Stantec

Project:	Gelliondale Wind Farm – Desktop Assessment	**Office:**	Melbourne, Collins St
Project №:	304200672	**Status:**	Draft
Client:	Adam Gray, Synergy Wind Pty Ltd	**Prepared by:**	Joshua Carroll
Date:	25 October 2023	**Approved by:**	Luke Smith
Subject:	**Technical Memorandum**		

1.   Overview

Stantec has been requested to prepare a technical memo to address queries raised by the Department of Transport and Planning (DTP) for PA2302394 in regards to the proposed Gelliondale Wind Farm. This memo will specifically address Item 2.c. outlined within the letter from DTP, with an excerpt provided below.

> 2)   *Updated planning report to reflect the following:*
>   c)   *Clarify which roads within the TRZ2 are proposed to have access created / altered.*

In order to address the above query, each proposed access to be created / altered from the TRZ2 road (South Gippsland Highway) will be reviewed with consideration of the following:

- Previously undertaken swept path assessments;
- High-level Safe Intersection Sight Distance (SISD) and Approach Sight Distance (ASD) checks;
- Review of potential upgrades required to accommodate OSOM vehicles including cut/fill, pole relocation/removal, culvert construction, vegetation removal ect; and
- Recommendations for future investigations (i.e BAR or BAL requirements) which are to be investigated at a later date within the Traffic Management Plan (TMP).

The access locations to be reviewed are outlined below in Figure 1.1.

ADVERTISED PLAN

Figure 1.1 – Site Access Locations

Design with *community* in mind
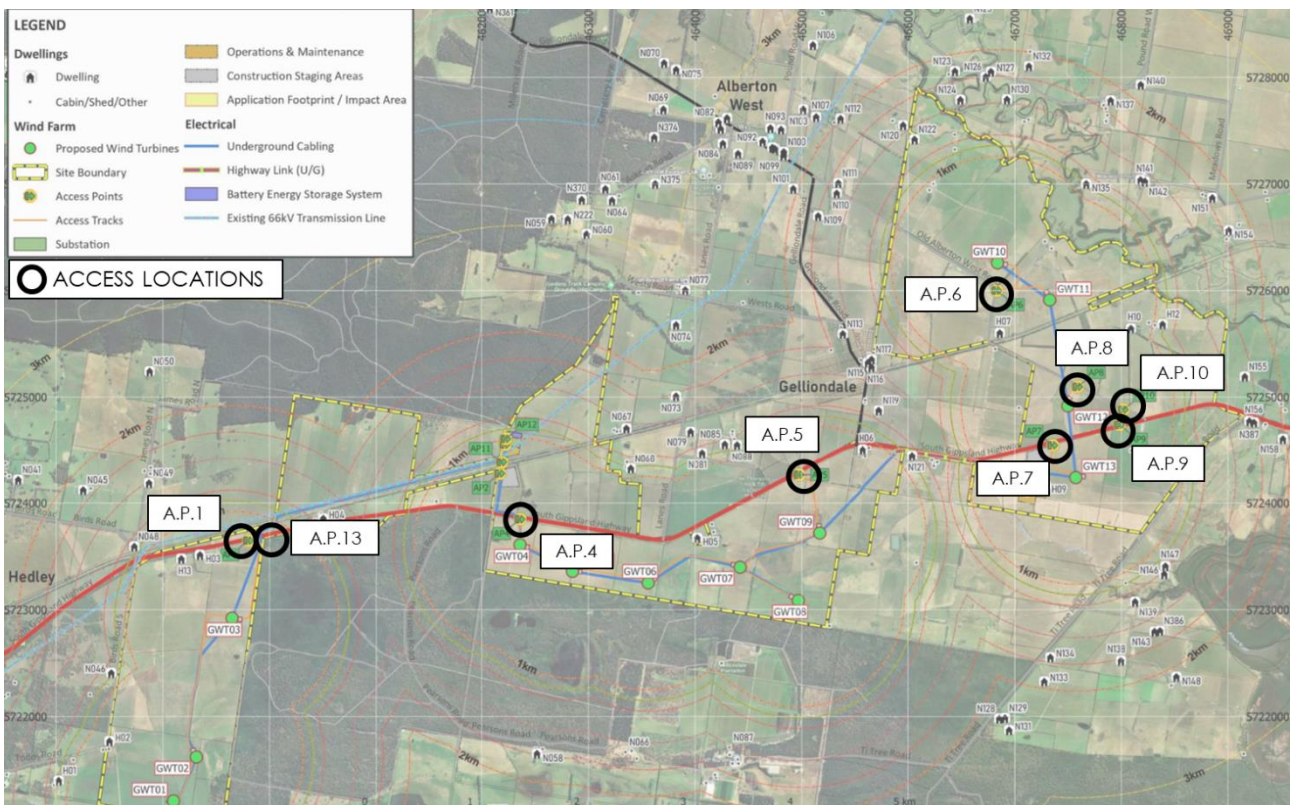
2. Site Access Location Review

Table 2.1 below provides a high-level review for each site access location identified in Figure 1.1. All detailed calculations relating SISD and ASD checks can be found in Appendix A. All site access swept paths can be found in Appendix B.

Table 2.1 **Site Access Review**

Location	Swept Path Review	SISD & ASD Review					Future Recommendations
Site Access Point 1	As shown in V220239-TR-SK-0004 to enable the delivery of turbine componentry the following potential upgrades may be required: • Clearing of vegetation on the south side of South Gippsland Highway; • Potential electricity pole relocation; • Culvert construction across swale drain; and • Cut/fill to construct access.	**Approach**	**ASD**	**SISD**	**Aerial SD**	**Check**	As this access is not required for any material deliveries post turbine componentry delivery, with all HV vehicles accessing the site via the existing access road east of the new access point, no upgrades will be required. Upgrades to the existing access track such as a BAR or BAL will be investigated as part of the detailed Traffic Management Plan.
		Western	205m	289m	440m	Satisfactory	
		Eastern	205m	289m	640m	Satisfactory	
Site Access Point 4	As Site Access Point 4 was not part of the original scope, the following high-level analysis has been undertaken for vehicles exiting the South Gippsland Highway from the west and turning south. Aerial view can be found in Appendix A. • Clearing of vegetation on the south side of South Gippsland Highway; • Potential electricity pole relocation, however, can be avoided with further vegetation removal; • Culvert construction across swale drain; and • Cut/fill to construct access.	**Approach**	**ASD**	**SISD**	**Aerial SD**	**Check**	Further investigation is required within the Traffic Management Plan to determine future peak hour traffic volumes and the potential construction of a BAR or BAL intersection to cater for heavy vehicle movements.
		Western	205m	289m	650m	Satisfactory	
		Eastern	205m	289m	520m	Satisfactory	

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Location	Swept Path Review	SISD & ASD Review					Future Recommendations
Site Access Point 5	As shown in V220239-TR-SK-0005 to enable the delivery of turbine componentry the following potential upgrades may be required: • Clearing of vegetation on the north and south sides of South Gippsland Highway; • Potential electricity pole relocation, however, can be avoided with further vegetation removal; • Widening of existing culvert drain across swale drain; and • Cut/fill to construct access.	**Approach**	**ASD**	**SISD**	**Aerial SD**	**Check**	Further investigation is required within the Traffic Management Plan to determine future peak hour traffic volumes and the potential construction of a BAR or BAL intersection to cater for heavy vehicle movements.
		Western	205m	289m	360m	Satisfactory	
		Eastern	205m	289m	400m	Satisfactory	
Site Access Point 6	As shown in V220239-TR-SK-0010 to enable the delivery of turbine componentry the following potential upgrades may be required: • Clearing of vegetation on the east and west sides of Old Alberton West Road; • Widening of existing culvert drain across swale drain; and • Cut/fill to construct access and potentially widen Old Alberton West Road adjacent to the access.	**Approach**	**ASD**	**SISD**	**Aerial SD**	**Check**	Potential localised widening of Old Alberton West Road to facilitate construction to be investigated during the detailed Traffic Management Plan.
		Western	142m	209m	520m	Satisfactory	
		Eastern	142m	209m	480m	Satisfactory	

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Location	Swept Path Review	SISD & ASD Review					Future Recommendations
Site Access Point 7	As shown in V220239-TR-SK-0006 to enable the delivery of turbine componentry the following potential upgrades may be required: • Clearing of vegetation on the north and south sides of South Gippsland Highway; • Potential electricity pole relocation, however, can be avoided with further vegetation removal; • Widening of existing culvert drain across swale drain; and • Cut/fill to construct access.	**Approach**	**ASD**	**SISD**	**Aerial SD**	**Check**	Further investigation is required within the Traffic Management Plan to determine future peak hour traffic volumes and the potential construction of a BAR or BAL intersection to cater for heavy vehicle movements.
		Western	205m	289m	560m	Satisfactory	
		Eastern	205m	289m	460m	Satisfactory	
Site Access Point 8	As shown in V220239-TR-SK-0008 to enable the delivery of turbine componentry the following potential upgrades may be required: • Clearing of vegetation on the south side of Old Alberton West Road; and • Cut/fill to construct access and potentially widen Old Alberton West Road adjacent to the access.	**Approach**	**ASD**	**SISD**	**Aerial SD**	**Check**	Potential localised widening of Old Alberton West Road during construction to be investigated during the detailed Traffic Management Plan.
		Western	142m	209m	580m	Satisfactory	
		Eastern	142m	209m	560m	Satisfactory	
Site Access Point 9	As shown in V220239-TR-SK-0007 to enable the delivery of turbine componentry the following potential upgrades may be required: • Cut/fill to construct access. • Construction of culvert across swale drain to enable heavy vehicle access.	**Approach**	**ASD**	**SISD**	**Aerial SD**	**Check**	Further investigation is required within the Traffic Management Plan to determine future peak hour traffic volumes and the potential construction of a BAR or BAL intersection to cater for heavy vehicle movements. BAL potentially not possible at the South Gippsland Highway / Old Alberton West Road intersection due to existing cattle crossing. As such during the Traffic Management Plan it should be investigated to maintain this access for left in construction vehicle access.
		Western	205m	289m	400m	Satisfactory	
		Eastern	205m	289m	475m	Satisfactory	

Location	Swept Path Review	SISD & ASD Review					Future Recommendations
Site Access Point 10	As shown in V220239-TR-SK-0007 to enable the delivery of turbine componentry the following potential upgrades may be required: • Clearing of vegetation on the south side of Old Alberton West Road; and • Cut/fill to construct access and potentially widen Old Alberton West Road adjacent to the access.	**Approach**	**ASD**	**SISD**	**Aerial SD**	**Check**	Potential localised widening of Old Alberton West Road during construction to be investigated during the detailed Traffic Management Plan.
		Western	142m	209m	345m	Satisfactory	
		Eastern	142m	209m	220m	Satisfactory	
Site Access Point 13	Site Access 13 is proposed to be utilised for light vehicle traffic only during the construction period. Given it is an existing property access from the South Gippsland Highway, no further assessment was undertaken for this location as part of this memo.	N/A					Further investigation is required within the Traffic Management Plan to determine future peak hour traffic volumes and the potential construction of a BAR or BAL intersection to cater for light vehicle movements.

Signed

Joshua Carroll   **Date:** 25/10/2023

Joshua Carroll

Traffic Engineer

Luke Smith   **Date:** 25/10/2023

Luke Smith

Principal Engineer

Appendix A – Sight Distance Assessments

Design with community in mind

Site Access Point 1

INITIAL PROPERTIES

PROPERTY	VALUE	UNIT	EQN SYMBOL	COMMENT
Road Speed Limit	100	km/h	V	
Crossing Length	0	m		ties into critical safe gap, tc
Average Walking Speedq	1.2	m/s		ties into critical safe gap, tc
Southern Road Grade	0.00%			
Northern Road Grade	0.00%			
Reaction Time	2.5	Rt		
Coefficient of Deceleration	0.29			
Decision Time	5.5	Dt		
Driver Eye Height	1.1	m		
Critical Safe Gap	0	sec	tc	

ACTUAL ON SITE SIGHT DISTANCE LENGTHS

WESTERN SD	440	m
EASTERN SD	640	m

APPROACH SIGHT DISTANCE

EASTERN APPROACH		WESTERN APPROACH	
ASD EASTERN APPROACH CHECK		ASD WESTERN APPROACH CHECK	
PART 1	69.44444444	PART 1	69.44444444
PART 2	135.7588922	PART 2	135.7588922
ASD_CALC	205.2033367	ASD_CALC	205.2033367
CHECK	OK	CHECK	OK

SAFE INTERSECTION SIGHT DISTANCE

EASTERN APPROACH		WESTERN APPROACH	
SISD EASTERN APPROACH CHECK		SISD WESTERN APPROACH CHECK	
PART 1	152.7777778	PART 1	152.7777778
PART 2	135.7588922	PART 2	135.7588922
SISD_CALC	288.53667	SISD_CALC	288.53667
CHECK	OK	CHECK	OK

Equation 1 provides the formula for ASD and Figure 3.1 illustrates the application of ASD:

$$ASD = \frac{R_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)}$$
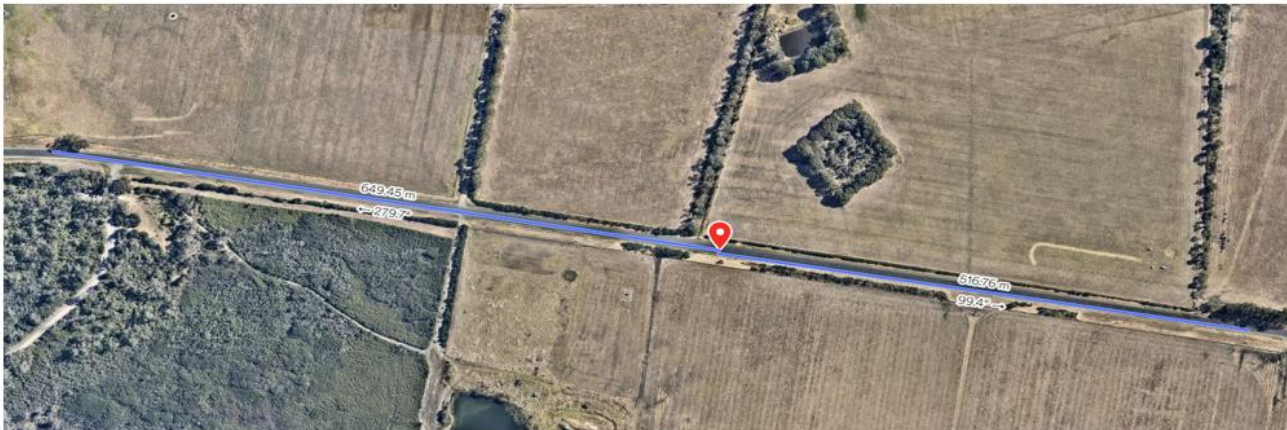
where

ASD = approach sight distance (m)

R_T = reaction time (sec), refer to AGRD Part 3 (Austroads 2016b) for guidance on values

V = operating (85th percentile) speed (km/h)

d = coefficient of deceleration, refer to Table 3.3 and AGRD Part 3 for values

a = a longitudinal grade in % (in direction of travel: positive for uphill grade, negative for downhill grade)

Equation 2 provides the formula for SISD:

$$SISD = \frac{D_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)} \qquad 2$$

where

SISD = safe intersection sight distance (m)

D_T = decision time (sec) = observation time (3 sec) + reaction time (sec) – refer to AGRD Part 3 (Austroads 2016b) for a guide to values

V = operating (85th percentile) speed (km/h)

d = coefficient of deceleration – refer to Table 3.3 and AGRD Part 3 for a guide to values

a = longitudinal grade in % (in direction of travel: positive for uphill grade, negative for downhill grade)

PURPOSE	GATE PROTOCAL	COMMENTS
Component delivery only	Locked/inoperable; reopened only for major maintenance access	N/A

Site Access Point 4

INITIAL PROPERTIES

PROPERTY	VALUE	UNIT	EQN SYMBOL	COMMENT
Road Speed Limit	100	km/h	V	
Crossing Length	0	m		ties into critical safe gap, tc
Average Walking Speed q	1.2	m/s		ties into critical safe gap, tc
Southern Road Grade	0.00%			
Northern Road Grade	0.00%			
Reaction Time	2.5	Rt		
Coefficient of Deceleration	0.29			
Decision Time	5.5	Dt		
Driver Eye Height	1.1	m		
Critical Safe Gap	0	sec	tc	

CTUAL ON SITE SIGHT DISTANCE LENGTH

WESTERN SD	650	m
EASTERN SD	520	m

APPROACH SIGHT DISTANCE

EASTERN APPROACH		WESTERN APPROACH	
SD EASTERN APPROACH CHEC		SD WESTERN APPROACH CHEC	
PART 1	69.444444	PART 1	69.444444
PART 2	135.75889	PART 2	135.75889
ASD_CALC	205.20334	ASD_CALC	205.20334
CHECK	OK	CHECK	OK

SAFE INTERSECTION SIGHT DISTANCE

EASTERN APPROACH		WESTERN APPROACH	
SD EASTERN APPROACH CHEC		SD WESTERN APPROACH CHEC	
PART 1	152.77778	PART 1	152.77778
PART 2	135.75889	PART 2	135.75889
SISD_CALC	288.53667	SISD_CALC	288.53667
CHECK	OK	CHECK	OK

Equation 1 provides the formula for ASD and Figure 3.1 illustrates the application of ASD:

$$ASD = \frac{R_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)}$$
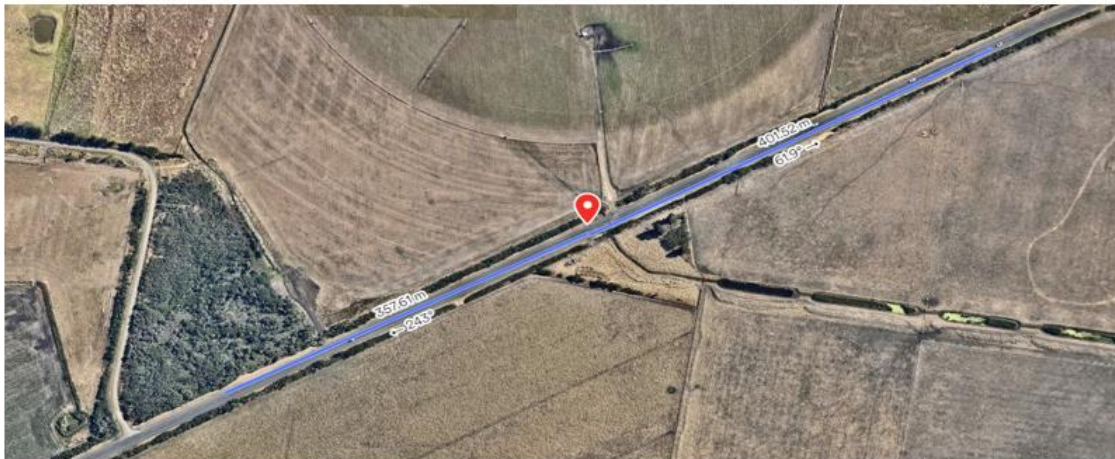
where

ASD = approach sight distance (m)

R_T = reaction time (sec), refer to *AGRD Part 3* (Austroads 2016b) for guidance on values

V = operating (85th percentile) speed (km/h)

d = coefficient of deceleration, refer to Table 3.3 and *AGRD Part 3* for values

a = a longitudinal grade in % (in direction of travel: positive for uphill grade, negative for downhill grade)

Equation 2 provides the formula for SISD:

$$SISD = \frac{D_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)} \qquad 2$$

where

$SISD$ = safe intersection sight distance (m)

D_T = decision time (sec) = observation time (3 sec) + reaction time (sec) – refer to *AGRD Part 3* (Austroads 2016b) for a guide to values

V = operating (85th percentile) speed (km/h)

d = coefficient of deceleration – refer to Table 3.3 and *AGRD Part 3* for a guide to values

= longitudinal grade in % (in direction of travel: positive for uphill grade, negative for downhill grade)

PURPOSE	GATE PROTOCAL	COMMENTS
Component delivery / construction access	Locked; functional for maintenance access	Off-highway link to AP5

Site Access Point 5

INITIAL PROPERTIES

PROPERTY	VALUE	UNIT	EQN SYMBOL	COMMENT
Road Speed Limit	100	km/h	V	
Crossing Length	0	m		ties into critical safe gap, tc
Average Walking Speed	1.2	m/s	q	ties into critical safe gap, tc
Southern Road Grade	0.00%			
Northern Road Grade	0.00%			
Reaction Time	2.5	Rt		
Coefficient of Deceleration	0.29			
Decision Time	5.5	Dt		
Driver Eye Height	1.1	m		
Critical Safe Gap	0	sec	tc	

ACTUAL ON SITE SIGHT DISTANCE LENGTH

WESTERN SD	360	m
EASTERN SD	400	m

APPROACH SIGHT DISTANCE

EASTERN APPROACH		WESTERN APPROACH	
SD EASTERN APPROACH CHECK		SD WESTERN APPROACH CHECK	
PART 1	69.444444	PART 1	69.444444
PART 2	135.75889	PART 2	135.75889
ASD_CALC	205.20334	ASD_CALC	205.20334
CHECK	OK	CHECK	OK

SAFE INTERSECTION SIGHT DISTANCE

EASTERN APPROACH		WESTERN APPROACH	
SD EASTERN APPROACH CHECK		SD WESTERN APPROACH CHECK	
PART 1	152.77778	PART 1	152.77778
PART 2	135.75889	PART 2	135.75889
SISD_CALC	288.53667	SISD_CALC	288.53667
CHECK	OK	CHECK	OK

Equation 1 provides the formula for ASD and Figure 3.1 illustrates the application of ASD:

$$ASD = \frac{R_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)}$$

where

ASD = approach sight distance (m)

R_T = reaction time (sec), refer to *AGRD Part 3* (Austroads 2016b) for guidance on values

V = operating (85th percentile) speed (km/h)

d = coefficient of deceleration, refer to Table 3.3 and *AGRD Part 3* for values

a = a longitudinal grade in % (in direction of travel: positive for uphill grade, negative for downhill grade)

Equation 2 provides the formula for SISD:

$$SISD = \frac{D_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)}$$

where

$SISD$ = safe intersection sight distance (m)

D_T = decision time (sec) = observation time (3 sec) + reaction time (sec) – refer to *AGRD Part 3* (Austroads 2016b) for a guide to values

V = operating (85th percentile) speed (km/h)

d = coefficient of deceleration – refer to Table 3.3 and *AGRD Part 3* for a guide to values

a = longitudinal grade in % (in direction of travel: positive for uphill grade, negative for downhill grade)

PURPOSE	GATE PROTOCAL	COMMENTS
Component delivery / construction access	Locked; functional for maintenance access	Off-highway link to AP4

Site Access Point 6

INITIAL PROPERTIES

PROPERTY	VALUE	UNIT	EQN SYMBOL	COMMENT
Road Speed Limit	80	km/h	V	
Crossing Length	0	m		ties into critical safe gap, tc
Average Walking Speedq	1.2	m/s		ties into critical safe gap, tc
Southern Road Grade	0.00%			
Northern Road Grade	0.00%			
Reaction Time	2.5	Rt		
Coefficient of Deceleration	0.29			
Decision Time	5.5	Dt		
Driver Eye Height	1.1	m		
Critical Safe Gap	0	sec	tc	

CTUAL ON SITE SIGHT DISTANCE LENGTH

WESTERN SD	520	m
EASTERN SD	480	m

APPROACH SIGHT DISTANCE

EASTERN APPROACH		WESTERN APPROACH	
SD EASTERN APPROACH CHEC		SD WESTERN APPROACH CHEC	
PART 1	55.555556	PART 1	55.555556
PART 2	86.885691	PART 2	86.885691
ASD_CALC	142.44125	ASD_CALC	142.44125
CHECK	OK	CHECK	OK

SAFE INTERSECTION SIGHT DISTANCE

EASTERN APPROACH		WESTERN APPROACH	
SD EASTERN APPROACH CHE		SD WESTERN APPROACH CHE	
PART 1	122.22222	PART 1	122.22222
PART 2	86.885691	PART 2	86.885691
SISD_CALC	209.10791	SISD_CALC	209.10791
CHECK	OK	CHECK	OK

Equation 1 provides the formula for ASD and Figure 3.1 illustrates the application of ASD:

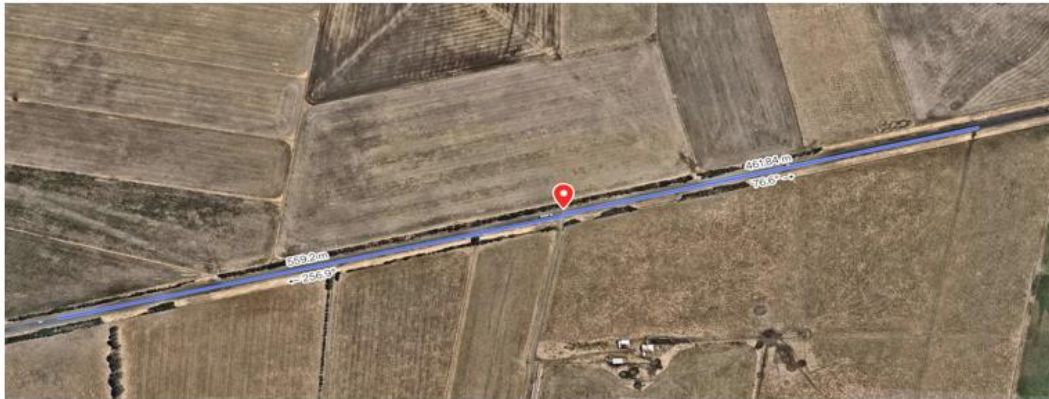$$ASD = \frac{R_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)}$$

where

ASD = approach sight distance (m)

R_T = reaction time (sec), refer to *AGRD Part 3* (Austroads 2016b) for guidance on values

V = operating (85th percentile) speed (km/h)

d = coefficient of deceleration, refer to Table 3.3 and *AGRD Part 3* for values

a = a longitudinal grade in % (in direction of travel: positive for uphill grade, negative for downhill grade)

Equation 2 provides the formula for SISD:

$$SISD = \frac{D_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)}$$

where

$SISD$ = safe intersection sight distance (m)

D_T = decision time (sec) = observation time (3 sec) + reaction time (sec) – refer to *AGRD Part 3* (Austroads 2016b) for a guide to values

V = operating (85th percentile) speed (km/h)

d = coefficient of deceleration – refer to Table 3.3 and *AGRD Part 3* for a guide to values

a = longitudinal grade in % (in direction of travel: positive for uphill grade, negative for downhill grade)

PURPOSE	GATE PROTOCAL	COMMENTS
Component delivery / construction access	Locked; functional for maintenance access	N/A

Site Access Point 7

INITIAL PROPERTIES				
PROPERTY	VALUE	UNIT	EQN SYMBOL	COMMENT
Road Speed Limit	100	km/h	V	
Crossing Length	0	m		ties into critical safe gap, tc
Average Walking Speedq	1.2	m/s		ties into critical safe gap, tc
Southern Road Grade	0.00%			
Northern Road Grade	0.00%			
Reaction Time	2.5	Rt		
Coefficient of Deceleration	0.29			
Decision Time	5.5	Dt		
Driver Eye Height	1.1	m		
Critical Safe Gap	0	sec	tc	

CTUAL ON SITE SIGHT DISTANCE LENGTH		
WESTERN SD	560	m
EASTERN SD	460	m

APPROACH SIGHT DISTANCE			
EASTERN APPROACH		WESTERN APPROACH	
SD EASTERN APPROACH CHEC		SD WESTERN APPROACH CHEC	
PART 1	69.444444	PART 1	69.444444
PART 2	135.75889	PART 2	135.75889
ASD_CALC	205.20334	ASD_CALC	205.20334
CHECK	OK	CHECK	OK

SAFE INTERSECTION SIGHT DISTANCE			
EASTERN APPROACH		WESTERN APPROACH	
SD EASTERN APPROACH CHEC		SD WESTERN APPROACH CHEC	
PART 1	152.77778	PART 1	152.77778
PART 2	135.75889	PART 2	135.75889
SISD_CALC	288.53667	SISD_CALC	288.53667
CHECK	OK	CHECK	OK

Equation 1 provides the formula for ASD and Figure 3.1 illustrates the application of ASD:

$$ASD = \frac{R_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)}$$

where

ASD = approach sight distance (m)

R_T = reaction time (sec), refer to AGRD Part 3 (Austroads 2016b) for guidance on values

V = operating (85th percentile) speed (km/h)

d = coefficient of deceleration, refer to Table 3.3 and AGRD Part 3 for values

a = a longitudinal grade in % (in direction of travel: positive for uphill grade, negative for downhill grade)

Equation 2 provides the formula for SISD:

$$SISD = \frac{D_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)}$$

where

$SISD$ = safe intersection sight distance (m)

D_T = decision time (sec) = observation time (3 sec) + reaction time (sec) – refer to AGRD Part 3 (Austroads 2016b) for a guide to values

V = operating (85th percentile) speed (km/h)

d = coefficient of deceleration – refer to Table 3.3 and AGRD Part 3 for a guide to values

a = longitudinal grade in % (in direction of travel: positive for uphill grade, negative for downhill grade)

PURPOSE	GATE PROTOCAL	COMMENTS
Component delivery / construction access	Locked; functional	Also access location for optional construction and O&M areas

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Site Access Point 8

INITIAL PROPERTIES

PROPERTY	VALUE	UNIT	EQN SYMBOL	COMMENT
Road Speed Limit	80	km/h	V	
Crossing Length	0	m		ties into critical safe gap, tc
Average Walking Speedq	1.2	m/s		ties into critical safe gap, tc
Southern Road Grade	0.00%			
Northern Road Grade	0.00%			
Reaction Time	2.5	Rt		
Coefficient of Deceleration	0.29			
Decision Time	5.5	Dt		
Driver Eye Height	1.1	m		
Critical Safe Gap	0	sec	tc	

CTUAL ON SITE SIGHT DISTANCE LENGTH

WESTERN SD	580	m
EASTERN SD	560	m

APPROACH SIGHT DISTANCE

EASTERN APPROACH		WESTERN APPROACH	
SD EASTERN APPROACH CHEC		SD WESTERN APPROACH CHEC	
PART 1	55.555556	PART 1	55.555556
PART 2	86.885691	PART 2	86.885691
ASD_CALC	142.44125	ASD_CALC	142.44125
CHECK	OK	CHECK	OK

SAFE INTERSECTION SIGHT DISTANCE

EASTERN APPROACH		WESTERN APPROACH	
SD EASTERN APPROACH CHEC		SD WESTERN APPROACH CHEC	
PART 1	122.22222	PART 1	122.22222
PART 2	86.885691	PART 2	86.885691
SISD_CALC	209.10791	SISD_CALC	209.10791
CHECK	OK	CHECK	OK

Equation 1 provides the formula for ASD and Figure 3.1 illustrates the application of ASD:

$$ASD = \frac{R_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)}$$
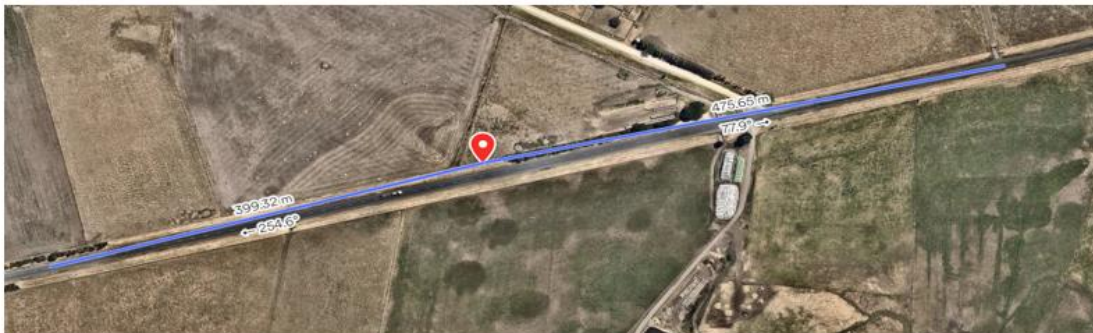
where

- ASD = approach sight distance (m)
- R_T = reaction time (sec), refer to AGRD Part 3 (Austroads 2016b) for guidance on values
- V = operating (85th percentile) speed (km/h)
- d = coefficient of deceleration, refer to Table 3.3 and AGRD Part 3 for values
- a = a longitudinal grade in % (in direction of travel: positive for uphill grade, negative for downhill grade)

Equation 2 provides the formula for SISD:

$$SISD = \frac{D_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)}$$

where

- SISD = safe intersection sight distance (m)
- D_T = decision time (sec) = observation time (3 sec) + reaction time (sec) – refer to AGRD Part 3 (Austroads 2016b) for a guide to values
- V = operating (85th percentile) speed (km/h)
- d = coefficient of deceleration – refer to Table 3.3 and AGRD Part 3 for a guide to values
- a = longitudinal grade in % (in direction of travel: positive for uphill grade, negative for downhill grade)
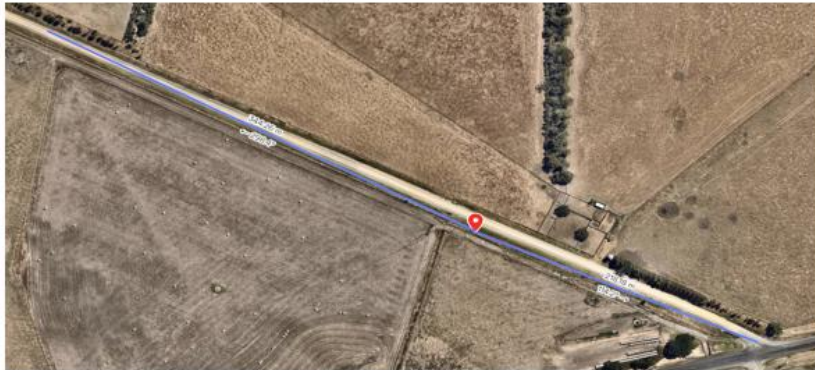

PURPOSE	GATE PROTOCAL	COMMENTS
Component delivery / construction access	Locked; functional for maintenance access	N/A

Site Access Point 9

INITIAL PROPERTIES

PROPERTY	VALUE	UNIT	EQN SYMBOL	COMMENT
Road Speed Limit	100	km/h	V	
Crossing Length	0	m		ties into critical safe gap, to
Average Walking Speedq	1.2	m/s		ties into critical safe gap, to
Southern Road Grade	0.00%			
Northern Road Grade	0.00%			
Reaction Time	2.5	Rt		
Coefficient of Deceleration	0.29			
Decision Time	5.5	Dt		
Driver Eye Height	1.1	m		
Critical Safe Gap	0	sec	tc	

CTUAL ON SITE SIGHT DISTANCE LENGTH

WESTERN SD	400	m
EASTERN SD	475	m

APPROACH SIGHT DISTANCE

EASTERN APPROACH		WESTERN APPROACH	
5D EASTERN APPROACH CHE(		5D WESTERN APPROACH CHE(	
PART 1	69.444444	PART 1	69.444444
PART 2	135.75889	PART 2	135.75889
ASD_CALC	205.20334	ASD_CALC	205.20334
CHECK	OK	CHECK	OK

SAFE INTERSECTION SIGHT DISTANCE

EASTERN APPROACH		WESTERN APPROACH	
5D EASTERN APPROACH CHE(		5D WESTERN APPROACH CHE(	
PART 1	152.77778	PART 1	152.77778
PART 2	135.75889	PART 2	135.75889
SISD_CALC	288.53667	SISD_CALC	288.53667
CHECK	OK	CHECK	OK

Equation 1 provides the formula for ASD and Figure 3.1 illustrates the application of ASD:

$$ASD = \frac{R_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)}$$

where

ASD = approach sight distance (m)

R_T = reaction time (sec), refer to *AGRD Part 3* (Austroads 2016b) for guidance on values

V = operating (85th percentile) speed (km/h)

d = coefficient of deceleration, refer to Table 3.3 and *AGRD Part 3* for values

a = a longitudinal grade in % (in direction of travel: positive for uphill grade, negative for downhill grade)

Equation 2 provides the formula for SISD:

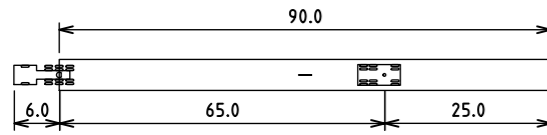$$SISD = \frac{D_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)}$$

where

$SISD$ = safe intersection sight distance (m)

D_T = decision time (sec) = observation time (3 sec) + reaction time (sec) – refer to *AGRD Part 3* (Austroads 2016b) for a guide to values

V = operating (85th percentile) speed (km/h)

d = coefficient of deceleration – refer to Table 3.3 and *AGRD Part 3* for a guide to values

a = longitudinal grade in % (in direction of travel: positive for uphill grade, negative for downhill grade)

PURPOSE	GATE PROTOCAL	COMMENTS
Component delivery only	Locked/inoperable; reopened only for major maintenance access	N/A

Site Access Point 10

INITIAL PROPERTIES

PROPERTY	VALUE	UNIT	EQN SYMBOL	COMMENT
Road Speed Limit	80	km/h	V	
Crossing Length	0	m		ties into critical safe gap, tc
Average Walking Speedq	1.2	m/s		ties into critical safe gap, tc
Southern Road Grade	0.00%			
Northern Road Grade	0.00%			
Reaction Time	2.5	Rt		
Coefficient of Deceleration	0.29			
Decision Time	5.5	Dt		
Driver Eye Height	1.1	m		
Critical Safe Gap	0	sec	tc	

CTUAL ON SITE SIGHT DISTANCE LENGTH

WESTERN SD	345	m
EASTERN SD	220	m

APPROACH SIGHT DISTANCE

EASTERN APPROACH		WESTERN APPROACH	
SD EASTERN APPROACH CHEC		SD WESTERN APPROACH CHEC	
PART 1	55.555556	PART 1	55.555556
PART 2	86.885691	PART 2	86.885691
ASD_CALC	142.44125	ASD_CALC	142.44125
CHECK	OK	CHECK	OK

SAFE INTERSECTION SIGHT DISTANCE

EASTERN APPROACH		WESTERN APPROACH	
SD EASTERN APPROACH CHEC		SD WESTERN APPROACH CHEC	
PART 1	122.22222	PART 1	122.22222
PART 2	86.885691	PART 2	86.885691
SISD_CALC	209.10791	SISD_CALC	209.10791
CHECK	OK	CHECK	OK

Equation 1 provides the formula for ASD and Figure 3.1 illustrates the application of ASD:

$$ASD = \frac{R_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)}$$

where

- ASD = approach sight distance (m)
- R_T = reaction time (sec), refer to *AGRD Part 3* (Austroads 2016b) for guidance on values
- V = operating (85th percentile) speed (km/h)
- d = coefficient of deceleration, refer to Table 3.3 and *AGRD Part 3* for values
- a = a longitudinal grade in % (in direction of travel: positive for uphill grade, negative for downhill grade)

Equation 2 provides the formula for SISD:

$$SISD = \frac{D_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)}$$

where

- $SISD$ = safe intersection sight distance (m)
- D_T = decision time (sec) = observation time (3 sec) + reaction time (sec) – refer to *AGRD Part 3* (Austroads 2016b) for a guide to values
- V = operating (85th percentile) speed (km/h)
- d = coefficient of deceleration – refer to Table 3.3 and *AGRD Part 3* for a guide to values
- a = longitudinal grade in % (in direction of travel: positive for uphill grade, negative for downhill grade)

PURPOSE	GATE PROTOCAL	COMMENTS
Component delivery only	Locked/inoperable; reopened only for major maintenance access	N/A

Design with community in mind

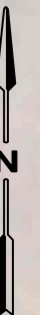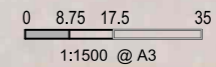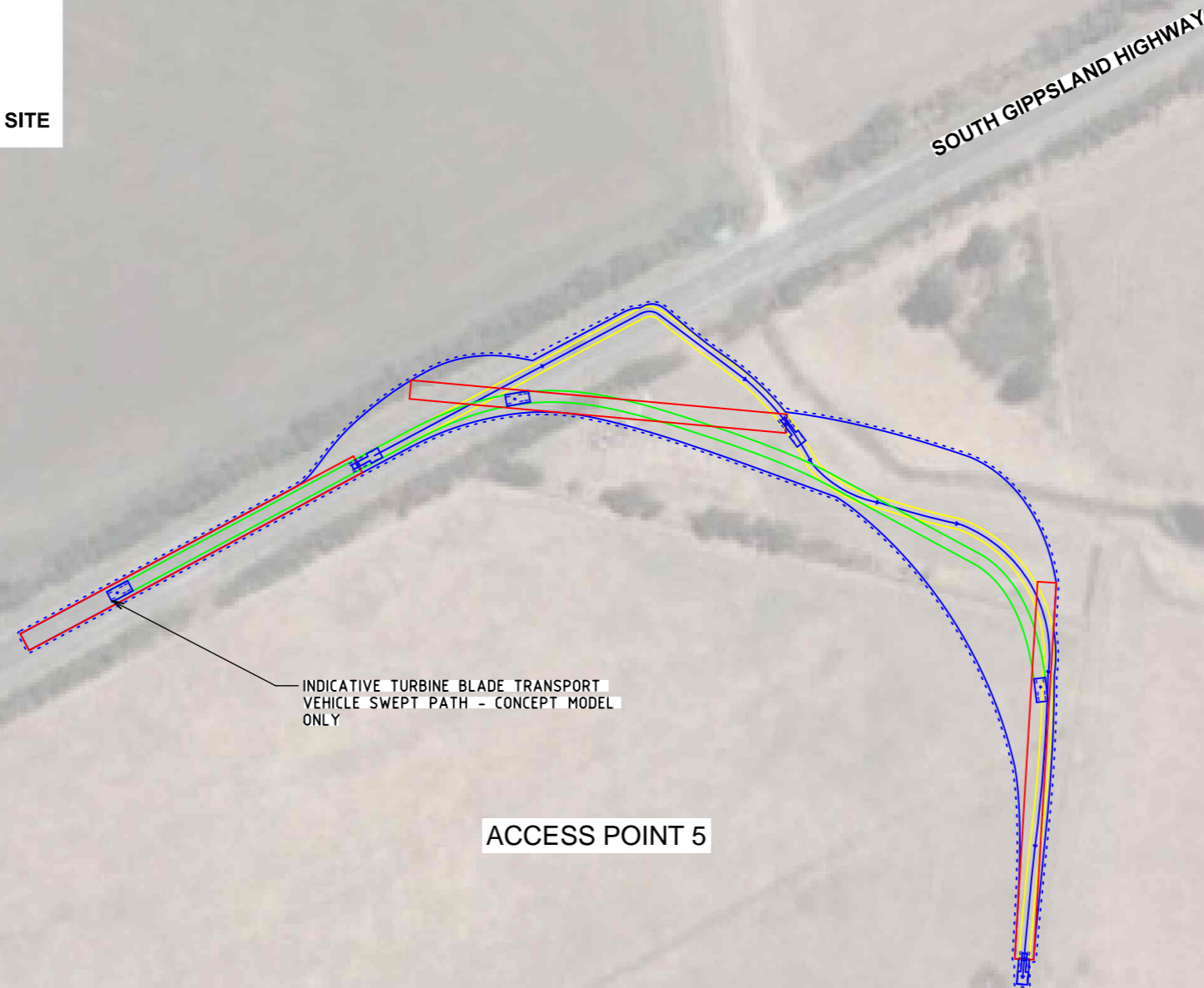# Appendix B – Swept Path Assessments

DESIGN VEHICLE

90.0

6.0   65.0   —   25.0

NOTE: ALL SIGNS, POWER POLES ETC. ARE INDICATIVE ONLY.
EXACT MEASUREMENTS AND LOCATION TO BE CONFIRMED ON SITE

LEGEND
FRONT AXLE
REAR AXLE
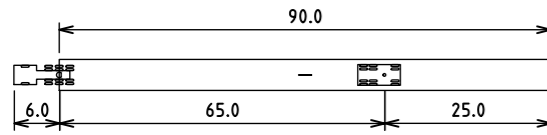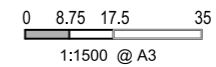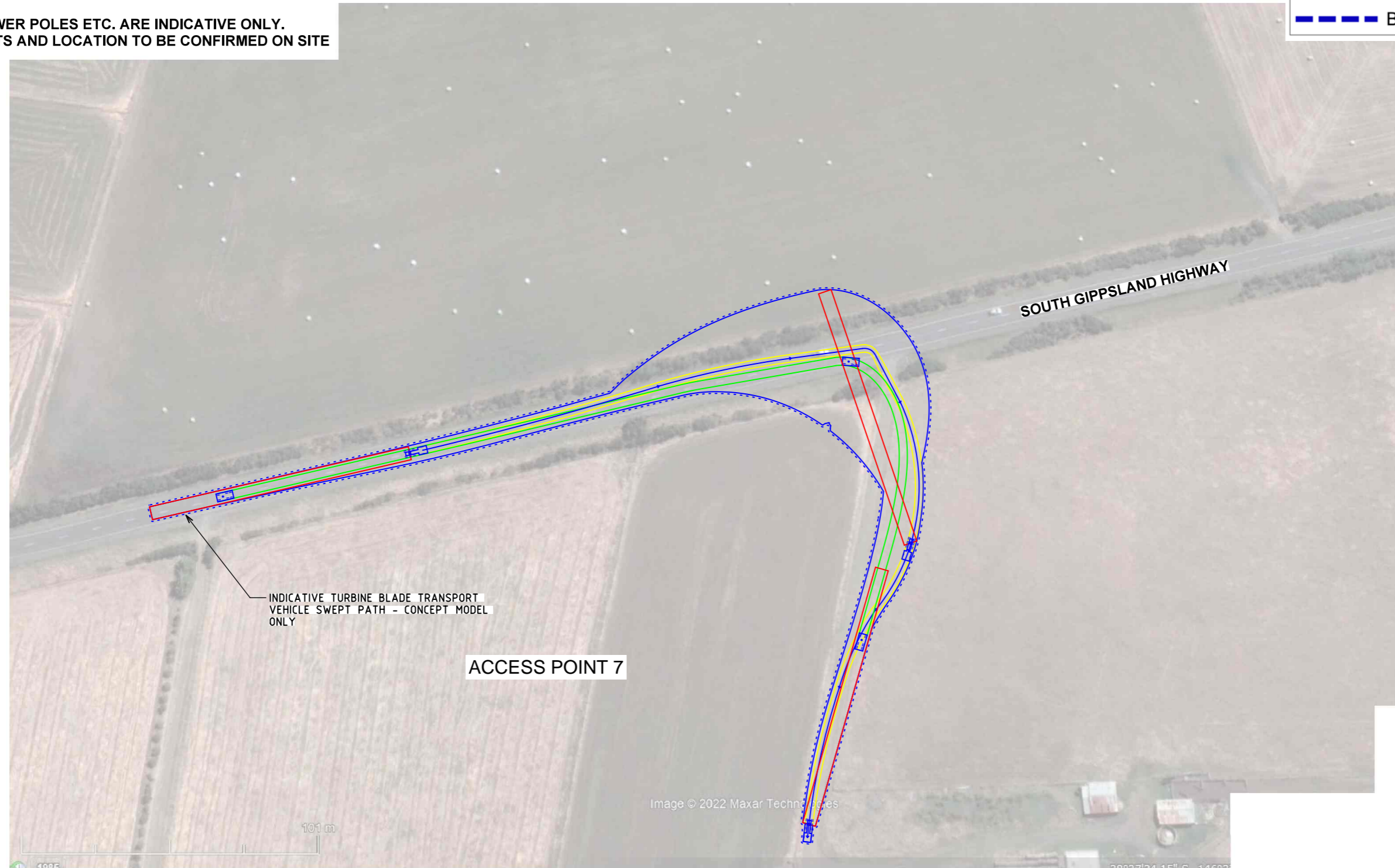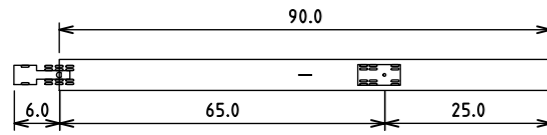TRUCK TRAILER
BLADE MOVEMENTS
BLADE CLEARANCE

INDICATIVE TURBINE BLADE TRANSPORT
VEHICLE SWEPT PATH – CONCEPT MODEL
ONLY

SOUTH GIPPSLAND HIGHWAY

ACCESS POINT 1

Image © 2022 Maxar Technologies

130 m

N

0   8.75 17.5   35
1:1500 @ A3

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SYNERGY WIND
GELLIONDALE WIND FARM
LOCATION:STH GIPPSLAND HWY - SITE ACCESS 1
TURBINE BLADE TRANSPORT VEHICLE
CONCEPT SWEPT PATH DIAGRAM

Drawn/Check	Date	Scale	Size
RJM / JH	15.09.2022	1:1500	A3
Drawing Number			Revision
V220239-TR-SK-0004			1

DESIGN VEHICLE

90.0

6.0   65.0   25.0

NOTE: ALL SIGNS, POWER POLES ETC. ARE INDICATIVE ONLY.
EXACT MEASUREMENTS AND LOCATION TO BE CONFIRMED ON SITE

SOUTH GIPPSLAND HIGHWAY

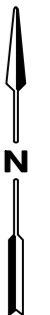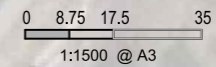**LEGEND**

FRONT AXLE	
REAR AXLE	
TRUCK TRAILER	
BLADE MOVEMENTS	
BLADE CLEARANCE	

INDICATIVE TURBINE BLADE TRANSPORT
VEHICLE SWEPT PATH - CONCEPT MODEL
ONLY

ACCESS POINT 5

N

0   8.75   17.5   35
1:1500 @ A3

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SYNERGY WIND
GELLIONDALE WIND FARM
LOCATION:STH GIPPSLAND HWY - SITE ACCESS 5
TURBINE BLADE TRANSPORT VEHICLE
CONCEPT SWEPT PATH DIAGRAM

Drawn/Check	Date	Scale	Size
RJM / JH	15.09.2022	1:1500	A3
Drawing Number			Revision
V220239-TR-SK-0005			1

DESIGN VEHICLE

90.0

6.0   65.0   25.0

NOTE: ALL SIGNS, POWER POLES ETC. ARE INDICATIVE ONLY.
EXACT MEASUREMENTS AND LOCATION TO BE CONFIRMED ON SITE

LEGEND

———	FRONT AXLE
———	REAR AXLE
———	TRUCK TRAILER
———	BLADE MOVEMENTS
– – –	BLADE CLEARANCE

SOUTH GIPPSLAND HIGHWAY

INDICATIVE TURBINE BLADE TRANSPORT
VEHICLE SWEPT PATH – CONCEPT MODEL
ONLY

ACCESS POINT 7

Image © 2022 Maxar Technologies

N

0   8.75 17.5   35
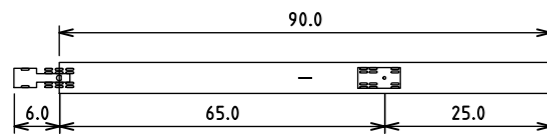1:1500 @ A3

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SYNERGY WIND
GELLIONDALE WIND FARM
LOCATION:STH GIPPSLAND HWY - SITE ACCESS 7
TURBINE BLADE TRANSPORT VEHICLE
CONCEPT SWEPT PATH DIAGRAM

Drawn/Check	Date	Scale	Size
RJM / JH	16.09.2022	1:1500	A3
Drawing Number			Revision
V220239-TR-SK-0006			1

DESIGN VEHICLE

90.0

6.0   65.0   25.0

NOTE: ALL SIGNS, POWER POLES ETC. ARE INDICATIVE ONLY.
EXACT MEASUREMENTS AND LOCATION TO BE CONFIRMED ON SITE

ACCESS POINT 9 & 10

OLD ALBERTON WEST ROAD

SOUTH GIPPSLAND HIGHWAY

INDICATIVE TURBINE BLADE TRANSPORT
VEHICLE SWEPT PATH – CONCEPT MODEL
ONLY

LEGEND

▬	FRONT AXLE
▬	REAR AXLE
▬	TRUCK TRAILER
▬	BLADE MOVEMENTS
┅	BLADE CLEARANCE

N

0   8.75   17.5   35
1:1500 @ A3

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SYNERGY WIND
GELLIONDALE WIND FARM
STH GIPPSLAND HWY-OLD ALBERTON W RD
TURBINE BLADE TRANSPORT VEHICLE
CONCEPT SWEPT PATH DIAGRAM

Drawn/Check	Date	Scale	Size
RJM / JH	16.09.2022	1:1500	A3

Drawing Number
V220239-TR-SK-0007

Revision
1

DESIGN VEHICLE

90.0

6.0   65.0   25.0

NOTE: ALL SIGNS, POWER POLES ETC. ARE INDICATIVE ONLY.
EXACT MEASUREMENTS AND LOCATION TO BE CONFIRMED ON SITE

LEGEND

— FRONT AXLE
— REAR AXLE
— TRUCK TRAILER
— BLADE MOVEMENTS
--- BLADE CLEARANCE

OLD ALBERTON WEST ROAD

INDICATIVE TURBINE BLADE TRANSPORT
VEHICLE SWEPT PATH – CONCEPT MODEL
ONLY

ACCESS POINT 8
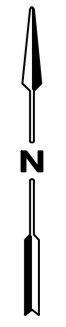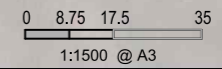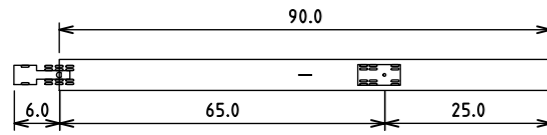
Image © 2022 Maxar Technologies

N

0   8.75 17.5   35
1:1500 @ A3

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SYNERGY WIND
GELLIONDALE WIND FARM
OLD ALBERTON WEST RD - SITE ACCESS 8
TURBINE BLADE TRANSPORT VEHICLE
CONCEPT SWEPT PATH DIAGRAM

Drawn/Check	Date	Scale	Size
RJM / JH	03.05.2023	1:1500	A3

Drawing Number	Revision
V220239-TR-SK-0008	2

BY: User:Russell.Meaney

DATE PLOTTED: 09/16/22   11:56:47

CAD File: C:\Users\Russell.Meaney\OneDrive - Cardno\Desktop\V220239_Gelliondale_Wind_Farm\Traffic\Engineering\Drafting\03 Sketches\01 CAD\V220239-TR-SK-0010 -1.dgn
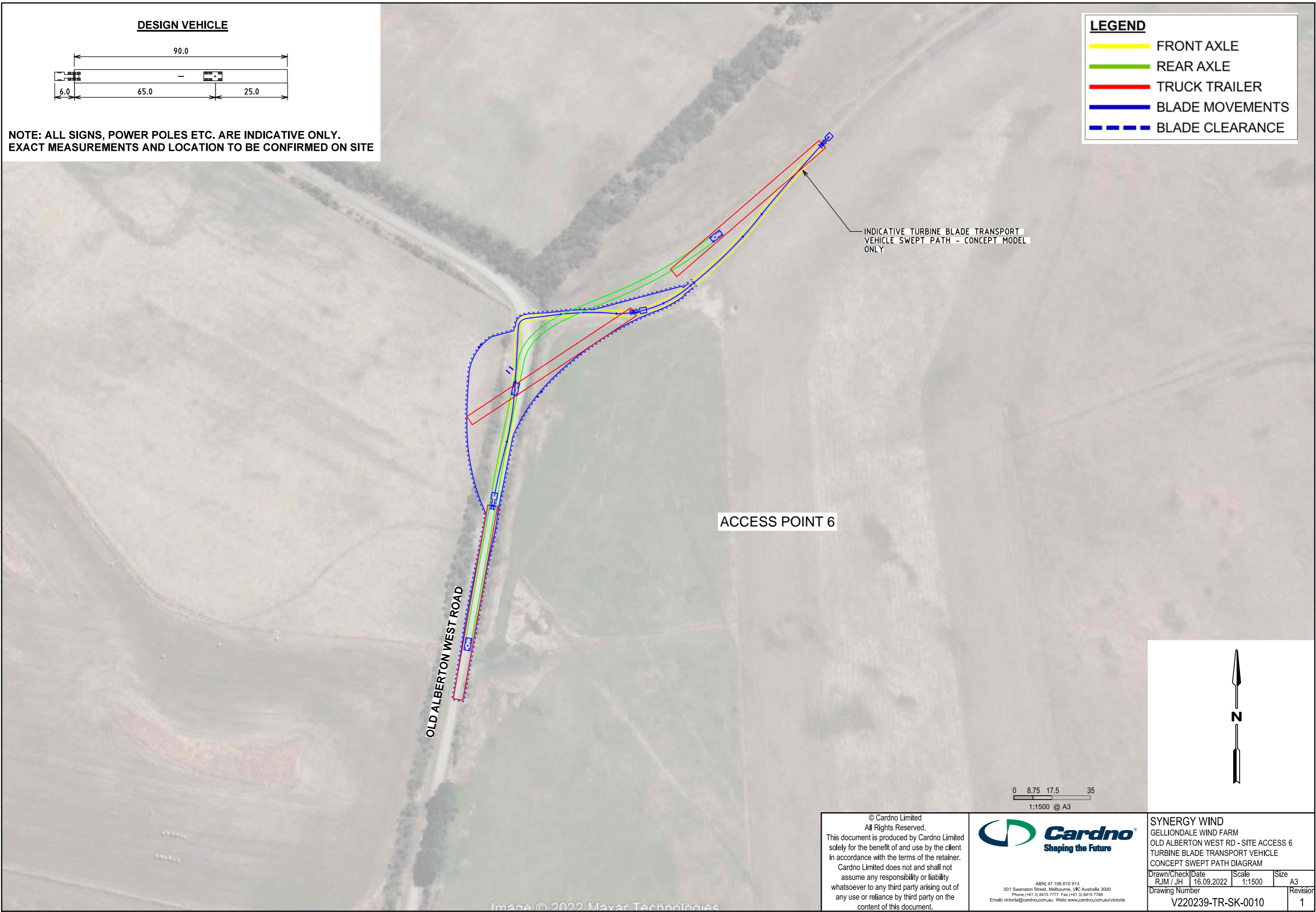
DESIGN VEHICLE

90.0

6.0   65.0   25.0

NOTE: ALL SIGNS, POWER POLES ETC. ARE INDICATIVE ONLY.
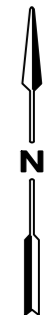EXACT MEASUREMENTS AND LOCATION TO BE CONFIRMED ON SITE

LEGEND

FRONT AXLE
REAR AXLE
TRUCK TRAILER
BLADE MOVEMENTS
BLADE CLEARANCE

INDICATIVE TURBINE BLADE TRANSPORT
VEHICLE SWEPT PATH – CONCEPT MODEL
ONLY

ACCESS POINT 6

OLD ALBERTON WEST ROAD

N

0   8.75 17.5   35

1:1500 @ A3

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SYNERGY WIND
GELLIONDALE WIND FARM
OLD ALBERTON WEST RD - SITE ACCESS 6
TURBINE BLADE TRANSPORT VEHICLE
CONCEPT SWEPT PATH DIAGRAM

Drawn/Check	Date	Scale	Size
RJM / JH	16.09.2022	1:1500	A3

Drawing Number	Revision
V220239-TR-SK-0010	1

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