

Project

Residential Development, Cornelscourt, Dublin 18

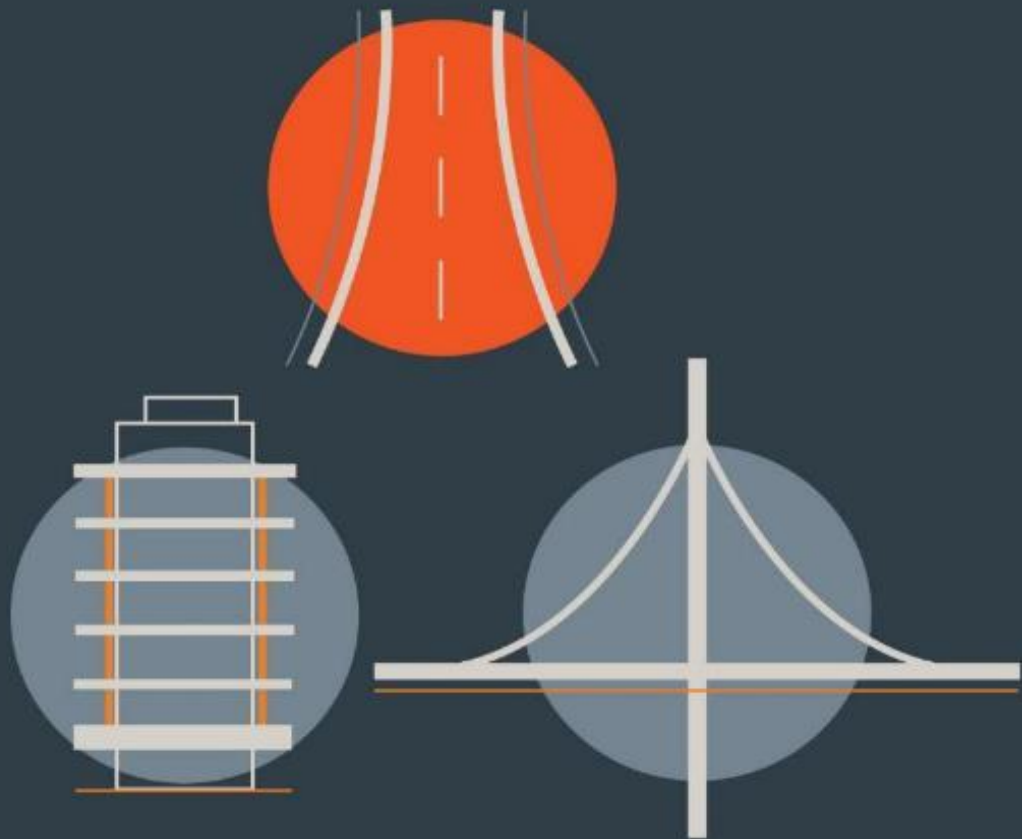
Report Title

Preliminary Design Stage Quality Audit

Client

Cornel Living Ltd.

TRANSPORTATION



DBFL CONSULTING ENGINEERS

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1.0 INTRODUCTION

1.1 BACKGROUND

- 1.1.1 DBFL Consulting Engineers (DBFL) has been commissioned to prepare a Preliminary Design Stage Quality Audit for a proposed residential development on a greenfield site in Cornelscourt, Dublin 18. The proposals seek permission for the provision of 452 no. apartments and 16 no. houses as part of a Build to Rent Scheme on residential zoned lands. The subject site is located on and accessed via the R842 Old Bray Road and lies to the south of the strategic N11 Stillorgan Road within the Cornelscourt area of Southeast Dublin.
- 1.1.2 This Preliminary Design Stage Quality Audit forms part of the planning submission for the proposed residential care facility.
- 1.1.3 The proposed site's vehicular access, onto the R842 Old Bray Road, is shared by the Cornelscourt AIB Bank. It is proposed to upgrade the existing R842 site access junction arrangement and to incorporate a single entry and exit lane and introduce a right turn pocket layout leading to the developments access, which services both the vehicles entering/exiting the basement car park and podium level 'shared surface' of the proposed development.

1.2 SCOPE OF QUALITY AUDIT

- 1.2.1 The geographical scope of this Quality Audit considers the subject development site (extent of proposed new infrastructure works within the site boundary) which includes the basement car park and the proposed site access/egress locations. In addition, the immediate pedestrian/cycle/vehicular routes leading to/from the development site have also been included within the Quality Audit.



Figure 1.1: Subject Site

1.3 QUALITY AUDIT PROCEDURE

1.3.1 The definition of a Quality Audit is provided within the Department for Transport (UK) Traffic Advisory Leaflet 5/11 "Quality Audit", and states: -

"QA is a defined process, independent of, but involving, the design team, that through planning, design, construction and management stages of a project, provides a check that high quality places are delivered and maintained by all relevant parties, for the benefit of all end users. QA is a process, applied to highway, traffic management or development schemes, which systematically reviews projects using a series of discrete but linked evaluations and ensures that the broad objectives of a place, functionality, maintenance and safety are achieved."

1.3.2 The Design Manual for Urban Roads and Streets (DMURS) states that; *"the intention of a Quality Audit is not to pass or fail a design rather it is intended as an assessment tool that highlights the strengths and weaknesses of a design and a documented process of how decisions were made."*

1.3.3 Quality Audits are a relatively new process within Ireland and as such no formal detailed guidance has been published here to date. Accordingly, until the publication of such guidance in Ireland, DBFL continue to use our internally derived Quality Audit report structure which has been compiled in reference to international best practice guidance including, amongst others, the Department for Transport (UK) Traffic Advisory Leaflet 5/11 "Quality Audit", and the CIHT document "Manual for Streets 2". Through the adoption of the guidance detailed within the aforementioned documents, DBFL submit that this Quality Audit complies fully with the requirements introduced in DMURS.

1.3.4 For developer led schemes the Quality Audit is an integral element of the development team approach through which all relevant disciplines contribute to the planning process. The Quality Audit seeks to identify a set of clear, agreed outcomes and recommendations that are set fed back into the design process through discussion and agreement with the relevant parties of the design team (e.g. architects, planners, engineers etc.). The Quality Audit process can be summarised as follows:

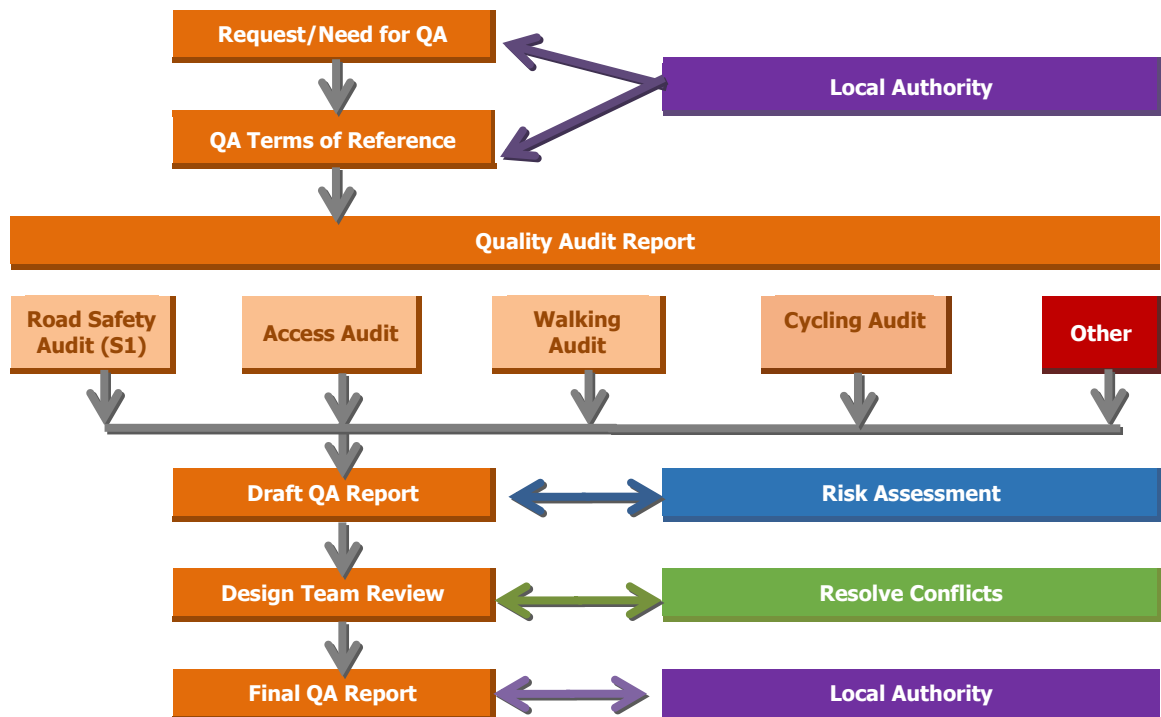


Figure 1.2: Quality Audit Process

1.4 REPORT STRUCTURE

- 1.4.1 Section 2 & 3 introduces the principal characteristic of the development of the scheme. The purpose and context of the Quality Audit process are detailed in response to the Quality Audits specific terms of reference. A summary of the Quality Audit findings and associated recommendations are outlined in section 4.
- 1.4.2 Section 5 details the general comments the audit team have in relation to the Audit, whilst Section 6 details the Audit Team Statement.
- 1.4.3 Section 7 summarises the list of information provided to the audit team for the purposes of the audit.

2.0 CHARACTERISTICS OF PROPOSALS

2.1 OVERVIEW

- 2.1.1 The proposals seek planning permission to construct 452 no. residential apartment units and 16 no. houses on residential zoned lands. The residential development is to be built on a greenfield site in Cornelscourt, Dublin 18.
- 2.1.1 The development proposes basement accessed through (i) a ramp for vehicles, (ii) through lift/stair core wells for the development's residents, and (iii) a number of dedicated pedestrian/cycle access routes.
- 2.1.2 The development will also comprise the construction of associated infrastructure including landscaped shared surface courtyard, footpaths, and associated services as referred to in the Infrastructure Report.
- 2.1.3 As the proposed development is a full BTR scheme, at operational phase it will be a fully managed property (24/7). Residents will avail of a number of shared services such as a concierge, a café, communal open spaces, car parking, bicycle parking, laundry, waste disposal etc.

2.2 Vehicle/Pedestrian Site Access

- 2.2.1 The proposed site's vehicular access, onto the R842 Old Bray Road, is shared by the Cornelscourt AIB Bank. It is proposed to incorporate a new internal junction set back about 30m from the R842 Old Bray Road corridor. This new internal junction will comprise one lane exit and a single entry lane to/from the development access route which will service the vehicles entering/exiting both the basement car park and surface level podium level of the proposed development. A right turn pocket will serve vehicles entering onto the site from the shared access with AIB Bank. The access junction onto the R842 Old Bray Road, will continue to operate as a priority junction however enhancements are being proposed to address pedestrian accessibility and safety concerns. The proposed junction layout is shown in **Figure 4.1** below.
- 2.2.2 Pedestrians and cyclists can access the development via the proposed access from Old Bray Road. This access junction will lead pedestrians into the internal podium level courtyard of the development site.

2.2.3 Further pedestrian links will be provided from the northern boundary of the site to the N11 Stillorgan Road and in the to the adjacent Willow Grove, as shown in **Figure 4.2** below.

2.2.4 An existing segregated cycle track (northbound) is located along the western edge of the N11 (adjacent to the site's north-eastern boundary). It is proposed to create a link to this N11 cycle track (in the north-west corner of the site with direct access from the basement's pedestrian/bicycle access point).

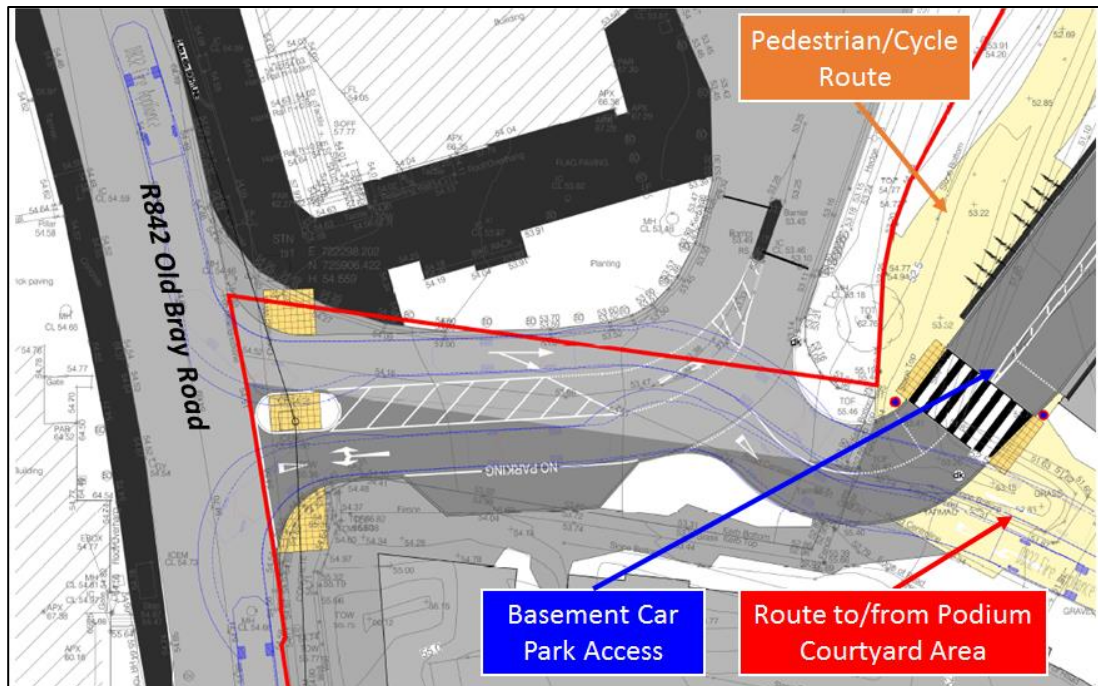


Figure 4.1: Site Access Junction Layout

2.2.5 Further details of the development proposals including the site layout and site access arrangements are illustrated in the architects' scheme drawings, in **Figure 4.2**, and as submitted with this planning application.

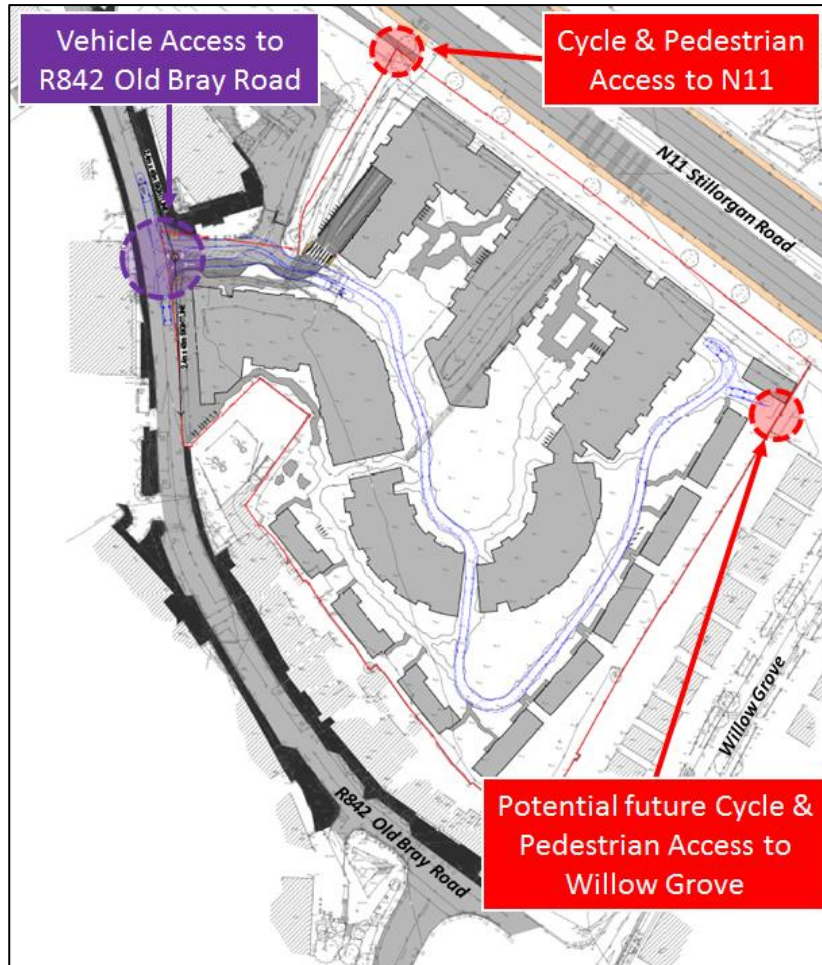


Figure 4.2: Site Access Arrangement

3.0 QUALITY AUDIT CONTEXT

3.1 INTRODUCTION

3.1.1 This section describes the general context of the Quality Audit which encompasses a Stage 1 Road Safety Audit, Access Audit, Walking Audit and Cycling Audit. The scope of the audit considers the subject development site and the immediate pedestrian/cycle/vehicular routes leading to/from the development site.

3.1.2 The Audit Team membership was as follows:

Team Leader: Thomas Jennings
BEng MSc MIEI MIHT CMILT
DBFL Consulting Engineers

Team Member: Mark Kelly
BAI (Hons) BA MSc MIEI
DBFL Consulting Engineers

3.1.3 The Audit comprised a review of the drawings/documents detailed in Section 6 of this report in addition to an examination of the existing conditions on site. The site was visited by the audit team on Friday 09th October between 09:30 and 11:00 with the objective of quantifying: -

- Existing traffic (pedestrian, cyclist and vehicular) and travel demand characteristics;
- The provision of dedicated facilities available for NMU's and their functionality;
- The likely travel desire lines/links to/from the subject site; and
- Any issues that might impact the comfort and safety of NMU's.

3.1.4 This Audit has been carried out in accordance with the DMRB (UK) Section 5 Part 2 HD45/02 Non-Motorised User Audits, the relevant sections of Transport Infrastructure Ireland guidance GE-STY-01024 December 2017 for Road Safety Audits, in addition to respecting the DMURS requirements of the Access Audit, Cycling Audit and Walking Audit.

3.1.5 The problems identified and described in this report are considered by the Audit Team to require action in order to improve accessibility, enhance comfort and safety levels of the scheme and minimise accident occurrence.

3.2 COLLISION HISTORY

- 3.2.1 The collision statistics on the Road Safety Authority (RSA) website were reviewed in order to ascertain the safety record in the vicinity of the subject scheme extents over the most recent ten-year period. This includes information for the years 2005 to 2016 inclusive and indicates basic information on all reported incidents. It should be noted that information relating to reported incidents for the years 2017, 2018 and 2019 is not yet available on the Road Safety Authority (RSA) website. Accordingly, the following records relate to the Bray Road and the N11.
- 3.2.2 The RSA records detail only those occasions where the incident was officially recorded such as the Garda being present to formally record details of the incident.
- 3.2.3 According to the RSA website there were no reported incidents in close proximity to the subject site access junction on the R841 Old Bray Road corridor. However, it is noted that there are a number of minor incidents and one fatal injury on the N11 which involved a pedestrian.

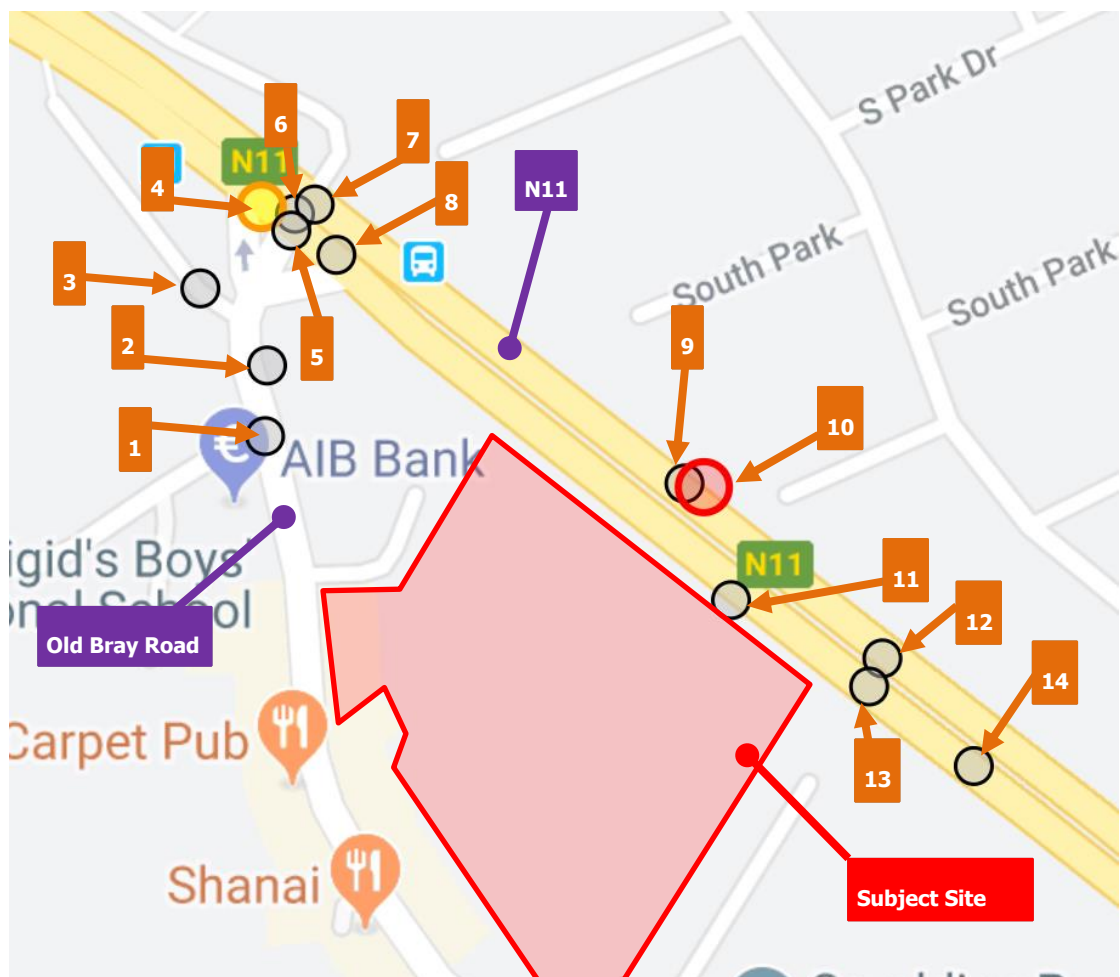


Figure 1.2: Collision Records (Source www.rsa.ie)

Residential Development, Cornelscourt, Dublin 18Preliminary Design Stage Quality Audit

Ref	Year	Vehicle	Circumstances	Day	Time	Severity	Total Casualties
1	2010	Motorcycle	Angle, right turn	Wed	1000-1600	Minor	1
2	2010	Motorcycle	Single vehicle only	Tues	1600-1900	Minor	1
3	2010	Car	Other	Fri	1600-1900	Minor	1
4	2012	Undefined	Other	Mon	1000-1600	Serious & Minor	4 & 2
5	2013	Car	Rear end, straight	Thurs	1000-1600	Minor	2
6	2008	Bicycle	Other	Sun	2300-0300	Minor	1
7	2008	Undefined	Pedestrian	Tues	0700-1000	Minor	1
8	2015	Car	Rear end, straight	Tues	1900-2300	Minor	3
9	2014	Car	Rear end, straight	Tues	1900-1900	Minor	1
10	2008	Undefined	Pedestrian	Sun	2300-0300	Fatal & Minor	1 & 1
11	2008	Car	Pedestrian	Fri	1000-1600	Minor	1
12	2006	Goods vehicle	Rear end, straight	Tues	1000-1600	Minor	2
13	2009	Goods vehicle	Other	Sat	1900-2300	Minor	2
14	2009	Car	Other	Fri	1600-1900	Minor	2

Table 1.1 Collision Records

4.0 ITEMS RAISED DURING THIS PRELIMINARY DESIGN STAGE QA

4.1 GENERAL PROBLEMS AT MULTIPLE LOCATIONS

4.1.1 Problem G1 – Landscaping adjacent to pedestrian/cycle routes

The landscape plans indicate the provision of trees adjacent to pedestrian/cycle/vehicle routes throughout the site. The audit team are concerned that landscaping may encroach into the pedestrian/cycle routes and reduce their effective width or overhang the routes resulting in head/eye injuries.

Recommendation:

Ensure adequate side and height clearance is provided to all pedestrian/cycle routes. Ensure tree species are chosen such that the canopy of the trees can be maintained at a minimum of 2.5m above cycle tracks and footpaths.

4.1.2 Problem G2 - Street lighting

The drawings provided for the purpose of this audit do not detail the provision of street lighting along the pedestrian routes within the subject site. In the absence of appropriate street lighting, safety issues such as trip hazards could arise for pedestrians whilst personal security issues could prove a significant concern for pedestrians and cyclists.

Recommendation:

During the detailed design stage, appropriate levels of internal lighting should be provided across all pedestrian, cyclists, and vehicle routes. The location of the street lighting columns should also be carefully considered to ensure that they do not impact access levels or present a hazard.

4.1.3 Problem G3 – Surface Drainage.

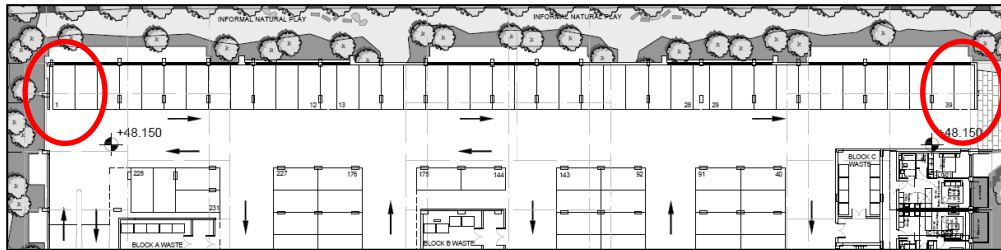
From the scheme information provided for this audit it has not been possible to ascertain the specific details of the surface drainage strategy. Surface water can prove a trip hazard in both warm and cold weather conditions in addition to adversely impacting the skid resistance of bicycles and motorized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

Recommendation:

During the detail design stage ensure adequate measures are taken to ensure that the ramp has 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.

4.1.4 Problem G4 – Car Park

It is unclear to the audit team if all of the parking bays within the residential development are accessible when the car parking spaces adjacent and perpendicular are occupied by vehicles. Failure to provide adequately sized parking bays with aisles of sufficient width could result in material damage incidents as vehicle drivers try to manoeuvre into/out of parking bays.



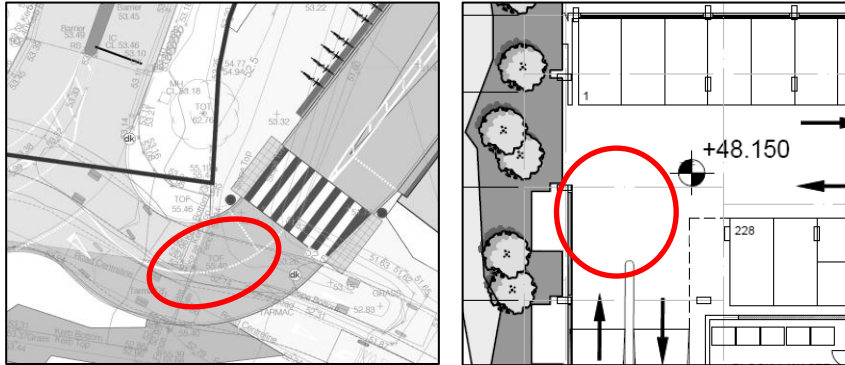
Recommendation:

A tracking analysis should be undertaken to determine if all spaces are accessible. Sufficient side clearance to structures should be provided.

4.2 PROBLEMS AT SPECIFIC LOCATIONS

4.2.1 Problem S1 – Access/Egress to the basement Car Park

Due to the sharp bend at the entry/exit to the car park the auditors are concerned that there may not be sufficient space for a vehicle to enter at the same time as another vehicle exiting the car park leading to potential conflict.

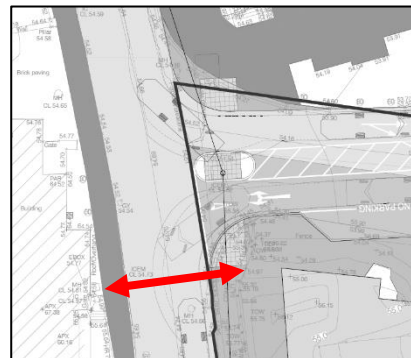


Recommendation:

The design team should confirm that a vehicle can enter the car park at the same time as a vehicle exiting. A tracking analysis should be undertaken for the largest vehicles expected to use the carpark.

4.2.2 Problem S2 – Pedestrian crossing Bray Road

The audit team have concerns regarding the lack of pedestrian crossing facilities at the priority junction at Bray Road/AIB access road. Pedestrians may attempt to cross at the priority junction which is the immediate crossing desire line to reach the shops/office blocks on the western side of Bray Road. This could result in pedestrians entering into the Bray Road carriageway when it is unsafe to do so, resulting in conflict with vehicles (or cyclists) travelling along Bray Road.

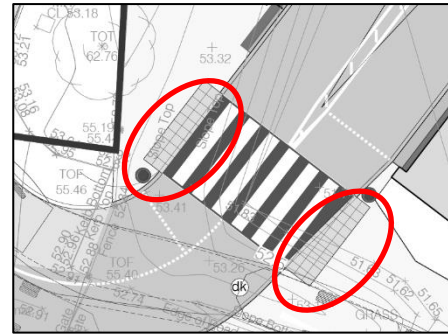


Recommendation:

Appropriate pedestrian crossing facilities should be provided in close proximity to the Bray Road/AIB access junction to enable pedestrians cross the Old Bray Road carriageway.

4.2.3 **Problem S3 - Zebra Crossing Markings & Buff coloured Tactile Paving**

The audit team have noted the use of zebra crossing road markings with buff coloured tactile paving supplemented with illuminated beacons (belisha beacons). The zebra crossing road marking & the belisha beacons indicate that pedestrians have priority at the



crossing and vehicle drivers must stop. However, the use of buff tactile paving (and the associated configuration) indicates that the crossing is an uncontrolled crossing. The use of the zebra road markings and beacons with buff tactile may cause confusion to both pedestrians and vehicle drivers as to who has priority, there is potential for pedestrian and vehicle conflict.

Recommendation:

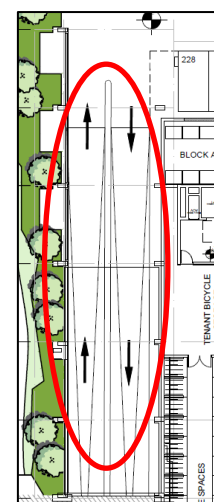
It is recommended that the zebra markings and illuminated beacons are supplemented with the appropriate red tactile (and the associated configuration) and the regulatory lines (transverse & zig zag) in accordance with the requirements of the Traffic Signs Manual.

4.2.4 **Problem S4 – Basement ramp design.**

The auditors are concerned that the design of the vehicle ramp may not meet the appropriate design requirements with resulting width constraints, visibility and alignment issues potentially contributing to side swipe collisions (with adjoining wall or other vehicles) and restricting two-way operation.

Recommendation:

It is recommended that a swept path analysis is undertaken. If found necessary, the design of ramp may need to be revisited at detail design stage to ensure that vehicle ramp complies with the requirements of the appropriate IStructE guidelines.



4.2.5 Problem S5 – Servicing Arrangement

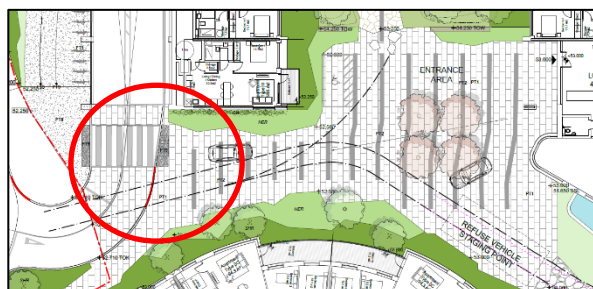
The auditors are unclear about the servicing arrangements (refuge collections) for the proposed development. Inappropriate practices in regard to; (i) temporary wheelie bin storage at surface level (e.g. temporary transfer area) which could block pedestrian and vehicle routes, (ii) method of transfer of large wheelie bins from the basement store to the surface on waste collection days (a single person pushing the bins up a 1:10 ramp would be considered dangerous), and (iii) refuge vehicles access requirements and the potential for reversing in areas were conflicts with other vehicles and pedestrians may arise.

Recommendation:

The designers should confirm the arrangements being considered for refuge collections for the subject site, associated bin storage (permanent/temporary on day of collection) and refuge vehicle access/egress arrangements to all bin storage areas.

4.2.6 Problem S6 – Surface level 'set down' area.

The auditors have interpolated the scheme drawings as illustrating a lightly trafficked 'Service Vehicles Only' approach to the 'Entrance Area' and vehicle turning area.



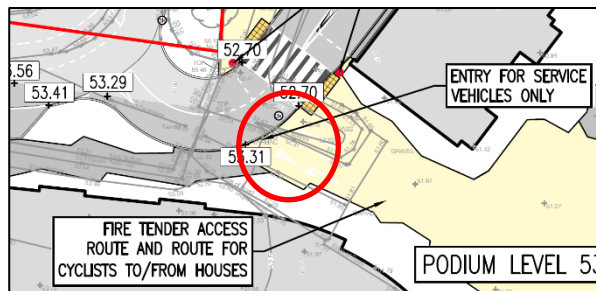
Through the specification of different surface treatments vehicle drivers are directed upon entering the development site to the basement car parking area thereby minimising the number of vehicles that may travel into the internal courtyard 'shared' zone. Whilst this approach is welcomed, the auditors are concerned that in the absence of a specific surface treatment specification the scheme may be constructed with a similar surface finish applied to both the vehicle access to/ from the basement AND the 'shared surface' to the front of the building. In such a situation additional vehicular traffic may enter the 'shared surface' thereby (i) increasing the potential of conflict with pedestrians, and (ii) increasing the potential conflict with other vehicles using the set-down area at building entrance.

Recommendation:

The auditors request the design team to confirm the specification of the surface treatments internally for (i) the vehicle route to/ from the basement ramp, and (ii) the internal shared zone. It is recommended that the design of both these surface treatments provides a strong visual contrast (in both wet/dry conditions and during day / night times) with the objective of portraying to the vehicle driver the indented different/contrasting function of both areas / routes.

4.2.7 Problem S7 – Surface level 'set down' area.

The auditors have concerns that the road marking on the 'Service Vehicle Only' approach to the internal courtyard 'Entrance Area' may confuse resident/visitor drivers who may



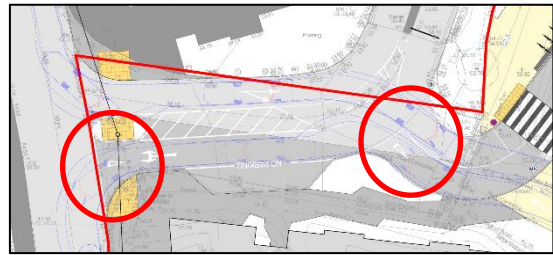
in turn drive through service vehicle access/'share surface' thereby (i) increasing the potential of conflict with pedestrians, and (ii) increasing the potential conflict with service vehicles using the set-down area at building entrance.

Recommendation:

The auditors request the design team remove the road marking and that it is clearly signpost that it is a 'Service Vehicle Access Only'. Ensure appropriate self-enforcing measures are put in place to prevent residents/visitors from driving into the 'Entrance Area'. Appropriate signage should also be provided to (i) inform vehicles drivers of the most appropriate vehicle route to follow, and (ii) any restrictions that may impact vehicle access (e.g. height registrations) or circulation internally.

4.2.8 Problem S8 – Stop line & Sign

The 'Yield' road marking at the AIB access road and at the residential access site should be replaced with 'Stop' line & Sign. This is due to the fact that:



- (1) Bray Road is a busy urban road with high vehicle speeds and
- (2) The residential access junction has a number of potential vehicle movements and conflict points.

Recommendation:

The regulatory 'Stop' line & Sign should be provided at both junction in accordance with the requirements of the Traffic Signs Manual.

4.2.9 Problem S9 – Surface Level 'Set Down' Area

An indented kerbside layby facility is proposed on the southern side of the internal access between the Old Bray Rd junction and the access routes to/from the proposed residential



development. The auditors request clarification regarding how the adopted design vehicle can conveniently gain safe access into or from this kerbside facility without the need to undertake a three point (or more depending upon vehicle type) u-turn manoeuvre on the internal road carriageway in the general area where the access roads diverts to the northwest (AIB car park) and southeast (development basement car park – podium access). Vehicle drivers undertaking turning manoeuvres in this general area could come into conflict with other vehicles or result in localised congestion leading to a queue of inbound vehicles extending back onto the Old Bray Road carriageway (where the potential for rear-end shunt incidents increases).

Recommendation

Clarification is required outlining how safe and convenient vehicle access can be achieved to the proposed kerbside layby facility in its present location. Should it prove difficult to achieve a safe and convenient access arrangement (e.g. one that does not require a u-turn manoeuvre on the main internal vehicle road carriageway) it is recommended that the kerbside bay is relocated to an appropriate location on Old Bray Road. Appropriate regulations may also need to be implemented to safeguard the availability of the kerbside bay (for its intended function) considering the existing demand at the neighbouring AIB facility.

4.2.10 Problem S10 – AIB Access Junction

The auditors are concerned that the generous radii (approx. 5m) of the proposed site access junction layout could; (i) contribute to excessive vehicle speeds entering and exiting the site, and (ii) result in a longer (length) than necessary road crossing for pedestrians walking along the Bray Road footpath



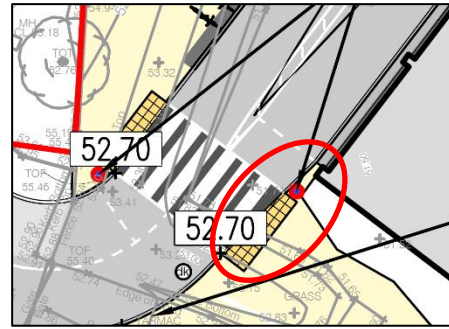
and who are required to walk across the proposed minor arm of this junction / access.

Recommendation:

In the context of the modest number and size (predominately cars with no more than 1-3 LGV's per day and 2 HGV's per week) of vehicles that is predicted to travel through this site access junction, it is recommended that a tighter radius in the order of 3m is adopted at the site access junction to achieve a greater balance between pedestrian and vehicle access requirements.

4.2.11 Problem S11 – Inter-visibility basement car park

There is a pedestrian crossing route at the entrance to the basement car park. It is unclear if there will be sufficient inter-visibility between pedestrians and drivers due to (i) the presence of the wall/structure adversely impacting exiting vehicle drivers and (ii) landscaping impacting inbound drives. A lack of inter-visibility could lead to collisions between those user groups.



Recommendation

It is recommended that sufficient inter-visibility be provided on the approaches to the proposed zebra crossing.

4.2.12 Problem S12 – Basement Carpark Internal Junctions

The proposals do not detail the provision of 'No Entry' road markings and associated signage at the basement car parks internal junctions. In the absence of these control measures vehicle drivers may become confused regarding one-way roads and priority, this may result in vehicular collisions.

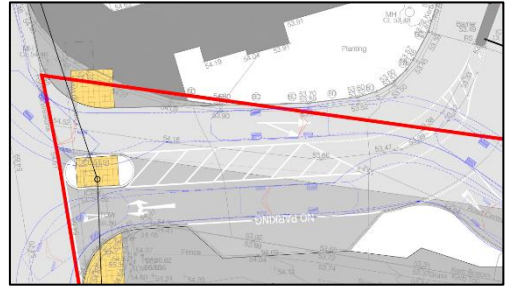


Recommendation:

In reference to the Traffic Signs Manual the appropriate vehicle control measures should be provided within the basement car parks internal junctions.

4.2.13 Problem S13 - Proposed Site Access Junctions

The auditors note that there are no parking restrictions proposed at the AIB access. During the site visit it was observed that cars were parked haphazardly on the southern side of the access. The auditors are concerned that vehicles parked kerbside within the vicinity of the site access junctions may adversely impact the availability of unobstructed visibility splays for vehicles exiting the junctions. This could potentially contribute to the generation of side-impact collisions between vehicles exiting the subject site and the AIB access.

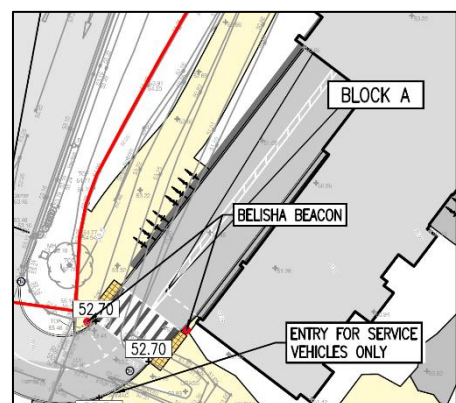


Recommendation:

It is recommended that parking restrictions are implemented in the vicinity of (i) the Old Bray Road/AIB access junction and the internal access route leading to/from both the existing AIB car park entrance/exit and the proposed site access junction with the objective of safeguarding the appropriate visibility splays and (ii) keeping the internal vehicle access route free from inappropriate car parking practices.

4.2.14 Problem S14 - Proposed Site Access Junctions

Parking restrictions (barrier or bollards) to the basement, to prevent access for non-residents have not been provided. During the site visit it was observed that cars were parked haphazardly on the southern side of the access. The auditors are concerned that non-residents such as AIB customers may park (i) in the basement or (ii) at the podium level courtyard. Such practices could result in residents having to park



haphazardly on the surface level footpaths/shared surface, which could lead to vulnerable road users having to enter the carriageway leading to greater likelihood of conflict with motorised vehicles or could lead to slip and fall as pedestrians mount/dismount kerbs or walk through grassed area.

Recommendation:

Ensure appropriate self-enforcing measures are put in place to prevent non-residential vehicles from accessing the basement car park and central podium level 'shared' courtyard area.

4.2.15 Problem S15 – Pedestrian/cyclist access into basement car park

The auditors are concerned that the proposed pedestrian/cycle access/egress into the basement (northwest corner) may result in an insufficient level of clear unobstructed visibility being provided between vehicle drivers and pedestrians/cyclists access the basement. In such instances conflicts between vehicle and pedestrians/cyclists could arise with pedestrians/cyclists suddenly appearing within the path of vehicle drivers exiting/accessing the basement ramp.

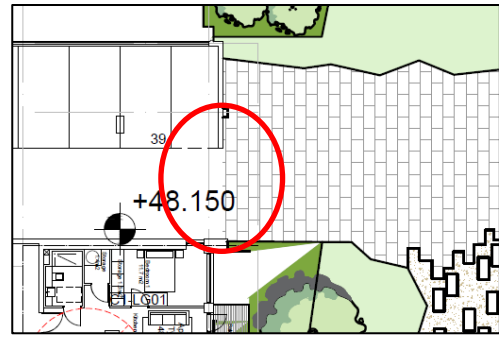


Recommendation:

It is recommended that either (i) the location of the ped/cycle doorway to/from the basement is relocated to a more appropriate location, or (ii) the design of vehicle ramp (access/egress point) is redesigned to ensure that an adequate level of visibility is provided between pedestrians/cyclists and opposing vehicles approaching the bottom of the basement's vehicle ramp.

4.2.16 **Problem S16 - Proposed Site Access Junctions**

The audit team acknowledges that access to the external pedestrian/cyclist 'shared surface' from the basement car park may have to be maintained to accommodate emergency vehicles. However, the wide unobstructed access point may encourage inappropriate encroachment



of private vehicles into this sensitive lightly trafficked/'shared surface' area. This could result in collisions between vehicles and pedestrians in addition to impeding the pedestrian routes.

Recommendation:

Ensure appropriate self-enforcing measures are put in place to prevent any inappropriate residential vehicles from accessing the external pedestrian/cyclist 'shared surface' at this location.

4.2.17 **Problem S17 – Pedestrian linkage to Willow Grove**

There is no tie-in between the proposed pedestrian/cycle route on the eastern side of the development and Willow Grove. There could be a risk of slips and falls in the green area during wet conditions.

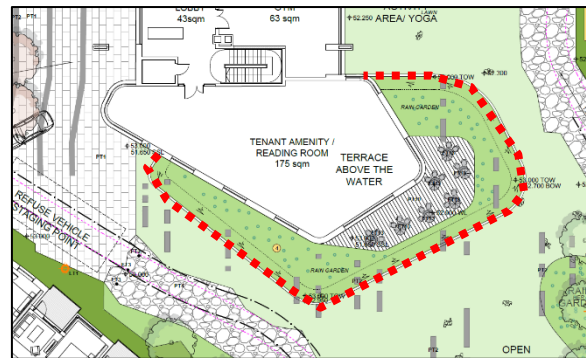


Recommendation:

It is recommended that a hard surface (of appropriate width and gradient) is provided through the green area to provide a link to Willow Grove.

4.2.18 Problem S18 – Open Watercourse

The auditors are concerned about the potential depth/gradient of the internal open watercourse features. There is no protection for young children who may fall into the open water features. There is no kerb or landscaping buffer to restrict access. Falling into the open deep channel with a sudden drop could lead to drowning incidents.

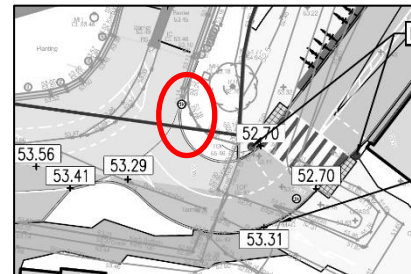


Recommendation:

It is recommended that a management regime is implemented and in the absence of a tapered gentle gradient at the watercourse edge treatment, protection is provided around all sides of the water feature to restrict young children from falling into the rain garden.

4.2.19 Problem S19 – Dropped Kerb

There is a proposal for dropped kerbs at the site access with no pedestrian crossing facilities (tactile paving) or corresponding crossing point/dropped kerb (on the other side of the carriageway). This could result in pedestrians entering the carriageway at an inappropriate location or time, and result in conflict with vehicles.

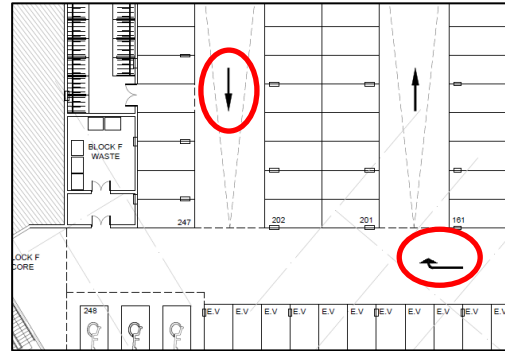


Recommendation

The dropped kerb should be removed as part of the scheme with pedestrians encourage/directed to use the zebra crossing facilities.

4.2.20 **Problem S20 – One-way circulatory system in the basement**

Vehicles which were parked within the first 'western' section/row of car parking spaces and wanting to exit the car park will have to drive against traffic (over a short two-way section) to exit via the next row of car parking spaces. This could result in head-on collisions between vehicles.



Recommendation

The one-way circulatory system in the basement car park should be reviewed and updated, to provide safe access & egress and prevent confusion.

4.2.21 **Problem S21 – Haphazard parking on Bray Road at AIB access junction**

During the site visit it was observed that cars were parked haphazardly on the southern side of the access. The auditors are concerned that due to the new junction layout, vehicles will no longer be able to park on the southern side of the existing AIB access and may decide to park along the eastern side of Bray road in close proximity to the junction. Haphazard parked cars along Bray Road at the AIB access junction may obstruct driver's visibility at the junctions. 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.

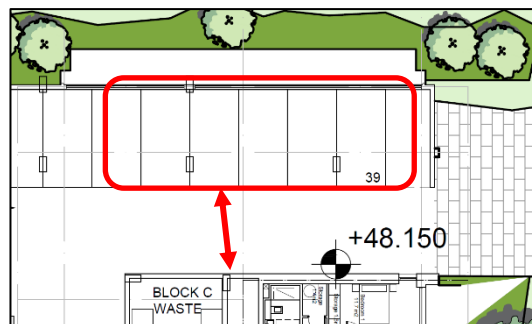


Recommendation

The existing double yellow lines along the eastern side of Bray Road should be extended to prevent vehicles parking at the AIB access junction. Ensure sufficient visibility is provided at junction.

4.2.22 Problem S22 - Basement Car Park

It is unclear to the audit team if the aisle with or parking bays located in the north-eastern corner of the basement are of sufficient width to enable a vehicle to enter/exit the bay when the parking space adjacent it occupied. The vehicle aisle width has



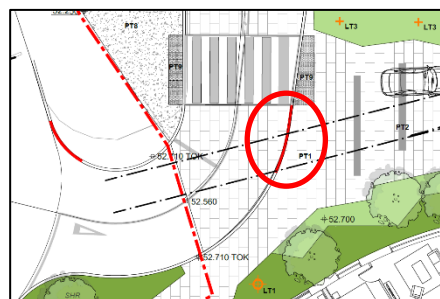
been reduced due to the apartment block (approx. width 4.5m). Failure to provide sufficient width and associated side clearance to a permanent structure could lead to vehicle drivers experiencing difficulty in navigating a car to/from a space, which could result in material damage incidents.

Recommendation:

Car parking spaces should be provided as per DMURS guidelines and a tracking analysis should be undertaken to ensure the parking spaces are accessible. Sufficient side clearance to structures should also be provided.

4.2.23 Problem S23 – Dropped Kerb at access to 'Shared Surface'

Due to the dropped kerb for 'service vehicle access' the 'shared surface' exits directly onto the road carriageway without any warning being provided to visually impaired pedestrians. Accordingly, such pedestrians could find themselves continuing to walk from the 'shared surface' out into the path of moving vehicles accessing/exiting the basement car park.

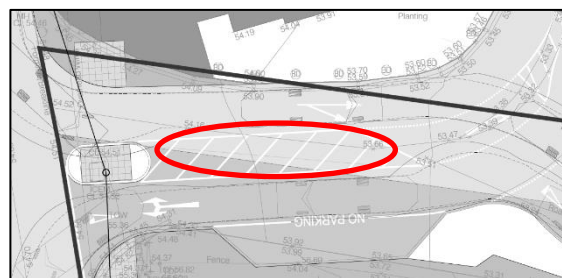


Recommendation:

It is recommended that a 50mm kerb is provided which will warn visually impaired pedestrians of the road carriageway. Or tactile 'warning' paving could be provided at the transition from the 'shared area' to/from the road carriageway. This will ensure that visually impaired pedestrians are provided with the necessary warning of 'to proceed with caution' or direct them along the footpath to the neighbouring zebra crossing facilities.

4.2.24 Problem S24 – Haphazard car parking at AIB access

During the site visit it was observed that cars were parked haphazardly on the southern side of the access. The auditors are concerned that due to the new junction layout, vehicles (seeking to access AIB)



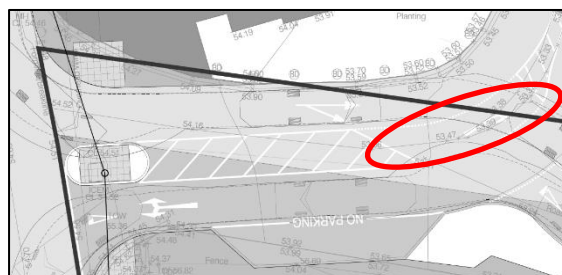
may park on the northern side of the access or on the hatched road marking. Haphazard parked cars at the AIB access junction may obstruct driver's visibility at the junctions. Failure to provide sufficient visibility for vehicle drivers at the junctions could result in overshoot incidents or side impact collisions with vehicles/cyclists travelling along the road.

Recommendation

The refuge island should be extended into the hatch area (4 to 6m) to prevent haphazard vehicle parking. Planting on the island can be provided to prevent vehicles parking on the island and create a sense of enclosure and thereby reduce vehicle speeds.

4.2.25 Problem S25 – Right turn pocket

It is unclear if there is sufficient length available in the right turn pocket to enable cars/service vehicles to stop and wait for an available gap in oncoming vehicles,



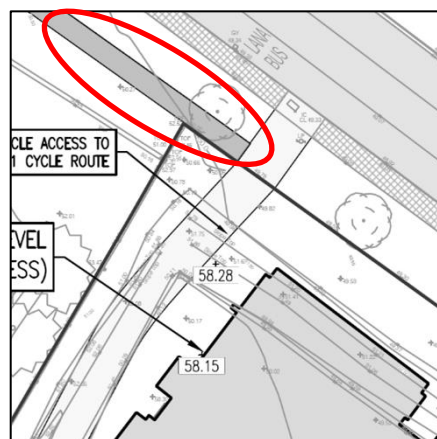
without the vehicle overhanging onto the inbound lane of the road carriageway leading to the AIB car park. This could lead to waiting vehicles being struck by vehicles travelling through to the AIB car park.

Recommendation

Further to S24, it is recommended that the right turn pocket is extended (4 to 6m) towards the pedestrian refuge island, ensuring there is sufficient space available for a large vehicle to wait, without overhanging onto the inbound lane leading to the AIB car park.

4.2.26 Problem S26 – Footpath along the N11

Cyclists who are travelling out from the city centre/UCD direction (e.g. southbound) along the N11 and wish to access the subject site would most likely cross at the signalised crossing (northwest of the site) and use the proposed new footpath along the N11 to connect to the shared surface access to the site. This may result in collisions between cyclists and pedestrians due to the inadequate width of the new footpath facility to cater for both pedestrians and cyclists.



Recommendation

It is recommended that the footpath is upgraded to a formal shared surface facility and widen to 3-3.5m to also cater for outbound cyclists (from the city centre) seeking to access the proposed development along the most convenient travel desire line.

4.2.27 Problem S27 – Pedestrian access into basement car park

The auditors have concerns that no cycle access has been provided into the basement from the proposed 'shared surface' on the northwest corner of the development. As part of the proposed development, steps have been provided to enable pedestrian access to the basement. Cyclists will have to access the

basement car park via the vehicle access which is not on the cyclist's desire line to/from the N11. The basement ramp will be the main access for both vehicles and cyclists and will therefore result in a high frequency of vehicle and cycle interactions which may result in collisions. The steep basement ramp (1:10) may be inconvenient for many bicycle users, who may then choose to walk their bike up the ramp (rather than cycle), which in turn will cause delays and frustration to vehicle users.



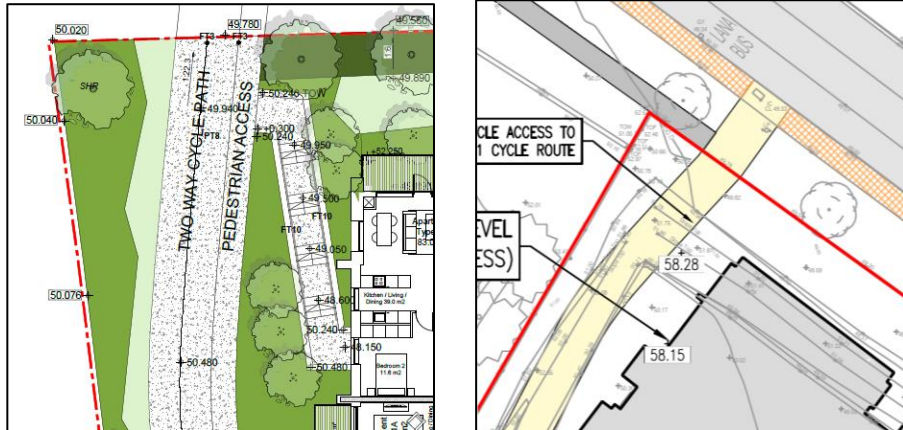
Recommendation:

It is recommended that the design team explore the opportunity to provide a ramp to cater for both pedestrians and cyclists. Should this prove not viable, as an absolute minimum wheel channels for bicycles should be provided adjacent to the steps and landings.

5.0 COMMENTS

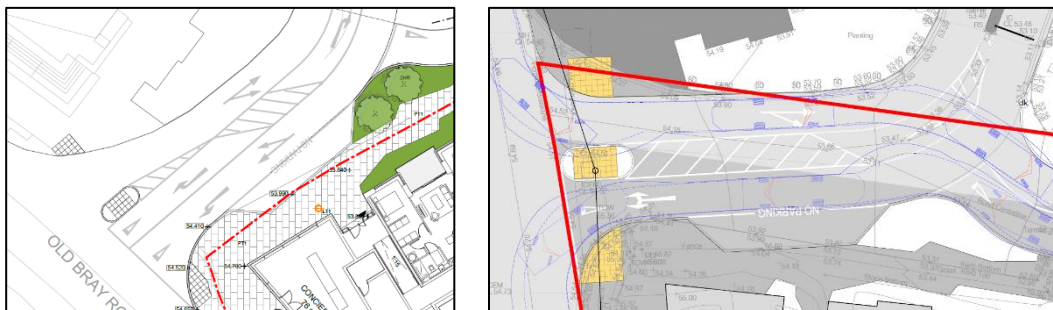
5.1.1 Comment (C1) Cycle/Pedestrian route to the N11

There is inconsistency between drawings, the landscape drawing shows a segregated two-way cycle path & footpath to the N11 while another roads drawing shows a Shared Surface.



5.1.2 Comment (C2) AIB access junction

There is inconsistencies between drawings, the access junction layout is different in the landscape and the road layout drawings.



6.0 AUDIT TEAM STATEMENT

- 6.1 I certify that I have examined the drawings and other information listed in Chapter 5. This Audit has been carried out with the sole purpose of identifying any features of the Design that could be removed or modified to improve the safety of the Scheme. The problems that I have identified have been noted in the report, together with suggestions for improvement which we recommend should be studied for implementation.

Audit Team Leader: Mr Thomas Jennings

***BEng (Hons) MSc MIEI MCIHT CMILT
DBFL Consulting Engineers (Waterford)***

Signed:



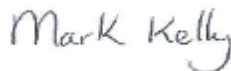
Date:

31st of October 2019

Audit Team Member: Mr Mark Kelly

***BAI (Hons) BA CEng MSc MIEI
DBFL Consulting Engineers (Dublin)***

Signed:



Date:

31st of October 2019

7.0 LIST OF INFORMATION RECEIVED

Items Received		Yes / No	Details
1	Scheme Description	Yes	<ul style="list-style-type: none"> Obtained from Instruction to Tenderers Draft Traffic and Transport Assessment Report Draft Mobility Management Plan
2	Project Brief	Yes	<ul style="list-style-type: none"> Informal brief received
3	Scheme / Project Drawings	Yes	DBFL DUBLIN drawing nos:- <ul style="list-style-type: none"> '180208-DBFL-XX-XX-DR-C-2001' '180208-DBFL-XX-XX-DR-C-2002' '180208-DBFL-XX-XX-DR-C-2003' Cameo & Partners Ltd drawing nos:- <ul style="list-style-type: none"> C0098 L100 Henry J Lyons drawing nos:- <ul style="list-style-type: none"> PL 1010
4	Departures from Standard	No	
5	Traffic Signal Information	No	
6	Road Signs & Road Marking Details	Yes	As per the above drawings.
7	Traffic Count Information	Yes	
8	Speed Survey Data	No	
9	Collision Data	No	Obtained from www.RSA.ie
10	Previous Road Safety Audit Reports	No	
11	Relevant Design Standards	No	
12	Public Transport Information	No	
13	Other Information	No	

APPENDIX A

Problem Location Figures




Project :	Residential Development, Cornelscourt, Dublin 18	Designed :	MK	Prepared :	MK
Client :	Cornel Living Ltd.	Date :	Oct 2019	Checked :	TJ
Drawing Title :	Preliminary Design Stage Quality Audit	Scale :	NTS	File Ref :	180208-S1 RSA-Fig 1
		Drawing No :	180208/SK001		



DBFL Consulting Engineers



Project :	Residential Development, Cornelscourt, Dublin 18	Designed :	MK	Prepared :	MK
Client :	Cornel Living Ltd.	Date :	Oct 2019	Checked :	TJ
Drawing Title :	Preliminary Design Stage Quality Audit	Scale :	NTS	 DBFL Consulting Engineers	
		File Ref :	180208-S1 RSA-Fig 1		
		Drawing No :	180208/SK002		

APPENDIX B

Feedback Form

ROAD SAFETY AUDIT FEEDBACK FORM

Scheme: Residential Development, Cornelscourt, Dublin 18

Audit Stage: 1

Date Audit Completed: October 2019

To be Completed By Designer				To be Completed by Audit Team Leader
Problem No. in Quality Audit Report	Problem accepted (yes/no)	Recommended measure accepted (yes/no)	Describe alternative measure(s). Give reasons for not accepting recommended measure. Only complete if recommended measure is not accepted.	Alternative measures or reasons accepted by Auditors (yes/no)
G1	Yes	Yes		
G2	Yes	Yes		
G3	Yes	Yes		
G4	Yes	Yes		
S1	Yes	Yes		
S2	Yes	Yes	Ability to provide a pedestrian crossing at this location fall outside the applicant's area of ownership. The local authority will be made aware, this crossing can be incorporated should the local authority agree	
S3	Yes	Yes		
S4	Yes	Yes		
S5	Yes	Yes	Bin storage areas are located in the basement. Bins will be hauled by a vehicle to a "refuse vehicle staging point" on the podium. Refuse trucks will access the "refuse vehicle staging point" via the access road shared with AIB and the podium. These areas have been tracked to confirm sufficient space is available for a refuse vehicle to access and egress the "refuse vehicle staging point". We note that refuse removal will be co-ordinated by the management company to ensure minimal disruption to residents. The location of the "refuse vehicle staging point" will not impede pedestrian access across the podium area.	
S6	Yes	Yes		
S7	Yes	Yes		
S8	Yes	Yes		
S9	Yes	Yes		

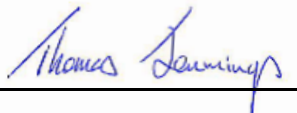


S10	Yes	Yes		
S11	Yes	Yes		
S12	Yes	Yes		
S13	Yes	Yes		
S14	Yes	Yes		
S15	Yes	Yes		
S16	Yes	Yes		
S17	Yes	Yes	This is intended as a potential future linkage to the open space north of Willow Grove. The area north of Willow Grove falls outside the applicant's area of ownership. The local authority can implement this linkage as and when they require. The local authority will be made aware of the auditor's concerns (i.e. provide hard surface of appropriate width and gradient).	
S18	Yes	Yes		
S19	Yes	Yes		
S20	Yes	Yes		
S21	Yes	Yes		
S22	Yes	Yes		
S23	Yes	Yes		
S24	Yes	Yes		
S25	Yes	Yes		
S26	Yes	Yes		
S27	Yes	Yes		

Signed: 

Designer: Brendan Keogh

Date: 08/11/2019

Signed: 

Audit Team Leader: Thomas Jennings

Date: 12/11/2019

180208



Signed:

A handwritten signature in black ink, appearing to read 'D. Reilly', is enclosed in a thin black rectangular border.

Employer:

Dan Reilly

Date: 12/11/2019

Please complete and return to safety auditor.