PSA CONSULTING

Traffic Impact Assessment Report

Pace Farm – Warrah Ridge Farm 1

12 October 2021

pace farm
the enjoyable egg

Document Control

Document: Project Name: Warrah Ridge Farm 1
PSA Job Number: 1220
Report Name: Traffic Impact Assessment Report

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Revision History

VERSION	DATE	DETAILS	AUTHOR	AUTHORISATION
V2	12 October 2021	FINAL	Ryan Peel	Hannah Richardson

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LIST OF ACRONYMS

EFWA	Example Four Word Acronym
BAL	Basic Left Turn
BAR	Basic Right Turn
DCP	Development Control Plan
DPI	Department of Primary Industries
HML	Higher Mass Limit
NSW	New South Wales
PSA	PSA Consulting
RAV	Restricted Access Vehicle
SISD	Safe Intersection Sight Distance
TIA	Traffic Impact Assessment

1 INTRODUCTION

PSA Consulting (Australia) has been engaged by Pace Farm Pty Ltd to undertake a Traffic Impact Assessment (TIA) to accompany a development application for the proposed poultry farm development on Lot 391 DP556635, Warrah Ridge, NSW. The development involves the building of one poultry farm consisting of 4 rearing sheds, providing a maximum capacity of 248,000 birds across the property. The proposed farm will be accessed via Inverkip Road, Warrah Ridge, the location of which is shown below in Figure 1.

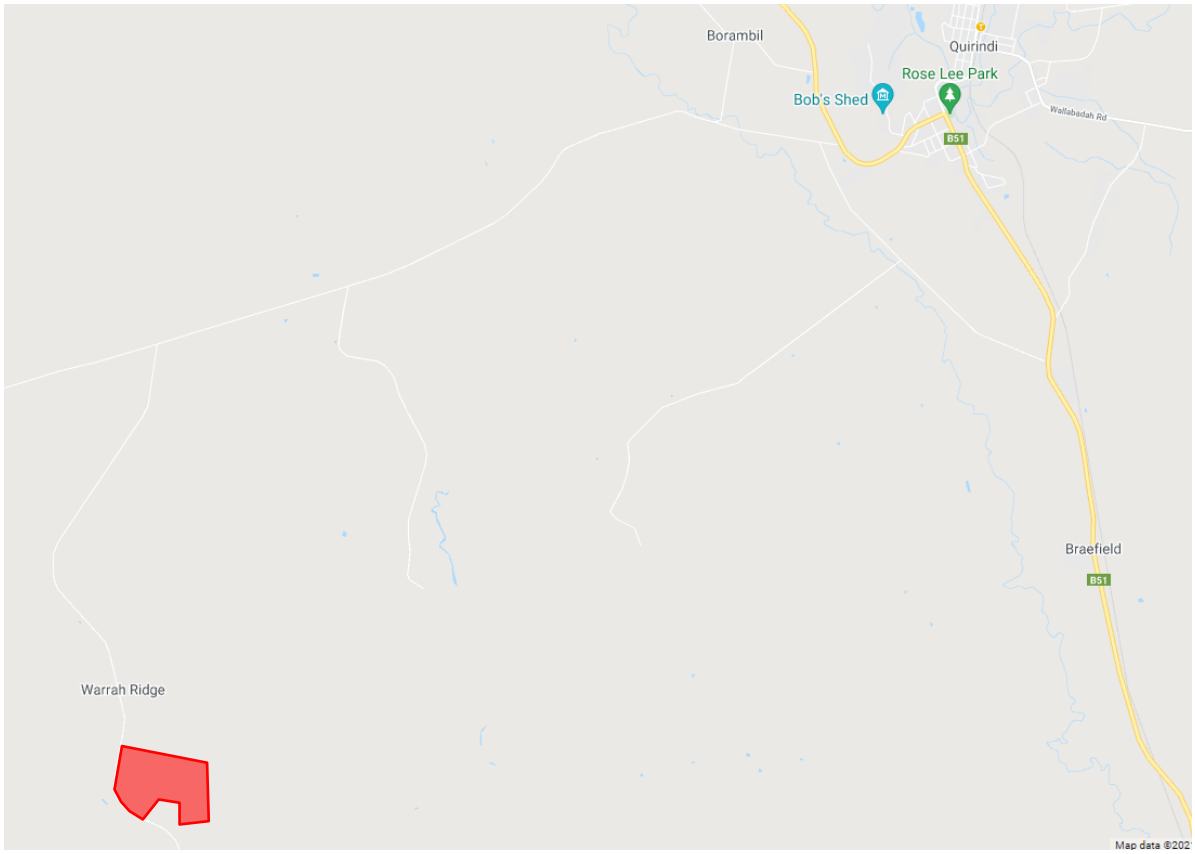


Figure 1: Locality Plan (Source: NSW Department of Finance, Services & Innovation)

2 EXISTING CONDITIONS

2.1 ROAD NETWORK

The proposed poultry farm is located at 375 Inverkip Road, approximately 16km south-west of the town of Quirindi, and approximately 15km west of the Kamilaroi Highway. Inverkip Road is a two lane, two-way road, and has an unsealed width of approximately 9.5m. Inverkip Road is classified as a Local Road, as per the Transport for NSW Road Network Classifications, as shown in Figure 2. The speed limit for Inverkip Road is 100 km/h. Access to/from the site for heavy vehicles will also be via Inverkip Road.

Heavy vehicles will access the site from Inverkip Road, turning into a new driveway before making their way to the farms.

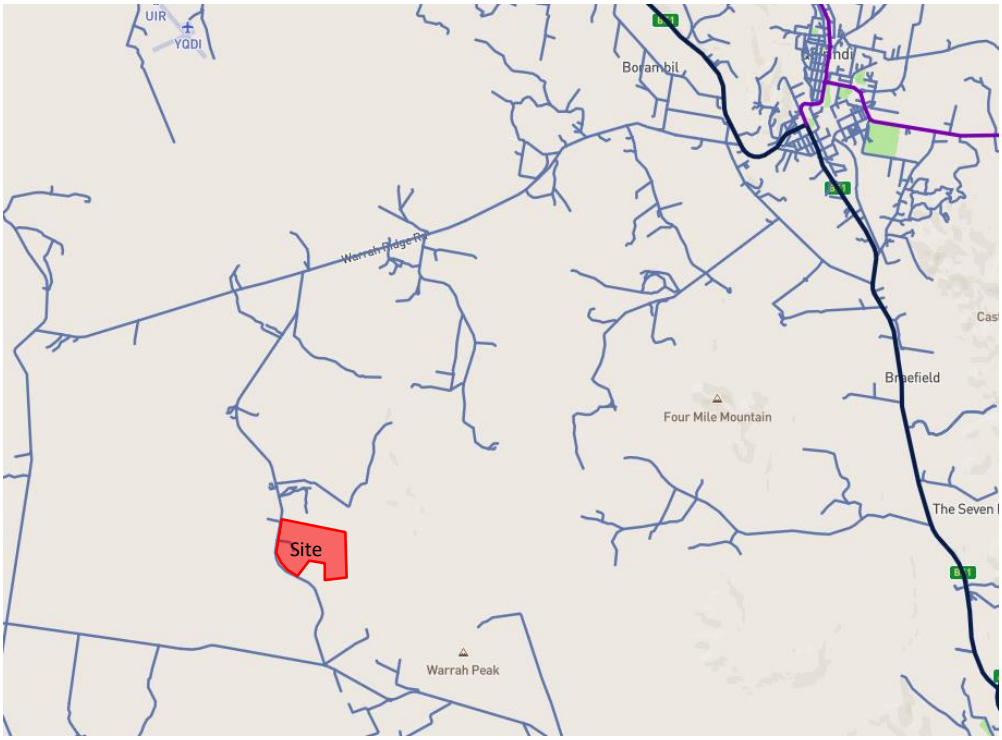


Figure 2: Road Classification (Source: Transport for NSW)

Access to the farm will be achieved via an internal driveaway connecting to Inverkip Road. Inverkip Road is a local road which connects to Warrah Ridge Road to the North and Merriwah Road to the South. Merriwah Road is a Regional Road and a designated B-Double Route taking up to 25m-B-Doubles. Inverkip Road and Warrah Ridge Road fall within the "Approved Area with Travel Conditions" as per the Transport for NSW *Combined Higher Mass Limits (HML) and Restricted Access Vehicle (RAV) Map, (*shown in Figure 3), which for B-doubles requires the following for operating conditions:

- It is the responsibility of the driver of the B-Double transport to satisfy themselves that the proposed route is suitable for use under the conditions existing at the time and undertake a risk assessment of the route prior to travelling the route to assess the suitability of travel along the route
- Temporary route restrictions may be imposed when routes become impassable for heavy vehicles
- Following rainfall the driver of a B-Double transport must check with the Liverpool Plains Shire Council, or the RTA Area Office, regarding possible road closures
- Extreme care must be taken on the route especially during wet weather or during school bus hours

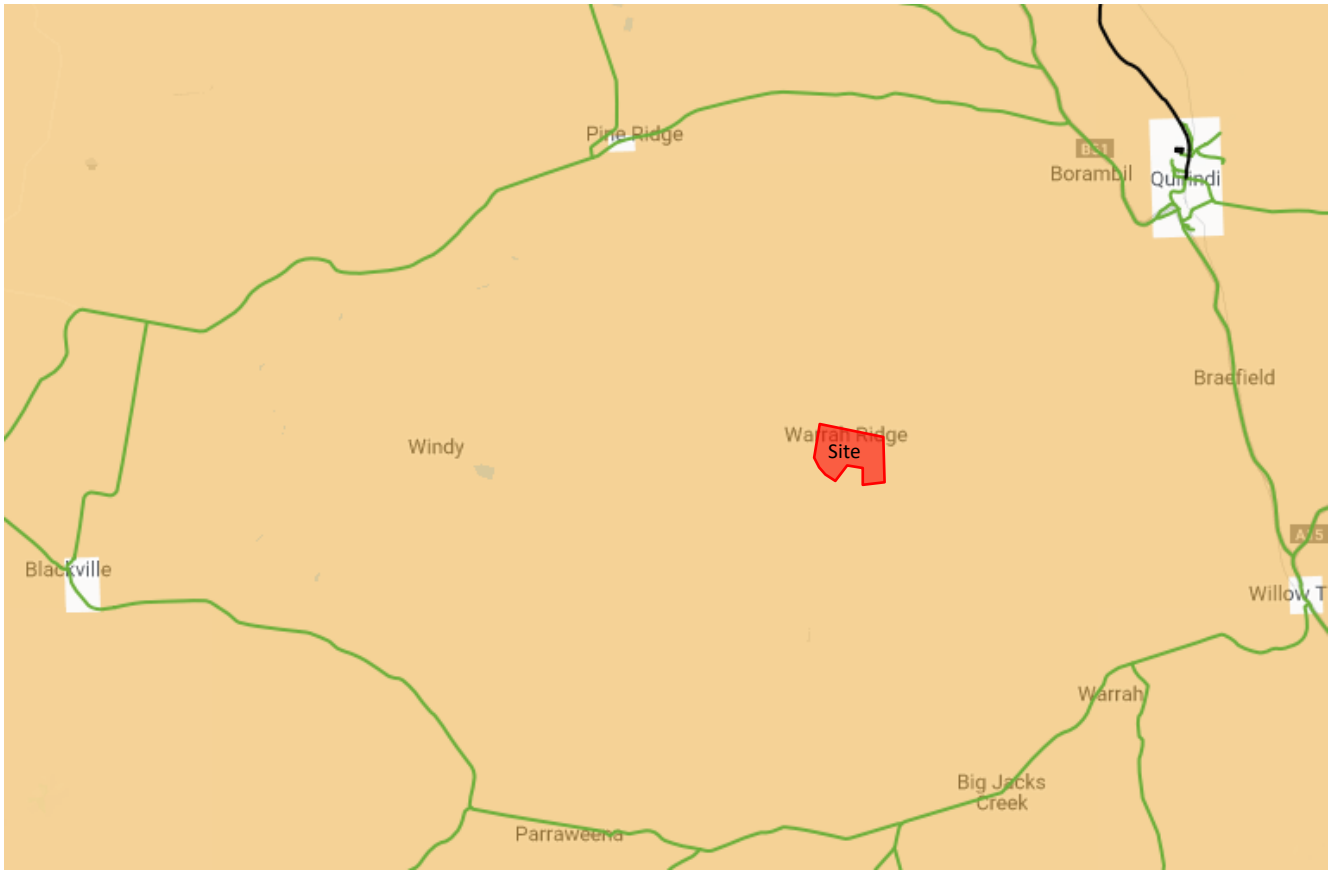


Figure 3: NSW Combined Higher Mass Limits (HML) and Restricted Access Vehicle (RAV) Map (Source: Transport for NSW)

2.2 EXISTING SITE

The proposed development site is located at 375 Inverkip Road, and is currently a vacant rural property.

3 DEVELOPMENT PROFILE

The proposed development involves the construction of a single farm consisting of four sheds. All four sheds will be used for the rearing of poultry. A site layout plan of the proposed development can be seen in Figure 4.

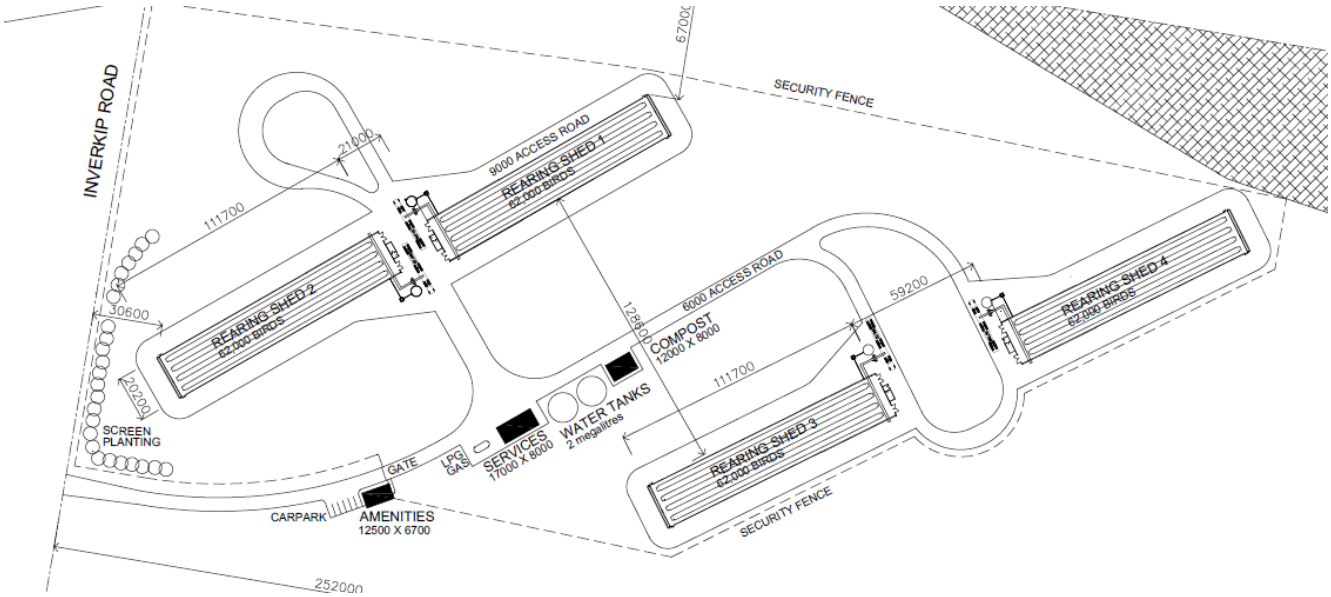


Figure 4: Proposed Site Layout Plan (Source: Pace Farm)

As shown in the plan, the primary site entrance will be from Inverkip Road, with all vehicles accessing the site from this location. It is expected that the development will reach full operation in the year 2023.

4 IMPACT ASSESSMENT

4.1 ASSESSMENT PARAMETERS

It is a standard requirement when analysing traffic impacts to adopt a 10-year design horizon from the year of opening/full operation of the proposed development. As such, the following development parameters have been adopted for the purpose of this assessment:

- Traffic count 2021
- Year of full operation 2023
- 10-year design horizon 2033

4.2 EXISTING AND FUTURE YEAR BACKGROUND TRAFFIC VOLUMES

Due to the remote location and limited number of entry and exit points on Inverkip Road, historic traffic counts were not obtained for the site. While traffic has been observed to be incredibly light, as an extremely conservative estimate it will be assumed that the bidirectional light vehicle traffic on Inverkip Road will be 50 vehicles (assumed an additional 10% will be heavy vehicles) in the AM and PM peak times. It is expected that the AM and PM peak hours will align with the arrival and departures of staff in the morning and afternoon (8:00AM-9:00AM and 4:00PM-5:00PM respectively). Therefore, the impacts of the development generated traffic on the road network will be assessed for the AM and PM peak hours.

The assumed background traffic volumes during these times are shown below in Figure 5.

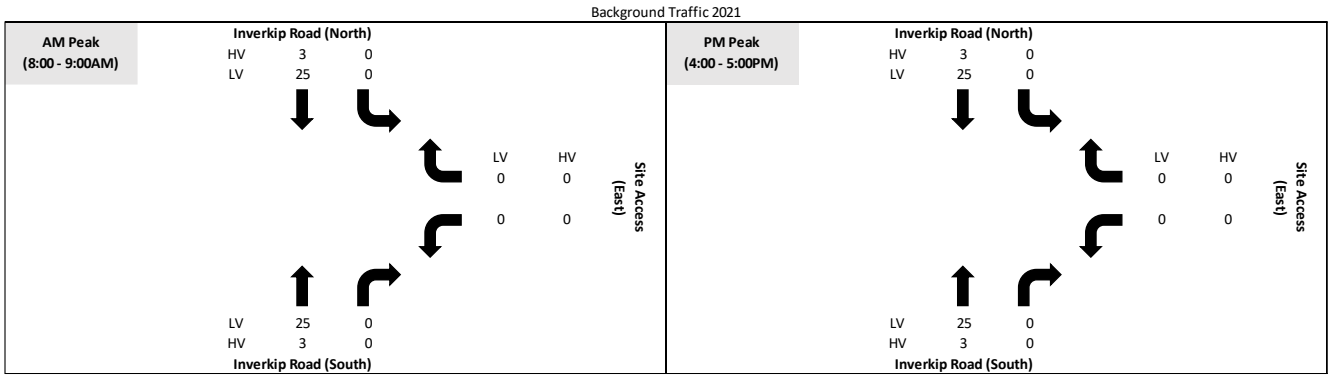


Figure 5: Assumed Background Peak Hour Traffic Volumes (Source: PSA Consulting)

4.3 DEVELOPMENT TRAFFIC GENERATION AND DISTRIBUTION

Traffic generated by the development is based on similar sized farms PSA has analysed in the past. Average traffic generated by the development is shown below in Table 1.

Table 1: Total Traffic Generation (Source: PSA Consulting)

PURPOSE	VEHICLE TYPE	AVERAGE DAILY TRIPS*
Staff	Light Vehicle	12
Birds In	Heavy Vehicle	0.8
Bedding Removal/Delivery	Heavy Vehicle	0.8
Delivery of feed	Heavy Vehicle	0.8
Delivery of Gas	Heavy Vehicle	0.8
Birds Out	Heavy Vehicle	0.8

*For the purpose of this assessment, a vehicle trip is defined as a vehicle entering or exiting the development.

An estimate of the daily traffic movements entering and exiting the development is shown below in Table 2

Table 2: Daily Traffic Generation (Source: PSA Consulting)

VEHICLE TYPE	VEHICLES ENTERING DEVELOPMENT	VEHICLES EXITING DEVELOPMENT	TOTAL VEHICLE TRIPS
Light Vehicles	6	6	12
Heavy Vehicles	2	2	4
TOTAL	8	8	16

A conservative estimate of the traffic entering and exiting the development during the identified peak hours is shown below in Table 3. Again, to be conservative it has been assumed that all Light Vehicles and Heavy Vehicles will enter and exit the development site during the AM and PM Peak Hours respectively, where in reality these trips will be spread across the day.

Table 3: AM and PM Peak Hour Traffic Generation (Source: PSA Consulting)

VEHICLE TYPE	AM PEAK		PM PEAK	
	VEHICLES ENTERING DEVELOPMENT	VEHICLES EXITING DEVELOPMENT	VEHICLES ENTERING DEVELOPMENT	VEHICLES EXITING DEVELOPMENT
Light Vehicles	6	0	0	6
Heavy Vehicles	2	0	0	2
TOTAL	8	0	0	8

The above estimates assume the following, which are considered to be conservative given the remote location:

- It is assumed that all light vehicles and heavy vehicles will enter the development site during the AM Peak, and will leave the site during the PM peak.
- Based on the information provided by Pace Farm, 50% of Heavy Vehicles will enter/exit the site to/from the north, and 50% will enter/exit the site to/from the south.
- For Light Vehicles, 50% will enter/exit to/from the north, and 50% will enter/exit to/from the south.
- A background traffic growth rate of 3% per year will be applied to for the forecasted background traffic.

The distribution of traffic after consultation with Pace Farm is shown in Figure 6.

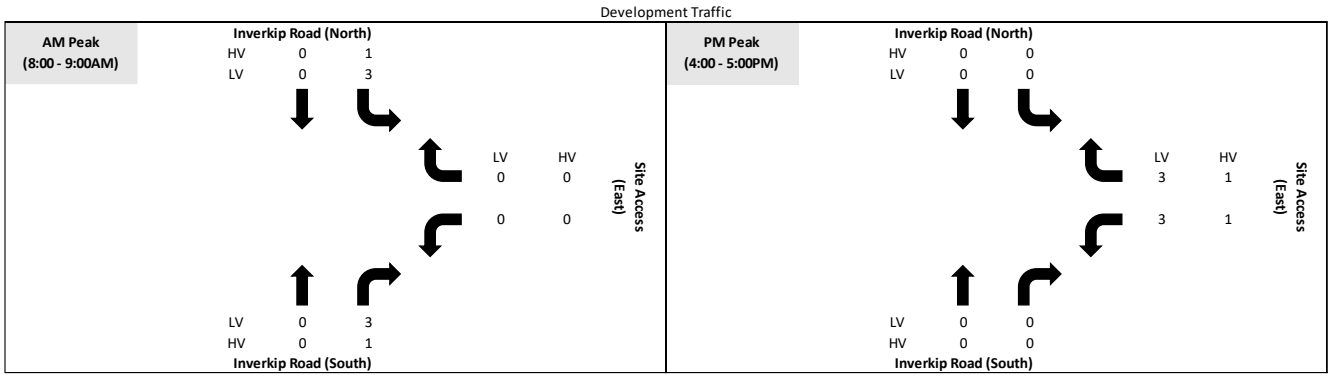


Figure 6: Site Development Peak Hour Traffic (Source: PSA Consulting)

Construction traffic is not anticipated to exceed the volumes that will be experienced during full operation of the site. As such, it is not necessary to conduct an investigation into the impacts of construction specific traffic.

4.4 TRAFFIC IMPACT ASSESSMENT

Using the assumptions above, and a conservative background traffic growth rate of 3%, future year background traffic volumes have been calculated and combined with the development generated traffic volumes to obtain the design traffic volumes for this assessment. The scenarios analysed for this assessment are the year of opening and the 10-year design horizon.

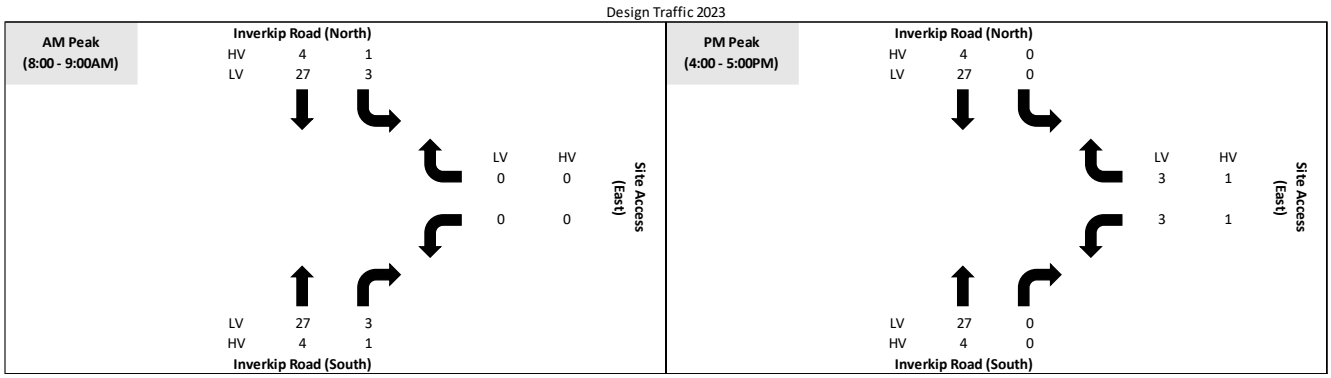


Figure 7: 2023 Year of Opening Design Traffic (Source: PSA Consulting)

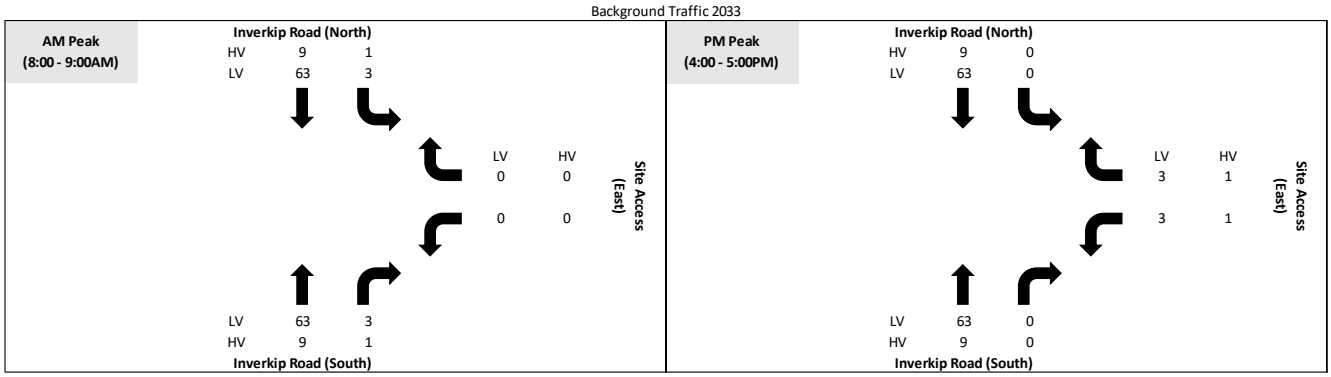


Figure 8: 2033 10-Year Design Horizon Traffic (Source: PSA Consulting)

Austroads *Guide to Traffic Management Part 3: Traffic Study and Analysis Methods (2009)* lists the intersection capacity – uninterrupted flow conditions for a range of traffic volumes for unsignalised intersections. This table is shown in Figure 9.

Major Road Types[1]	Major Road Flow (vph)[2]	Minor Road Flow (vph)[3]
Two-Lane	400	250
	500	200
	650	100
Four-Lane	1000	100
	1500	50
	2000	25

Notes
1. Major road is through road i.e. has priority
2. Major road design volumes include through and turning movements
3. Minor road design volumes include through and turning volumes

Figure 9: Intersection Capacity - Uninterrupted Flow Conditions

As the year of opening and 10-year design horizon traffic volumes are less than those in the table, it is deemed unnecessary to carry out an intersection analysis.

4.4.1 Assessment of Turn Warrants

A turn warrants assessment has been carried out for the Inverkip Road and site access T-intersection. Both the year of opening (2023) and 10-year design horizon (2033) traffic volumes have been analysed. The turn warrants have been assessed using Figure 4A-10b – Warrants for turn treatments on the major road at unsignalised intersections from Austroads *Guide to Road Design Part 4: Intersections and Crossings*. This figure has been reproduced in Figure 10 and Figure 11.

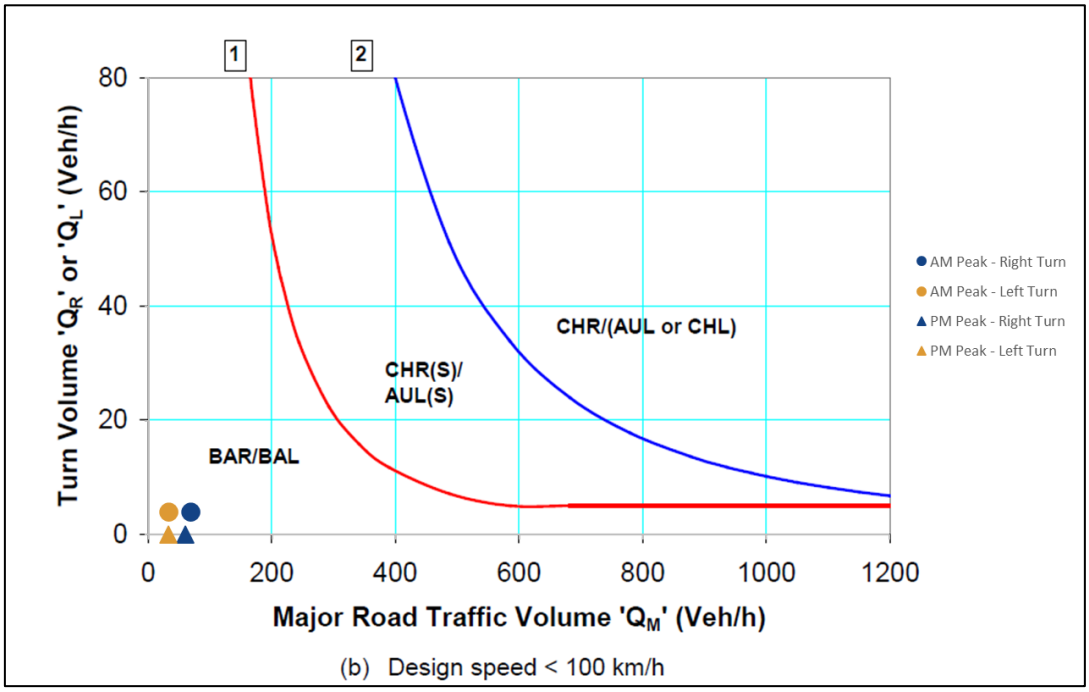


Figure 10: Turn Warrants Assessment 2023 Year of Opening (Source: Austroads & PSA Consulting)

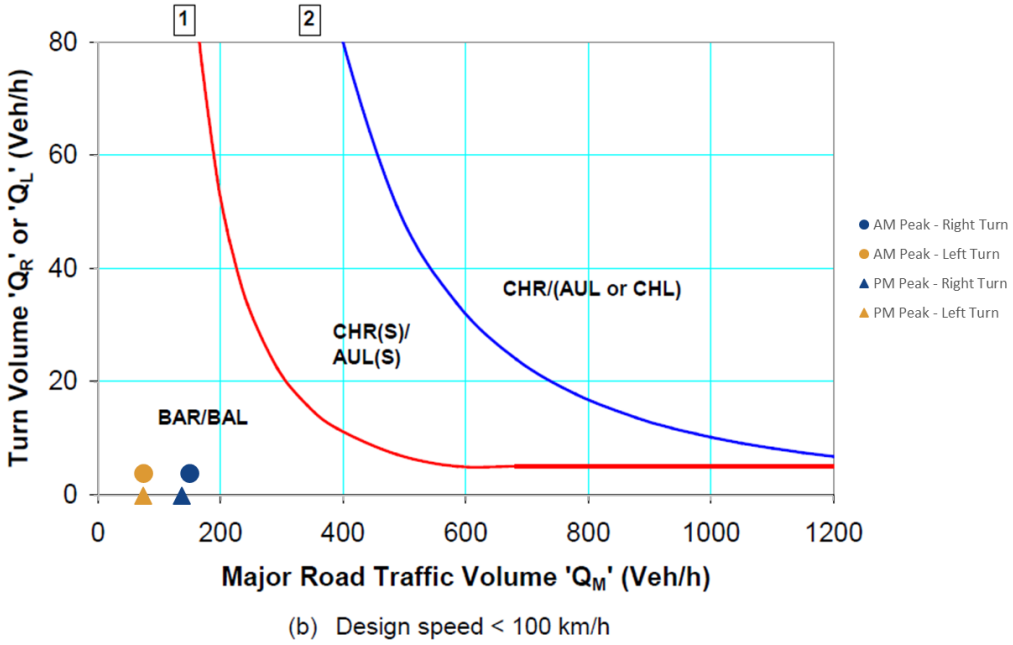


Figure 11: Turn Warrants Assessment 2033 Design Horizon (Source: Austroads & PSA Consulting)

As shown in the above figures, the turning volumes for both the year of opening and the 10-year design horizon warrant the construction of both a Basic Right (BAR) and Basic Left (BAL) at the intersection of Inverkip Road and the development site access.

The features of a Basic Right and Basic Left turn treatments, as per Chapter 4A (Unsignalised and Signalised Intersections) of Austroads Guide to Road Design are shown in Figure 12.

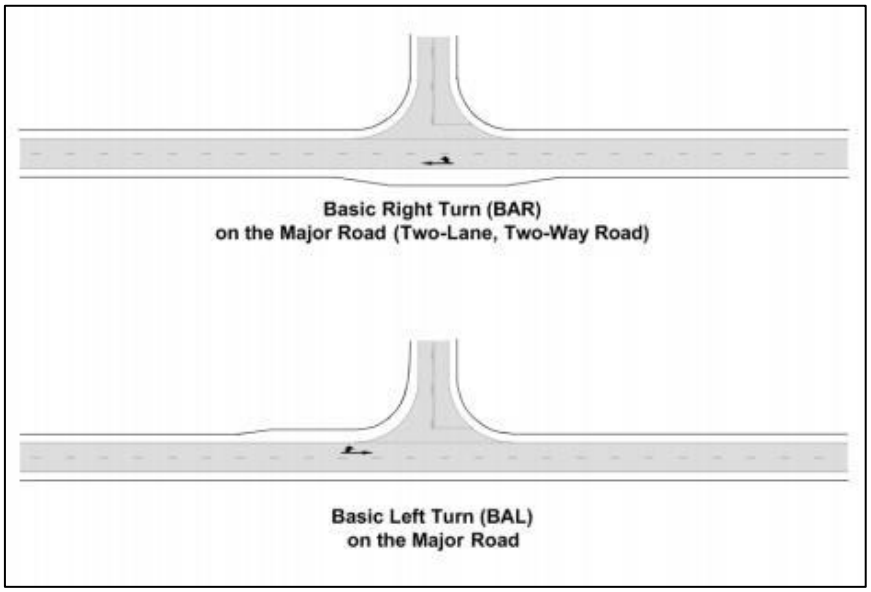


Figure 12: Rural Basic BA turn treatments (Source: Austroads)

5 ON-SITE PARKING REQUIREMENTS

The Liverpool Plains Shire Council DCP does not require a specific parking rate be met for intensive animal industries. For Intensive Agriculture, the DCP refers to the NSW Government Department of Primary Industries (DPI) Guidelines with regard to industry-specific farm management practices. The DPI *Best Practice Management for Meat Chicken Production in NSW* requires "adequate provision for the parking of vehicles anticipated to be using the farm". As such, it is expected that the proposed development will suitably provide parking for each staff member on site at any one time (4) while also providing an additional allowance for visitors and contractors. 6 parking spaces have been provided at the entrance for staff and visitors to the site in accordance with bio-security protocols. There is sufficient space on the site for parking and manoeuvring to be provided for all staff and visitors.

6 SITE ACCESS

The main concern with safety is the Inverkip Road / site access intersection, as all light and heavy vehicles will access the site from this location. Therefore, an assessment has been carried out on its safety to ensure it is in a satisfactory condition to accommodate the proposed additional traffic volumes.

As per Austroads *Guide to Road Design Chapter 4A*, a safe intersection sight distance (SISD) for a 100km/h posted speed road is 211m. Figure 13 & Figure 14 show Inverkip Road facing each direction from the site

Figure 13: Inverkip Road Facing South (Source: PSA Consulting)

Figure 14: Inverkip Road Facing North (Source: PSA Consulting)

As shown in the above figures, the sight distance available in each direction easily exceeds the requirements stated in Austroads. Therefore, there are deemed to be no sight distance related issues with this intersection.

7 SWEPT PATH ASSESSMENT

Swept path analysis has been undertaken for the site access, as well as for manoeuvring to all 4 sheds within the farm. Traffic generation and distribution information has been obtained through consultation with Pace Farm, which listed B-Doubles accessing and manoeuvring through the site. The following locations on the site were examined using Autocad and Autoturn modelling software:

- Site access to/from Inverkip Road (both directions);
- Sheds 1 & 2 site manoeuvring;
- Sheds 1 & 2 access

A 25m long B-double vehicle template was used for the swept path analysis for each of the above locations. It was found that the B-Double could manoeuvre throughout the site. Assuming the unsealed width of 9.5m, the site-access driveway will require widening to enable access onto the roadway for B-Doubles. Should longer heavy vehicles need to access the site in the future, it is recommended that the driveway access to the site be widened to accommodate the longer vehicles.

Refer to Appendix B for each swept path movement undertaken.

8 PUBLIC AND ACTIVE TRANSPORT LINKAGES

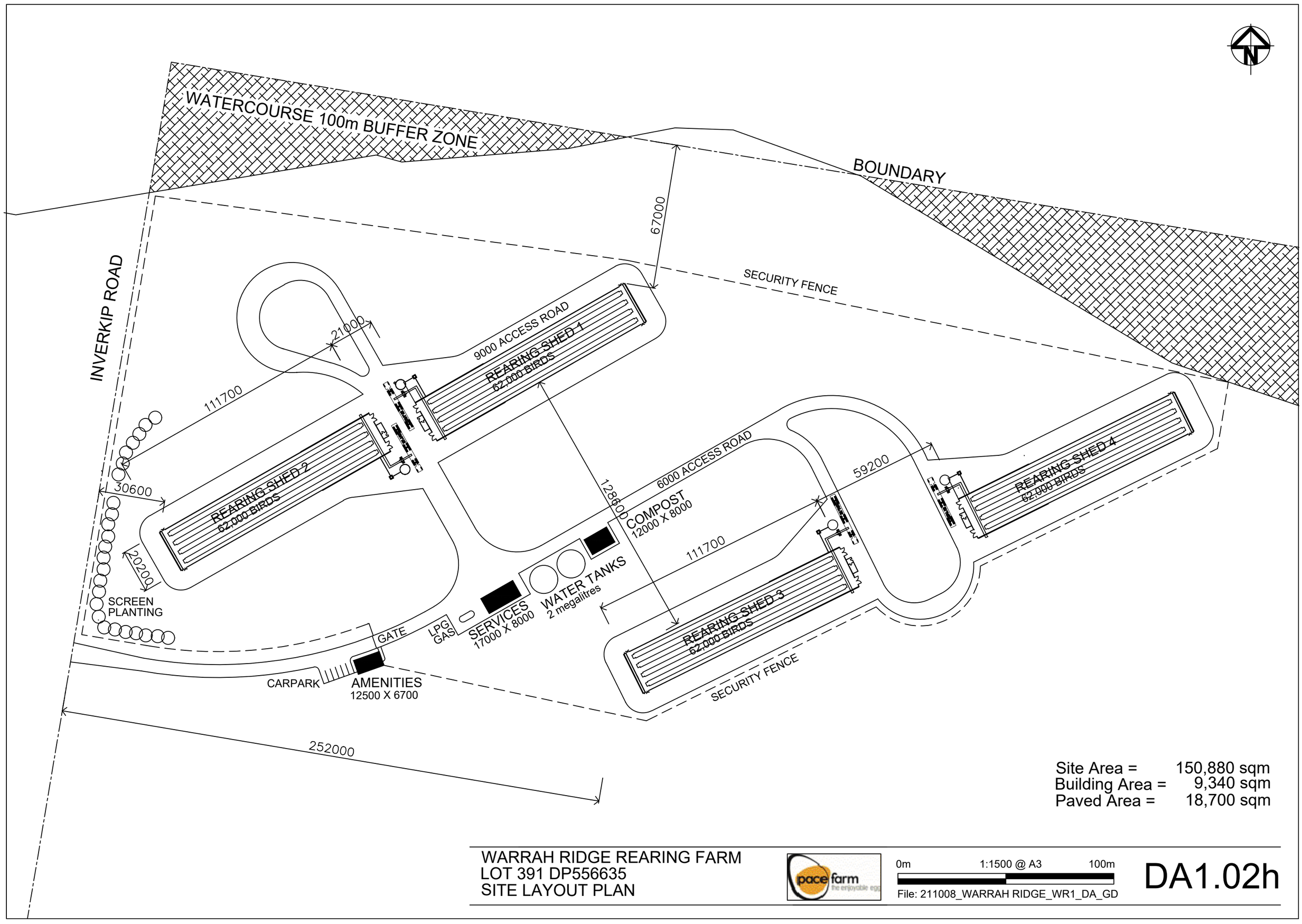
There no public or active transport facilities within the vicinity of the development site. It is expected that all staff will utilise private vehicles to access the site.

9 SUMMARY

The key finding from the traffic impact assessment for the proposed Poultry Farm at 375 Inverkip Road is that it is not considered to result in any significant impacts on the external road network. This has been demonstrated in the forecasted turning volumes for the site. It was found that there is sufficient sight distance for the site access on Inverkip Road, and that the necessary design vehicles are able to manoeuvre throughout the site. It is recommended to widen the proposed driveway access on Inverkip Road to enable 25.0m B-Doubles access the site safely. If longer heavy vehicles are to enter the site in the future, the access driveway will need to be widened further.

APPENDIX 1: SITE PLANS

AP01



Site Area = 150,880 sqm
Building Area = 9,340 sqm
Paved Area = 18,700 sqm

WARRAH RIDGE REARING FARM
LOT 391 DP556635
SITE LAYOUT PLAN

pace farm
the enjoyable egg

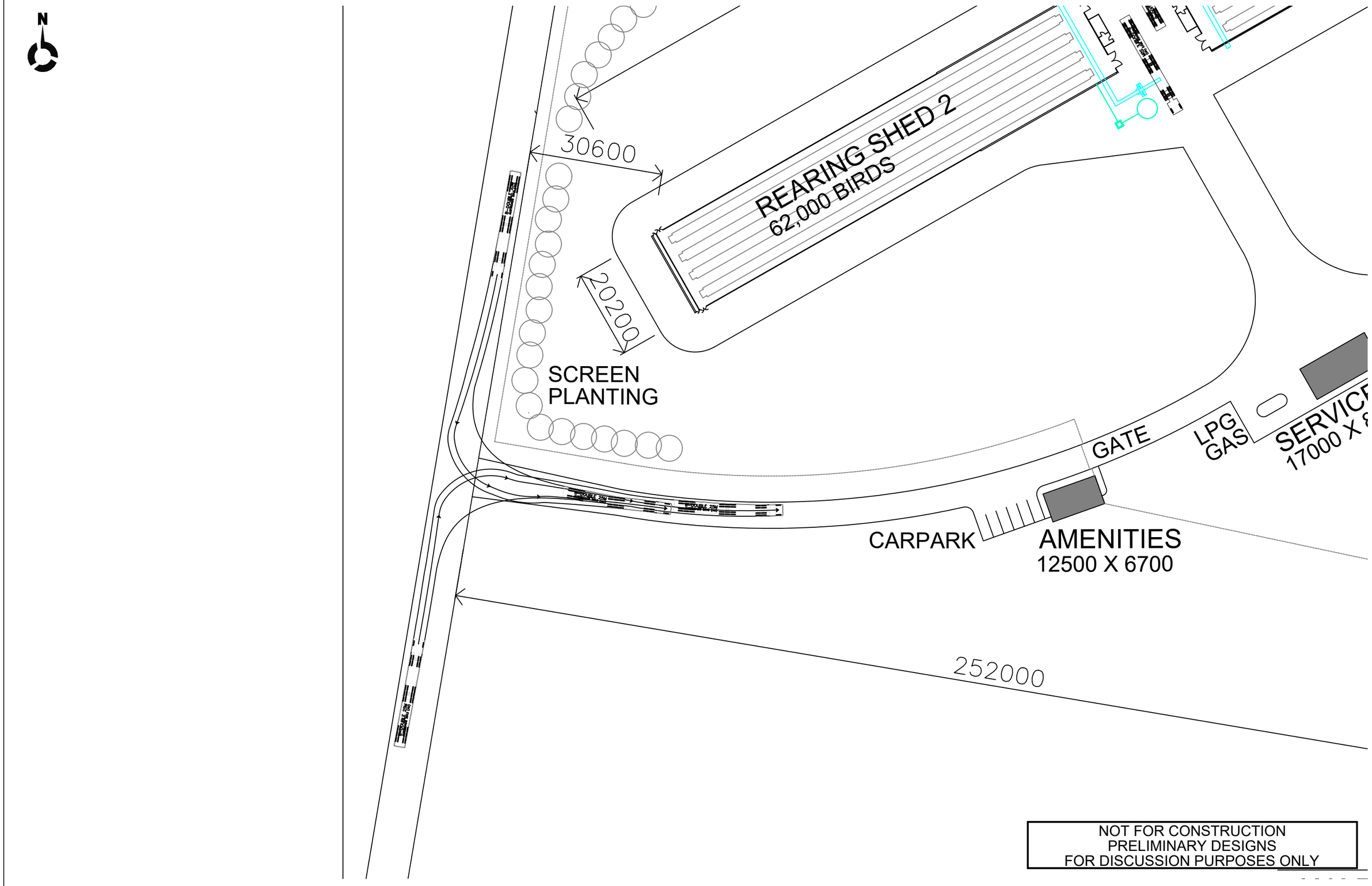
0m 1:1500 @ A3 100m

File: 211008_WARRAH RIDGE_WR1_DA_GD

DA1.02h

APPENDIX 2: SWEPT PATHS

AP02



REVISION	DESCRIPTION	BY	DATE
1	ORIGINAL ISSUE	R.P	06.09.2021
2	UPDATED PLANS	R.P	12.10.2021

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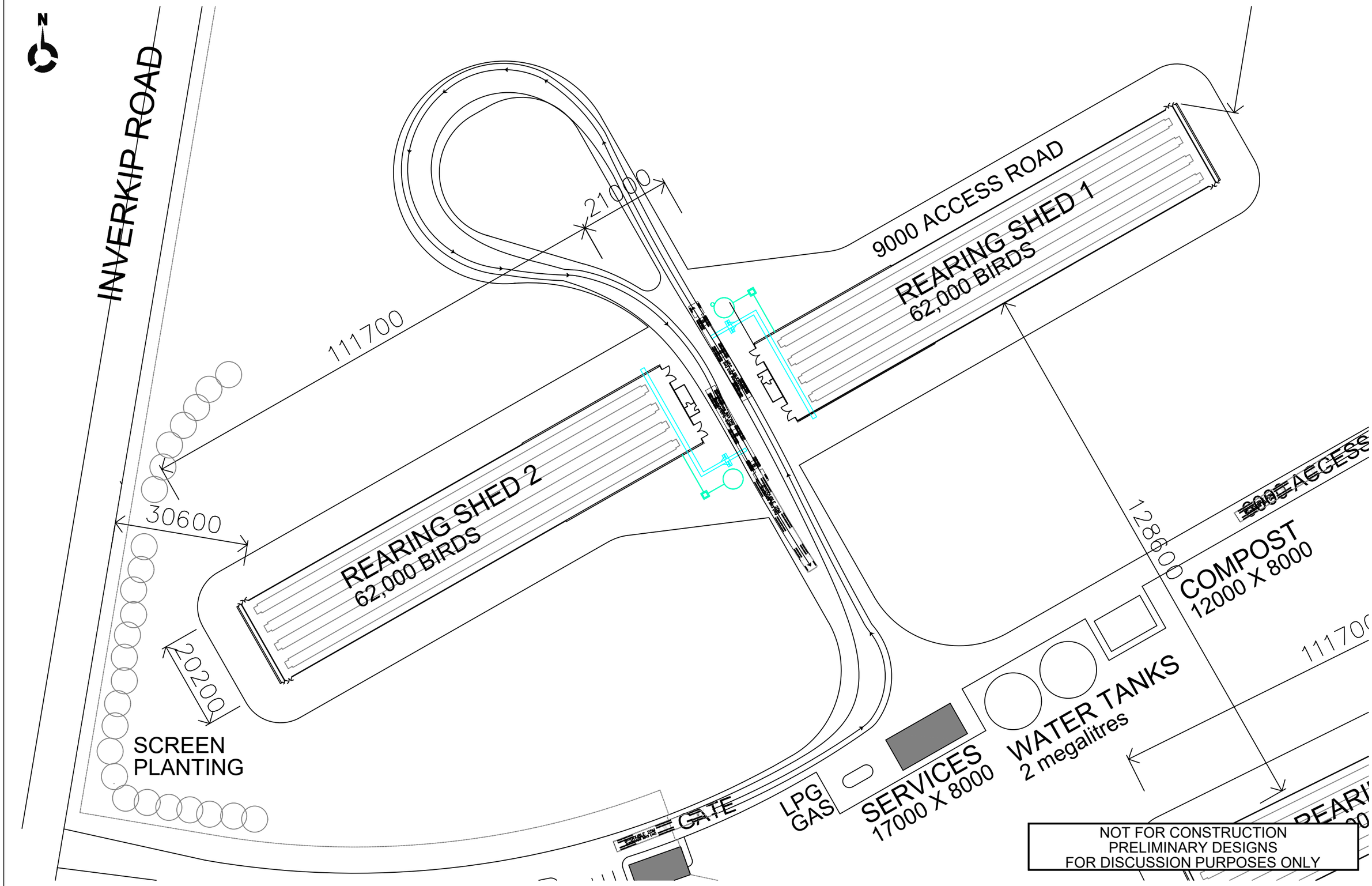
TOWN PLANNING | TRAFFIC ENGINEERING | TRANSPORT PLANNING | PROGRAM MANAGEMENT | INFRASTRUCTURE

DRAWING TITLE: INVERKIP ROAD ACCESS SWEPT PATHS
CLIENT: PACE FARMS
PROJECT: WARRAH RIDGE FARM 1
LOCATION: 375 INVERKIP ROAD, WARRAH RIDGE, NSW

DRAWING DATE: OCTOBER 2021
ORIGINAL SIZE: A1 SCALE A3: 1:800
SCALE: 0 8 16 24m
SCALE 1:400 (A1)

DRAWN BY: R.P
CHECKED BY: H.R
APPROVED BY: H.R

PROJECT NO.: 1220
DRAWING NO.: SK01
REVISION: 2



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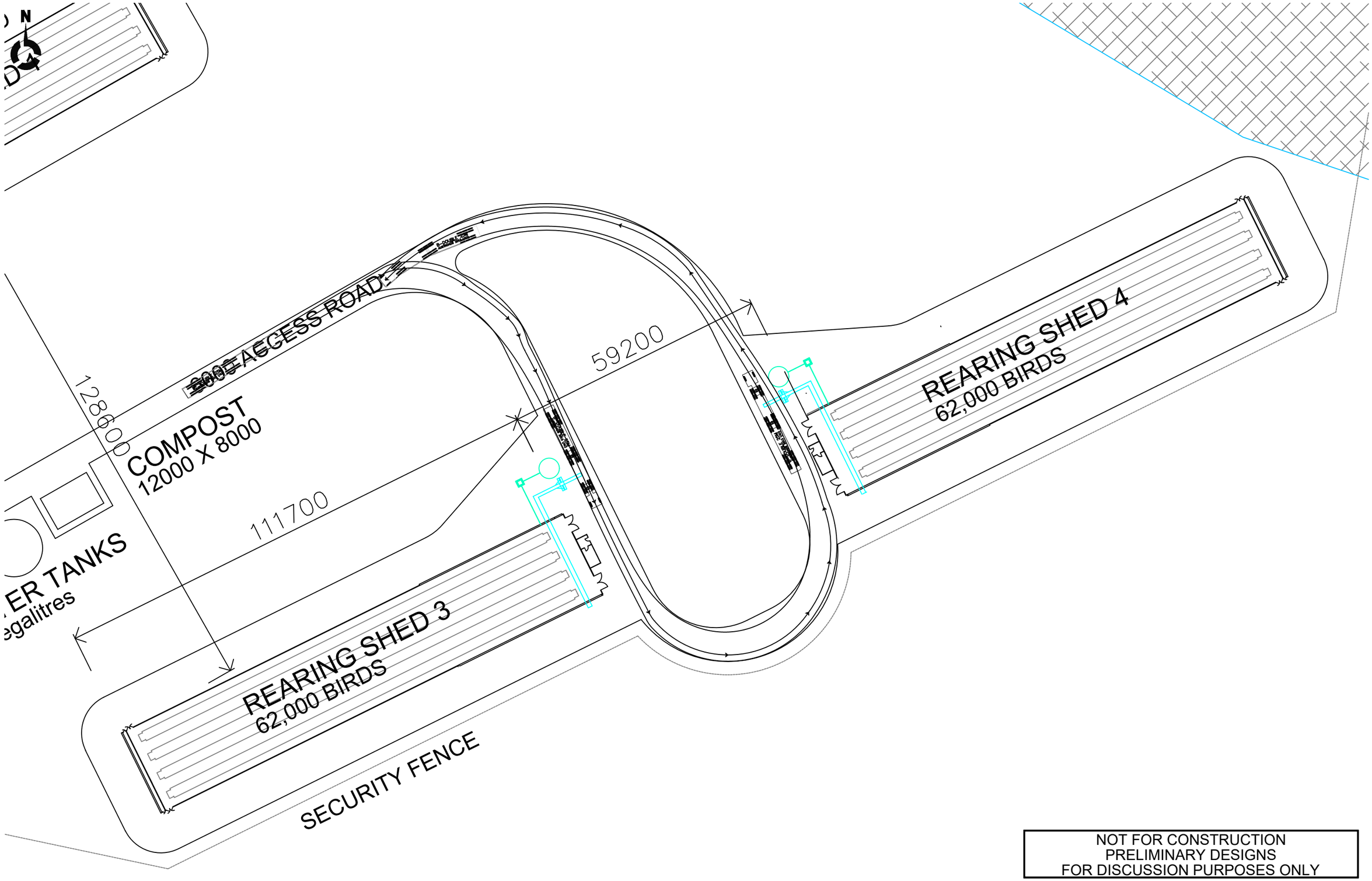
TOWN PLANNING | TRAFFIC ENGINEERING | TRANSPORT PLANNING | PROGRAM MANAGEMENT | INFRASTRUCTURE

DRAWING TITLE: SHEDS 1A & 1B SWEPT PATHS
CLIENT: PACE FARMS
PROJECT: WARRAH RIDGE FARM 1
LOCATION: 375 INVERKIP ROAD, WARRAH RIDGE, NSW

DRAWING DATE: OCTOBER 2021
ORIGINAL SIZE: A1 SCALE A3: 1:800
SCALE: 0 8 16 24m — SCALE 1:400 (A1)

DRAWN BY: R.P
CHECKED BY: H.R
APPROVED BY: H.R

PROJECT NO.	DRAWING NO.	REVISION
1220	SK02	2



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DRAWING TITLE: SHEDS 1C & 1D SWEPT PATHS
CLIENT: PACE FARMS
PROJECT: WARRAH RIDGE FARM 1
LOCATION: 375 INVERKIP ROAD, WARRAH RIDGE, NSW

DRAWING DATE: OCTOBER 2021
ORIGINAL SIZE: A1 SCALE A3: 1:800
SCALE: 0 8 16 24m
SCALE 1:400 (A1)

DRAWN BY	R.P
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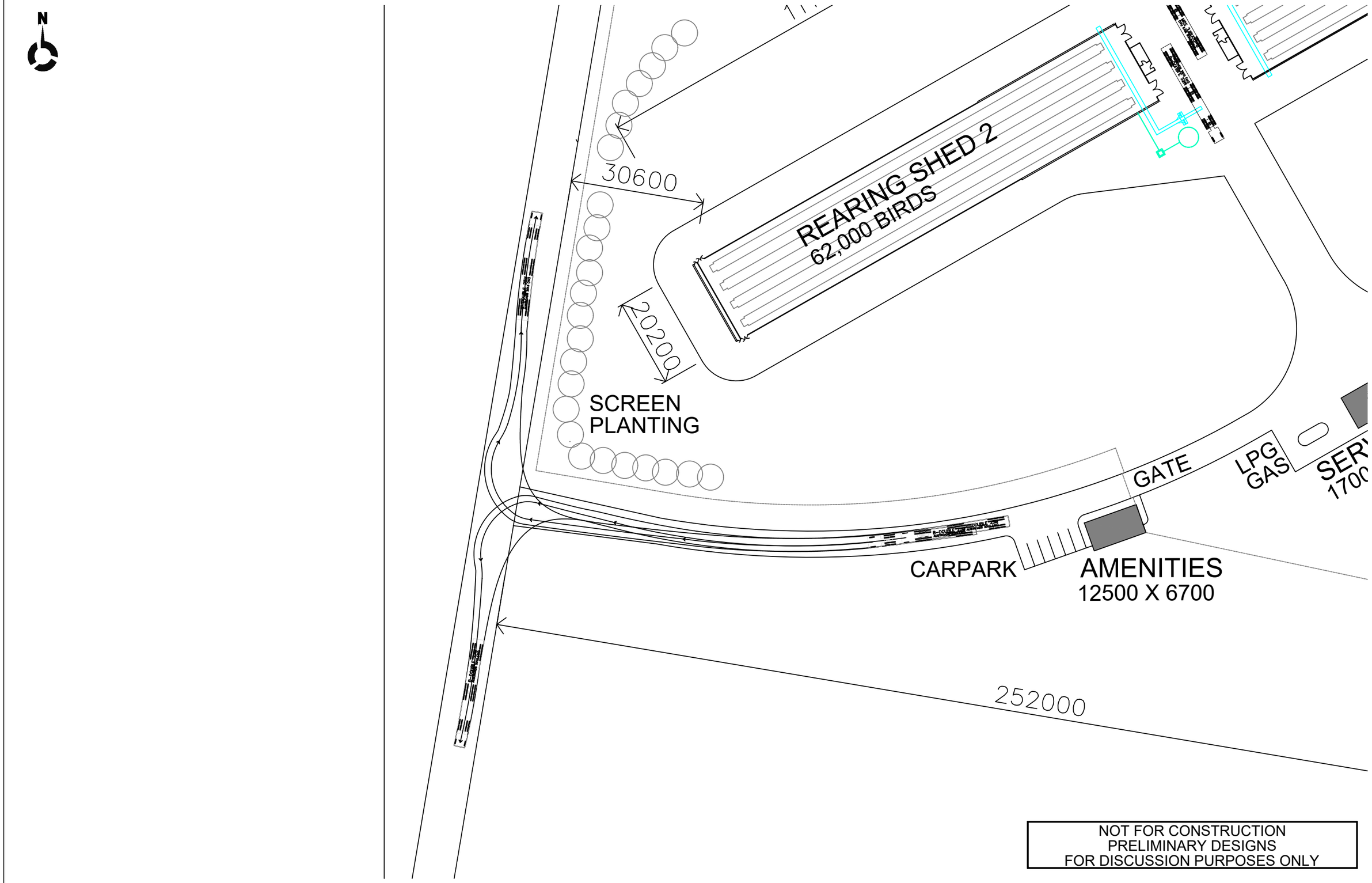
PROJECT NO.	DRAWING NO.	REVISION
1220	SK03	2



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REVISION	DESCRIPTION	BY	DATE
1	ORIGINAL ISSUE	R.P	12.10.2021

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TOWN PLANNING | TRAFFIC ENGINEERING | TRANSPORT PLANNING | PROGRAM MANAGEMENT | INFRASTRUCTURE

DRAWING TITLE: INVERKIP ROAD ACCESS SWEPT PATHS CONTINUED
CLIENT: PACE FARMS
PROJECT: WARRAH RIDGE FARM 1
LOCATION: 375 INVERKIP ROAD, WARRAH RIDGE, NSW

DRAWING DATE: OCTOBER 2021
ORIGINAL SIZE: A1 SCALE A3: 1:800
SCALE: 0 8 16 24m
SCALE 1:400 (A1)

DRAWN BY: R.P
CHECKED BY: H.R
APPROVED BY: H.R

PROJECT NO.	DRAWING NO.	REVISION
1220	SK04	1