

17 October 2023



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Attn: Joelle Khnouf, Development Manager

RE: State Significant Development (SSD 5248) Condition C36A – Traffic and Transport Response

Dear Joelle,

Reference is made to the Request for Additional Information (RFI) Letter to be submitted to the Department of Planning and Environment (DPE), in relation to the Condition C36A of the MOD 2 Master Plan for the State Significant Development (SSD 5248), dated 22 Decembre 2022.

Condition C36A reproduced as follows:

“Within 3 months of the date of the MOD 2 consent, the Applicant must provide to the Planning Secretary, a list of recommendations to minimise the safety risks identified in the Road Safety Audit titled Momentum Industrial Estate, Eastern Creek concept design road safety audit prepared by DC Traffic Engineering dated 19 December 2022. The Applicant must include a timetable for implementing the recommendations, to the satisfaction of the Planning Secretary”

Upon review of the condition, we offer the following response:

In response to the Road Safety Audit (RSA) conducted on December 19, 2022, necessary solutions have been implemented to address the identified issues. Focusing primarily on concerns related to unauthorised parking and traffic conflicts, comprehensive measures have been put in place.

These measures include strict on-site parking regulations, ensuring sufficient parking provisions have been provided within individual lots in accordance with the relevant Conditions of Consent highlighting on-site parking requirements.

On-street parking along all of the estate roads, particularly for trucks stopping for breaks and extended stays, has been strictly prohibited in order for mitigating any potential risks associated with sightlines at the proposed driveways.

To reinforce these measures, a detailed Signage and Line Marking Plan (**Appendix B**) has been prepared. This plan features the installation of “No Stopping” signs along internal estate roads, ensuring no stopping at any time by any vehicles.

These proactive steps, along with the commitment to implement these solutions before any lot occupation, demonstrate a dedication to creating a secure and smoothly functioning traffic environment within the Estate.

For further details reference can be made to below sections.

1 Road Safety Audit

1.1 RSA Summary

A Road Safety Audit (RSA) conducted by DC Traffic Engineering on December 19, 2022, brought to light four main concerns:

- Delays, Queuing, and Congestion Analysis: The first issue addressed in the RSA focused on analysing delays, queuing, and congestion along the road. (Ref 1)
- Mitigating Traffic Conflicts and Enhancing Safety on Estate Road 1: The second issue revolved around strategies to reduce traffic conflicts and improve safety specifically along Estate Road 1. (Ref 2)
- Traffic Conflicts and Safety Concerns Due to Closely Spaced Access Points on Estate Roads: The third concern delved into safety issues arising from closely spaced access points on Estate Roads. It highlighted the risks associated with numerous driveways and intersections in close proximity. (Ref 3)
- Unauthorised Parking in the Estate Roads: Lastly, the RSA discussed the problem of unauthorized parking within the Estate Roads, which can contribute to safety hazards and congestion. (Ref 4)

Ason Group has addressed each on the concern above in Appendix A of the RSA (please refer to **Appendix A** of this report). Notwithstanding, this letter primarily relates to respond to Reference Item 4 of the RSA, which has been reproduced below.

"With the numerous warehouse facilities, one typical risk identified at other similar developments is the tendency for truck and trailer parking along the estate roads. This includes temporary layovers to complete logbooks and check loads, as well as long-term stays with both truck and trailer, and even trailers being parked by themselves. Such parking behaviour blocks access for other truck and vehicle movements. It also may block sightlines to and from side accesses. As the design progresses and includes full signage and linemarking detail, strict controls will be needed with respect to parking and stopping along the estate roads."

1.2 Response to RSA

At the time of RSA preparation, the Project Team responded as follows:

"This is unlikely to be an issue due to the nature of the development. The Estate and the Estate Roads are private, and there would be limited, if any, external through traffic in the Estate."

Sufficiency of parking provisions within each lot, in line with the consent requirements, ensures parking demand is captured off-street.

Signage and line marking can be implemented to reinforce areas prohibited for on-street parking. This can consider factors such as sightlines, proximity to driveways, and manoeuvring space.

As above. Therefore, we consider this comment as CLOSED."

To address this issue further Ason Group has prepared a signage and line marking plan (Please refer to **Appendix B**). It should be noted that the internal roads of the Estate are private. "No stopping" signs will be installed along the internal estate roads. Additionally, the Estate will only have one access point via a signalised intersection at Wallgrove Road.

The installation of "No Stopping" signs along the internal estate roads will ensure that no vehicle will legally stop on these roads at any time. It is also worth mentioning that every lot provides sufficient parking to cater for any and all vehicles traveling to any particular warehouse, as well as loading docks to accommodate the

vehicle demand of each lot. With these provisions in place, it is less likely for drivers to find the need to park on the street, particularly on the internal roads.

1.3 Implementation of Recommendations

It is expected that the Signage and Line Marking Plan will be put into effect prior to the occupation of any lots within the estate.

2 Parking Management

2.1 On-site Car Parking

In accordance with the Condition B5, individual sites shall provide on-site car parking in accordance with the following rates (unless specific approval for reduced rates is provided by a subsequent development consent).

TABLE 1 MASTERPLAN PARKING RATE

Land Use	Minimum Car Parking Rate
Warehouse / Industrial	1 space per 300m ²
Office	1 space per 40m ²
Accessible	2 spaces per 100 spaces provided

On-site parking provisions is a matter for individual site-specific traffic assessment.

2.2 On-street Parking

On-street parking within the Estate is strictly prohibited.

These restrictions have been implemented to address issues raised within the RSA, primarily relating to safety issues arising from;

- Trucks stopping for their compulsory breaks (for logbook completion).
- To check and readjust loads.
- Extended stays involving both trucks and trailers, and
- decoupled trailers being parked for extended stays also.

It is expected that Gazcorp will implement all signage and line marking outlined within **Appendix B**. These stringent controls are explicitly outlined, emphasising that on-street parking is strictly prohibited.

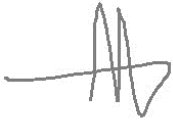
Management of respective lots shall remain the responsibility of the respective warehouse tenant to ensure that no vehicles associated with business operations are stopping/parking on-street, and contrary to the parking restrictions.

3 Conclusion

Based on the implemented measures, including on-site parking regulations, the prohibition of on-street parking, and the detailed Signage and Line Marking Plan, we believe that Condition C36A has been effectively addressed with appropriate recommendations and a traffic management strategy in place. These proactive steps demonstrate a commitment to ensuring safety and traffic efficiency within the estate, thereby fulfilling the requirements outlined in Condition C36A.

Should you require any additional information or clarification, please do not hesitate to contact the undersigned.

Yours sincerely,

A handwritten signature in black ink, consisting of a horizontal line followed by a series of vertical and diagonal strokes, forming a stylized 'M' and 'A'.

Musstafa Abdullah

Traffic Engineer

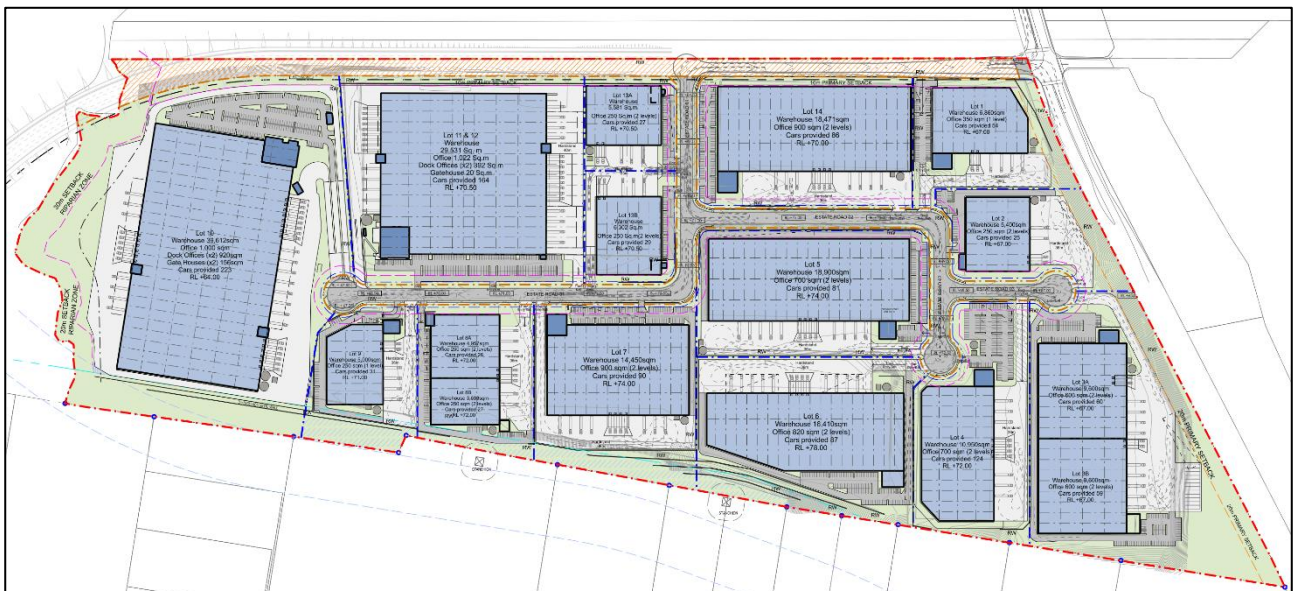
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Appendix A. Road Safety Audit

Momentum Industrial Estate, Eastern Creek

Concept design road safety audit



Ason Group

Momentum Industrial Estate, Eastern Creek

Concept design road safety audit

Authors

Damien Chee

A handwritten signature in black ink that reads 'Damien Chee'. The signature is written in a cursive style with a horizontal line underneath it.

Report No

ASON-PROJ-0018-01 CD RSA 813-913 WALLGROVE ROAD Rev 5

Date

19/12/2022

This report has been prepared for Ason Group.

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Appendix A - Close out responses from project team

1 Introduction

1.1 Project and audit details

Details of the audit have been summarised in Table 1.

Table 1 Details of the road safety audit.

Audited project	Master plan of proposed industrial estate at 813-913 Wallgrove Road, Eastern Creek.
Client/ contact	Eric Ye Traffic Engineer Ason Group Ph: 0466 620 261 E: eric.ye@asongroup.com.au
Audit type	<i>Concept design</i> road safety audit.
Purpose	A <i>concept design</i> road safety audit was required to identify potential safety issues for consideration prior to the construction phase.
Background	Gazcorp has SSD approval for a 15-lot warehouse development at 813-913 Wallgrove Road, Eastern Creek. This is on the western side of Wallgrove Road to the north of Chandos Road. The following request was made by Fairfield City Council: <i>The applicant shall engage a suitably qualified person (Accredited Road Safety Auditor) to undertake a road safety audit for the proposed Estate Road to ensure that the road capacity is adequate to cater for the intended design vehicles. The objective of a road safety audit is to identify foreseeable hazards for all road users and with the identified issues being addressed to the satisfaction of the Accredited Road Safety Auditor*.</i> * It should be noted that in NSW, the usual road safety auditing practice is to not provide recommendations as a part of the road safety audit. This is outlined in Section 3.4 of the NSW Centre for Road Safety's <i>Guidelines for Road Safety Auditing Practices</i>. The road safety audit team is usually not cognisant of <u>all</u> the governing and constraining factors which are required to make a recommendation. As such, this report does not include recommendations. Also, typically, the road safety audit team does not approve the action plan following an audit. The audit team is not responsible for the project and does not own the risk associated with the project. As such, it is typically inappropriate for the audit team to approve the action plan in response to an audit. The project team should formulate their own close out / action plan and document this. This is outlined in Section 4.8B of the <i>Austrorads Guide to Road Safety Part 6A – Implementing Road Safety Audits</i>.
Scope of project/ audit	The following plan was issued to the audit team and considered to be the auditable material/ scope: - MM7-DA-001 revision P3. An extract from this design has been provided on the front cover. It should be noted that the access roads in the development will be private roads and typically only used by staff, delivery and servicing consignments ordered by the warehouses. The following notes further define the scope of this road safety audit: - Only the road facilities within the property boundaries (red lines) were to be included in the road safety audit. External roads, including the proposed signalised intersection with Wallgrove Road are all outside the scope of this audit. - The warehouse layout is indicative and subject to firmer details to be submitted with each individual development application. This also means that the layout, spacing and positions of each driveway and truck entry-egress point to each warehouse would also be subject to refinement. However, the driveway layout as per the master plan was reviewed in this audit, because this would at least be indicative of the number of driveways needed. Also, with individual lot sizes determined, the ultimate spacing of driveways (yet to be determined) was assumed to be similar to that shown in the master plan. In these respects, the higher-level message with each of the audit findings should be considered, particularly if the issue relates to driveway spacing,

	which is likely to be similar in all scenarios if the number of warehouses and the lot boundaries are fixed. Road, parking, loading dock and circulation layouts within each individual lot were outside the scope of this audit. These internal layouts are quite likely to change with each individual development application for the lots.
Audit team details	Damien Chee, DC Traffic Engineering (level 3 and lead auditor – RSA-02-0094). Linda Chee, DC Traffic Engineering (level 2 road safety auditor - RSA-02-1069).
Audit methodology	The audit was undertaken using the following methodology: - Review of design concept on 28/10/2022. - A familiarisation site inspection was carried out on 13/10/2022. - The road safety audit findings have been documented in this report in accordance with the NSW Centre for Road Safety's <i>Guidelines for Road Safety Audit Practices</i> (2011). - All audit findings have been risk rated using the methodology outlined in Section 4.8 of the Austroads Guide to Road Safety Part 6 – Road Safety Audit. This is based on an assessment of crash likelihood (see Table 2), crash severity (see Table 3) and the resultant risk rating (see Table 4).
Material supplied	See <i>scope of project/ audit</i>.
Meeting and assessment details	Review of design concept on 28/10/2022. Site inspection carried out on 13/10/2022.

Table 2 Assessment of crash frequency/ likelihood (for the risk rating of each audit finding).

Frequency	Description
Frequent	Once or more per week
Probable	Once or more per year (but less than once a week)
Occasional	Once every five or ten years
Improbable	Less often than once every ten years

Table 3 Assessment of crash severity (for the risk rating of each audit finding).

Severity	Description	Examples
Catastrophic	Likely multiple deaths	High-speed, multi-vehicle crash on a freeway. Car runs into crowded bus stop. Bus and petrol tanker collide. Collapse of a bridge or tunnel.
Serious	Likely death or serious injury	High or medium-speed vehicle/vehicle collision. High or medium-speed collision with a fixed roadside object. Pedestrian or cyclist struck by a car.
Minor	Likely minor injury	Some low-speed vehicle collisions. Cyclist falls from bicycle at low speed. Left-turn rear-end crash in a slip lane.
Limited	Likely trivial injury or property damage only	Some low-speed vehicle collisions. Pedestrian walks into object (no head injury). Car reverses into post.

Table 4 Risk rating (combined result of crash likelihood and severity).

	Frequent	Probable	Occasional	Improbable
Catastrophic	Intolerable	Intolerable	Intolerable	High
Serious	Intolerable	Intolerable	High	Medium
Minor	Intolerable	High	Medium	Low
Limited	High	Medium	Low	Low

1.2 Responding to the audit report

Road safety audits provide the opportunity to highlight potential road safety problems and have them formally considered by the project manager in conjunction with all other project considerations. They are to be considered as a “value-add” process in identifying potential safety risks that may have been overlooked in the design. They are not intended to “catch out” the project team, and the audit process and report should not be used to stifle a project. Rather, if used appropriately, road safety audits should make projects more justifiable by encouraging the inclusion of additional safety measures, or alternatively removing potentially unsafe aspects.

The responsibility for the project rests with the project manager, not with the auditor. The project manager is under no obligation to accept the audit findings. Also, it is not the role of the auditor to agree to, or approve the project manager’s responses to the audit. The audit team is not responsible for the project and does not own or manage the risk associated with the project. Therefore, it is also inappropriate for the audit team to direct the project team on a particular course of action following the audit. It should be appreciated that in responding to audit findings, the project team needs to consider the wide range of influencing factors, not just the road safety aspect. In these respects, the audit team is not positioned to consider all project factors. In the same respects, it is inappropriate for the audit team to approve or reject the action plan that follows a road safety audit. This close out/ action plan should be at the discretion of the project team in consultation with relevant stakeholders.

1.3 Previous audits

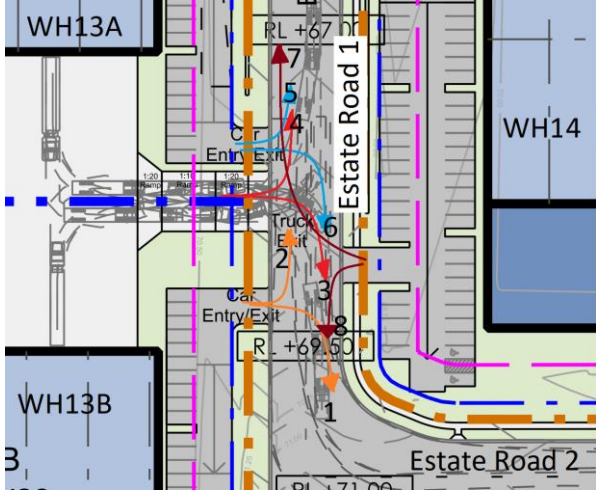
There were no previous audits of direct relevance to this project that were issued to the audit team.

2 Safety audit findings

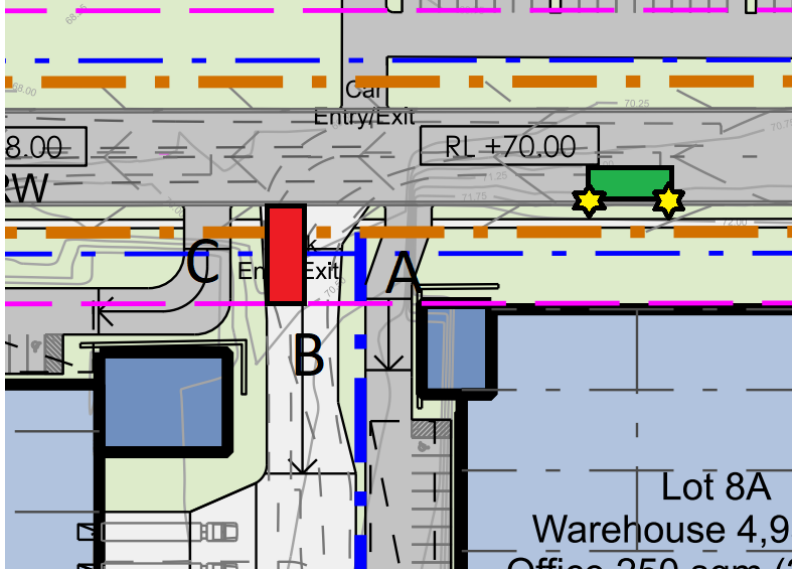
The road safety audit findings are presented in Table 5.

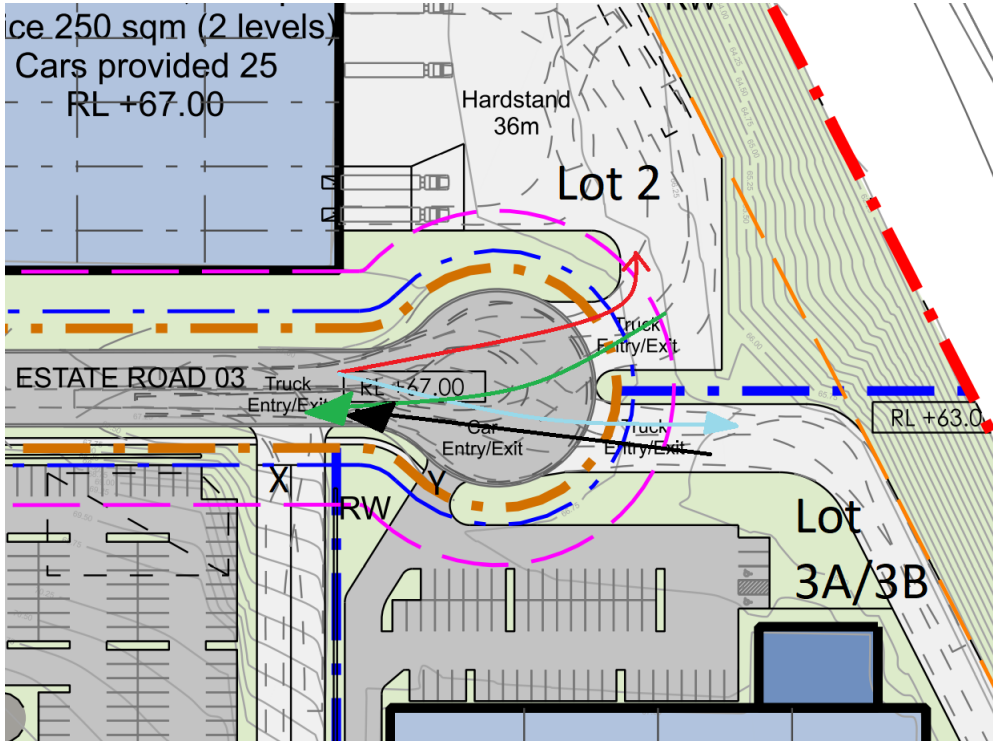
Table 5 Road safety audit findings.

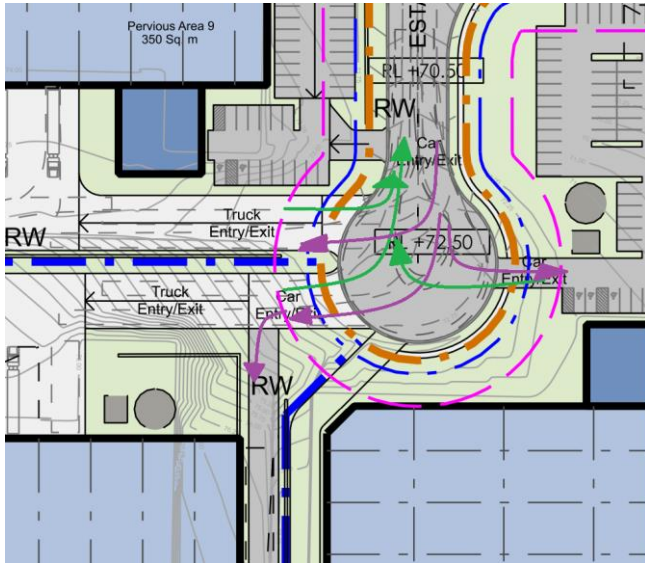
Ref	Location	Road safety audit finding	Risk rating
1	Traffic generation impacts and potential delays and queuing.	Delays and queuing are performance indicators of traffic management. However, they also have implications on road safety such as (i) frequent queuing and flow-breakdown which gives rise to <i>rear-end</i> crashes, (ii) increased delays which may result in increased driver frustration and poor decision making (eg. speeding and red light running), (iii) queues which may spill back to undesirable areas such as blocking outbound and inbound paths at driveways. The audit team envisages that the two areas that will experience the most congestion and queuing would be those coloured in red below. Region 1 would be the outbound traffic from the estate, typically at the end of the work day. The traffic signal operations and limited cycle time allocated to the outbound traffic would reduce the capacity of the intersection to process the outbound traffic. This is especially the case for outbound right-turning movements as these would have more conflicting traffic movements and hence less opportunities/ phases to complete the movement in. The design also indicates that a single outbound lane would be provided in Access Road and hence the right-turning vehicles would be mixed with left-turning vehicles without any opportunity to optimise the discharge of these two traffic streams (ie. via dedicated signal phasing). For example, if a left-arrow hold is displayed to protect pedestrians on the northern crossing, and a left-turning vehicle is at the head of queue, then this held vehicle will penalise all right-turning vehicles queued behind, which are not held on red arrow. There will be a lot of wasted green periods due to the mixed traffic. The total quantum of traffic generation would be based on a total car park supply of 1493 spaces and 71 truck loading docks spread over 16 warehouses which is considered significant. Region 2, on Estate Road 2, would carry the outbound traffic from Lots 1, 2, 3A, 3B, 4, 5 and 6. This traffic would be generated from a supply of 490 car parking spaces and seven warehouses. Furthermore, this traffic would be attempting to enter Estate Road 1 which needs to cater to a traffic generation based on a supply of 561 car parking spaces and six warehouses. As Estate Road 2 is a lower priority than Estate Road 1, the high degree of conflicting traffic, and the lack of gaps in Estate Road 1 will result in considerable queuing in Region 2. A significant traffic management risk is the extremely high dependence on the single point of access-egress via the Wallgrove Road intersection. Any breakdown in traffic movements at that location and beyond, could result in large-scale queuing and congestion in Access Road and its connecting routes.  Left: The audit team envisages that there will be large-scale queuing and congestion in the two regions shaded in red.	Medium (Probable + Limited)

Ref	Location	Road safety audit finding	Risk rating
2	Estate Road 1 between its intersections with Lot 13A and Estate Road 2.	The audit team considers that there are too many access points in close succession and hence a clustering of turning conflicts associated with these access points. In this section of Estate Road 1, there are the following accesses and side road turning movements: ▪ Driveway to Lot 13A car park (WH13): This car park will allow inbound left turn movements, outbound left-turn movements (numbered 5 in image below), inbound right-turn movements and outbound right-turn movements (6). ▪ Truck exit from Lots 13A and 13B: This will allow outbound left-turn movements (4) and outbound right-turn movements (3). ▪ Driveway to Lot 14 car park (WH14): This car park will allow inbound left turn movements, outbound left-turn movements (8), inbound right-turn movements and outbound right-turn movements (7). ▪ Driveway to Lot 13B car park: This car park will allow inbound left turn movements, outbound left-turn movements (2), inbound right-turn movements and outbound right-turn movements (1). ▪ Estate Road 2: This will allow inbound left turn movements, outbound left-turn movements, inbound right-turn movements and outbound right-turn movements. These are not depicted below due to the information clutter. This presents a high volume of conflicting vehicular movements and complex gap-checking and acceptance by outbound drivers. As such, the audit team anticipates a significant risk of crashes. This includes frequent near-miss events where conflicting vehicles converge without incident but where one driver/ vehicle needs to make space for the other to pass first. Item 3b discusses typical scenarios where crash risk would be increased as a result of close spacing of successive driveways and access points. Although those scenarios are associated with another site, they are also applicable and relevant to this location. The project team should consider traffic management methods to reduce and rationalise the conflicts and to present a more orderly traffic management arrangement.  Left: The close spacing of successive driveways and access points would give rise to a multitude of turning movements and conflicts. This presents an untidy arrangement from a traffic management perspective.	Medium (Occasional + Minor)

Ref	Location	Road safety audit finding	Risk rating
3a	General – More discussion on the impacts of closely spaced intersections and access points.	Item 2 discussed issues associated with the closely spaced accesses and intersections along Estate Road 1 between the Lot 13A car park access and Estate Road 2. Further to that discussion, the audit team raises the issue of closely spaced driveways in general. This is because there are also closely spaced driveways and access points along Estate Road 2, Estate Road 1 in the western portion of the site and the cul-de-sac terminals at the ends of each of these roads. It should be noted that regardless of the ultimate lot layouts, and hence driveway positions, the number of warehouses and the lot sizes are fixed. This means that regardless of where driveways are positioned, there are likely to be closely spaced access points. Hence, it is the higher-level message that should be considered. The left-hand image shows a series of access points along the western portion of Estate Road 1. These include (from east to west): (i) The inbound access to Lot 7 car park, (ii) the truck entry point to Lots 13A and 13B, (iii) the truck exit point from Lots 11 and 12, (iv) the truck access and egress to Lot 7, (v) The truck access and egress to Lots 8A and 8B, (vi) the car park access/egress to Lot 11 and 12, (vii) a second car park access/egress to Lot 11 and 12, (ix) an inbound access to the car park to Lots 8A and 8B, (x) The truck entry and egress to Lot 9, (xi) the inbound access to the car park of Lot 9, (xii) the inbound truck access to Lots 11 and 12, (xiii) The truck egress from Lot 10, and (xiv) the combined truck and car entry to Lot 10. This is also a case of there being too many accesses and egresses immediately adjacent to each other. This will present a multitude of turning movements and crash conflicts. It will also make it difficult for drivers to interpret the turning intentions of other vehicles. The right-hand image shows the number of cross-over and merge-related conflicts associated with driveways (ii), (iii), (iv) and (v). In the case of collisions involving similar outbound turning movements from adjacent driveways, this is highly plausible. This is because the outbound drivers are likely to use the same gaps in traffic to perform their outbound turning movement. By doing so, and by being overly fixated on the main line traffic conditions and gaps, they are likely to create collision scenarios due to the coincidental nature of these movements. With these 14 individual access-egress points, a typical traffic management solution is to create “side roads” to collect traffic from adjacent lots and consolidate these into a common point of access-egress. Left: In the short length along the western portion of Estate Road 1, there are a total of 14 access/egress points which creates a multitude of turning movements and conflicts. Right: A micro-analysis of four of these driveways showing the most dominant movements and the multitude of cross over and merging conflicts created. This also assumes that all outbound vehicles turn directly towards the outbound path to Wallgrove Road, and vice versa for the inbound traffic.	Medium (Occasional + Minor)

Ref	Location	Road safety audit finding	Risk rating
3b	General – More discussion on the impacts of closely spaced intersections and access points.	Further to item 3a, the illustration below shows a likely crash scenario that would result from the closely spaced access points and hence the driver's potential confusion in interpreting the intended turning movements of other vehicles. In this scenario, the red vehicle is an outbound vehicle from the loading dock of Lot 9. This driver sees an approaching westbound vehicle (green vehicle) that activates its left-turn indicator light. The driver of the red vehicle would not be certain whether the approaching green vehicle intends to turn left into channel A (Lot 8A and 8B car park), into channel B (the truck entry/egress to the Lot 9 loading docks, or to channel C, the car park for Lot 9. If the red vehicle driver guesses/ assumes/ misinterprets the left turn indicator as an intended left turn into channel A, they may falsely believe that they can safely egress. However, if the left-turn indication was in fact an intended left-turn into channel C, a <i>cross over</i> conflict could be created due to this misinterpretation. This problem would happen at most locations where there are multiple accesses in close succession. This is only one example of driver misinterpretations of intended movements of other vehicles. Many other scenarios would also apply.  Left: An illustrated crash conflict due to closely spaced driveways and the confusion in interpreting the turn signals of approaching vehicles.	Medium (Occasional + Minor)

Ref	Location	Road safety audit finding	Risk rating
3c	General – More discussion on the impacts of closely spaced intersections and access points.	The design extract below shows the closely spaced accesses (inbound and outbound truck accesses) to Lots 2 and 3A/3B. The inbound and outbound movements are superimposed by the red, green, blue and black arrows. As shown, there is a <i>cross over conflict</i> (green versus blue arrows) as well as a <i>merge-related conflict</i> (green versus black arrows). Furthermore, there is also a truck entry and egress to Lot 4 (marked X) and an access to the car park to Lots 3A/3B (marked Y). The green and blue movements may also appear to be travelling on the “wrong side” of each other. That is, these vehicles will pass each other on the right-hand side, rather than the conventional left-hand drive passing practice. More consideration should be given to rationalising and consolidating the conflicts.  Above: The multitude of crash conflicts due to the closely spaced truck entry and egresses at Lots 2 and 3A/3B.	Medium (Occasional + Minor)

Ref	Location	Road safety audit finding	Risk rating
3d	General – More discussion on the impacts of closely spaced intersections and access points.	The left-hand image shows a number of closely spaced accesses. These include: (a) the inbound access to the Lot 5 car park, (b) the truck entry-egress to Lot 5 (which also serves as the outbound driveway for car park traffic, (c) the truck entry-egress to Lot 6 which also links to (d) an access to the car park, and (e) the entry-egress to Lot 4's car park. These are labelled by their letter references accordingly. The inbound and outbound movements are superimposed onto each leg in purple and green arrows respectively. As shown, there is a multitude of crash conflicts caused by the cross over and merging interactions. Moreover, the traffic generation potential is significant with 292 car parking spaces, 36 loading docks and three warehouses accessed off these facilities. In these respects, a more orderly arrangement may be needed.  Left: The multitude of turning movements and conflicts associated with the closely spaced accesses off the cul-de-sac at the eastern end of Estate Road 2.	Medium (Occasional + Minor)

Ref	Location	Road safety audit finding	Risk rating
4	Unauthorised parking in the Estate Roads.	With the numerous warehouse facilities, one typical risk identified at other similar developments is the tendency for truck and trailer parking along the estate roads. This includes temporary layovers to complete log books and check loads etc, as well as long-term stays with both truck and trailer, and even trailers being parked by themselves. Such parking behaviour blocks access for other truck and vehicle movements. It also may block sight lines to and from side accesses. As the design progresses, and includes full signage and linemarking detail, strict controls will be needed with respects to parking and stopping along the estate roads.  <i>Left: Industrial estates such as this one in Honeycombe Drive, Eastern Creek, typically generate demands for on-street parking by trucks and their trailers.</i>	Low (Occasional + Limited)

3 Concluding statement

DC Traffic Engineering has undertaken a *concept design* road safety audit of this project in accordance with the methodology outlined in Section 1 of this report.

Issues identified have been noted in this report for the Project Manager to review, assess, and where appropriate, make the necessary recommendations to improve safety.



Damien Chee
Audit Team Leader
DC Traffic Engineering Pty Ltd

Appendix A

Close out responses from project team

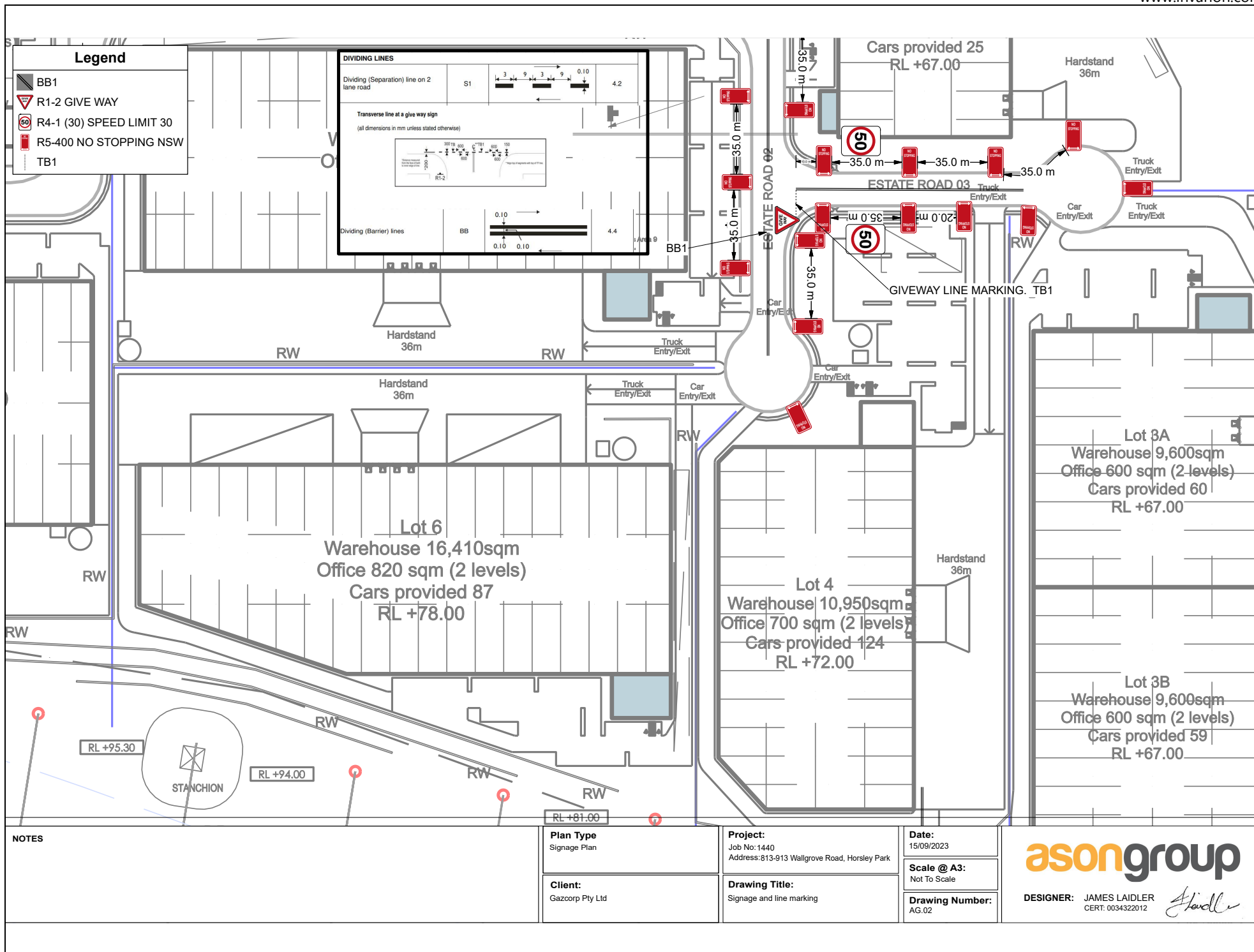
The close out responses to each of the numbered audit findings, from the project team are documented below.

Item no.	Close out responses from the project team
1	▪ Queuing has been designed to occur on the private road and not on the external road network as a requirement of TfNSW. ▪ Queuing within the estate has been modelled as part of the original SSD (see Amended Traffic Report submitted as part of the Response to Submissions Report) indicating that queuing during the AM Peak is around 75m with average delay of around 1 minute. The PM Peak queuing is around 250m with average delay of around 1 minute. This is not considered unreasonable in relation to traffic exiting the estate during the peak periods. ▪ Furthermore, the traffic modelling in the Amended Traffic Report assumed a single outbound lane from the Estate. The design has since evolved and the approved plans of the Wallgrove Road/ Estate access intersection illustrate 2 outbound lanes, one left-turn only and one shared through-right. ▪ This also addresses and closes the Audit's concern regarding "a single outbound lane would be provided in Access Road and hence the right-turning vehicles would be mixed with left-turning vehicles without any opportunity to optimise the discharge of these two traffic streams" and also the concern regarding "wasted green periods due to the mixed traffic" ▪ This level of queuing within the estate road has already been approved under SSD 5248. ▪ The single point access into the estate is considered appropriate as it was a specific requirement of TfNSW and was approved under SSD 5248. ▪ As a private road there is significant scope for Gazcorp to provide guidance and advice to tenants in relation to minimising queuing and managing the associated impacts, if deemed necessary. ▪ In terms of the internal intersection (i.e. at the location left of the area marked 2 in the Audit), low volumes of traffic are expected. As a high-level assessment based on the traffic generation outlined in the approved MOD 1 and the following assumptions: ▪ AM peak: 80% in, 20% out, PM peak: 20% in, 80% out ▪ Traffic generation pro-rated by warehouse + office GFA ▪ Minimal left-turning traffic from Estate Road 02 (east) to Estate Road 01 (north), minimal right-turning traffic from Estate Road 01 (south) to Estate Road 02 (east) - i.e. assume vehicles take the shortest path to their warehouse and internal trips between warehouses are minimal ▪ Analysis indicates that in the: ▪ AM peak: 50 vehicles exiting Estate Road 02 would be opposed by 283 vehicles travelling along Estate Road 01. This is less than 1 vehicle per minute against an opposing flow of around 5 vehicles per minute (or 1 every 12 sec). ▪ PM peak: 111 vehicles exiting Estate Road 02 would be opposed by 146 vehicles travelling along Estate Road 01. This is less than 2 vehicles per minute against an opposing flow of around 2-3 vehicles per minute (or 1 every 20-30 sec) ▪ As such, the opposing flows are minimal and are not expected to generate any notable queuing, particularly along Estate Road 02 as per the Audit's concern. ▪ Therefore, we consider this comment as CLOSED.

Item no.	Close out responses from the project team
2	▪ When reviewing the movements marked in the figure, it should be noted that any movements heading southbound would be minimal, if any. The Estate only has a single connection point to the north, hence it is expected that traffic would be to and from the north. This mitigates much of the conflict illustrated in the figure, reducing complexity in gap-checking and acceptance by outbound drivers. ▪ It is also highlighted that: ▪ Heavy vehicle driveways for Warehouses 13A and 13B are exit only by design. No inbound right turn movements will be allowed. ▪ Driveways for WH13A and 13B are expected to be used practically as left out only. Because there is no through traffic, there is no reason for any vehicles to be turning right out of these driveways, and any right turn movement (whilst not prohibited) would be in practice non-existent or very minimal (i.e. inconsequential). This applies to light vehicles and heavy vehicles. ▪ Similarly, there is not expected to be any reason for vehicles to be turning right from Estate Road 1 (northbound) into Estate Road 2 (or turning left from Estate Rd 2 into Estate Rd 1. ▪ As a private Estate with no through connection to the external road network (aside from the single access point), there is expected to be minimal external traffic and the large majority of traffic accessing the site would be familiar users. As such, these drivers would be familiar with the traffic environment and navigation through the site. To reinforce the above point, signage may be installed at the entrance of the Estate to clearly demarcate the Estate and the nature of the private roads and development. ▪ The proximity of closely spaced intersections at this location is acknowledged. The project team will investigate the relocation of the car driveways WH14 and WH13A further north to provide increased separation to the truck driveway. Detailed design of driveways for WH13A and 14A is subject of future detailed DA process when this issue can be further considered. The WH13B driveway would not be relocated south due to increased conflict that would be introduced by placing it adjacent to the t-intersection and the prohibition of access driveway locations in accordance with Fig 3.1 of AS2890.1:2004. ▪ As a private road there is also significant scope for Gazcorp to implement traffic management measures to minimise traffic conflicts and crash risks if they arise. Measures that could be implemented include signage, boom gates, signals etc ▪ Therefore, we consider this comment as CLOSED.
3a	▪ The truck driveway for WH11/12 is exit only and the truck driveway for WH13B is entry only. Therefore, instead of the multiple red and green arrows, there should only be a single red arrow outbound and a single green arrow inbound. This is a simple arrangement with priorities clearly established by standard road rules in that vehicles exiting the WH11/12 driveway would need to give way to vehicles within the road, including vehicles entering the WH13B. ▪ Similarly for the other driveways in this part of the estate. 4 driveways located close to each other – 2 on each side of the road, is not an uncommon arrangement for industrial estates. Priorities would be clearly established by standard road rules in that vehicles exiting would need to give way to vehicles within the road. ▪ The RSA notes 14 individual access/egress points. However, this is spread over a 300m section of internal road and is not dissimilar in driveway density to standard industrial estates. For consideration is that there would be minimal, if any, through traffic in the Estate due to the enclosed nature and single access point to the external road network. The low traffic volumes would result in low incidence of concurrent vehicle movements. ▪ As a private Estate with no through connection to the external road network (aside from the single access point), there is expected to be minimal external traffic and the large majority of traffic accessing the site would be familiar users. As such, these drivers would be familiar with the traffic environment and navigation through the site. To reinforce the above point, signage may be installed at the entrance of the Estate to clearly demarcate the Estate and the nature of the private roads and development. ▪ As a private road there is also significant scope for Gazcorp to implement traffic management measures to minimise traffic conflicts and crash risks if they arise. Measures that could be implemented include signage, boom gates, signals etc ▪ Driveway locations and design can still be further refined as each individual warehouse will need to undergo a DA process. ▪ Therefore, we consider this comment as CLOSED.

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3b	▪ This design outcome is common practice and present across a range of locations including existing industrial estates. Per the road rules, vehicles entering the roadway (e.g. from a driveway) need to give way to all other vehicles on the roadway. In practice the red vehicle illustrated would give way to the green vehicle until the green vehicle has commenced their turning manoeuvre or has passed the red vehicle. ▪ As a private Estate with no through connection to the external road network (aside from the single access point), there is expected to be minimal external traffic and the large majority of traffic accessing the site would be familiar users. As such, these drivers would be familiar with the traffic environment and navigation through the site. To reinforce the above point, signage may be installed at the entrance of the Estate to clearly demarcate the Estate and the nature of the private roads and development. ▪ As a private road there is also significant scope for Gazcorp to implement traffic management measures to minimise traffic conflicts and crash risks if they arise. Measures that could be implemented include signage, boom gates, signals etc ▪ As mentioned in 3a, driveway locations and design can still be further refined as each individual warehouse will need to undergo a DA process, and the feasibility of shifting the location of the driveway marked "C" westwards can be investigated with the subsequent DA for Lot 9. ▪ Therefore, we consider this comment as CLOSED.
3c	▪ There are only 3 driveways at this cul-de-sac and this is not an uncommon arrangement in industrial estates. This design accommodates the required space for large truck manoeuvres and assists in minimising the width of access driveways. As mentioned in 3b, the NSW road rules clearly articulate the requirement for vehicles entering the roadway to give way to all other vehicles on the roadway, hence a clear priority is established. ▪ To further delineate the movements, a painted central island can be considered in the cul-de-sac to minimise the directness of the movements (shown in green and light blue in the Audit). Detailed design for the warehouse driveways can also be further investigated in the individual warehouse DAs to refine the design. ▪ Therefore, we consider this comment as CLOSED.
3d	▪ As above. Therefore, we consider this comment as CLOSED.
4	▪ This is unlikely to be an issue due to the nature of the development. The Estate and the Estate Roads are private and there would be limited, if any, external through traffic in the Estate. ▪ Sufficiency of parking provisions within each lot, in line with the consent requirements, ensures parking demand is captured off-street. ▪ Signage and line marking can be implemented to reinforce areas prohibited for on-street parking. This can consider factors such as sight lines, proximity to driveways and manoeuvring space. ▪ As above. Therefore, we consider this comment as CLOSED.

Appendix B. Signage and Line Marking Plan



NOTES

Plan Type
Signage Plan

Client:
Gazcorp Pty Ltd

Project:
Job No: 1440
Address: 813-913 Wallgrove Road, Horsley Park

Drawing Title:
Signage and line marking

Date:
15/09/2023

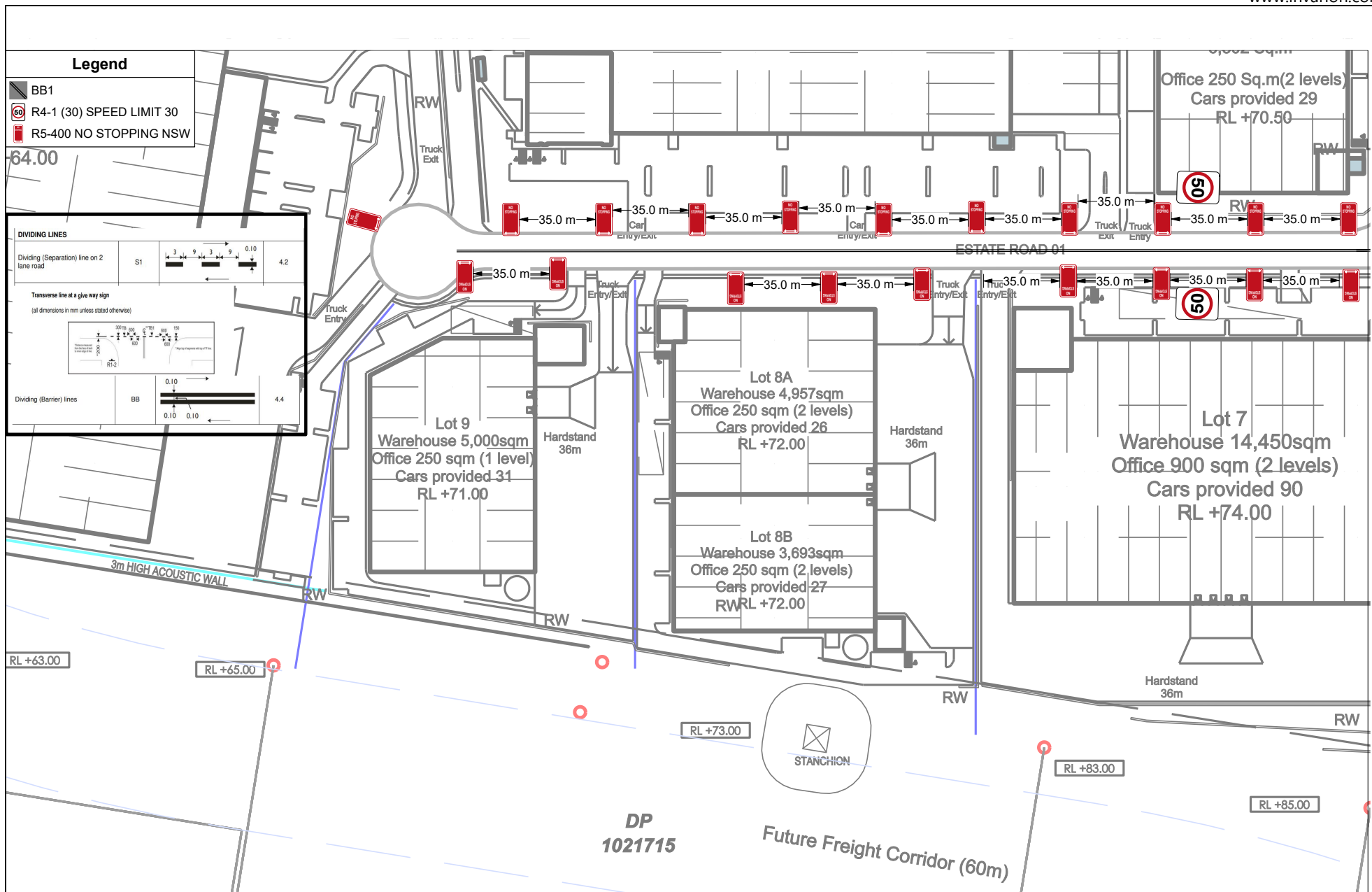
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Not To Scale

Drawing Number:
AG.02

asongroup

DESIGNER: JAMES LAIDLER
CERT. 0034322012

Handwritten signature



NOTES

Plan Type
Signage Plan

Client:
Gazcorp Pty Ltd

Project:
Job No: 1440
Address: 813-913 Wallgrove Road, Horsley Park

Drawing Title:
Signage and line marking

Date:
15/09/2023

Scale @ A3:
Not To Scale

Drawing Number:
AG.03

asongroup

DESIGNER: JAMES LAIDLER
CERT: 0034322012

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