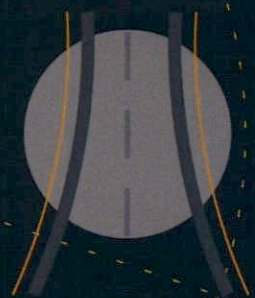
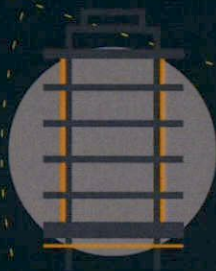


Clonburris T3

Road Safety Audit Response Report

CLB-T3-ZZZ-SW-DTM-RP-DBFL-CE-0005

INFRASTRUCTURE



April 2023



DBFL CONSULTING ENGINEERS



Project Title:	Clonburris T3		
Document Title:	Road Safety Audit Response Report		
File Ref:	CLB-T3-ZZZ-SW-DTM-RP-DBFL-CE-0005		
Status:	P1 - Information	Rev:	P01
	S - Issued		

Rev.	Date	Description	Prepared	Reviewed	Approved
1	12/04/23	Issued For Further Information	Dieter	John Carr	John Carr

Disclaimer

This document has been prepared for the exclusive use of our Client and unless otherwise agreed in writing with DBFL Consulting Engineers no other party may use, make use of or rely on the contents of this document. The document has been compiled using the resources agreed with the Client and in accordance with the agreed scope of work. DBFL Consulting Engineers accepts no responsibility or liability for any use that is made of this document other than for the purposes for which it was originally commissioned and prepared, including by any third party or use by others of opinions or data contained in this document. DBFL Consulting Engineers accepts no liability for any documents or information supplied by others and contained within this report. It is expressly stated that no independent verification of any documents or information supplied by others for this document has been made. DBFL Consulting Engineers has used reasonable skill, care and diligence in compiling this document and no warranty is provided as to the report's accuracy.

Copyright

The contents and format of this report are subject to copyright owned by DBFL Consulting Engineers unless that copyright has been legally assigned by us to another party or is used by DBFL Consulting Engineers under licence. This report may not be copied or used for any purpose other than the intended purpose.



Contents

1	Background	1
2	Stage 1 Road Safety Audit Items and Detailed Responses	2
2.1	Problems at General Locations.....	2
	Location (G2) – Crossing Alignment with Footpath.....	3
	Location (G3) –Signage.....	3
	Location (G4) – Street Lighting.....	4
	Location (G5) – Waste Bin Service Arrangement.....	5
	Location (G6) – Surface Drainage	6
	Location (G7) – Pedestrian Crossing Desire Lines	7
	Location (G8) – Long Straight Sections of Carriageway	8
	Location (G9) – Cycle Parking.....	9
	Location (G10) – EV Parking.....	10
	Location (G11) – Visibility Splays at Junction	11
2.2	PROBLEMS AT SPECIFIC LOCATIONS.....	12
	Location (S1) – Mobility Impaired Parking Bay	12
	Location (S2) – Two-Way Cycle Track Link to Western Road.....	13
	Location (S3) – Parking Bay Close to Two-Way Cycle Track	14
	Location (S4) – Parking Bay and Pedestrian / Cycle Facility Connection	15
	Location (S5) – Tactile Paving	16
	Location (S6) – Pedestrian Access / Bicycle Parking Access	17
	Location (S7) – Lack of Vehicle Turning Head	18
	Location (S8) – Residential Local Street	19
	Location (S9) – Classification of East-West Road	20
	Location (S10) – Perpendicular Parking Bays.....	20



3	COMMENTS	22
	Comment (C1) – Junction Performance	22
	Comment (C2) – Need for Controlled Pedestrians Crossings.....	22
	Comment (C3) – Pedestrian/Cycle Link to T4.....	23



1 Background

In response to a Planning submission for the proposed Clonburris T3 development (Planning ref SDZ22A/0017), SDCC have requested additional information in order to consider the application.

Item 3(b) of the additional information request states:

"The applicant is requested to submit a complete report stating how ALL Road Safety Audit items were addressed in the submitted application."

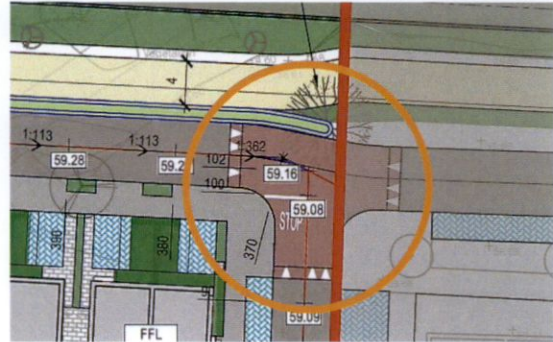
This report details how each Road Safety Audit item has been addressed/resolved in line with the recommendations of the auditor.

2 Stage 1 Road Safety Audit Items and Detailed Responses

2.1 Problems at General Locations

Location (G1) – Dropped Kerbs and Tactile Paving Problem

The drawings provided for the purpose of the RSA do not show provision of dropped kerbs and tactile paving at certain locations where pedestrian crossing points are proposed. This could lead to accessibility issues for road users, particularly wheelchair users and can cause confusion for partially sighted pedestrians who may encounter difficulties when crossing the road carriageway.

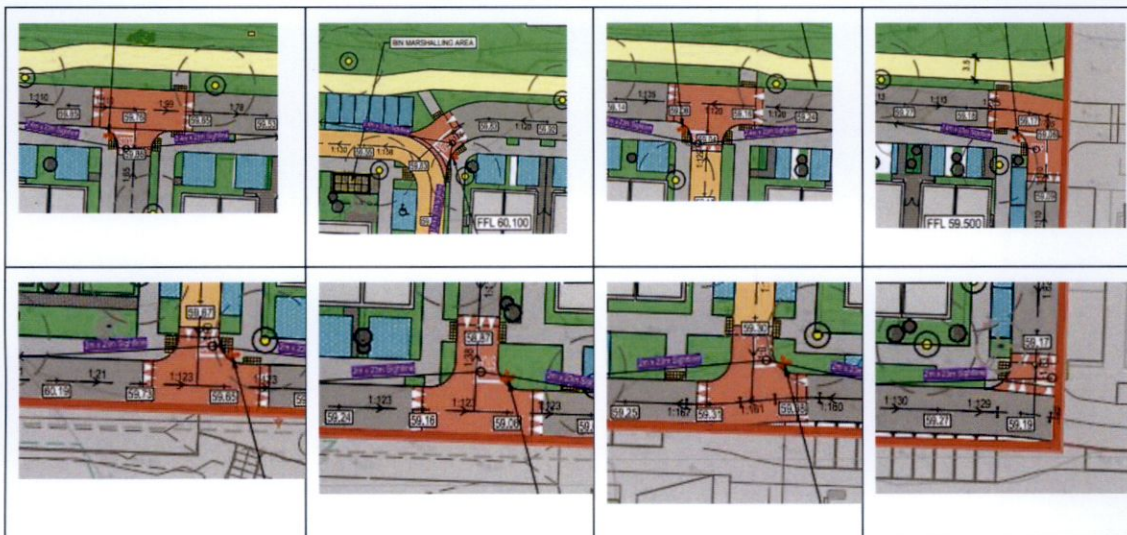


Recommendation:

It is recommended that dropped kerbs and / or tactile paving in accordance with the appropriate design recommendations is provided at all key pedestrian travel desire lines that require a pedestrian to cross a road carriageway.

Solution Implemented:

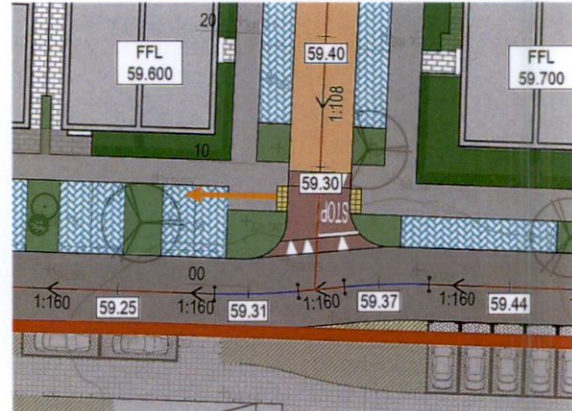
Pedestrian road crossing points and tactiles at all appropriate locations have been added to ensure safety of regular and disabled pedestrians. Key pedestrian desire lines have been considered at intersections and as close as possible to the middle of residential housing blocks.



Location (G2) – Crossing Alignment with Footpath

Problem

The auditors note that proposed pedestrian crossings at some instances have not been aligned with footpaths on both sides of the crossings such as shown in the figure opposite. This may direct visually impaired pedestrians toward car parking bays resulting in a conflict between pedestrian and vehicles.

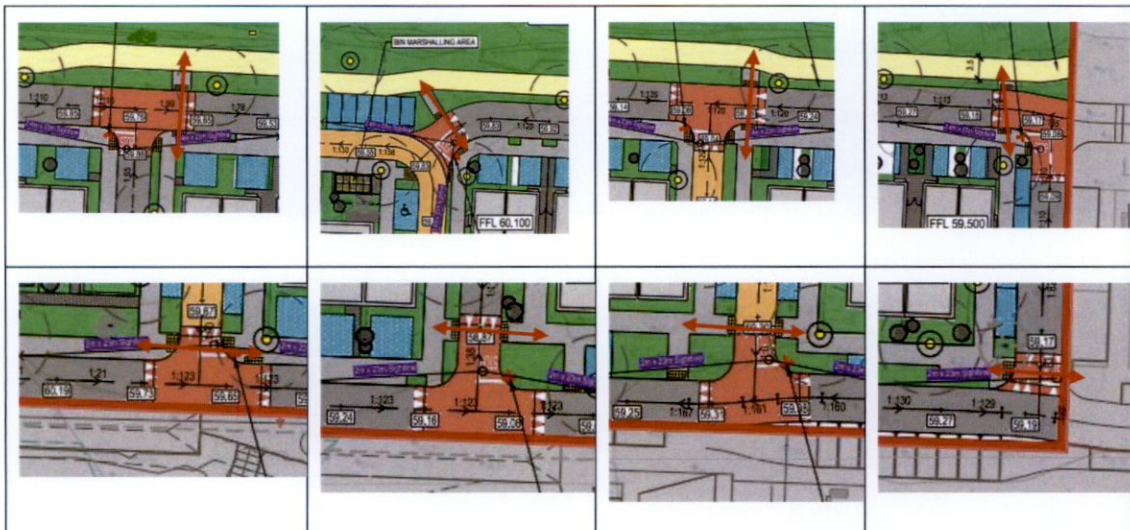


Recommendation:

Ensure pedestrian crossings are appropriately aligned with the footways on both sides to safeguard the safety of visually impaired pedestrians.

Solution Implemented:

All pedestrian crossing points, including the crossing at the junction of streets 12 and 18 have been aligned with footpaths to avoid any pedestrian confusion.



Location (G3) –Signage

Problem

The drawings provided for the purposes of the RSA do not show details of signage. Failure to provide the appropriate regulatory signs may result in vehicles failing to stop at the minor arm of

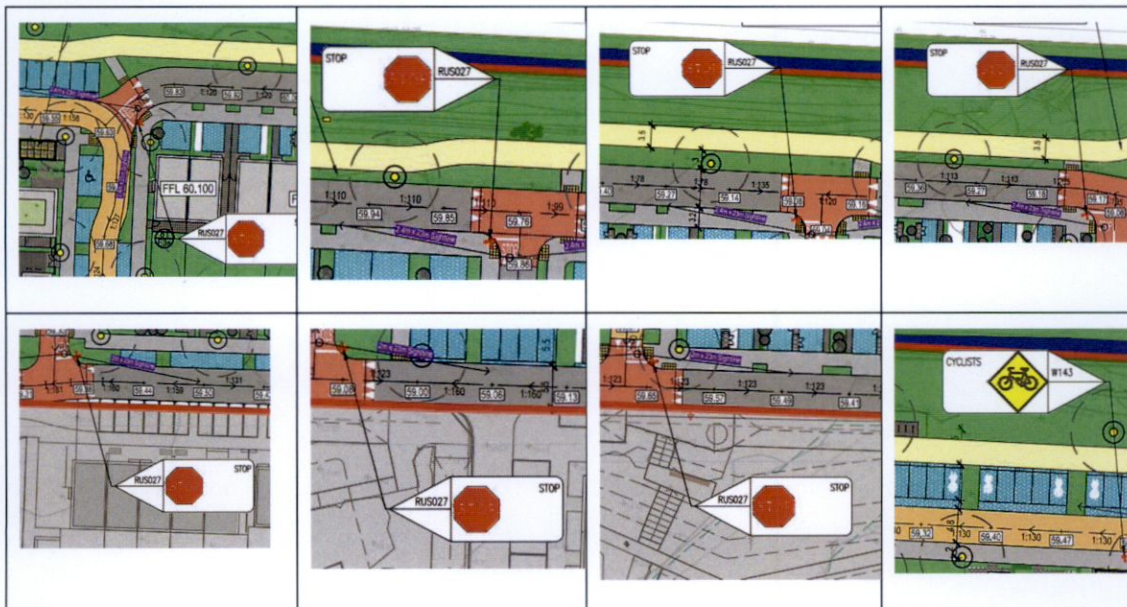
junctions which may lead to side impact collisions with vehicles travelling along the major arm through junctions.

Recommendation:

It is recommended that appropriate road marking and signages are provided in accordance with the requirements of the Traffic Signs Manual.

Solution Implemented:

Proposed signage has been added to the roads layout drawing CLB-T3-95-SW-DTM-DR-DBFL-CE-1201 in accordance with the Traffic Signs Manual.



Location (G4) – Street Lighting

Problem

No details regarding the proposed schemes street lighting have been provided to the audit team. As a result, the audit team cannot comment upon the appropriateness of the proposed schemes street lighting strategy.

Recommendation:

Ensure appropriate street lighting is provided across all pedestrians, cycle, and vehicle routes.

Solution Implemented:

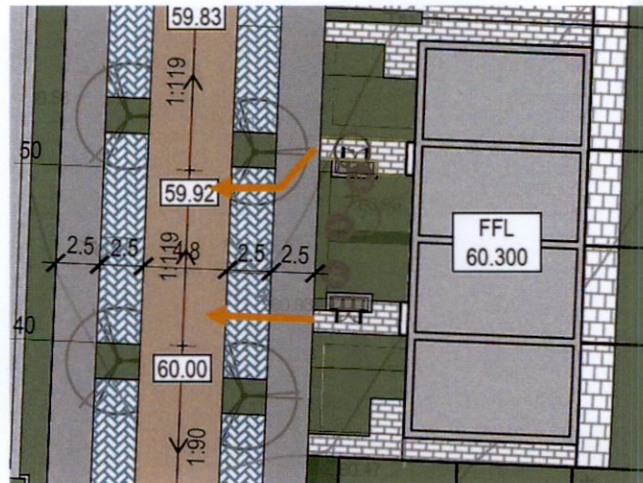


A public lighting layout (drawing SES 15522) has been completed as part of the Planning submission and provides appropriate street lighting across all pedestrian, cycle and vehicle routes. Public lighting is now show on the roads layout CLB-T3-95-SW-DTM-DR-DBFL-CE-1201.

Location (G5) – Waste Bin Service Arrangement

Problem

The auditors note that the drawing illustrates the locations of waste bin storage areas within the site. However, the transfer arrangements for the waste bins between the carriageway and the house units is unclear. Should waste bins be inappropriately stored in the path of pedestrians, this could block pedestrian routes or limit the space available to pedestrians as they could



step onto the adjacent landscaping area or onto the parallel parking bays. This could result in pedestrian / vehicle conflicts. No consideration has been given to waste collection services requirements to transfer (e.g., manually pull the bins via the footpath and between the parallel parking bays) the waste from the storage area. If parking bays are occupied by vehicles, no route would be available when transferring bins to / from the waste collection vehicle on the carriageway.

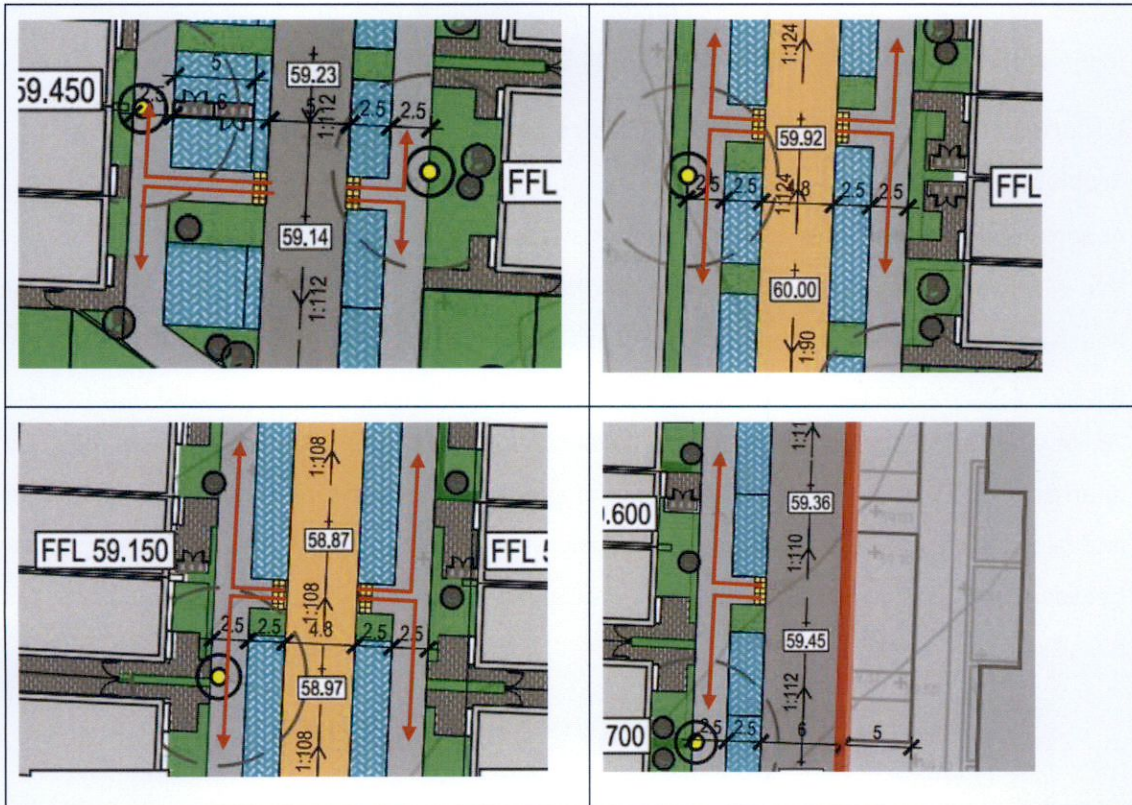
Recommendation:

Ensure appropriate bin transfer areas / locations and appropriate routes are be provided for waste bin transfer which do not result in the reduction of footpath widths to such an extent that pedestrian must leave the footpath to move around bins. Ensure a navigable route in the form of an appropriately designed pathway is provided that offers a route for waste collection activities on the carriageway.

Solution Implemented:

Footpath connections between the footpath and the roadway have been added after the road safety audit as stated in the audit responses. Further pedestrian links have been added closer to

the middle of the streets to allow a link from the houses to the road for bin collection. Refer to drawing CLB-T3-95-SW-DTM-DR-DBFL-CE-1201 for further details.



Location (G6) – Surface Drainage

Problem

From the scheme information provided for this audit, it has not been possible to ascertain the specific details of the surface drainage strategy. Surface water can prove a trip hazard in both warm and cold weather conditions in addition to adversely impacting the skid resistance of bicycles and motorized vehicles.

Recommendation:

During the detail design stage, the design team should provide adequate measures are taken to ensure that all surface areas benefit from having sufficient drainage and that localised ponding does not arise during wet weather conditions. All access routes leading to/from the subject site should have adequate surface water drainage.

Solution Implemented:

A drainage design has been produced and will be progressed during the detail design stage to drain all surfaces intended for public use. Gullies have also been included and will assist in draining excess surface water from the roads and footpaths, reducing trip hazards for pedestrians. Refer to the proposed site drainage layout CLB-T3-94-SW-DTM-DR-DBFL-CE-1311.

Location (G7) – Pedestrian Crossing Desire Lines

Problem

At some locations within the scheme, no provision has been made for pedestrians (and cyclists) that will be seeking to cross the road carriageway at key desire lines. This is noted between the house and the apartment units. No crossing has been provided along the entirety of the southern boundary of the scheme that connects to the park and the residential units as part of the Phase 1B Development to the south. Furthermore, no midblock crossing points are provided on the four internal north-south aligned streets. Absence of appropriate crossing provision could lead to trips and falls as pedestrians, children and particularly wheelchair users if trying to undertake crossing between parked vehicles and / or via landscaped or tree planting buffers. The issue could also lead to collisions with vehicles.



Recommendation:

Appropriate pedestrian crossing facilities should be provided at all key pedestrian desire lines as indicated in the figure above to enable pedestrians safely crossing at key crossing desire lines along the internal roads as well as towards the adjacent proposed development.

Solution Implemented:

Appropriate pedestrian crossing points have been added at all desire lines indicated in the Road Safety Audit. Refer to drawing CLB-T3-95-SW-DTM-DR-DBFL-CE-1201.



Location (G8) - Long Straight Sections of Carriageway

Problem

The internal local roads exhibit long straight sections with the carriageway lacking necessary traffic calming measures. This could lead to high excessive vehicle speeds. Higher speeds would lead to higher severity injury collisions should a driver lose control or come into contact with another road user.

Recommendation:

The designers are requested to confirm the adopted design speed for each of the development streets. It is recommended that suitable traffic calming measures are provided to manage vehicular speeds along the local road/streets and ensure vehicle drivers do not exceed the adopted design speed. The measures should be in compliance with the principles set out in DMURS in regards to managing vehicle speeds.

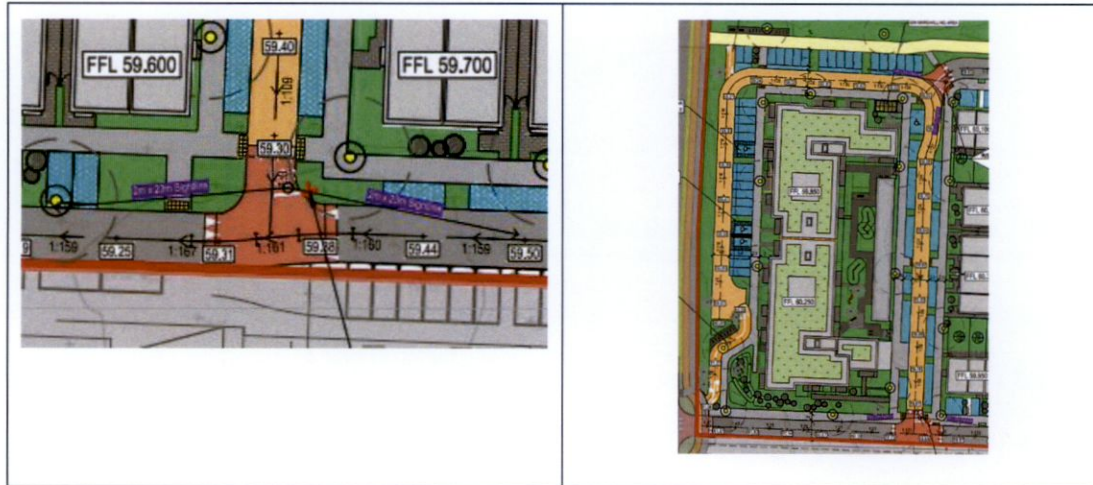
Solution Implemented:

The design speed of the development is 30km/h. Several bends in alignment have been introduced in Local Streets and different carriageway treatment utilised in Home Zones to manage vehicle speeds. Additional raised intersections and pedestrian crossings have also been introduced to



address auditors concerns. Traffic signage will also be used to mitigate speeds along the streets within the development.

An additional raised table has been added to manage vehicle speeds and Street 14 has been turned into a 4.8m wide Homezone. Refer to drawing CLB-T3-95-SW-DTM-DR-DBFL-CE-1201 for further details.



Location (G9) – Cycle Parking

Problem

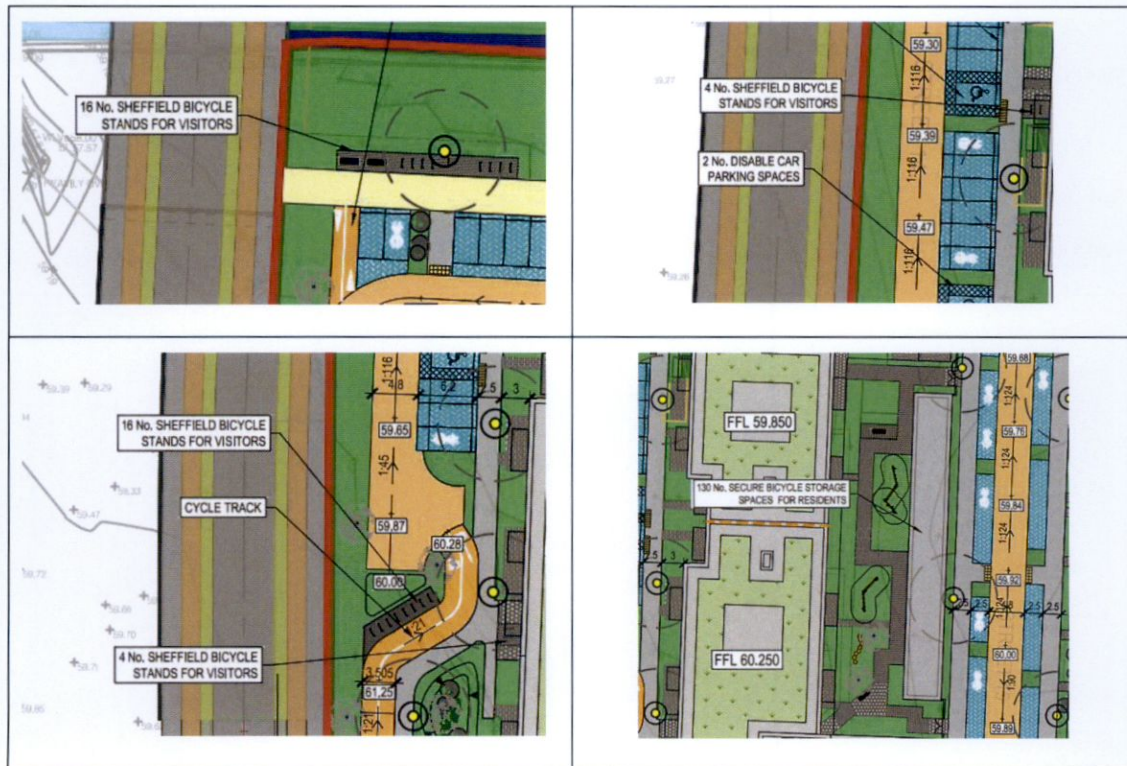
The auditors note in reference to the drawing provided for the purpose of the audit that no long term (residents) or short term (visitors) bicycle parking has been provided. The auditors are concerned that in the absence of such facilities indiscriminate bicycle parking practices (eg. Light poles etc) may arise which have the potential to block the footpath and represent trip hazard for pedestrians.

Recommendation

The designer should ensure that the appropriate quantum of bicycle parking is provided for both resident and visitors. The design and location of the bicycle parking should respect the appropriate design guidance and safeguard pedestrian routes free from trip hazard.

Solution Implemented:

Long term and short stay bicycle parking is now shown on the roads layout CLB-T3-95-SW-DTM-DR-DBFL-CE-1201 and corresponds with requirements as stated in the TTA.



Location (G10) – EV Parking

Problem

It is noted upon review of TTA report that a minimum of 34 no. electric vehicle (EV) parking spaces will be provided. However, the scheme does not provide details of the location and size of EV parking bays or the location of EV charging points. The auditors are concerned that the proposed EV parking bays may be of a substandard size that could impact accessibility and result in cables encroaching to the public footpath which would represent trip hazard. Furthermore, the auditors are concerned that EV charge point may be located in either 1) the public footpath which could subsequently represent obstruction and /or 2) a grass landscaped area which, particularly in wet conditions, could be slip hazard for drivers seeking to access the charge point.

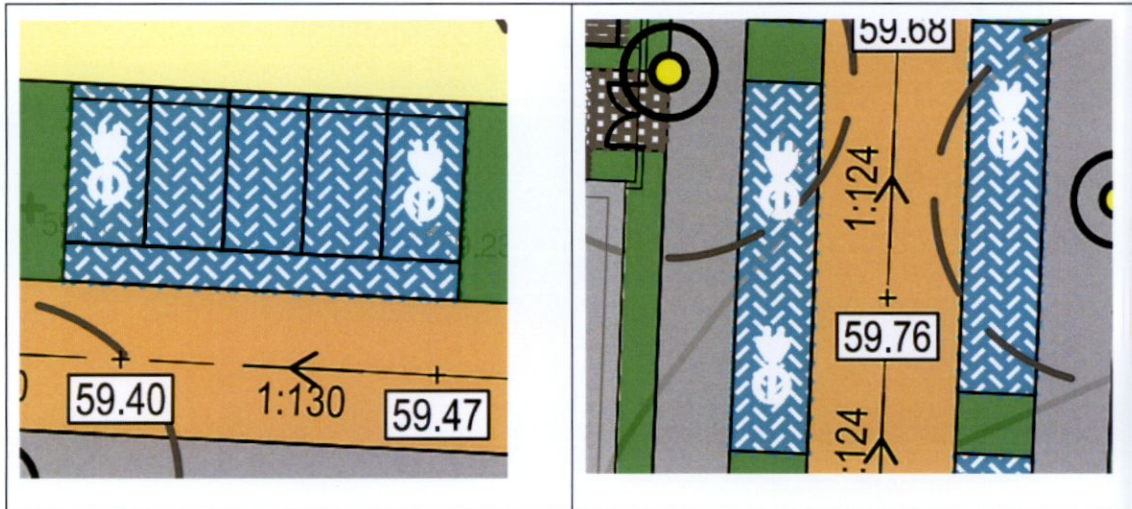
Recommendation:

The designers are requested to confirm the location and size of all EV parking spaces meet best practice design guidance. EV charging points should be located in an area of hard standing, outside of the footpath area, and in close proximity to EV bays.

Solution Implemented:

EV parking spaces are minimum 5.5m in length and are indicated on the roads layout CLB-T3-95-SW-DTM-DR-DBFL-CE-1201.

All footpaths proposed as part of the development have been increased to 2.5m wide if they were not previously. This would provide enough space for pedestrians on footpaths even if EV charging stations are placed on the edge of footpaths.



Location (G11) – Visibility Splays at Junction

Problem

The proximity of car parking bays adjoining a number of internal junctions throughout the site may obstruct driver's visibility. Failure to provide sufficient visibility for vehicle drivers at the junctions could result in overshoot incidents or side impact collisions with vehicles/cyclists travelling along the road.

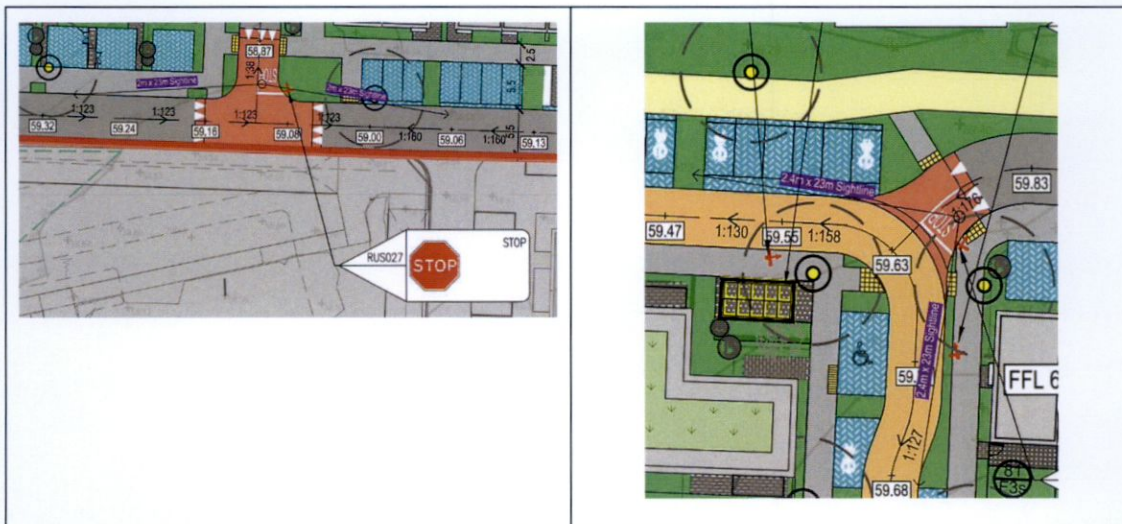


Recommendation:

Ensure sufficient visibility is provided at all junctions and vehicle access points as outlined in DMURS by ensuring car parking and tree species are located /specified such that unobstructed visibility splays safeguarded.

Solution Implemented:

Visibility splays have been indicated on the roads layout CLB-T3-95-SW-DTM-DR-DBFL-CE-1201 to ensure there are no obstructions to any vehicle sight lines at junctions



2.2 PROBLEMS AT SPECIFIC LOCATIONS

Location (S1) – Mobility Impaired Parking Bay

Problem

The mobility impaired parking bays are proposed to adjoin the landscaping area that does not provide a hardstanding area or dropped kerbs. A disabled person may find it difficult when entering / egressing the vehicle parked at this bay if a kerb is present which could result in a fall and cause an injury.

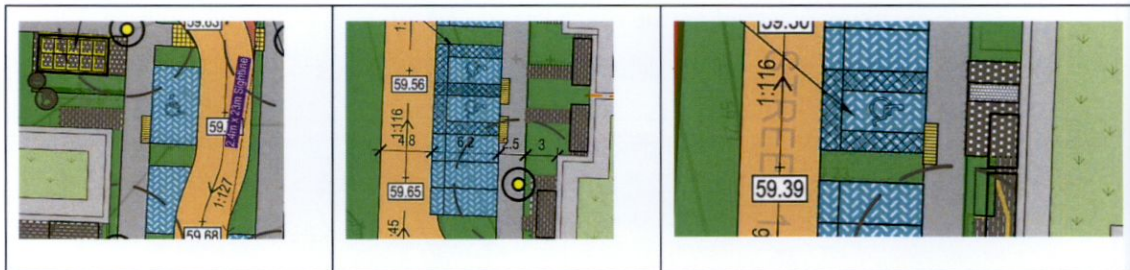
Recommendation:

It is recommended that appropriate hardstanding areas with dropped kerb are provided to connect the parking bay with the footpath. The layout of 'parallel' disabled bay should respect the guidance outlined in the Traffic Signs Manual.

Solution Implemented:

Dropped kerbs have been provided for all disabled parking bays to allow users to access the adjacent footpaths as per the Traffic Signs Manual. Refer to the roads layout CLB-T3-95-SW-DTM-DR-DBFL-CE-1201.





Location (S2) – Two-Way Cycle Track Link to Western Road

Problem

The auditors note that the proposed two-way cycle track located to the south-west of the site terminates with the pedestrian footway. Cyclists travelling to and from the two-way track could be travelling at high speed and will have to cross through the footway. This can be considered hazardous and could result in a conflict between pedestrians and cyclists.



Recommendation:

It is recommended that a suitable transition be provided between the internal two-way cycle track and the external one-way cycle track facilities on the road to the west of the scheme to ensure the safety of all users and the appropriate level of integration between cycle links. The footpath area connecting both the internal cycle track and the external pedestrian / cycle facility could be converted into a 'shared-area' and could implement the corduroy tactile paving on either side of the pedestrian / cycle facilities to warn the vulnerable and the visually impaired. The designers should also confirm how cyclists are to travel to and from the northbound one-way cycle track located on the western side of the external road corridor.

Solution Implemented:

As stated in the Road Safety Audit Responses, the Link Street in question is separately permitted and cannot be changed at this stage. However, discussions will be arranged with Local Roads Authority to raise the auditors concerns and agreed details how the cycle track can appropriately tie into the Link Street and associated cycle infrastructure and crossing desire lines.

Problem

The two-way cycle track could commence / terminate further south to ensure that a reversing vehicle does not need to drive onto the cycle track.

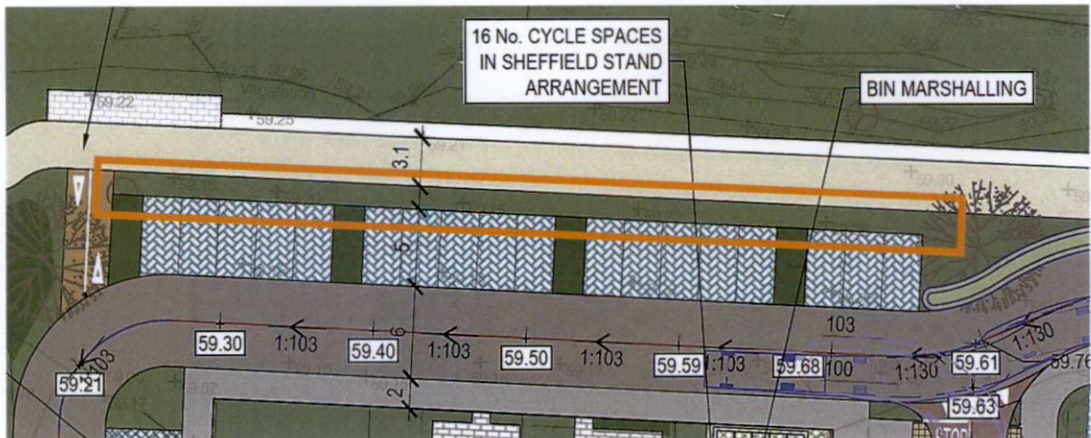
The roadway could not be extended as suggested as the cycle link to the south would no longer meet part M gradient requirements. Parking bays were however moved farther north and a hammerhead has been introduced to assist vehicle turning and create a safe tie-in space for the cycle track to the roadway.



Location (S4) – Parking Bay and Pedestrian / Cycle Facility Connection

Problem

No connection has been provided between the parking bays (located north of Block B) and the continuous pedestrian / cycle link at the northern boundary of the site. The parking bay and the pedestrian / cycle link has been separated by a landscaping strip. The landscaping strip could be a trip hazard for pedestrians particularly during wet conditions.

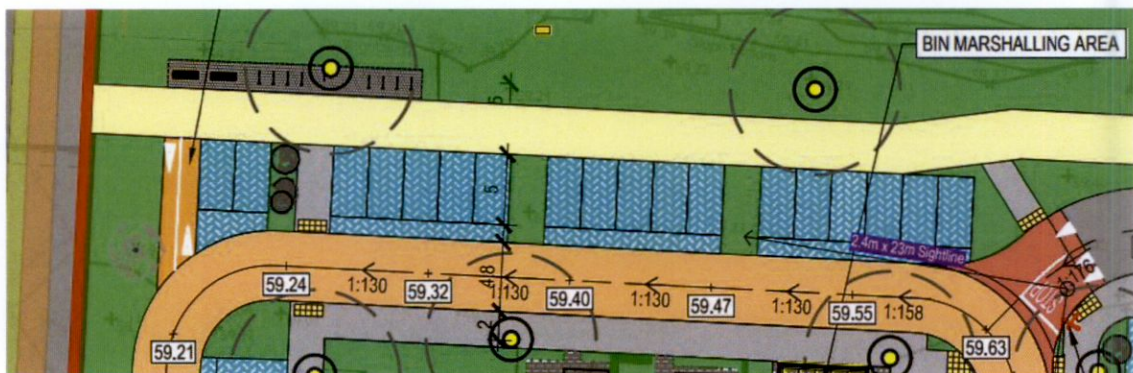


Recommendation:

It is recommended that a concrete handstand be provided to ensure the shared pedestrian / cycle link is easily accessible by individuals accessing / egressing their vehicles.

Solution Implemented:

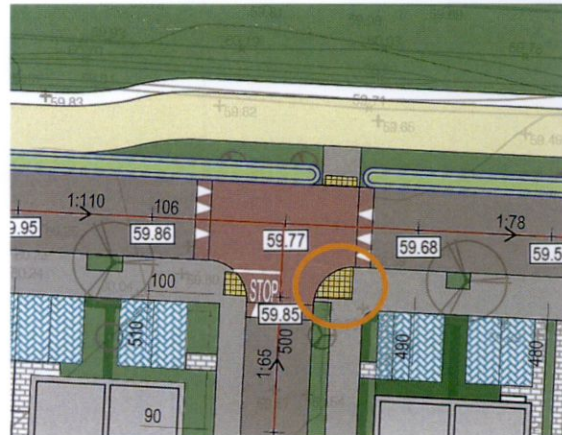
The landscape strip between the parking bays and the shared pedestrian/cycle route has been removed to ensure easy access from the parking area and eliminate any trip hazard.



Location (S5) – Tactile Paving

Problem

The tactile paving on the eastern edge of the minor arm is misleading and would currently direct visually impaired pedestrians towards the carriageway resulting in collisions .



Recommendation:

Ensure tactile paving is appropriately placed . A separate tactile paving should be provided for north-south movements at the eastern arm of this junction.

Solution Implemented:

Separate tactiles have been provided for the north-south and east-west pedestrian routes to avoid any confusion of visually impaired users of the footpaths.



Location (S6) – Pedestrian Access / Bicycle Parking Access

Problem

The auditors have noted that there is a significant level difference between the bicycle parking spaces to the south-west of Block B and the dedicated cycle tracks to the west of the cycle parking. Ramped accesses from two locations towards this parking spaces have been provided, however, the auditors cannot ascertain if the proposed gradient is suitable for cyclists accessing these spaces to and from the cycle tracks as well as for pedestrians (particularly for wheelchair users).



Recommendation :

The designer should confirm that the proposed pedestrians path and cycle facility access will have a suitable gradient for pedestrians and particularly for wheelchair users and cyclists.

Solution Implemented:

Proposed gradients of footpaths and cycle track south of the apartment building are $<1:20$, conforming to Part M accessibility requirements. Gradients are now shown on the Roads Layout CLB-T3-95-SW-DTM-DR-DBFL-CE-1201.





Location (S7) – Lack of Vehicle Turning Head

Problem

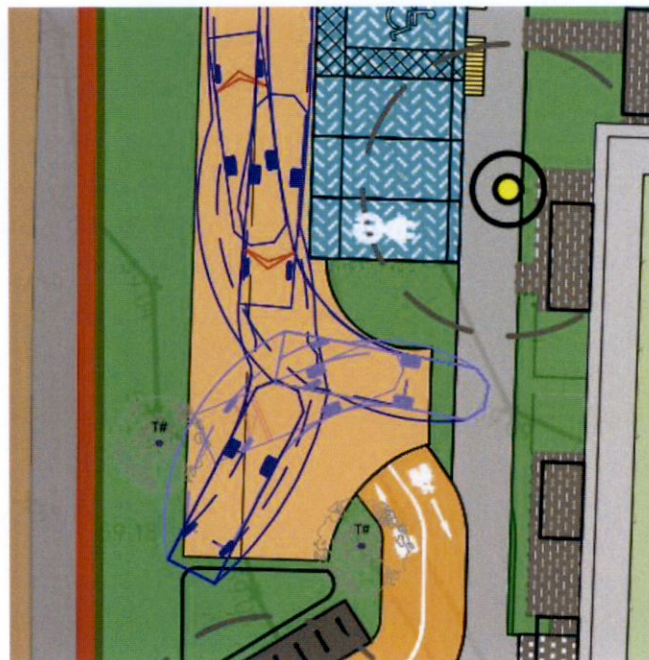
It is unclear how cars and large refuge vehicles will be able to access and undertaking u turn manoeuvre at the southern termination of the north-south street located immediately to the west of apartment block at the western edge of the site. The auditors request clarification regarding how large vehicles can be accommodated as the road terminates with a cul-de-sac.

Recommendation:

To ensure a safe and convenient turning movement at this location, it is recommended to provide a turning head on this carriageway.

Solution Implemented:

A turning head has been added to the end of Street 14 to allow sufficient turning space for a fire tender vehicle. Refer to drawing CLB-T3-95-SW-DTM-DR-DBFL-CE-1202 for further vehicle tracking details for the site.





Location (S8) – Residential Local Street

Problem

The auditors are concerned that the proposed 6m width for the 'Local' residential street is excessive compared to DMURS recommendation and could result in higher vehicle speed. This a concern in the area as cyclists are likely to be present on the road carriageway in this general area when travelling between the segregated cycle track (to the south) and the shared ped/cycle path along the site's northern boundary.



Recommendation:

The street should be narrow to meet the DMURS recommendations.

Consideration should also be given to implementing signage that would provide advanced cycle warning to the drivers of the presence of cyclists on the carriageway in this area.

Solution Implemented:

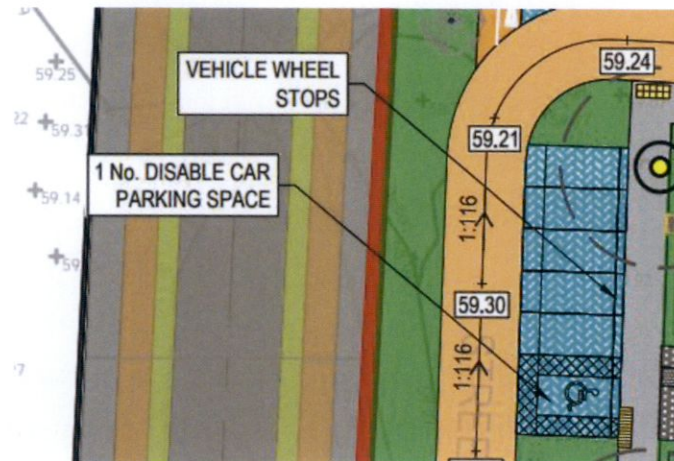
Street 14 has been converted to a Homezone of 4.8m width, which will assist in managing vehicle speeds and ensure cyclist safety. Street signs warning motorists of cyclists have also been included on the roads layout CLB-T3-95-SW-DTM-DR-DBFL-CE-1201.





Solution Implemented:

Wheel stops have been provided on the roads layout to prevent vehicle overhangs encroaching on footpaths.





Location (S9) – Classification of East-West Road

Problem

The designers are requested to clarify the intended function and associated traffic characteristics of the east-west orientated street along the southern boundary of the subject Tile 3 plot. The proposals advocate the potential for perpendicular car parking along the northern and southern sides of this street. It is noted that DMURS does not permit such perpendicular parking arrangements on either arterial or link streets due to problems associated with vehicles reversing into and from a high volume trafficked street.

Recommendation:

In the context of the overall SDZ master plan proposals and , the number of external plots serviced by this east-west oriented Tile 3 street, the designers are requested to clarify the function of this street in reference to DMURS principles. Should it be classified as a 'link' street (or above) then the specification of perpendicular parking should be revisited. If the street is to function as a local street then additional traffic calming should be considered.

Solution Implemented:

As stated and accepted in the Road Safety Audit responses. The East/West street along the southern border of the subject site is designed as a Local Street. A parallel 'Link' street is to be provided a short distance to the south as part of another phase of the SDZ development. The additional measures now Yes 220047 incorporated in response to G8 will ensure that vehicle speeds are maintained to that appropriate for a Local street.

Location (S10) – Perpendicular Parking Bays

Problem

The auditors have noted that perpendicular car parking bays are provided immediately adjacent pedestrian walkways in several locations. It is noted that there are no physical barriers (e.g. bollards, wheel stops etc) between the parking bays and pedestrian walkway. There is a risk that drivers parking their cars (or worse case light goods vehicle such as vans) may cross over / encroach into the intended pedestrian footway resulting in pedestrian / vehicle collisions and / or pedestrian movements becoming obstructed.

Recommendation:

It is recommended that measures are implemented to prevent vehicles encroaching into the pedestrian footway.

3 COMMENTS

Comment (C1) – Junction Performance

The subject Tile 3 development is proposed to be accessed via a priority controlled junction located south-west of the site. This junction will also be used by other development Phases of Clonburris SDZ, therefore, the auditors feel that the priority arrangement of this junction, due to anticipated high traffic volume may result in the junction poor performance. The designer may consider signalised junction arrangement which could operate better in this case.



Solution Implemented:

The Link Street adjacent to the proposed development has been granted planning under a separate planning application and has been deemed compliant.

Comment (C2) – Need for Controlled Pedestrians Crossings

Further to C1, uncontrolled crossing is provided at the site access junction. The auditors feel that there is a need for controlled crossing for pedestrian and cyclists at this location due to anticipated high number of pedestrians and cyclists using the facility.



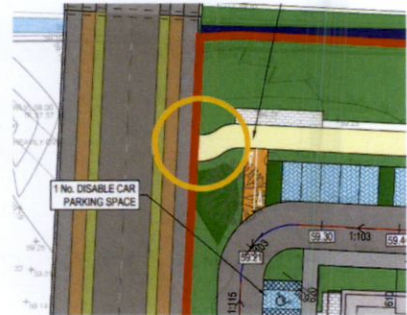
Solution Implemented:

The Link Street adjacent to the proposed development has been granted planning under a separate planning application and has been deemed compliant.



Comment (C3) – Pedestrian/Cycle Link to T4

The auditors are not sure about how the shared pedestrian/cycle route will connect to T4 development. If it connects to T4 via a tunnel, ensure sufficient lighting and headroom are provided for cyclists.



Solution Implemented:

The bridge shown on the proposed drawings are indicative only and proposals will be lodged under a separate planning application. The lighting layout drawing SES 15522 for the proposed development is enclosed.