

14 ROADS, TRAFFIC & TRANSPORTATION

This chapter addresses the issue of Roads, Traffic & Transportation at the proposed residential scheme to complete the RB Central development at Sandyford.

14.1 INTRODUCTION

The proposed predominantly residential scheme supersedes previously approved development at this site made under applications D05A/1159 and subsequently D07A/0975 which were partially completed. Road improvements works required under those applications in order to ameliorate the impact of the scheme were previously completed. The development under those proposals was accounted for within the overall traffic model for Sandyford Business District (since it was assumed that those schemes would have been completed), which subsequently gave the terms of reference for the Sandyford Urban Framework Plan for future development within the district. This traffic assessment will compare impact of the proposed development with that of the previous schemes to demonstrate the relative impact on the environs with respect to traffic and transportation and also evaluate the impact of the scheme on a number of junctions in the vicinity of the development. This approach has been agreed with Dun Laoghaire Rathdown County Council (DLRCC). We note that the recent previous planning assessment of the D16A/0697 scheme by DLRCC and ABP with respect to traffic and transportation issues did not feature in the reasons for refusal.

The transport and sustainable travel policies are set out predominantly in the *Dún Laoghaire-Rathdown Development Plan 2016-2022* which incorporates the Sandyford Urban Framework Plan.

14.2 METHODOLOGY

The methodology undertaken for these proposals is to calculate the numbers of trips that the proposed development will have, and compare them to those trips which have already been accounted for in the traffic model for the district. Assessments of junctions in the vicinity of the site were also assessed, in the same manner as was carried out in support of the previous application for the site (D16A/0697). The findings and output contained herein have been presented and agreed with DLRCC, as summarised in correspondence set out in Appendix 14.5.

The findings of the assessment have been issued and agreed with DLRCC.

14.3 RECEIVING ENVIRONMENT

14.3.1 Site Location

The RB Central site is located at the north western edge of Sandyford Business District. The site is bounded by Blackthorn Drive to the north and west, Carmanhall Road to the south, and the former Aldi site (now known as the Tivway site) to the east.

The Rockbrook scheme permitted under planning applications D05A/1159 and D07A/0975 was partially completed. The part of the site where the proposed RB Central Apartments are located comprises a partially completed basement with concrete slab to the ground floor level. The eastern part of the basement area comprises only the excavation for the basement.

The existing element of the Rockbrook scheme is currently accessed via a single access at the northeast corner of the site from Blackthorn Drive. The works proposed under this proposal will establish a new access point at the southeast corner of the site onto Carmanhall Road. Under the new scheme all retail associated traffic will be routed through the northern access point, whilst all office (permitted but as of time of assessment not completed and occupied), together with proposed and existing residential traffic will be routed via the Carmanhall Road access. Access and streetwork proposals are set out on CST Group drawings 118139/01 and 02 together with the Landscape Architect's drawings.

14.3.2 Existing Transportation Infrastructure

The vehicle access routes in the vicinity of the proposed development include:

M50 – Dublin's ring motorway. Southbound access into the district is via Junction 13 at Dundrum, whilst northbound access is via Junction 14. Traffic exiting the district accesses the motorway at Junction 14 R133 Drummartin Link Road southbound, and Leopardstown Road (N31) northbound.

N31 Leopardstown Road – this road facilitates a link to the N11 and onwards to Dun Laoghaire and Blackrock, and the M50 to the south of the district.

Blackthorn Drive (L2014) – this road forms part of the main circulation road around the district and a link to Dundrum to the south of the site and to the city via Benildus Avenue at the northwest corner.

Blackthorn Road – this road forms two sides to the distributor road around the district. There are signalised junctions at either end of the road – at Blackthorn Drive and Blackthorn Road, as well as at the junction with Burton Hall Road.

Blackthorn Avenue – this road provides distributor road for the district with connection to St Raphaela's Road (Kilmacud Road Upper Extension) to and from Stillorgan.

Immediately local to the proposed development there is:

Carmanhall Road – a two lane road with a signal controlled junction with Blackthorn Avenue/Birch Avenue to the west, and priority junctions with Bracken Road, Corrig Road and Blackthorn Road to the east.

The receiving environment differs slightly in terms of the original assessments due to the following local traffic management proposals:

- a. Bus Gate at Carmanhall Road not implemented. The original proposals were modelled with Carmanhall Road being a cul de sac, as a bus gate was to be implemented to permit buses only to access along Carmanhall Road. However, this is no longer the case, and all traffic can access Blackthorn Drive, via the west or Corrig Road/Blackthorn Road to the east.
- b. Blackthorn Road – the section of Burton Hall Road between Carmanhall Road and Blackthorn Drive which was previously one way (north) only was made two way and also cycle facilities provided on the verges.

Overall these traffic management proposals have little impact on the overall traffic associated with the scheme, as trips will all be destined to the larger network. The local receiving environment is shown on Figure 14.1, with the site highlighted in red.

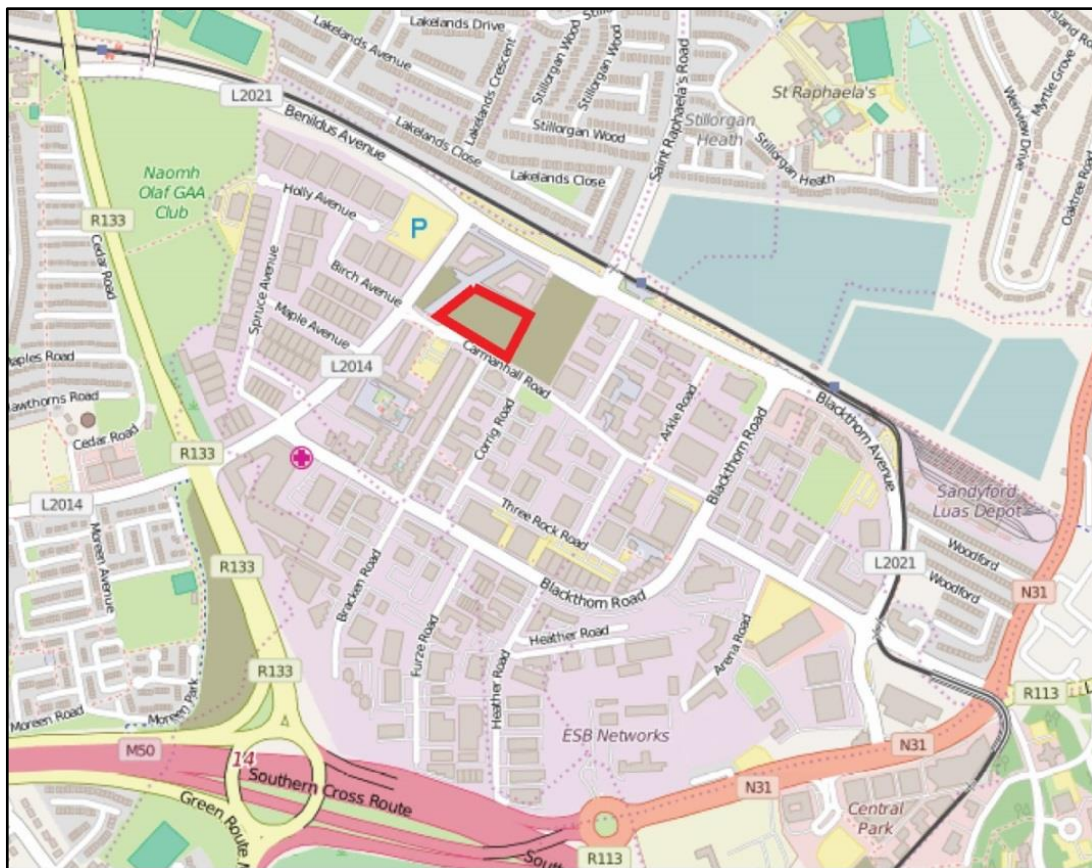


Figure 14.1 – Indicative location map of development and surrounding road network (Source- OpenStreetMap contributor)

Pedestrian and Cycle Facilities

To the RB Central site perimeter, improved foot path and cycle facilities were provided as part of the offsite works proposed under permission D07A/0975. These comprise:

- Blackthorn Drive West – 2.5m wide footway with 1.5m wide cyclelane;
- Blackthorn Drive North – 2.5m wide footway with 1.5m wide cyclelane;
- Carmanhall Road 2m wide footway with 1.5m wide cyclelane

The cycleway facilities on Blackthorn Drive will contribute to the overall Proposed Cycle Network - Dublin Area, as highlighted in Figure 14.2.



Figure 14.2– Excerpt from Proposed Cycle Network – Dublin Area

Public Transport Facilities

Sandyford is served with public transport facilities, via bus and Luas light rail – Green Line which links Bridesglenn with the city – Stephens Green and onwards to Broombridge in the north of the city. There are stops for both systems to the perimeter of the site. The routes are set out in Figure 14.3.

The Stillorgan Stop for the Green Line is also served with a Park and Ride facility.

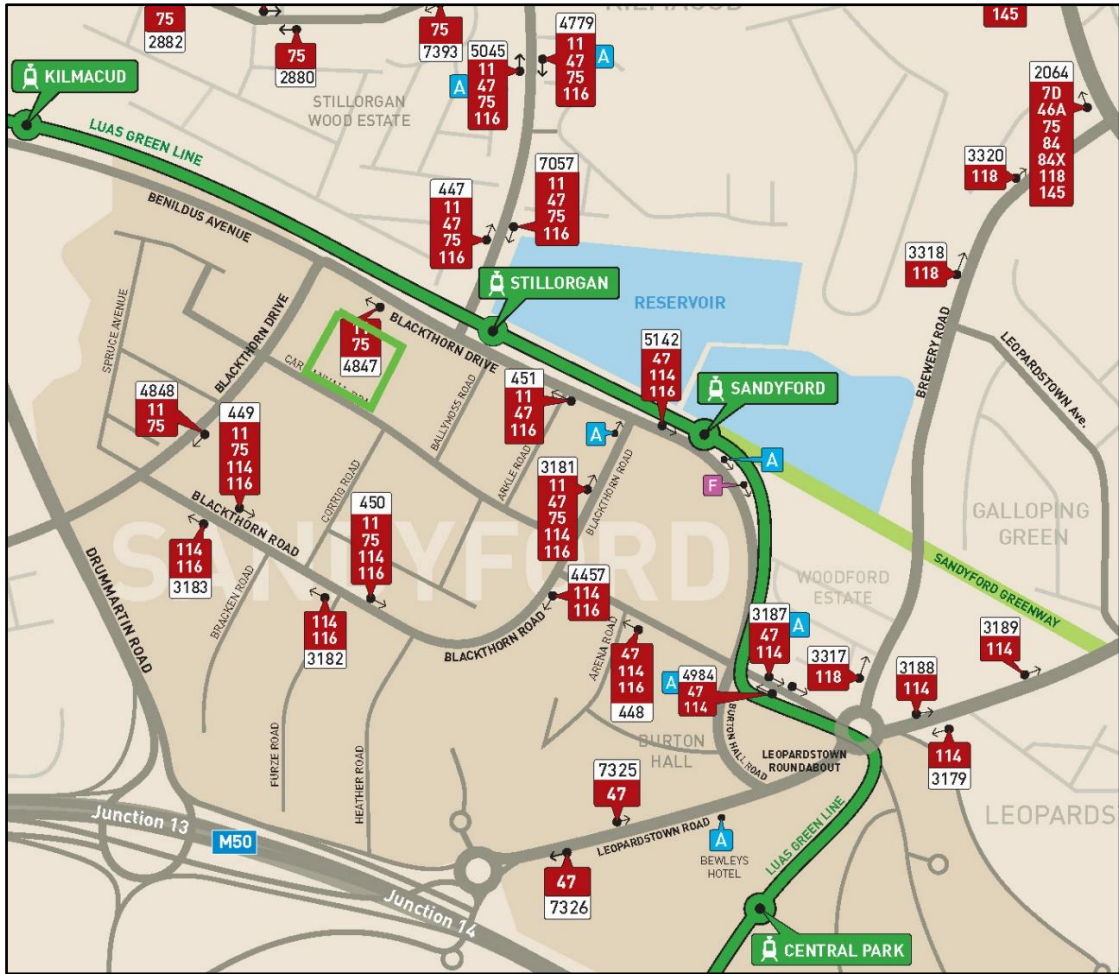


Figure 14.3– Public Transport Routes - Excerpt from Sandyford Smarter Travel Brochure

14.3.3 Existing Road Traffic Model

Sandyford District has been comprehensively modelled by DLRCC in order to identify the capacity of the road system for permitted and future development. The Sandyford Highway Model was initially developed as part of the *Sandyford Land Use and Transportation Study* which was used to set the context of the SUFP. Further work of validation was carried out under *Sandyford Transportation Model Peer Review & 2016 Scenario Tests*. In the latter report – the full permitted Rockbrook/RB Central development was accounted for within area 316 within that study.

14.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The proposed development will consist of the following:

- 428 apartments – comprising 154 one-bed apartments, 251 two-bed units and 23 three-bed units;
- 862 m² of retail development;
- 486 m² crèche unit;
- Ground floor level landscaping providing interface with the existing as built scheme including pedestrian and cycle facilities;
- Completion of the underground basement which will accommodate service, car parking and bicycle parking for the development. The basement will contain the same footprint as the previously permitted development.

It should be noted that this development replaces the previous permitted development, for which permission has previously lapsed:

- 491 apartment units;
- 5,221m² of retail/commercial;
- 641m² of restaurant/café.

The assessments contained in the sections below take into consideration the overall reduced development.

14.4.1 Parking

The quantum of parking required for the overall scheme will be reduced compared to that originally permitted. It should be noted that parking numbers calculated under the original scheme were based on the 2004-2010 Development Plan. The current 2016-2022 Development Plan is more prescriptive of the parking rates particularly with respect to sites in close proximity to public transport routes, such as the proposed development. Therefore there will be offset of proposed parking against the omitted development.

The parking standards for this modified development are based on Table 8.2.3: Residential Land Use - Car Parking Standards

Apartments 1 space per 1-bed unit
 1.5 spaces per 2-bed unit
 2 spaces per 3-bed unit
 (*depending on design and location*).

and Table 8.2.4: Non Residential Land Use – Maximum Car Parking Standards - Designated areas along public transport corridors (on basis of proximity to the Luas).

Retail - Shopping Centres and Stores 1 space per 50 sq.m. gross leasable area
Childcare Services 1 space per 1 staff member (including set down).

The proposed parking for the overall development is as per the Table 14.1.

User Group	Location	Size	Unit	Rate	No.
<i>Existing permitted scheme built/committed</i>					
Retail	Aldi/EZ	4,712	m ²	1 per 20m ²	233
Retail	other	1,257	m ²	1 per 20m ²	-
Restaurant/Café		250	m ²	1 per 10m ²	19
Community Facilities		195	m ²	n/a	-
Office	Block C Sentinel	13,287	m ²	1 per 20m ²	266
Residential	Blocks A&D	419	units	1 per unit	419
Nett allocation to existing or committed development in blocks A,C,D					937

New Development Allocation of Parking

Residential					
– 1 bed		154	units	1 per unit	154
– 2 bed		251	units	1 per unit	251
– 3 bed		23	units	1 per unit	23
Residential visitor					46
Retail		862	m ²	1 per 50m ² gfa	17
Crèche				1 per staff member	15
Car Share Scheme					2
					508
Total spaces provided					1,445

Table 14.1 Car Parking

- (1) The Planning Guidelines issued in March 2018 by the DoEHLG for Design Standards for New Apartments states that “In suburban/urban locations served by public transport or close to....employment areas and particularly for housing schemes with more than 45 dwellings per hectare...., planning authorities must consider a reduced overall parking standard and apply an appropriate maximum car parking standard”. A reduced rate of 1.0 space per 2 and 3 bed units should be applicable for this site due to the proximity to the Luas and other public transport links. As the client already owns a significant number of the units already completed, their experience in terms of uptake by tenants informs us as to the lower applicable rate. Additionally, an allowance of ten percent of the overall parking for residential units is provided for visitor parking for the new apartments. The resultant ‘effective’ provision of parking per two/three bed unit (for the RB Central Apartments development) is 1.16 spaces per unit. This provision would ensure sufficient parking provision for this predominantly residential scheme.

It is considered adequate to accept this lower provision for the following additional reasons:

- a. Similar sites do not require more than one space per unit. An assessment of potential parking demand, using similar sample sites within DLR from the TRICS database were reviewed with respect to the parking demands to further justify the lower provision of parking. The sites with close proximity to public transport indicate that the maximum average parking occupation was below one space per unit – ie 74% - see Table 14.2. The database output setting out the locations of the sample sites is contained in Appendix 14.1. This finding is consistent with IRES’s experience with letting of 350 existing apartments on the site where they have demand for an average of 0.86 spaces per apartment.

TRICS Site	Dwellings	Parking	Cars Parked			Occupancy Peak	
			Start Survey	Spaces Per Apt	Max Occupancy	at end of Survey	Occupancy Rate
C-07	372	317	249	0.85	249	192	67%
C-11	96	67	65	0.70	65	51	68%
C-12	47	79	34	1.68	35	29	74%
C-13	52	77	60	1.48	60	43	115%
C-14	140	145	114	1.04	114	113	81%
Average							74%

Table 14.2 Parking Demand at Other Sites

- b. Having an active Residential Travel Plan (RTP) in place – As the site is predominantly single landlord operated they will have an active role in managing the RTP once the scheme is complete and occupied. The implementation of the RTP for the proposed development will ensure that there is a significant modal shift towards sustainable travel modes.
- c. Appropriate mix of land uses within and surrounding the proposed development. Although the proposed development is predominantly residential, there are other types of use on the immediate site, as well as many high end commercial units elsewhere within the Sandyford District meaning that more people can live and work within the immediate area.
- d. Provision of alternative car transport measures such as a car club, eg Go Car, which will be provided at the upper basement level.
- e. Cross sharing with retail car parking – where additional ad hoc short term visitor parking is required for the residential scheme such parking would reasonably be accommodated within the retail parking. As set out below – the parking provision for the retail element of the previously permitted development is some 2.5 times higher than what is currently permitted under the 2016-2022 Development Plan.

- f. Precedence – the previously approved residential developments such as at the Avid site (ref D16A/0158) and Tivway site (ref ABP-301428-18), which are located near the RB Central site, were approved with a lower car parking provisions.
- (2) As the proposed retail unit for this element of the development is small and local in nature – ie a convenience store, it would not be expected that additional trips would be generated. Further, the current development plan permits 1 space per 50m² retail GFA compared to the previous allowance of 1 space per 20m². Therefore the existing parking provision for the already completed retail will adequately accommodate the additional retail proposed under this application. The nett overall provision of parking for retail equates to one space per 27m².

The rationale with respect to allocation of the various types of parking are similar to those previously proposed. The short term retail, restaurant and crèche parking will be accommodated at the Basement -1 level. Long stay residential and office parking will be provided at Basement -2 and -3 levels.

The Basement -1 floor level will be accessed and egressed via Blackthorn Drive to the north of the site, whilst Basement -2 and -3 will be accessed via Carmanhall Road to the south of the site. Provision has been made to enable emergency alternative movement of cars via the respective accesses via locked gateway at level -1 basement level.

The commercial car parking at Basement -1 level will operate as a pay and display in order to restrict parking to short term only. It is proposed that a barrier controlled access system will be implement on completion of the RB Central scheme, with pay stations located within the Basement -1 level. The system will be managed by a contractor. Access to the residential and office parking areas at Basement -2 and -3 levels will be restricted to residents and office use only via a proprietary fob system as is currently employed for the residential on the site in order to control access and provide security.

The car parking layout is shown on the Architect's drawings. It is proposed to provide the 1,445 off street car park spaces within the site at the following locations:

Use	Basement Level			total
	-1	-2	-3	
<i>Existing permitted scheme built/committed (Not included in this application)</i>				
Retail	233			233
Restaurant/Café	19			19
Office		154	112	266
Residential (blocks A&D)		195		195
		224		224
<i>RB Central Residential Scheme</i>				
Residential		210	218	428
residentialvisitor	46			46
Creche	15			15
Retail	17			17
CarShare	2			2
BasementTotal	332	783	330	1,445

Table 14.3 Off Street Car Park Spaces

The number of disabled spaces provided for the new development totals 21 spaces. This figure is compliant with the County Development Plan 2016-2022 requirements.

Three no. additional short duration car park spaces are also proposed at street level on Carmanhall Road to facilitate convenient crèche drop off and pick up.

Electric Charging Points

To encourage the use of Electric Vehicles, the development will provide Electric Vehicle Charging spaces as follows:

- One electric charging space per ten car park spaces for the new development. This equates to 52 spaces total. They will be distributed within the Basement levels as shown on the architect's drawings.

Car Sharing

Two additional car park spaces have been allocated at the upper basement level to facilitate car sharing. This provision will be monitored, should there be additional requirements for car sharing, spaces will be allocated.

Motorcycle Spaces

The total number of motorcycle spaces provided for proposed development totals 37 spaces for the new development. This figure is compliant with the County Development Plan 2016-2022 requirements.

Pedestrian and Cycle Facilities

Pedestrians will be catered for primarily by continued facilitation of the Boulevard which runs diagonally through the Rockbrook/RB Central site on a southwest to northeast direction. The Boulevard provides connectivity to the new blocks and onward connection to the Stillorgan Green Line Luas Stop and Blackthorn Drive - West. The streetscape to Carmanhall Road will be improved to provide an integration of development proposals.

There are currently 410 short and long term cycle spaces provided for the existing constructed scheme. These will continue to be accessed as per the existing scheme. Cycle facilities required for the Sentinel Office development are accommodated within that development's demise and are not considered here. A total of 593 cycle spaces will be provided for the development works associated with this proposal. The cycle parking provision is in accordance with the County Development Plan 2016-2022 and the *DLR Standards for Cycle Parking and associated Cycling Facilities for New Developments 2018*. Short term spaces will be provided at ground level, whilst long term spaces will be provided at basement level -1.

Short term cycle facilities are located at various locations at Level 0, readily accessible from Carmanhall Road. The Boulevard provides access to Blackthorn Drive. There will also be connectivity provided to the Tivway scheme at the north eastern boundary of the proposed scheme.

Long term secure cycle parking, with 463 spaces, is located in basement -1, accessed via a dedicated bicycle lane off the cycle network on (refer figure 14.2 above) Blackthorn Drive. In taking advantage of the existing level difference between Blackthorn Drive and Carmanhall Road, the cycle ramp has a favourable gradient of 1:47 for cyclists accessing the basement parking. Level difference between Carmanhall Road and the existing level -1 basement dictates that it is not feasible to provide an access ramp of required gradient to the long-term cycle parking facilities from that streetscape. This is due to the historic design/partially completed building. However, the long term cycle facilities are readily accessible from lift cores for the proposed development. Additionally, the long term spaces will be readily accessible from the Boulevard /Carmanhall Road area via the existing traveller or lift at the northern edge of the buildings. These facilities will ensure ease of access for both residential and business users to short as well as long term cycle spaces. All of the measures proposed ensure compliance with *DLR Standards for Cycle Parking and associated Cycling Facilities for New Developments 2018*.

Access routes to and from Blackthorn Drive and Carmanhall Road together with travel distances routes to and from Carmanhall Road are highlighted on drawing CST Group drawing 118139/03.

The long term secure cycle storage facilities will be managed via the on site office which the developer IRES currently uses within the existing development. CCTV monitoring will be used to ensure adequate security. Access will be via fobs issued via the management office.

User Group	No/Area	Type	Rate	Required No.	Provided No.	Surplus/ (Shortfall)
Residential	428 units	short term	1 per 5 unit	86	110	24
		long term	1 per unit	428	451	23
Retail	865m ²	short term	1 per 100m ²	9	10	1
		long term	1 per 5 staff	6	6	-
Crèche	486m ²	short term	1 per 10 children	8	10	2
		long term	1 per 5 staff	6	6	-
		Total Short Term		103	130	27
		Total Long Term		440	463	23
		Overall Total		543	593	50

Table 14.4 Cycle Parking for the RB Central development

Above ground facilities will generally be Sheffield type stands or similar approved.

A quality audit as required under 8.2.4.1 of the Development Plan 2016-2022 has been carried out. As the proposals are contained within the demise of the site, the audit has focussed on non-motorised road users facilities. The report and response are set out in Appendix 14.2.

14.5 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

14.5.1 Construction Phase

It is anticipated that following grant of planning permission construction would commence in early 2020 and be completed within up to a 2.5 - 3 year timeframe. The volumes of traffic that will be generated during the construction phase of the development will be small in comparison to the traffic volumes generated by the operation of the development during the peak hour periods.

Additionally, it should be noted that a significant part of the generated construction traffic for a project of this type would be associated with the excavation of the basement and delivery of materials for the accommodation construction. In this particular case, the basement is substantially constructed, with only some floors requiring construction to complete the scheme. Also, the utilisation of prefabricated construction will reduce the deliveries of materials, as well as reduce the number of trades on site. It is envisaged that normal working hours will be from 07:00 to 19:00 hours, and will engage a peak maximum of 200 construction personnel. It would be expected that car parking will be limited, and already constructed basement facilities will be utilised.

A quantitative analysis for the construction stage would yield lower ratio of flow to capacity results than the worst case scenario considered in the report which is the 2031 peak hour. The construction stage therefore does not require quantitative traffic analysis, however in order to minimise disruption due to construction wheel washing facilities, or other cleaning measures will be installed at the site access during the construction stage to reduce the amount of dirt and debris carried on to the public roadway during the excavation operations etc.

14.5.2 Operational Phase - Car Trips

A comparison of the traffic generated by the previously permitted scheme under the D07A/0975 permission with the current proposals has been made. The parent permission to D07A/0975, i.e. D05A/1159, is not compared here as D07A/0975 is the most recent permission. As part of the assessment of the new development a traffic survey was carried out at the existing site access as well as a number of nearby junctions. The survey was undertaken on Thursday 8 December 2016. The information derived informs us to the trip rates now actually generated by the existing retail and residential development. Previously used trip rates for the restaurant/café and offices were used for comparative purposes.

The peak hour trip rates used in the D07A/0975 application were:

Land Use	Units	AM Peak		PM Peak	
		Arr	Dep	Arr	Dep
Apartments	per unit	0.060	0.380	0.360	0.100
Restaurant/café	per 100m ² GFA	-	-	4.410	1.838
Retail	per 100m ² GFA	1.908	1.228	4.948	4.862
Offices	per 100m ² GFA	2.232	0.342	0.318	1.978

Table 14.5 Trip Rates for D07A/0975 application

The trip rates used for the assessment of the proposed development together with permitted offices are:

Land Use	Units	AM Peak		PM Peak	
		Arr	Dep	Arr	Dep
Apartments	per unit	0.050	0.138	0.091	0.041
Restaurant/café	per 100m ² GFA	-	-	4.410	1.838
Retail	per 100m ² GFA	1.952	0.276	1.528	1.868
Offices	per 100m ² GFA	2.232	0.342	0.318	1.978

Table 14.6 Trip Rates for current application

Comparing the two tables it can be seen that the trip rates observed are significantly lower than those which were used for the 2005 application. These lower trip rates are reflections of the high take up of use of Luas and other non private transport by users of the site.

The total number of trips generated by this development under the previous application and under the current application would as per Table 14.7 and Table 14.8.

D07A/0975 Arrivals and Departures

Land Use	units			AM Peak		PM Peak	
				arr	dep	arr	dep
Apartments	per unit	910	no.	55	346	328	91
Restaurant/café	per 100m ² GFA	1,314	m ²	-	-	58	24
Retail	per 100m ² GFA	11,472	m ²	219	141	568	558
Offices	per 100m ² GFA	13,287	m ²	297	45	42	263
Total Trips				570	532	995	936

Table 14.7 Trips for D07A/0975 application

Proposed Scheme with existing permitted and completed development

Land Use	Units			AM Peak		PM Peak	
				Arr	Dep	Arr	Dep
Apartments	per unit	847	no.	42	117	77	35
Restaurant/café	per 100m ² GFA	250	m ²	0	0	11	5
Retail	per 100m ² GFA	6,836	m ²	133	19	104	128
Offices	per 100m ² GFA	13,287	m ²	297	45	42	263
Total Trips				472	181	235	430

Table 14.8 Trips for current application

As can be seen in the above tables there will be an overall decrease in trips now generated by this overall development. The relative routing of the existing and proposed development traffic will be as set out in section 7 of the Junction Analyses Report. The resultant trips via the two accesses for each of the peak hours will as per the Tables 14.9 and 14.10 for the respective AM and PM peaks:

AM Peak					
Land Use	Direction	Blackthorn Dr	Carmanhall Rd	Total	% change
<i>D07A/0975 Scheme</i>					
Retail/Restaurant/ Creche/Community	Arr	219	-	219	
	Dep	127	14	141	
Residential/Office	Arr	-	351	351	
	Dep	-	391	391	
Total		346	756	1,102	
<i>Proposed Scheme with Permitted Development</i>					
Retail/Restaurant/ Creche/Community	Arr	133	-	133	-39%
	Dep	19	-	19	-87%
Residential/Office	Arr	-	339	339	-3%
	Dep	-	162	162	-58%
Total		152	501	654	-41%
% change	Arr	-39%	-3%		
	Dep	-85%	-60%		

Table 14.9 AM Peak Trip Allocation

PM Peak					
Land Use	Direction	Blackthorn Dr	Carmanhall Rd	Total	% change
<i>D07A/0975 Scheme</i>					
Retail/Restaurant/ Creche/Community	arr	626	-	626	
	dep	524	58	582	
Residential/Office	arr	-	370	370	
	dep	-	354	354	
Total		1,150	782	1,932	
<i>Proposed Scheme with Permitted Development</i>					
Retail/Restaurant/ Creche/Community	arr	115	-	115	-82%
	dep	132	-	132	-77%
Residential/Office	arr	-	119	119	-68%
	dep	-	298	298	-16%
Total		248	417	665	-66%
% change	arr	-82%	-68%		
	dep	-75%	-28%		

Table 14.10 PM Peak Trip Allocation

It is worth noting that overall fewer trips from the development will occur due to the omission of previously permitted development. The reduction in trips would be 448 and 1,267 for the AM and PM peaks respectively. These represent decreases of 41% and 66% trips attributed to the overall development for the respective peaks. The nett result will be a decrease in the number of trips at each of the accesses due to the revised scheme.

14.5.3 Network Analysis – Do Nothing v Do Something

A quantitative assessment of five junctions in the vicinity of the site was carried out as per the agreed scoping with the local authority, to assess the impact of the proposals. They were:

- Junction 1 Blackthorn Dr/Carmanhall Rd/Birch Ave four-arm signalised junction;
- Junction 2 Carmanhall Rd/Site Access – three-arm priority junction;
- Junction 3 Carmanhall Rd/Corrig Rd – three-arm priority junction;
- Junction 4 Carmanhall Rd/Blackthorn Rd – three-arm priority junction;
- Junction 5 Blackthorn Dr/Site Access – three-arm priority junction.

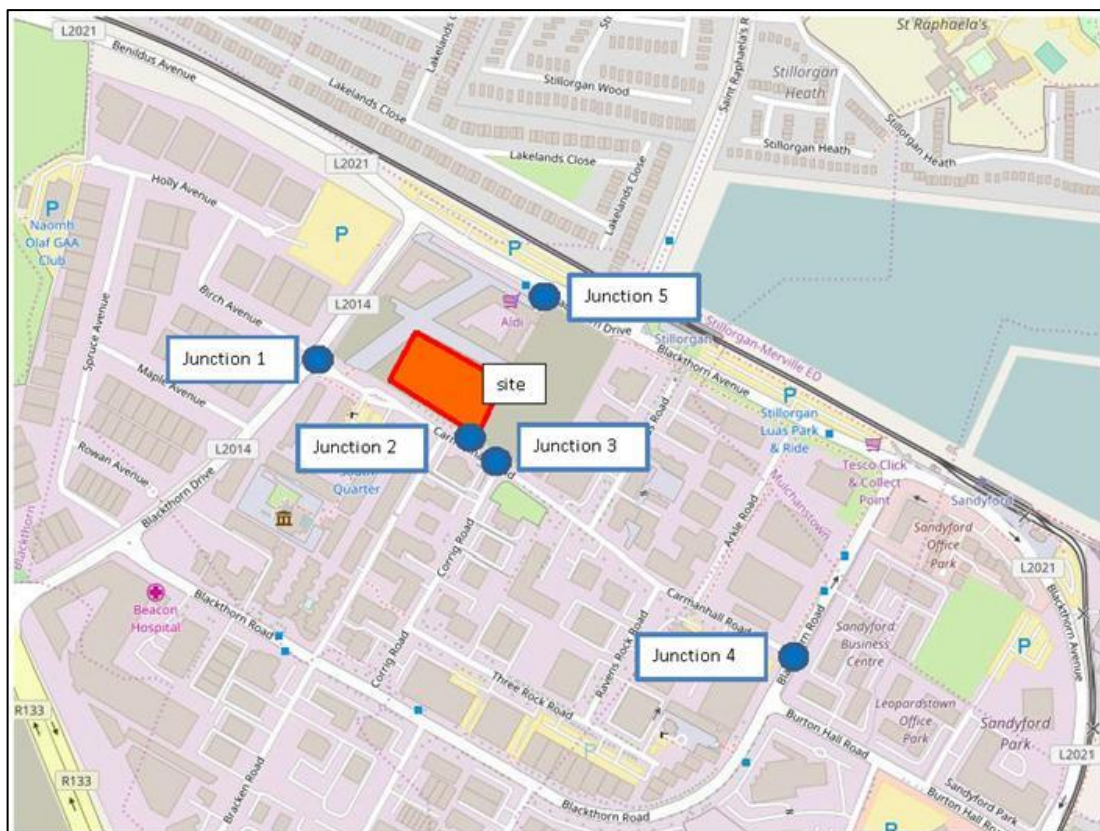


Figure 14.4: Junction Locations (Source- OpenStreetMap contributors)

The assessments considered both the proposed development at the site as well as committed office development under existing permissions.

The percentage uplift of traffic on existing junctions was established by calculating the total additional traffic at the junction due to the development as a percentage of the total traffic on the junction in 2021. This was used to assess the relative impact of the works on the traffic flows and are set out in Table 14.11.

Year/ Peak	Junction 1 Blackthorn Dr/ Carmanhall Rd/Birch Ave	Junction 2 Carmanhall Rd/Site Access (new)	Junction 3 Carmanhall Rd/Corrig Rd	Junction 4 Carmanhall Rd/ Blackthorn Rd	Junction 5 Blackthorn Dr/Site Access
2021 AM	4.3%	16.4%	5.9%	3.3%	0.0%
2031 AM	3.8%	15.1%	5.3%	3.0%	0.0%
2021 PM	2.5%	10.8%	3.7%	1.9%	2.3%
2031 PM	2.3%	10.0%	3.3%	1.7%	2.1%

Table 14.11 Additional Traffic at junctions due to the development

Under the requirements of National Roads Authority's (now TII) Traffic and Transport Assessment Guidelines 2014 if the impact of a new development amounts more than 10% additional traffic on the local network the impact is considered material even if the local network is not experiencing prolonged congestion. Where the network is experiencing prolonged congestion during peak period this threshold is reduced to 5%. The table above shows the additional traffic added to the junctions due to the development, even assuming all junctions are congested, would not be considered to have a material impact for Junctions 1, 4 and 5.

All junctions were assessed for the Do Nothing, and Do Something scenarios. Output information is set out in Appendix 14.3.

A. Junction 1 Blackthorn Dr/Carmanhall Rd/Birch Ave

This junction forms part of the road improvement proposals carried out in support of the original 2005 approval for the site. When considering signalised junctions a positive Percentage Residual Capacity (PRC) would indicate that a junction has sufficient spare capacity.

This four arm signalised junction was assessed using LinSig software. The results are set out in Table 14.12.

	PRC (%)	Ave Queue (pcu's)
2016 AM Existing	71.4	8.2
2021 AM Do Nothing	5.2	15.9
2021 AM Do Something	0.8	18.6
2031 AM Do Nothing	-11.3	33.7
2031 AM Do Something	-16.2	52.4
2016 PM Existing	75.1	12.3
2021 PM Do Nothing	25.6	16.8
2021 PM Do Something	20.5	21.0
2031 PM Do Nothing	1.3	31.8
2031 PM Do Something	2.9	34.2

Table 14.12: Junction 1 PRC and Queue

The LinSig analysis predicts that this junction has a shortfall in capacity at the design year as there is a minimum of -16.2% Percent of Reserve Capacity (PRC).

B. Junction 2 Carmanhall Rd/Site Access

This priority junction was analysed using PICADY software. When considering priority controlled junctions a Ratio of Flow to Capacity (RFC) of greater than 85% (0.850) would indicate that is junction is nearing capacity.

The results of the operational assessment of this priority junction during the weekday morning and evening peaks is summarised in Table 14.13.

The arms are labelled as follows: Arm A: Carmanhall Rd West;
 Arm B: Development;
 Arm C: Carmanhall Rd East.

	Arm	RFC (Max)	Max. Queue (pcu's)
2016 AM Existing	B-AC	-	-
	C-AB	-	-
2021 AM Do Nothing	B-AC	0.139	0.1
	C-AB	0.221	0.2
2021 AM Do Something	B-AC	0.540	1.1
	C-AB	0.260	0.4
2031 AM Do Nothing	B-AC	0.146	0.2
	C-AB	0.228	0.3
2031 AM Do Something	B-AC	0.571	1.3
	C-AB	0.268	0.4
2016 PM Existing	B-AC	-	-
	C-AB	-	-
2021 PM Do Nothing	B-AC	0.683	2.0
	C-AB	0.026	0.0
2021 PM Do Something	B-AC	0.803	3.7
	C-AB	0.077	0.1
2031 PM Do Nothing	B-AC	0.708	2.3
	C-AB	0.026	0.0
2031 PM Do Something	B-AC	0.834	1.8
	C-AB	0.062	0.1

Table 14.13: Junction 2 RFC and Queue

The results indicate that the junction will operate well within capacity during the morning peak, and that a maximum RFC value of 0.834 will occur on the right turn from the site arm into Carmanhall Road for the 2031 PM peak, and there will be minimal queuing.

C. Junction 3 Carmanhall Rd/Corrig Rd

The results of the operational assessment of this priority junction during the weekday morning and evening peaks is summarised in Table 14.14.

The arms are labelled as follows:

Arm A: Carmanhall Rd East

Arm B: Corrig Road

Arm C: Carmanhall Rd West

	Arm	RFC (Max)	Max. Queue (pcu's)
2016 AM Existing	B-AC	0.515	1.0
	C-AB	0.147	1.5
2021 AM Do Nothing	B-AC	0.614	1.5
	C-AB	0.180	0.3
2021 AM Do Something	B-AC	0.630	1.7
	C-AB	0.181	0.3
2031 AM Do Nothing	B-AC	0.723	2.4
	C-AB	0.203	0.3
2031 AM Do Something	B-AC	0.743	2.7
	C-AB	0.205	0.3
2016 PM Existing	B-AC	0.439	0.8
	C-AB	0.066	0.1
2021 PM Do Nothing	B-AC	0.501	1.0
	C-AB	0.078	0.1
2021 PM Do Something	B-AC	0.509	1.0
	C-AB	0.078	0.1
2031 PM Do Nothing	B-AC	0.580	1.3
	C-AB	0.089	0.1
2031 PM Do Something	B-AC	0.590	0.9
	C-AB	0.071	0.1

Table 14.14: Junction 3 RFC and Queue

The results indicate that the junction will operate well within capacity during both peaks, with a maximum RFC value of 0.562 and 0.465 will occur on the right turn from the Corrig Road arm into Carmanhall Road for the 2031 AM and PM peaks respectively and there will be minimal queuing.

D. Junction 4 Carmanhall Rd/Blackthorn Rd

The results of the operational assessment of this priority junction during the weekday morning and evening peaks is summarised in Table 14.15.

The arms are labelled as follows:

Arm A: Blackthorn Rd South

Arm B: Carmanhall Road

Arm C: Blackthorn Rd North

	Arm	RFC (Max)	Max. Queue (pcu's)
2016 AM Existing	B-AC	0.416	0.7
	C-AB	0.262	0.4
2021 AM Do Nothing	B-AC	0.715	2.3
	C-AB	0.374	0.6
2021 AM Do Something	B-AC	0.833	3.9
	C-AB	0.350	0.6
2031 AM Do Nothing	B-AC	0.855	4.9
	C-AB	0.471	0.9
2031 AM Do Something	B-AC	0.985	12
	C-AB	0.482	0.9
2016 PM Existing	B-AC	0.875	5.7
	C-AB	0.106	0.1
2021 PM Do Nothing	B-AC	1.690	83
	C-AB	0.194	0.2
2021 PM Do Something	B-AC	1.758	176
	C-AB	0.201	0.3
2031 PM Do Nothing	B-AC	2.089	248
	C-AB	0.247	0.3
2031 PM Do Something	B-AC	2.171	227
	C-AB	0.257	0.2

Table 14.15: Junction 2 RFC and Queue

The results indicate that the junction will operate over capacity during the morning peak in the design year – even in the do nothing scenario, and that a maximum RFC value of 0.985 will occur on the turn from Carmanhall Road into Blackthorn Road for the 2031 AM peak, and there will be minimal queuing.

However, the results show that the junction in its current form is at capacity for the PM peak, and that with committed development in the Sandyford area coming on stream the capacity will deteriorate further leading to substantial queuing. As previously stated the assessment for the 2021 year assumes that all the committed development has been delivered by that time – which is unlikely to be the case.

It needs to be remembered that the RB Central Residential development will contribute little to this lack of capacity as highlighted in the previous section. It should also be borne in mind that the queuing will occur on the Carmanhall Arm – which is the minor arm at the junction as Blackthorn Road is the distributor route. Whilst the theoretical figures indicate that there would be insufficient capacity it would be anticipated that traffic would reroute locally from this junction and enter the larger road network through either the Corrig Road or Blackthorn Drive junctions, both of which suffer minimal queuing during the PM peak.

Further, the survey records highlight that queuing at the junction has significant fluctuations. An excerpt from the survey set out in the table below for the period of 15 minutes either side of the peak hour flow shows that queues are clearing quickly, and there is not sustained congestion at the junction.

Time Start	Queue Length (pcu's)
16:45	1
16:50	3
16:55	0
17:00	0
17:05	5
17:10	15
17:15	15
17:20	4
17:25	10
17:30	0
17:35	0
17:40	15
17:45	0
17:50	13
17:55	0
18:00	0
18:05	2
18:10	4
18:15	5

Table 14.16: Recorded Queue Length at Junction 4

DLRCC agree that the congestion at this junction is predominantly due to other proposed developments and that RB Central will have a relatively minor impact.

E. Junction 5 Blackthorn Dr/Site Access

The results of the operational assessment of this priority junction during the weekday morning and evening peaks is summarised in Table 8 below.

The arms are labelled as follows:

Arm A: Blackthorn Drive East

Arm B: Site Access

Arm C: Blackthorn Drive West

	Arm	RFC (Max)	Max. Queue (pcu's)
2016 AM Existing	B-AC	0.142	0.2
	C-AB	0.088	0.1
2021 AM Do Nothing	B-AC	0.158	0.2
	C-AB	0.096	0.1
2021 AM Do Something	B-AC	0.043	0.0
	C-AB	0.119	0.1
2031 AM Do Nothing	B-AC	0.185	0.2
	C-AB	0.111	0.1
2031 AM Do Something	B-AC	0.064	0.1
	C-AB	0.134	0.2
2016 PM Existing	B-AC	0.222	0.3
	C-AB	0.079	0.1
2021 PM Do Nothing	B-AC	0.250	0.3
	C-AB	0.088	0.1
2021 PM Do Something	B-AC	0.305	0.4
	C-AB	0.088	0.1
2031 PM Do Nothing	B-AC	0.300	0.4
	C-AB	0.102	0.1
2031 PM Do Something	B-AC	0.350	0.5
	C-AB	0.102	0.1

Table 14.17: Junction 5 RFC and Queue

The results indicate that the junction will operate well within capacity during both peaks, with a maximum RFC value of 0.111 and 0.102 will occur on the right turn from the Blackthorn Drive West arm into the site access for the 2031 AM and PM do nothing peaks (since with the construction of the Carmanhall access residential traffic will be routed away from this junction) respectively and there will be minimal queuing, and similarly the site access arm will exhibit ample capacity for all peaks.

Conclusion

The assessment of the junctions in the vicinity of the site has established that all junctions except the Junction 1 Blackthorn Dr/Carmanhall Rd/Birch Ave four-arm signalised junction and Junction 4 - Carmanhall Road/Blackthorn Road junction (PM) will operate within capacity. The development at RB Central Apartment Development site will however contribute negligible additional traffic at these junctions and its quantum at 1.9% for the 2021 PM peak is considerably below the five percent threshold permitted under the requirements for Transport Assessments.

In terms of the greater road network in the area a greater quantum of residential development was accounted for in the preparation of the transportation model for Sandyford than is now being applied for. Additionally the trip rates being achieved for the previously constructed residential element of the scheme and which are applicable to the traffic generated for this proposal are considerably lower than the trip rates used for the transport assessment the previous applications. These are reflective of the greater use of non-motorised transport by residents.

Service and Delivery Trips

Service and delivery trips to and from the development will be via the northern access, as is currently carried out. It is envisaged that the majority of delivery vehicle trips will occur during off-peak times, however the TRICS traffic generation exercise carried out for the retail element of the development includes an element of delivery trips.

14.6 MITIGATION MEASURES

Construction Phase

During the construction phase the site will be accessed via Carmanhall Road. This will reduce the impact of the works on the surrounding previously constructed development and the surrounding road network. Additionally, the fact that the works for the basement construction will be utilising the same footprint as for the previously granted permission will reduce the need for excavation and disposal.

An Outline Construction Management Plan is required in accordance with County Development Plan 2016-2022, a preliminary version of which is set out as part of the planning pack. The Plan includes a section which covers the Preliminary Traffic Management Plan.

Operational Phase

Mitigation measures put in place will include the adoption of a travel plan to ensure consistency with the County Development Plan requirement to reduce dependency on private car transport. The provision of the requisite Travel Plan as required will be developed further prior to occupation of the site. The attached draft Travel Plan contained in Appendix 14.4 will form the basis for the operational phase plan. The draft Travel Plan will also form part of the Construction Traffic Management Plan and will be agreed with DLRCC prior to commencement of works on site.

The SUFP identified a number of road improvement schemes which would be needed to ensure adequate capacity for further development within the Sandyford District under a six year time frame. These include (numbers as per the SUFP numbering system):

- (1) M50 Diverge Ramp to ESB Link Road (preferred) or Heather Road
- (2a) Leopardstown Link Road
- (3) Bracken Road Extension
- (6) ESB Link Road & Link to Arena Road
- (7) Leopardstown Roundabout Reconfiguration
- (9) Bus Priority Schemes.

The locations of the schemes are set out in the Figure 14.5.

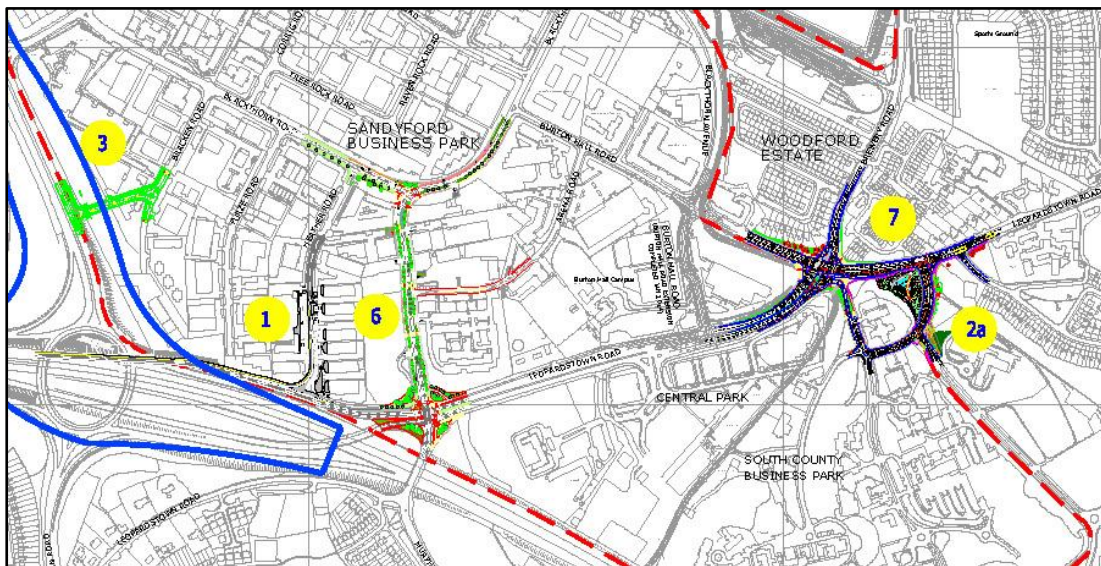


Figure 14.5– 6 Year Road Infrastructure Objectives Excerpt from SUFP Drawing 8

Of these schemes, 2a and 7 have recently been completed and are opened to the public whilst scheme 6 has planning approval. These proposed and completed road schemes will further enhance capacity within the Sandyford district.

The road improvement works proposed under permission D07A/0975 have been completed, and contribute to the mitigation of the impact of the overall scheme including those works proposed under this application.

14.7 PREDICTED IMPACTS

Construction Phase

The volumes of traffic that will be generated during the construction phase of the development will be small in comparison to the traffic volumes generated by the operation of the development during the peak hour periods. A quantitative analysis for the construction stage would yield lower ratio of flow to capacity results than the design year.

The construction stage therefore does not require quantitative traffic analysis, however in order to minimise disruption due to construction wheel washing facilities, or other cleaning measures will be installed at the site access during the construction stage to reduce the amount of dirt and debris carried on to the public roadway during any excavation operations etc.

Operational Phase

The overall impact of this development will be less than that which formed the previous planning applications on the site. As the generated traffic from that proposal was accounted for in the proposals for local road improvements as well as the overall traffic model for Sandyford District it would be expected that the proposed development works will result in under capacity on the road network.

14.8

MONITORING

During the ongoing construction phase there will be ongoing monitoring by the Contractor to ensure:

- Compliance with Construction Stage Management Plan
- Adequacy of Site and External Control Measures
- Compliance with requirements of DLRC for any road opening licences.

During the operational phase of the development monitoring of the Travel Plan will be undertaken to ensure its compliance and ongoing relevance, and to update where necessary for new initiatives that may be relevant to the overall developments ongoing success in reducing reliance on car transport.