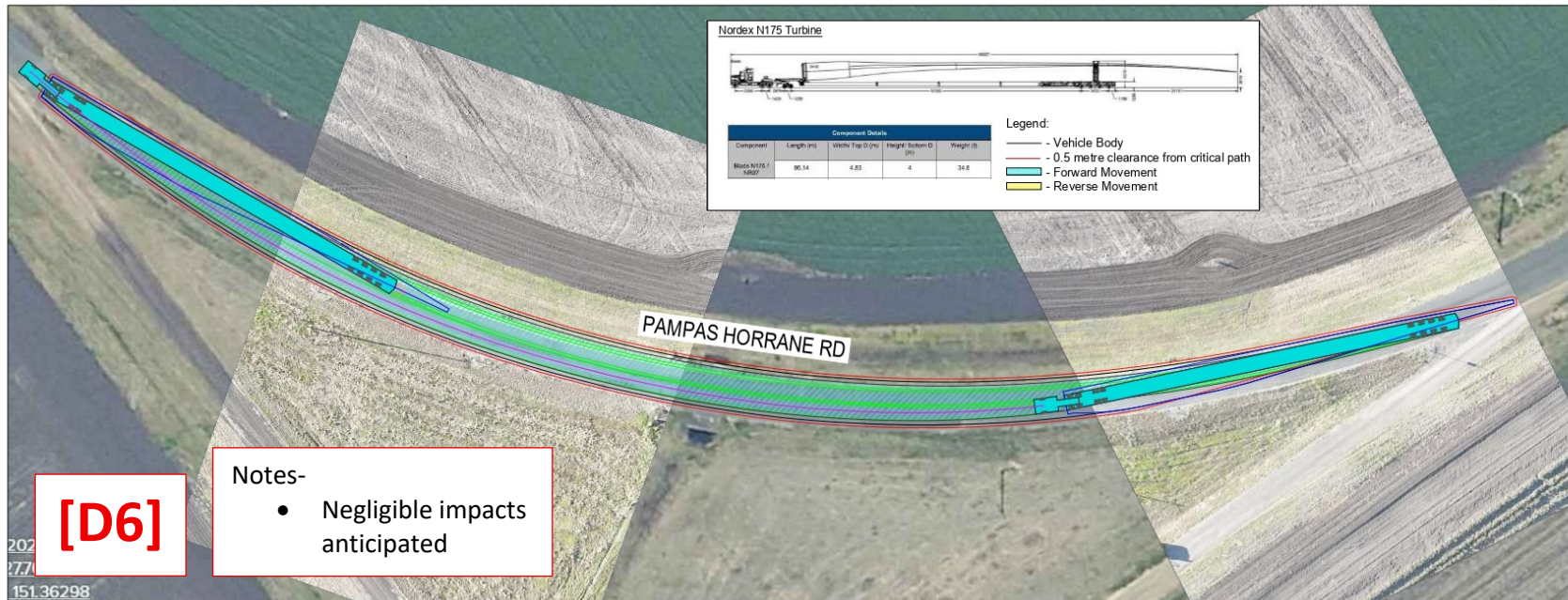
Gore Hwy onto Pampas Horrane Rd



Bend on Pampas Horrane Rd



Bend on Pampas Horrane Rd

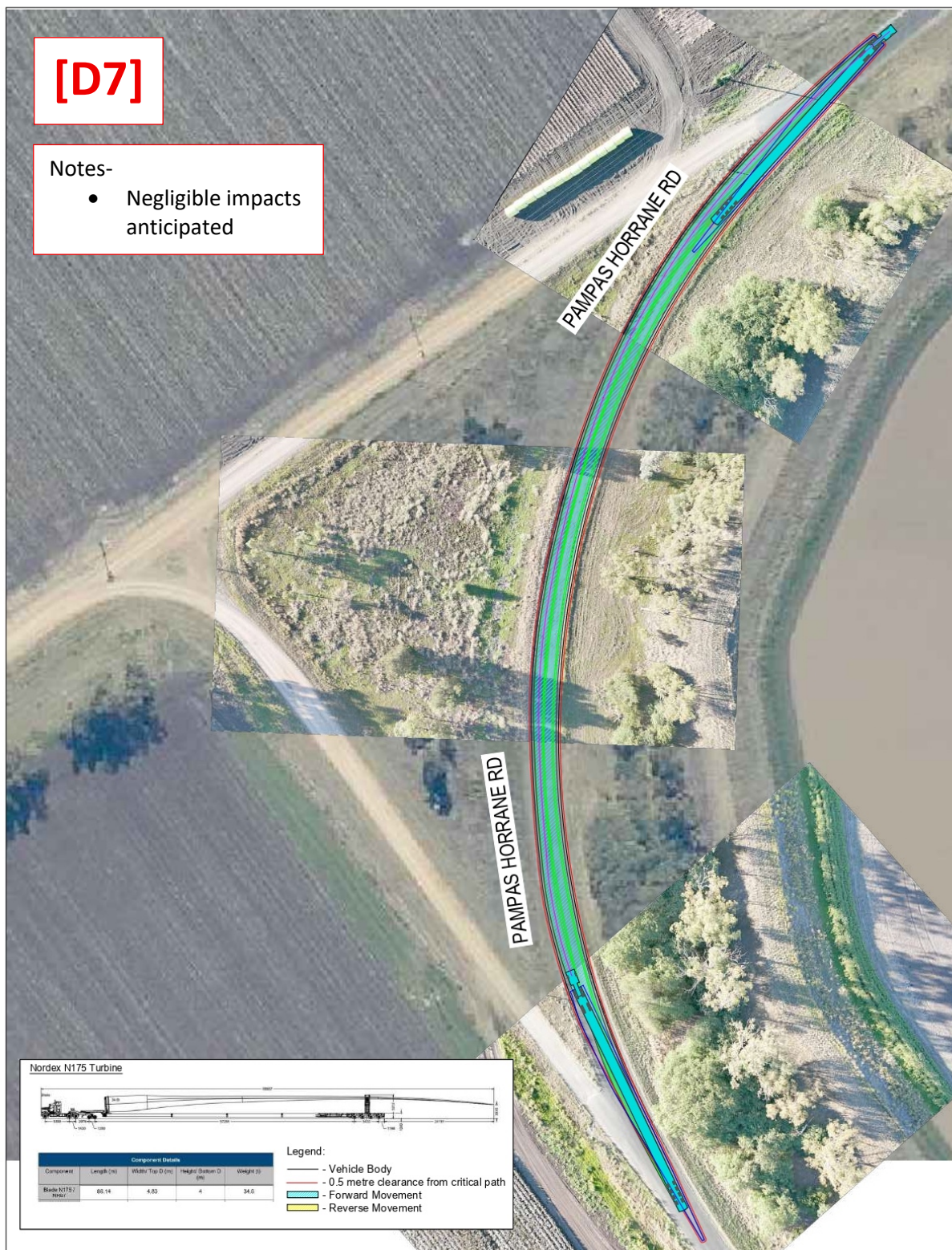


Bend on Pampas Horrane Rd

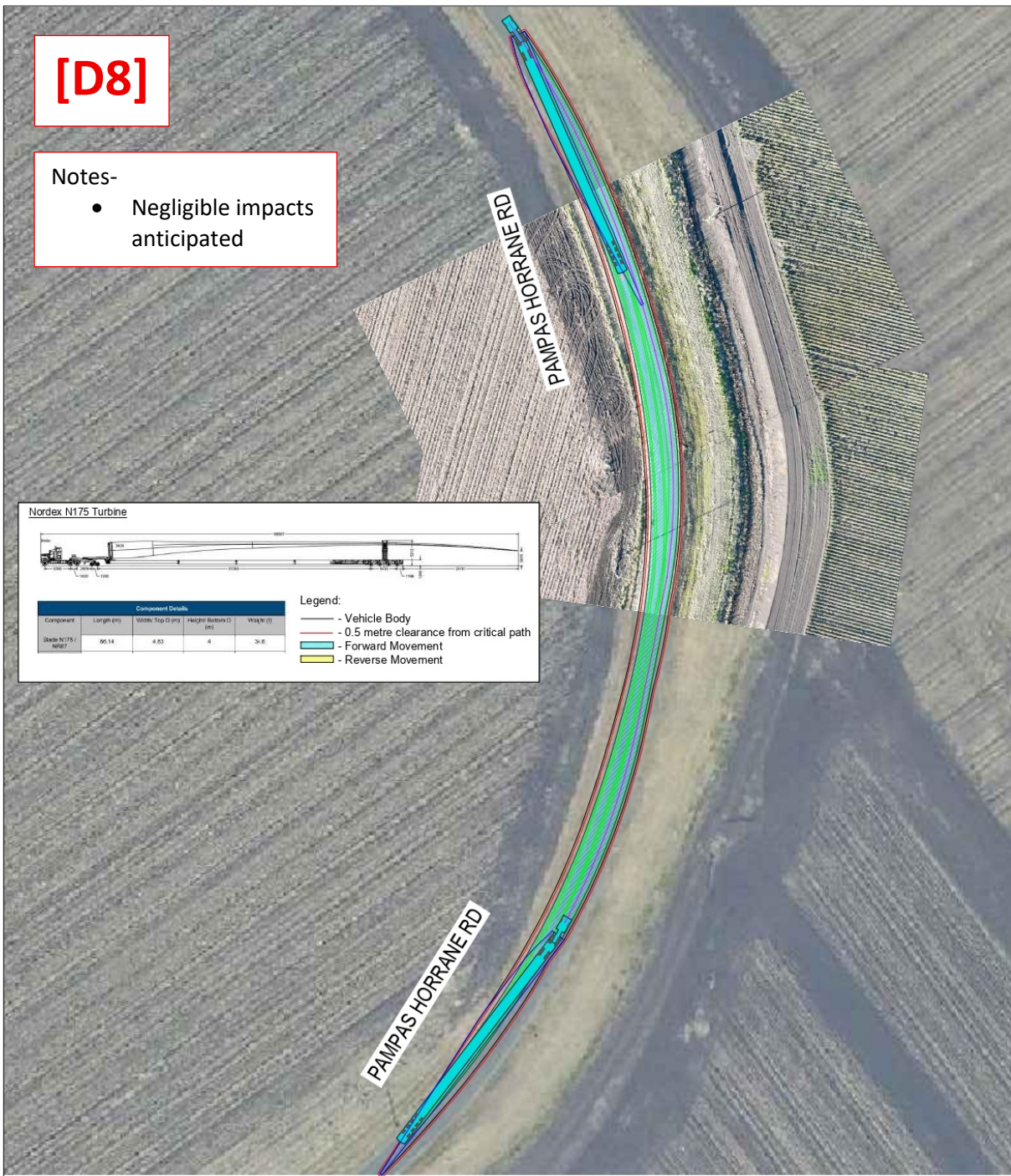
[D7]

Notes-

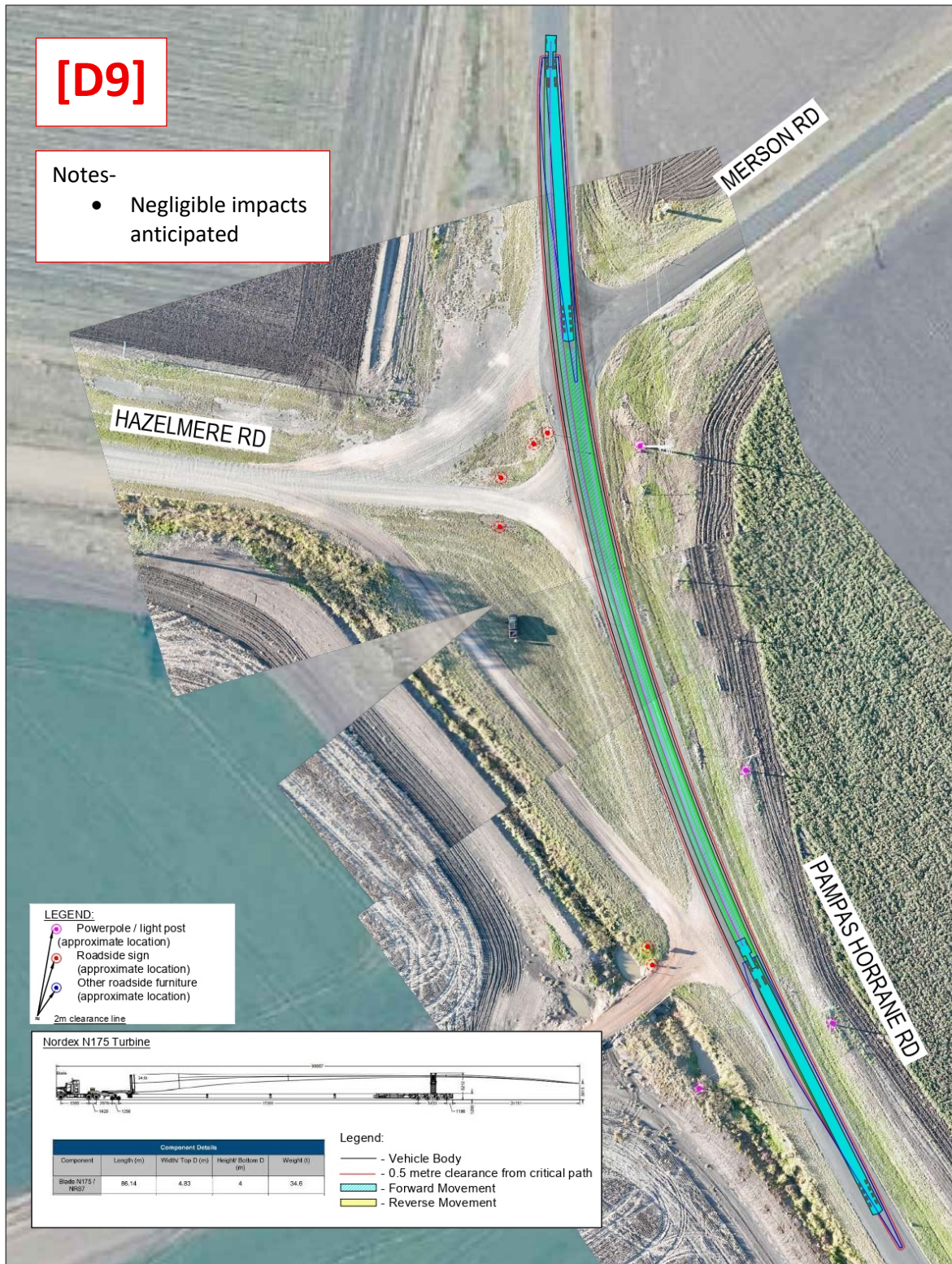
- Negligible impacts anticipated



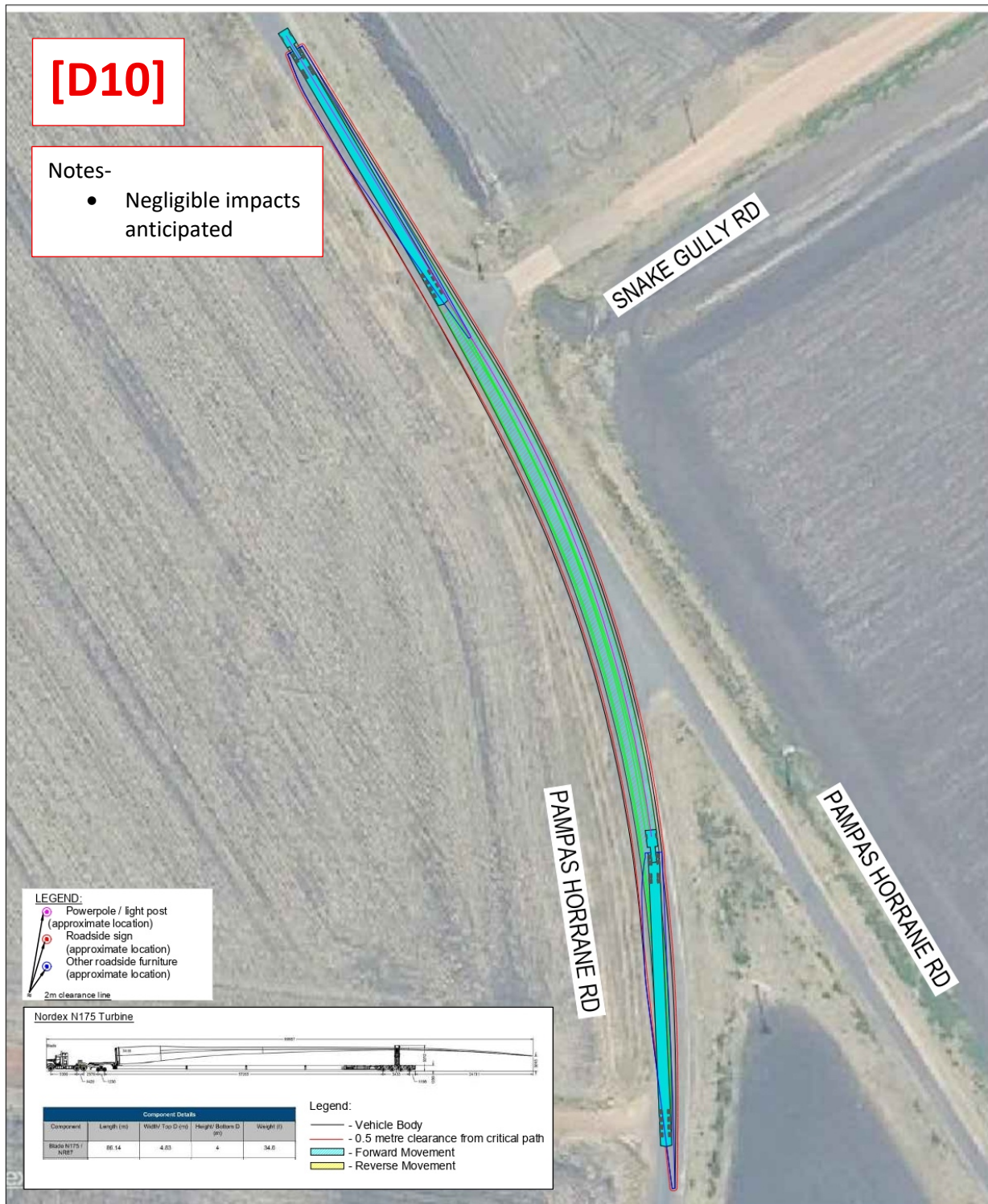
Bend on Pampas Horrane Rd



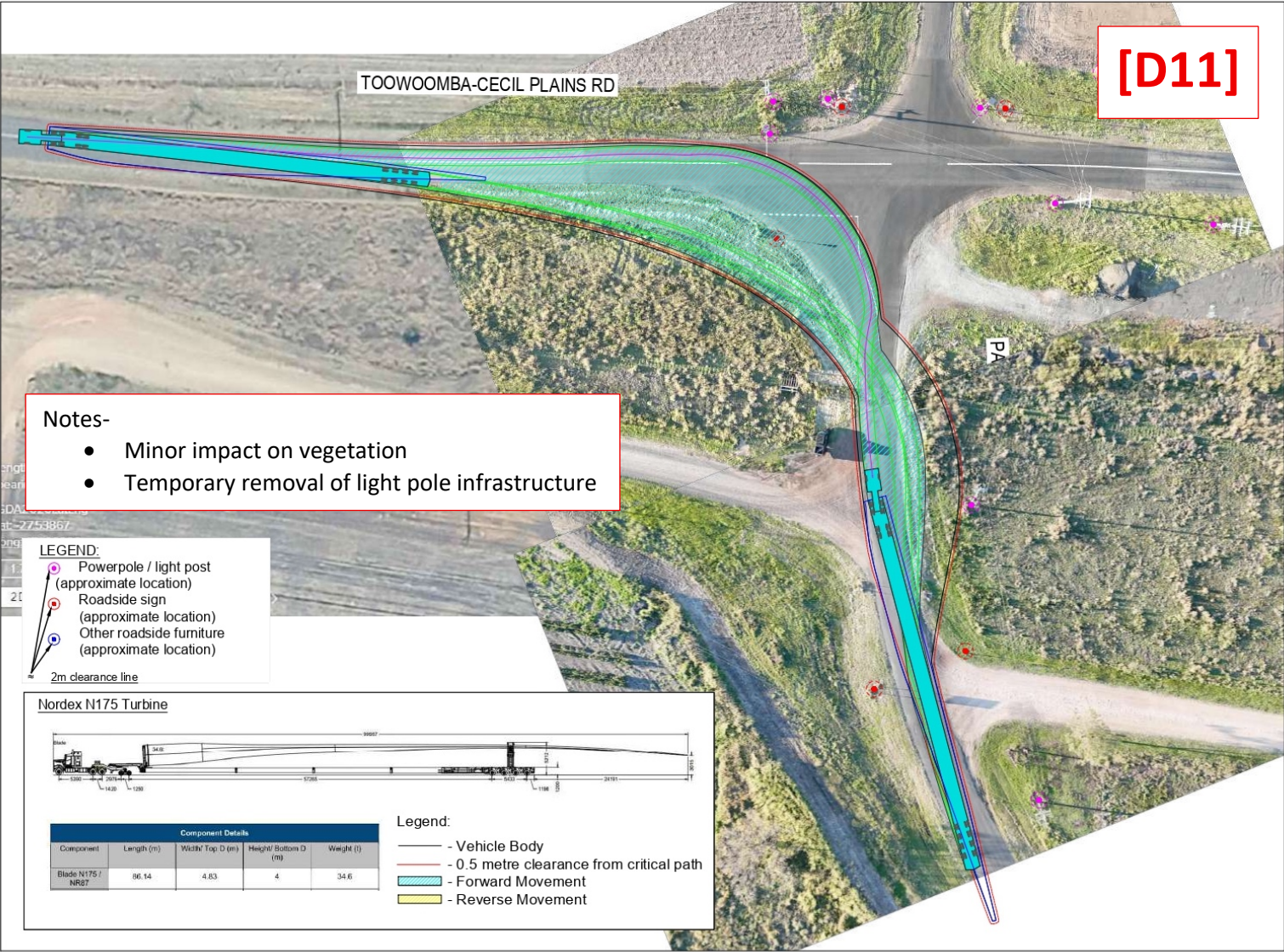
Intersection of Pampas Horrane Rd and Merson Rd



Bend on Pampas Horrane Rd



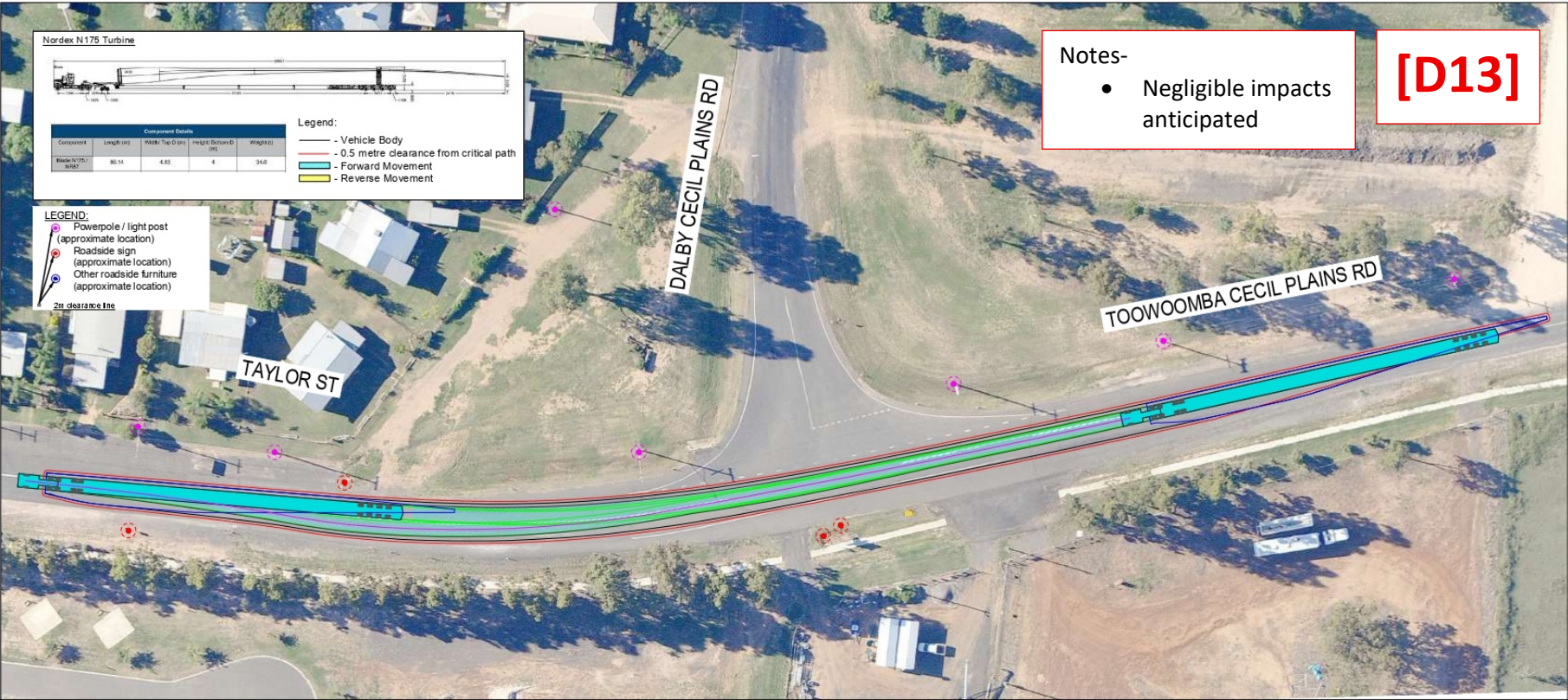
Pampas Horrane Rd onto Toowoomba-Cecil Plains Rd



Bend on Toowoomba Cecil Plains Rd - Cecil Plains



Toowoomba Cecil Plains Rd onto Taylor St

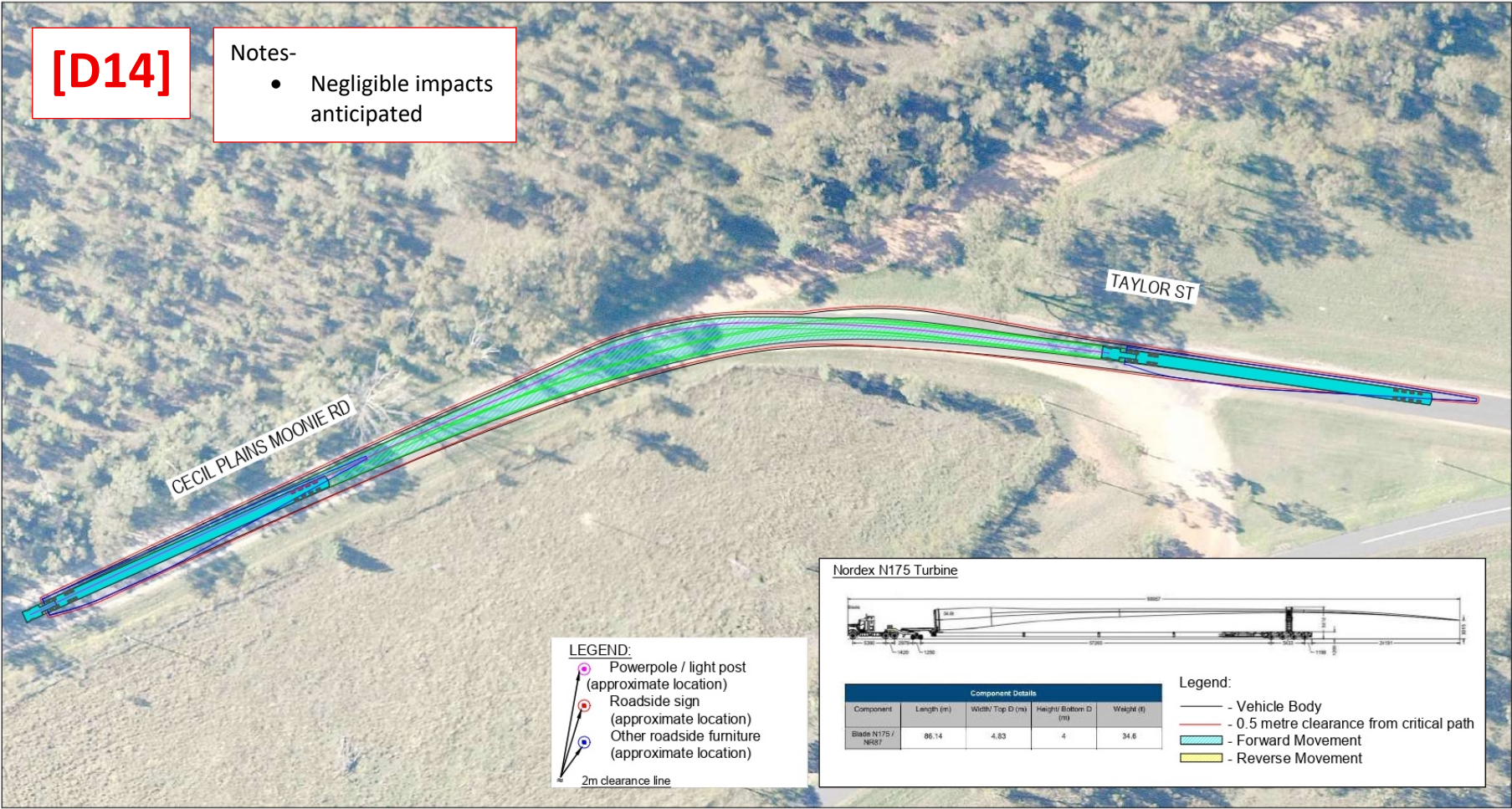


Taylor St onto Cecil Plains Moonie Road

[D14]

Notes-

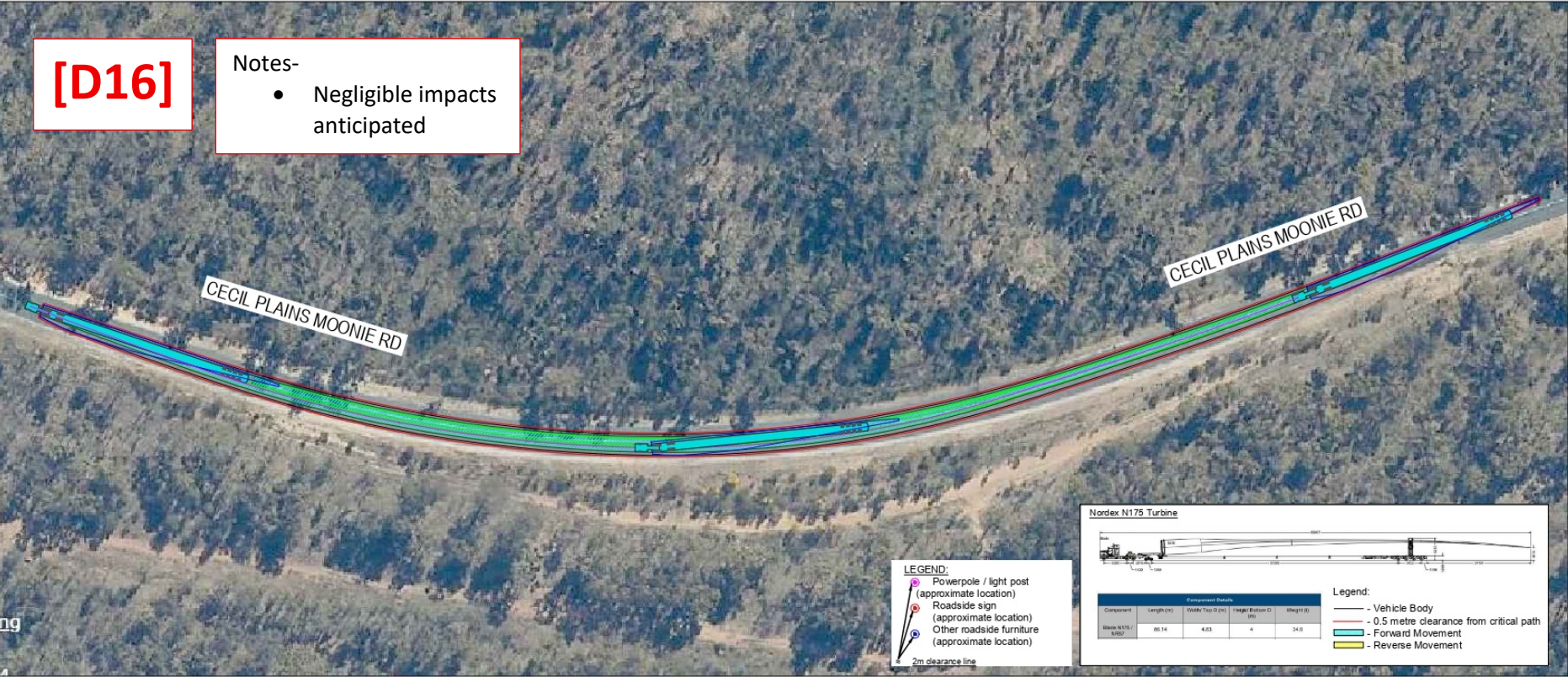
- Negligible impacts anticipated



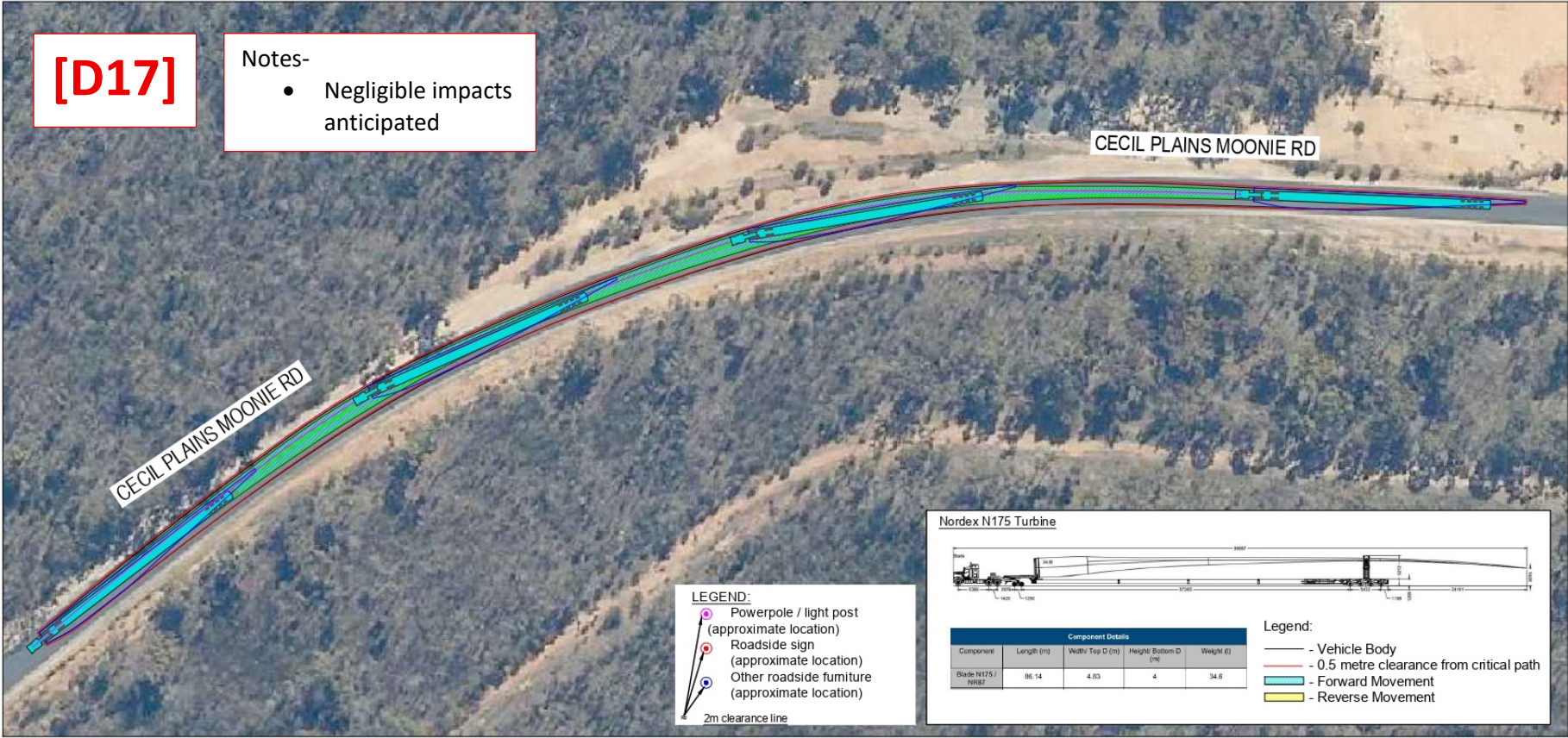
Bend on Cecil Plains Moonie Road



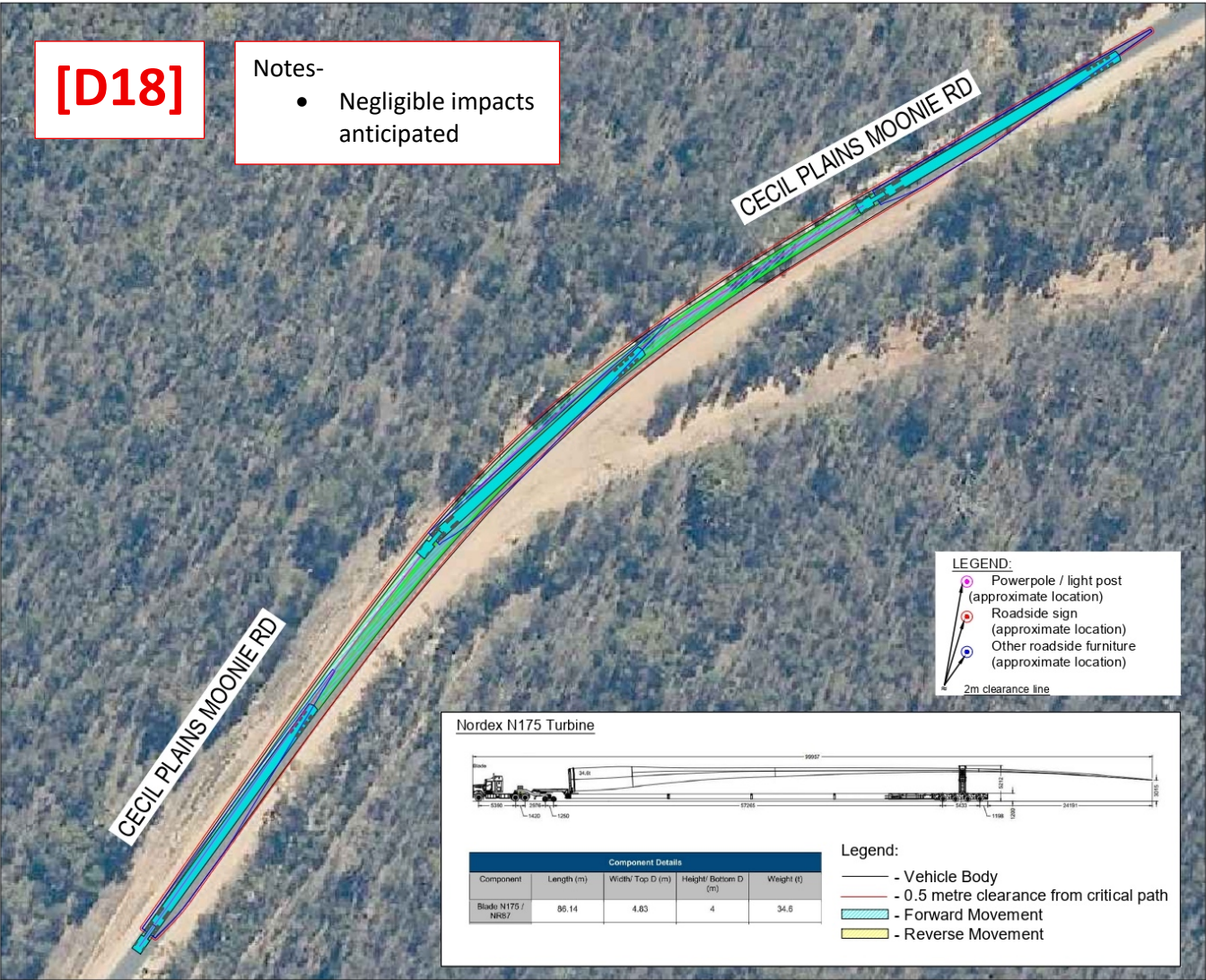
Bend on Cecil Plains Moonie Road



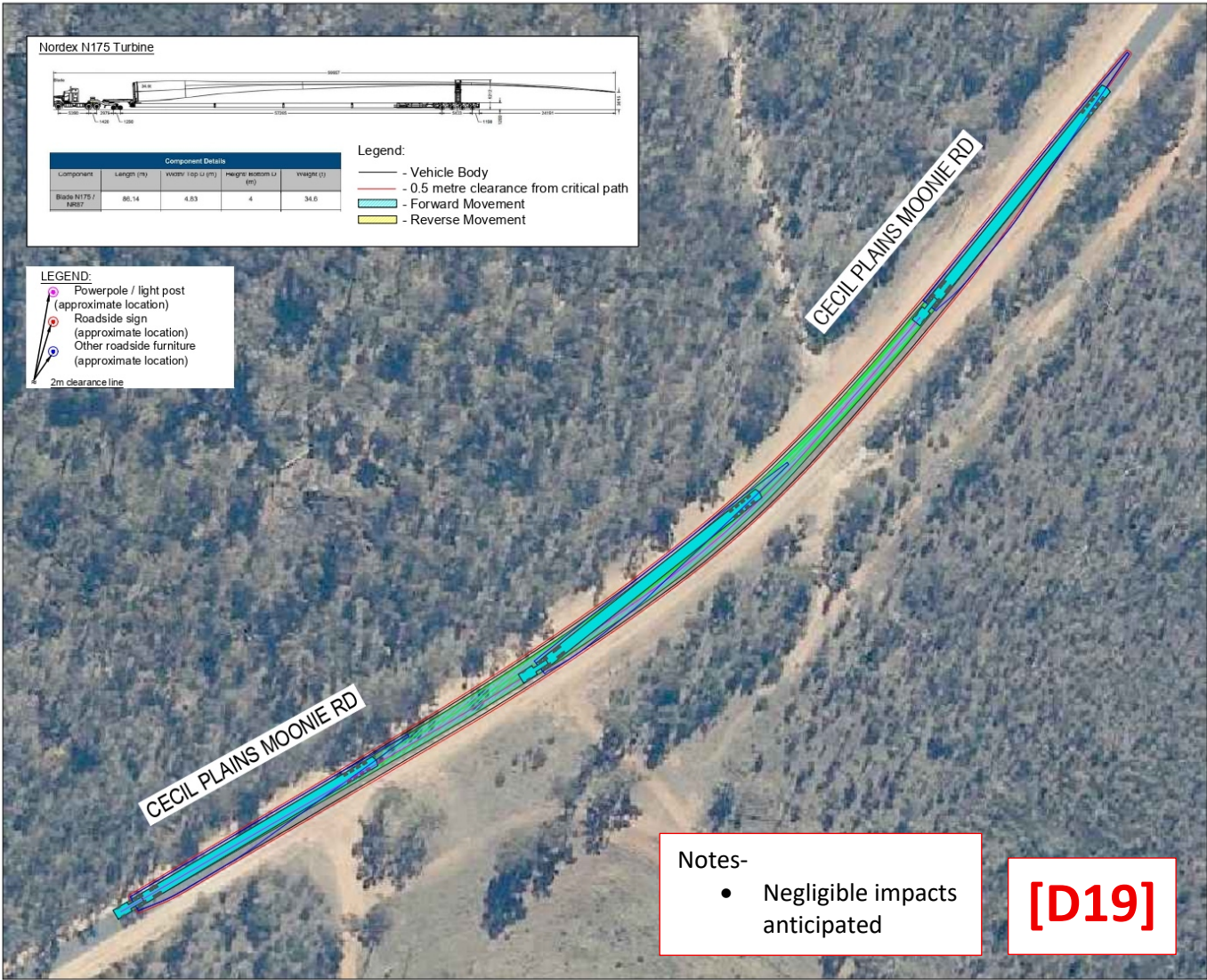
Bend on Cecil Plains Moonie Road



Bend on Cecil Plains Moonie Road



Bend on Cecil Plains Moonie Road

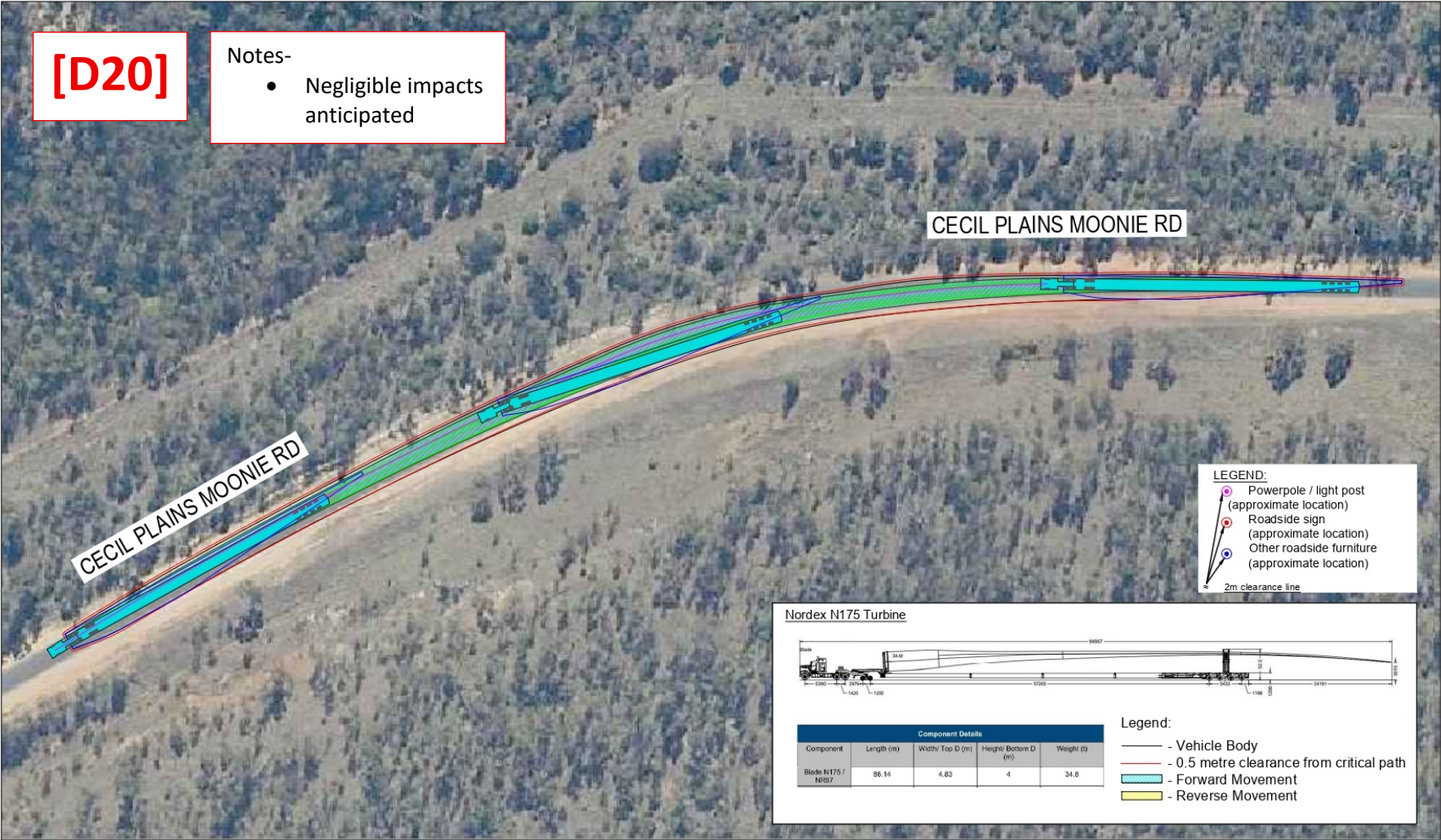


Bend on Cecil Plains Moonie Road

[D20]

Notes-

- Negligible impacts anticipated



Nordex N175 Turbine

Component	Component Details			
	Length (m)	Width/Top D (m)	Height/Bottom D (m)	Weight (t)
Blade N175 / N167	85.14	4.83	4	34.6

Legend:

- Vehicle Body
- 0.5 metre clearance from critical path
- Forward Movement
- Reverse Movement

LEGEND:

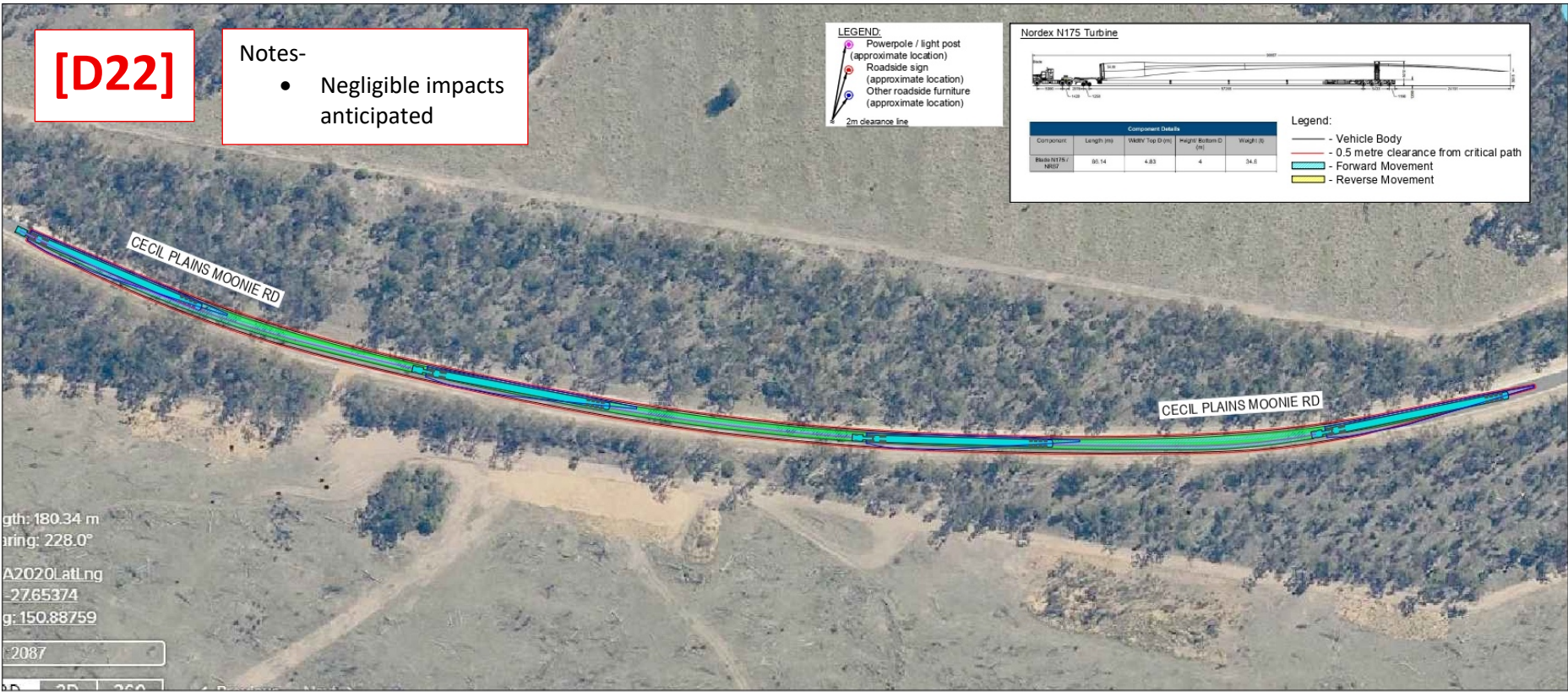
- Powerpole / light post (approximate location)
- Roadside sign (approximate location)
- Other roadside furniture (approximate location)
- 2m clearance line

Notes-

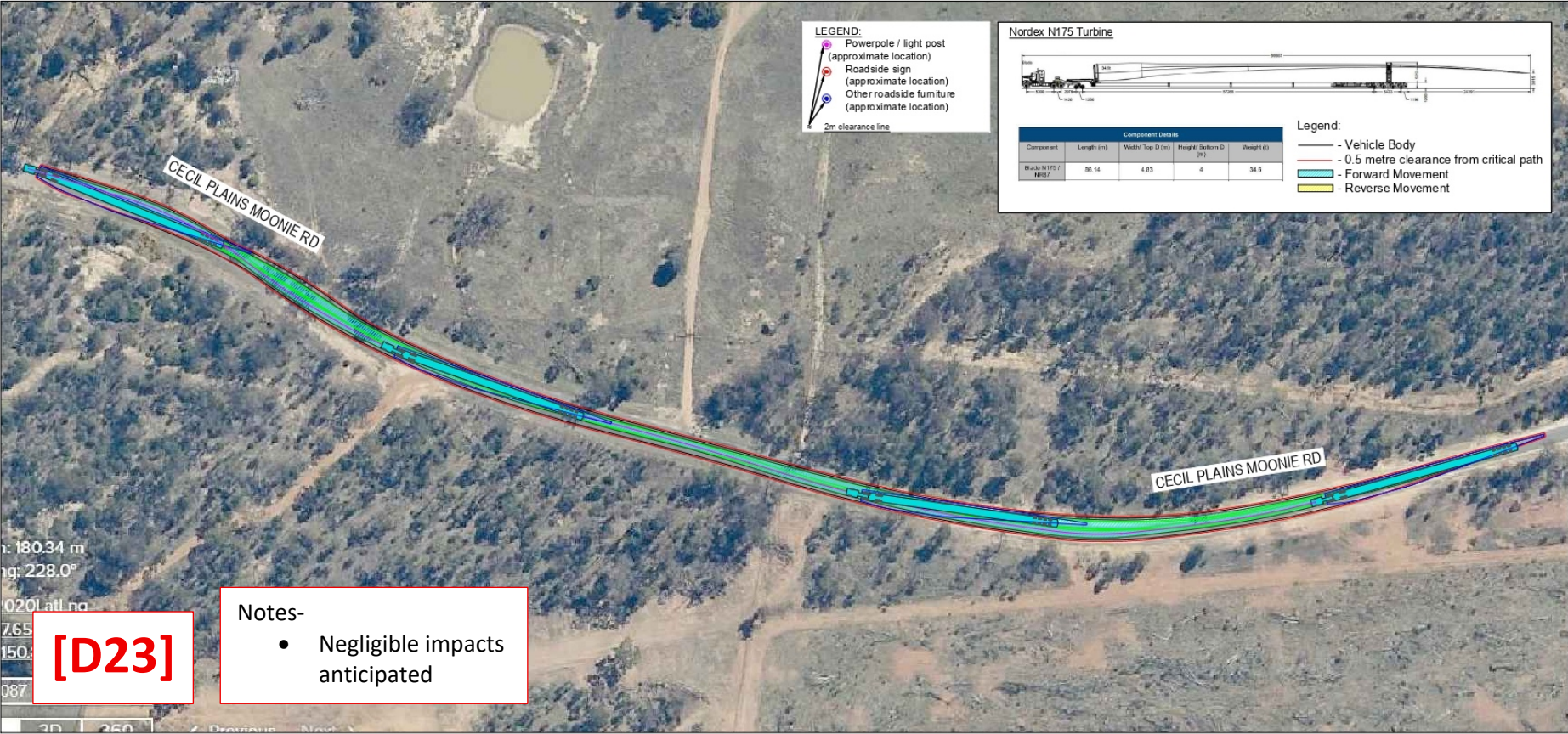
- Negligible impacts anticipated

[D21]

Bend on Cecil Plains Moonie Road

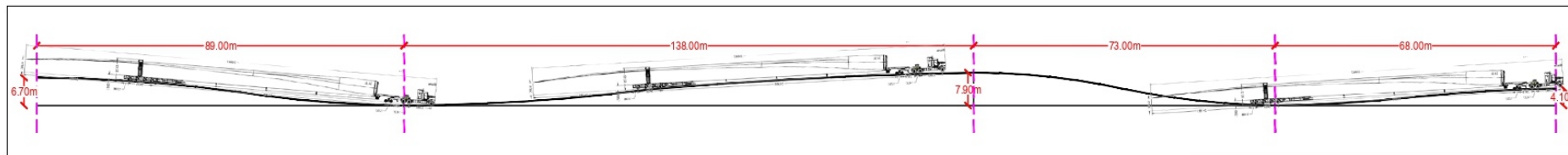


Bend on Cecil Plains Moonie Road

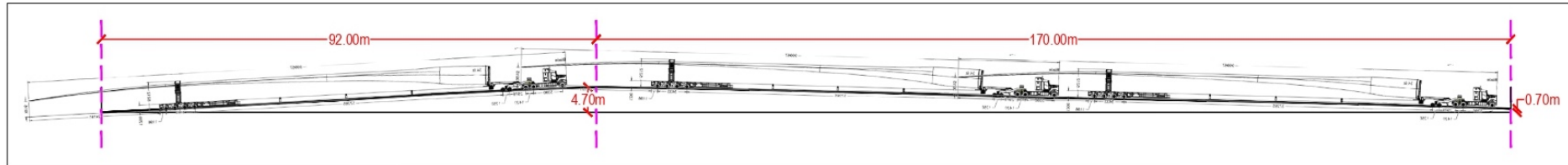


APPENDIX F – VERTICAL SWEPT PATH ANALYSIS (FLOODWAY)

FLOODWAY 1 – CECIL PLAINS – MOONIE ROAD



FLOODWAY 2 – CECIL PLAINS – MOONIE ROAD 35KM WEST OF MOONIE HIGHWAY

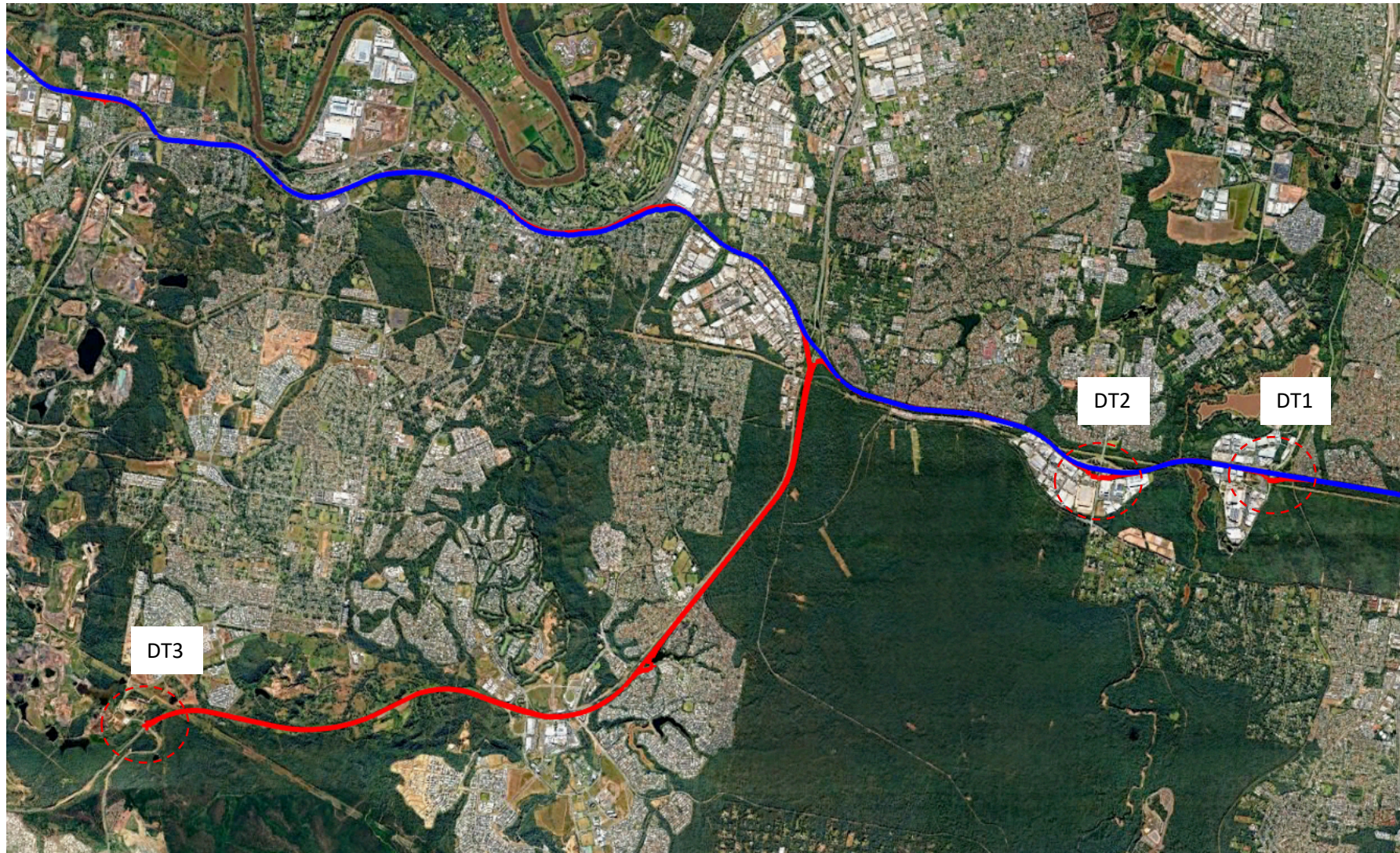


APPENDIX G – SUMMARY OF OVERHEAD STRUCTURES

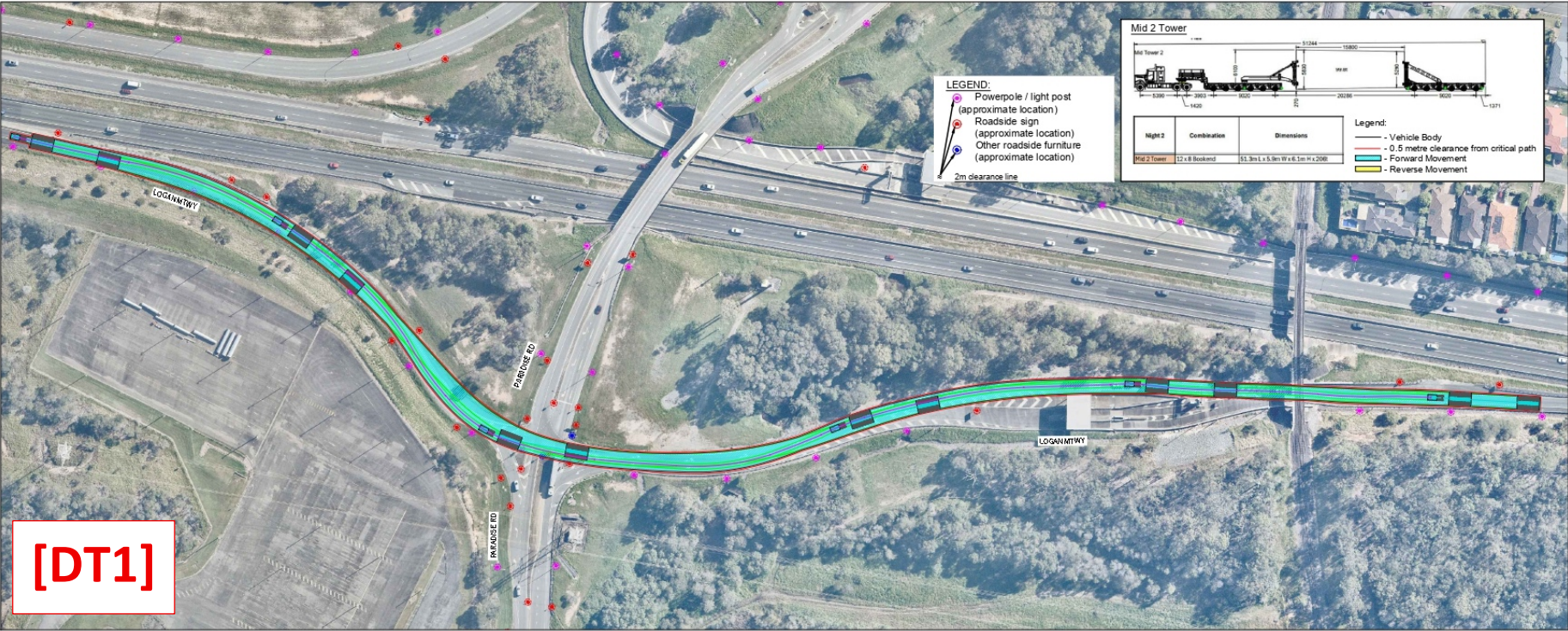
Ref	Location	Description
OP1	Lucinda Dr Overpass, Port Drive	Bridge Height: Left 6.8m / Centre 6.8m / Right 6.8m
OP2	Pritchard St Overpass, Port Drive	Bridge Height: Left 7.8m / Centre 7.7m / Right 7.7m
OP3	Lindum Rd Overpass, Port Drive	Bridge Height: Left 6.48m / Centre 6.38m / Right 6.28m
OP4	Hamment–Tingalpa Rd Overpass, Port Drive	Bridge Height: Left 6.42m / Centre 6.37m / Right 6.17m
OP5	Link Rd Overpass, Port Drive	Bridge Height: Left 6.38m / Centre 6.37m / Right 6.7m
OP6	Meadowland Rd Overpass, Gateway Motorway	Bridge Height: Left 6.2m / Centre 6.3m / Right 6.4m
OP7	Miles Platting Rd Overpass, Gateway Motorway	Bridge Height: Left 6.5m / Centre 6.2m / Right 6.1m
OP8	Compton Rd Overpass, Gateway Motorway	Bridge Height: Left 6.9m / Centre 7.1m / Right 7.2m
OP9	Logan Motorway Overpass	Bridge Height: All lanes 7.0m+
OP10	Beaudesert Rd Overpass 1	Bridge Height: All lanes 7.0m+
OP11	Beaudesert Rd Overpass 2	Bridge Height: All lanes 7.0m+
OP12	Paradise Rd Rail Overpass, Logan Motorway	Bridge Height: Left 5.6m / Centre 5.5m / Right 5.4m
OP13	Paradise Rd Overpass, Logan Motorway	Bridge Height: 5.4m all lanes
OP14	Stapylton Rd Overpass, Logan Motorway	Bridge Height: 5.4m all lanes
OP15	Woogaroo St Overpass, Logan Motorway	Bridge Height: Left 6.15m / Centre 5.98m / Right 5.8m
OP16	Centenary Highway Overpass	Bridge Height: Left 5.7m / Centre 5.7m / Right 5.6m
OP17	Centenary Highway Overpass 4	Bridge Height: Left 5.5m / Centre 5.7m / Right 5.7m
OP18	Formation St Overpass, Logan Motorway	Bridge Height: Left 6.7m / Centre 6.75m / Right 6.8m
OP19	Tunnel under Ipswich Motorway	Clearance: Left 6.5m / Centre 6.45m / Right 6.37m
OP20	Overhead Walkway 1 Goodna	Bridge Height: Left 6.6m / Centre 6.6m / Right 6.93m
OP21	Overhead Walkway 2 Goodna	Bridge Height: Left 6.68m / Centre 6.8m / Right 6.71m
OP22	Redbank Plaza Walkway	Bridge Height: Left 6.79m / Centre 6.89m / Right 7.03m
OP23	Walkway before Warrego Hwy Exit	Bridge Height: Left 8.6m / Centre 8.2m / Right 8.0m
OP24	River Rd Overpass, Warrego Hwy	Bridge Height: Left 5.8m / Centre 5.7m / Right 5.6m
OP25	Mt Crosby Rd Overpass, Warrego Hwy	Bridge Height: Left 5.6m / Centre 5.5m / Right 5.5m
OP26	Kholo Rd Overpass, Warrego Hwy	Bridge Height: Left 6.4m / Centre 6.2m / Right 6.2m
OP27	Pine Mountain Rd Overpass, Warrego Hwy	Bridge Height: Left 6.0m / Centre 5.9m / Right 5.9m

OP28	Wulkuraka Connection Rd Overpass	Bridge Height: Left 6.55m / Centre 6.3m / Right 6.3m
OP29	Walkway Bridge Marburg	Bridge Height: 7.0m signed
OP30	Laidley–Plainland Rd Overpass	Bridge Height: 6.7m signed
OP31	Outer Ring Rd Overpass	Bridge Height: 5.6m signed
OP32	Eastern Dr Overpass, Warrego Hwy	Bridge Height: Centre 6.5m
OP33	Murphy Creek Rd Overpass	Bridge Height: 6.3m all lanes
OP34	New England Hwy Overpass	Bridge Height: 8.0m+ all lanes
OP35	Mort St Overpass, Toowoomba Bypass	Bridge Height: 6.4m all lanes
OP36	Boundary St Overpass, Toowoomba Bypass	Bridge Height: 6.3m all lanes

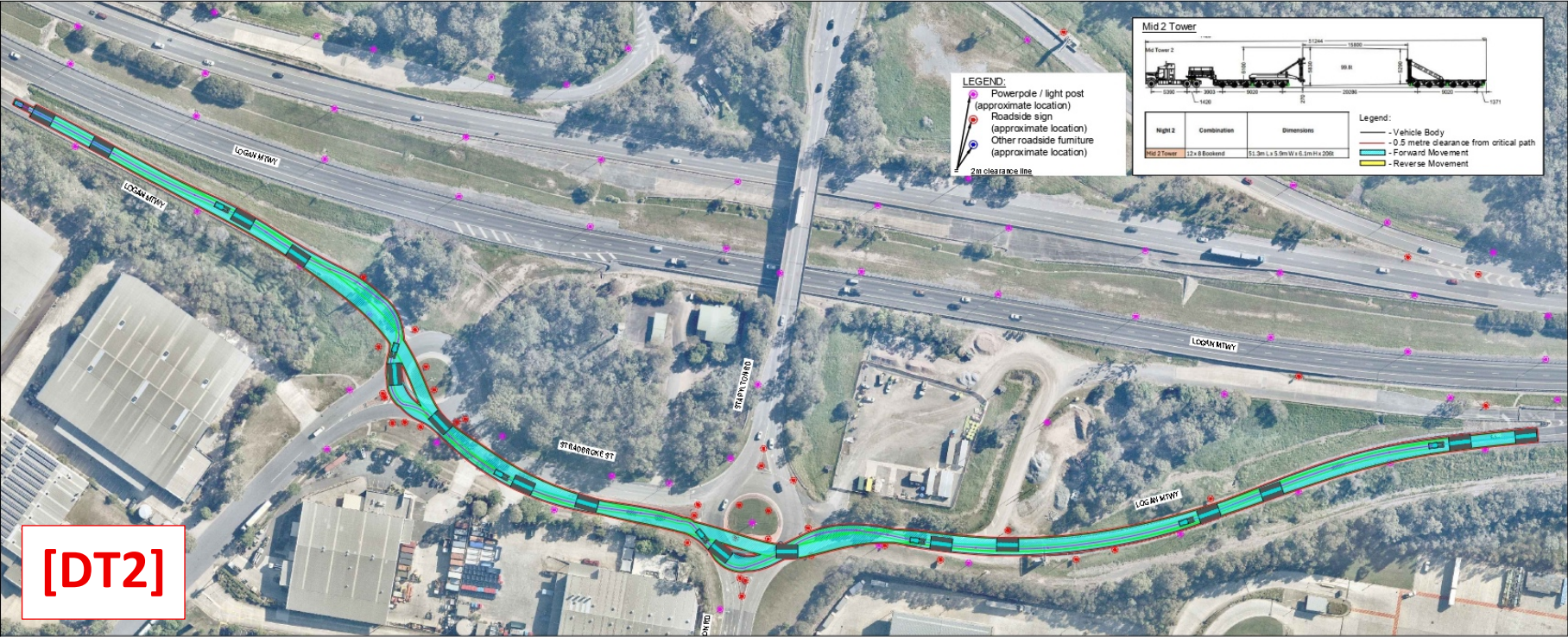
APPENDIX H – LATERAL SWEPT PATH ANALYSIS (DETOUR ROUTE UP TO 6.1m HIGH VEHICLES)



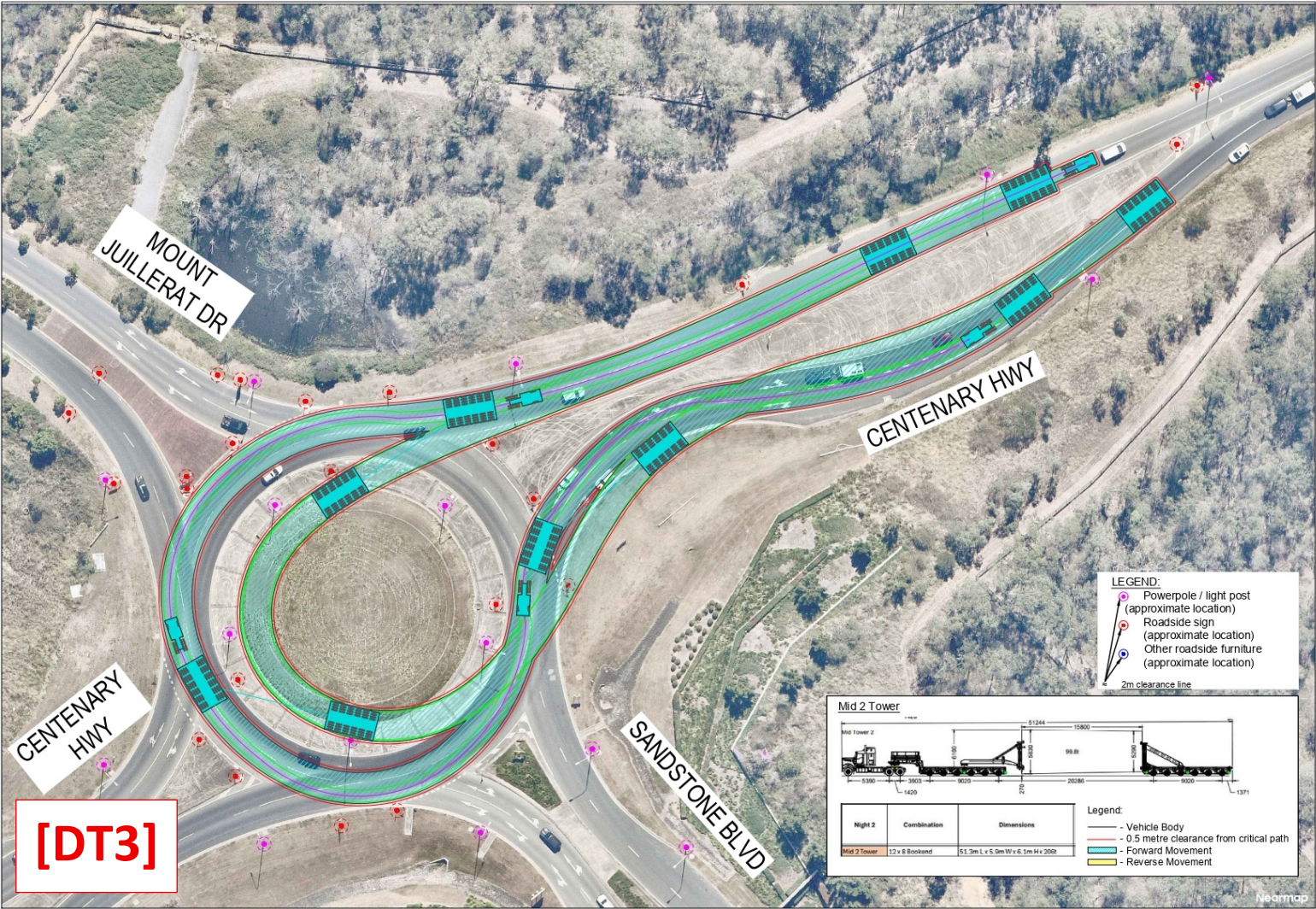
Along Logan Mtwy

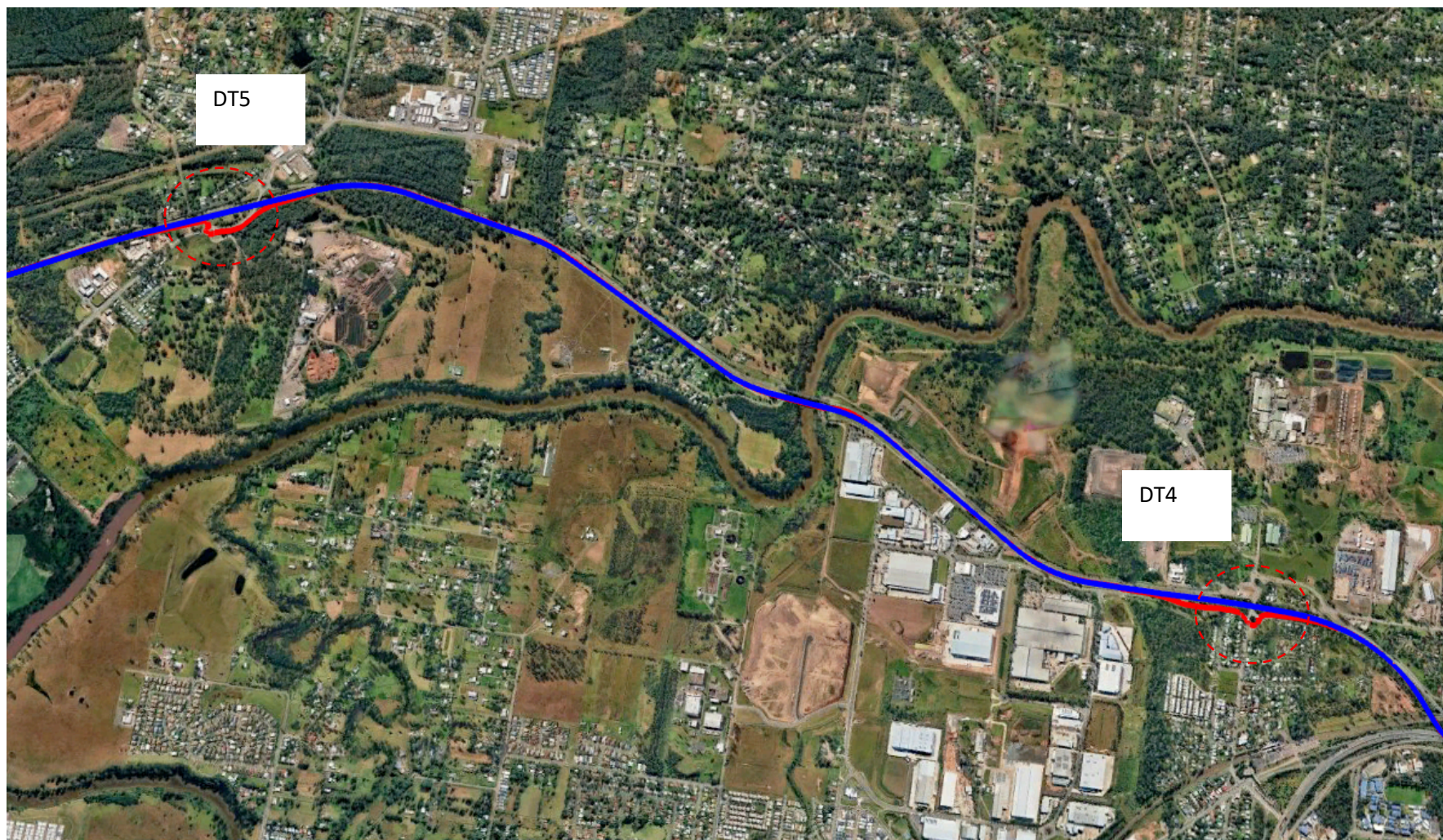


Logan Mtwy onto Stradbroke St

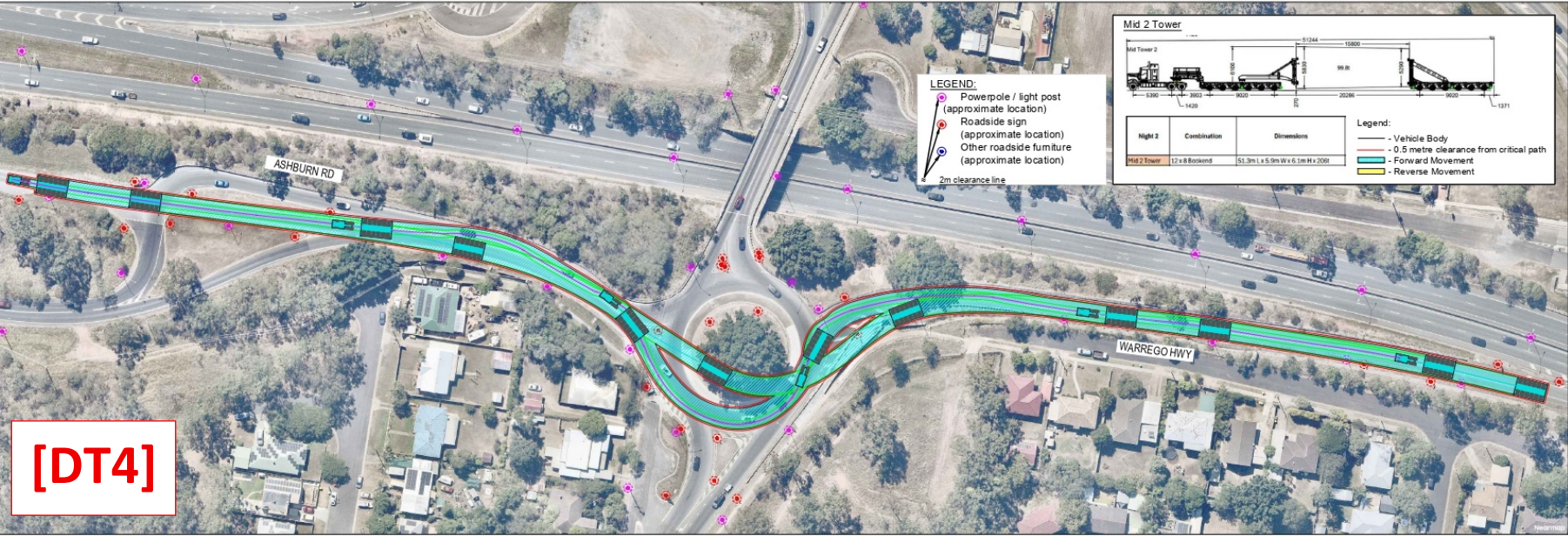


Roundabout in Centenary Hwy

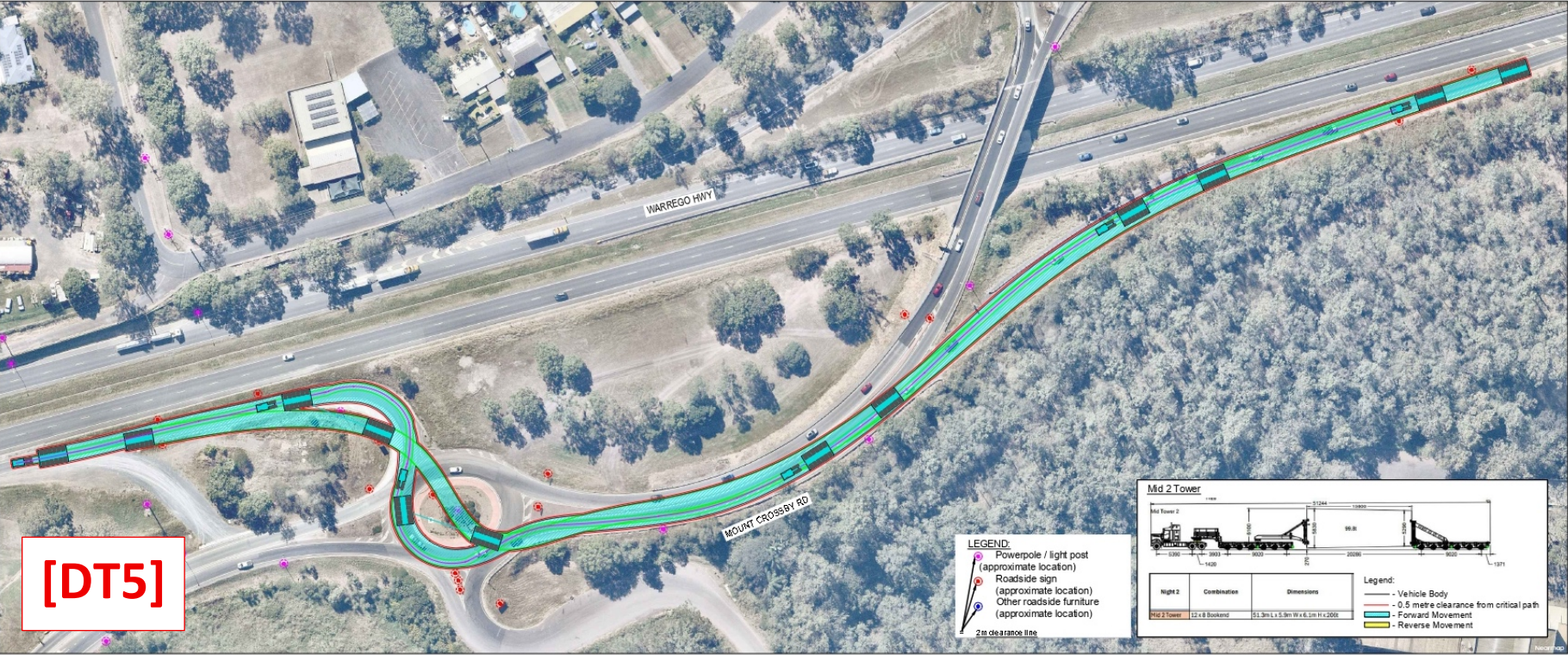


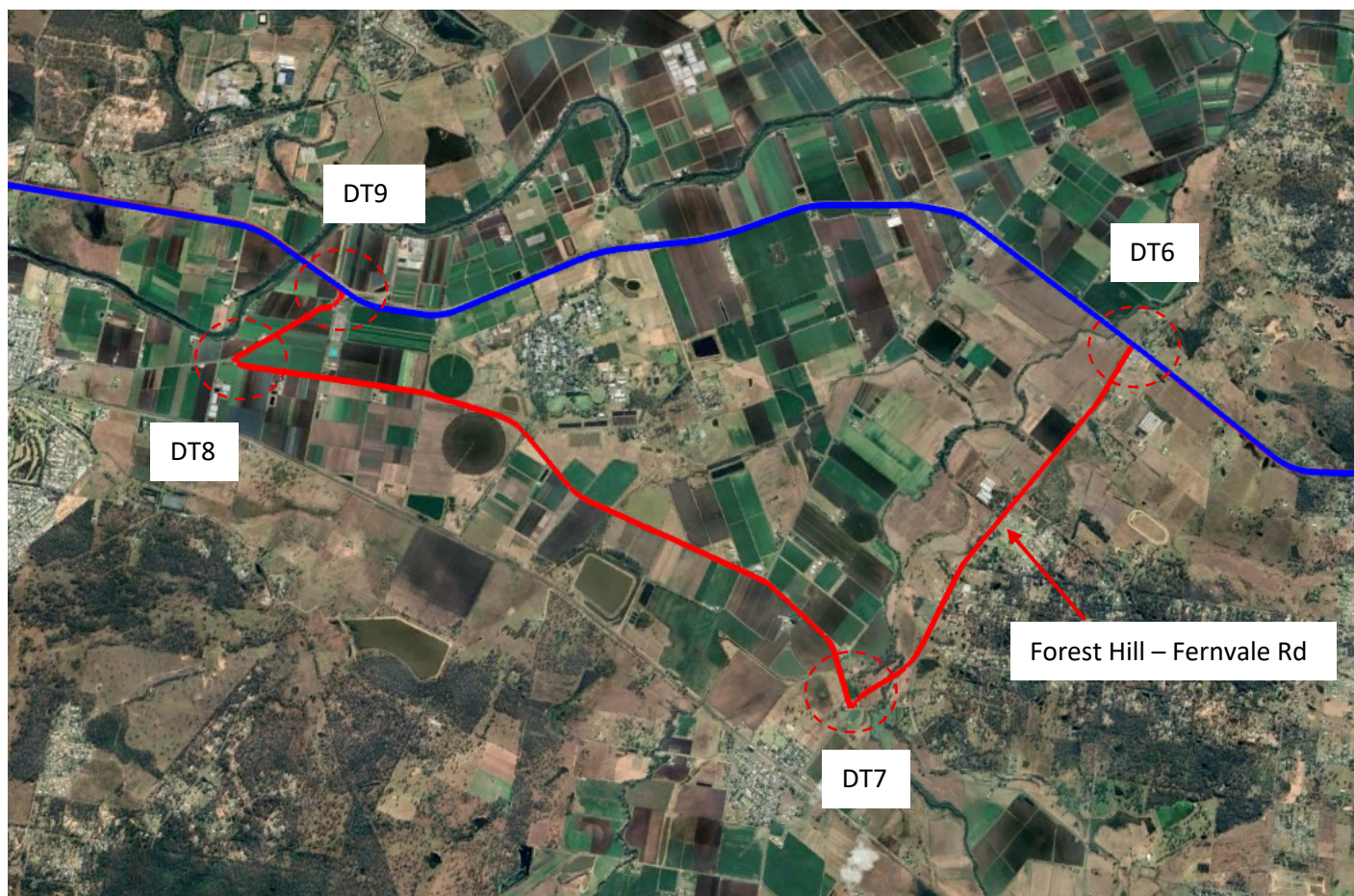


Warrego Hwy onto Ashburn Rd

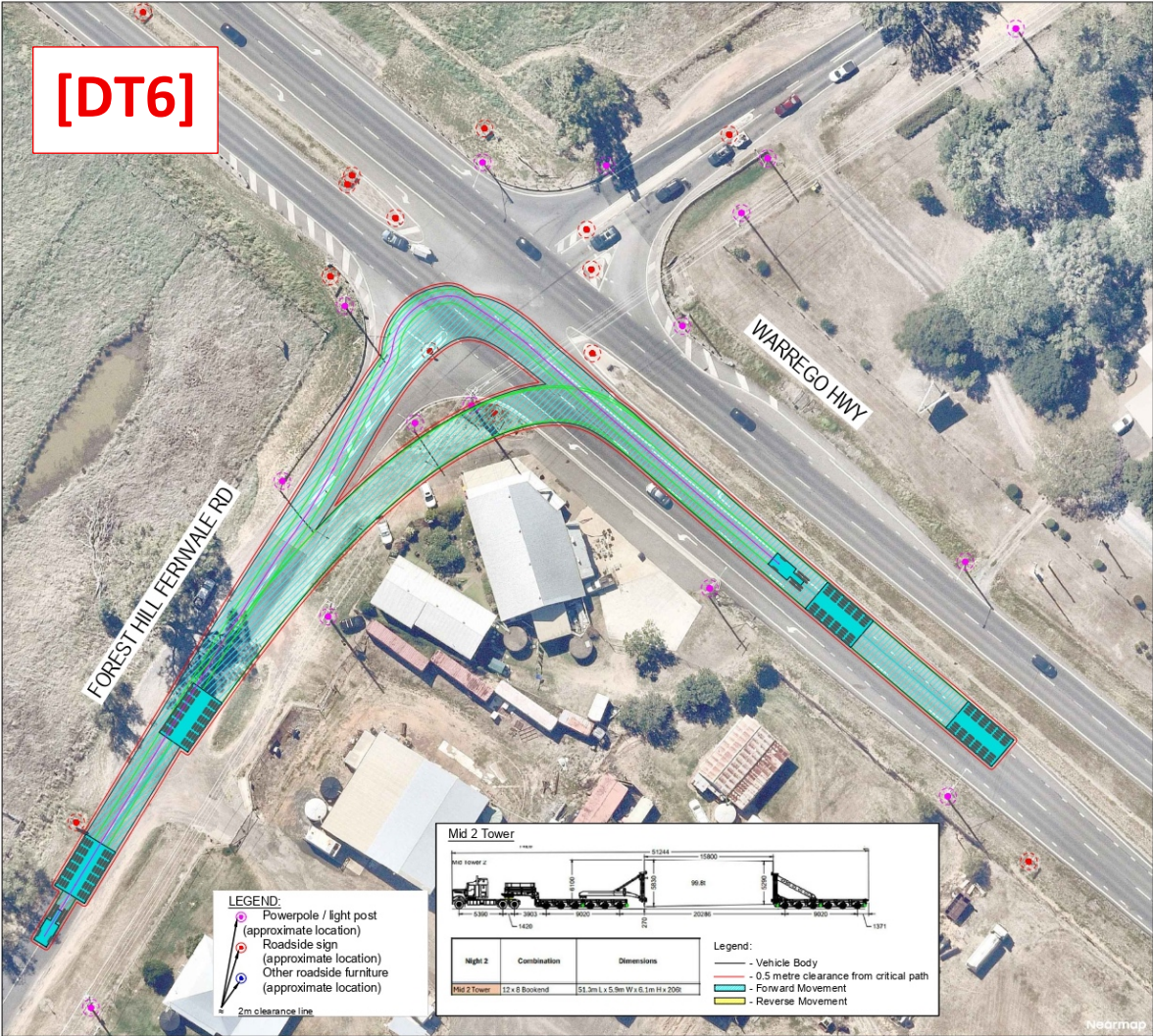


Along Mount Crossby Rd

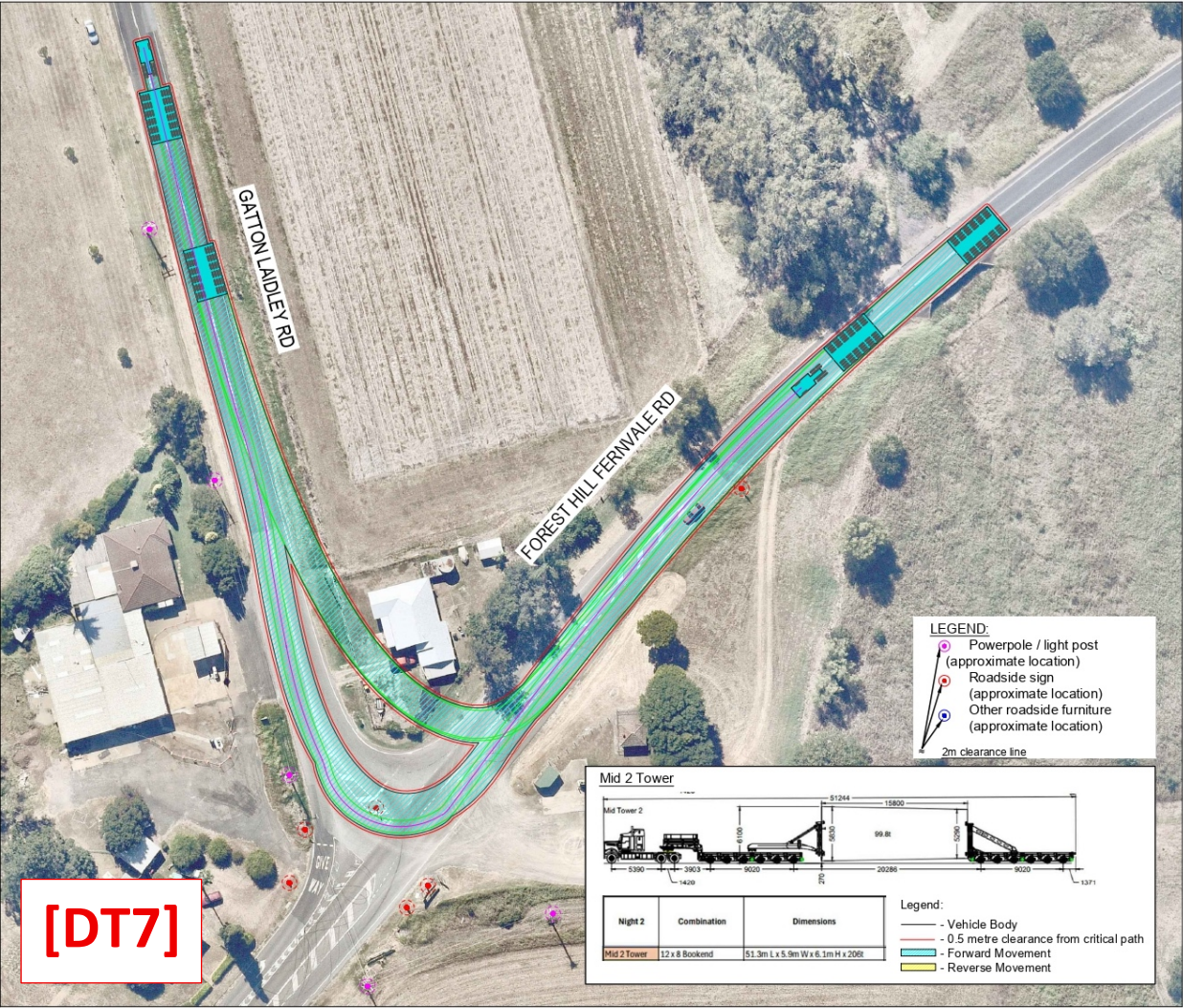




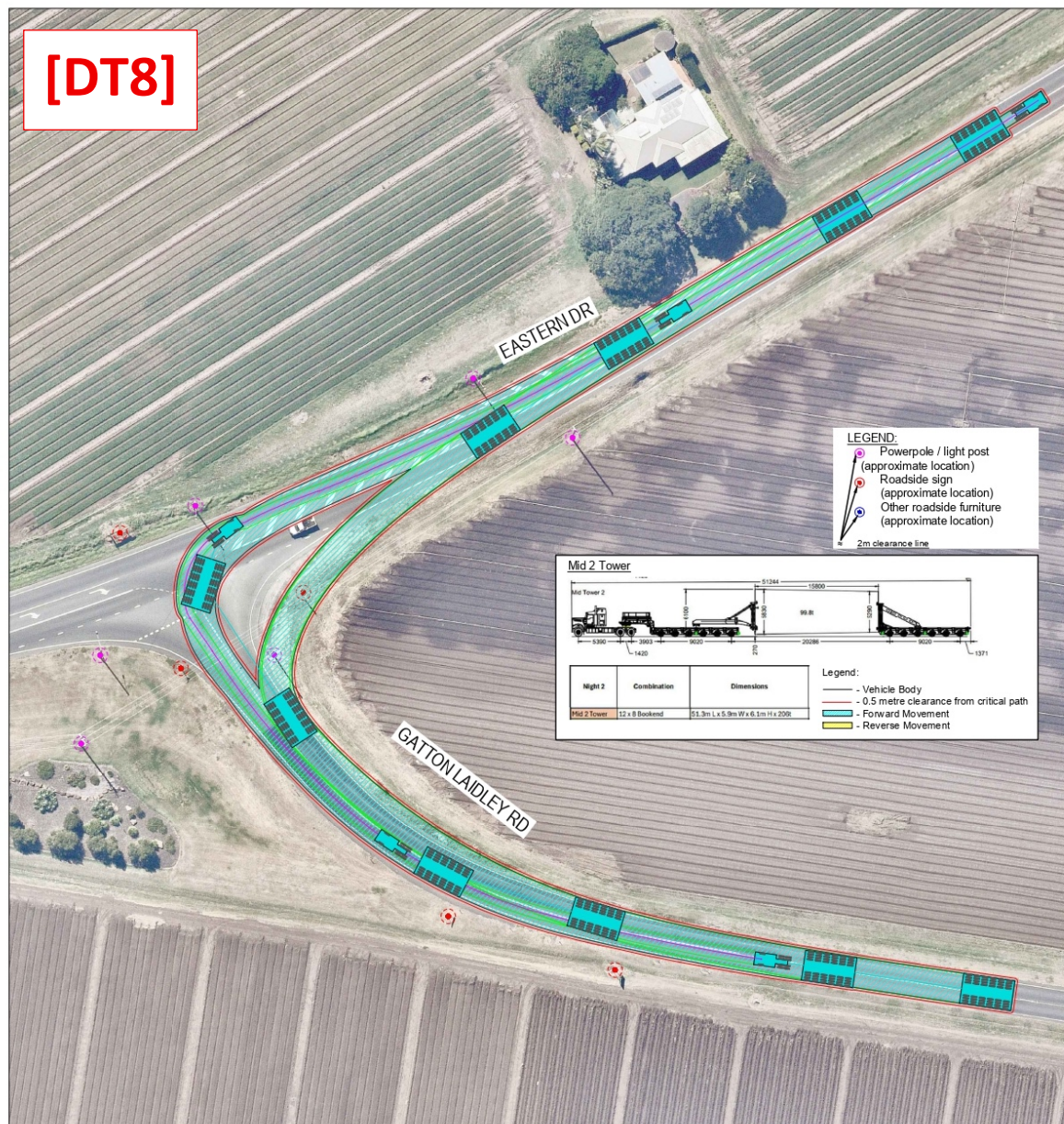
Warrego Hwy onto Forest Hill Fernvale Rd



Forest Hill Fernvale Rd onto Gatton Laidley Rd



Eastern Dr onto Gatton Laidley Rd



Through Roundabout at Eastern Drive onto Motorway

