

## 12 Traffic & Transportation

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## 12.1 Introduction

The Transportation Assessment (TA) set out in this chapter of the EIAR has been prepared by NRB Consulting Engineers Ltd and addresses the Traffic/Transportation impacts associated with the proposed strategic housing development at St. Teresa’s, Temple Hill, Monkstown, Blackrock, Co Dublin.

## 12.2 Methodology

The chapter of the EIAR has been prepared in accordance with TII’s Traffic & Transportation Assessment Guidelines and addresses the worst case traffic impact of the proposal.

Comprehensive classified turning movement surveys of the existing roads and junctions during the weekday AM and PM Peak Hours were carried out prior to the Covid 19 Pandemic. These surveys were supplemented by additional validation traffic surveys undertaken in October 2020, due to DLRCC implemented changes at the adjacent traffic signal controlled junction, and were in turn validated based on a review of 2021 TII Traffic Counter Data.

These traffic surveys together formed the basis of the study. The analysis includes the effects of the existing traffic on the local roads and assesses the impact during the traditional peak commuter peaks periods. The assessment also takes account of the committed development (permitted and under construction nearby at the Frascati Centre & at Enterprise House).

An appraisal and assessment of Non-Car Transport modes has been undertaken and this is set out within Section 6 of the appended TA Report, forming part of this EIAR.

## 12.3 Receiving Environment

The site is in Blackrock, within easy walking distance of Dublin Bus Stops on the adjacent N31 Bus Corridor, and also close to Seapoint and Blackrock Rail / Dart Stations and is therefore ideally placed to accommodate the Transportation Demands associated with this scale of development.

The site is bounded along the northern boundary by the N31 Temple Road, to the east by the existing St Vincent's Park Residential Development, to the west by St Louise's Park and the Alzheimer Society of Ireland, and to the south by undeveloped parklands and the established convent buildings.

The road along the northern boundary of the site is the N31 National Secondary Road which is one of the city's main commuter routes, also serving the port of Dun Laoghaire, connecting to the N11. The N31 is a wide urban dual carriageway with a series of large traffic signal controlled junctions along its length, serving local areas as well as commercial development such as Blackrock Village, Blackrock Shopping Centre and the Frascati Shopping Centre located to the north of the subject site. The N31 is subject to a 50kph urban speed restriction. The N31 carries a weekday AM Peak Hour 2-way flow of approximately 2,100 PCUs and a weekday PM Peak Hour 2-Way flow of approximately 2,500 PCUs, and in these terms, it can be considered as quite heavily trafficked.

The junction of the N31/Seapoint Ave/St Vincent's Park takes the form of a large 4-arm traffic signal controlled junction. The junction has relatively recently been upgraded, however the layout remains substandard in terms of modern & safe roads design, due primarily to the requirement to maintain access to St Vincent's Park with a non-standard geometric layout, and a left turn diverge lane that crosses the city bound cycle lane.

DLRCC previously commissioned studies looking at the accessibility of the subject lands and the existing junction was identified as the preferred location for providing vehicular access, by way of an upgraded traffic signal controlled junction. The junction proposed to serve the subject 493-unit SHD consists of an upgraded traditional 4-arm at grade traffic signal controlled junction, incorporating dedicated controlled crossing facilities for pedestrians and cyclists. The inclusion of the Carmond lands allows a small but beneficial further improvement to the alignment of the vehicular access road leading to St Vincent’s Park.

The existing residential development of St Vincent's Park adjacent the site is a low density development, consisting of approximately 30 residential houses. In these terms St Vincent's Park is demonstrably a very low generator of vehicular movements.

To the west of the site, St Louise's Park provides access to Traveller Accommodation and also to the Headquarters of the Alzheimers Society of Ireland. Like St Vincent's Park, it is a low generator of vehicle movements.

A site layout plan showing the development arrangement in relation to the existing site and roads is included herein as **Appendix A** along with further details of the redeveloped improved access and egresses. We also include TRACK (Vehicle Swept Path) drawings and a drawing illustrating how the parking spaces provided can readily be upgraded to provide for electric vehicle charging if required based on end-user demand.

Notwithstanding the highly accessible and permeable network and links as set out above, the site is ideally placed to benefit from accessibility by non-car modes of travel (walking, cycling, Bus and DART/Rail). All of these are described in greater detail within **Section 6** of the appended TA Report and in the accompanying MMP included as **Appendix H** within the TA.

A review of the Road Safety Authority (RSA) online collision database indicates that there is a cluster of (minor) vehicular collisions occurring on the N31 at the adjacent Traffic Signal Controlled Junction, between 2005-date inclusive (Refer *Figure 12.1* Below). It should also be noted that the proposed use of the site represents a reduced intensification in terms of traffic generation when compared to the historic former uses, in that the original use of the lands by religious orders likely generated higher traffic volumes than the proposed apartment scheme - and the proposals now include significant upgrade and improvement in terms of the design and operation of the existing junction.

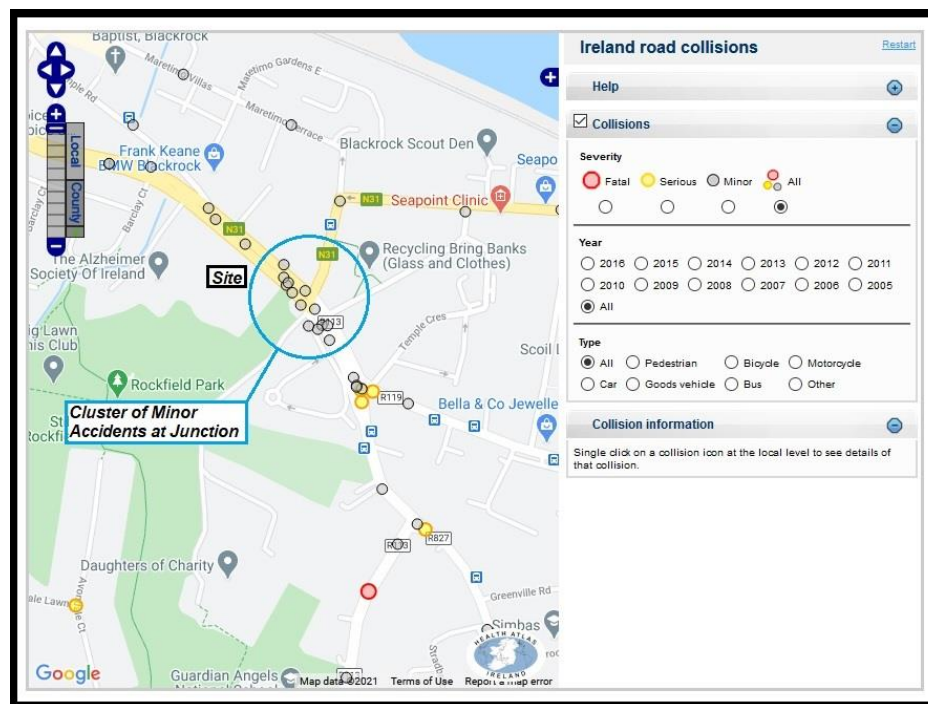


Figure 12.1 – Extract RSA Database of Road Traffic Accidents

## 12.4 Characteristics Of The Proposed Development

The proposed development comprises 493 residential units delivered in a combination of new apartment buildings (ranging in height from 3- 10 storeys overall in height) and a relocated St. Teresa’s Lodge.

St. Teresa’s House provides for 6 apartments, comprising 5 no. 2-bed units and 1 no. 3-bed unit. The new build element of 487 units is set out in 11 no. residential development blocks (Blocks A1- C2 and D1 – E2) ranging in height from 3-10 storeys over basement comprising:

- Block A1 (5 storeys) comprising 37 no. apartments (33 no. 1 bed units and 4 no. 2 bed units)
- Block B1 (10 storeys) comprising 55 no. apartments (37 no. 1 bed units, 10 no. 2 bed units and 8 no. 3 bed units)
- Block B2 (8 storeys) comprising 42 no. apartments (28 no. 1 beds, 9 no. 2 beds and 5 no. 3 beds)
- Block B3 (8 storeys) comprising 42 no. apartments (28 no. 1 beds, 9 no. 2 beds and 5 no. 3 beds)
- Block B4 (5 storeys) comprising 41 no. apartments (4 no. studio units, 4 no. 1 bed units, 27 no. 2 bed units and 6 no. 3 bed units).
- Block C1 (3 storeys) comprising 10 no. apartments (1 no. studio unit, 3 no. 1 bed units and 6 no. 2 bed units).
- Block C2 (3 storeys) comprising 6 no. apartments (2 no. 1 bed units, 4 no. 2 bed units,) together with a creche facility of 392 sq. m at ground floor level and outdoor play area space of 302sq.m
- Block C3 (1 storey plus basement level) comprising residential amenity space of 451 sq. m.
- Block D1 (6 storeys) comprising 134 no. apartments (12 no. studio units, 22 no. 1 bed units, 90 no. 2 bed units and 10 no. 3 bed units).

- Block E1 (6 storeys) comprising 70 apartment units (34 no. 1 bed units, 26 no. 2 bed units and 10 no. 3 bed units).
- Block E2 (6 storeys) comprising 50 units (1 no. studio unit, 29 no. 1 bed units, 18 no. 2 bed units and 2 no. 3 bed units).

Each residential unit has associated private open space in the form of a terrace/balcony.

Resident amenity space c. 451 sq. m. accommodating a gym and studio space at basement level; residents’ lounge/café, work booths/meeting room and reception/foyer/parcel store at ground floor.

Crèche facility of 392. sq. m.

252 no. residential car parking spaces (161 no. at basement level and 91 no. at surface level) and 20 motorcycle spaces at basement level are proposed. 8 no. car parking spaces for creche use are proposed at surface level.

1056 no. bicycle parking spaces (656 no. at basement level and 400 no. at surface level).

15,099.7 sq. m. public open space in the form of a central parkland, garden link, woodland parkland (incorporating an existing folly), a tree belt, entrance gardens, plazas, terraces, gardens, and roof terraces for Blocks B2 and B3.

The traffic generated by the proposed extension has been calculated based on the TRICS database, in accordance with industry standard practice, and the detailed calculation is included within the Appended TA. This traffic has then been all assigned to the road network to reflect conditions with & without the development in place and operational. No additional vehicular traffic is expected as a result of the small Crèche and Café, as these are considered to be ancillary to the use of the apartments and are not expected to generate any measurable or significant traffic volumes in their own right.

The Transportation Assessment Reports for both the Frascati Shopping Centre Extension (Ref D14A/0134) and the redevelopment of Enterprise House (D16A/0418) have been reviewed in order to assign traffic associated with these permitted and under-construction developments to the local roads. Details of the traffic are included within Pages 2/3 and Pages 7/8 of **Appendix D** of the TA Report. These adjacent committed developments are considered to be the most significant permitted developments locally affecting the roads in proximity to the subject development.

A robust assessment has been undertaken in order to ensure a thorough assessment of the potential impacts in terms of stress-testing the access junctions and the road capacity impact and implications of the scheme.

The traffic generation rates from real sites within the TRICS database take account of all vehicle movements, residents, visitors, staff, service vehicles, inbound & outbound trucks and vans associated with the proposed use.

The Trip Rates applied in this case are summarised below as **Table 12.1**.

493 Apartments	Arrivals (PCUs)		Departures (PCUs)		Total 2- Way Traffic Generated
	Per Apt	493 Apts	Per Apt	493 Apts	
Weekday AM Peak Hr	0.056	28	0.193	95	123
Weekday PM Peak Hr	0.177	87	0.083	41	128

**Table 12.1: TRICS Data Summary, 493 Residential Apartments (Absolute Worst Case) PCUs**

The above illustrates and confirms that this proposed development is clearly a relatively low generator of vehicular traffic, in the context of the local traffic conditions and in the context of the capacity of the local roads. We have included herein as Appendix C of the TA the TRICS data output for Apartments upon which the above Traffic Generation calculations are based.

In terms of the future development of the zoned lands to the south, these have also been assessed in terms of their impact on the network. The Blackrock LAP Mapping identifies that the lands to the south are to be accessed from Temple Hill (ie via the proposed junction). An extract from the LAP Mapping is included below as **Figure 12.2**

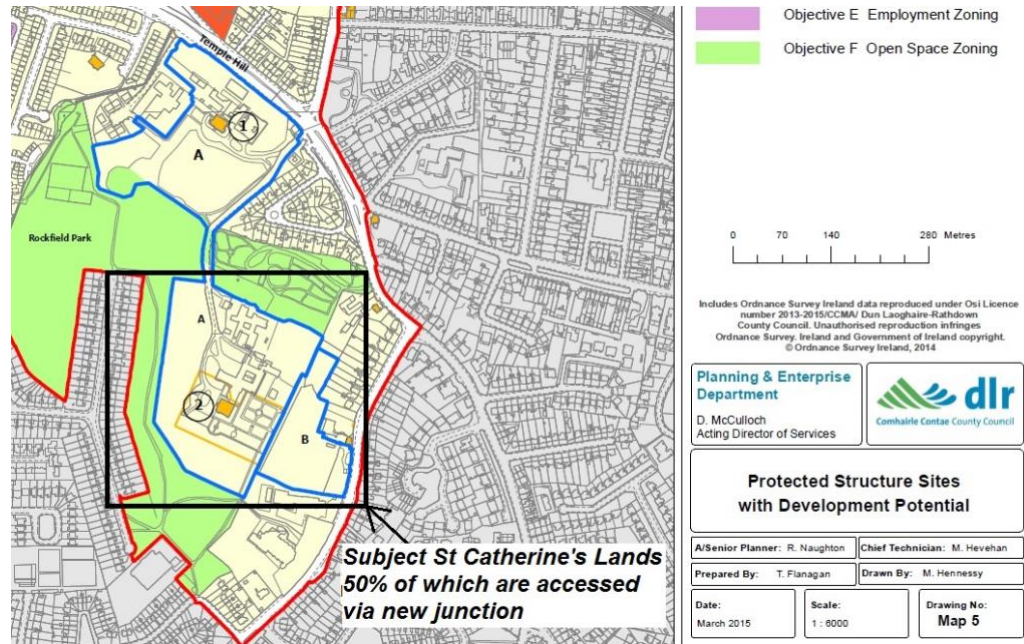


Figure 12.2 - Extract from LAP Map 5

Chapter 3, Page 30 of the Blackrock LAP identifies restrictions and access proposals for the lands with development potential, with effectively 50% via Newtownpark Avenue and 50% via the subject Temple Hill Traffic Signal Controlled junction. In this case we have therefore assigned 50% of the proposed St Catherine's SHD through the proposed signal controlled junction (ie 155 Residential Units). This is the same strategy and assessment methodology that was previously deployed for the permitted development of 291 units. The resulting Traffic Generated by these lands is therefore as illustrated in **Table 12.2** below. It should be noted that this traffic generated by the southern lands has been added to the traffic generated by the subject SHD Development in order to stress test the capacity if the traffic signal controlled vehicular access junction.

155 Apartments	Car Arrivals		Car Departures		Total 2-Way Car Traffic Generated
	Per Unit	155 Units	Per Unit	155 Units	
Weekday AM Peak	0.056	8	0.193	30	38
Weekday PM Peak	0.177	27	0.083	13	40

Table 12.2: TRICS Data Summary, 155 Residential Apartments at St Catherine's (PCUs)

### **Assignment/Distribution - Future Year Traffic**

Hand assignment techniques have been used, with the worst-case traffic as set out above assigned to the roads based on the observed established traffic patterns, and this represents industry standard practice.

The standard methodology applied was to firstly ascertain the base background traffic conditions for both the weekday AM and weekday PM Commuter Peak periods. We then used TII PE-PAG-02017 Project Appraisal Guidelines for National Roads Unit 5.3 to establish selected opening year 2025 and associated design year 2040 traffic conditions on the local road network, with the committed development traffic in place.

The worst case traffic based on the content of Table 12.1 and 12.2 above was then applied in order to establish selected Opening Year & associated Design Year Traffic Conditions. This is all included in the calculations included within the TA as **Appendix D**.

It should be noted that we have selected an opening year of 2025 as being reasonable and appropriate, given the scale of the plans. However, in our experience, varying the opening year and design year by 1-3 years will have no significant impact upon the conclusions of the study

Traffic growth factors for future year assessments were calculated from data obtained in the TII PE-PAG-02017 Project Appraisal Guidelines for National Roads Unit 5.3 (Travel Demand Projections, Table 6.1: Central Growth Rates: Annual Growth Factors Metropolitan Dublin). Calculations of the relevant revised growth factors are included in **Table 12.3** below (based on tabulated ‘Central growth’ in the Dublin Metropolitan Area).

Year	to Year	Table 6.1
Surveyed	2025	1.084
2025	2040	1.140

*Table 12.3: Traffic Growth Rates, TII PE-PAG-02017*

## **12.5 Potential Impacts Of The Proposed Development**

### **Construction Phase**

There is the potential for construction operations to cause an unreasonable or excessive impact on the operational performance of the road network, resulting in a traffic safety or capacity issue arising.

The effect of construction operations and traffic are also addressed in the Construction and Environmental Management Plan which is included as a separate appendix to this EIAR. The CEMP includes a description of the proposed works and how these works will be managed for the duration of the demolition and construction works on site. All mitigation measures set out in the CEMP will be implemented.

Any works on the public road (e.g. for services connections) would require an application for a Road Opening Licence to the Local Authority.

It is intended that the first operations on site will be the relocation of the Gatelodge immediately followed by the construction of the proposed new/realigned traffic signal controlled junction, with

the dedicated new vehicular access arrangement serving the site thereby delivered as part of the first phases. The Traffic Signals will be fully commissioned and operational, thereby facilitating safe and appropriate access for construction related activities and for construction staff.

Perimeter hoarding will be provided around the entire enclosed site to provide a barrier against unauthorised access from public areas. The controlled access point to the site, in the form of gates or doors, will be monitored and secured, with a full time Flagman or Banksman during working hours to ensure that any conflicts between construction related traffic and public road users are minimised. These gates will be locked and secured to prevent unauthorised access during periods when these are not monitored (e.g. outside working hours). The hoarding will be maintained and painted, possibly with graphics of the project information, in accordance with current best practice.

It is proposed that works shall only be carried out between the hours of:

- Mondays to Fridays - 7.00am to 6.00pm
- Saturday - 8.00 a.m. to 2.00pm
- Sundays and Public Holidays - No activity on site.

Deviation from these times will only be allowed in exceptional circumstances where prior written approval has been received from Dun Laoghaire Rathdown County Council following an application for same. Such an application is considered unlikely, and would only be made in exceptional or emergency circumstances, and approval may be given subject to conditions pertaining to the particular circumstances.

It is proposed that the new access arrangement will be used for all subsequent stages once the site has been secured. For the duration of construction, all traffic will enter and leave via the new access point (via the new traffic signals). The temporary parking of delivery vehicles or construction staff vehicles will not be permitted on public roads outside the site, and a dedicated storage and staff parking area will be constructed as part of the early works to accommodate construction vehicles and worker parking as necessary. Unfettered and unobstructed access will be maintained at all times to neighbouring properties adjacent the site and no parking on public roads will be allowed.

In terms of Construction Staff, and the requirement for parking, it is estimated that the maximum number of staff on site at any one time, including main contractors and fit-out contractors is likely to be approximately 50. At worst, it is expected that this would require 25-30 car parking spaces on site, given the location of the development site adjacent to a Core Bus Corridor and being a short walk from two nearby DART stations. It should be remembered that construction activities and working hours mean that construction staff arrive and depart outside the traditional weekday commuter peak hours of 8-9am and 5-6pm. In this regard, following our assessment, we consider that the implications for impact of construction staff traffic are considered to be not significant.

The Construction Management Plan identifies that the maximum HGV movement during construction will be 4-5 in any one hour period (Equivalent to 12 PCUs, or 24 PCUs 2-way). This, combined with the worst case staff traffic volumes (assuming for robustness that all 50 operatives arrive as car drivers) means that the maximum possible hourly traffic generated by the site is 74 PCUs or car equivalents.

**Table 12.1** above confirms that the fully operational and occupied proposed apartment scheme on the site will generate 125 PCUs in the AM Peak Hour and 131 PCUs in the PM Peak Hour. In this regard the max construction traffic is demonstrably less than the occupied completed development. It has been demonstrated within the appended TA as illustrated in Table 12.4 and Table 12.5 below, that the completed, occupied development traffic can be accommodated with a ‘not significant’ impact. Given that the construction traffic volume is significantly lower, and with the fully completed traffic signals in place, the impact of construction traffic will, therefore, be imperceptible.

### **Operational Phase**

The Assessment has been undertaken of the Operational Phase of the development, ie with all of the permitted proposed developments locally and with the subject development fully occupied and operational. There is the potential for the operation and occupation of the development itself to have an adverse impact upon the safety, capacity & operation of the adjacent road network. In these terms, the assessment undertaken was to determine whether there was likely to be an adverse or significant impact, with the assessment of impact during a selected opening year and an assessment during the associated design year 15 years following opening. The assessment, as set out in the appended TA, and as summarised below indicates that there will be a small increase in traffic through the road network associated with the development, together with an increased demand for non-car travel modes. The operational phase impact are considered not significant.

## 12.6 Remedial And Mitigation Measures

### Construction Phase

The CTMP appended to this EIAR includes a description of the proposed works and how these works will be managed for the duration of the demolition and construction works on site. The CTMP includes proposed details for access arrangements for labour, plant and materials and indicates the locations of construction parking/plant and machine compounds. A final CTMP shall be prepared, together with detailed method statements, having regard to any relevant planning conditions.

The proposed works on the public road (e.g. for services connections) will require an application for a Road Opening Licence to the Local Authority.

Construction vehicle movements will be minimised through:

- Consolidation of delivery loads to/from the site and managing larger deliveries to occur outside peak traffic periods,
- Use of precast/prefabricated materials, where possible,
- Adequate storage space on site will be provided with no impact on public streets or areas,
- Adherence to best practice mobility management measures for the site staff to encourage access to the site by means other than the private car.

### Operational Phase

No mitigation is proposed for the operational phase of the proposed development as it is predicted to have a not significant impact on the operation of the local roads.

## 12.7 Residual Impacts Of The Proposed Development

### Construction Phase

The assessment demonstrates the negligible traffic impact of the operational (full completion and occupation) stage of the development. The construction traffic volumes have been assessed and are expected to be equivalent to or below the operational stage traffic volumes. In these terms the effects of the construction traffic volumes are expected to be negligible and unnoticeable on the local road network. The implementation of the Construction Traffic Management Plan will ensure that the effects are further minimised and controlled.

### Operational Phase

The TII Traffic and Transport Assessment Guidelines sets out a strict mechanism for assessment of developments of this nature and determining whether further assessment is indeed required. This Guidelines requires a **Threshold Assessment** of the impact on the local roads to be provided in order to determine whether further more detailed modelling and assessment of particular critical

junctions is necessary. The TII Guidelines are the Nationally applied Standard for assessment purposes. We have assessed the impact of the proposed development with a wide area of influence included.

This is important in this case as the development is located in proximity to important local arterial routes. The professional guidance referenced above sets out specific increases in traffic volume associated with new development, which, if breached, requires further detailed analysis to be undertaken. The recommendation is that, if the expected increase is 5% for networks that are considered heavily trafficked or congested, then further analysis is warranted. In this case, given the location, for robustness the 5% threshold has been applied.

In this regard, it is demonstrated herein that the proposed construction and operation of the development, with relatively low volumes of vehicular traffic added to a busy network, will not result in any significant or noticeable level of new trips on the local roads, with all anticipated traffic increases up to & beyond the existing public road access point are expected to be **well below** the Industry-Standard level of 5% above which further assessment is required (and indeed are also below the FCC applied standard of 2.5%).

Our assessment confirms that the absolute worst case traffic increase on the adjacent road network junctions, undertaken in accordance with Guidelines, is as summarised below as **Table 12.4 & Table 12.5**.

Assessed Road - Scenario - Year/Period	Traffic Increase %
N31/Monkstown Road Junction	2.0%
<b>N31/Seapoint Rd/Site Access</b>	<b>5.0% (~ 5%, therefore Analysed)</b>
N31/Barclay Ct/Temple Rd Junction	2.6%
N31/Sweetmans Ave Junction	2.6%
N31/Carysfort Ave Junction	2.1%
N31/Georges Ave Junction	2.4%
N31/Frascati SC/Rockhill Junction	1.9%
N31/Mt Merrion Ave Junction	1.8%

**Table 12.4; - Threshold Assessment, Worst-Case Impact AM Peak Hour**

Assessed Road - Scenario - Year/Period	Traffic Increase %
N31/Monkstown Road Junction	1.6%
<b>N31/Seapoint Rd/Site Access</b>	<b>4.5%</b>
N31/Barclay Ct/Temple Rd Junction	2.4%
N31/Sweetmans Ave Junction	2.5%

N31/Carysfort Ave Junction	2.0%
N31/Georges Ave Junction	2.3%
N31/Frascati SC/Rockhill Junction	2.1%
N31/Mt Merrion Ave Junction	2.1%

**Table 12.5; - Threshold Assessment, Worst-Case Impact PM Peak Hour**

It is quite clear that the impact of the proposed development is not significant immediately beyond the vehicular access to the site. To set these increases in context, the day-to-day variation in traffic conditions as a result of variables such as day of week or weather conditions is accepted as being 10%, so in this context increases of less than 3% are considered not significant.

#### **Capacity of Access Junction.**

Detailed capacity analysis of the site access junction identified in **Table 12.4** & **Table 12.5** has been undertaken, together with macro simulation modelling of the site access for the selected opening year 2025 and Design Year 2040

The capacity of the junction has been assessed using the LiNSiG programme (Linked Signal Design). LiNSiG is TII approved software that enables the user to predict the capacity, queues and delays at traditional traffic signal controlled junctions. The outputs from the software present Degrees of Saturation, Practical Reserve Capacity and Queues/Delays as indicators of the operational efficiency of the specific junction type. The assessment is undertaken, conscious of the limited capacity available at the vast majority of urban junctions of this nature, particularly during peak commuter times.

The detailed output of the models are included herein as **Appendix E** within the TA Report and are summarised below as **Table 12.6** ;.

Modelled Scenario	Network Saturation %	Total Delay PCUhr
2025 Opening Year PM Peak	84.8	22.2
2040 Design Year PM Peak	96.7	34.9
2025 Opening Year AM Peak	79.6	29.07
2040 Design Year AM Peak	88.6	40.5

**Table 12.6; N31/Access/Seapoint Ave - Summary LiNSiG Results**

Whilst 100% is technically at capacity, an RFC approaching 90% indicates that the junction is approaching capacity - and in this case it is quite clear that all are within capacity during the opening year, and for many years thereafter. This analysis confirms that there will not be any capacity related issues whatsoever associated with the operation of the significantly enhanced access arrangement to facilitate the construction and operation of the proposed residential development.

It should also be noted that the improved junction represents a very significant improvement in local traffic safety conditions and is expected to go some way to addressing and rectifying the established local accident cluster at the junction

#### **Assessment with adjacent lands (Sensitivity Test)**

We have set out above the rationale regarding the density and number of units within St Catherine's Lands to the south that we have assumed will be accessed via Temple Hill, based on the content of the Blackrock Local Area Plan and the stated restrictions on access to these lands identified within the body of the LAP.

This allows the assessment of traffic flows for Opening and Design Year with committed developments, the subject site and the adjacent lands to the south fully developed. The base year traffic and design year traffic projections are included within the TA Report as **Appendix F**. This has been undertaken at the specific request of DLRCC.

Following on, we undertook detailed junction capacity assessment of the improved junction using industry-standard software, LiNSiG (Linked Signal Design).

The outputs from the software are again presented as Degrees of Saturation, Practical Reserve Capacity and Queues/Delays as indicators of the operational efficiency of the specific junction type. The detailed output of the models for the Junction Sensitivity Test are included within the TA Report as **Appendix G**, and are summarised below as **Table 12.7**.

Modelled Scenario	Network Saturation %	Total Delay PCUhr
2025 Opening Year PM Peak	84.8	22.6
2040 Design Year PM Peak	96.7	35.84
2025 Opening Year AM Peak	80.4	29.53
2040 Design Year AM Peak	88.7	39.98

*Table 12.7; N31/Access/Seapoint Ave - Summary LiNSiG Results – Sensitivity Test*

The above analysis confirms that the junction will continue to operate in an acceptable manner in terms of capacity during Opening Year, with the assessment confirming that the junction is approaching capacity during 2040, 15 years following opening.

The proposed development has been assessed on a traditional ‘predict and provide’ basis, in accordance with established practice. Concerns regarding junction traffic carrying capacity in urban environments are clearly lessened in circumstances where sustainable policies and home-working will have an increasing effect in reducing car based traffic during peak commuter hours. In this case, the site is highly accessible by non-car modes and this is set out within Section 6 of the appended TA Report.

## 12.8 Cumulative Impacts

The cumulative impact of the Operational Development, with committed developments in place, has been assessed in accordance with the TII Guidelines for Traffic/Transport Assessment, based on a thorough traffic survey of the affected road network, and it has been determined to be not significant in the context of the established network flows. This is clearly set out with the results of the modelling as per Table 12.7 above, and with Appendix F of the appended TA Report.

## 12.9 Additional Residual Impacts

Following the Assessment, the residual impacts are expected to be positive, with increased pedestrian and cyclist activity, with an increased demand for public & alternative transport created

through contributing to a vibrant sustainable active Residential Development within the heart of Blackrock. The alternative transport modes available are highlighted within Section 6 of the appended TA Report.

#### **12.10 Difficulties Encountered In Compiling**

There were no difficulties encountered when compiling this assessment.

#### **12.11 INTERACTIONS**

Information was provided to other Design Team members in terms of Operational Traffic and Construction Traffic to allow the Air and Noise Assessments to be undertaken. In addition, NRB were part of the design team that advised in relation to the layout and design of the proposed scheme.