consulting engineers

NRB

Transportation Assessment Report

incl.

Preliminary Travel Plan,

(Appendix J)

DMURS Statement of Consistency,

(Appendix K)

Independent Stage 1

Road Safety Audit,

(Appendix L)

&

Bus Service/Capacity Assessment

(Appendix N)

for

Proposed Residential Development

At

Whitechurch Road,

Rathfarnham, Dublin 16.

SUBMISSION ISSUE

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EXECUTIVE SUMMARY

NRB Consulting Engineers Ltd were appointed to address the Traffic & Transportation issues associated with a Strategic Housing Development application comprising Residential Apartments/Housing and supporting elements at Whitechurch Rd., Rathfarnham, Dublin 14.

The proposed development on a site that extends to 6.77 hectares includes the derelict Kilmashogue House (southern lands) & Coill Avon house (northern lands), adjacent roads in the control of South Dublin County and Dun Laoghaire Rathdown County Councils and consists of the following developments: -

- Demolition of Kilmashogue House & outbuildings, and the demolition of Coill Avon house & out-buildings;
- The refurbishment and re-use of 2 no. stone outbuildings for community use, to be incorporated into an area of public open space on the southern lands;
- The construction of a mixed-use development comprising neighbourhood centre & 178 no. residential units comprising 72 no. houses, 38 no. apartments and 68 no. duplex apartments;
- The 72 no. houses will comprise 2, 2.5 and 3-storey detached, semi-detached and terraced units to include 6 No 2-Bed Houses, 45 No 3-Bed Houses and 21 No 4-Bed Houses;
- The 38 no. apartments & 68 no. duplex apartments are located across 7 no. buildings ranging in height from 3 to 5-storey consisting of 1 no. Block A/B, 1 no. Block C, 1 no. Block E, 1 no. Block S and 3 no. Blocks T-type as follows: -
    - **Block A/B:** 5-storey over basement & podium accommodating 10 no. 1-bed apartments, 16 no. 2-bed duplex apartments and 1 no. 3-bed duplex apartment (with associated balconies/terraces);
    - **Block C:** 5-storey over basement accommodating 4 no. 1-bed apartments and 8 no. 2-bed duplex apartments (with associated balconies/terraces);
    - **Block E:** 4-storey over basement accommodating 8 no. 1-bed apartments and 16 no. 2-bed duplex apartments (with associated balconies/terraces);
    - **Block S:** 3-storey accommodating 2 no. 2-bed duplex apartments and 1 no. 3-bed apartment and 1 No. 3-bed duplex apartments (with associated balconies/terraces);
    - **Block T:** 3no. 3-storey buildings accommodating 6 no. 1-bed apartments, 18 no. 2-bed duplex apartments, 9 no. 3-bed apartments and 6 no. 3-bed duplex apartments (all with associated balconies/terraces);

- Block A/B and Block C are arranged around a landscaped podium. The neighbourhood centre is located below this podium and accommodates a 2-level creche (313m²) at lower ground and ground floor level, and 3 no. retail/non-retail/cafe service units (470m^2) at ground level;
- The basement below Block A/B and Block C accommodates 50 no. car parking spaces, bicycle parking, bin stores, plant & staff service area (80m^2);
- The basement below Block E accommodates 35 no. car parking spaces, bicycle parking, bin store & plant;
- A section of link street with footpath and cycle path (approx. 438 linear metres) extending from the junction of Whitechurch Rd and College Road on an alignment parallel to the M50, to provide access to the southern development lands and incorporating a bus turning circle;
- Upgrade works to College Road including a new two-way cycle track and relocated footpath from the Whitechurch Road junction to provide connectivity to the Slang River pedestrian/cycle Greenway;
- A new signalised crossroads junction to connect the proposed link street with Whitechurch Road and College Road;
- Upgrade to the existing vehicular access at the entrance to Coill Avon house on Whitechurch Road;
- Foul sewer drainage works along Whitechurch Road from the Kilmashogue junction to the existing junction at Glinbury housing estate;
- All landscaping, surface car parking, boundary treatments, infrastructure works, ESB substation, and associated site works and services.

In terms of vehicular access, it is intended to deliver a significant proportion of the new Link Street parallel to the M50, as a continuation of the R113 College Rd., which will in time provide a link to Edmondstown Road. In addition, improved cycle and pedestrian links are provided on Whitechurch Rd and on College Rd., which will provide a link to the NTA's GDA Cycle Network and to DLRCC Slang River Greenway at Marley park. These facilities improve, and are consistent with, the GDA Cycle Network Plans.

Whitechurch Road area Dublin Bus Services currently 'terminate' at Whitechurch Green. The design of the site provides a dedicated turning and set-down area for bus services, and it is expected that the development of the site will allow extension and connectivity of existing bus services in the area.

DLRCC granted planning permission for a major Regional Sports Campus at Tibradden just on the other side of the M50. The works have commenced, and the first stage, which includes a running track, is due for completion by Summer 2022. Dundrum

South Dublin Athletics Club, in partnership with DLRCC, are currently building this Regional Sports Campus. It is expected that Bus Services will naturally be extended to serve the Campus, passing the subject development site. The delivery of the cycle track along College Road will also improve sustainable modes of transport to the Sports Campus.

This Transportation Assessment Report (TA) has been prepared to address the Traffic and Transportation issues associated with the proposal, the capacity of the existing road network and the impact of the increased scale of development locally, conscious that the site use will actually generate very low traffic volumes in the context of the road network in the area. The Report has been prepared in accordance with TII's Traffic & Transportation Assessment Guidelines and addresses the worst-case traffic impact of the proposal.

The report also specifically addressed the nature and capacity of both Whitechurch Road and College Road to accommodate the increased vehicular traffic volumes. Based on our studies and assessment, we do not believe that either of these roads presents an impediment to the development of the lands.

Comprehensive classified turning movement surveys of the existing affected roads and junctions were carried out during the weekday AM and PM Peak Hours in 2019 (and indeed 2018), prior to the Covid 19 Pandemic Emergency. These surveys, undertaken in the normal school term, form the basis of this 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 in accordance with Traffic & Transportation Assessment Guidelines.

The Transportation Assessment confirms that the existing road network, the proposed new/improved roads, including the New Link Street, the new signal-controlled junction at College Rd & the vehicular access junctions serving the site are more than adequate to accommodate the worst case traffic associated with the development. The assessment also confirms that the construction and full occupation of the scheme will have a negligible impact upon the operation of the adjacent road network and can easily be accommodated.

The assessment includes a Preliminary Travel Plan (MMP or Travel Plan) for the site which is included as ***Appendix J***. The MMP highlights the multi-modal accessibility of the site with very significantly enhanced pedestrian & cyclist facilities. These improvements will of course also be of wider public benefit, including benefitting the

under construction adjacent Regional Sports Campus, located immediately south of the lands on the opposite side of the M50 (Refer ***Appendix A***).

A DMURS Statement of Consistency is also included as ***Appendix K***. An independent Stage 1 Road Safety Audit, together with the Designer Feedback form is included as ***Appendix L***. A Bus Service & Bus Capacity Assessment has been undertaken and is included as ***Appendix N*** to this Report.

Based on our studies, we believe that there are no adverse traffic/transportation capacity or operational issues associated with the construction and occupation of the proposed development that would prevent planning permission being granted by An Bord Pleanála.

1.0 INTRODUCTION

1.1 This Transportation Assessment (TA) has been prepared by NRB Consulting Engineers Ltd and addresses the Traffic/ Transportation issues arising from the proposed strategic housing development (including crèche and neighbourhood shops) on the site at Whitechurch Rd., Rathfarnham, Dublin 14.

1.2 The subject site, is clearly part of an attractive sub-urban Residential area, being one of the last remaining zoned residential sites within the M50 'Ring'. It is located on the boundary of both SDCC and DLRCC and both Local Authorities have been consulted in the preparation of this study. A site reference location plan is included below as ***Figure 1.1***;

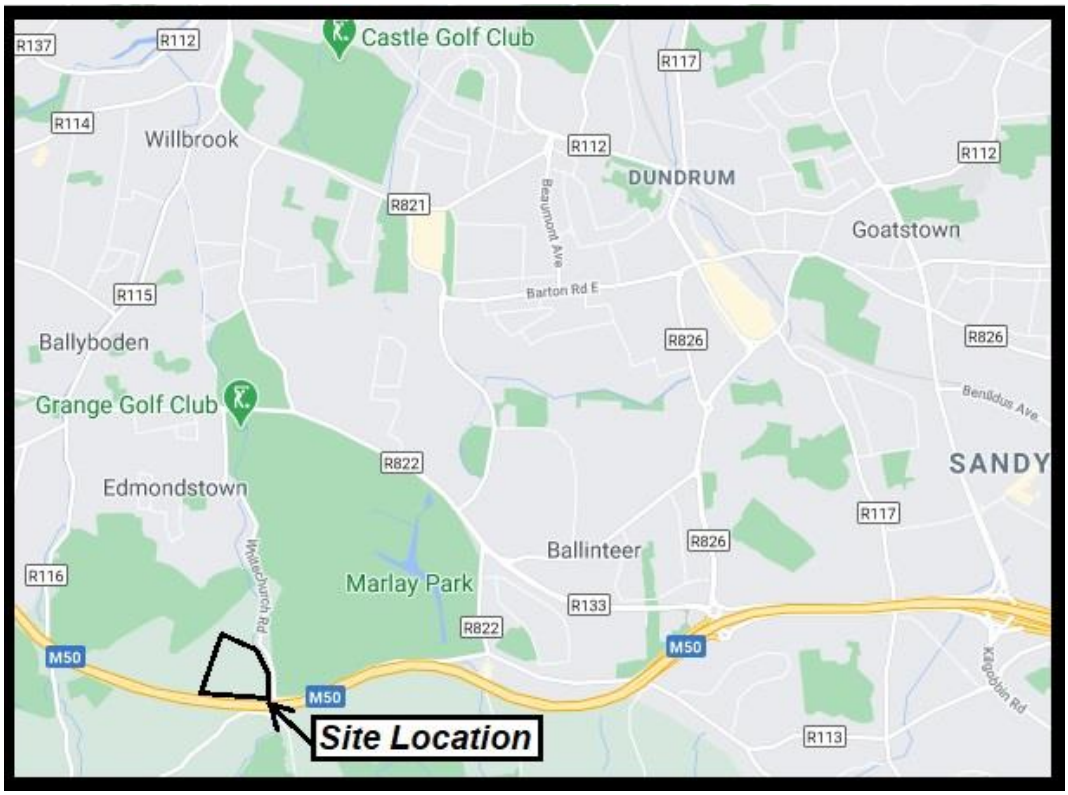

Figure 1.1 - Site Location

1.3 In describing the Receiving Environment and the Proposed Future Environment, this report addresses the following aspects of the proposed development:

- Relative Small Scale of the development in the context of the busy road network (Reflected in the very Low Vehicular Traffic Generation of the Development, calculated using industry-standard proprietary tools in ***Appendix C*** and ***Appendix D***),

- Location of the development with the provision for and easy potential for the extension of Dublin Bus services to serve the site and the under construction Regional Sports Campus,
- Traffic & Transportation impact,
- Capacity of the proposed vehicular access arrangement to accommodate the worst-case development traffic flows,
- Pedestrian and cyclist permeability & promotion with very significant enhancement and connection to the GDA cycle network locally,
- Capacity of the Existing Road Network,
- Adequacy and safety of the existing roads and junctions locally, within the area of influence.
- Impact upon the adjacent affected junctions locally on Whitechurch Rd.
- Capacity and Suitability Assessment of Whitechurch Rd

1.4 A review of the Road Safety Authority (RSA) online collision database indicates that there are no significant accidents on the affected stretches of road network surrounding the site. An extract from the RSA on-line collisions record is included below as ***Figure 1.2***.

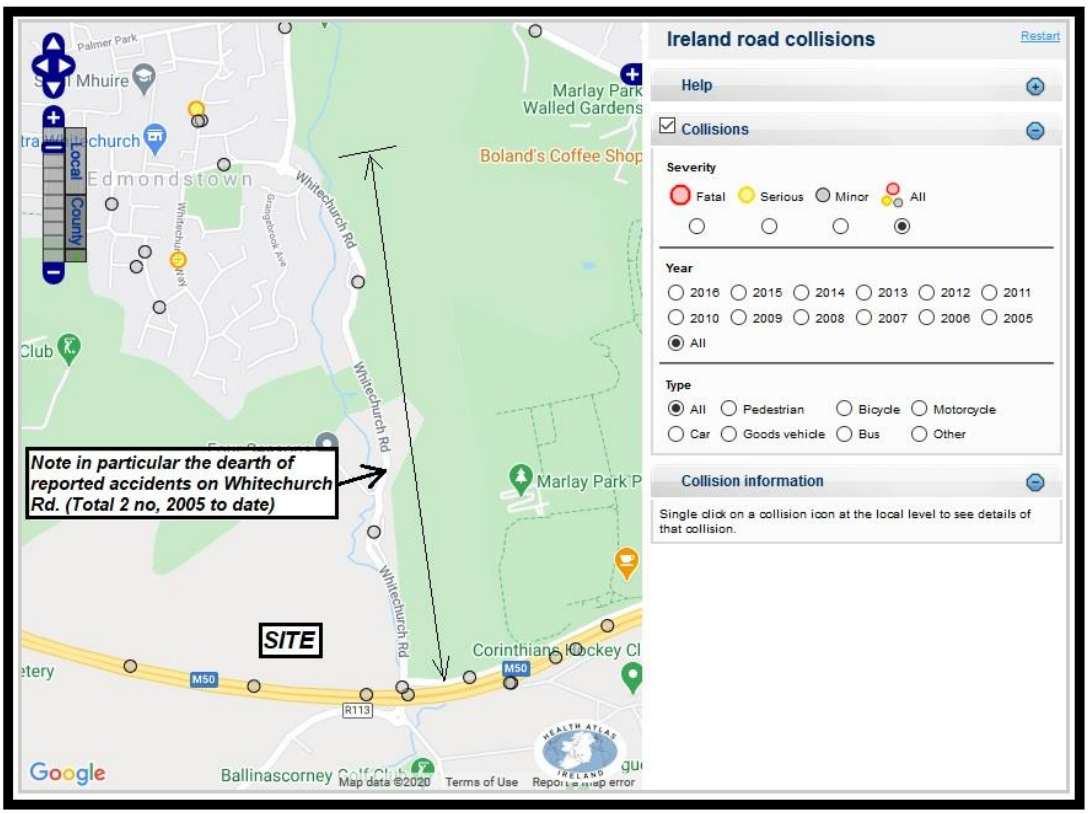

Figure 1.2 - Extract from RSA On-Line Record of Traffic Collisions

1.5 The Recommendations contained within this Transportation Assessment are based on the following sources of information & industry-standard practices; -

- TII Traffic & Transport Assessment Guidelines,
- Design Manual for Urban Roads and Streets,
- Recent Traffic Survey Data (pre covid pandemic),
- Site Observations & Measurements,
- Relevant Design Guidance,
- Our experience in assessing the impact of Developments of this Nature, and
- Site Visits and Observations.

1.6 The Report has been prepared in accordance with the requirements of the TII's Traffic & Transport Assessment Guidelines. These are the professional Guidelines used to assess the impact of developments on public roads.

1.7 The assessment includes a Preliminary MMP/Travel Plan for the site which is included as a separate report as ***Appendix J***. A review of the proposed development in terms of DMURS has been undertaken and a Statement of Consistency is included herein as ***Appendix K***.

1.8 An independent Stage 1 Road Safety Audit of the layouts, roads & accesses, together with the Designer Feedback Form addressing any issues raised is included as ***Appendix L***. A Bus Service & Bus Capacity Assessment has been undertaken and is included as ***Appendix N*** to this Report

2.0 EXISTING CONDITIONS & DEVELOPMENT PROPOSALS

2.1 For the purposes of this assessment, in terms of quantification of transportation demand, we have simply divided the site into 2 distinct elements (referred to herein as the Northern & Southern Sites).

2.2 The Northern part of the site will contain a total mix of 52 residential units, with 24 apartments and 28 houses. These are set out in a quiet courtyard setting, with the sole vehicular access formed by way of a simple priority junction from Whitechurch Rd.

2.3 The southern part of the site will contain a total mix of 126 residential units, with 82 apartments/duplexes and 44 houses. These are supported by a small ancillary crèche, a small neighbourhood shop, a community use building & a café/restaurant. The southern part of the site is accessed by way of two simple priority junctions created from the proposed new link street. The new link street in turn creates a 4 arm traffic signal controlled junction, in a traditional crossroads arrangement opposite College Rd. The proposed link street provides footpaths and cycle lanes, with the design consistent with the National cycle manual.

2.4 We have set out below the ***Existing Status*** of Modal Accessibility Transportation Provision of the entire lands in terms of;

- Pedestrians,
- Cyclists,
- Public Transport (LUAS),
- Public Transport (Dublin Bus), and
- Cars (Vehicles).

Existing Pedestrians

2.5 There is a continuous footpath provided along the western edge of Whitechurch Road In the N-S Direction linking the site with Rathfarnham and the remainder of the City. This allows for the safe passage of pedestrians between the site and the surrounding areas and facilities. This is illustrated below as ***Figure 2.1***

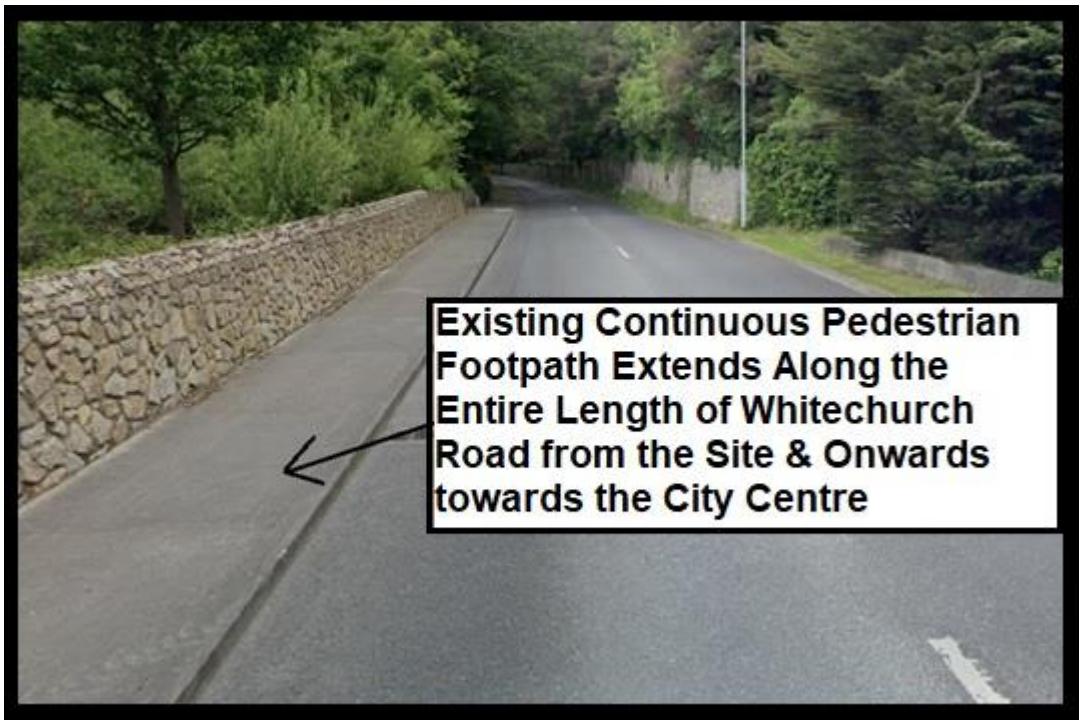

Figure 2.1 – Pedestrian Footpath, Whitechurch Rd

2.6 There is also a continuous footpath provided along the northern edge of College Road at the site, which provides a continuous link to the Southern Entrance to Marlay Park and the Dún Laoghaire-Rathdown County Council (DLRCC) ***Slang River Greenway***. This is illustrated below as ***Figure 2.2***.

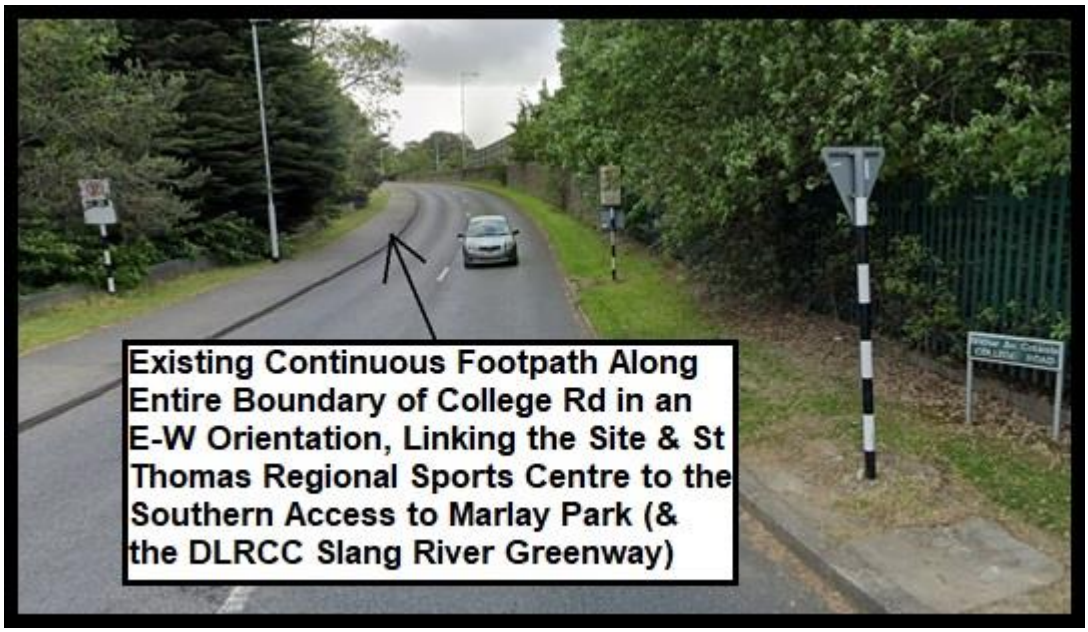

Figure 2.2 – Pedestrian Footpath, College Rd

Existing Cycle Facilities

2.7 There are currently no dedicated off road cyclist facilities provided serving the site, in terms of cycle lanes or similar infrastructure. However, cyclists are clearly allowed to share road space with other traffic on both Whitechurch Road and College Road. The area is however also accessible to the ***Slang River Greenway***, a dedicated cycle route developed by DLRCC.

2.8 Details of the Slang River Greenway are included herein as ***Appendix I***, by way of illustration showing the transportation links available to the site, within the Spatial Framework document. The site is within easy cycling access of the Slang River Greenway, being only c.400m from the start of the Greenway (Reference ***Figure 2.3*** below).

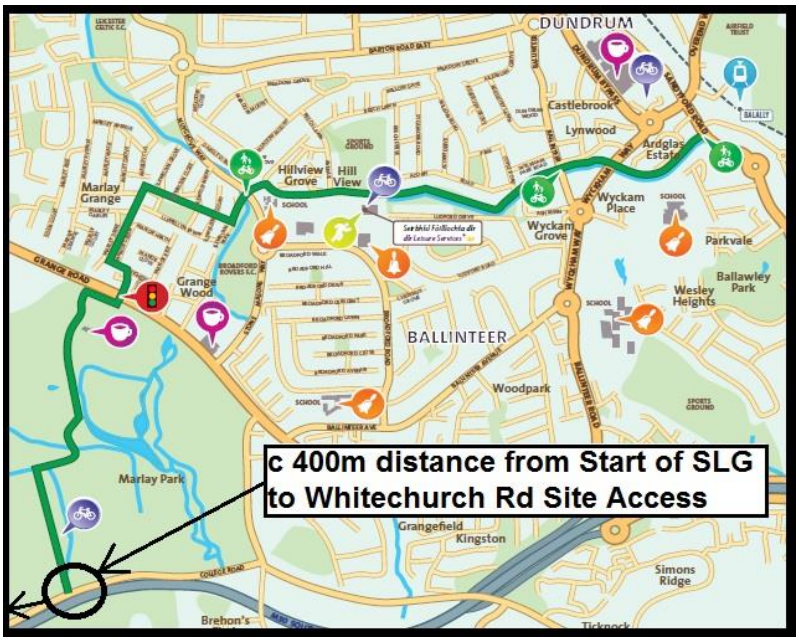

Figure 2.3 - Extract DLRCC Brochure - Cyclist Access to Slang River Greenway

Existing Public Transport - LUAS

2.9 As part of the GDA Cycle Network, DLRCC have in place an ever-improving network of Greenways which afford cyclists the opportunity to access local amenities and developments, for the most part by way of Off-Road cycling infrastructure. The ***Slang River Greenway*** is one such route, forming an important part of the ***Foxrock to Marlay Park Cycle Route***, commencing at the southern College Road access gateway to Marlay Park and linking the entire way to Foxrock via Dundrum Shopping Centre (& Balally LUAS) and Leopardstown/Sandyford (both being major areas of employment). The subject lands are therefore well placed to benefit from the cyclist accessibility to this DLRCC Network, as well as providing access to LUAS for commuting cyclists.

Existing Public Transport – Dublin Bus

2.10 Dublin Bus operates 4 dedicated and frequent services to the Whitechurch Area. These are Route Numbers 15d, 61, 116 and 161. These services are currently within a 15-20 minute walk of the site, as illustrated in ***Figure 2.4*** below;.

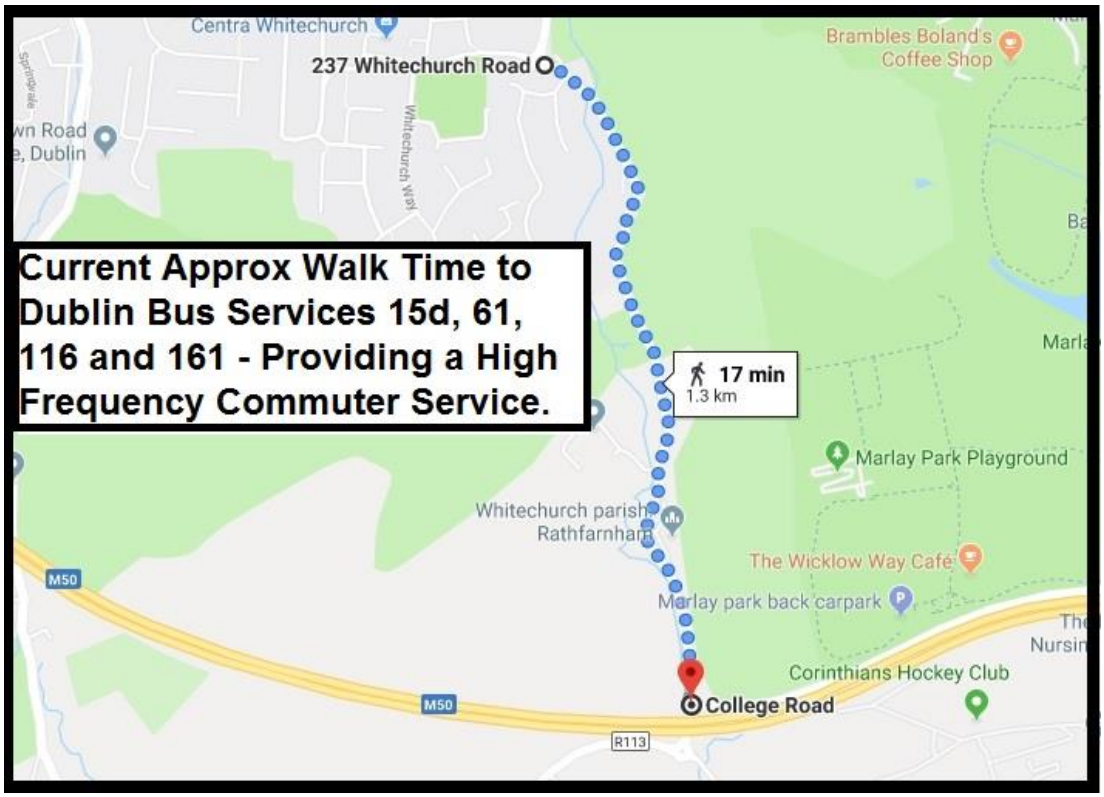

Figure 2.4 – Current Walk Time from M50 to Terminus at Whitechurch Green

2.11 Whilst some argue that a 2km walk is acceptable for commuters, ideally it would be beneficial if the current services were extended south to meet demand created by additional residential housing on the subject lands and by the Regional Sports Campus. Given that the services currently terminate at Whitechurch Green using the public road as an 'idling' Terminus, it is considered that it would be very straightforward to extend these routes and redesign these services through negotiation with the NTA/Dublin Bus so that they terminate and originate at the subject lands or at the roundabout immediately south of the M50 underpass. It will clearly also be necessary to provide bus services to the under construction Regional Sports Campus, and any such extension would of course pass the site. This is discussed and considered further within Section 5 of this report.

2.12 Alternatively, other routes such as the #16 could be extended from the east along College Road to link to the lands. To this end, a dedicated turning area for bus services has been accommodated within the site layout to provide for the natural extension of Bus Services.

2.13 For further assessment and consideration of Bus Services please refer to the Bus Services & Capacity Assessment included as ***Appendix N***.

Vehicular Access

2.14 The full completion of the street linking to Edmondstown Road to the west will in time further increase the accessibility of the site and enhance road network permeability – this has been carefully designed to, in-time, allow the provision of improved local accessibility and permeability for traffic movements within the M50 ring, as a natural extension to College Rd & Grange Road. This is fully consistent with permeable design principles set out within DMURS, and also meets stated road objectives of SDCC (which were outlined at S247 stage of the application process).

Whitechurch Rd

2.15 The L4020 Whitechurch Road is a single carriageway road, which, due to the enclosed nature of the boundary hedgerows and walls, appears narrow. However, it is inappropriate to suggest that the geometry and nature of Whitechurch Road as being unsafe (as evidenced from the almost complete absence of reported accidents). Being 'Sylvan' in nature with some bends, it is self-regulating in terms of traffic speeds and driver behaviour. The historically good safety record of the Whitechurch Road, is evidenced by the on-line records maintained by the Road Safety Authority (Refer ***Figure 1.2*** above). There have been no recorded accidents that are considered of relevance to the development of the subject lands, with only 2 minor accidents since records were maintained in 2005.

2.16 Whitechurch Road is generally of good quality, with a continuous footpath provided linking to Taylors Lane towards the City. The road is subject to a 3T weight restriction, with traffic calming and natural curvature, which assists in managing the nature of traffic. The road carries a weekday AM Peak Hour 2-way flow of approximately 300 PCUs and a weekday PM Peak Hour 2-Way flow of approximately 120 PCUs, adjacent the northern section of the site. To set this flow in context, a road of this nature has a free flow link capacity of approximately 700-1000 PCUs per-direction per-hour, and in these terms the existing flows are considered very light in volume. The measured maximum existing 2-way traffic flow of 300PCUs on Whitechurch Rd represents only 15% of it's link capacity. In these terms it is **very lightly trafficked.**

2.17 In terms of the assessment of Whitechurch Road, and in order to determine it's true running carriageway width, we undertook a taped measurement survey of the length of the road from College Road to Whitechurch Green (measuring at 30m intervals). The details of the survey are included herein as ***Appendix H***. This survey confirmed that **the average effective width of the road is 5.95m** ('Width of tarmacked surface, edge to edge' with offside overgrown grass displaced). There are 2 very localised places where the width narrows to 5.2-5.3m, however, if necessary, these sections can be quite easily addressed (***Refer to Appendix H***).

2.18 In order to set the road width in context, we include below an extract from DMURS in terms of the road width recommendations as ***Figure 2.5*** ;

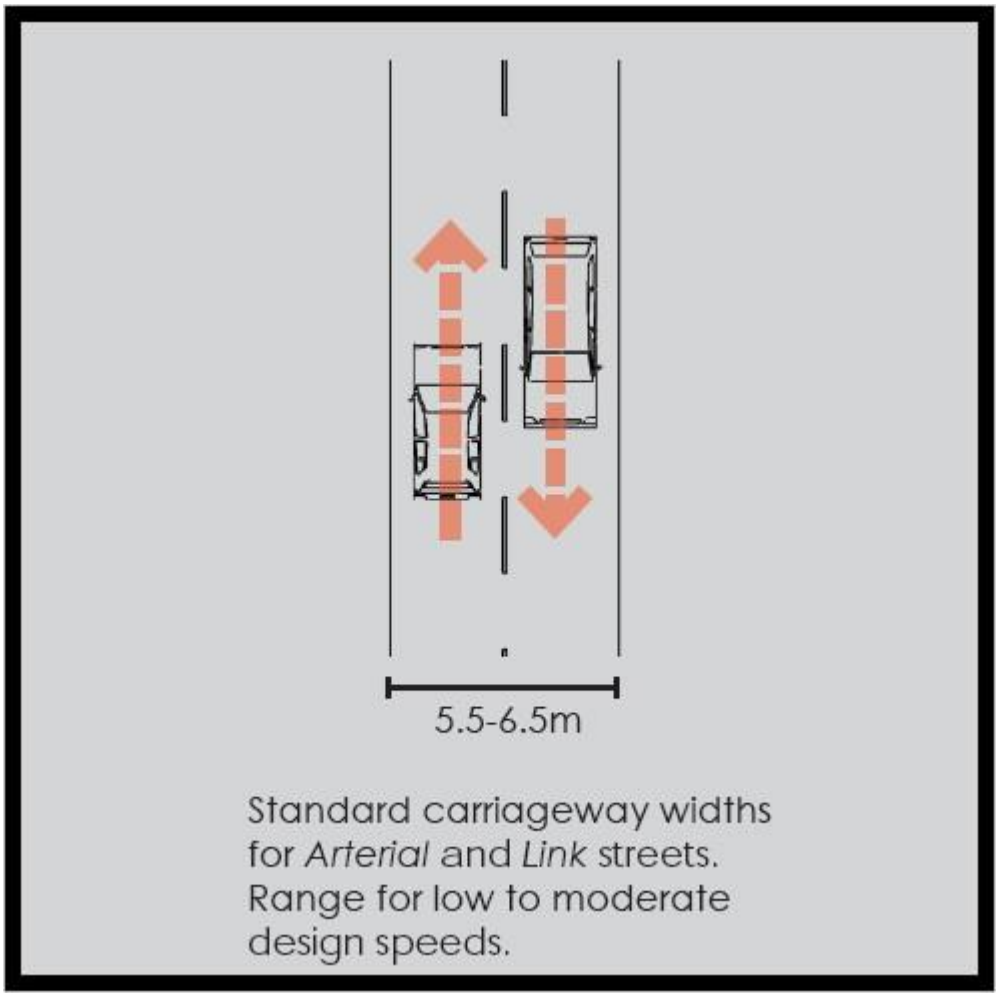

Figure 2.5 – Extract DMURS Table 4.55 ('Carriageway Widths')

2.19 It is therefore clear that Whitechurch Rd **meets the DMURS requirements for Arterial & Link Streets** in terms of its current width (conscious that the identified 2 very localised areas can be addressed).

2.20 Road capacity is generally controlled by the capacity of terminal junctions. Whitechurch Road leads to the significant arterial route the R113 (Taylors Lane/Ballyboden Way) approximately 1.5km to the north of the subject lands.

2.21 Whilst the local roads, and in particular Whitechurch Road, are demonstrably very lightly trafficked, it is acknowledged that the capacity of a road in urban areas of this nature is determined by the capacity of the terminal junctions. In these terms, there are clearly some normal commuter peak capacity issues on a number of local road junctions, however this is normal reflecting self-regulating busy urban traffic conditions. Peak period traffic capacity issues in urban areas are to be expected.

College Rd

2.22 College Road (R113) is classified as a Regional Road, it runs parallel to the M50 at the rear of Marlay Park, and it links Whitechurch Road with Grange Road to the east. It is subject to an Urban 50kph speed restriction, however observation would indicate that the nature and width of the road facilitates higher ambient traffic speeds than the posted speed restriction. This observation was confirmed through a 24 Hour Automated Traffic County ("Fixed Tube") Speed Survey on the road at the access to Marlay Park, undertaken during September 2019, is normal school term. The full output from the Speed and Traffic Surveys are included at ***Appendix B***

2.23 The Survey revealed that **notwithstanding the posted speed limit**, the actual measured 85% ile speed is in excess of 72 kph, with an extract from the speed survey reproduced below as ***Figure 2.6***

EASTBOUND	85% Speed = 72.89 km/h, 95% Speed = 80.91 km/h, Median = 60.66 km/h
WESTBOUND	85% Speed = 72.09 km/h, 95% Speed = 81.36 km/h, Median = 59.31 km/h

Figure 2.6 – Extract College Rd Speed Survey

2.24 It was noteworthy that the Maximum Recorded speed during the survey was measured at in excess of 120kph. It is therefore clear to us that the road is currently prone to higher than appropriate traffic speeds, and this is clearly the case where the measured 85%ile speed (ie the "Design Speed") is currently 72kph and the **AVERAGE** speed is actually in excess of 60kph - these need to be considered conscious that the **posted speed limit is actually 50kph**. Given that this road serves as access to a local park and also serves as the commencement of a DLRCC Cycle and Pedestrian Greenway leading from the new Regional Sports Campus, we consider that traffic calming & speed reduction measures are clearly

required to significantly calm traffic and reduce ambient traffic speeds enhancing road safety characteristics. **We believe that this is now more pressing in light of the construction of the Regional Sports Campus on Tibradden Road which will inevitably lead to a significant increase in pedestrian and cycling demand on College Rd** .

2.25 We include below the extract from DMURS that illustrates how the treatment, design, width and nature of a street can in fact contribute to inappropriate speeds.

Figure 2.7 – DMURS Figure 2.14 Exact Extract

2.26 We include below an image showing the current treatment and design of College Road for comparison purposes.

Figure 2.8 – College Rd – View East

2.27 An important part of this application includes the reconfiguration of College Road to promote safe Pedestrian & Cycle Linkages to the Regional Sports Campus and the Wicklow Way, and to Reduce Vehicular Speeding on the route. Apart from the very significant beneficial effects of the connection of area to the Slang River Greenway, & the NTA's GDA Cycle network, we believe that the works proposed will significantly enhance road safety characteristics, with DMURS & National Cycle Manual compliant design features.

2.28 The Traffic Survey reveals that College Road currently carries a weekday AM Peak Hour 2-way flow of 499 PCUs and a weekday PM Peak Hour 2-Way flow of 398 PCUs, adjacent the Marlay Park Access Gateway. The measured 24hr Annual Average Daily Traffic is 3,850 PCUs. To put these flows in context, a road of this nature has a Traffic Link Capacity of approximately 1,200-1,500 PCUs per-hour per-direction. So, in these terms College Road is considered to be moderately trafficked.

2.29 The proposed new link street consists of a single carriageway road with dedicated footpaths and cycle lanes provided along its length. The provision of vehicular site accesses, the new Whitechurch Rd Traffic Signals, and street activity, will assist in reducing traffic speeds locally consistent with an urban 50kph limit. The proposed junction of the Link Road with Whitechurch Rd & College Rd takes the form of an at-grade 4-arm traffic signal-controlled junction. The design and form of control of the junction has evolved following discussions with SDCC and DLRCC, and it includes full controlled dedicated toucan crossings within the signals for pedestrians and cyclists.

2.30 In terms of the width of the proposed 2-Way Cycle Lane on College Road, and the adequacy of the proposal, which is fully consistent with the recommendations of the National Cycle Manual, we include for Reference as ***Appendix M*** the recently published **DLRCC Plans** for provision of isolated cycle facilities at the St Thomas Regional Sports Campus. We include below an extract from the DLRCC drawing at ***Figure 2.9*** for ease of reference and we highlight that DLRCC themselves are promoting a 3m wide shared surface, whilst we are proposing a 3m wide cycle lane adjacent a 2m wide footpath (ie a 5m wide shared surface).

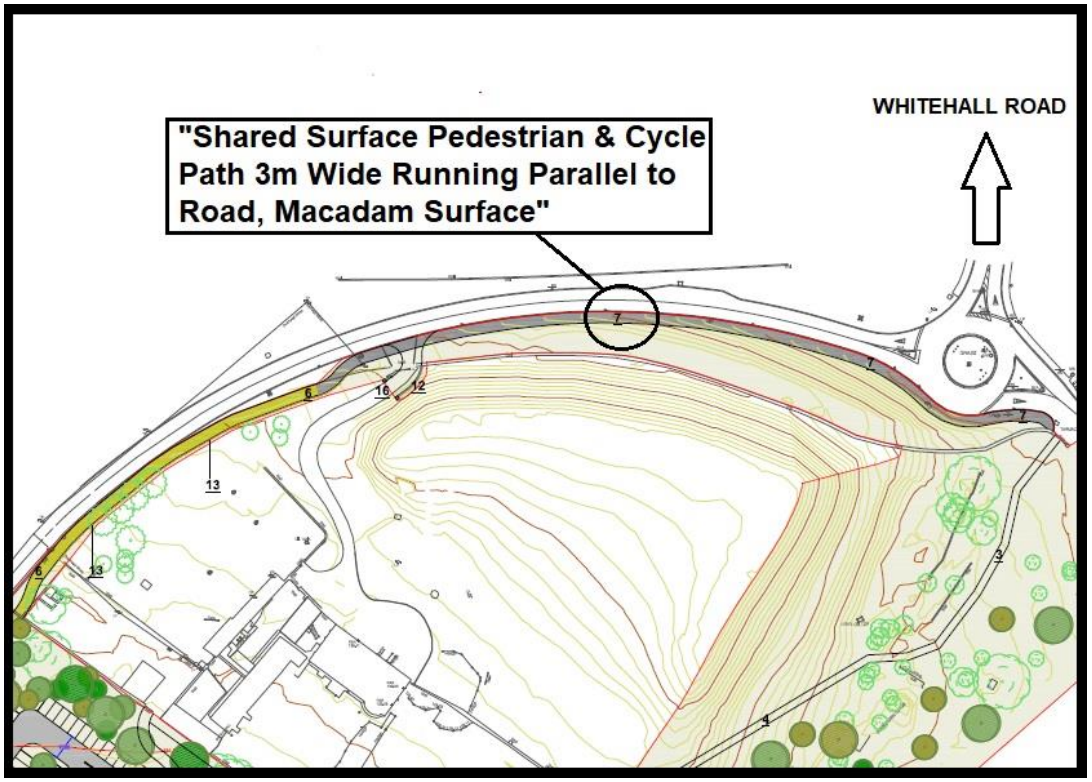

Figure 2.9 – Extract DLRCC Drawing (with Exact Note) Included as Appendix M

2.31 We have examined the potential for linking the DLRCC proposed cycle facility at St Thomas above to the subject proposed improved cycle network at the site and along College Road. This would require linkage under the M50 overbridge on Whitechurch Road. To this end, we measured the dimensions available at the bridge, and these are illustrated below as ***Figure 2.10***

Figure 2.10 – Available Space/Dimensions at M50 Overbridge

2.32 A simple solution to the provision of Cycle-linkage From St Thomas appears to be available. If the road were to be reduced to 6m in width, from the 7.6m provided currently (6m being consistent with the DMURS recommended width for Link Streets), this would allow the remaining 1.6m to be allocated to pedestrians & cyclists, 0.8m to either side. This would then clearly allow the DLRCC-recommended 3m shared surface at St Thomas to be extended under the bridge **on both sides**, linking a full off-road cycle facility between St Thomas and the improved College Road. This could quite easily be delivered by DLRCC. If necessary, further enhanced facilities could be achieved under the bridge through adjustments to the sloped bridge abutments above (which is normally just a hard landscape feature on these structures).

Electric Vehicle Charging

2.33 10% of the provided spaces are EV charging, consistent with the requirements of the Development Plan. However, all car parking spaces can easily be upgraded to allow conversion for Electric Vehicles. In the case of the residential elements, with specific spaces likely dedicated to specific units, it is considered appropriate to also facilitate the retro-fitting of spaces, based on demand following occupation, rather than a % of spaces being defined as such and provided from the outset.

2.34 The entire car park areas of the subject scheme can therefore be ducted to accept future cabling to serve a charging point for every car space as demanded. Within the parking area, conduits can be run on the walls, or buried within landscaped areas, where charging points can also be mounted, which can then all be wired and fitted following occupation, based on demand.

Parking Quantum

2.35 For the residential housing elements of the SHD the car parking is either provided within the curtilage or within the street fronting the houses. Cycle parking for the individual houses is clearly provided internally. For the apartments, car parking is provided within the dedicated basements.

2.36 The **Northern Portion** of the site has a total car parking provision of 83 spaces (48 parking spaces at surface level and 35 spaces within the dedicated apartment basement). 11 No of the Parking Spaces in the basement and 6 No at Surface Level are allocated and demarcated as Visitor Spaces. For the 52 units total on the northern portion of the site the remaining residential parking allocation represents a parking ratio of 1.5 car parking spaces per residential housing unit, with 1 car parking space per apartment unit.

2.37 An annotated image below as ***Figure 2.11*** shows the parking allocation for The **Southern Portion** of the site. The full detail is available on the Architects Plans. This has a total car parking provision of 85 No spaces allocated to the 44 No. residential housing units, including 19 allocated to visitor parking spaces, representing a ratio of 1.5 dedicated spaces per residential housing unit. This results in a parking ratio of 1.5 per residential housing unit.

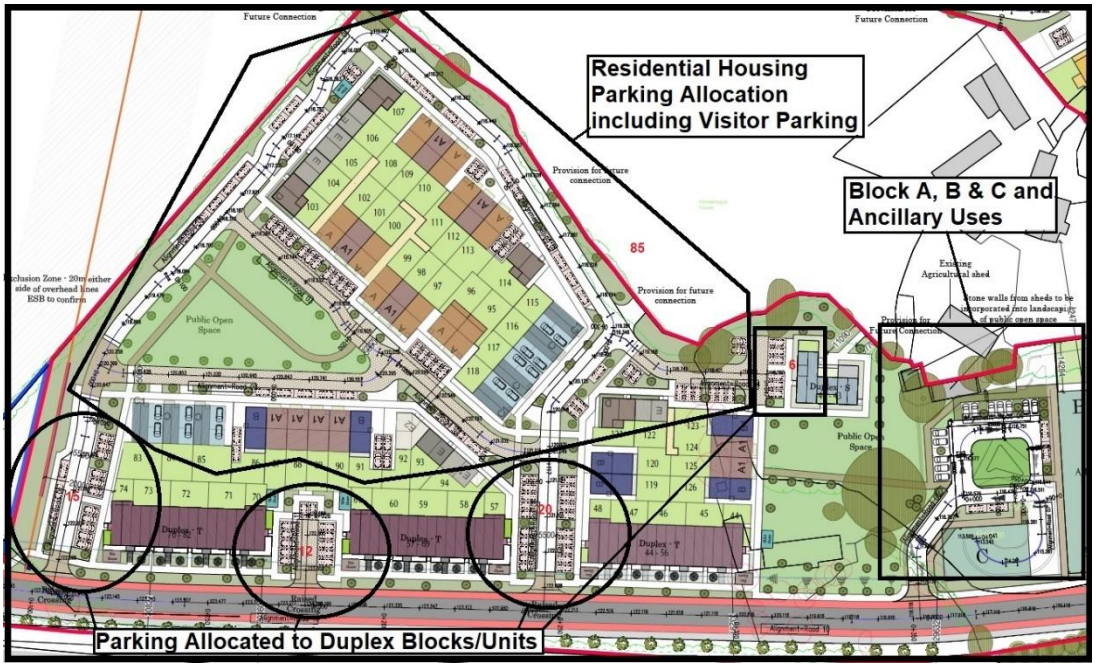

Figure 2.11 – Parking Allocation Southern Part of Site
(For Exact Accurate Detail Refer to Architects Plans)

2.38 This allocation has 47 car parking spaces allocated to the 3 x "T" Blocks of Duplexes along the street (shown encircled). This represents 1 parking space for each of the 39 No. duplex units, with 8 spaces available for visitors and/or set down.

2.39 Block S, located to the NE contains 4 units and has a total of 6 allocated parking spaces, one per unit, including 2 dedicated visitor or set down spaces.

2.40 Blocks A, B and C have a total provision of 50 car parking spaces between basement and surface level. 39 No are dedicated to residential elements of these blocks, with 6 allocated to visitors, 3 for Creché use and 2 allocated for Retail use.

2.41 The recently adopted 'Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities' dated March 2018 (with the 2020 version having no changes in traffic terms). This updates previous guidance in the context of greater evidence and knowledge of current and likely future housing

demand in Ireland, taking account of the Housing Agency National Statement on Housing Demand and Supply and projected need for additional housing supply out to 2020, the Government's action programme on housing and homelessness Rebuilding Ireland & National Planning Framework Ireland 2040, (subsequent to 2015 guidelines).

2.42 These new guidelines address car parking and include an objective to 'Remove requirements for car-parking in certain circumstances where there are better mobility solutions and to reduce costs.' Under Car Parking - Section 4.18 the guidelines acknowledge that the quantum of car parking or the requirement for any such provision for apartment developments will vary, having regard to the types of location that may be suitable for apartment development, broadly based on proximity and accessibility criteria.

2.43 The apartment elements of the development will be managed and operated by a Management Company. Car parking will not be an automatic entitlement. The entire development will be continually managed on an on-going basis to ensure that the reduced car dependency nature of the development is continually promoted and enhanced.

2.44 Under the guidelines, the highest parking ratio is for sites located in areas qualifying as 'peripheral and/or less accessible urban locations'. Under section 4.22, the '*benchmark guidelines for apartments in relatively peripheral or less accessible urban locations, one car parking space per unit, together with an element of visitor parking, such as one space for every 3-4 apartments, should generally be required.*

2.45 It is proposed that a number of the parking spaces in a prominent accessible location within the development can be allocated to car club parking spaces (e.g. "*Go Car"* spaces). These can be located conveniently for ease for use for residents.

Bicycle Parking

2.46 For the residential housing and duplex elements, bicycle parking and storage can and will be managed within each individual household. In terms of the apartment elements, the Department of Housing Planning & Local Government "***Sustainable Urban Housing Design Standards for New Apartments***" includes recommendations on the appropriate level of Bicycle Parking. An extract from the Guidance is included below as ***Figure 2.12***

> *Quantity* – a general minimum standard of 1 cycle storage space per bedroom shall be applied. For studio units, at least 1 cycle storage space shall be provided. Visitor cycle parking shall also be provided at a standard of 1 space per 2 residential units. Any deviation from these standards shall be at the discretion of the planning authority and shall be justified with respect to factors such as location, quality of facilities proposed, flexibility for future enhancement/enlargement, etc.

Figure 2.12 - Extract from National Apartment Guidelines

2.47 The **Northern Portion** of the site has a total of 24 Apartments, containing 40 Bedrooms. Under the Guidance, this generates a requirement for 40 Residential Cycle Parking Spaces and 12 Visitor Cycle Parking Spaces. There are 12 twin racked spaces provided in the basement and 12 twin racked spaces within the dedicated bicycle storage compound for residents at ground level. A total of 18 visitor bicycle parking spaces are also provided at ground level in the form of Sheffield stands.

2.48 In terms of bicycle parking provision for the **Southern Portion** of the site; Block S has 4 double rack bicycle stands in an enclosed area at ground floor level, and 6 visitor spaces in the form of Sheffield stands – a total provision of 14 No Bicycle Parking Spaces at Block S. For the Block T Units along the street, there are 20 no residential bicycle parking spaces per block located in secure shared stores, and in-curtilage secure bicycle stores for the ground floor apartments providing for 33 further bicycles at a rate of 1 bicycle per bedroom. 8 No visitor spaces are provided in the form of Sheffield Stands per "T" block (these spaces are spread around the southern site).

2.49 For Block A, B & C there are a total of 40 No secure stands for residential use within the basement, 2 No twin bike stores located in the basement for staff use, with a total of 27 double sided Sheffield Stands provided for staff and visitors. In total, there are 138 No bicycle spaces provided in the basement of blocks A, B and C and 24 no. surface level spaces in the neighbourhood centre. Note that level access is provided to the basement for cyclists on the eastern side of the AB Block.

2.50 Based on the above, we believe that the provision of bicycle parking for the development exceeds the requirements of the National Apartment Guidelines.

3.0 VEHICULAR TRIP GENERATION, ASSIGNMENT & DISTRIBUTION

3.1 The Trip Rate Information Computer System (TRICS) database is ordinarily used to ascertain vehicular trip generation associated with the use of any particular site. This represents industry standard practice for Transportation Assessments in Ireland. In this case the worst case assessment has been undertaken using the licensed version of TRICS.

3.2 A robust and onerous assessment has been undertaken of the impact along the adjacent Local Network, in order to ensure that we thoroughly assess the impact (in terms of stress-testing the access junctions and the road capacity impact of the scheme on the important local links). The assessment is undertaken in accordance with the Guidelines in the context of the demonstrably low levels of traffic generated by the proposed development, as confirmed herein.

3.3 In terms of ***Committed Development*** (ie Development that has received planning permission and is not yet built), we have included the traffic generation associated with the adjacent DLRCC ***St Thomas Regional Sports Complex*** and also the under construction 'Glinbury' housing scheme immediately north of the development on Whitechurch Rd (SD20A/0057). The inclusion of traffic associated with Committed Development in this way is a requirement of the TII Guidelines for Transportation Assessment.

3.4 The TRICS Trip Rates applied for the 2 identified Committed Developments in this case are as set out below as ***Table 3.1 & Table 3.2***

Table 3.1 – Weekday Traffic Generated by 11 Houses at 'Glinbury'

Network Period	Car Arrivals		Car Departures		TOTAL 2-Way Traffic
	Per Unit	Total	Per Unit	Total	
Weekday AM Peak 8-9am	0.133	1	0.382	4	5
Weekday PM Peak 5-6pm	0.352	4	0.18	2	6
24 Hr Traffic	2.249	25	2.329	26	51

Table 3.2 – Weekday Traffic Generated by Tibradden Sports Campus

Network Period	Car Arrivals		Car Departures		TOTAL 2-Way Traffic
	Per 100m2	Total	Per 100m2	Total	
Weekday AM Peak 8-9am	0.482	15	0.346	11	26
Weekday PM Peak 5-6pm	1.146	37	1.069	34	71
24 Hr Traffic	9.49	304	9.43	302	605

3.5 We have included herein as ***Appendix C*** the TRICS data output for Sports and Leisure Complexes and Residential Housing upon which the above are based. We have undertaken an assessment of the traffic generated by the subject application, based on the schedule of accommodation & uses, divided between the 'Northern' and 'Southern' portions of the site (guided by the access or O-D of traffic generated by each).

3.6 The assessment of Traffic Generated by the Northern Portion of the site is as set out below as ***Table 3.3***, ***Table 3.4*** & ***Table 3.5***

Table 3.3 – Weekday Traffic Generated by 24 Apartments on Northern Portion

24 Apartments	Car Arrivals		Car Departures		Total 2-Way Traffic
Network Period	Per Apt	Total	Per Apt	Total	
AM Peak Hr 8-9am	0.058	1	0.204	5	6
PM Peak Hr 5-6pm	0.186	4	0.087	2	6

Table 3.4 – Weekday Traffic Generated by 28 Houses on Northern Portion

28 Houses	Car Arrivals		Car Departures		Total 2-Way Traffic
Network Period	Per Unit	Total	Per Unit	Total	
AM Peak Hr 8-9am	0.133	4	0.382	11	15
PM Peak Hr 5-6pm	0.352	10	0.180	5	15

Table 3.5 – TOTAL Weekday Traffic Generated by Northern Portion

Network Period	Car Arrivals	Car Departures	Total 2-Way
AM Peak Hr 8-9am	5	16	21
PM Peak Hr 5-6pm	14	7	21

3.7 The assessment of Traffic Generated by the Southern Portion of the site is as set out below as ***Table 3.6***, ***Table 3.7, Table 3.8, Table 3.9***, ***Table 3.10*** & ***Table 3.11***

Table 3.6 – Weekday Traffic Generated by 82 Apartments/Duplex on Southern Portion

82 Apartments/Duplex	Car Arrivals		Car Departures		Total 2-Way Traffic
Network Period	Per Apt	Total	Per Apt	Total	
AM Peak Hr 8-9am	0.058	5	0.204	17	22
PM Peak Hr 5-6pm	0.186	15	0.087	7	22

Table 3.7 – Weekday Traffic Generated by 44 Houses on Southern Portion

44 Houses	Car Arrivals		Car Departures		Total 2-Way Traffic
Network Period	Per Unit	Total	Per Unit	Total	
AM Peak Hr 8-9am	0.133	6	0.382	17	23
PM Peak Hr 5-6pm	0.352	15	0.180	8	23

Table 3.8 – Weekday Traffic Generated by Creché on Southern Portion *

306 m2 GFA Creche	Car Arrivals		Car Departures		Total 2-Way Traffic
Network Period	per 100m2	Total	per 100m2	Total	
AM Peak Hr 8-9am	3.329	10	2.727	8	18
PM Peak Hr 5-6pm	2.396	7	2.888	9	16

** The reality is that the Creché is an 'ancillary' supporting use & will NOT generate any traffic in its own right.*

Table 3.9 – Weekday Traffic Generated by Café on Southern Portion

144m2 GFA Café	Car Arrivals		Car Departures		Total 2-Way Traffic
Network Period	per 100m2	Total	per 100m2	Total	
AM Peak Hr 8-9am	0.000	0	0.000	0	0
PM Peak Hr 5-6pm	1.625	2	0.849	1	3

Table 3.10 – Weekday Traffic Generated by Shops/Commercial on Southern Portion**

403m2 GFA Shops/Commercial Units	Car Arrivals		Car Departures		Total 2-Way Traffic
Network Period	per 100m2	Total	per 100m2	Total	
AM Peak Hr 8-9am	3.276	13	2.976	12	25
PM Peak Hr 5-6pm	4.304	17	4.614	19	36

*** The reality is that the Neighbourhood element will generate very few external primary Car Trips*

Table 3.11 – TOTAL Weekday Traffic Generated by Southern Portion

Network Period	Car Arrivals	Car Departures	Total 2-Way
AM Peak Hr 8-9am	34	54	88
PM Peak Hr 5-6pm	57	44	101

Assignment/Distribution - Future Year Traffic

3.8 We have used hand assignment techniques based on the observed patterns, with the worst case traffic assigned to the roads based on the observed established traffic patterns. This represents industry-standard practice.

3.9 The standard methodology applied was to firstly ascertain the base background traffic conditions for both the weekday AM and weekday PM Commuter Peak periods. 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 which provides the recommended method of predicting future year traffic growth on Roads, to establish Selected occupation/opening year 2025 and design year 2040 traffic conditions (15 years following opening) on the local road network.

3.10 The worst case traffic based on the content of ***Table 3.5 & Table 3.11*** above was then applied in order to establish Opening Year and Design Year Traffic Conditions

with the entire proposed development in place and fully occupied. This is all included in the calculations included herein as ***Appendix D***.

3.11 It is noteworthy that the ENTIRE subject Development generates a Peak Hour Worst Case of 123 no. 2-Way Car Movements during the Commuter PM Peak (22 plus 101 above). In simple terms, this equates to slightly more than one car each way every minute during the hour – an extremely small volume of vehicular traffic in the context of any road network. Predicted Car movements, at one minute intervals during the peak times, represents a very low volume of traffic.

3.12 We have selected an opening year of 2025 as being reasonable and appropriate. However, in our experience, varying the opening year and design year by 1-3 years, if required, would have no significant impact upon the conclusions of the study. In addition, given the favourable results reported in this study, if required to apply higher background traffic conditions for any reason we would not anticipate any changes whatsoever to the conclusions.

3.13 Traffic growth factors for future year assessments were calculated from data obtained in the industry standard TII PE-PAG-02017 Project Appraisal Guidelines for National Roads Unit 5.3 which provides the recommended method of predicting future year traffic growth on Roads.

3.14 Calculations of the relevant growth factors are included in ***Table 3.2*** below (based on tabulated 'medium growth' in the Metropolitan Area). It should be noted that any requirement to use different or higher growth factors will also have no real implications for the conclusions of the study.

Table 3.2 - Traffic Growth Rates, TII Travel Demand Projections Unit 5.3

Year	to Year	Table 5.5.1:
2019	2025	1.030
2025	2040	1.077

3.15 The resulting Traffic Flow Projections and Figures within ***Appendix D*** allowed the assessment of impact of the development to be undertaken.

4.0 TRAFFIC IMPACT - THRESHOLD ASSESSMENT/TRAFFIC CAPACITY ANALYSIS

4.1 The Institution of Highways and Transportation (IHT) Guidelines for Traffic Impact Assessment and 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 at key nodes.

4.2 This TII Traffic and Transport Assessment 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. This is important in this case as the development is located in proximity to some important Dublin City routes.

4.3 The professional guidance referenced above sets out specific increases in traffic volume associated with new development, which, if breached at intersections, 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, and for robustness, the 5% threshold has been applied.

4.4 In this regard, it is demonstrated herein that the proposed development and occupation of the entire development, with very low volumes of vehicular traffic added to a busy network, will not result in any significant level of new trips on the local roads

4.5 Our assessment, included within ***Appendix D***, (Refer Page 10 of Appendix D) confirms that the absolute worst case traffic increase on the adjacent road network junctions are as summarised below as ***Table 4.1*** and ***Table 4.2***

Table 4.1; - Threshold Assessment, Worst-Case Impact - AM Peak Hour 8-9am

Link or Junction	Traffic Incr %	Comment
R113 Whitechurch Rd/Taylors Lane Junction	1.7%	<5% (Capacity Assessment Unnecessary)
Whitechurch Rd/Whitechurch Green R'Abt	6.4%*	>5% (Capacity Assessment Undertaken)
Site Accesses & Link Rd/College Rd Signals	N/A	Capacity Assessment included
Kilmashogue R'abt South of M50	3.4%	<5% (Capacity Assessment Unnecessary)

**** There is a >5% Traffic Increase here BECAUSE the existing background traffic is very low in volume, so that any small traffic increase at all will result in exceeding the 5% Threshold Level***

Table 4.2; - Threshold Assessment, Worst-Case Impact - PM Peak Hour 5-6pm

Link or Junction	Traffic Incr %	Comment
R113 Whitechurch Rd/Taylors Lane Junct	2.1%	<5% (Capacity Assessment Unnecessary)
Whitechurch Rd/Whitechurch Green R'Abt	7.8%*	>5% (Capacity Assessment Undertaken)
Site Accesses & Link Rd/College Rd Signals	N/A	Capacity Assessment included
Kilmashogue R'abt South of M50	4.2%	<5% (Capacity Assessment Unnecessary)

**** There is a >5% Traffic Increase here BECAUSE the existing background traffic is very low in volume, so that any small traffic increase at all will result in exceeding the 5% Threshold Level***

4.6 The Threshold Assessment clearly confirms that, in reality beyond the site accesses and the College Rd/Whitechurch Rd junction, the worst case traffic increase are in all cases imperceptible AND significantly below the IHT and TII recommended level of 5% above which further assessment is warranted. It should also be recognised that the above assessment ignores the fact that we have applied all trips as primary new trips making no reduction for shared journeys or transfer to alternative modes, and in these terms the assessment is further robust. So, the net effect of the proposed new development on local traffic flows will likely be considerably less than reported above.

4.7 Irrespective, to set the above tabulated increased levels of traffic in context, the day-to-day variation in traffic volume (due to day-of-week or weather conditions) is accepted as being 10%, so, in this context alone, increases of in all cases less than 8% in Traffic on the local roads will go unnoticed.

4.8 It is clear that the introduction of the proposed development will have a negligible and likely unnoticeable impact upon vehicular traffic conditions locally.

JUNCTION CAPACITY ANALYSIS & ASSESSMENT

4.9 We have used the TII-approved software package 'Junctions 9' PICADY' (**P**riority **I**ntersection **C**apacity and **D**ela**y**) software package (as part of the TRL Package 'Junction 9') to assess the capacity of the Northern priority controlled access junction onto Whitechurch Road to accommodate the completed development. We have used 'Junctions 9' ARCADY' (**A**ssessment of **R**oundabout **C**apacity **A**nd **D**ela**y**) to assess the Whitechurch Rd/Whitechurch Green junction. For the assessment of the New Link Rd/Whitechurch Rd/College Rd Traffic Signal Controlled junction we have used LiNSiG (**Lin**ked **Sig**nal Design). All of these are TII approved proprietary capacity modelling software packages.

Northern Site Access (on Whitechurch Rd)

4.10 The software PiCADY produces results based on a ratio of flow to capacity (RFC) and queue length. An RFC greater that 1.00 indicates that a junction is operating at or above capacity, with 0.85 considered to be the optimum RFC value. We have appended the detailed computer simulation model results (PiCADY Outputs) of the junction modelling for the proposed site access in ***Appendix E.*** A summary of the results is reproduced below as ***Table 4.3***

Table 4.3 - Junctions9 PiCADY Summary Results, Northern Site Access T-Junction

Modelled Scenario	*Period Mean Max Q (PCUs)*	*Period Max RFC*
2025 Opening Year AM Peak	<1	0.04
2025 Opening Year PM Peak	<1	0.02
2040 Design Year AM Peak	<1	0.04
2040 Design Year PM Peak	<1	0.02

4.11 The results of the modelling clearly show that the site access junction will have significantly more than adequate capacity to accommodate the worst case traffic associated with the entire lands being developed and all units fully occupied. All of the RFCs are way below the theoretical optimum capacity of 0.85 and no queuing whatsoever is anticipated.

Whitechurch Rd/Whitechurch Green Roundabout

4.12 The software ARCADY similarly produces results based on a ratio of flow to capacity (RFC) and queue length. An RFC greater that 1.00 indicates that the roundabout junction is operating at or above capacity, with 0.85 again considered to be the optimum RFC value. We have appended the detailed computer simulation model results (ARCADY Outputs) of the junction modelling for the existing junction in ***Appendix F.*** A summary of the results is reproduced below as ***Table 4.4***

Table 4.4 - Junctions9 ARCADY Summary Results, Existing Roundabout Junction

Modelled Scenario	*Period Mean Max Q (PCUs)*	*Period Max RFC*
2025 Opening Year AM Peak	<1	0.24
2025 Opening Year PM Peak	<1	0.27
2040 Design Year AM Peak	<1	0.26
2040 Design Year PM Peak	<1	0.28

4.13 The results of the modelling clearly show that the existing roundabout junction will have significantly more than adequate capacity to accommodate the worst case traffic associated with the entire lands being developed and all units fully occupied. All of the RFCs are way below the theoretical optimum capacity of 0.85 and no vehicle queuing is anticipated.

New Link Rd/Whitechurch Rd/College Rd Traffic Signal Controlled Junction

4.14 The software LiNSiG produces results that are presented and interpreted differently than PICADY or ARCADY. The output reports Maximum Degree of Saturation on any approach as a percentage, and so clearly 100% represents saturation (though it is accepted that in signals the max DoS should be 90%). We have appended the detailed computer simulation model results (LiNSiG Outputs) of the junction modelling for the proposed junction in ***Appendix G.*** A summary of the results is reproduced below as ***Table 4.5***

Table 4.5 - LiNSiG Summary Results, New 4 Arm Signal Controlled Junction

Modelled Scenario	*Period Max DoS (%)*	*Period Mean Max Q PCUs*
2025 Opening Year AM Peak	32	5
2025 Opening Year PM Peak	24	5
2040 Design Year AM Peak	34	6
2040 Design Year PM Peak	26	2

4.15 The results of the modelling clearly show that the proposed signal controlled junction will have significantly more than adequate capacity to accommodate the worst case traffic associated with the entire lands being developed and all units fully occupied. All of the DoS are way below the theoretical optimum capacity of 90% and no significant queuing is anticipated. This is unsurprising in light of the low background traffic conditions and in light of the low levels of traffic generated by the development.

4.16 The above assessment clearly demonstrates that the entire proposed development can be accommodated on the road network without any traffic and roads issues arising in terms of road capacity or road safety.

5.0 TRANSPORTATION MODES & PROVISION

Access By Road

5.1 Eventually, a proposed new street can be facilitated providing a continuous link from Grange Road to the east along College Road to Whitechurch Road and onwards to Edmondstown Road., The first section being provided in this application will run along the southern boundary of the subject lands, parallel to the M50. A design of this link street has been undertaken in 3-D by NRB, based on Topographical Survey information.

5.2 The primary role of the link is to provide access to adjacent zoned lands. However, it is expected that, in the longer term, this street will provide some benefit to local traffic with increased accessibility and permeability within the M50 Ring, consistent with the requirements of DMURS which promotes permeability. However, it is demonstrably not required to facilitate the subject development, which generates very low volumes of vehicular traffic.

5.3 This Link Street consists of a traffic calmed single carriageway 2-way pavement, with DMURS compliant raised platforms and reduced radii at the internal housing road network junctions. We have also provided the Link Street with continuous segregated cycle-ways incorporated.

5.4 It is clear from the Assessment within the Traffic/Transportation Report above that College Road, running along the southern perimeter of Marlay Park, currently experiences inappropriate and excessive traffic speeds. The measured average speed is greater than 60kph and the 85% ile Speed (ie the Road Design Speed) is 72kph. Therefore we have provided a traffic calmed design whereby;

- College Rd is reduced in width to from 6.5m to 6m, consistent with DMURS,
- We provided and created a 2-way cycle lane along the northern boundary linking to the DLRCC Slang River Greenway at Marlay Park, with a parallel footpath, all consistent with the NCM and the DLRCC Request,
- We have provided intermediate Traffic Calming Features along the length of College Road,
- The creation of a Traffic Signal Controlled junction at the Whitechurch Rd junction will assist in calming traffic with an urban junction form, and
- We can provide additional Raised Platforms and Toucan crossings as necessary and as required by DLRCC and SDCC.

5.5 In terms of Road Width, DMURS states (Para 4.4.1); ***"Research from the UK has found that narrow carriageways are one of the most effective design measures that calm traffic".***

5.6 DMURS goes on to state; - ***"In new designs the standard lane widths on Arterial and Link Streets should be in the range of 2.75m to 3.5m. Within this range the preferred values are 3.0m and 3.25m"***

5.7 We believe that the proposed redesign with the reduction in carriageway width of College Road to 6m, with 3.0m wide lanes in each direction, consistent with the recommendations of DMURS, combined with the introduction of the intermediate and raised table arrangements at both Whitechurch Road and at the entrance to Marlay Park will have a significant and beneficial effect on both Traffic Speeds and Traffic Safety characteristics .

5.8 In the Medium/Long Term, with the full development of all of the adjacent Zoned Lands, the proposed new Link Street can be extended to Edmondstown Road as illustrated in our design drawings included as ***Appendix A***.

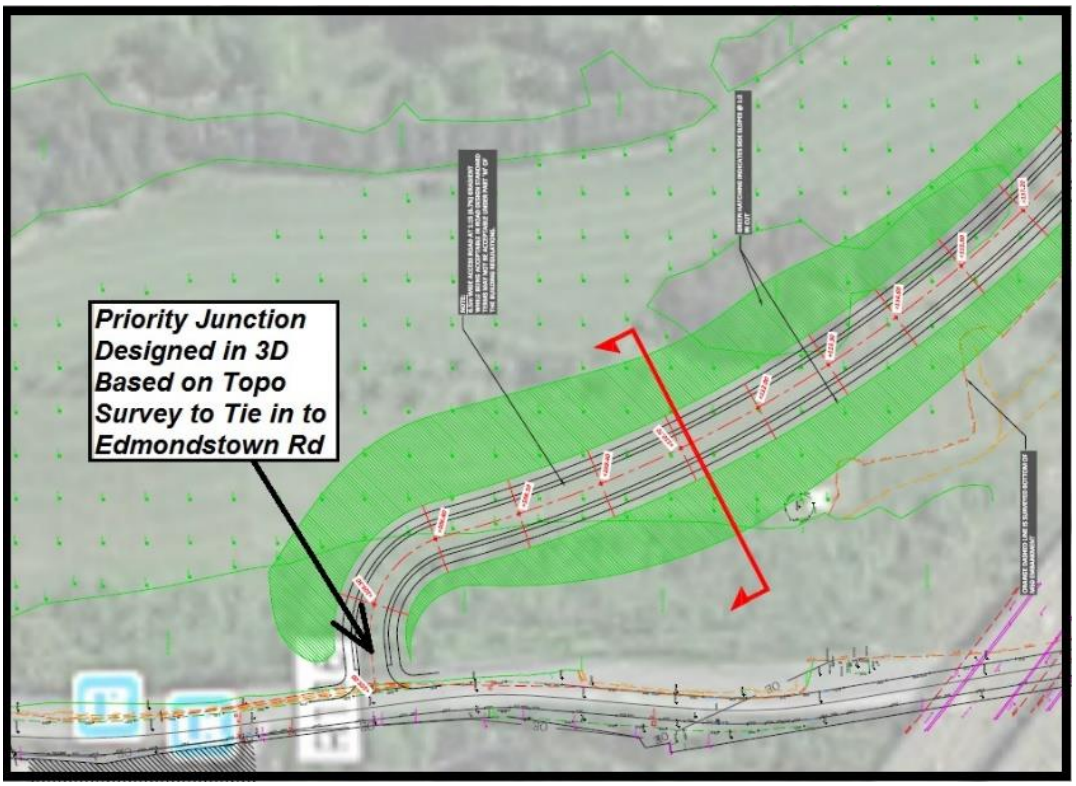

Figure 5.1 - DMRB Compliant Junction Design at Edmondstown Rd

Public Transport/Bus Provision

5.9 In the **short term**, with the anticipated significant increased demand for buses associated with the development & Regional Sports Campus, it is sensibly expected that a commercial demand will exist for **Dublin Bus/NTA** to extend the Whitechurch Area Bus Services to serve the lands (or an alternative as deemed appropriate). The location of the under-construction DLRCC St Thomas Regional Sports Campus on the south side of the M50 at Tibradden supports this (refer details below). Clearly, the anticipated resulting demand of any new residential area combined with a Regional Sports Campus, would make the logical extension of the current bus services commercially viable. (Refer also to ***Appendix N*** herewith containing the Bus Services & Capacity Assessment Report).

5.10 To this end we have designed the Link Rd Street with a dedicated turning and waiting area for Dublin Bus Services, and this is detailed on the drawings included herein as ***Appendix A***. An illustration of the possible Bus Penetration of the site to serve the lands is included below as ***Figure 5.2***

Figure 5.2 - Short Term Bus Plans

5.11 In the Medium to Longer Term, with the eventual continuation of the New Link street through to Edmondstown Rd, there will be a further opportunity for Dublin Bus to maintain, extend or improve the bus services. For example, bus services could run up Whitechurch Rd and loop back to the City along Edmondstown Road or vice-versa.

5.12 The NTA have published plans for the new Bus Connects Network for Dublin, and an annotated extract from the plan showing the site and the Regional Sports Campus is shown below as ***Figure 5.3***

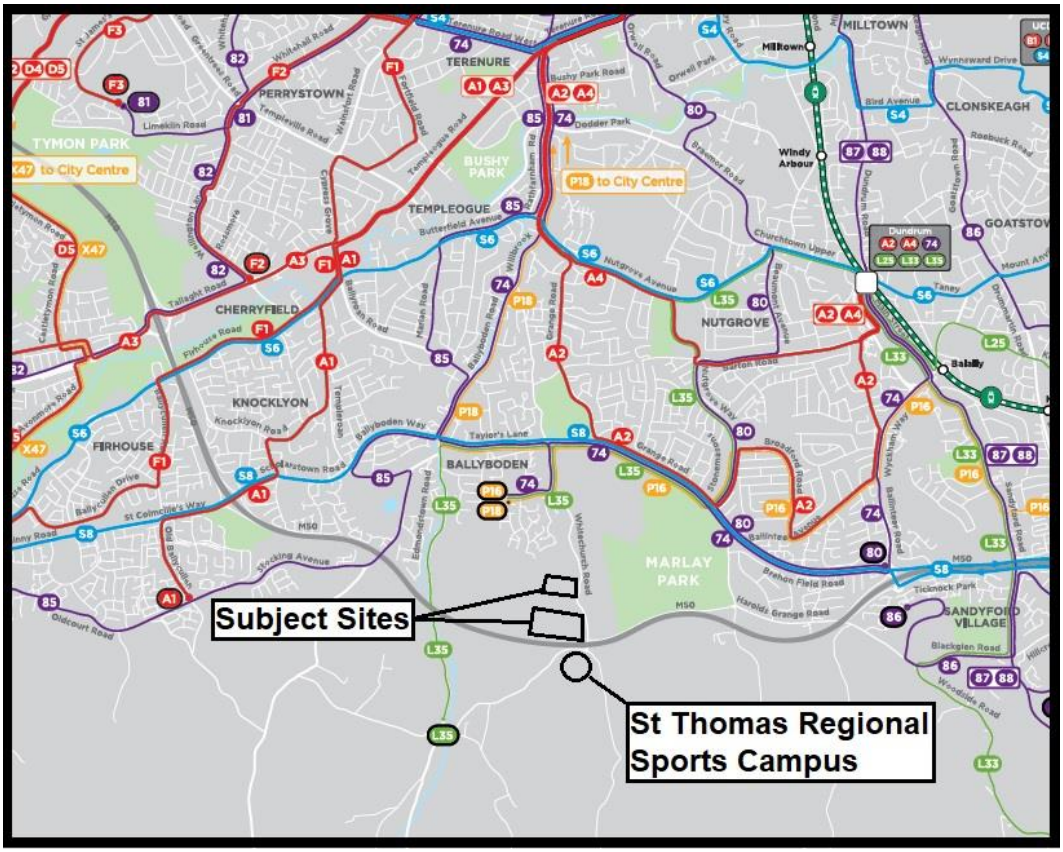

Figure 5.3 – NTA Network Plans & Site

5.13 The current plans do **not** show new any bus services passing the sites on Whitechurch Road, as of course commercial operations rely on a market and demand for services. In this case therefore an increased demand will of course be created by the building of new homes and a requirement to connect to the new Regional Sports Campus. This demand that currently exists, and will be improved in the future, is evidenced by the fact that; we understand that there has been a recent application by a Private Bus Operator for a licence to operate a bus service linking Edmondstown, Marlay Park and Whitechurch Road to Sandyford in a loop arrangement, as illustrated in ***Figure 5.4*** below;

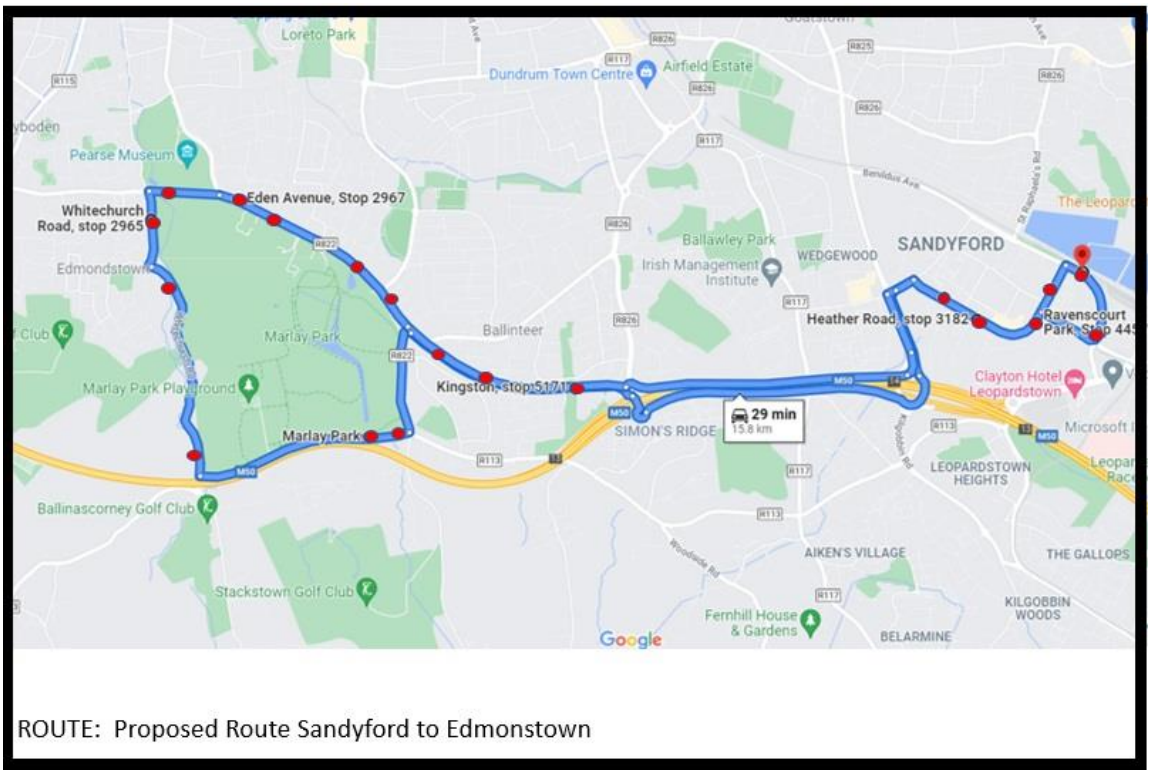

Figure 5.4 – Route of Service, As Per Recent Application to NTA.

5.14 Whilst this is clearly not a 100% commitment to the service provision, as it is currently under consideration by the NTA. It does however indicate a need for such a bus provision, and provides a measure of reassurance in terms of the commercial viability of same.

5.15 As mentioned, DLRCC have granted planning permission for the major Regional Sports Campus at Tibradden just on the other side of the M50. Dundrum South Dublin Athletics Club, in partnership with DLRCC, are currently building the new St Thomas **Regional Sports Campus**. Supported by the Council, Dundrum South Dublin Athletics Club (DSD AC) & **seven national governing sports bodies, the centre will feature an outdoor 400 metre running track, an indoor sprint track, a multi-use gymnasium and other high quality indoor and outdoor amenities for gymnastics, archery, fencing, cycling and triathlon, as well as Special Olympics facilities**.

5.16 Moving from having few dedicated facilities to a top-class multi-sport campus, these sporting bodies will now have the opportunity to train and produce athletes in a range of disciplines who can compete on the international stage, while also reaching a wider public. In addition, the multi-sport nature of the project, which involves clubs sharing the facilities, will see synergies between the sporting bodies

which will bring about mutual enhancement and will lead to a greater participation in sports by people in this part of the country and beyond.

5.17 DSD AC, and the National Bodies, are keen to promote sustainable transport, and accessibility for all, consistent with the ethos of the participating clubs & sports bodies. The campus will generate interest on a National and indeed International basis. Provision of a reliable and frequent Public Transport Link to the facility to/from the City Centre is therefore critical to the Club and National Bodies. We are aware that DSD AC have written to the NTA to request that a service or services are extended to the facility. **In this regard, we believe that the extension of bus services along Whitechurch Road is inevitable**. The extra demand for bus services will support the reintroduction of bus services down Whitechurch Road, which we understand once served this area, but which were then removed due to lack of demand.

5.18 Notwithstanding the above, the proposed bus facilities are clearly accessible to the site, as illustrated in the Annotated extract included below as ***Figure 5.5***, which shows the accessibility of services within a 2km iso-distance.

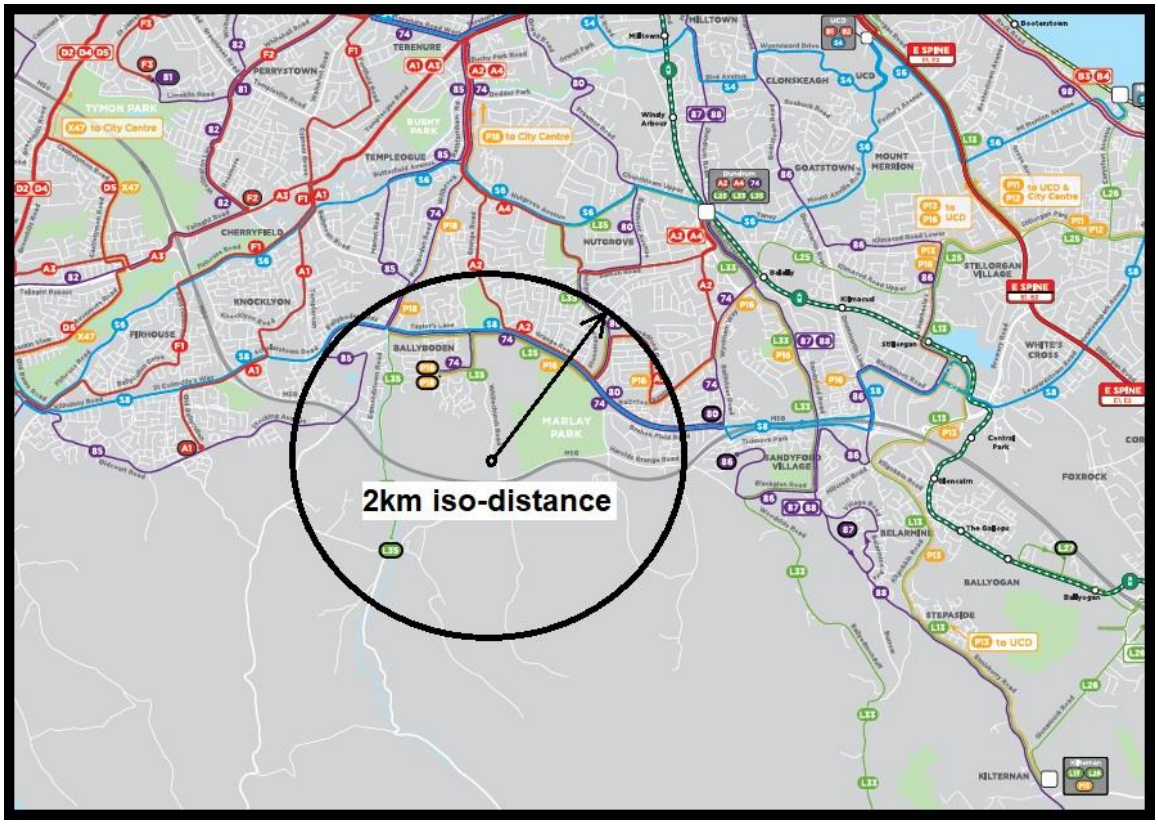

Figure 5.5 – 2km Iso-Distance of NTA Network

5.19 It is clear from the above that the following planned Bus Connects services are within a 15 min walk;- 'Express Routes' P16 & P18 (Yellow), 'Radial Route' #74

(Purple) and 'Local Route' L35 (Green) – all of which terminate at Whitechurch Green just north of the site. The following services are within a 25 minute walk or less; - 'Spine Route' A2 (Red) and 'Orbital Route' S8 (Blue). The site is therefore easily accessible by bus by a wide range of current planned routes, even in the absence of an extension of the current bus services.

Cycle & Pedestrian Access & Networks

5.20 The DLRCC ***Slang River Greenway which is part of the NTA GDA Cycle Network extends to and through Marlay Park*** and terminates at the southern College Road Access Gate to the Park, which is approximately 400m distance from the subject lands. Details of the Slang River Greenway are included in the Document within ***Appendix I*** of the TA Report. Connectivity to and through this Greenway would enable the NTA's Greater Dublin Area Cycle Network to be accessed by residents of the site. This is illustrated in the extract from the NTA Network Plans included below as ***Figure 5.6***

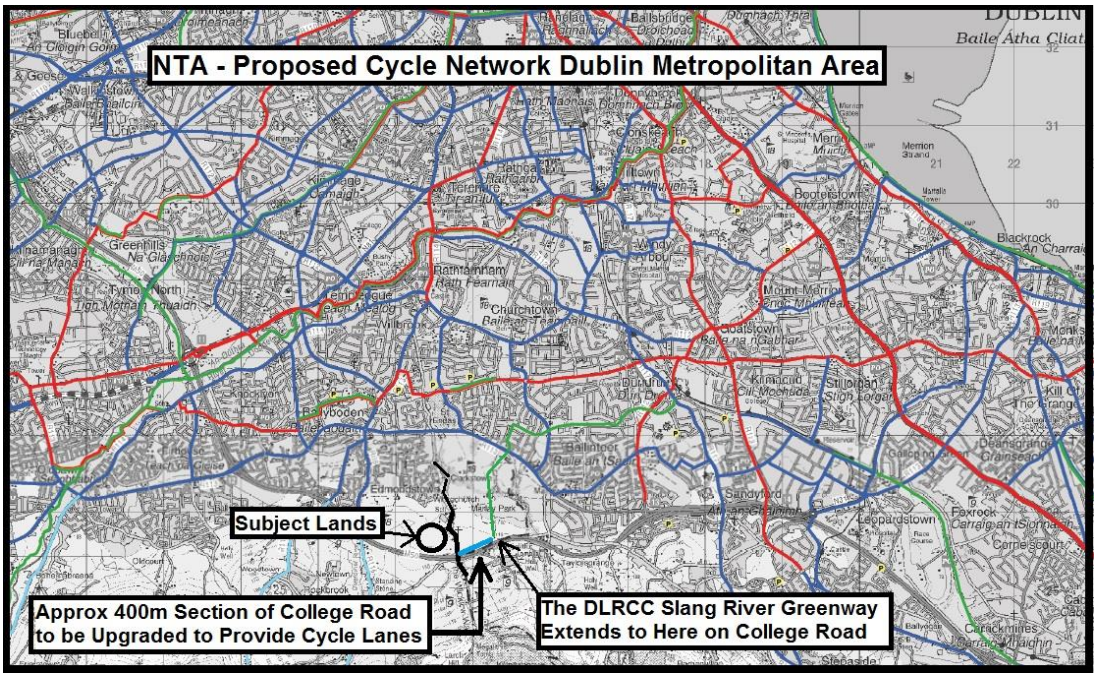

Figure 5.6 - Connectivity to NTA GDA Cycle

5.21 In the Short Term, given the proximity of the subject site to the DLRCC Slang River Greenway, and onwards to the Greater Dublin Area Cycle Network, the **key issue will be to deliver a safe and appropriate cycle link to the Southern Access to Marlay Park along College Road**. To this end, we have reviewed the current road-width and traffic conditions on College Road, with a view to now retro-fitting an appropriate design. College Road is currently 6.5m wide with a single footpath provided along the northern boundary, and a wide grassed verge along the

southern boundary. With the reduction of the road running width to c 6m (thereby remaining consistent with the width requirements of DMURS for a 50kph "Arterial and Link Street", with "Low-Moderate design Speeds"), it is possible to provide a 2-way cycle link along College Road (with the design being fully in accordance with the ***Width Calculator Section 1.5.2 of the National Cycle Manual)***

5.22 In consultation with DLRCC, we have prepared a design demonstrating that this can be achieved based on Survey Mapping, and this is included within **Appendix A**. A safe and appropriate dedicated link to the GDA Cycle Network via the DLRCC Slang River Greenway can therefore easily be provided by the Landowners in consultation with the Local Authority prior to occupation of any housing on the subject lands. This connection, and the associated calming of College Rd, will also be of benefit to the DLRCC St Thomas Regional Sports Campus to the south.

5.23 An extract image showing the proposed new cross section on College Road, with the new 2-way NCM compliant cycle lanes, to provide the link to the Slang River Greenway is included below as ***Figure 5.7***

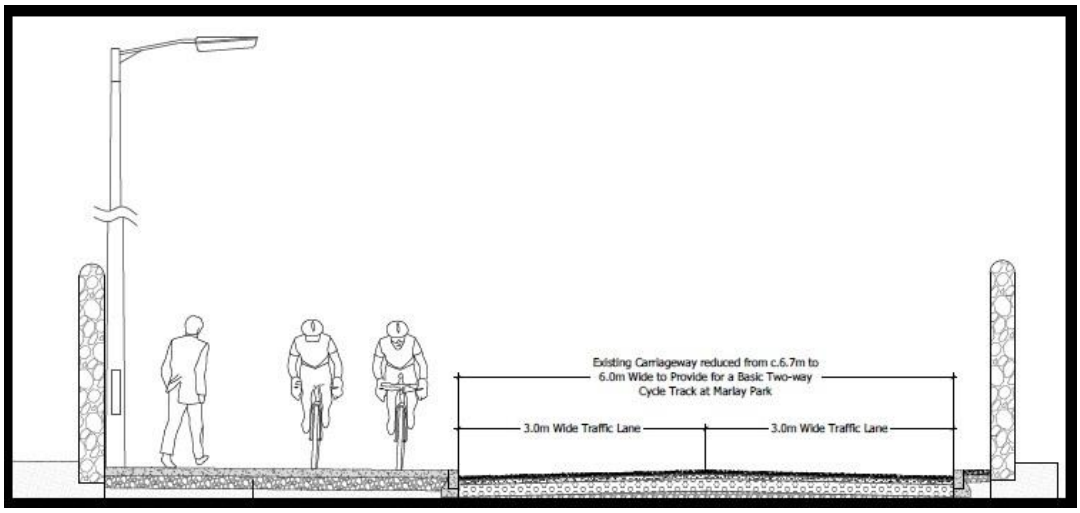

Figure 5.7 – Proposed New Cross Section on College Rd

5.24 In the Medium/Long Term, there will then be a continuous 2-way off-road cycle lane provided along the New Link Road connecting Whitechurch Road and Edmondstown Road.

5.25 This, combined with the provision of c400m of New Cycle Lane on College Road, represents a **total provision of approximately 1.8km of off-road dedicated 2-way cycle lane**, linking with the NTA's GDA Network at both ends - thereby

significantly increasing cyclist permeability & improving local access. This is illustrated in ***Figure 5.8*** below.

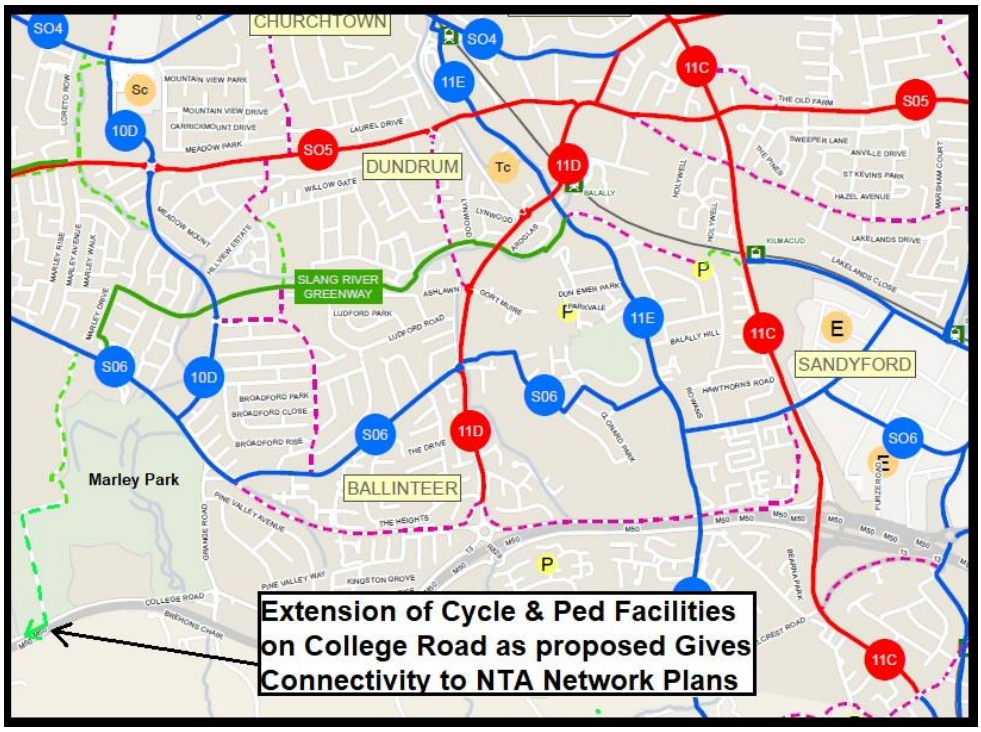

Figure 5.8 – Short Term Connectivity with NTA GDA Cycle Network

5.26 In the medium to longer term, if the street link to Edmondstown Road were completed, this would further enhance the cycle network linkage as illustrated below as ***Figure 5.9***

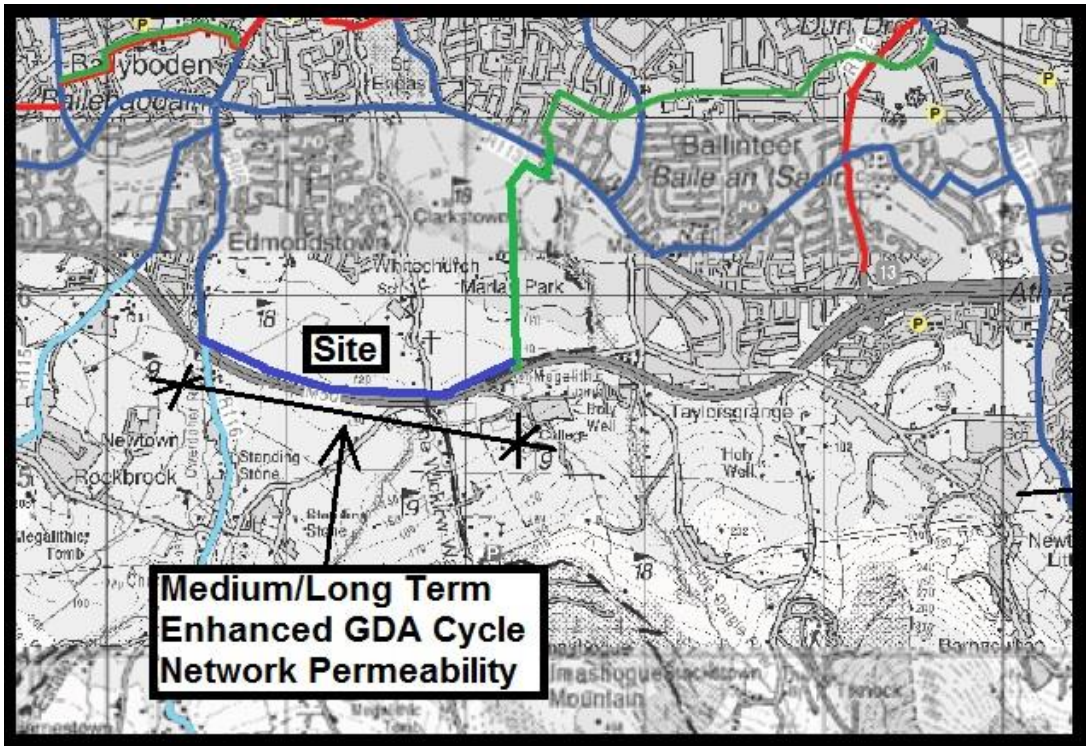

Figure 5.9 – Medium to Longer Term Connectivity to NTA Cycle Network

Whitechurch Road - Advisory Cycle Lanes

5.27 In the short/medium term, it is proposed to provide dedicated on-road advisory cycle facilities on the southern section of Whitechurch Road, ***consistent with the detail as set out on P58 of the National Cycle Manual***. This proposal is illustrated in ***Figure 5.10*** below.

Figure 5.10 - Proposed Advisory Cycle Lanes on Whitechurch Rd

5.28 The extract from the NCM (Page 58) is reproduced below as ***Figure 5.11*** for ease of reference.

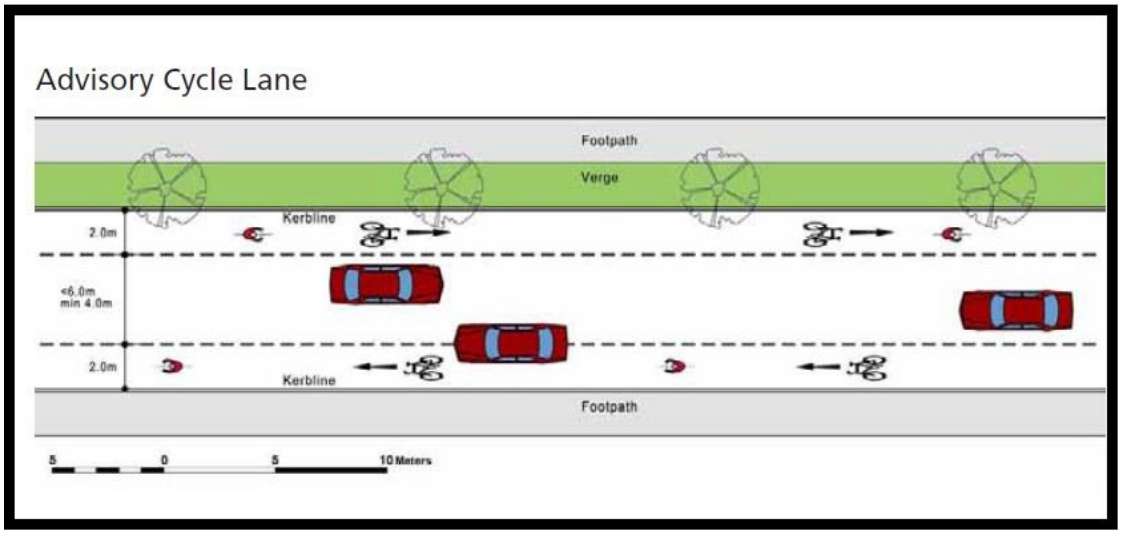

Figure 5.11 - Advisory Cycle Lane Detail as per NCM

5.29 As demonstrated in the TA Report, ***this section of Whitechurch Rd is demonstrably very lightly trafficked indeed*** - the traffic survey revealed that the weekday AM Peak Hour **2-Way** Traffic flow here is 315 PCUs, the weekday PM Peak Hour 2-Way Traffic flow here is 193 PCUs AND the 24 Hr AADT is only 2,261 PCUs. To set these flows in context, a road of the nature of Whitechurch Rd has a 2-Way traffic link capacity of c 2,000 PCUs per hour and an associated AADT Capacity of c 48,000 PCUs. So, by this measure, it currently operates at 15% of its capacity in the AM Peak Hour, at 9% of its capacity in the PM Peak Hour and at less than 5% of its capacity on a 24Hr basis. In this regard, the road is very lightly trafficked indeed, and the introduction of Advisory Cycle Lanes, as recommended in the NCM, does not therefore in our view represent any Traffic Safety concern in light of the current and projected traffic volumes.

Pedestrians

5.30 The proposed development is designed in accordance with the requirements of the Design Manual for Urban Roads and Streets (DMURS), with 30kph 'Homezones'. In these terms the layout is arranged to optimise and prioritise accessibility by Cyclist & Pedestrians, with significant reduced emphasis on accessibility by car. The layout clearly shows that it is intended to create a cyclist and pedestrian friendly environment with a permeable network combined with a traffic calmed environment.

5.31 Clearly, the development includes a carefully designed network of internal footpaths linking to the facilities already available on both Whitechurch Road and on College Road. These provide safe and appropriate off-road dedicated footpaths linking to neighbouring areas and amenities. It is proposed that safe crossing of roads will be enhanced through the incorporation of Toucan Controlled Pedestrian/Cyclist crossing points at key junctions including the traffic signal-controlled junction at Whitechurch Rd/College Rd, and these also incorporate raised platforms and traffic signage to further regulate and reduce traffic speeds.

5.32 Importantly, the small local neighbourhood shops & community facilities being introduced significantly reduce the need to travel by car for bread, milk, short term top-up provisions and daily 'basket-shop' groceries.

5.33 For journeys greater than 8km, it is recognised that a modal shift to cycling could be achievable for some, but not all, and options such as public transport and car sharing should be considered. Journeys up to 8km is accepted as the distance which can be easily undertaken by bicycle and journeys up to 2-4km could be undertaken by either walking or cycling.

5.34 To illustrate the extent of the Greater Dublin Area, Employment Zones, Schools and Services accessible by both Bicycle (8km) and on foot (2km, which represents a c25 min walk) we have included below approximate 'Iso-Distance Mapping' for an 8km and 2km Radius from the site. These illustrate the extent of the facilities within the current sustainable travel distance of the site, as ***Figure 5.12*** and ***Figure 5.13***.

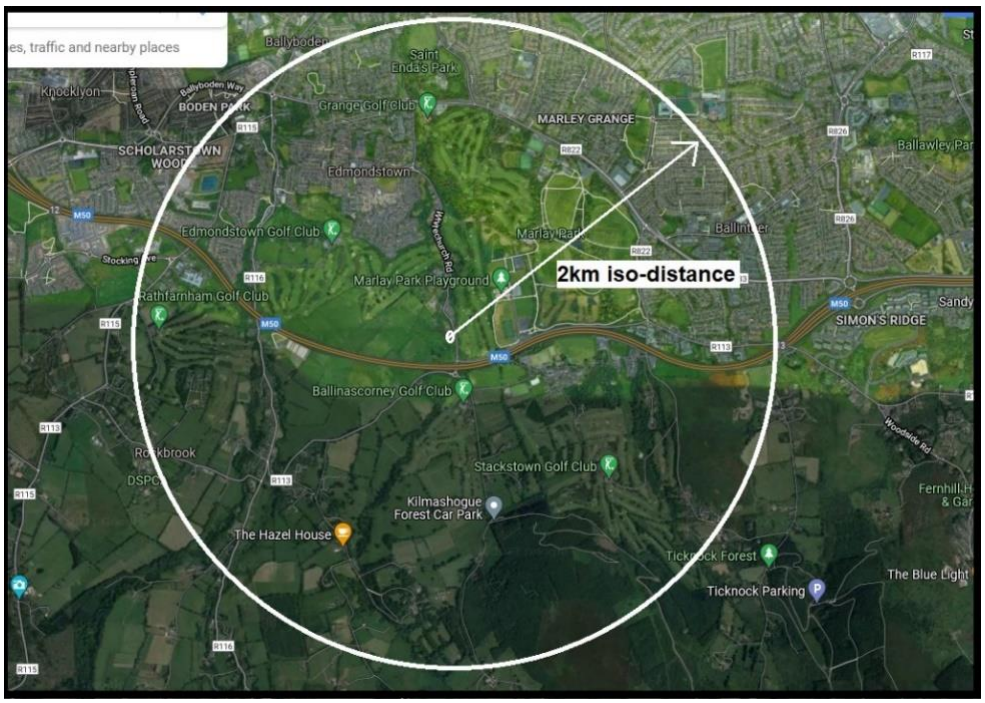

Figure 5.12 – 2km iso-distance of Subject Sites

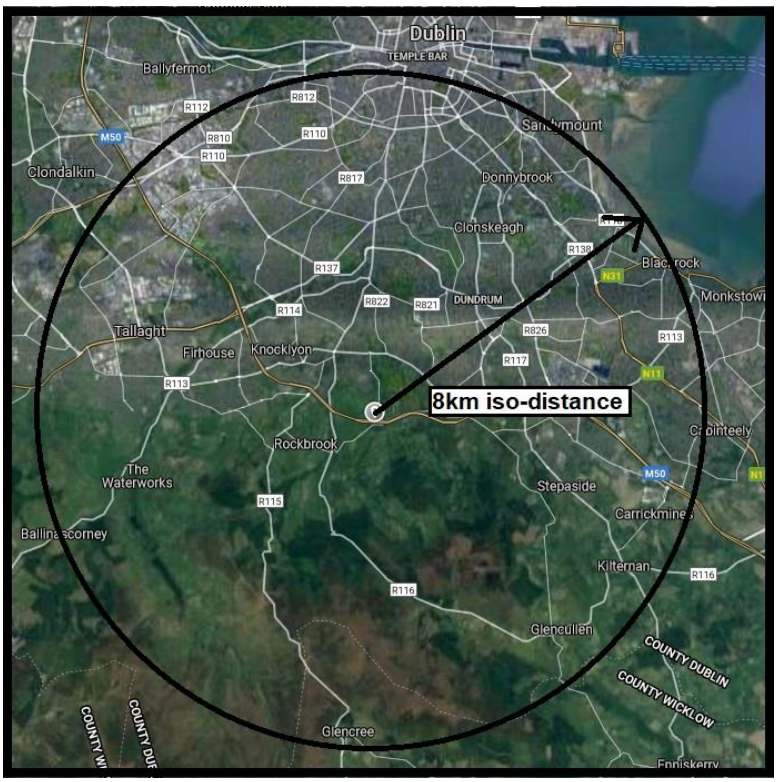

Figure 5.13 – 8km iso-distance of Subject Site

5.35 In these terms, residents would clearly not have a need to own a car (and certainly not be multiple-car households), thereby supporting sustainable modern living.

5.36 In terms of number of current and future transport alternatives easily available to Residents, it is considered that the proposed development is highly sustainable in terms of public and alternative transport accessibility. The proximity of the development to existing infrastructure & public transport services means that all residents will have viable alternatives to the private car for accessing the site and will not be reliant upon the car as a primary mode of travel.

6.0 RESPONSE TO TRAFFIC/ROADS MATTERS RAISED IN THE ABP OPINION

6.1 This section sets out the response to Traffic/Transportation & Roads matters raised within the ABP Opinion. We include individual numbered items below for ease of reference together with the considered response thereafter.

1. Principle of proposal:

Further consideration/justification of the documents as they relate to the principle of the proposed development in the context of the requirements of H3 SLO 1 of South Dublin County Development Plan 2016. The documentation submitted at application stage should demonstrate that the proposal is not premature pending determination of a road layout/increased accessibility for the area. The applicant should address why the proposed development could not be considered to be ad hoc, piecemeal, premature development in the absence of a comprehensive approach to the development of these residentially zoned lands.

The further consideration of these issues may require an amendment to the documents and/or design proposals submitted.

Figure 6.1 – ABP Opinion Item #1

Item 1 – NRB Response

6.2 It should be noted that NRB are responding and commenting on the Traffic/Transportation & Roads matters relating to the Opinion. We include below as ***Figure 6.2*** the text of H3 SLO1 extracted from the SDCC Development Plan 2016-2022 for ease of reference, with the relevant traffic/accessibility issues highlighted .

H3 SLO 1:

To facilitate the development of lands at Edmondstown (former Kilmashogue House) for the purpose of low density residential development at a net density of not more than 12 dwellings per hectare, and to promote housing for older people (nursing home, independent and semi-independent) as a fully integrated part of such development with an increased density of not more than 20 dwellings per hectare to apply to independent and semi-independent housing for older people. All residential development, including housing for older people, shall be integrated within a sustainable residential neighbourhood that is served by shared public open space, community and local facilities. Permissible densities may be increased in accordance with the relevant ministerial guidelines where issues of accessibility have been fully resolved in an appropriate manner. Any future development should have regard to the boundaries with and the protection of the existing amenity and function of Edmondstown Golf Course.

Figure 6.2 – SDCC H3 SLO1 as Extracted from Development Plan

6.3 We suggest that the design and layout of the scheme comprises a highly sustainable residential neighbourhood, with multi modal accessibility to local schools, employment destinations and services. We believe that this has been clearly demonstrated within the foregoing TA Report and the enclosed MMP.

6.4 In terms of accessibility, it has been widely stated (and particularly by DLRCC and SDCC Roads/Traffic officials) that the current nature & alignment of Whitechurch Road in particular represents an impediment or a barrier to the development of the subject lands. We also refer to the previous Board Decision in 2007 (Ref D06A/0826 ABP 06S.221017) which referred to issues of accessibility being fully resolved. This decision was prior to the release of DMURS (2013) so Road Guideline/Standard requirements including widths, and the associated safety matters, were less understood. And also we are now connecting the site to cycle routes via College road and Slang river Greenway etc.

6.5 We therefore fundamentally disagree with SDCC and DLRCC Roads/Traffic officials, and we believe that this is clearly demonstrated in this Report and analysis. Whitechurch Road has overhanging trees & foliage which creates an enclosed environment. And it has to be said, it creates a naturally traffic-calmed environment, which is reflected in the lack of accidents. We restate that it is of appropriate DMURS-compliant width, it has no significant accident record and it is demonstrably lightly trafficked. As a comparative example, it is of similar (or greater) capacity and better quality than either Stocking Lane or Scholarstown Road located to the NW of the subject site. These are roads where much more significant levels of development have been permitted and constructed without major issues arising to our knowledge. There are other examples of reduced-width and alignment-constrained much poorer quality urban roads in DLRCC (eg Brennanstown Rd) that have also accommodated significantly higher levels of development than is being proposed in this instance

6.6 During pre-planning meetings SDCC Roads/Transportation Dept state that the completion of the road link from Whitechurch Road through to Edmondstown Road is key-critical to the development of the subject lands. This stance is, in our view, unsubstantiated. In terms of a requirement for the new link, the southern portion of the subject site is predicted to generate a total 2-Way traffic flow of 101 PCUs (“Cars”) (Reference Table 3.11 above). Even if 50% of this volume of traffic were to originate/disperse to/from Edmondstown Road, in the event that the entire link were built, this would have no noticeable effect on the traffic conditions then pertaining along Whitechurch Road and beyond. 50 extra vehicles 2-way on the local network without the link being completed is negligible in light of the capacity that exists as demonstrated herein.

6.7 It is now widely accepted that constructing additional road linkages results in increased vehicular traffic flows on a network rather than reducing traffic volumes. Roads facilitate traffic rather than reducing or controlling volumes. We have clearly demonstrated that the completion of this link is not required to allow the development of the subject lands, and we have demonstrated the very small traffic impact of the proposals following full occupation.

6.8 In terms of accessibility, the main body of this report and the attached MMP highlights the significant non-car accessibility of the site. Following our review it was concluded that the proposed development is highly sustainable in terms of public and alternative transport accessibility.

6.9 As part of this proposed development, the application includes local transportation infrastructure improvements & offer including;

- National Cycle Manual (NCM) compliant linkage to the NTA GDA Cycle Network connecting to the south of Marlay Park along College Road,
- A reduced width and traffic calmed College Road, which is clearly required based on the evidence of high speeds contained within this report,
- Creating a new DMURS and NCM compliant street from Whitechurch Road to access the southern section of the development. This street can in time provide for access to the remainder of the zoned lands to the west and north, if considered appropriate,
- Improvements to Whitechurch Road to include advisory cycle facilities on the southern section consistent with the detail as set out on P58 of the National Cycle Manual,
- Inclusion of the turning area or terminus to facilitate the extension of Bus Services for the site and possibly for the Regional Sports Campus currently under construction immediately south of the M50, and
- Provision of high quality cycle and pedestrian infrastructure in the design, which assists in creation of a sustainable residential community.

(ii) Further consideration/justification of the documents as they relate to the proposed car parking strategy. The prospective applicant should also satisfy themselves that the proposed car parking strategy provides the optimal solution for the site, given its locational context and should provide justification for extent of car parking proposed.

Figure 6.3 – ABP Opinion Item #2(ii)

Item 2(ii) – NRB Response

6.10 The parking provision is described and set out in Paragraph 2.31 to 2.42 above. In effect the proposals have 1.5 car parking spaces per residential house and 1 car parking space per residential apartment/duplex, plus visitor/deliveries and set down parking. We believe that this is an appropriate and sustainable approach in the circumstances based on our experience and study (as outlined in this Report).

6.11 Clearly, a **Car Parking Management Strategy** will be deployed and enforced and this will be a function of the Management Company. Given the restricted number of car parking spaces provided, the scheme will initially be actively marketed and promoted as a sustainable "Reduced-Car-Dependency" scheme and this will be communicated from the outset as part of sales and marketing for the residential elements.

6.12 The development will also be managed on an on-going basis to ensure that the reduced dependency nature of the development is continually promoted and enhanced by way of a working Mobility Management Plan.

6.13 The development will be managed and operated by a Management Company. Car parking will not be an automatic entitlement with the apartments or the houses, but some spaces will be available to rent. Renting of parking will be allocated to residents mainly on a first come first served basis by the Management Company and will be continually managed by the Management, with enforcement by way of clamping. All parking spaces will be numbered and clearly identified. Some parking spaces will be reserved for visitors with other car parking spaces allocated for deliveries & car sharing. The allocation of car parking spaces will reviewed/renewed on an annual/ongoing basis to suit demand. Parking control will be the responsibility of the Management Company.

(iii) Further consideration/justification of the documents as they relate to the layout of the proposed development particularly in relation to the 12 criteria set out in the Urban Design Manual which accompanies the above mentioned Guidelines and the Design Manual for Urban Roads and Streets. The matters of arrangement and hierarchy of streets; the creation of a defined urban edge along the proposed link road; connectivity with adjoining lands; provision of well supervised, quality, usable open space and the creation of character areas within a high quality scheme should be given further consideration.

Figure 6.4 – ABP Opinion Item #2(iii)

Item 2(ii) – NRB Response

6.14 During the design/development of the scheme, NRB were involved in ensuring that the scheme was arranged and designed with a street network that accords with the requirements of DMURS in an appropriate manner. The final scheme was also subject to an independent Road Safety and Quality Audit. The DMURS Compliance Report and the Independent Road Safety Audit are both included as an Appendix herewith.

7.0 CONCLUSIONS

7.1 This Transportation Assessment Report assesses the traffic and transportation impact of the proposal to construct and occupy the proposed residential development on lands at Whitechurch Rd, Rathfarnham.

7.2 This Report has been prepared in accordance with the TII Traffic & Transport Assessment Guidelines, and is based on industry-standard Trip Generation Rates, in order to provide an onerous and robust assessment of the impact of the proposed development.

7.3 The traffic impact of the development traffic on the local roads has been modelled and assessed, based on a comprehensive new classified vehicle turning movement survey undertaken for the purposes of this study, during normal school period, outside any Covid 19 Pandemic Lockdown measures.

7.4 This report demonstrates that the proposed Development will have an absolutely negligible impact upon the established local traffic conditions and can easily be accommodated on the road network without any capacity concerns arising.

7.5 In particular, the report and assessment demonstrates that Whitechurch Road is currently very lightly trafficked, it meets the DMURS requirements for Arterial & Link Streets in terms of its current width and also that it has experienced very few traffic accidents, based on RSA data.

7.6 An assessment of multi modal transportation has also been undertaken and this confirms the multi modal accessibility of the site.

7.7 The plans include very significant improvements and linkages to pedestrian and cyclist facilities in the area. In particular the extension to the GDA Cycle Network, with the College Rd link to the NTA Network to and through Marlay Park, will be of benefit to all Dublin residents. The link will also be of benefit to the users of the permitted under construction St Thomas Regional Sports Campus.

7.8 The assessment includes a Preliminary MMP/Travel Plan for the site which is included as a separate report as ***Appendix J***. A review of the development plans has been undertaken and a Statement of Consistency with DMURS is included as ***Appendix K***

7.9 An independent Stage 1 Road Safety/Quality Audit of the layout & roads together with the Designer Feedback Form addressing any issues raised is included as ***Appendix L***.

7.10 A Bus Service & Bus Capacity Assessment has been undertaken and is included as ***Appendix N*** to this Report

7.11 It is considered that there are no significant Transportation, Operational Traffic Safety or Road Capacity issues that prevent a positive determination of the application by An Bord Pleanála.

APPENDICES - CONTENT

A	Proposed Development – Layout, Access & Roads Proposals
B	Raw Traffic Survey Data
C	TRICS Trip Generation Output *(Housing, Apartments, Shops, Creché, Café & Sports/Leisure Campus)*
D	Traffic Surveys, Trip Distribution & Network Traffic Flow Diagrams
E	PiCADY Junction Capacity Model Output - *Northern Site Access*
F	ARCADY Junction Capacity Model Output – *Whitechurch Green/W'ch Rd R'Abt*
G	LiNSiG Capacity Output – *Proposed Signal Controlled Crossroads at College Rd*
H	Measurements – *Effective Width Whitechurch Rd., from College Rd Northwards*
I	Spatial Framework Document (incl Site Connectivity Illustration/Image)
J	Preliminary Mobility Management Plan (Travel Plan)
K	DMURS Statement of Consistency
L	Independent Stage 1 Road Safety Audit & Designer Feedback Form
M	DLRCC Proposals for Cycle Facilities at St Thomas Sports Campus
N	Bus Services & Capacity Assessment Report

APPENDIX A

Proposed Development
Layout, Access & Roads Proposals

DRAWING ISSUE SHEET

NRB consulting engineers
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Project No : 20-017
Project Name : Whitechurch Lands - TA Drawings
Issued By: Paul Burke

(✓ denotes an entry with no revision)

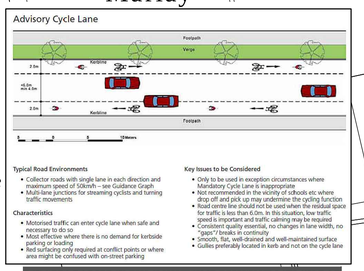
Drawing Description	No.	Size	Scale	Revision
Proposed Site Layout	NRB-TA-001	A1	1:2000	D
Proposed traffic Signal Junction General Arrangement	NRB-TA-002	A3	1:200	D
Autotrack of a Double Decker Bus at Proposed Bus Turning Head	NRB-TA-003	A3	1:250	D
Potential Future Link Road to Edmondstown Road	NRB-TA-004	A1	1:2000	D

Distribution	No. of copies
Planning	1

Date of Issue	**Day**	28
	Month	02
	Year	22
Purpose of Issue (P = Preliminary I = Information A = Approval T = Tender C = Construction)		I
Form of Issue (P = Print E = Email)		P

IMAGE ILLUSTRATING THE 'TIBRADDEN SPORTS COMPLEX' LAYOUT
(Extracted from the 'St. Thomas - A new home for sport in Dun Laoghaire Rathdown' document)

IMAGE ILLUSTRATING 'ADVISORY CYCLE LANE' MARKINGS ON WHITECHURCH ROAD IN LINE WITH THE NATIONAL CYCLE MANUAL



EXTRACT FROM THE NATIONAL CYCLE MANUAL RELATING TO 'ADVISORY CYCLE LANES'

EXISTING EDGE OF WHITECHURCH ROAD TO BE CLEARED IN ORDER TO MAXIMISE EFFECTIVE CARRIAGEWAY WIDTH

'ADVISORY' CYCLE LANES TO BE MARKED ON WHITECHURCH ROAD IN LINE WITH THE NATIONAL CYCLE MANUAL

'WICKLOW WAY' START/END POINT

EXISTING JUNCTION OF COLLEGE ROAD WITH MARLAY PARK

RAISED PLATFORM AT JUNCTION OF COLLEGE ROAD AND MARLAY PARK ENTRANCE TO PROMOTE PEDESTRIAN PRIORITY AND REDUCE SPEEDS ON COLLEGE ROAD

PROPOSED 'TOUCAN' CROSSING ON COLLEGE ROAD

SUGGESTED LOCATION FOR BUS TERMINUS/TURNING AREA TO FACILITATE EXTENSION OF EXISTING BUS SERVICES TO THE PROPOSED DEVELOPMENT

PROPOSED RECONFIGURATION OF COLLEGE ROAD TO INCLUDE A TWO-WAY CYCLE TRACK AND PEDESTRIAN PATH TO PROMOTE SAFE PEDESTRIAN & CYCLE LINKAGES

RAISED PLATFORM AT JUNCTION OF COLLEGE ROAD, WHITECHURCH ROAD AND DEVELOPMENT SITE TO PROMOTE PEDESTRIAN PRIORITY AND REDUCE SPEEDS ON COLLEGE ROAD AND WHITECHURCH ROAD

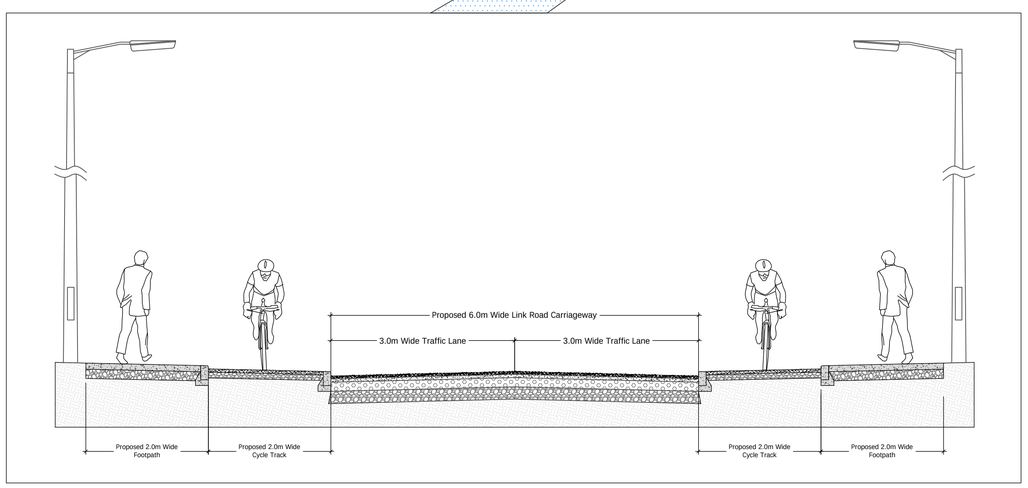
RAISED SPEED REDUCTION TABLES TO REDUCE SPEEDS ON COLLEGE ROAD

PROPOSED 6m WIDE ROAD WITH 2m WIDE FOOTPATH AND 2m WIDE ONE-WAY CYCLE TRACKS ON EITHER SIDE OF CARRIAGEWAY

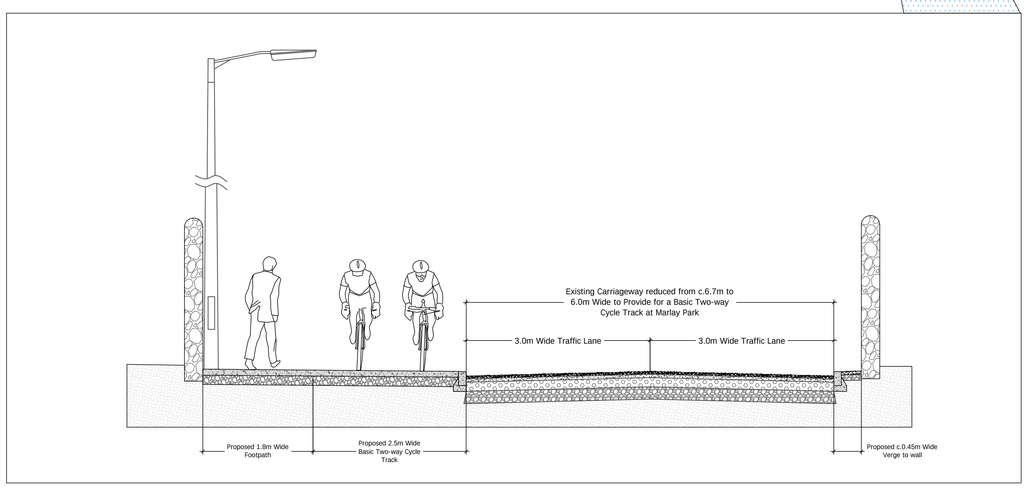
TRAFFIC SIGNAL CONTROLLED JUNCTION WITH 'TOUCAN' CROSSINGS TO ALLOW FULL PEDESTRIAN AND CYCLIST MOVEMENT BETWEEN DEVELOPMENT LANDS AND MARLAY PARK

NOTE:
IT IS INTENDED THAT ALL JUNCTIONS ALONG THIS PROPOSED ROAD WILL HAVE TRAFFIC CALMING RAISED PLATFORMS TO ENHANCE PEDESTRIAN PRIORITY IN LINE WITH DMURS.

LOCATION OF TIBRADDEN SPORTS COMPLEX - REFER TO IMAGE ABOVE



TYPICAL CROSS SECTION THROUGH PROPOSED DEVELOPMENT LINK ROAD - (Scale 1:50)



PROPOSED RECONFIGURED CROSS SECTION OF COLLEGE ROAD TO INCLUDE A TWO-WAY CYCLE TRACK AND PEDESTRIAN PATH TO PROMOTE, SAFE PEDESTRIAN & CYCLE LINKAGES - (Scale 1 :50)

NRB Consulting Engineers Ltd recommend that Road and land ownership boundaries are verified through Legal & Land searches by the Client.

This drawing is based upon JFOC Architects drawing 18.132.1001-2005 Site received 28/02/22. NRB Consulting Engineers Ltd shall not be liable for any inaccuracies or deficiencies.

REV	DATE	AMENDMENTS	DRAWN	CHK	APP

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Client

Project: Whitechurch Lands

Title: Proposed Site Layout

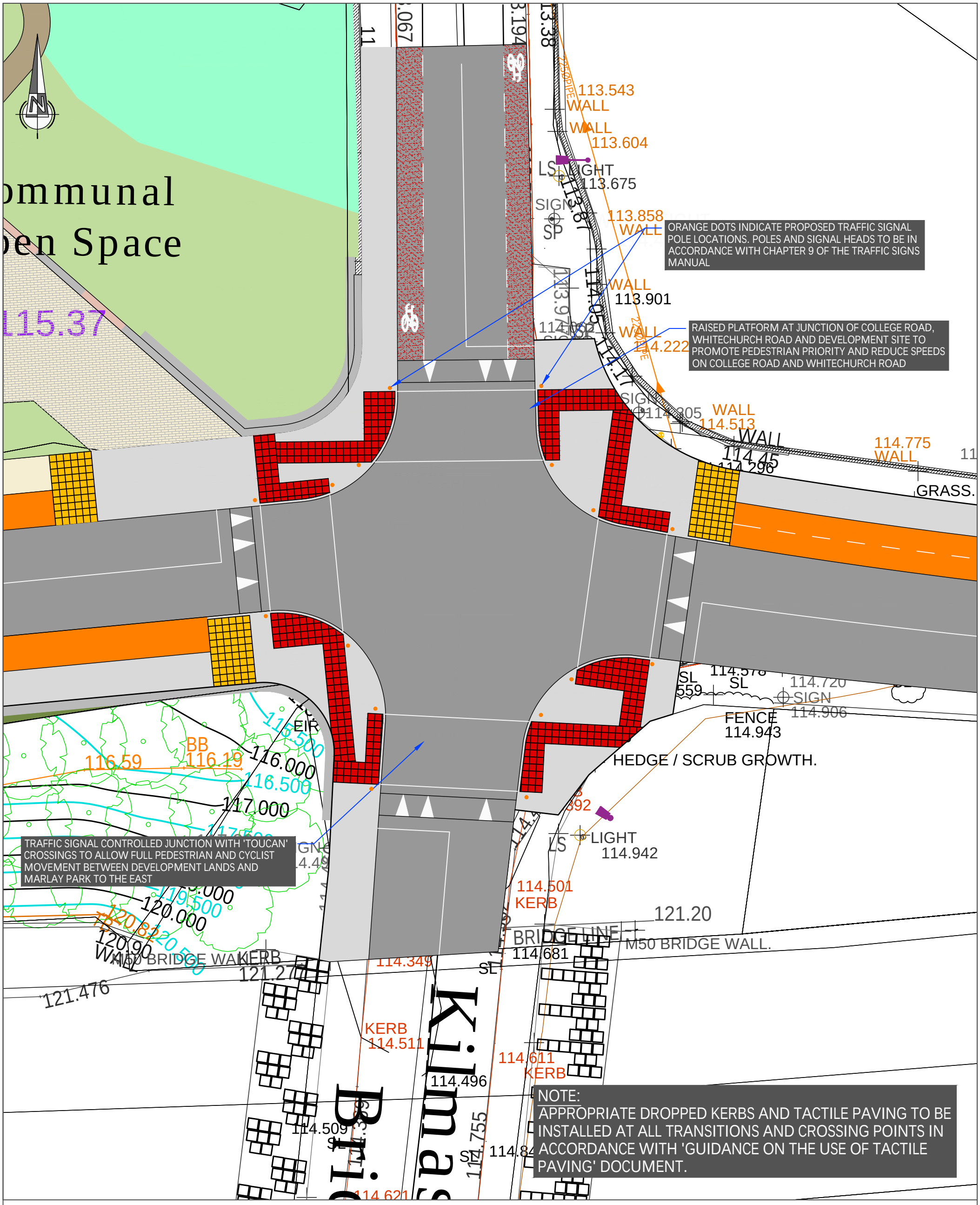
Project No.	Drawing No.
20-017	NRB-TA-001

Drawn	Checked	Approved
PB	ER 28/02/22	ER 28/02/22

Date	Scale @ A1	Rev
28-Feb-22	1:2000	D

Purpose of Issue: ☐ Draft ☐ Information ☐ Approval ☐ As Built ☐ Tender ☐ Construction

NRB Consulting Engineers Ltd accept no responsibility for any unauthorised amendments to this drawing. Only figured dimensions to be worked to.



NOTE:
APPROPRIATE DROPPED KERBS AND TACTILE PAVING TO BE INSTALLED AT ALL TRANSITIONS AND CROSSING POINTS IN ACCORDANCE WITH 'GUIDANCE ON THE USE OF TACTILE PAVING' DOCUMENT.

NRB Consulting Engineers Ltd recommend that Road and land ownership boundaries are verified through Legal & Land searches by the Client.

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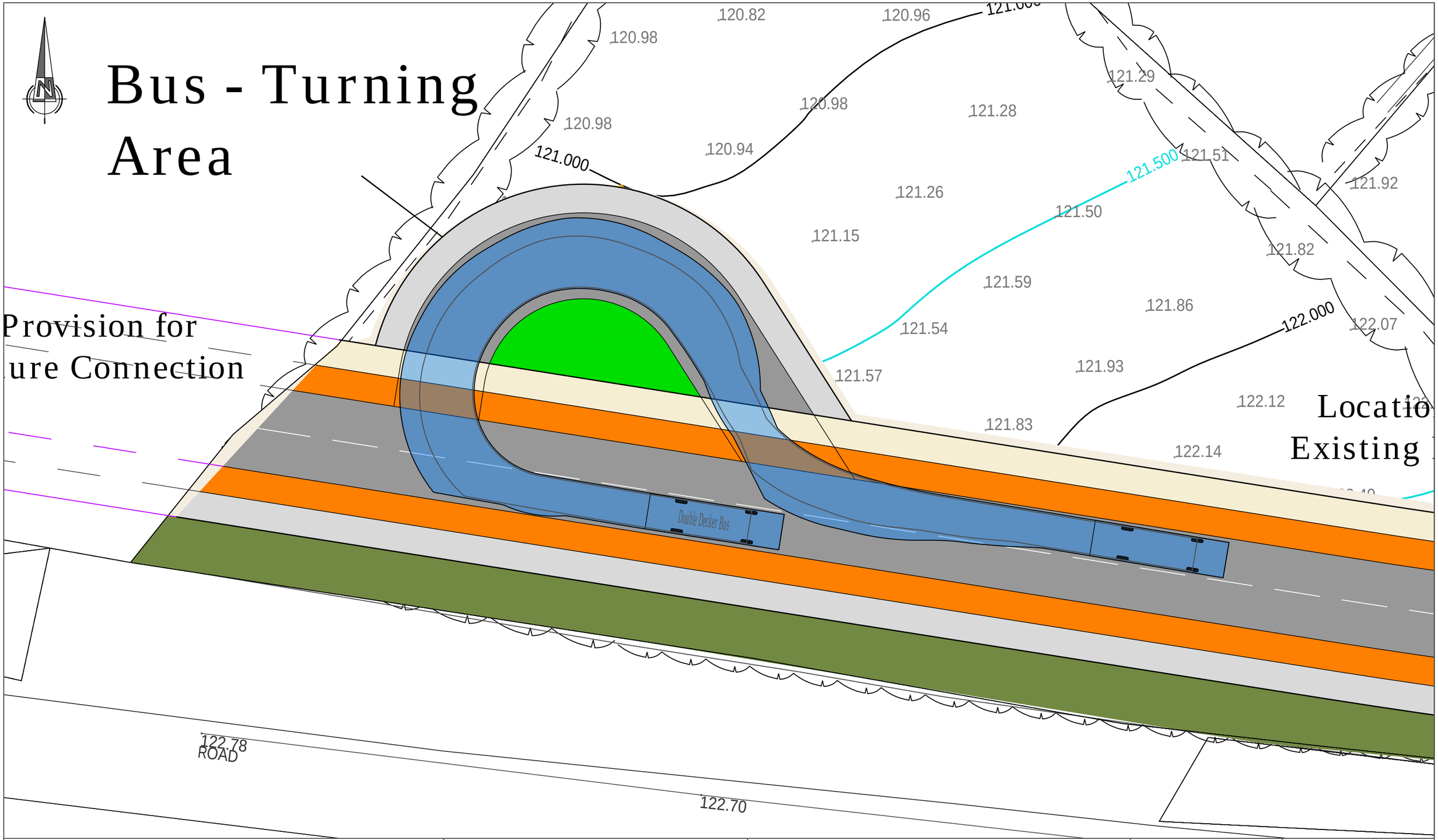
Client		Project No. 20-017	Drawing No. NRB-TA-002	
Project	Whitechurch Lands	Drawn PB	Checked ER 28/02/22	Approved ER 28/02/22
Title	Proposed Traffic Signal junction General Arrangement	Date 28-Feb-22	Scale @ A3 1:200	Rev D

NRB Consulting Engineers Ltd accept no responsibility for any unauthorised amendments to this drawing. Only figured dimensions to be worked to.

Purpose of Issue: ☐ Draft ☐ As Built ☐ Information ☐ Tender ☐ Approval ☐ Construction

Bus - Turning Area



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Registered in Ireland No. 491679

NRB consulting engineers

Client

Project: Whitechurch Lands

Title: AutoTRACK of a Double Decker Bus at Proposed Bus Turning Head

NRB Consulting Engineers Ltd accept no responsibility for any unauthorised amendments to this drawing. Only figured dimensions to be worked to.

Project No.	Drawing No.
20-017	NRB-TA-003

Drawn	Checked	Approved
PB	ER 28/02/22	ER 28/02/22

Date	Scale @ A3	Rev
28-Feb-22	1:250	D

Purpose of Issue: ☐ Draft ☐ Information ☐ Approval ☐ As Built ☐ Tender ☐ Construction

Marlay Park

Grange Golf Course

Grange Golf Club

Edmondstown Golf Club

South Dublin County Council

Dun Laoghaire Rathdown County Council

M50 South Bound →

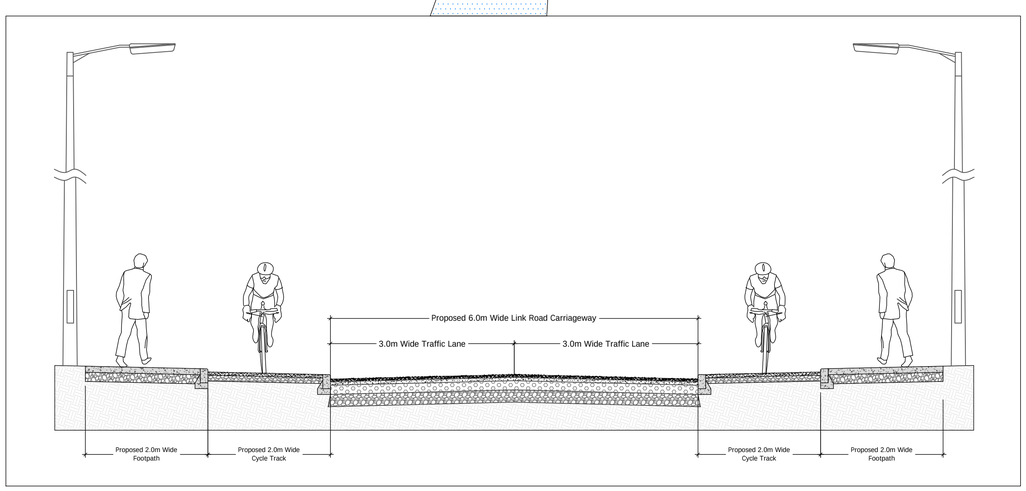
← M50 North Bound

Bus - Turning Area

NOTE:
IT IS INTENDED THAT ALL JUNCTIONS ALONG THIS PROPOSED ROAD WILL HAVE TRAFFIC CALMING RAISED PLATFORMS TO ENHANCE PEDESTRIAN PRIORITY IN LINE WITH DMURS.

PROPOSED CARRIAGEWAY TO TIE-INTO POTENTIAL FUTURE LINK AT 3rd PARTY BOUNDARY. EXACT DETAILS TBC

POTENTIAL 6m WIDE ROAD WITH 2m WIDE FOOTPATH AND 2m WIDE ONE-WAY CYCLE TRACKS ON EITHER SIDE OF CARRIAGEWAY TO EXTEND TO EDMONDSTOWN ROAD



TYPICAL CROSS SECTION THROUGH PROPOSED DEVELOPMENT LINK ROAD AND POTENTIAL LINK ROAD TO EDMONDSTOWN ROAD - (Scale 1:50)

NRB Consulting Engineers Ltd recommend that Road and land ownership boundaries are verified through Legal & Land searches by the Client.

This drawing is based upon JFOC Architects drawing 18.132.1001-2005 Site received 28/02/22. NRB Consulting Engineers Ltd shall not be liable for any inaccuracies or deficiencies.

REV	DATE	AMENDMENTS	DRAWN	CHK	APP

NRB Consulting Engineers Ltd
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Dundrum Road
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Registered in Ireland No. 491679

Client

Project: Whitechurch Lands

Title: Potential Future Link Road to Edmonstown Road

Project No.	Drawing No.
20-017	NRB-TA-004

Drawn	Checked	Approved
PB	ER 28/02/22	ER 28/02/22

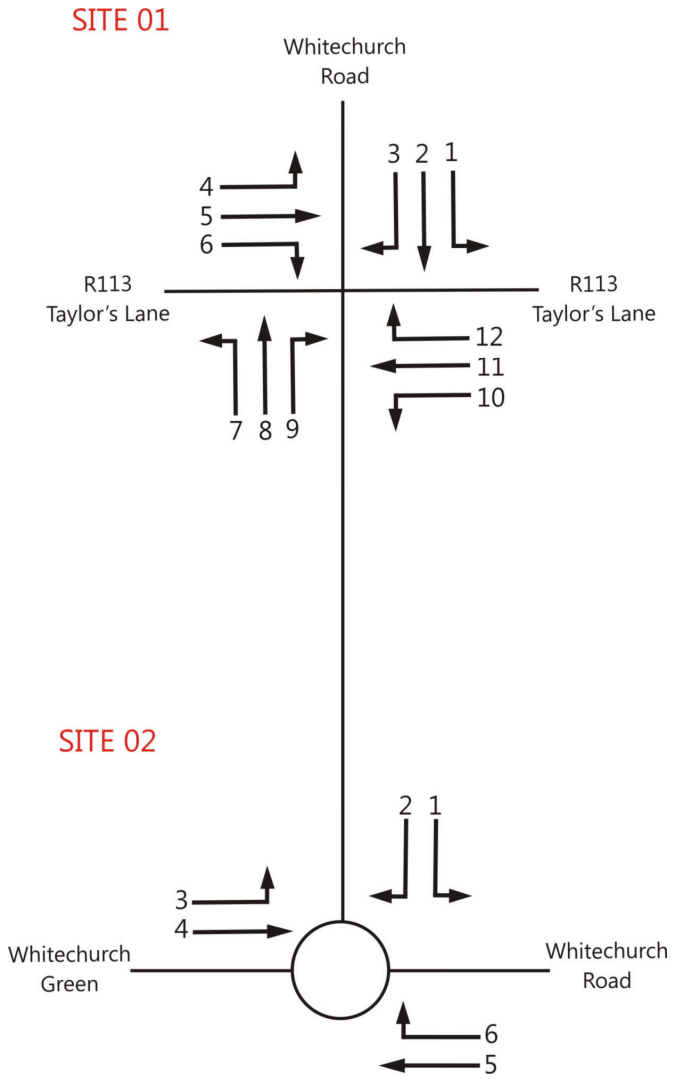
Date	Scale @ A1	Rev
28-Feb-22	1:2000	D

Purpose of Issue: ☐ Draft ☐ Information ☐ Approval ☐ As Built ☐ Tender ☐ Construction

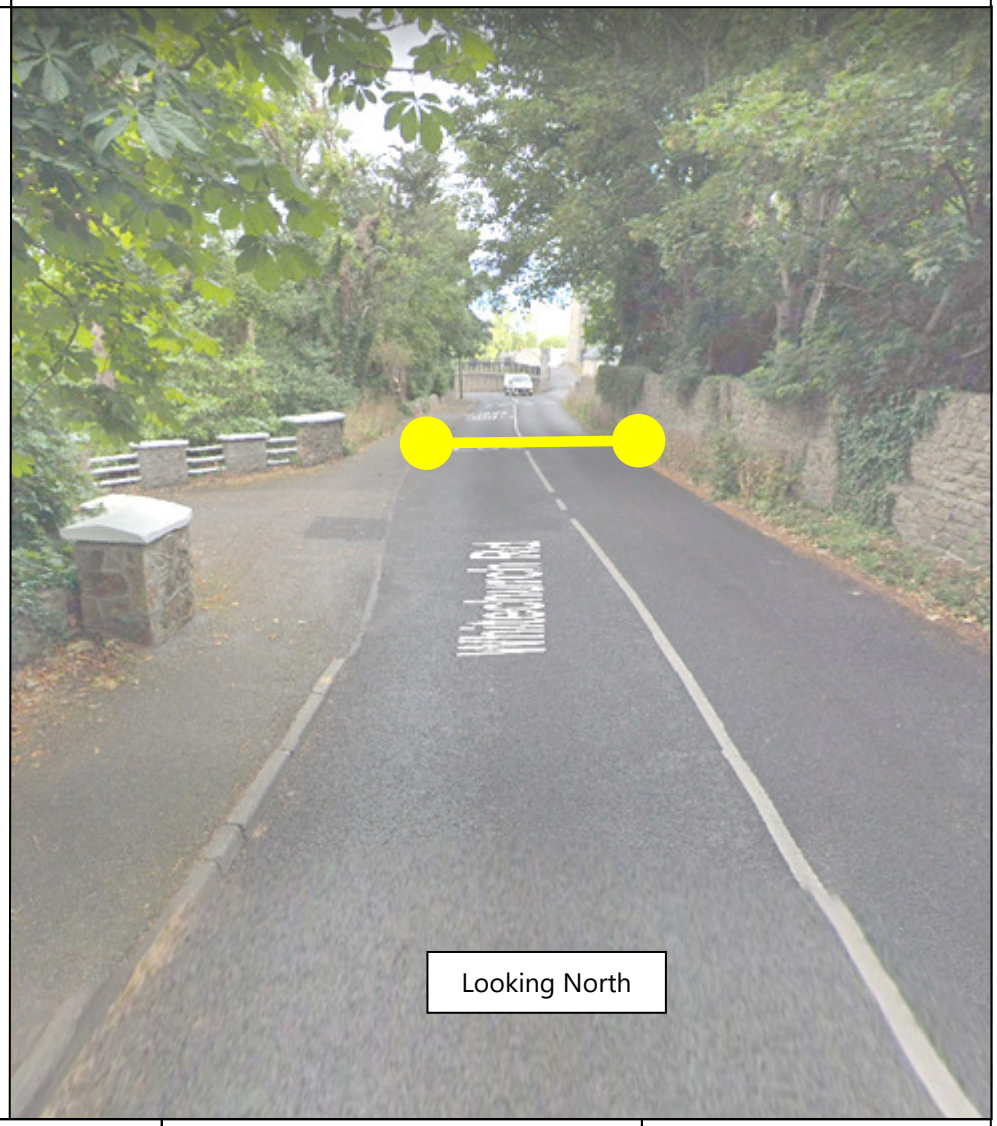
APPENDIX B

Raw Traffic Survey Data Output

Junction Count Numbering



Speed Survey Location



Job number: TRA/18/206	Job date: Nov 2019	Drawing No: TRA/18/206-1	traffinomics.ie
Client: NRB Consulting Engineers	Job day Weekday	Author: SPW	

TRAFFINOMICS LIMITED

WHITECHURCH ROAD TRAFFIC COUNTS **NOVEMBER 2019**
MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/1/206**

SITE: 01 DATE: 2019 Nov

LOCATION: R113 Taylor's Lane/Whitechurch Road DAY: Weekday

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**
07:30	0	0	7	0	0	0	7	7	0	0	4	0	0	0	4	4	0	0	21	2	0	0	23	23
07:45	0	0	8	0	0	0	8	8	0	0	6	1	0	0	7	7	0	0	11	0	0	0	11	11
08:00	0	0	5	0	0	0	5	5	0	0	15	1	0	1	17	18	0	0	12	0	0	0	12	12
08:15	1	0	9	0	0	0	10	9	0	0	14	0	0	0	14	14	0	0	14	0	0	0	14	14
H/TOT	1	0	29	0	0	0	30	29	0	0	39	2	0	1	42	43	0	0	58	2	0	0	60	60
08:30	1	0	10	1	0	0	12	11	0	0	3	0	0	0	3	3	0	0	11	1	0	0	12	12
08:45	0	0	4	0	0	0	4	4	0	0	16	0	0	0	16	16	0	0	15	1	0	1	17	18
09:00	0	0	3	0	0	0	3	3	0	0	12	0	0	0	12	12	1	0	15	2	0	0	18	17
09:15	0	1	9	0	0	0	10	9	0	0	8	0	0	0	8	8	1	0	17	1	0	0	19	18
H/TOT	1	1	26	1	0	0	29	28	0	0	39	0	0	0	39	39	2	0	58	5	0	1	66	65
P/TOT	2	1	55	1	0	0	59	57	0	0	78	2	0	1	81	82	2	0	116	7	0	1	126	125

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**
16:00	0	0	7	0	0	0	7	7	0	0	10	0	0	0	10	10	1	0	13	0	0	1	15	15
16:15	0	0	5	0	0	0	5	5	0	0	8	3	1	0	12	13	0	0	21	2	0	0	23	23
16:30	0	0	3	0	0	0	3	3	0	0	12	0	1	0	13	14	0	0	9	2	0	0	11	11
16:45	0	1	8	1	0	0	10	9	0	0	12	2	0	0	14	14	0	1	22	5	0	0	28	27
H/TOT	0	1	23	1	0	0	25	24	0	0	42	5	2	0	49	51	1	1	65	9	0	1	77	77
17:00	0	0	5	2	0	0	7	7	1	0	12	0	0	0	13	12	0	0	17	2	0	0	19	19
17:15	0	0	4	0	0	0	4	4	0	1	7	3	0	0	11	10	1	0	19	1	0	0	21	20
17:30	0	0	2	0	0	0	2	2	2	1	13	1	0	0	17	15	1	0	19	1	1	0	22	22
17:45	0	0	5	0	0	0	5	5	2	0	17	1	0	0	20	18	2	0	20	1	0	0	23	21
H/TOT	0	0	16	2	0	0	18	18	5	2	49	5	0	0	61	56	4	0	75	5	1	0	85	83
18:00	0	0	4	0	0	0	4	4	1	0	7	0	0	0	8	7	0	1	18	0	0	0	19	18
18:15	0	0	18	0	0	0	18	18	2	2	17	0	0	0	21	18	0	1	17	0	1	0	19	19
H/TOT	0	0	22	0	0	0	22	22	3	2	24	0	0	0	29	25	0	2	35	0	1	0	38	38
P/TOT	0	1	61	3	0	0	65	64	8	4	115	10	2	0	139	132	5	3	175	14	2	1	200	197

TRAFFINOMICS LIMITED

WHITECHURCH ROAD TRAFFIC COUNTS **NOVEMBER 2019**
MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/18/206**

SITE: 01 DATE: 2019 Nov

LOCATION: R113 Taylor's Lane/Whitechurch Road DAY: Weekday

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**
07:30	2	0	19	3	0	0	24	22	4	1	168	11	3	2	189	190	0	0	17	2	0	4	23	27
07:45	4	0	36	1	0	0	41	38	6	0	130	14	5	1	156	157	0	0	19	2	0	0	21	21
08:00	4	0	37	2	0	1	44	42	3	1	116	9	2	6	137	142	0	0	25	1	0	1	27	28
08:15	2	0	44	6	0	0	52	50	6	0	136	9	0	4	155	154	0	0	19	5	0	1	25	26
H/TOT	12	0	136	12	0	1	161	152	19	2	550	43	10	13	637	644	0	0	80	10	0	6	96	102
08:30	2	1	46	3	1	0	53	52	5	1	118	7	3	2	136	136	0	0	24	1	2	1	28	31
08:45	0	0	32	5	0	0	37	37	1	3	101	13	1	2	121	121	0	0	36	1	0	0	37	37
09:00	2	1	29	1	0	0	33	31	2	2	106	17	4	0	131	132	0	0	37	1	1	0	39	40
09:15	1	1	17	2	0	0	21	20	3	0	119	19	1	4	146	149	0	0	24	2	0	1	27	28
H/TOT	5	3	124	11	1	0	144	139	11	6	444	56	9	8	534	539	0	0	121	5	3	2	131	136
P/TOT	17	3	260	23	1	1	305	292	30	8	994	99	19	21	1171	1182	0	0	201	15	3	8	227	238

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**
16:00	0	0	18	1	0	0	19	19	0	1	90	12	2	0	105	106	0	0	21	1	0	0	22	22
16:15	0	0	23	3	0	0	26	26	2	0	93	6	0	0	101	99	0	0	26	7	1	1	35	37
16:30	1	0	22	1	0	0	24	23	0	1	80	9	0	1	91	91	0	0	31	6	0	1	38	39
16:45	1	0	15	1	0	0	17	16	2	0	95	8	1	2	108	109	0	0	19	6	0	0	25	25
H/TOT	2	0	78	6	0	0	86	84	4	2	358	35	3	3	405	407	0	0	97	20	1	2	120	123
17:00	0	0	16	2	0	0	18	18	1	0	102	5	1	1	110	111	0	1	24	4	1	0	30	30
17:15	0	0	28	1	0	0	29	29	1	0	104	4	1	0	110	110	0	0	25	2	0	0	27	27
17:30	0	0	12	0	0	0	12	12	2	1	108	4	1	1	117	117	0	0	24	1	0	1	26	27
17:45	1	0	22	0	0	0	23	22	2	0	77	1	0	1	81	80	0	1	22	2	0	2	27	28
H/TOT	1	0	78	3	0	0	82	81	6	1	391	14	3	3	418	419	0	2	95	9	1	3	110	113
18:00	0	1	23	0	0	0	24	23	0	0	98	4	1	1	104	106	0	1	33	2	0	0	36	35
18:15	0	0	14	0	0	0	14	14	6	1	106	5	0	1	119	115	1	0	30	2	0	1	34	34
H/TOT	0	1	37	0	0	0	38	37	6	1	204	9	1	2	223	221	1	1	63	4	0	1	70	70
P/TOT	3	1	193	9	0	0	206	203	16	4	953	58	7	8	1046	1046	1	3	255	33	2	6	300	305

TRAFFINOMICS LIMITED

WHITECHURCH ROAD TRAFFIC COUNTS **NOVEMBER 2019**
MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/18/206**

SITE: 01 DATE: 2019 Nov

LOCATION: R113 Taylor's Lane/Whitechurch Road DAY: Weekday

	MOVEMENT 7								MOVEMENT 8								MOVEMENT 9							
TIME	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**
07:30	0	0	38	3	0	1	42	43	1	0	7	0	0	0	8	7	0	0	17	2	0	0	19	19
07:45	0	0	21	3	0	1	25	26	4	1	5	0	0	0	10	6	0	0	6	0	0	1	7	8
08:00	0	0	29	5	0	2	36	38	3	0	15	0	0	0	18	16	0	0	19	1	0	1	21	22
08:15	0	0	39	4	1	1	45	47	1	0	20	1	0	0	22	21	0	0	32	0	0	1	33	34
H/TOT	0	0	127	15	1	5	148	154	9	1	47	1	0	0	58	50	0	0	74	3	0	3	80	83
08:30	0	0	30	2	0	0	32	32	2	1	22	0	0	0	25	23	1	0	20	4	0	0	25	24
08:45	0	0	26	5	1	1	33	35	0	0	11	1	0	0	12	12	0	0	15	0	1	0	16	17
09:00	1	0	31	3	1	0	36	36	0	0	10	0	0	0	10	10	0	1	10	0	0	0	11	10
09:15	0	0	24	2	2	0	28	30	1	0	9	1	0	0	11	10	0	0	15	0	0	0	15	15
H/TOT	1	0	111	12	4	1	129	133	3	1	52	2	0	0	58	55	1	1	60	4	1	0	67	67
P/TOT	1	0	238	27	5	6	277	287	12	2	99	3	0	0	116	105	1	1	134	7	1	3	147	150

	MOVEMENT 7								MOVEMENT 8								MOVEMENT 9							
TIME	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**
16:00	0	0	29	10	0	2	41	43	0	0	8	1	0	0	9	9	0	0	11	1	0	0	12	12
16:15	0	0	25	3	1	0	29	30	0	1	5	1	1	0	8	8	0	0	6	0	0	1	7	8
16:30	0	0	24	5	1	0	30	31	0	0	12	2	0	0	14	14	0	0	15	0	0	1	16	17
16:45	0	0	21	3	1	2	27	30	0	0	5	1	0	0	6	6	0	0	15	1	0	0	16	16
H/TOT	0	0	99	21	3	4	127	134	0	1	30	5	1	0	37	37	0	0	47	2	0	2	51	53
17:00	0	0	14	0	0	0	14	14	0	0	3	0	0	0	3	3	0	0	8	0	0	0	8	8
17:15	0	0	25	1	1	0	27	28	0	0	5	1	0	0	6	6	0	0	4	0	0	0	4	4
17:30	0	0	23	3	0	0	26	26	0	0	5	1	0	0	6	6	0	0	9	1	0	1	11	12
17:45	0	0	27	0	1	0	28	29	0	0	3	0	0	0	3	3	0	0	11	0	0	0	11	11
H/TOT	0	0	89	4	2	0	95	97	0	0	16	2	0	0	18	18	0	0	32	1	0	1	34	35
18:00	0	0	21	2	0	1	24	25	0	0	6	0	0	0	6	6	0	0	10	0	0	0	10	10
18:15	0	0	25	1	0	2	28	30	0	0	14	0	0	0	14	14	0	0	18	1	0	0	19	19
H/TOT	0	0	46	3	0	3	52	55	0	0	20	0	0	0	20	20	0	0	28	1	0	0	29	29
P/TOT	0	0	234	28	5	7	274	286	0	1	66	7	1	0	75	75	0	0	107	4	0	3	114	117

TRAFFINOMICS LIMITED

WHITECHURCH ROAD TRAFFIC COUNTS **NOVEMBER 2019**
MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/18/206**

SITE: 01 DATE: 2019 Nov

LOCATION: R113 Taylor's Lane/Whitechurch Road DAY: Weekday

	MOVEMENT 10								MOVEMENT 11								MOVEMENT 12							
TIME	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**
07:30	0	0	4	1	0	0	5	5	0	1	83	10	0	2	96	97	0	0	1	0	0	0	1	1
07:45	0	0	9	0	0	0	9	9	1	0	106	7	1	0	115	115	0	0	0	0	0	0	0	0
08:00	0	0	12	1	0	1	14	15	4	0	62	5	1	2	74	74	0	0	4	0	0	0	4	4
08:15	0	0	12	0	0	0	12	12	1	0	89	3	1	2	96	98	0	0	3	0	0	0	3	3
H/TOT	0	0	37	2	0	1	40	41	6	1	340	25	3	6	381	385	0	0	8	0	0	0	8	8
08:30	0	0	6	0	1	0	7	8	1	0	69	5	3	0	78	80	0	0	4	0	0	0	4	4
08:45	0	0	12	1	1	0	14	15	1	0	80	6	1	4	92	96	0	0	1	0	0	0	1	1
09:00	0	0	10	1	0	0	11	11	1	0	90	9	2	3	105	109	0	0	5	0	0	0	5	5
09:15	0	0	10	3	0	0	13	13	1	0	82	11	1	4	99	103	0	0	7	1	0	0	8	8
H/TOT	0	0	38	5	2	0	45	47	4	0	321	31	7	11	374	389	0	0	17	1	0	0	18	18
P/TOT	0	0	75	7	2	1	85	88	10	1	661	56	10	17	755	773	0	0	25	1	0	0	26	26

	MOVEMENT 10								MOVEMENT 11								MOVEMENT 12							
TIME	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**
16:00	0	0	17	1	1	0	19	20	1	0	96	11	4	3	115	121	0	0	5	1	0	0	6	6
16:15	0	0	15	2	0	1	18	19	1	0	133	11	2	3	150	154	0	0	3	0	0	0	3	3
16:30	0	0	18	1	0	0	19	19	1	0	117	17	2	3	140	144	0	0	7	1	0	0	8	8
16:45	0	0	12	1	0	1	14	15	1	1	133	13	2	2	152	155	0	0	4	0	0	0	4	4
H/TOT	0	0	62	5	1	2	70	73	4	1	479	52	10	11	557	574	0	0	19	2	0	0	21	21
17:00	0	2	16	2	1	0	21	21	4	2	147	14	3	2	172	173	0	0	1	1	0	0	2	2
17:15	0	0	14	1	1	0	16	17	4	2	155	9	2	1	173	172	0	0	5	0	0	0	5	5
17:30	0	1	8	0	0	0	9	8	5	0	158	10	1	0	174	171	1	0	6	0	0	0	7	6
17:45	0	0	23	2	0	0	25	25	1	3	105	6	0	0	115	112	0	0	6	0	0	0	6	6
H/TOT	0	3	61	5	2	0	71	71	14	7	565	39	6	3	634	628	1	0	18	1	0	0	20	19
18:00	0	0	24	0	0	0	24	24	2	1	123	3	0	1	130	129	0	0	5	0	0	0	5	5
18:15	0	0	21	0	0	0	21	21	2	3	124	3	3	1	136	137	0	0	5	1	0	0	6	6
H/TOT	0	0	45	0	0	0	45	45	4	4	247	6	3	2	266	265	0	0	10	1	0	0	11	11
P/TOT	0	3	168	10	3	2	186	189	22	12	1291	97	19	16	1457	1467	1	0	47	4	0	0	52	51

TRAFFINOMICS LIMITED

WHITECHURCH ROAD TRAFFIC COUNTS **NOVEMBER 2019**
MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/18/206**

SITE: 02 DATE: 2019 Nov

LOCATION: Whitechurch Road/Whitechurch Green DAY: Weekday

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**
07:30	0	0	16	2	0	0	18	18	0	0	9	0	0	4	13	17	1	0	33	3	0	2	39	40
07:45	0	0	25	3	0	0	28	28	0	0	9	0	0	0	9	9	0	1	19	4	0	1	25	25
08:00	0	0	44	1	0	0	45	45	0	0	9	1	0	3	13	16	0	0	30	3	0	3	36	39
08:15	0	0	21	2	0	0	23	23	0	0	22	3	0	1	26	27	0	0	31	2	0	2	35	37
H/TOT	0	0	106	8	0	0	114	114	0	0	49	4	0	8	61	69	1	1	113	12	0	8	135	142
08:30	0	0	20	0	2	1	23	26	0	0	14	1	1	0	16	17	0	1	30	3	0	0	34	33
08:45	0	0	29	2	1	0	32	33	0	0	38	1	0	0	39	39	0	0	36	3	0	1	40	41
09:00	0	0	31	1	0	0	32	32	0	0	27	2	0	0	29	29	0	1	33	4	1	0	39	39
09:15	0	0	12	4	0	0	16	16	0	0	28	3	1	1	33	35	0	0	38	2	2	0	42	44
H/TOT	0	0	92	7	3	1	103	107	0	0	107	7	2	1	117	120	0	2	137	12	3	1	155	158
P/TOT	0	0	198	15	3	1	217	221	0	0	156	11	2	9	178	189	1	3	250	24	3	9	290	299

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**
16:00	0	0	14	0	1	0	15	16	0	0	31	1	0	0	32	32	0	0	28	4	1	0	33	34
16:15	0	0	18	3	1	0	22	23	0	0	33	10	1	2	46	49	0	1	17	1	0	2	21	22
16:30	0	0	17	1	0	0	18	18	0	0	44	6	1	1	52	54	0	0	29	2	0	1	32	33
16:45	0	0	7	2	0	0	9	9	0	0	32	7	0	1	40	41	0	0	14	5	0	1	20	21
H/TOT	0	0	56	6	2	0	64	66	0	0	140	24	2	4	170	176	0	1	88	12	1	4	106	110
17:00	1	0	10	2	0	0	13	12	0	3	35	7	1	0	46	45	0	0	13	0	0	0	13	13
17:15	0	0	13	3	0	0	16	16	0	1	27	5	1	0	34	34	0	0	20	4	0	0	24	24
17:30	2	1	17	1	0	0	21	19	1	1	31	1	0	1	35	35	0	0	26	2	0	1	29	30
17:45	1	0	15	0	0	0	16	15	1	1	42	5	0	2	51	52	0	0	19	1	1	1	22	24
H/TOT	4	1	55	6	0	0	66	62	2	6	135	18	2	3	166	166	0	0	78	7	1	2	88	91
18:00	1	0	18	1	0	0	20	19	0	0	50	0	0	0	50	50	0	0	31	0	0	1	32	33
18:15	3	2	17	0	0	0	22	18	0	1	49	2	1	1	54	55	1	0	36	2	0	1	40	40
H/TOT	4	2	35	1	0	0	42	38	0	1	99	2	1	1	104	105	1	0	67	2	0	2	72	73
P/TOT	8	3	146	13	2	0	172	166	2	7	374	44	5	8	440	447	1	1	233	21	2	8	266	275

TRAFFINOMICS LIMITED

WHITECHURCH ROAD TRAFFIC COUNTS **NOVEMBER 2019**
MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/18/206**

SITE: 02 DATE: 2019 Nov

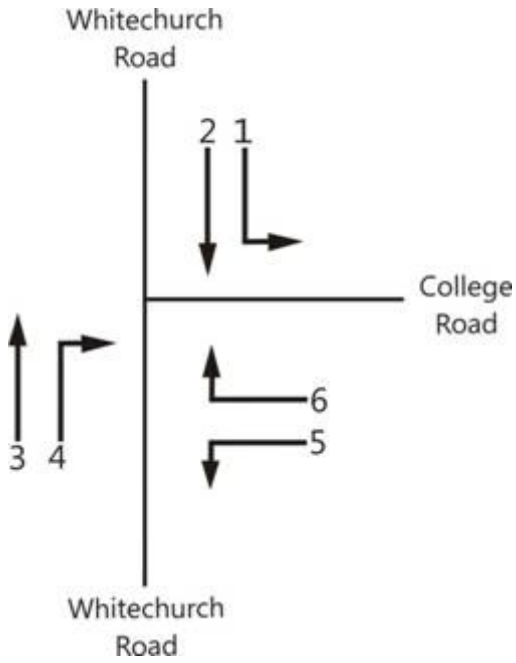
LOCATION: Whitechurch Road/Whitechurch Green DAY: Weekday

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**
07:30	0	0	8	1	0	0	9	9	0	0	0	0	0	0	0	0	0	0	24	1	0	0	25	25
07:45	0	0	12	1	0	0	13	13	0	0	4	1	0	0	5	5	3	0	14	0	0	0	17	15
08:00	0	0	8	0	0	0	8	8	0	0	4	1	0	0	5	5	2	0	32	1	0	0	35	33
08:15	0	0	6	0	0	1	7	8	0	0	5	1	0	0	6	6	3	0	54	2	1	0	60	59
H/TOT	0	0	34	2	0	1	37	38	0	0	13	3	0	0	16	16	8	0	124	4	1	0	137	132
08:30	0	0	4	0	0	0	4	4	0	0	5	0	0	0	5	5	2	0	45	3	0	0	50	48
08:45	0	0	6	0	0	0	6	6	0	0	10	1	0	0	11	11	0	0	14	2	2	0	18	20
09:00	0	0	9	3	0	0	12	12	0	0	5	1	0	0	6	6	1	0	13	0	0	0	14	13
09:15	0	0	12	0	0	0	12	12	0	0	3	1	0	0	4	4	1	0	13	0	0	0	14	13
H/TOT	0	0	31	3	0	0	34	34	0	0	23	3	0	0	26	26	4	0	85	5	2	0	96	95
P/TOT	0	0	65	5	0	1	71	72	0	0	36	6	0	0	42	42	12	0	209	9	3	0	233	226

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**
16:00	0	0	2	1	0	0	3	3	0	0	5	0	1	0	6	7	0	0	21	5	1	0	27	28
16:15	0	0	9	0	0	0	9	9	0	0	11	0	0	0	11	11	0	0	20	5	0	0	25	25
16:30	1	0	4	1	0	0	6	5	0	0	6	0	0	0	6	6	0	0	16	6	1	0	23	24
16:45	0	0	6	0	0	0	6	6	0	0	10	0	0	0	10	10	0	0	17	1	1	0	19	20
H/TOT	1	0	21	2	0	0	24	23	0	0	32	0	1	0	33	34	0	0	74	17	3	0	94	97
17:00	0	0	9	0	0	0	9	9	0	0	2	0	0	0	2	2	0	0	12	0	0	0	12	12
17:15	0	0	5	1	0	0	6	6	0	0	8	2	0	0	10	10	0	0	16	0	1	0	17	18
17:30	0	0	4	0	0	0	4	4	0	0	6	0	0	0	6	6	0	0	18	1	0	0	19	19
17:45	1	0	3	1	0	0	5	4	0	0	6	1	0	0	7	7	0	0	14	0	0	0	14	14
H/TOT	1	0	21	2	0	0	24	23	0	0	22	3	0	0	25	25	0	0	60	1	1	0	62	63
18:00	0	0	8	0	0	0	8	8	0	0	10	2	0	0	12	12	0	0	9	1	0	0	10	10
18:15	0	0	3	2	0	0	5	5	0	0	8	0	0	0	8	8	0	0	20	0	0	0	20	20
H/TOT	0	0	11	2	0	0	13	13	0	0	18	2	0	0	20	20	0	0	29	1	0	0	30	30
P/TOT	2	0	53	6	0	0	61	59	0	0	72	5	1	0	78	79	0	0	163	19	4	0	186	190

Site Locations

Movement Numbering



Job number: TRA/19/192	Job Date: 12th September 2019	Drawing No: TRA/19/192-01	traffinomics.ie
Client: NRB	Job Day: Thursday	Author: SPW	

TRAFFINOMICS LIMITED

RATHFARNHAM TRAFFIC COUNT **SEPTEMBER 2019**

MANUAL CLASSIFIED JUNCTION TURNING COUNT **TRA/19/192**

SITE: 01 DATE: 12th September 2019

LOCATION: Whitechurch Road/College Road DAY: Thursday

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
00:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
00:30	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
00:45	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	0	0	3	0	0	0	3	3
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
04:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
05:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
06:00	0	0	1	0	0	0	1	1	0	0	4	0	0	0	4	4	0	0	2	0	0	0	2	2
06:15	0	0	2	0	0	0	2	2	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0
06:30	0	0	3	0	0	0	3	3	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
06:45	0	0	9	0	0	0	9	9	0	0	5	0	0	0	5	5	0	0	2	0	0	0	2	2
H/TOT	0	0	15	0	0	0	15	15	0	0	12	0	0	0	12	12	0	0	4	0	0	0	4	4
07:00	0	0	7	1	0	0	8	8	0	0	2	2	1	0	5	6	0	0	2	0	0	0	2	2
07:15	0	0	13	2	0	0	15	15	0	0	7	1	0	0	8	8	0	0	2	1	0	0	3	3
07:30	0	0	17	4	0	0	21	21	0	0	5	0	0	0	5	5	0	0	9	0	0	0	9	9
07:45	0	0	18	0	0	0	18	18	1	1	5	0	0	0	7	6	1	0	10	0	0	0	11	10
H/TOT	0	0	55	7	0	0	62	62	1	1	19	3	1	0	25	25	1	0	23	1	0	0	25	24

TRAFFINOMICS LIMITED

RATHFARNHAM TRAFFIC COUNT **SEPTEMBER 2019**

MANUAL CLASSIFIED JUNCTION TURNING COUNT **TRA/19/192**

SITE: 01 DATE: 12th September 2019

LOCATION: Whitechurch Road/College Road DAY: Thursday

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
08:00	0	0	25	2	0	0	27	27	0	0	18	1	0	0	19	19	1	0	29	2	1	0	33	33
08:15	1	0	33	0	0	1	35	35	0	0	12	1	0	0	13	13	0	0	24	1	0	0	25	25
08:30	0	0	18	1	1	0	20	21	0	0	12	0	0	0	12	12	0	0	17	1	0	0	18	18
08:45	0	0	34	1	0	0	35	35	1	0	9	0	0	0	10	9	0	0	6	0	0	0	6	6
H/TOT	1	0	110	4	1	1	117	118	1	0	51	2	0	0	54	53	1	0	76	4	1	0	82	82
09:00	0	0	25	4	1	0	30	31	0	0	9	0	1	0	10	11	0	0	1	0	1	0	2	3
09:15	0	0	13	1	0	0	14	14	1	0	13	3	0	0	17	16	0	0	2	0	0	0	2	2
09:30	0	0	10	0	0	0	10	10	1	0	20	0	0	0	21	20	0	0	6	0	0	0	6	6
09:45	1	0	7	2	0	0	10	9	0	0	6	1	1	0	8	9	0	0	6	1	0	0	7	7
H/TOT	1	0	55	7	1	0	64	64	2	0	48	4	2	0	56	56	0	0	15	1	1	0	17	18
10:00	0	0	5	1	0	0	6	6	1	0	8	2	0	0	11	10	0	0	3	1	0	0	4	4
10:15	0	0	9	0	0	0	9	9	2	0	3	1	0	0	6	4	0	0	1	0	1	0	2	3
10:30	0	0	4	0	0	0	4	4	1	0	5	0	1	0	7	7	1	0	6	2	0	0	9	8
10:45	0	0	6	0	0	0	6	6	0	0	5	0	0	0	5	5	0	0	3	1	1	0	5	6
H/TOT	0	0	24	1	0	0	25	25	4	0	21	3	1	0	29	27	1	0	13	4	2	0	20	21
11:00	0	0	6	0	0	0	6	6	1	0	4	0	0	0	5	4	1	1	1	0	0	0	3	2
11:15	0	0	6	0	0	0	6	6	0	0	8	1	0	0	9	9	0	0	4	0	0	0	4	4
11:30	1	0	4	0	0	0	5	4	0	0	3	1	1	0	5	6	0	0	5	0	0	0	5	5
11:45	0	0	12	1	0	0	13	13	0	1	4	2	0	0	7	6	0	0	7	0	1	0	8	9
H/TOT	1	0	28	1	0	0	30	29	1	1	19	4	1	0	26	26	1	1	17	0	1	0	20	20
12:00	0	0	24	1	0	0	25	25	0	0	5	0	1	0	6	7	0	0	4	1	0	0	5	5
12:15	0	0	1	0	0	0	1	1	0	0	2	0	0	0	2	2	0	0	9	1	0	0	10	10
12:30	0	0	12	0	0	0	12	12	0	1	5	0	0	0	6	5	1	1	3	2	0	0	7	6
12:45	0	0	6	0	0	0	6	6	0	0	3	0	0	0	3	3	0	0	16	0	0	0	16	16
H/TOT	0	0	43	1	0	0	44	44	0	1	15	0	1	0	17	17	1	1	32	4	0	0	38	37
13:00	0	0	9	0	0	1	10	11	0	0	3	2	0	0	5	5	0	0	6	0	0	0	6	6
13:15	0	0	5	0	0	0	5	5	0	0	6	4	0	0	10	10	0	0	7	0	0	0	7	7
13:30	0	0	6	1	0	0	7	7	0	0	5	1	0	0	6	6	0	0	9	0	0	0	9	9
13:45	0	0	23	1	0	2	26	28	2	0	15	0	0	0	17	15	0	0	16	1	0	0	17	17
H/TOT	0	0	43	2	0	3	48	51	2	0	29	7	0	0	38	36	0	0	38	1	0	0	39	39
14:00	0	0	4	0	0	0	4	4	0	0	8	0	0	0	8	8	0	0	10	1	0	0	11	11
14:15	1	0	9	1	0	0	11	10	0	0	4	1	0	0	5	5	0	0	8	0	0	0	8	8
14:30	0	0	11	0	0	0	11	11	0	0	3	2	1	0	6	7	1	0	14	2	0	0	17	16
14:45	0	0	6	0	0	0	6	6	0	0	11	0	0	0	11	11	0	1	3	0	0	0	4	3
H/TOT	1	0	30	1	0	0	32	31	0	0	26	3	1	0	30	31	1	1	35	3	0	0	40	39
15:00	0	0	7	0	0	1	8	9	0	0	7	1	0	0	8	8	0	0	4	1	0	0	5	5
15:15	0	0	14	1	0	0	15	15	0	0	5	0	0	0	5	5	0	0	7	0	0	0	7	7
15:30	0	0	8	0	0	0	8	8	1	0	4	0	0	0	5	4	0	0	6	0	0	0	6	6
15:45	0	0	6	1	0	0	7	7	0	0	4	0	0	0	4	4	0	0	8	1	0	0	9	9
H/TOT	0	0	35	2	0	1	38	39	1	0	20	1	0	0	22	21	0	0	25	2	0	0	27	27

TRAFFINOMICS LIMITED

RATHFARNHAM TRAFFIC COUNT **SEPTEMBER 2019**

MANUAL CLASSIFIED JUNCTION TURNING COUNT **TRA/19/192**

SITE: 01 DATE: 12th September 2019

LOCATION: Whitechurch Road/College Road DAY: Thursday

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
16:00	1	0	12	2	0	0	15	14	0	0	8	0	0	0	8	8	0	1	9	2	0	0	12	11
16:15	0	0	16	3	0	0	19	19	0	0	8	1	0	0	9	9	0	1	3	1	0	0	5	4
16:30	0	0	7	1	0	0	8	8	0	0	7	1	0	0	8	8	0	0	3	2	0	0	5	5
16:45	0	0	4	0	0	0	4	4	0	0	5	0	0	0	5	5	0	0	4	1	0	0	5	5
H/TOT	1	0	39	6	0	0	46	45	0	0	28	2	0	0	30	30	0	2	19	6	0	0	27	26
17:00	0	0	6	0	0	0	6	6	0	0	12	1	1	0	14	15	0	0	3	1	0	0	4	4
17:15	0	0	6	1	0	0	7	7	0	0	15	3	0	0	18	18	0	0	4	0	1	0	5	6
17:30	0	0	11	0	1	0	12	13	0	0	7	0	0	0	7	7	0	0	7	0	0	0	7	7
17:45	1	0	12	1	0	0	14	13	1	0	3	0	0	0	4	3	0	0	7	1	0	0	8	8
H/TOT	1	0	35	2	1	0	39	39	1	0	37	4	1	0	43	43	0	0	21	2	1	0	24	25
18:00	0	0	15	1	0	0	16	16	2	0	6	2	0	0	10	8	2	0	4	2	0	0	8	6
18:15	3	0	5	0	0	0	8	6	2	0	9	0	0	0	11	9	1	0	7	0	0	0	8	7
18:30	0	0	10	0	0	0	10	10	2	0	5	0	0	0	7	5	0	0	8	0	0	0	8	8
18:45	0	0	8	1	0	0	9	9	1	0	16	0	0	0	17	16	0	0	9	0	0	0	9	9
H/TOT	3	0	38	2	0	0	43	41	7	0	36	2	0	0	45	39	3	0	28	2	0	0	33	31
19:00	0	0	6	1	0	0	7	7	1	0	7	0	0	0	8	7	0	0	6	1	0	0	7	7
19:15	0	0	5	0	0	0	5	5	0	0	6	0	0	0	6	6	0	0	2	0	0	0	2	2
19:30	0	0	9	0	0	0	9	9	0	0	9	0	0	0	9	9	0	0	4	0	0	0	4	4
19:45	0	0	4	1	0	0	5	5	0	0	7	0	0	0	7	7	0	0	3	1	1	0	5	6
H/TOT	0	0	24	2	0	0	26	26	1	0	29	0	0	0	30	29	0	0	15	2	1	0	18	19
20:00	0	0	5	0	0	0	5	5	0	0	5	0	0	0	5	5	0	0	5	0	0	0	5	5
20:15	0	0	2	0	0	0	2	2	0	0	11	0	0	0	11	11	0	0	5	0	0	0	5	5
20:30	1	0	3	0	0	0	4	3	0	0	9	0	0	0	9	9	1	1	17	1	0	0	20	19
20:45	0	0	4	0	0	0	4	4	0	0	2	0	0	0	2	2	0	0	14	0	0	0	14	14
H/TOT	1	0	14	0	0	0	15	14	0	0	27	0	0	0	27	27	1	1	41	1	0	0	44	43
21:00	0	0	1	0	0	0	1	1	0	0	2	0	0	0	2	2	0	0	7	0	0	0	7	7
21:15	0	0	1	0	0	0	1	1	0	0	4	0	0	0	4	4	0	0	4	0	0	0	4	4
21:30	0	0	4	0	0	0	4	4	0	0	2	0	0	0	2	2	0	0	2	0	0	0	2	2
21:45	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	4	0	0	8	1	0	0	9	9
H/TOT	0	0	6	0	0	0	6	6	0	0	12	0	0	0	12	12	0	0	21	1	0	0	22	22
22:00	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	0	0	4	0	0	0	4	4
22:15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	4	0	0	0	4	4
22:30	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0
22:45	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
H/TOT	0	0	3	0	0	0	3	3	0	0	4	0	0	0	4	4	0	0	9	0	0	0	9	9
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:15	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0
23:30	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0
23:45	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	1	0	0	0	1	1	0	0	4	0	0	0	4	4	0	0	0	0	0	0	0	0
P/TOT	10	0	600	38	3	5	656	656	21	3	439	35	8	0	506	495	10	6	436	34	7	0	493	488

TRAFFINOMICS LIMITED

RATHFARNHAM TRAFFIC COUNT **SEPTEMBER 2019**

MANUAL CLASSIFIED JUNCTION TURNING COUNT **TRA/19/192**

SITE: 01 DATE: 12th September 2019

LOCATION: Whitechurch Road/College Road DAY: Thursday

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
00:00	0	0	2	0	0	0	2	2	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
00:15	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	0	2	0	0	0	2	2
00:30	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
00:45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
H/TOT	0	0	3	0	0	0	3	3	0	0	5	0	0	0	5	5	0	0	2	0	0	0	2	2
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
04:15	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
04:45	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
H/TOT	0	0	3	0	0	0	3	3	0	0	3	0	0	0	3	3	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	2	0	0	0	0	0	0	0	0
05:45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
H/TOT	0	0	1	0	0	0	1	1	0	0	2	1	0	0	3	3	0	0	0	0	0	0	0	0
06:00	2	0	2	0	0	0	4	2	0	0	1	0	1	0	2	3	0	0	0	0	0	0	0	0
06:15	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	4	0	0	2	0	0	0	2	2
06:30	0	0	3	0	0	0	3	3	0	0	2	0	0	0	2	2	0	0	1	0	0	0	1	1
06:45	0	0	8	2	2	1	13	16	0	0	3	1	0	0	4	4	0	0	0	0	0	0	0	0
H/TOT	2	0	13	2	2	1	20	21	0	0	6	1	1	2	10	13	0	0	3	0	0	0	3	3
07:00	0	0	11	1	0	0	12	12	0	1	5	1	0	0	7	6	1	0	1	0	0	0	2	1
07:15	0	0	15	2	1	0	18	19	0	0	4	1	0	0	5	5	0	0	2	0	0	0	2	2
07:30	0	0	37	3	0	0	40	40	1	0	11	2	0	0	14	13	0	0	8	0	0	0	8	8
07:45	0	0	50	1	0	0	51	51	0	0	21	1	0	0	22	22	0	0	9	0	0	0	9	9
H/TOT	0	0	113	7	1	0	121	122	1	1	41	5	0	0	48	47	1	0	20	0	0	0	21	20

TRAFFINOMICS LIMITED

RATHFARNHAM TRAFFIC COUNT **SEPTEMBER 2019**

MANUAL CLASSIFIED JUNCTION TURNING COUNT **TRA/19/192**

SITE: 01 DATE: 12th September 2019

LOCATION: Whitechurch Road/College Road DAY: Thursday

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
08:00	0	0	70	2	0	0	72	72	0	0	17	0	0	1	18	19	0	0	28	0	0	0	28	28
08:15	3	0	62	3	0	2	70	70	0	0	16	3	0	1	20	21	0	0	17	1	0	0	18	18
08:30	0	1	59	1	0	0	61	60	0	0	21	0	0	0	21	21	0	0	7	1	0	0	8	8
08:45	0	0	27	4	0	1	32	33	1	0	20	1	1	0	23	23	0	0	8	0	0	0	8	8
H/TOT	3	1	218	10	0	3	235	235	1	0	74	4	1	2	82	84	0	0	60	2	0	0	62	62
09:00	0	0	21	2	1	0	24	25	0	0	12	0	0	1	13	14	0	0	9	1	0	0	10	10
09:15	0	0	14	2	0	0	16	16	0	0	15	3	0	0	18	18	0	0	7	0	1	0	8	9
09:30	0	0	10	0	0	0	10	10	0	0	14	1	0	0	15	15	0	0	7	0	0	0	7	7
09:45	0	0	11	0	0	0	11	11	2	0	28	1	0	0	31	29	0	0	4	2	0	0	6	6
H/TOT	0	0	56	4	1	0	61	62	2	0	69	5	0	1	77	76	0	0	27	3	1	0	31	32
10:00	0	0	12	4	1	0	17	18	0	0	12	0	0	0	12	12	0	0	2	0	0	0	2	2
10:15	1	0	10	2	0	1	14	14	1	0	8	3	0	0	12	11	0	0	5	0	0	0	5	5
10:30	1	0	9	0	0	0	10	9	0	0	18	1	0	0	19	19	0	0	1	0	0	0	1	1
10:45	1	0	15	1	0	0	17	16	0	0	13	1	0	0	14	14	0	0	4	0	0	0	4	4
H/TOT	3	0	46	7	1	1	58	58	1	0	51	5	0	0	57	56	0	0	12	0	0	0	12	12
11:00	0	0	8	1	0	0	9	9	0	0	11	0	2	0	13	15	0	0	10	0	0	0	10	10
11:15	0	0	10	3	0	0	13	13	0	0	13	0	0	0	13	13	0	0	3	0	0	0	3	3
11:30	1	0	12	2	0	0	15	14	0	0	10	1	0	0	11	11	0	0	7	0	1	0	8	9
11:45	0	0	4	4	0	0	8	8	0	0	13	4	0	0	17	17	0	0	18	2	0	0	20	20
H/TOT	1	0	34	10	0	0	45	44	0	0	47	5	2	0	54	56	0	0	38	2	1	0	41	42
12:00	0	0	16	0	1	0	17	18	0	0	12	0	1	0	13	14	0	0	6	0	0	0	6	6
12:15	0	0	20	2	0	0	22	22	0	1	24	1	0	0	26	25	0	0	10	1	0	0	11	11
12:30	0	0	13	0	0	0	13	13	0	0	23	0	0	0	23	23	0	0	7	0	0	0	7	7
12:45	0	0	9	1	0	0	10	10	0	0	14	0	1	0	15	16	0	0	10	1	0	0	11	11
H/TOT	0	0	58	3	1	0	62	63	0	1	73	1	2	0	77	78	0	0	33	2	0	0	35	35
13:00	0	0	17	2	0	1	20	21	2	0	16	3	0	0	21	19	0	0	6	0	0	0	6	6
13:15	0	0	27	0	0	0	27	27	1	0	22	2	1	0	26	26	1	0	12	1	0	0	14	13
13:30	0	0	30	0	0	0	30	30	0	0	16	2	1	0	19	20	0	0	13	0	0	1	14	15
13:45	2	0	18	3	0	0	23	21	0	0	16	0	0	0	16	16	1	0	13	0	0	0	14	13
H/TOT	2	0	92	5	0	1	100	99	3	0	70	7	2	0	82	82	2	0	44	1	0	1	48	47
14:00	0	0	23	2	1	0	26	27	0	0	14	3	0	0	17	17	0	0	12	0	0	0	12	12
14:15	0	0	22	1	0	0	23	23	0	0	17	2	0	0	19	19	0	0	7	0	0	0	7	7
14:30	0	0	14	4	0	0	18	18	2	0	18	2	0	0	22	20	0	0	7	1	0	0	8	8
14:45	0	0	10	0	0	0	10	10	0	0	12	1	1	0	14	15	0	0	4	0	1	0	5	6
H/TOT	0	0	69	7	1	0	77	78	2	0	61	8	1	0	72	71	0	0	30	1	1	0	32	33
15:00	0	0	18	2	0	0	20	20	0	0	13	1	0	0	14	14	0	0	4	1	0	0	5	5
15:15	0	0	17	1	0	0	18	18	0	0	14	0	0	0	14	14	0	0	9	1	0	0	10	10
15:30	0	0	25	0	0	1	26	27	0	0	24	1	1	1	27	29	1	0	6	1	0	1	9	9
15:45	1	0	8	0	0	0	9	8	1	0	25	0	0	2	28	29	1	0	11	3	0	0	15	14
H/TOT	1	0	68	3	0	1	73	73	1	0	76	2	1	3	83	86	2	0	30	6	0	1	39	38

TRAFFINOMICS LIMITED

RATHFARNHAM TRAFFIC COUNT **SEPTEMBER 2019**

MANUAL CLASSIFIED JUNCTION TURNING COUNT **TRA/19/192**

SITE: 01 DATE: 12th September 2019

LOCATION: Whitechurch Road/College Road DAY: Thursday

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
16:00	0	0	15	2	0	1	18	19	0	0	22	3	0	0	25	25	0	0	10	2	0	0	12	12
16:15	0	0	18	0	0	0	18	18	1	0	32	3	2	0	38	39	0	0	17	2	1	0	20	21
16:30	1	0	20	2	0	0	23	22	0	0	35	3	0	0	38	38	0	0	16	1	0	0	17	17
16:45	1	0	16	1	0	0	18	17	0	0	33	6	0	1	40	41	0	0	10	3	1	0	14	15
H/TOT	2	0	69	5	0	1	77	76	1	0	122	15	2	1	141	143	0	0	53	8	2	0	63	65
17:00	0	0	12	0	0	0	12	12	2	0	51	6	0	0	59	57	0	0	20	2	0	0	22	22
17:15	1	0	21	1	0	0	23	22	0	0	35	3	0	1	39	40	0	0	26	3	0	0	29	29
17:30	0	2	24	2	1	0	29	29	1	0	45	2	0	0	48	47	0	0	16	1	0	0	17	17
17:45	0	0	28	0	0	1	29	30	0	0	30	3	1	0	34	35	0	1	18	0	0	0	19	18
H/TOT	1	2	85	3	1	1	93	93	3	0	161	14	1	1	180	180	0	1	80	6	0	0	87	86
18:00	1	0	23	0	0	0	24	23	1	0	36	5	0	0	42	41	0	0	13	0	0	0	13	13
18:15	1	0	20	2	0	0	23	22	1	0	34	2	0	0	37	36	0	0	16	4	0	0	20	20
18:30	1	0	11	1	0	0	13	12	6	1	17	0	0	0	24	19	0	0	10	0	0	0	10	10
18:45	0	0	19	0	0	0	19	19	1	0	25	1	0	0	27	26	0	0	8	0	0	0	8	8
H/TOT	3	0	73	3	0	0	79	77	9	1	112	8	0	0	130	122	0	0	47	4	0	0	51	51
19:00	0	0	8	0	0	0	8	8	0	1	26	1	0	0	28	27	0	0	10	0	0	0	10	10
19:15	2	0	7	1	0	0	10	8	2	0	14	0	0	0	16	14	0	0	17	0	0	0	17	17
19:30	2	0	12	2	0	0	16	14	3	0	6	0	0	0	9	7	0	0	7	0	0	0	7	7
19:45	1	0	11	0	0	0	12	11	0	0	18	0	0	0	18	18	0	0	3	0	0	0	3	3
H/TOT	5	0	38	3	0	0	46	42	5	1	64	1	0	0	71	66	0	0	37	0	0	0	37	37
20:00	0	0	16	0	0	0	16	16	1	0	20	2	0	0	23	22	0	0	8	0	0	0	8	8
20:15	0	0	13	0	0	0	13	13	0	0	24	0	0	0	24	24	0	0	7	1	0	0	8	8
20:30	1	0	32	0	0	0	33	32	1	0	13	1	0	0	15	14	0	0	3	1	1	0	5	6
20:45	0	0	9	0	0	0	9	9	0	0	6	0	0	0	6	6	0	0	1	0	0	0	1	1
H/TOT	1	0	70	0	0	0	71	70	2	0	63	3	0	0	68	66	0	0	19	2	1	0	22	23
21:00	0	0	7	0	0	0	7	7	0	0	7	0	0	0	7	7	0	0	1	2	0	0	3	3
21:15	0	0	5	1	0	0	6	6	0	0	6	0	0	0	6	6	0	0	4	1	0	0	5	5
21:30	0	0	6	0	0	0	6	6	0	0	6	1	0	0	7	7	0	0	5	0	0	0	5	5
21:45	0	0	27	0	0	0	27	27	0	0	7	1	0	0	8	8	0	0	3	0	0	0	3	3
H/TOT	0	0	45	1	0	0	46	46	0	0	26	2	0	0	28	28	0	0	13	3	0	0	16	16
22:00	0	0	4	0	0	0	4	4	0	0	7	0	0	0	7	7	0	0	8	1	0	0	9	9
22:15	0	0	3	0	0	0	3	3	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1
22:30	0	0	3	0	0	0	3	3	0	0	4	0	0	0	4	4	0	0	1	0	0	0	1	1
22:45	0	0	1	0	0	0	1	1	0	0	4	0	0	0	4	4	0	0	1	0	0	0	1	1
H/TOT	0	0	11	0	0	0	11	11	0	0	16	0	0	0	16	16	0	0	11	1	0	0	12	12
23:00	0	0	2	0	0	0	2	2	0	0	2	0	0	0	2	2	0	0	1	0	0	0	1	1
23:15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	4	0	0	0	4	4
23:30	0	0	1	0	0	0	1	1	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0
23:45	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	4	0	0	0	4	4	0	0	5	0	0	0	5	5	0	0	5	0	0	0	5	5
P/TOT	24	3	1169	73	8	9	1286	1282	31	4	1149	87	13	10	1294	1290	5	1	564	41	6	2	619	622

TRAFFINOMICS LIMITED

RATHFARNHAM TRAFFIC COUNT **SEPTEMBER 2019**

MANUAL CLASSIFIED JUNCTION TURNING COUNT **TRA/19/192**

SITE: 01 DATE: 12th September 2019

LOCATION: Whitechurch Road/College Road DAY: Thursday

PCU's Through Junction	PEDESTRIAN COUNTS						
	TIME	**MVT 1**	**MVT 2**	**MVT 3**	**MVT 4**	**MVT 5**	**MVT 6**
5	00:00	0	0	0	0	0	0
5	00:15	0	0	0	0	0	0
3	00:30	0	0	0	0	0	0
2	00:45	0	0	0	0	0	0
15	**H/TOT**	0	0	0	0	0	0
0	01:00	0	0	0	0	0	0
0	01:15	0	0	0	0	0	0
0	01:30	0	0	0	0	0	0
0	01:45	0	0	0	0	0	0
0	**H/TOT**	0	0	0	0	0	0
0	02:00	0	0	0	0	0	0
0	02:15	0	0	0	0	0	0
0	02:30	0	0	0	0	0	0
0	02:45	0	0	0	0	0	0
0	**H/TOT**	0	0	0	0	0	0
0	03:00	0	0	0	0	0	0
0	03:15	0	0	0	0	0	0
0	03:30	0	0	0	0	0	0
2	03:45	0	0	0	0	0	0
2	**H/TOT**	0	0	0	0	0	0
2	04:00	0	0	0	0	0	0
2	04:15	0	0	0	0	0	0
2	04:30	0	0	0	0	0	0
2	04:45	0	0	0	0	0	0
8	**H/TOT**	0	0	0	0	0	0
0	05:00	0	0	0	0	0	0
1	05:15	0	0	0	0	0	0
3	05:30	0	0	0	0	0	0
1	05:45	0	0	0	0	0	1
5	**H/TOT**	0	0	0	0	0	1
12	06:00	0	0	0	0	0	0
10	06:15	0	0	0	0	0	1
10	06:30	0	0	0	0	0	0
36	06:45	0	0	0	0	0	0
68	**H/TOT**	0	0	0	0	0	1
36	07:00	1	0	0	0	0	0
52	07:15	0	0	0	0	0	0
96	07:30	0	0	0	0	0	0
116	07:45	0	0	0	0	0	0
300	**H/TOT**	1	0	0	0	0	0

TRAFFINOMICS LIMITED

RATHFARNHAM TRAFFIC COUNT **SEPTEMBER 2019**

MANUAL CLASSIFIED JUNCTION TURNING COUNT **TRA/19/192**

SITE: 01 DATE: 12th September 2019

LOCATION: Whitechurch Road/College Road DAY: Thursday

PCU's Through Junction	PEDESTRIAN COUNTS						
	TIME	**MVT 1**	**MVT 2**	**MVT 3**	**MVT 4**	**MVT 5**	**MVT 6**
198	08:00	0	0	4	0	0	0
182	08:15	1	0	0	0	0	0
140	08:30	0	0	0	0	0	0
114	08:45	0	0	0	0	0	0
635	**H/TOT**	1	0	4	0	0	0
94	09:00	0	0	0	0	0	0
75	09:15	1	0	0	0	0	0
68	09:30	1	0	0	0	2	0
72	09:45	1	0	0	0	0	0
309	**H/TOT**	3	0	0	0	2	0
52	10:00	0	0	0	0	4	0
47	10:15	0	0	0	0	1	0
49	10:30	0	0	0	0	1	0
51	10:45	0	0	1	0	0	1
199	**H/TOT**	0	0	1	0	6	1
46	11:00	1	0	0	0	0	0
48	11:15	0	1	0	0	0	0
49	11:30	0	0	0	0	0	0
73	11:45	0	0	1	1	0	1
217	**H/TOT**	1	1	1	1	0	1
75	12:00	0	1	0	0	0	0
71	12:15	1	0	1	0	21	0
66	12:30	0	0	0	1	0	0
62	12:45	0	0	1	0	0	0
274	**H/TOT**	1	1	2	1	21	0
68	13:00	0	0	0	0	0	0
88	13:15	0	0	0	1	1	0
87	13:30	0	0	1	0	1	1
111	13:45	1	0	0	0	0	0
355	**H/TOT**	1	0	1	1	2	1
79	14:00	0	3	2	1	0	0
72	14:15	2	3	1	3	0	0
81	14:30	1	0	0	0	0	0
51	14:45	1	0	0	2	0	0
283	**H/TOT**	4	6	3	6	0	0
61	15:00	0	0	0	0	0	0
69	15:15	0	0	0	2	0	0
83	15:30	1	2	0	0	0	0
72	15:45	1	0	0	0	0	0
285	**H/TOT**	2	2	0	2	0	0

TRAFFINOMICS LIMITED

RATHFARNHAM TRAFFIC COUNT **SEPTEMBER 2019**

MANUAL CLASSIFIED JUNCTION TURNING COUNT **TRA/19/192**

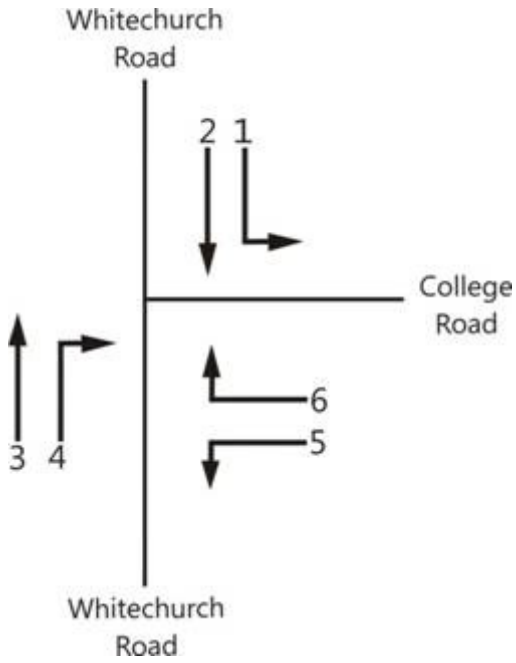
SITE: 01 DATE: 12th September 2019

LOCATION: Whitechurch Road/College Road DAY: Thursday

PCU's Through Junction	PEDESTRIAN COUNTS						
	TIME	**MVT 1**	**MVT 2**	**MVT 3**	**MVT 4**	**MVT 5**	**MVT 6**
90	16:00	0	0	0	0	0	0
111	16:15	0	0	0	0	0	0
98	16:30	0	0	0	0	0	0
87	16:45	0	0	1	0	0	0
386	**H/TOT**	0	0	1	0	0	0
116	17:00	0	0	0	0	0	0
122	17:15	0	0	0	0	0	0
120	17:30	1	0	0	0	0	0
108	17:45	0	0	0	0	0	0
466	**H/TOT**	1	0	0	0	0	0
108	18:00	0	0	0	0	1	0
101	18:15	0	0	0	1	0	3
64	18:30	0	0	0	0	0	0
87	18:45	0	0	0	1	2	0
360	**H/TOT**	0	0	0	2	3	3
67	19:00	0	1	0	0	0	1
53	19:15	0	0	0	0	0	0
50	19:30	0	0	0	0	0	1
50	19:45	0	0	0	0	0	1
220	**H/TOT**	0	1	0	0	0	3
61	20:00	0	0	0	0	0	0
63	20:15	1	0	0	0	0	0
83	20:30	0	0	0	0	0	0
36	20:45	0	0	0	1	2	0
243	**H/TOT**	1	0	0	1	2	0
27	21:00	2	0	0	0	0	0
26	21:15	0	0	0	0	0	0
26	21:30	1	0	0	0	0	0
51	21:45	0	0	0	2	0	2
130	**H/TOT**	3	0	0	2	0	2
26	22:00	0	0	0	0	0	0
10	22:15	0	0	0	0	0	0
10	22:30	0	0	0	0	0	0
9	22:45	0	0	0	0	0	0
55	**H/TOT**	0	0	0	0	0	0
5	23:00	0	0	0	0	0	0
7	23:15	0	0	0	0	0	0
5	23:30	0	0	0	0	0	0
2	23:45	0	0	0	0	0	0
19	**H/TOT**	0	0	0	0	0	0
4834	**P/TOT**	19	11	13	16	36	13

Site Locations

Movement Numbering



	Job number: TRA/19/192	Job Date: 12th September 2019	Drawing No: TRA/19/192-01	traffinomics.ie
	Client: NRB	Job Day: Thursday	Page 1 of 13	

RATHFARNHAM TRAFFIC COUNT/SPEED SURVEY **SUMMARY** **Thursday 12 September 2019**
AUTOMATIC TRAFFIC COUNT **TRA/19/192**

SITE 01

LOCATION: College Road, Rathfarnham Immediately East of Marlay Park Access (Google Maps Ref: 53.268496, -6.273299)

SPEED SURVEY SUMMARY:

EASTBOUND	85% Speed = 72.89 km/h, 95% Speed = 80.91 km/h, Median = 60.66 km/h	Maximum = 121.9 km/h, Minimum = 19.8 km/h, Mean = 58.6 km/h
WESTBOUND	85% Speed = 72.09 km/h, 95% Speed = 81.36 km/h, Median = 59.31 km/h	Maximum = 115.9 km/h, Minimum = 14.2 km/h, Mean = 59.4 km/h

VOLUMETRIC VEHICLE COUNTS:

Direction	Time	Thursday 12 September 2019
EASTBOUND	**07-19**	1822
WESTBOUND	**07-19**	1783
EASTBOUND	**00-00**	2216
WESTBOUND	**00-00**	2099

PEAK FLOW SUMMARY:

Peak	AM	IP	PM
Peak Hour	0800	1300	1600
Vehicles per Peak Hour	343	161	149

RATHFARNHAM TRAFFIC COUNT/SPEED SURVEY **Thursday 12 September 2019**
AUTOMATIC TRAFFIC COUNT **TRA/19/192**

SITE 01
EASTBOUND

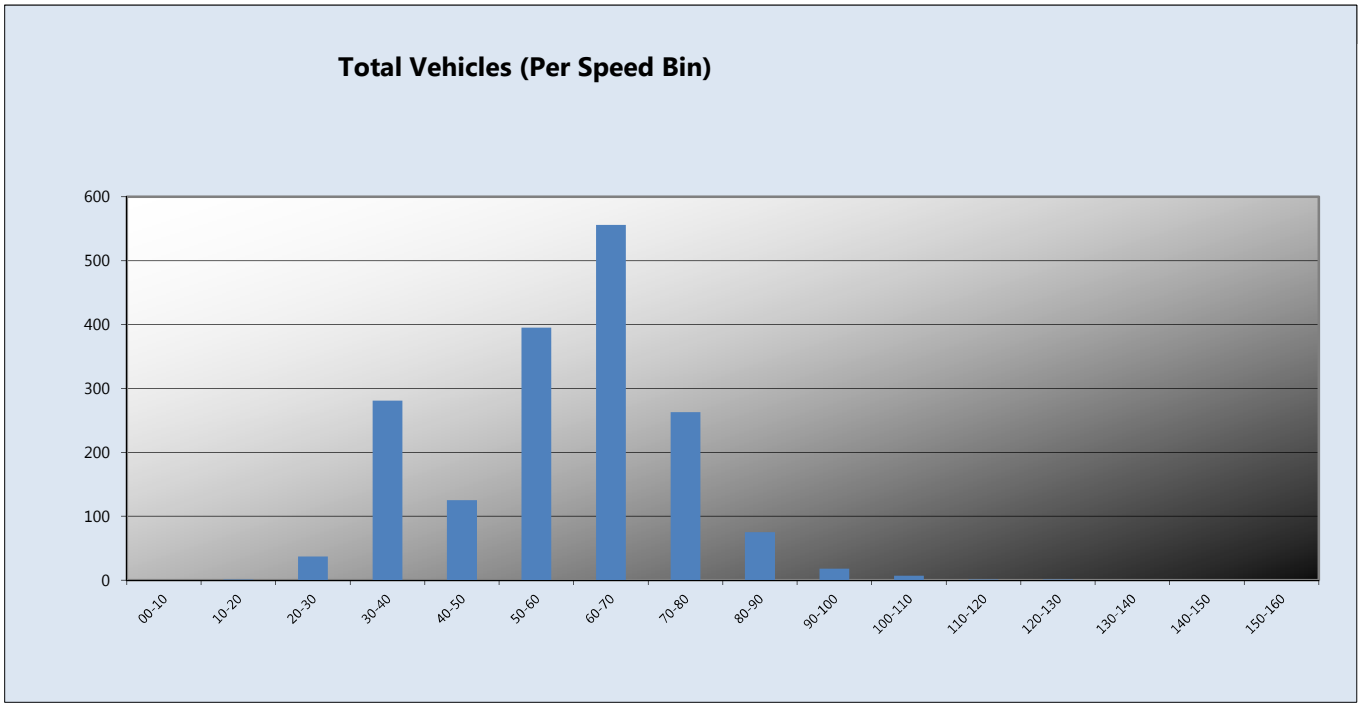
PROFILE:

Filter time: 00:00 12th September 2019 => 23:59 12th September 2019
Speed range: 0 - 200 km/h.
Separation: Greater than 4.00 seconds. - (Headway)
Units: Metric (meter, kilometer, m/s, km/h, kg, tonne)

Vehicles = 1760
Maximum = 121.9 km/h, Minimum = 19.8 km/h, Mean = 58.6 km/h
85% Speed = 72.89 km/h, 95% Speed = 80.91 km/h, Median = 60.66 km/h
20 km/h Pace = 53 - 73, Number in Pace = 986 (56.02%)
Variance = 232.56, Standard Deviation = 15.25 km/h

SPEED BINS:

Speed	Bin	
KPH	No.	%
00-10	0	0.0
10-20	1	0.1
20-30	37	2.1
30-40	281	16.0
40-50	125	7.1
50-60	395	22.4
60-70	556	31.6
70-80	263	14.9
80-90	75	4.3
90-100	18	1.0
100-110	7	0.4
110-120	1	0.1
120-130	1	0.1
130-140	0	0.0
140-150	0	0.0
150-160	0	0.0



RATHFARNHAM TRAFFIC COUNT/SPEED SURVEY **Thursday 12 September 2019**
AUTOMATIC TRAFFIC COUNT **TRA/19/192**

SITE 01
WESTBOUND

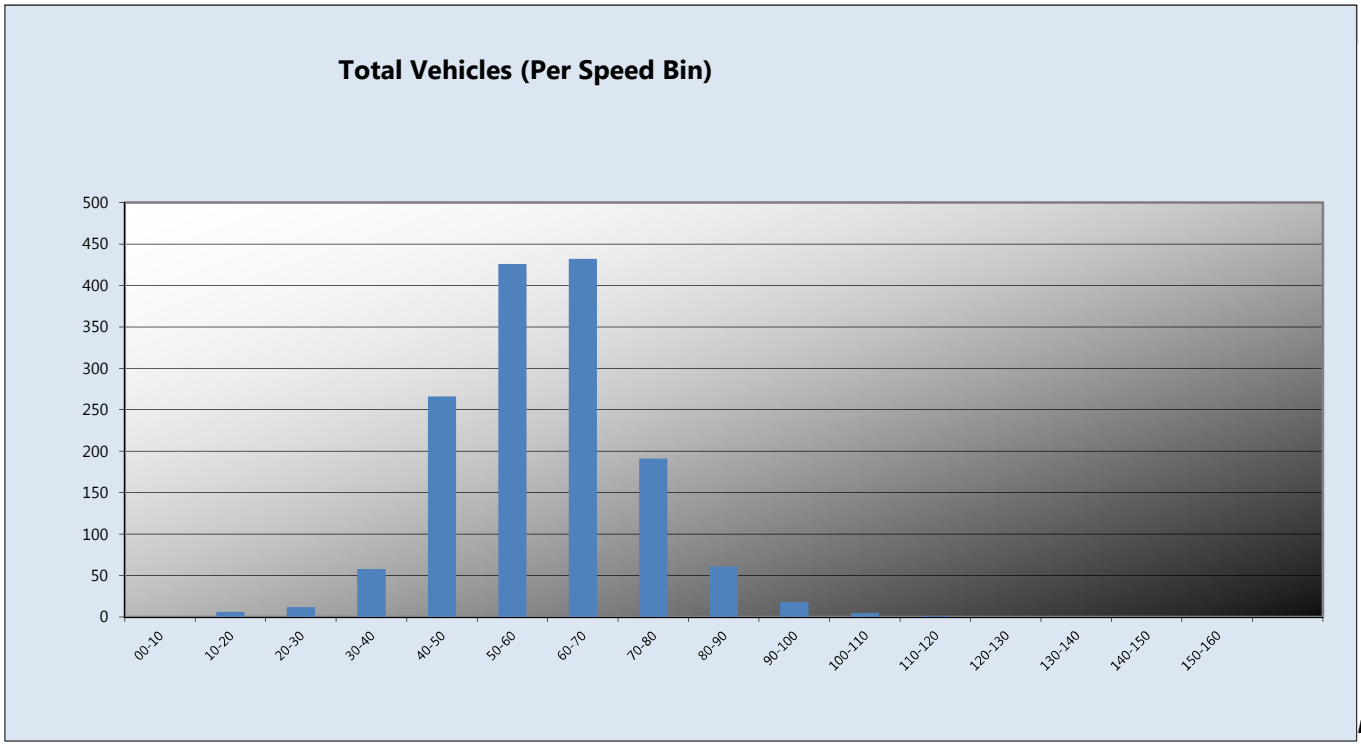
PROFILE:

Filter time: 00:00 12th September 2019 => 23:59 12th September 2019
Speed range: 0 - 200 km/h.
Separation: Greater than 4.00 seconds. - (Headway)
Units: Metric (meter, kilometer, m/s, km/h, kg, tonne)

Vehicles = 1476
Maximum = 115.9 km/h, Minimum = 14.2 km/h, Mean = 59.4 km/h
85% Speed = 72.09 km/h, 95% Speed = 81.36 km/h, Median = 59.31 km/h
20 km/h Pace = 48 - 68, Number in Pace = 861 (58.33%)
Variance = 173.63, Standard Deviation = 13.18 km/h

SPEED BINS

Speed	Bin	
KPH	No.	%
00-10	0	0.0
10-20	6	0.4
20-30	12	0.8
30-40	58	3.9
40-50	266	18.0
50-60	426	28.9
60-70	432	29.3
70-80	191	12.9
80-90	61	4.1
90-100	18	1.2
100-110	5	0.3
110-120	1	0.1
120-130	0	0.0
130-140	0	0.0
140-150	0	0.0
150-160	0	0.0



SITE: 01 DATE: 12th September 2019

LOCATION: Whitechurch Road/College Road DAY: Thursday

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**
00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
00:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
00:30	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
00:45	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	0	0	3	0	0	0	3	3
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
04:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
05:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
06:00	0	0	1	0	0	0	1	1	0	0	4	0	0	0	4	4	0	0	2	0	0	0	2	2
06:15	0	0	2	0	0	0	2	2	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0
06:30	0	0	3	0	0	0	3	3	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
06:45	0	0	9	0	0	0	9	9	0	0	5	0	0	0	5	5	0	0	2	0	0	0	2	2
H/TOT	0	0	15	0	0	0	15	15	0	0	12	0	0	0	12	12	0	0	4	0	0	0	4	4
07:00	0	0	7	1	0	0	8	8	0	0	2	2	1	0	5	6	0	0	2	0	0	0	2	2
07:15	0	0	13	2	0	0	15	15	0	0	7	1	0	0	8	8	0	0	2	1	0	0	3	3
07:30	0	0	17	4	0	0	21	21	0	0	5	0	0	0	5	5	0	0	9	0	0	0	9	9
07:45	0	0	18	0	0	0	18	18	1	1	5	0	0	0	7	6	1	0	10	0	0	0	11	10
H/TOT	0	0	55	7	0	0	62	62	1	1	19	3	1	0	25	25	1	0	23	1	0	0	25	24

TRAFFINOMICS LIMITED

RATHFARNHAM TRAFFIC COUNT **SEPTEMBER 2019**

MANUAL CLASSIFIED JUNCTION TURNING COUNT **TRA/19/192**

SITE: 01 DATE: 12th September 2019

LOCATION: Whitechurch Road/College Road DAY: Thursday

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
08:00	0	0	25	2	0	0	27	27	0	0	18	1	0	0	19	19	1	0	29	2	1	0	33	33
08:15	1	0	33	0	0	1	35	35	0	0	12	1	0	0	13	13	0	0	24	1	0	0	25	25
08:30	0	0	18	1	1	0	20	21	0	0	12	0	0	0	12	12	0	0	17	1	0	0	18	18
08:45	0	0	34	1	0	0	35	35	1	0	9	0	0	0	10	9	0	0	6	0	0	0	6	6
H/TOT	1	0	110	4	1	1	117	118	1	0	51	2	0	0	54	53	1	0	76	4	1	0	82	82
09:00	0	0	25	4	1	0	30	31	0	0	9	0	1	0	10	11	0	0	1	0	1	0	2	3
09:15	0	0	13	1	0	0	14	14	1	0	13	3	0	0	17	16	0	0	2	0	0	0	2	2
09:30	0	0	10	0	0	0	10	10	1	0	20	0	0	0	21	20	0	0	6	0	0	0	6	6
09:45	1	0	7	2	0	0	10	9	0	0	6	1	1	0	8	9	0	0	6	1	0	0	7	7
H/TOT	1	0	55	7	1	0	64	64	2	0	48	4	2	0	56	56	0	0	15	1	1	0	17	18
10:00	0	0	5	1	0	0	6	6	1	0	8	2	0	0	11	10	0	0	3	1	0	0	4	4
10:15	0	0	9	0	0	0	9	9	2	0	3	1	0	0	6	4	0	0	1	0	1	0	2	3
10:30	0	0	4	0	0	0	4	4	1	0	5	0	1	0	7	7	1	0	6	2	0	0	9	8
10:45	0	0	6	0	0	0	6	6	0	0	5	0	0	0	5	5	0	0	3	1	1	0	5	6
H/TOT	0	0	24	1	0	0	25	25	4	0	21	3	1	0	29	27	1	0	13	4	2	0	20	21
11:00	0	0	6	0	0	0	6	6	1	0	4	0	0	0	5	4	1	1	1	0	0	0	3	2
11:15	0	0	6	0	0	0	6	6	0	0	8	1	0	0	9	9	0	0	4	0	0	0	4	4
11:30	1	0	4	0	0	0	5	4	0	0	3	1	1	0	5	6	0	0	5	0	0	0	5	5
11:45	0	0	12	1	0	0	13	13	0	1	4	2	0	0	7	6	0	0	7	0	1	0	8	9
H/TOT	1	0	28	1	0	0	30	29	1	1	19	4	1	0	26	26	1	1	17	0	1	0	20	20
12:00	0	0	24	1	0	0	25	25	0	0	5	0	1	0	6	7	0	0	4	1	0	0	5	5
12:15	0	0	1	0	0	0	1	1	0	0	2	0	0	0	2	2	0	0	9	1	0	0	10	10
12:30	0	0	12	0	0	0	12	12	0	1	5	0	0	0	6	5	1	1	3	2	0	0	7	6
12:45	0	0	6	0	0	0	6	6	0	0	3	0	0	0	3	3	0	0	16	0	0	0	16	16
H/TOT	0	0	43	1	0	0	44	44	0	1	15	0	1	0	17	17	1	1	32	4	0	0	38	37
13:00	0	0	9	0	0	1	10	11	0	0	3	2	0	0	5	5	0	0	6	0	0	0	6	6
13:15	0	0	5	0	0	0	5	5	0	0	6	4	0	0	10	10	0	0	7	0	0	0	7	7
13:30	0	0	6	1	0	0	7	7	0	0	5	1	0	0	6	6	0	0	9	0	0	0	9	9
13:45	0	0	23	1	0	2	26	28	2	0	15	0	0	0	17	15	0	0	16	1	0	0	17	17
H/TOT	0	0	43	2	0	3	48	51	2	0	29	7	0	0	38	36	0	0	38	1	0	0	39	39
14:00	0	0	4	0	0	0	4	4	0	0	8	0	0	0	8	8	0	0	10	1	0	0	11	11
14:15	1	0	9	1	0	0	11	10	0	0	4	1	0	0	5	5	0	0	8	0	0	0	8	8
14:30	0	0	11	0	0	0	11	11	0	0	3	2	1	0	6	7	1	0	14	2	0	0	17	16
14:45	0	0	6	0	0	0	6	6	0	0	11	0	0	0	11	11	0	1	3	0	0	0	4	3
H/TOT	1	0	30	1	0	0	32	31	0	0	26	3	1	0	30	31	1	1	35	3	0	0	40	39
15:00	0	0	7	0	0	1	8	9	0	0	7	1	0	0	8	8	0	0	4	1	0	0	5	5
15:15	0	0	14	1	0	0	15	15	0	0	5	0	0	0	5	5	0	0	7	0	0	0	7	7
15:30	0	0	8	0	0	0	8	8	1	0	4	0	0	0	5	4	0	0	6	0	0	0	6	6
15:45	0	0	6	1	0	0	7	7	0	0	4	0	0	0	4	4	0	0	8	1	0	0	9	9
H/TOT	0	0	35	2	0	1	38	39	1	0	20	1	0	0	22	21	0	0	25	2	0	0	27	27

SITE: 01 DATE: 12th September 2019
LOCATION: Whitechurch Road/College Road DAY: Thursday

	MOVEMENT 1								MOVEMENT 2								MOVEMENT 3							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
16:00	1	0	12	2	0	0	15	14	0	0	8	0	0	0	8	8	0	1	9	2	0	0	12	11
16:15	0	0	16	3	0	0	19	19	0	0	8	1	0	0	9	9	0	1	3	1	0	0	5	4
16:30	0	0	7	1	0	0	8	8	0	0	7	1	0	0	8	8	0	0	3	2	0	0	5	5
16:45	0	0	4	0	0	0	4	4	0	0	5	0	0	0	5	5	0	0	4	1	0	0	5	5
H/TOT	1	0	39	6	0	0	46	45	0	0	28	2	0	0	30	30	0	2	19	6	0	0	27	26
17:00	0	0	6	0	0	0	6	6	0	0	12	1	1	0	14	15	0	0	3	1	0	0	4	4
17:15	0	0	6	1	0	0	7	7	0	0	15	3	0	0	18	18	0	0	4	0	1	0	5	6
17:30	0	0	11	0	1	0	12	13	0	0	7	0	0	0	7	7	0	0	7	0	0	0	7	7
17:45	1	0	12	1	0	0	14	13	1	0	3	0	0	0	4	3	0	0	7	1	0	0	8	8
H/TOT	1	0	35	2	1	0	39	39	1	0	37	4	1	0	43	43	0	0	21	2	1	0	24	25
18:00	0	0	15	1	0	0	16	16	2	0	6	2	0	0	10	8	2	0	4	2	0	0	8	6
18:15	3	0	5	0	0	0	8	6	2	0	9	0	0	0	11	9	1	0	7	0	0	0	8	7
18:30	0	0	10	0	0	0	10	10	2	0	5	0	0	0	7	5	0	0	8	0	0	0	8	8
18:45	0	0	8	1	0	0	9	9	1	0	16	0	0	0	17	16	0	0	9	0	0	0	9	9
H/TOT	3	0	38	2	0	0	43	41	7	0	36	2	0	0	45	39	3	0	28	2	0	0	33	31
19:00	0	0	6	1	0	0	7	7	1	0	7	0	0	0	8	7	0	0	6	1	0	0	7	7
19:15	0	0	5	0	0	0	5	5	0	0	6	0	0	0	6	6	0	0	2	0	0	0	2	2
19:30	0	0	9	0	0	0	9	9	0	0	9	0	0	0	9	9	0	0	4	0	0	0	4	4
19:45	0	0	4	1	0	0	5	5	0	0	7	0	0	0	7	7	0	0	3	1	1	0	5	6
H/TOT	0	0	24	2	0	0	26	26	1	0	29	0	0	0	30	29	0	0	15	2	1	0	18	19
20:00	0	0	5	0	0	0	5	5	0	0	5	0	0	0	5	5	0	0	5	0	0	0	5	5
20:15	0	0	2	0	0	0	2	2	0	0	11	0	0	0	11	11	0	0	5	0	0	0	5	5
20:30	1	0	3	0	0	0	4	3	0	0	9	0	0	0	9	9	1	1	17	1	0	0	20	19
20:45	0	0	4	0	0	0	4	4	0	0	2	0	0	0	2	2	0	0	14	0	0	0	14	14
H/TOT	1	0	14	0	0	0	15	14	0	0	27	0	0	0	27	27	1	1	41	1	0	0	44	43
21:00	0	0	1	0	0	0	1	1	0	0	2	0	0	0	2	2	0	0	7	0	0	0	7	7
21:15	0	0	1	0	0	0	1	1	0	0	4	0	0	0	4	4	0	0	4	0	0	0	4	4
21:30	0	0	4	0	0	0	4	4	0	0	2	0	0	0	2	2	0	0	2	0	0	0	2	2
21:45	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	4	0	0	8	1	0	0	9	9
H/TOT	0	0	6	0	0	0	6	6	0	0	12	0	0	0	12	12	0	0	21	1	0	0	22	22
22:00	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	0	0	4	0	0	0	4	4
22:15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	4	0	0	0	4	4
22:30	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0
22:45	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
H/TOT	0	0	3	0	0	0	3	3	0	0	4	0	0	0	4	4	0	0	9	0	0	0	9	9
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23:15	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0
23:30	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0
23:45	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	1	0	0	0	1	1	0	0	4	0	0	0	4	4	0	0	0	0	0	0	0	0
P/TOT	10	0	600	38	3	5	656	656	21	3	439	35	8	0	506	495	10	6	436	34	7	0	493	488

SITE: 01 DATE: 12th September 2019

LOCATION: Whitechurch Road/College Road DAY: Thursday

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**	**PCL**	**MCL**	**CAR**	**LGV**	**HGV**	**BUS**	**TOT**	**PCU**
00:00	0	0	2	0	0	0	2	2	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
00:15	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	0	2	0	0	0	2	2
00:30	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
00:45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
H/TOT	0	0	3	0	0	0	3	3	0	0	5	0	0	0	5	5	0	0	2	0	0	0	2	2
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
04:15	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
04:45	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
H/TOT	0	0	3	0	0	0	3	3	0	0	3	0	0	0	3	3	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	2	0	0	0	0	0	0	0	0
05:45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
H/TOT	0	0	1	0	0	0	1	1	0	0	2	1	0	0	3	3	0	0	0	0	0	0	0	0
06:00	2	0	2	0	0	0	4	2	0	0	1	0	1	0	2	3	0	0	0	0	0	0	0	0
06:15	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	4	0	0	2	0	0	0	2	2
06:30	0	0	3	0	0	0	3	3	0	0	2	0	0	0	2	2	0	0	1	0	0	0	1	1
06:45	0	0	8	2	2	1	13	16	0	0	3	1	0	0	4	4	0	0	0	0	0	0	0	0
H/TOT	2	0	13	2	2	1	20	21	0	0	6	1	1	2	10	13	0	0	3	0	0	0	3	3
07:00	0	0	11	1	0	0	12	12	0	1	5	1	0	0	7	6	1	0	1	0	0	0	2	1
07:15	0	0	15	2	1	0	18	19	0	0	4	1	0	0	5	5	0	0	2	0	0	0	2	2
07:30	0	0	37	3	0	0	40	40	1	0	11	2	0	0	14	13	0	0	8	0	0	0	8	8
07:45	0	0	50	1	0	0	51	51	0	0	21	1	0	0	22	22	0	0	9	0	0	0	9	9
H/TOT	0	0	113	7	1	0	121	122	1	1	41	5	0	0	48	47	1	0	20	0	0	0	21	20

TRAFFINOMICS LIMITED

RATHFARNHAM TRAFFIC COUNT **SEPTEMBER 2019**

MANUAL CLASSIFIED JUNCTION TURNING COUNT **TRA/19/192**

SITE: 01 DATE: 12th September 2019

LOCATION: Whitechurch Road/College Road DAY: Thursday

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
08:00	0	0	70	2	0	0	72	72	0	0	17	0	0	1	18	19	0	0	28	0	0	0	28	28
08:15	3	0	62	3	0	2	70	70	0	0	16	3	0	1	20	21	0	0	17	1	0	0	18	18
08:30	0	1	59	1	0	0	61	60	0	0	21	0	0	0	21	21	0	0	7	1	0	0	8	8
08:45	0	0	27	4	0	1	32	33	1	0	20	1	1	0	23	23	0	0	8	0	0	0	8	8
H/TOT	3	1	218	10	0	3	235	235	1	0	74	4	1	2	82	84	0	0	60	2	0	0	62	62
09:00	0	0	21	2	1	0	24	25	0	0	12	0	0	1	13	14	0	0	9	1	0	0	10	10
09:15	0	0	14	2	0	0	16	16	0	0	15	3	0	0	18	18	0	0	7	0	1	0	8	9
09:30	0	0	10	0	0	0	10	10	0	0	14	1	0	0	15	15	0	0	7	0	0	0	7	7
09:45	0	0	11	0	0	0	11	11	2	0	28	1	0	0	31	29	0	0	4	2	0	0	6	6
H/TOT	0	0	56	4	1	0	61	62	2	0	69	5	0	1	77	76	0	0	27	3	1	0	31	32
10:00	0	0	12	4	1	0	17	18	0	0	12	0	0	0	12	12	0	0	2	0	0	0	2	2
10:15	1	0	10	2	0	1	14	14	1	0	8	3	0	0	12	11	0	0	5	0	0	0	5	5
10:30	1	0	9	0	0	0	10	9	0	0	18	1	0	0	19	19	0	0	1	0	0	0	1	1
10:45	1	0	15	1	0	0	17	16	0	0	13	1	0	0	14	14	0	0	4	0	0	0	4	4
H/TOT	3	0	46	7	1	1	58	58	1	0	51	5	0	0	57	56	0	0	12	0	0	0	12	12
11:00	0	0	8	1	0	0	9	9	0	0	11	0	2	0	13	15	0	0	10	0	0	0	10	10
11:15	0	0	10	3	0	0	13	13	0	0	13	0	0	0	13	13	0	0	3	0	0	0	3	3
11:30	1	0	12	2	0	0	15	14	0	0	10	1	0	0	11	11	0	0	7	0	1	0	8	9
11:45	0	0	4	4	0	0	8	8	0	0	13	4	0	0	17	17	0	0	18	2	0	0	20	20
H/TOT	1	0	34	10	0	0	45	44	0	0	47	5	2	0	54	56	0	0	38	2	1	0	41	42
12:00	0	0	16	0	1	0	17	18	0	0	12	0	1	0	13	14	0	0	6	0	0	0	6	6
12:15	0	0	20	2	0	0	22	22	0	1	24	1	0	0	26	25	0	0	10	1	0	0	11	11
12:30	0	0	13	0	0	0	13	13	0	0	23	0	0	0	23	23	0	0	7	0	0	0	7	7
12:45	0	0	9	1	0	0	10	10	0	0	14	0	1	0	15	16	0	0	10	1	0	0	11	11
H/TOT	0	0	58	3	1	0	62	63	0	1	73	1	2	0	77	78	0	0	33	2	0	0	35	35
13:00	0	0	17	2	0	1	20	21	2	0	16	3	0	0	21	19	0	0	6	0	0	0	6	6
13:15	0	0	27	0	0	0	27	27	1	0	22	2	1	0	26	26	1	0	12	1	0	0	14	13
13:30	0	0	30	0	0	0	30	30	0	0	16	2	1	0	19	20	0	0	13	0	0	1	14	15
13:45	2	0	18	3	0	0	23	21	0	0	16	0	0	0	16	16	1	0	13	0	0	0	14	13
H/TOT	2	0	92	5	0	1	100	99	3	0	70	7	2	0	82	82	2	0	44	1	0	1	48	47
14:00	0	0	23	2	1	0	26	27	0	0	14	3	0	0	17	17	0	0	12	0	0	0	12	12
14:15	0	0	22	1	0	0	23	23	0	0	17	2	0	0	19	19	0	0	7	0	0	0	7	7
14:30	0	0	14	4	0	0	18	18	2	0	18	2	0	0	22	20	0	0	7	1	0	0	8	8
14:45	0	0	10	0	0	0	10	10	0	0	12	1	1	0	14	15	0	0	4	0	1	0	5	6
H/TOT	0	0	69	7	1	0	77	78	2	0	61	8	1	0	72	71	0	0	30	1	1	0	32	33
15:00	0	0	18	2	0	0	20	20	0	0	13	1	0	0	14	14	0	0	4	1	0	0	5	5
15:15	0	0	17	1	0	0	18	18	0	0	14	0	0	0	14	14	0	0	9	1	0	0	10	10
15:30	0	0	25	0	0	1	26	27	0	0	24	1	1	1	27	29	1	0	6	1	0	1	9	9
15:45	1	0	8	0	0	0	9	8	1	0	25	0	0	2	28	29	1	0	11	3	0	0	15	14
H/TOT	1	0	68	3	0	1	73	73	1	0	76	2	1	3	83	86	2	0	30	6	0	1	39	38

SITE: 01 DATE: 12th September 2019
LOCATION: Whitechurch Road/College Road DAY: Thursday

	MOVEMENT 4								MOVEMENT 5								MOVEMENT 6							
TIME	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU	PCL	MCL	CAR	LGV	HGV	BUS	TOT	PCU
16:00	0	0	15	2	0	1	18	19	0	0	22	3	0	0	25	25	0	0	10	2	0	0	12	12
16:15	0	0	18	0	0	0	18	18	1	0	32	3	2	0	38	39	0	0	17	2	1	0	20	21
16:30	1	0	20	2	0	0	23	22	0	0	35	3	0	0	38	38	0	0	16	1	0	0	17	17
16:45	1	0	16	1	0	0	18	17	0	0	33	6	0	1	40	41	0	0	10	3	1	0	14	15
H/TOT	2	0	69	5	0	1	77	76	1	0	122	15	2	1	141	143	0	0	53	8	2	0	63	65
17:00	0	0	12	0	0	0	12	12	2	0	51	6	0	0	59	57	0	0	20	2	0	0	22	22
17:15	1	0	21	1	0	0	23	22	0	0	35	3	0	1	39	40	0	0	26	3	0	0	29	29
17:30	0	2	24	2	1	0	29	29	1	0	45	2	0	0	48	47	0	0	16	1	0	0	17	17
17:45	0	0	28	0	0	1	29	30	0	0	30	3	1	0	34	35	0	1	18	0	0	0	19	18
H/TOT	1	2	85	3	1	1	93	93	3	0	161	14	1	1	180	180	0	1	80	6	0	0	87	86
18:00	1	0	23	0	0	0	24	23	1	0	36	5	0	0	42	41	0	0	13	0	0	0	13	13
18:15	1	0	20	2	0	0	23	22	1	0	34	2	0	0	37	36	0	0	16	4	0	0	20	20
18:30	1	0	11	1	0	0	13	12	6	1	17	0	0	0	24	19	0	0	10	0	0	0	10	10
18:45	0	0	19	0	0	0	19	19	1	0	25	1	0	0	27	26	0	0	8	0	0	0	8	8
H/TOT	3	0	73	3	0	0	79	77	9	1	112	8	0	0	130	122	0	0	47	4	0	0	51	51
19:00	0	0	8	0	0	0	8	8	0	1	26	1	0	0	28	27	0	0	10	0	0	0	10	10
19:15	2	0	7	1	0	0	10	8	2	0	14	0	0	0	16	14	0	0	17	0	0	0	17	17
19:30	2	0	12	2	0	0	16	14	3	0	6	0	0	0	9	7	0	0	7	0	0	0	7	7
19:45	1	0	11	0	0	0	12	11	0	0	18	0	0	0	18	18	0	0	3	0	0	0	3	3
H/TOT	5	0	38	3	0	0	46	42	5	1	64	1	0	0	71	66	0	0	37	0	0	0	37	37
20:00	0	0	16	0	0	0	16	16	1	0	20	2	0	0	23	22	0	0	8	0	0	0	8	8
20:15	0	0	13	0	0	0	13	13	0	0	24	0	0	0	24	24	0	0	7	1	0	0	8	8
20:30	1	0	32	0	0	0	33	32	1	0	13	1	0	0	15	14	0	0	3	1	1	0	5	6
20:45	0	0	9	0	0	0	9	9	0	0	6	0	0	0	6	6	0	0	1	0	0	0	1	1
H/TOT	1	0	70	0	0	0	71	70	2	0	63	3	0	0	68	66	0	0	19	2	1	0	22	23
21:00	0	0	7	0	0	0	7	7	0	0	7	0	0	0	7	7	0	0	1	2	0	0	3	3
21:15	0	0	5	1	0	0	6	6	0	0	6	0	0	0	6	6	0	0	4	1	0	0	5	5
21:30	0	0	6	0	0	0	6	6	0	0	6	1	0	0	7	7	0	0	5	0	0	0	5	5
21:45	0	0	27	0	0	0	27	27	0	0	7	1	0	0	8	8	0	0	3	0	0	0	3	3
H/TOT	0	0	45	1	0	0	46	46	0	0	26	2	0	0	28	28	0	0	13	3	0	0	16	16
22:00	0	0	4	0	0	0	4	4	0	0	7	0	0	0	7	7	0	0	8	1	0	0	9	9
22:15	0	0	3	0	0	0	3	3	0	0	1	0	0	0	1	1	0	0	1	0	0	0	1	1
22:30	0	0	3	0	0	0	3	3	0	0	4	0	0	0	4	4	0	0	1	0	0	0	1	1
22:45	0	0	1	0	0	0	1	1	0	0	4	0	0	0	4	4	0	0	1	0	0	0	1	1
H/TOT	0	0	11	0	0	0	11	11	0	0	16	0	0	0	16	16	0	0	11	1	0	0	12	12
23:00	0	0	2	0	0	0	2	2	0	0	2	0	0	0	2	2	0	0	1	0	0	0	1	1
23:15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	4	0	0	0	4	4
23:30	0	0	1	0	0	0	1	1	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0
23:45	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	4	0	0	0	4	4	0	0	5	0	0	0	5	5	0	0	5	0	0	0	5	5
P/TOT	24	3	1169	73	8	9	1286	1282	31	4	1149	87	13	10	1294	1290	5	1	564	41	6	2	619	622

SITE: 01 DATE: 12th September 2019

LOCATION: Whitechurch Road/College Road DAY: Thursday

PCU's Through Junction	PEDESTRIAN COUNTS						
	TIME	**MVT 1**	**MVT 2**	**MVT 3**	**MVT 4**	**MVT 5**	**MVT 6**
5	00:00	0	0	0	0	0	0
5	00:15	0	0	0	0	0	0
3	00:30	0	0	0	0	0	0
2	00:45	0	0	0	0	0	0
15	**H/TOT**	0	0	0	0	0	0
0	01:00	0	0	0	0	0	0
0	01:15	0	0	0	0	0	0
0	01:30	0	0	0	0	0	0
0	01:45	0	0	0	0	0	0
0	**H/TOT**	0	0	0	0	0	0
0	02:00	0	0	0	0	0	0
0	02:15	0	0	0	0	0	0
0	02:30	0	0	0	0	0	0
0	02:45	0	0	0	0	0	0
0	**H/TOT**	0	0	0	0	0	0
0	03:00	0	0	0	0	0	0
0	03:15	0	0	0	0	0	0
0	03:30	0	0	0	0	0	0
2	03:45	0	0	0	0	0	0
2	**H/TOT**	0	0	0	0	0	0
2	04:00	0	0	0	0	0	0
2	04:15	0	0	0	0	0	0
2	04:30	0	0	0	0	0	0
2	04:45	0	0	0	0	0	0
8	**H/TOT**	0	0	0	0	0	0
0	05:00	0	0	0	0	0	0
1	05:15	0	0	0	0	0	0
3	05:30	0	0	0	0	0	0
1	05:45	0	0	0	0	0	1
5	**H/TOT**	0	0	0	0	0	1
12	06:00	0	0	0	0	0	0
10	06:15	0	0	0	0	0	1
10	06:30	0	0	0	0	0	0
36	06:45	0	0	0	0	0	0
68	**H/TOT**	0	0	0	0	0	1
36	07:00	1	0	0	0	0	0
52	07:15	0	0	0	0	0	0
96	07:30	0	0	0	0	0	0
116	07:45	0	0	0	0	0	0
300	**H/TOT**	1	0	0	0	0	0

TRAFFINOMICS LIMITED

RATHFARNHAM TRAFFIC COUNT **SEPTEMBER 2019**

MANUAL CLASSIFIED JUNCTION TURNING COUNT **TRA/19/192**

SITE: 01 DATE: 12th September 2019

LOCATION: Whitechurch Road/College Road DAY: Thursday

PCU's Through Junction	PEDESTRIAN COUNTS						
	TIME	**MVT 1**	**MVT 2**	**MVT 3**	**MVT 4**	**MVT 5**	**MVT 6**
198	08:00	0	0	4	0	0	0
182	08:15	1	0	0	0	0	0
140	08:30	0	0	0	0	0	0
114	08:45	0	0	0	0	0	0
635	**H/TOT**	1	0	4	0	0	0
94	09:00	0	0	0	0	0	0
75	09:15	1	0	0	0	0	0
68	09:30	1	0	0	0	2	0
72	09:45	1	0	0	0	0	0
309	**H/TOT**	3	0	0	0	2	0
52	10:00	0	0	0	0	4	0
47	10:15	0	0	0	0	1	0
49	10:30	0	0	0	0	1	0
51	10:45	0	0	1	0	0	1
199	**H/TOT**	0	0	1	0	6	1
46	11:00	1	0	0	0	0	0
48	11:15	0	1	0	0	0	0
49	11:30	0	0	0	0	0	0
73	11:45	0	0	1	1	0	1
217	**H/TOT**	1	1	1	1	0	1
75	12:00	0	1	0	0	0	0
71	12:15	1	0	1	0	21	0
66	12:30	0	0	0	1	0	0
62	12:45	0	0	1	0	0	0
274	**H/TOT**	1	1	2	1	21	0
68	13:00	0	0	0	0	0	0
88	13:15	0	0	0	1	1	0
87	13:30	0	0	1	0	1	1
111	13:45	1	0	0	0	0	0
355	**H/TOT**	1	0	1	1	2	1
79	14:00	0	3	2	1	0	0
72	14:15	2	3	1	3	0	0
81	14:30	1	0	0	0	0	0
51	14:45	1	0	0	2	0	0
283	**H/TOT**	4	6	3	6	0	0
61	15:00	0	0	0	0	0	0
69	15:15	0	0	0	2	0	0
83	15:30	1	2	0	0	0	0
72	15:45	1	0	0	0	0	0
285	**H/TOT**	2	2	0	2	0	0

SITE: 01 DATE: 12th September 2019
LOCATION: Whitechurch Road/College Road DAY: Thursday

		PEDESTRIAN COUNTS						
		TIME	**MVT 1**	**MVT 2**	**MVT 3**	**MVT 4**	**MVT 5**	**MVT 6**
90		16:00	0	0	0	0	0	0
111		16:15	0	0	0	0	0	0
98		16:30	0	0	0	0	0	0
87		16:45	0	0	1	0	0	0
386		**H/TOT**	0	0	1	0	0	0
116		17:00	0	0	0	0	0	0
122		17:15	0	0	0	0	0	0
120		17:30	1	0	0	0	0	0
108		17:45	0	0	0	0	0	0
466		**H/TOT**	1	0	0	0	0	0
108		18:00	0	0	0	0	1	0
101		18:15	0	0	0	1	0	3
64		18:30	0	0	0	0	0	0
87		18:45	0	0	0	1	2	0
360		**H/TOT**	0	0	0	2	3	3
67		19:00	0	1	0	0	0	1
53		19:15	0	0	0	0	0	0
50		19:30	0	0	0	0	0	1
50		19:45	0	0	0	0	0	1
220		**H/TOT**	0	1	0	0	0	3
61		20:00	0	0	0	0	0	0
63		20:15	1	0	0	0	0	0
83		20:30	0	0	0	0	0	0
36		20:45	0	0	0	1	2	0
243		**H/TOT**	1	0	0	1	2	0
27		21:00	2	0	0	0	0	0
26		21:15	0	0	0	0	0	0
26		21:30	1	0	0	0	0	0
51		21:45	0	0	0	2	0	2
130		**H/TOT**	3	0	0	2	0	2
26		22:00	0	0	0	0	0	0
10		22:15	0	0	0	0	0	0
10		22:30	0	0	0	0	0	0
9		22:45	0	0	0	0	0	0
55		**H/TOT**	0	0	0	0	0	0
5		23:00	0	0	0	0	0	0
7		23:15	0	0	0	0	0	0
5		23:30	0	0	0	0	0	0
2		23:45	0	0	0	0	0	0
19		**H/TOT**	0	0	0	0	0	0
4834		**P/TOT**	19	11	13	16	36	13

APPENDIX C

TRICS Trip Generation Output
(Housing, Apartments, Shops, Creché, Café & Sports/Leisure Campus)

Calculation Reference: AUDIT-160301-201021-1019

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : A - HOUSES PRIVATELY OWNED
TOTAL VEHICLES

Selected regions and areas:

03	SOUTH WEST		
	DC	DORSET	1 days
	DV	DEVON	3 days
	SM	SOMERSET	3 days
	WL	WILTSHIRE	1 days
04	EAST ANGLIA		
	CA	CAMBRIDGESHIRE	2 days
	NF	NORFOLK	11 days
	SF	SUFFOLK	4 days
05	EAST MIDLANDS		
	DS	DERBYSHIRE	1 days
	LE	LEICESTERSHIRE	1 days
	LN	LINCOLNSHIRE	2 days
06	WEST MIDLANDS		
	SH	SHROPSHIRE	2 days
	ST	STAFFORDSHIRE	3 days
	WK	WARWICKSHIRE	3 days
	WM	WEST MIDLANDS	2 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	NE	NORTH EAST LINCOLNSHIRE	2 days
	NY	NORTH YORKSHIRE	6 days
	SY	SOUTH YORKSHIRE	1 days
	WY	WEST YORKSHIRE	1 days
08	NORTH WEST		
	CH	CHESHIRE	4 days
	GM	GREATER MANCHESTER	1 days
	LC	LANCASHIRE	2 days
	MS	MERSEYSIDE	1 days
09	NORTH		
	CB	CUMBRIA	1 days
	DH	DURHAM	3 days
	TW	TYNE & WEAR	2 days
10	WALES		
	PS	POWYS	2 days
	VG	VALE OF GLAMORGAN	1 days
11	SCOTLAND		
	AG	ANGUS	1 days
	FA	FALKIRK	2 days
	HI	HIGHLAND	1 days
12	CONNAUGHT		
	CS	SLIGO	2 days
	GA	GALWAY	1 days
	LT	LEITRIM	2 days
	RO	ROSCOMMON	2 days
13	MUNSTER		
	WA	WATERFORD	1 days
14	LEINSTER		
	CC	CARLOW	1 days
	WC	WICKLOW	2 days
	WX	WEXFORD	1 days
15	GREATER DUBLIN		
	DL	DUBLIN	2 days
16	ULSTER (REPUBLIC OF IRELAND)		
	CV	CAVAN	2 days
	DN	DONEGAL	5 days
17	ULSTER (NORTHERN IRELAND)		
	AN	ANTRIM	2 days
	DO	DOWN	1 days
	TY	TYRONE	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
TOTAL VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	95	96	0.067	95	96	0.285	95	96	0.352
08:00 - 09:00	95	96	0.133	95	96	0.382	95	96	0.515
09:00 - 10:00	95	96	0.151	95	96	0.186	95	96	0.337
10:00 - 11:00	95	96	0.123	95	96	0.141	95	96	0.264
11:00 - 12:00	95	96	0.128	95	96	0.136	95	96	0.264
12:00 - 13:00	95	96	0.160	95	96	0.159	95	96	0.319
13:00 - 14:00	95	96	0.158	95	96	0.156	95	96	0.314
14:00 - 15:00	95	96	0.174	95	96	0.181	95	96	0.355
15:00 - 16:00	95	96	0.242	95	96	0.178	95	96	0.420
16:00 - 17:00	95	96	0.273	95	96	0.167	95	96	0.440
17:00 - 18:00	95	96	0.352	95	96	0.180	95	96	0.532
18:00 - 19:00	95	96	0.288	95	96	0.177	95	96	0.465
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.249			2.328			4.577

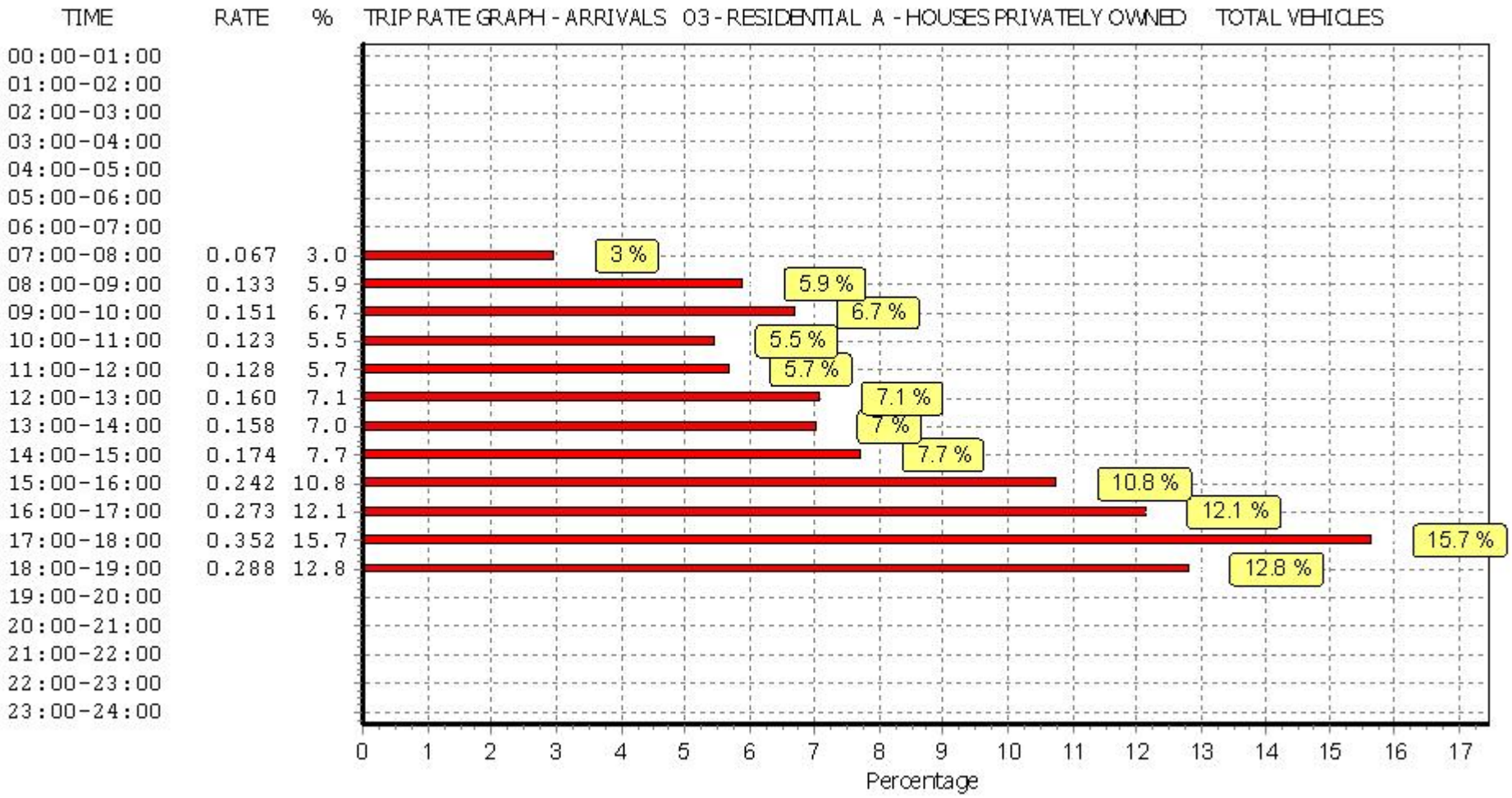
This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

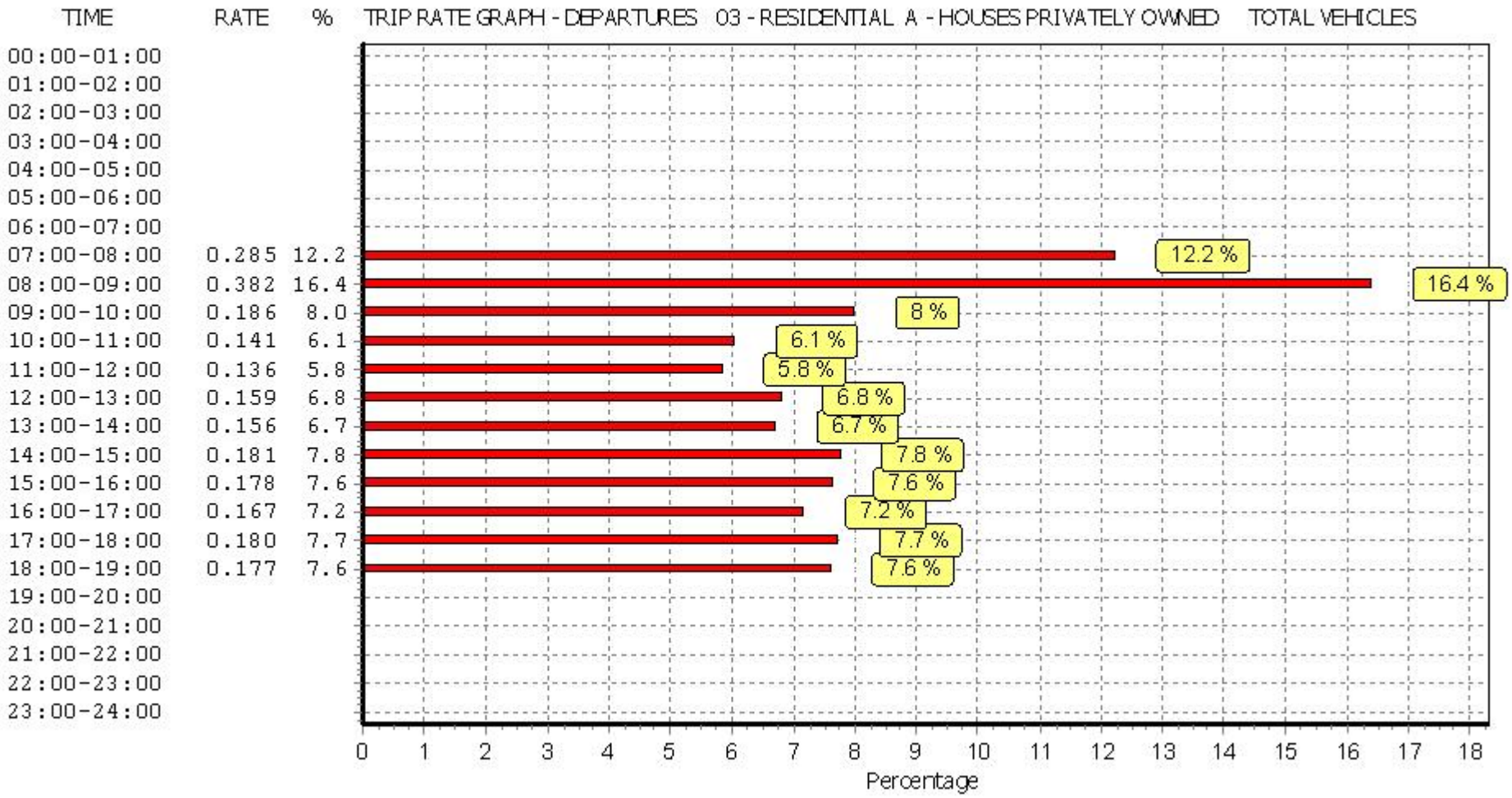
Parameter summary

Trip rate parameter range selected:	6 - 1817 (units:)
Survey date date range:	01/01/12 - 27/09/19
Number of weekdays (Monday-Friday):	99
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	7
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

Calculation Reference: AUDIT-160301-201021-1055

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : C - FLATS PRIVATELY OWNED
TOTAL VEHICLES

Selected regions and areas:

03	SOUTH WEST		
	DC	DORSET	1 days
	DV	DEVON	1 days
04	EAST ANGLIA		
	CA	CAMBRIDGESHIRE	1 days
	NF	NORFOLK	2 days
	SF	SUFFOLK	2 days
05	EAST MIDLANDS		
	DS	DERBYSHIRE	1 days
	NT	NOTTINGHAMSHIRE	2 days
06	WEST MIDLANDS		
	WM	WEST MIDLANDS	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	RI	EAST RIDING OF YORKSHIRE	1 days
08	NORTH WEST		
	MS	MERSEYSIDE	2 days
09	NORTH		
	CB	CUMBRIA	3 days
10	WALES		
	CO	CONWY	1 days
11	SCOTLAND		
	EB	CITY OF EDINBURGH	1 days
	SA	SOUTH AYRSHIRE	1 days
	SR	STIRLING	2 days
12	CONNAUGHT		
	GA	GALWAY	1 days
13	MUNSTER		
	WA	WATERFORD	1 days
14	LEINSTER		
	LU	LOUTH	3 days
15	GREATER DUBLIN		
	DL	DUBLIN	6 days
16	ULSTER (REPUBLIC OF IRELAND)		
	MG	MONAGHAN	1 days
17	ULSTER (NORTHERN IRELAND)		
	AN	ANTRIM	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
TOTAL VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	35	53	0.050	35	53	0.166	35	53	0.216
08:00 - 09:00	35	53	0.058	35	53	0.204	35	53	0.262
09:00 - 10:00	35	53	0.073	35	53	0.102	35	53	0.175
10:00 - 11:00	35	53	0.056	35	53	0.077	35	53	0.133
11:00 - 12:00	35	53	0.067	35	53	0.078	35	53	0.145
12:00 - 13:00	35	53	0.084	35	53	0.079	35	53	0.163
13:00 - 14:00	35	53	0.067	35	53	0.085	35	53	0.152
14:00 - 15:00	35	53	0.084	35	53	0.080	35	53	0.164
15:00 - 16:00	35	53	0.103	35	53	0.063	35	53	0.166
16:00 - 17:00	35	53	0.117	35	53	0.080	35	53	0.197
17:00 - 18:00	35	53	0.186	35	53	0.087	35	53	0.273
18:00 - 19:00	35	53	0.169	35	53	0.098	35	53	0.267
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.114			1.199			2.313

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	9 - 184 (units:)
Survey date date range:	01/01/12 - 18/11/19
Number of weekdays (Monday-Friday):	35
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

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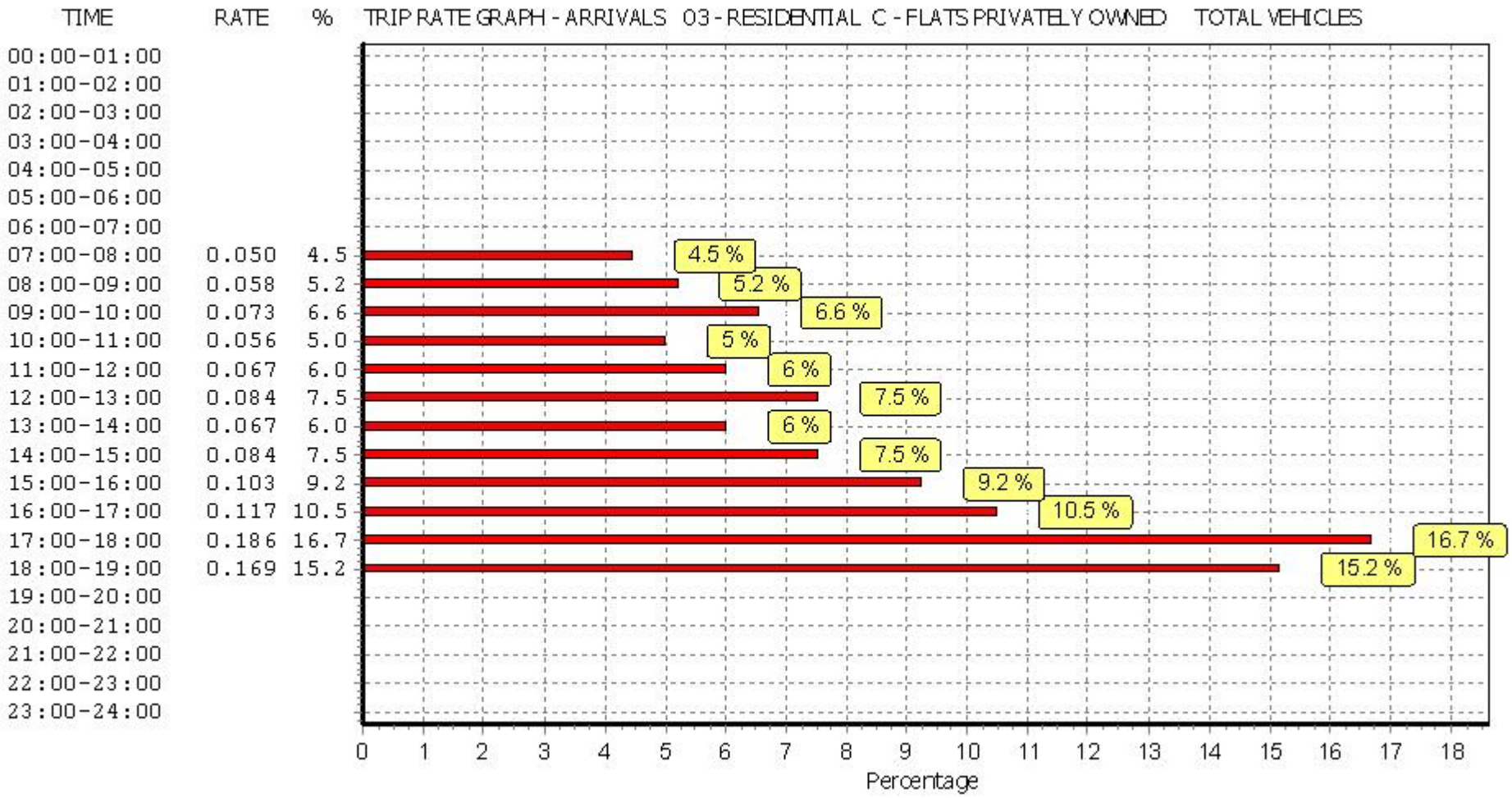
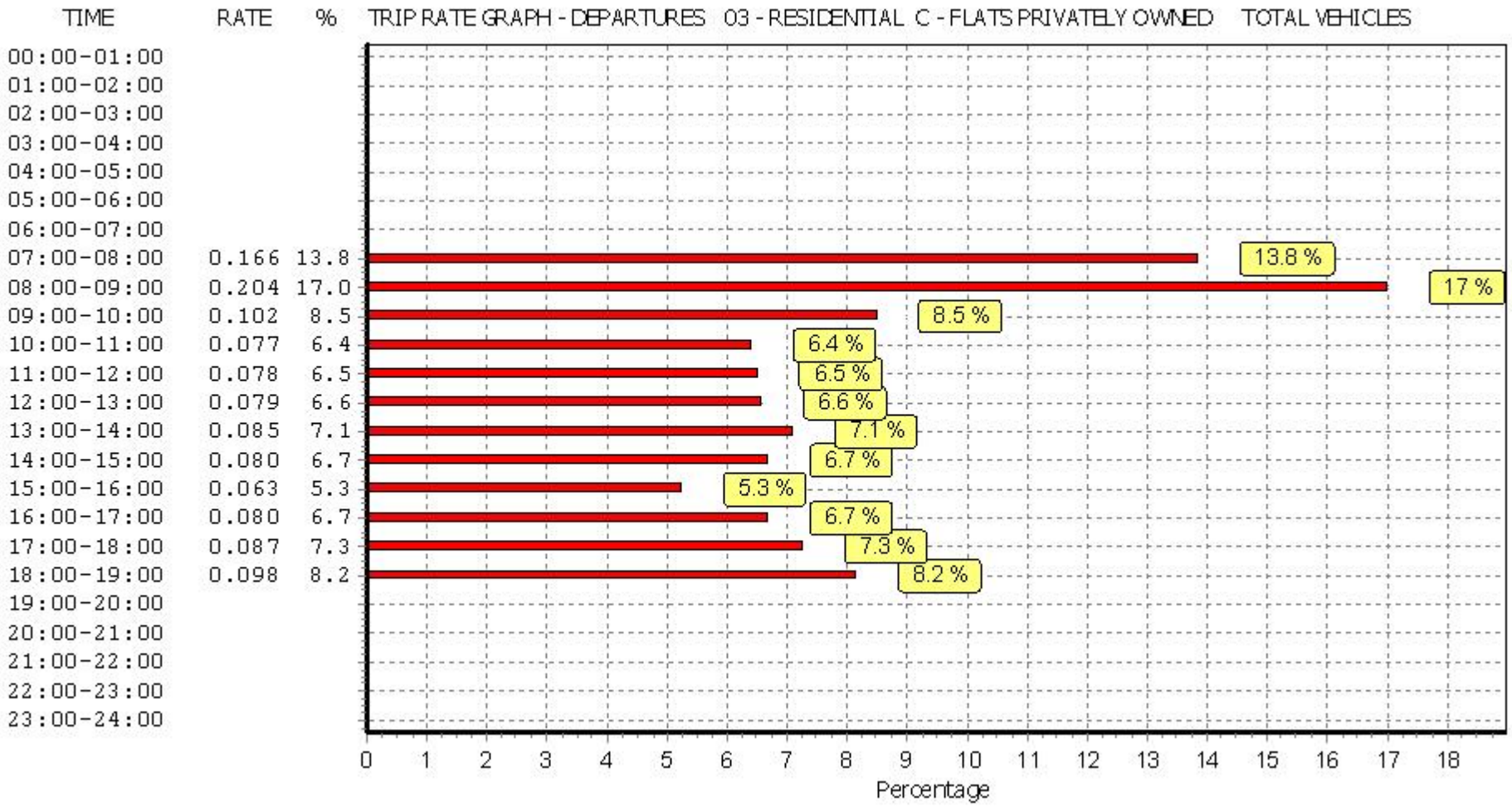


This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

Calculation Reference: AUDIT-160301-201021-1006

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 01 - RETAIL
Category : I - SHOPPING CENTRE - LOCAL SHOPS
TOTAL VEHICLES

Selected regions and areas:

03	SOUTH WEST		
	BR	BRISTOL CITY	1 days
	DV	DEVON	1 days
05	EAST MIDLANDS		
	LE	LEICESTERSHIRE	1 days
06	WEST MIDLANDS		
	SH	SHROPSHIRE	1 days
	WM	WEST MIDLANDS	1 days
	WO	WORCESTERSHIRE	1 days
08	NORTH WEST		
	CH	CHESHIRE	2 days
09	NORTH		
	TV	TEES VALLEY	2 days
	TW	TYNE & WEAR	2 days
11	SCOTLAND		
	SR	STIRLING	1 days
13	MUNSTER		
	CR	CORK	1 days
15	GREATER DUBLIN		
	DL	DUBLIN	1 days
16	ULSTER (REPUBLIC OF IRELAND)		
	DN	DONEGAL	1 days
17	ULSTER (NORTHERN IRELAND)		
	DE	DERRY	2 days

This section displays the number of survey days per TRICS® sub-region in the selected set

TRIP RATE for Land Use 01 - RETAIL/I - SHOPPING CENTRE - LOCAL SHOPS
TOTAL VEHICLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00	1	540	1.296	1	540	1.296	1	540	2.592
07:00 - 08:00	18	1238	2.765	18	1238	2.504	18	1238	5.269
08:00 - 09:00	18	1238	3.276	18	1238	2.976	18	1238	6.252
09:00 - 10:00	18	1238	4.089	18	1238	3.586	18	1238	7.675
10:00 - 11:00	18	1238	4.129	18	1238	3.851	18	1238	7.980
11:00 - 12:00	18	1238	4.336	18	1238	4.381	18	1238	8.717
12:00 - 13:00	18	1238	5.162	18	1238	4.973	18	1238	10.135
13:00 - 14:00	18	1238	4.506	18	1238	4.596	18	1238	9.102
14:00 - 15:00	18	1238	4.246	18	1238	4.318	18	1238	8.564
15:00 - 16:00	18	1238	4.210	18	1238	4.372	18	1238	8.582
16:00 - 17:00	18	1238	4.524	18	1238	4.358	18	1238	8.882
17:00 - 18:00	18	1238	4.304	18	1238	4.614	18	1238	8.918
18:00 - 19:00	18	1238	4.224	18	1238	4.466	18	1238	8.690
19:00 - 20:00	15	1217	4.529	15	1217	4.534	15	1217	9.063
20:00 - 21:00	15	1217	3.707	15	1217	3.844	15	1217	7.551
21:00 - 22:00	14	1015	3.406	14	1015	3.843	14	1015	7.249
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			62.709			62.512			125.221

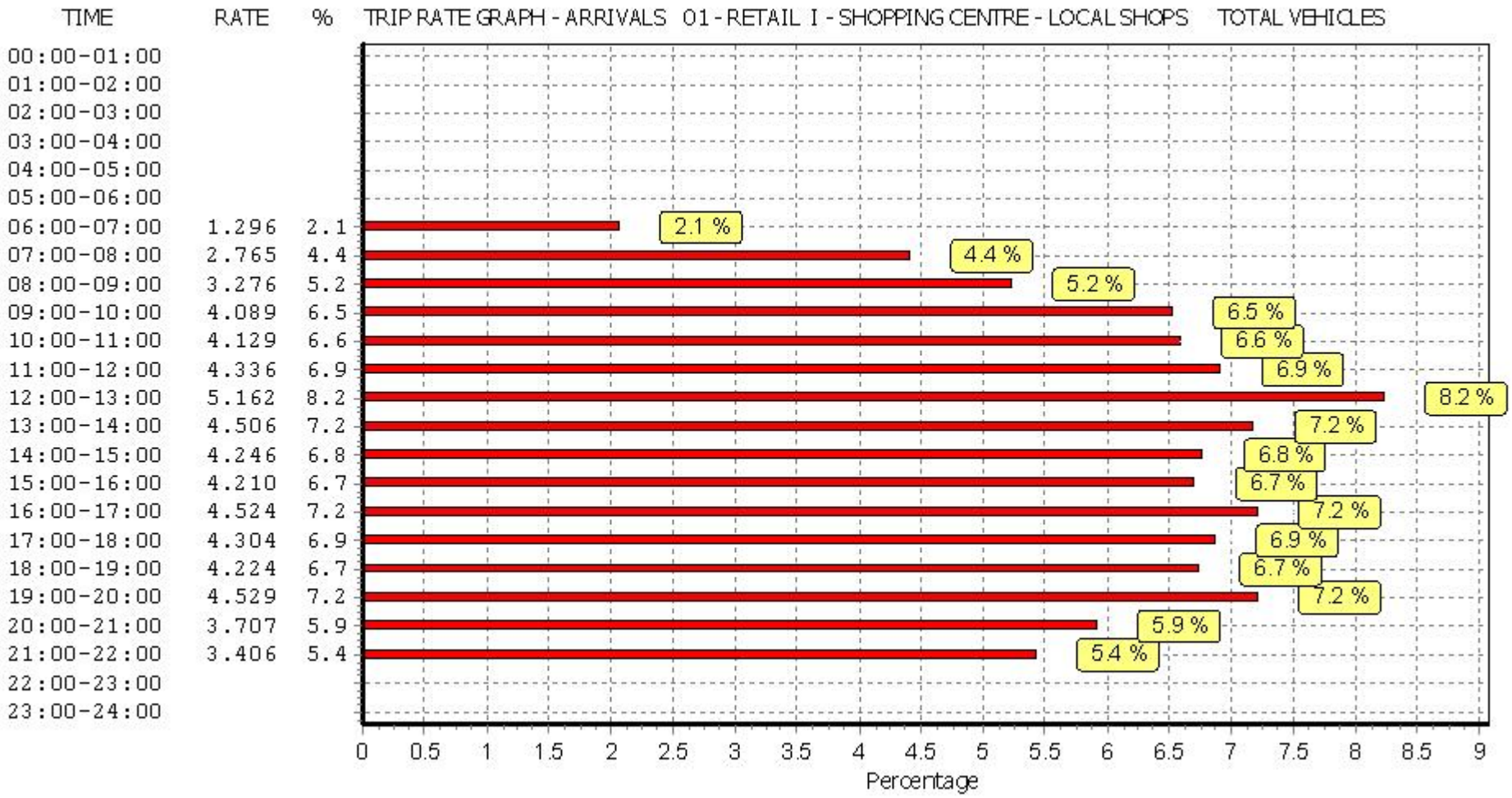
This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

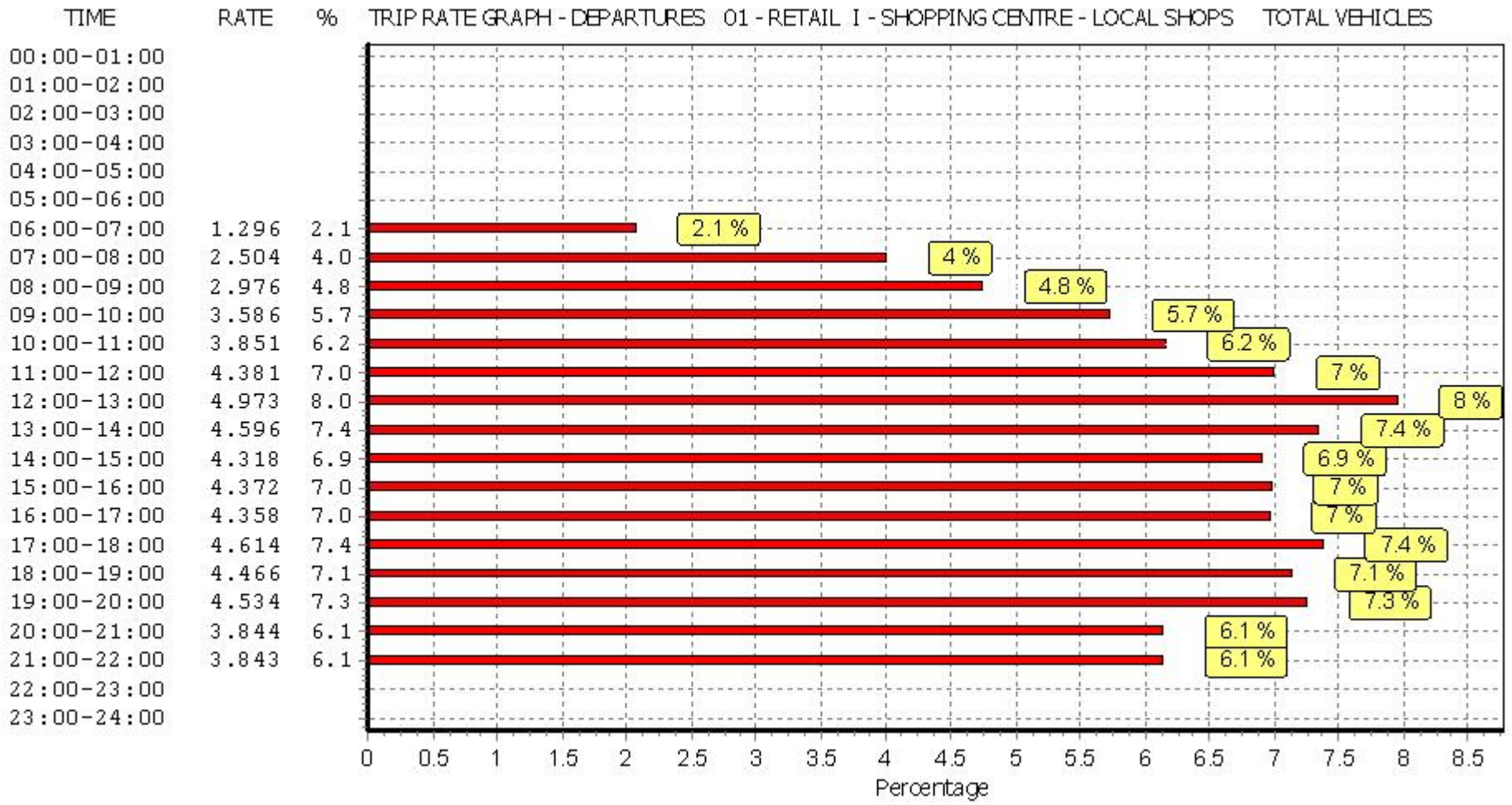
Parameter summary

Trip rate parameter range selected:	260 - 4052 (units: sqm)
Survey date date range:	01/01/12 - 24/05/19
Number of weekdays (Monday-Friday):	18
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	1
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

Calculation Reference: AUDIT-160301-201021-1002

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 07 - LEISURE
Category : C - LEISURE CENTRE
TOTAL VEHICLES

Selected regions and areas:

03	SOUTH WEST		
	DV	DEVON	2 days
	WL	WILTSHIRE	1 days
04	EAST ANGLIA		
	CA	CAMBRIDGESHIRE	1 days
	NF	NORFOLK	1 days
05	EAST MIDLANDS		
	DS	DERBYSHIRE	1 days
	NT	NOTTINGHAMSHIRE	2 days
06	WEST MIDLANDS		
	WM	WEST MIDLANDS	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	WY	WEST YORKSHIRE	2 days
09	NORTH		
	CB	CUMBRIA	1 days
	TW	TYNE & WEAR	1 days
10	WALES		
	CF	CARDIFF	1 days
11	SCOTLAND		
	AG	ANGUS	1 days
	EL	EAST LOTHIAN	1 days
12	CONNAUGHT		
	RO	ROSCOMMON	1 days
13	MUNSTER		
	CR	CORK	1 days
	TI	TIPPERARY	1 days
17	ULSTER (NORTHERN IRELAND)		
	AR	ARMAGH	1 days
	DO	DOWN	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

TRIP RATE for Land Use 07 - LEISURE/C - LEISURE CENTRE
TOTAL VEHICLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00	14	4957	0.268	14	4957	0.046	14	4957	0.314
07:00 - 08:00	20	4339	0.380	20	4339	0.230	20	4339	0.610
08:00 - 09:00	21	4235	0.482	21	4235	0.346	21	4235	0.828
09:00 - 10:00	21	4235	0.747	21	4235	0.388	21	4235	1.135
10:00 - 11:00	21	4235	0.666	21	4235	0.544	21	4235	1.210
11:00 - 12:00	21	4235	0.468	21	4235	0.525	21	4235	0.993
12:00 - 13:00	21	4235	0.455	21	4235	0.531	21	4235	0.986
13:00 - 14:00	21	4235	0.459	21	4235	0.454	21	4235	0.913
14:00 - 15:00	21	4235	0.462	21	4235	0.422	21	4235	0.884
15:00 - 16:00	21	4235	0.647	21	4235	0.503	21	4235	1.150
16:00 - 17:00	21	4235	0.907	21	4235	0.770	21	4235	1.677
17:00 - 18:00	21	4235	1.146	21	4235	1.069	21	4235	2.215
18:00 - 19:00	21	4235	1.085	21	4235	1.061	21	4235	2.146
19:00 - 20:00	21	4235	0.765	21	4235	0.945	21	4235	1.710
20:00 - 21:00	21	4235	0.414	21	4235	0.795	21	4235	1.209
21:00 - 22:00	20	4372	0.124	20	4372	0.632	20	4372	0.756
22:00 - 23:00	7	4609	0.015	7	4609	0.170	7	4609	0.185
23:00 - 24:00	1	4738	0.000	1	4738	0.000	1	4738	0.000
Total Rates:			9.490			9.431			18.921

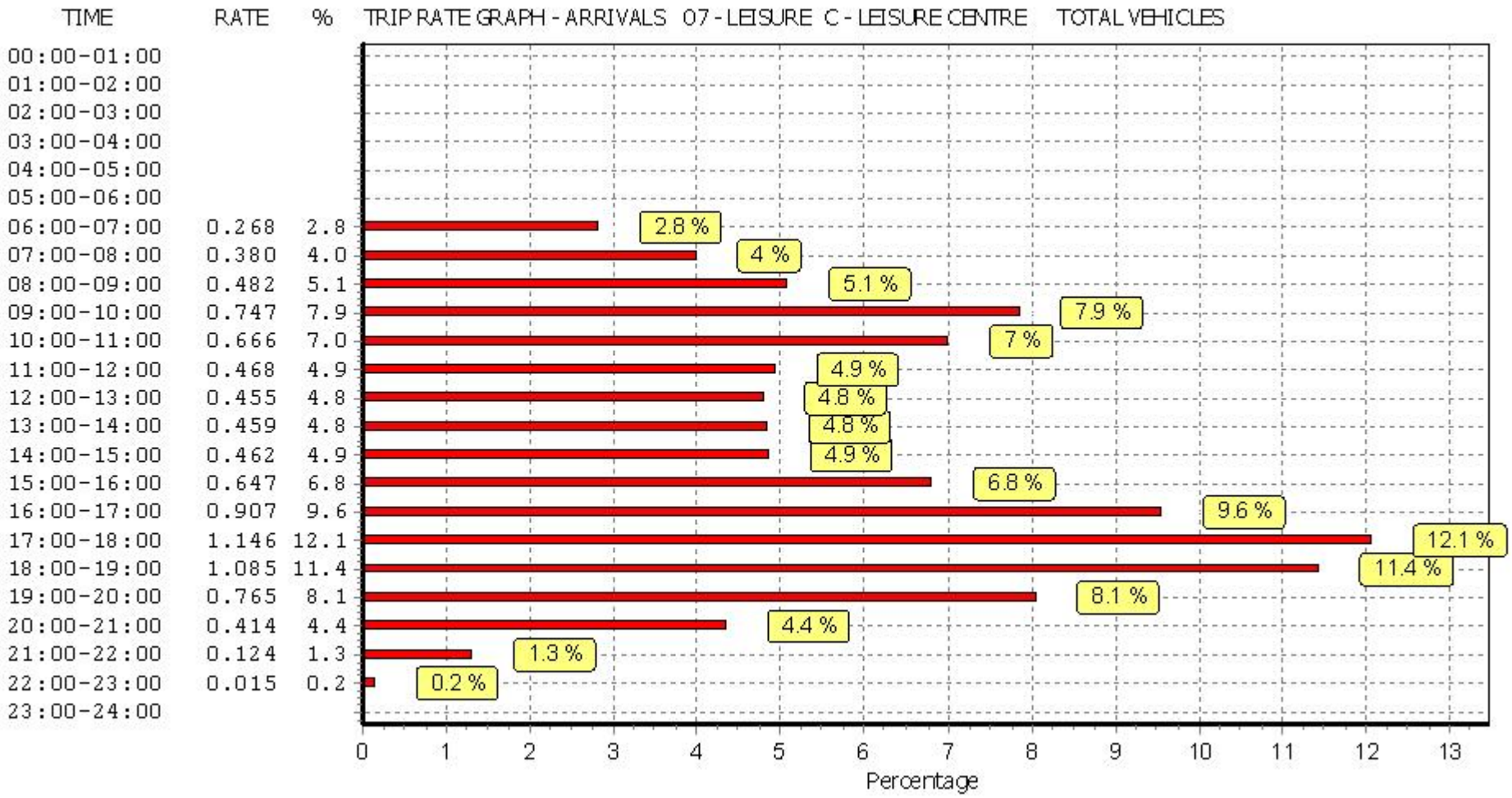
This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	1450 - 12188 (units: sqm)
Survey date date range:	01/01/12 - 28/11/19
Number of weekdays (Monday-Friday):	21
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

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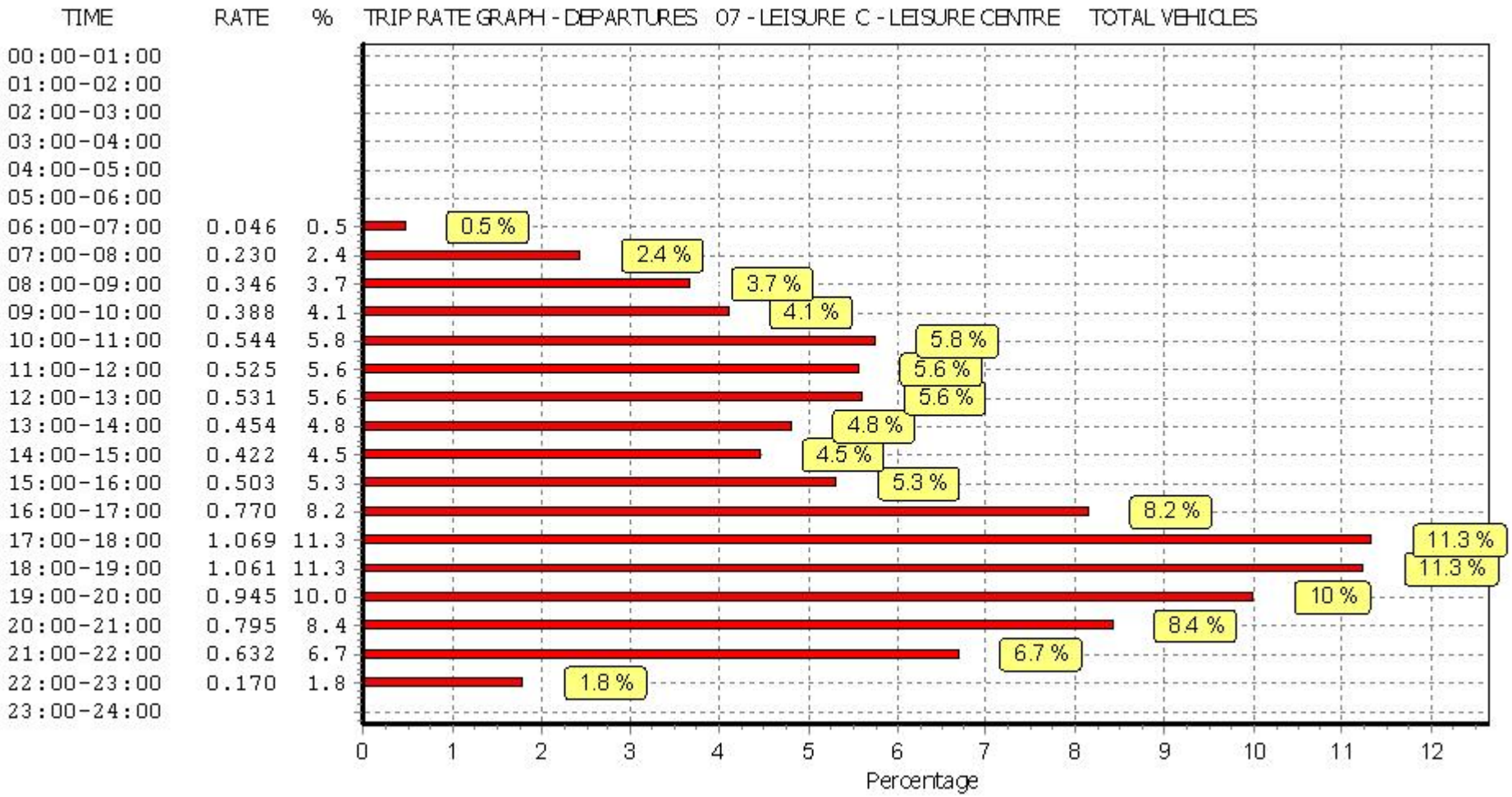


This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

Calculation Reference: AUDIT-160301-201021-1021

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 04 - EDUCATION
Category : D - NURSERY
TOTAL VEHICLES

Selected regions and areas:

03	SOUTH WEST		
	WL	WILTSHIRE	1 days
04	EAST ANGLIA		
	CA	CAMBRIDGESHIRE	1 days
	SF	SUFFOLK	1 days
05	EAST MIDLANDS		
	DS	DERBYSHIRE	1 days
	LE	LEICESTERSHIRE	1 days
	LN	LINCOLNSHIRE	1 days
	NR	NORTHAMPTONSHIRE	1 days
06	WEST MIDLANDS		
	SH	SHROPSHIRE	1 days
	WK	WARWICKSHIRE	1 days
08	NORTH WEST		
	CH	CHESHIRE	1 days
09	NORTH		
	TV	TEES VALLEY	1 days
	TW	TYNE & WEAR	2 days
10	WALES		
	BG	BRIDGEND	1 days
	MM	MONMOUTHSHIRE	1 days
11	SCOTLAND		
	DU	DUNDEE CITY	1 days
	SR	STIRLING	1 days
12	CONNAUGHT		
	RO	ROSCOMMON	2 days
15	GREATER DUBLIN		
	DL	DUBLIN	1 days
17	ULSTER (NORTHERN IRELAND)		
	DE	DERRY	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

TRIP RATE for Land Use 04 - EDUCATION/D - NURSERY
TOTAL VEHICLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00	2	328	0.152	2	328	0.000	2	328	0.152
07:00 - 08:00	21	475	1.725	21	475	0.782	21	475	2.507
08:00 - 09:00	21	475	3.329	21	475	2.727	21	475	6.056
09:00 - 10:00	21	475	1.785	21	475	1.654	21	475	3.439
10:00 - 11:00	21	475	0.511	21	475	0.381	21	475	0.892
11:00 - 12:00	21	475	0.702	21	475	0.531	21	475	1.233
12:00 - 13:00	21	475	1.304	21	475	1.434	21	475	2.738
13:00 - 14:00	21	475	0.852	21	475	1.293	21	475	2.145
14:00 - 15:00	21	475	0.662	21	475	0.652	21	475	1.314
15:00 - 16:00	21	475	0.812	21	475	1.003	21	475	1.815
16:00 - 17:00	21	475	1.494	21	475	1.644	21	475	3.138
17:00 - 18:00	21	475	2.396	21	475	2.888	21	475	5.284
18:00 - 19:00	20	491	0.153	20	491	0.733	20	491	0.886
19:00 - 20:00	1	400	0.000	1	400	0.000	1	400	0.000
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			15.877			15.722			31.599

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

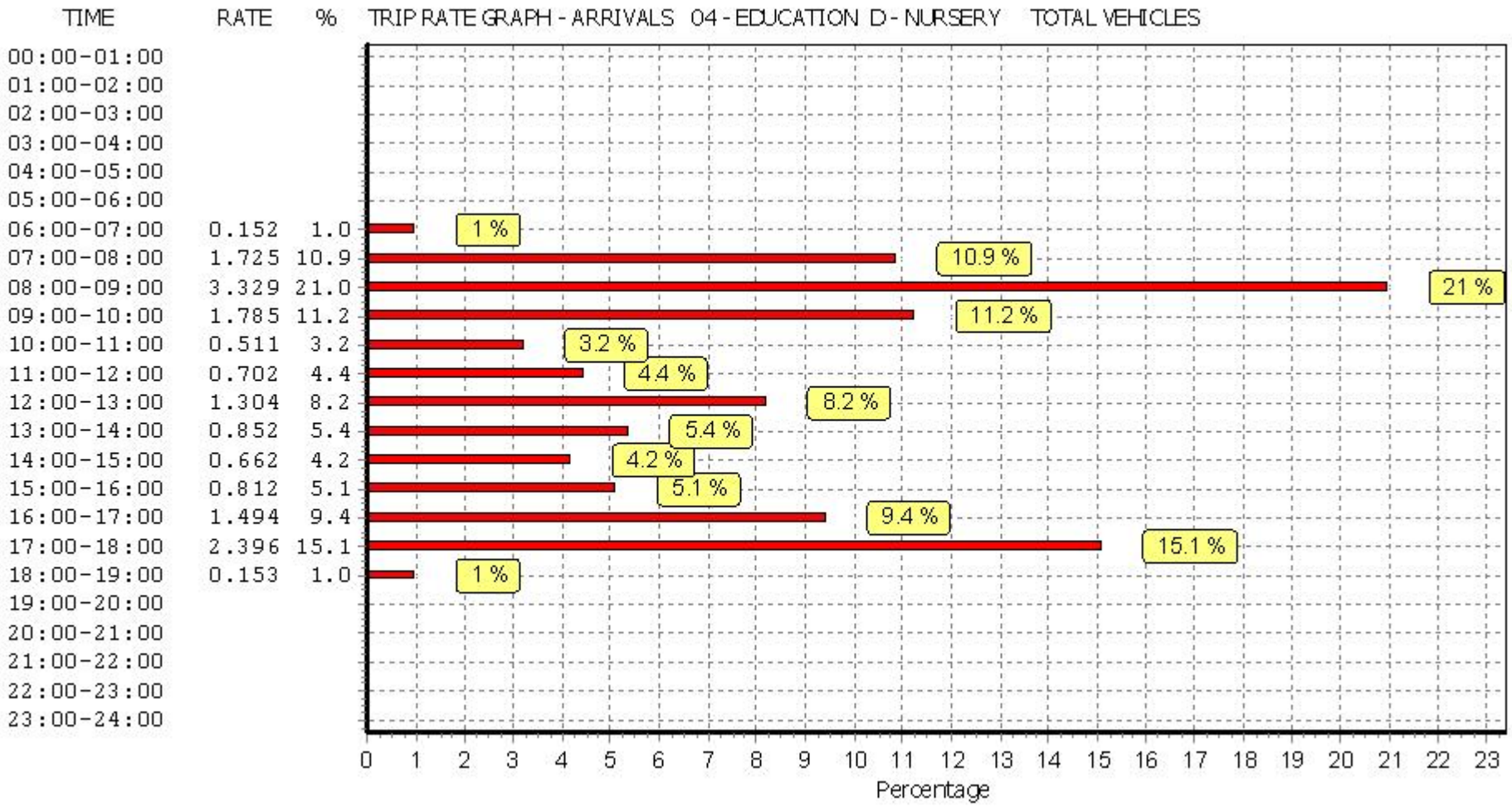
*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	150 - 1300 (units: sqm)
Survey date date range:	01/01/12 - 27/09/19
Number of weekdays (Monday-Friday):	21
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	1
Surveys manually removed from selection:	0

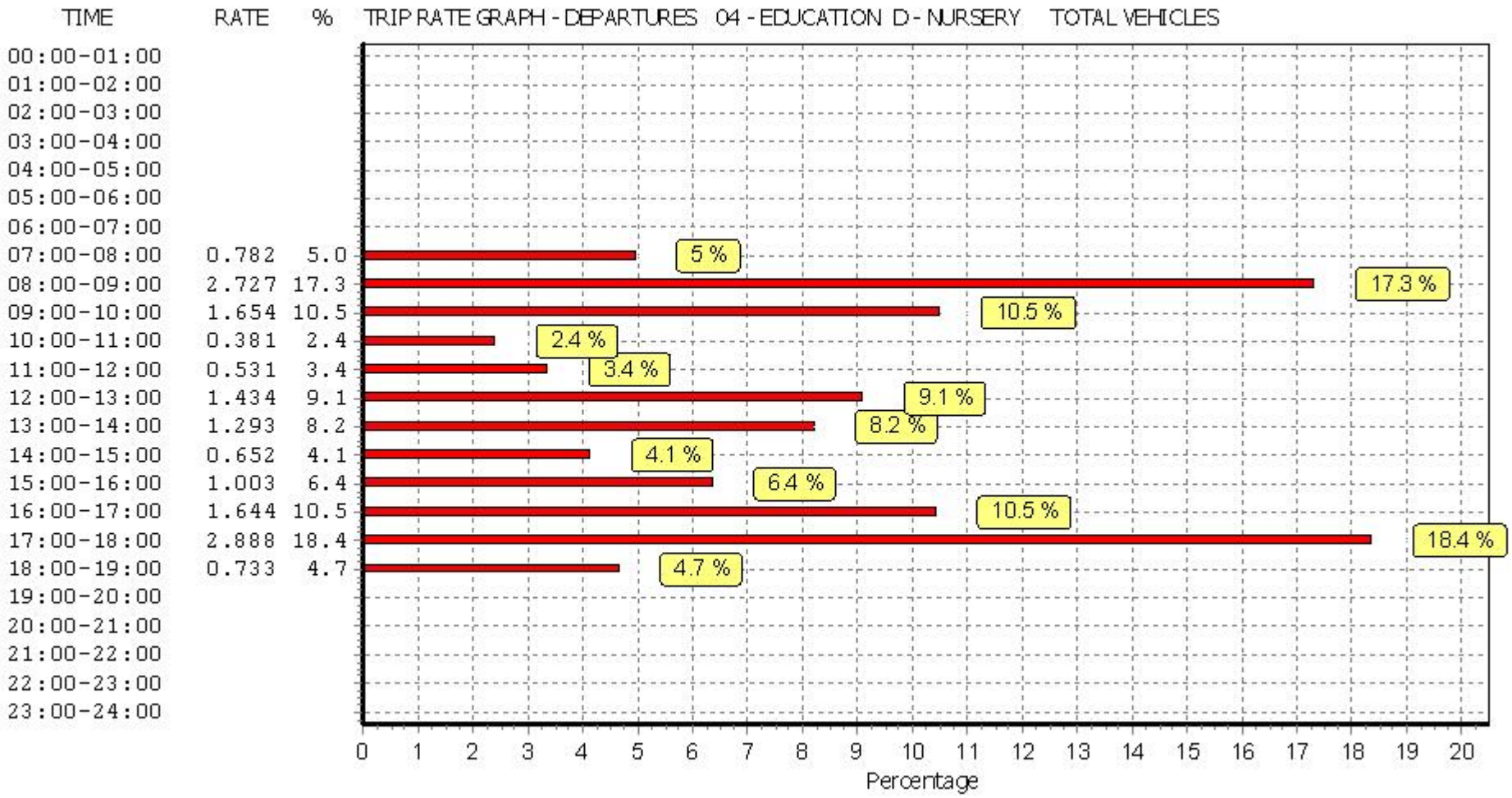
This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

NRB Consulting Engineers Ltd 8 Leopardstown Business Centre, Ballyogan Avenue Dublin 18 Licence No: 160301



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

NRB Consulting Engineers Ltd 8 Leopardstown Business Centre, Ballyogan Avenue Dublin 18 Licence No: 160301



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

TRIP RATE for Land Use 06 - HOTEL, FOOD & DRINK/B - RESTAURANTS
TOTAL VEHICLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00	1	950	0.211	1	950	0.211	1	950	0.422
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	1	865	0.000	1	865	0.000	1	865	0.000
08:00 - 09:00	1	865	0.000	1	865	0.000	1	865	0.000
09:00 - 10:00	2	520	0.769	2	520	0.096	2	520	0.865
10:00 - 11:00	10	548	1.058	10	548	0.492	10	548	1.550
11:00 - 12:00	16	632	1.019	16	632	0.712	16	632	1.731
12:00 - 13:00	16	632	2.048	16	632	1.088	16	632	3.136
13:00 - 14:00	16	632	2.068	16	632	1.920	16	632	3.988
14:00 - 15:00	16	632	1.197	16	632	1.732	16	632	2.929
15:00 - 16:00	17	616	0.773	17	616	1.165	17	616	1.938
16:00 - 17:00	18	615	0.957	18	615	0.731	18	615	1.688
17:00 - 18:00	18	615	1.625	18	615	0.849	18	615	2.474
18:00 - 19:00	18	615	2.474	18	615	1.806	18	615	4.280
19:00 - 20:00	18	615	2.194	18	615	2.049	18	615	4.243
20:00 - 21:00	18	615	1.282	18	615	2.077	18	615	3.359
21:00 - 22:00	18	615	0.876	18	615	1.517	18	615	2.393
22:00 - 23:00	17	601	0.490	17	601	1.146	17	601	1.636
23:00 - 24:00	14	612	0.233	14	612	0.887	14	612	1.120
Total Rates:			19.274			18.478			37.752

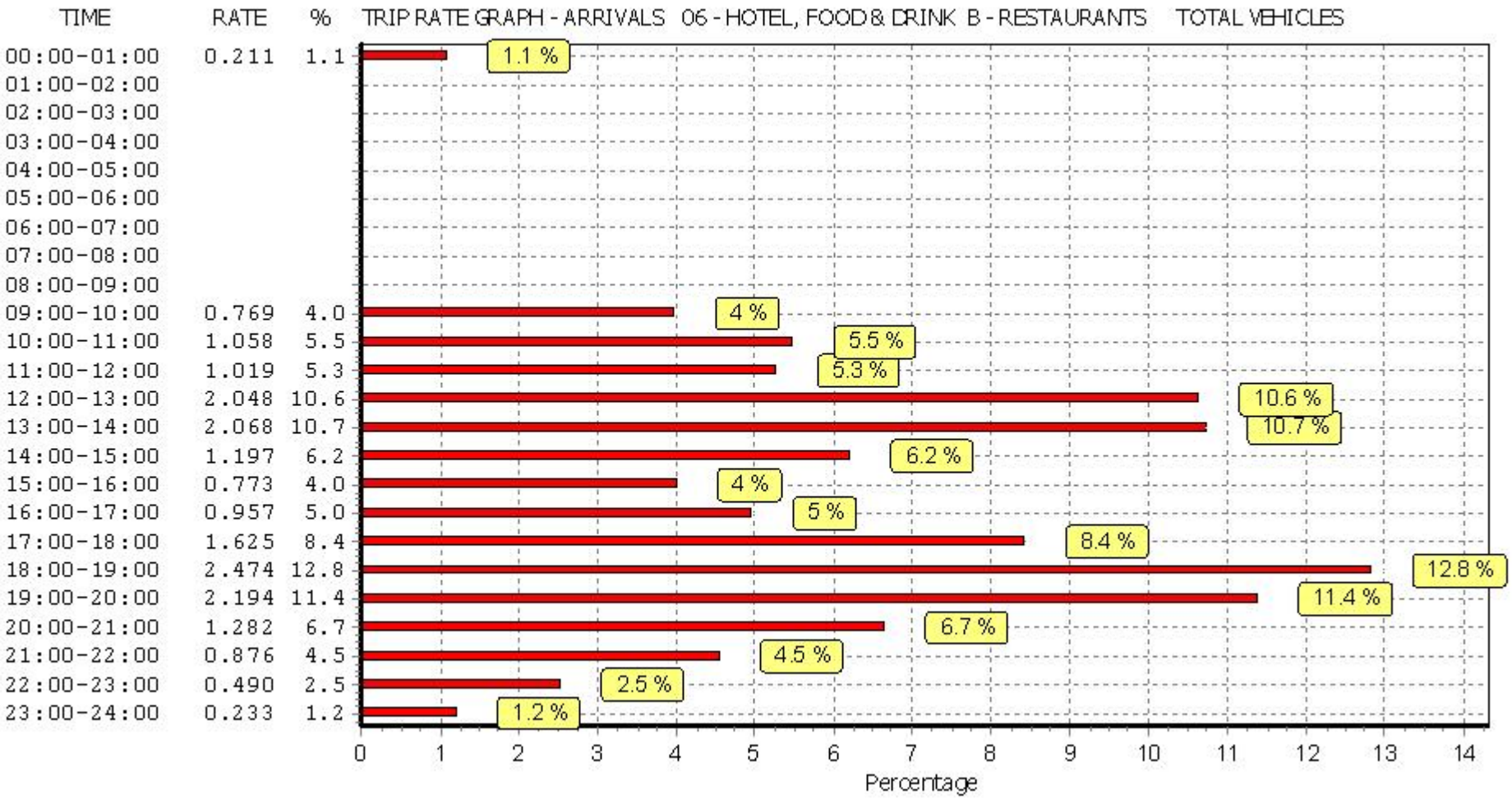
This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

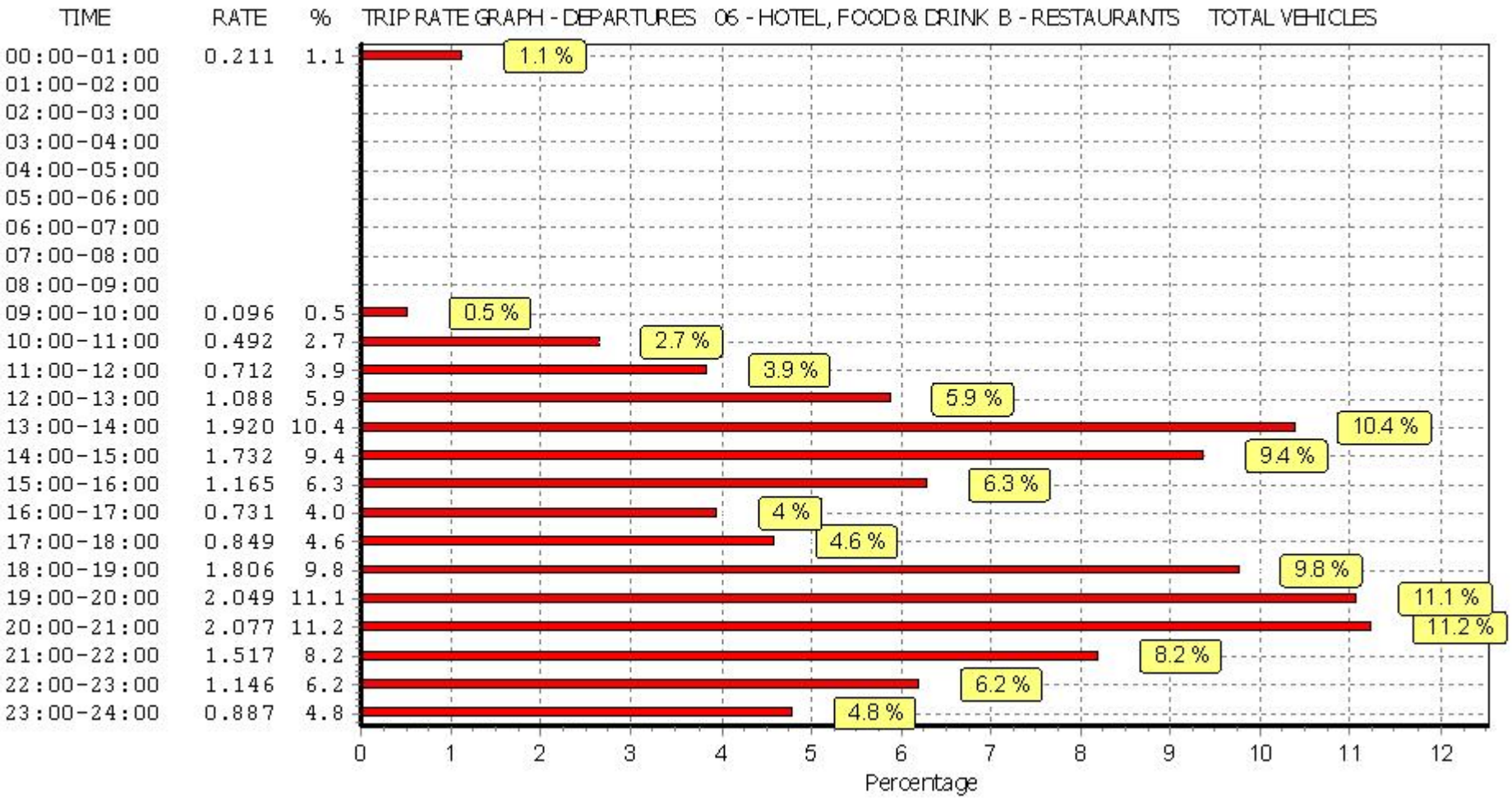
Parameter summary

Trip rate parameter range selected:	160 - 2200 (units: sqm)
Survey date date range:	01/01/12 - 25/09/19
Number of weekdays (Monday-Friday):	18
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.



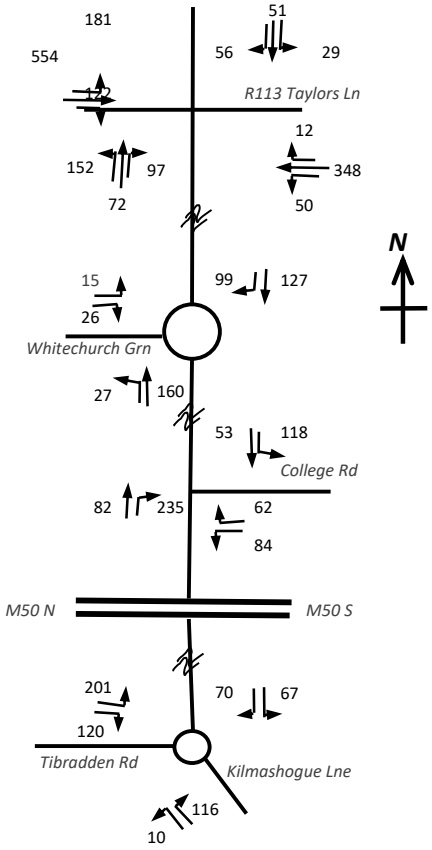
This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

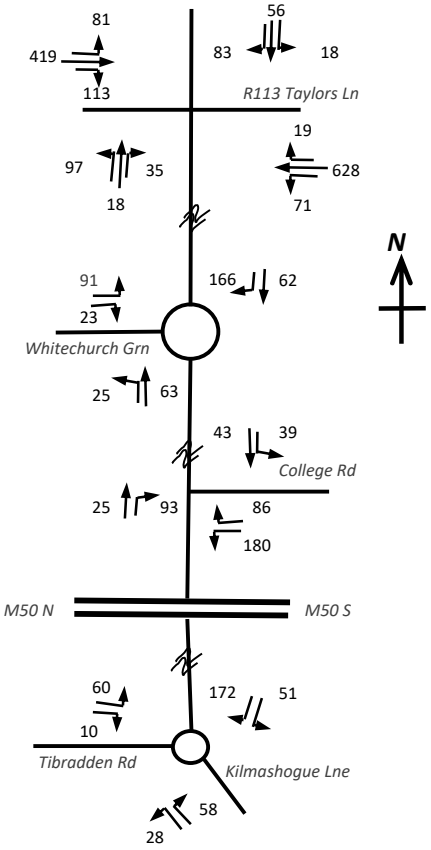


This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

APPENDIX D

Traffic Surveys, Trip Distribution & Network Traffic Flow Projections & Diagrams



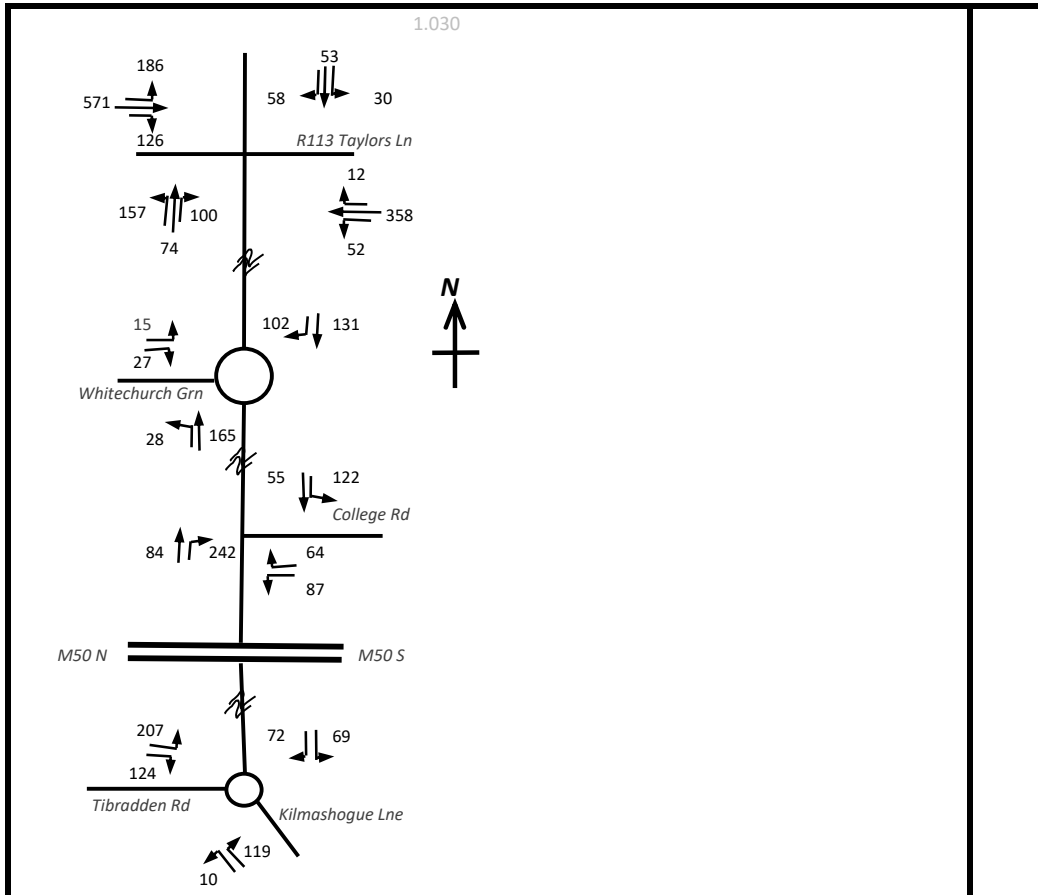


WEEKDAY AM PEAK HOUR 8-9AM

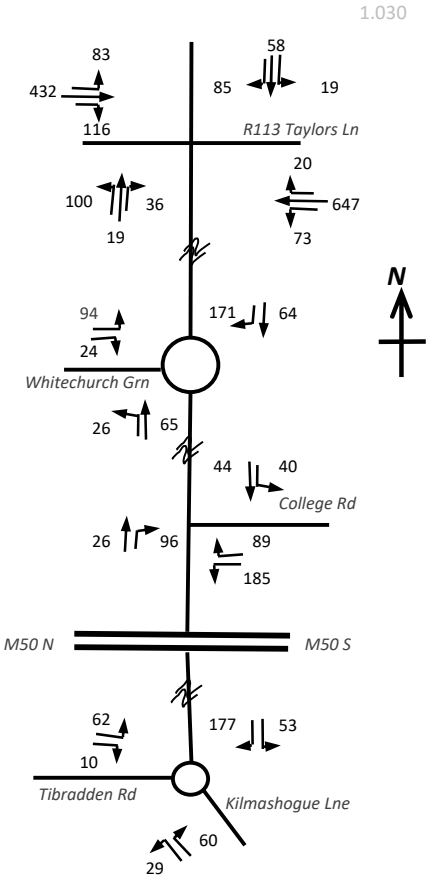
WEEKDAY PM PEAK HOUR 5-6PM

EXISTING AS-SURVEYED PRE-PANDEMIC TRAFFIC CONDITIONS 2019 (PCUs)

TII PE-PAG-02017 Project Appraisal Guidelines for National Roads Unit 5.3 (Travel Demand Projections October 2016, Table 5.3.2: Link-Based Growth Rates: Annual Growth Factors) DLRCC/SDCC	2019 to 2025 =	1.030
	2025 to 2040 =	1.077

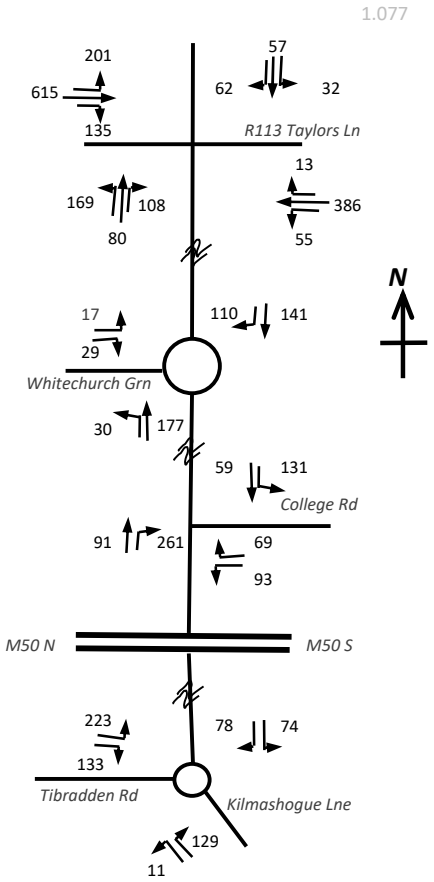


WEEKDAY AM PEAK HOUR 8-9AM

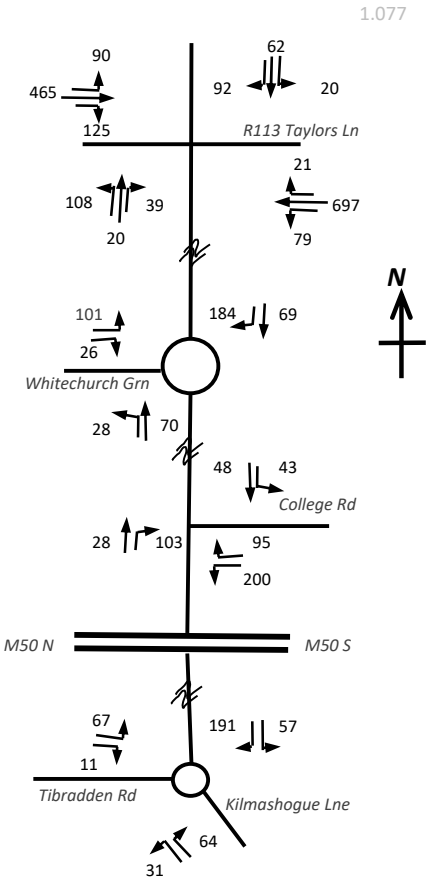


WEEKDAY PM PEAK HOUR 5-6PM

PROJECTED SELECTED OPENING YEAR TRAFFIC CONDITIONS 2025 (PCUs) - <u>WITHOUT</u> PROPOSED DEVELOPMENT



WEEKDAY AM PEAK HOUR 8-9AM



WEEKDAY PM PEAK HOUR 5-6PM

PROJECTED DESIGN YEAR (OPE +15) TRAFFIC CONDITIONS 2040 (PCUs) - <u>WITHOUT</u> PROPOSED DEVELOPMENT

Permitted St Thomas Sports Campus - Assessment of Traffic Generated

3200 **m2 GFA Leisure Centre Development - EXTANT/COMMITTED**

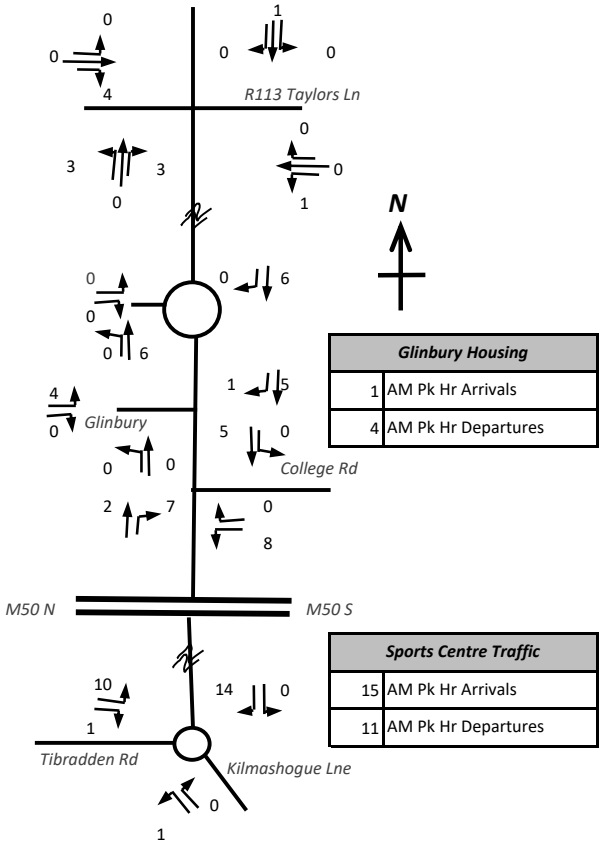
Network Period	*Car Arrivals*		*Car Departures*		**TOTAL 2-Way Traffic**
	Per 100m2	**Total**	*Per 100m2*	**Total**	
Weekday AM Peak 8-9am	0.482	15	0.346	11	26
Weekday PM Peak 5-6pm	1.146	37	1.069	34	71
24 Hr Traffic	9.49	304	9.43	302	605

Please Note, we have undertaken an Assessment of the Traffic Generated during the weekday AM and PM Peaks based on TRICS V7.7.4, as there does NOT appear to have been any quantification of traffic generated in the supporting Part 8 Documents & Reports.

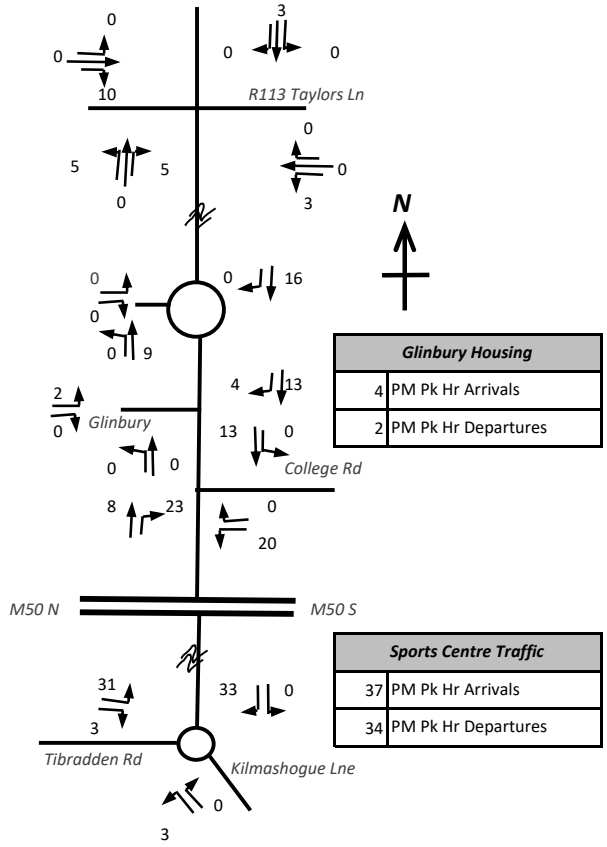
Under Construction 'Glinbury' Housing Development

11 **No Residential Housing Units**

Network Period	*Car Arrivals*		*Car Departures*		**TOTAL 2-Way Traffic**
	Per Unit	**Total**	*Per Unit*	**Total**	
Weekday AM Peak 8-9am	0.133	1	0.382	4	5
Weekday PM Peak 5-6pm	0.352	4	0.18	2	6
24 Hr Traffic	2.249	25	2.329	26	51

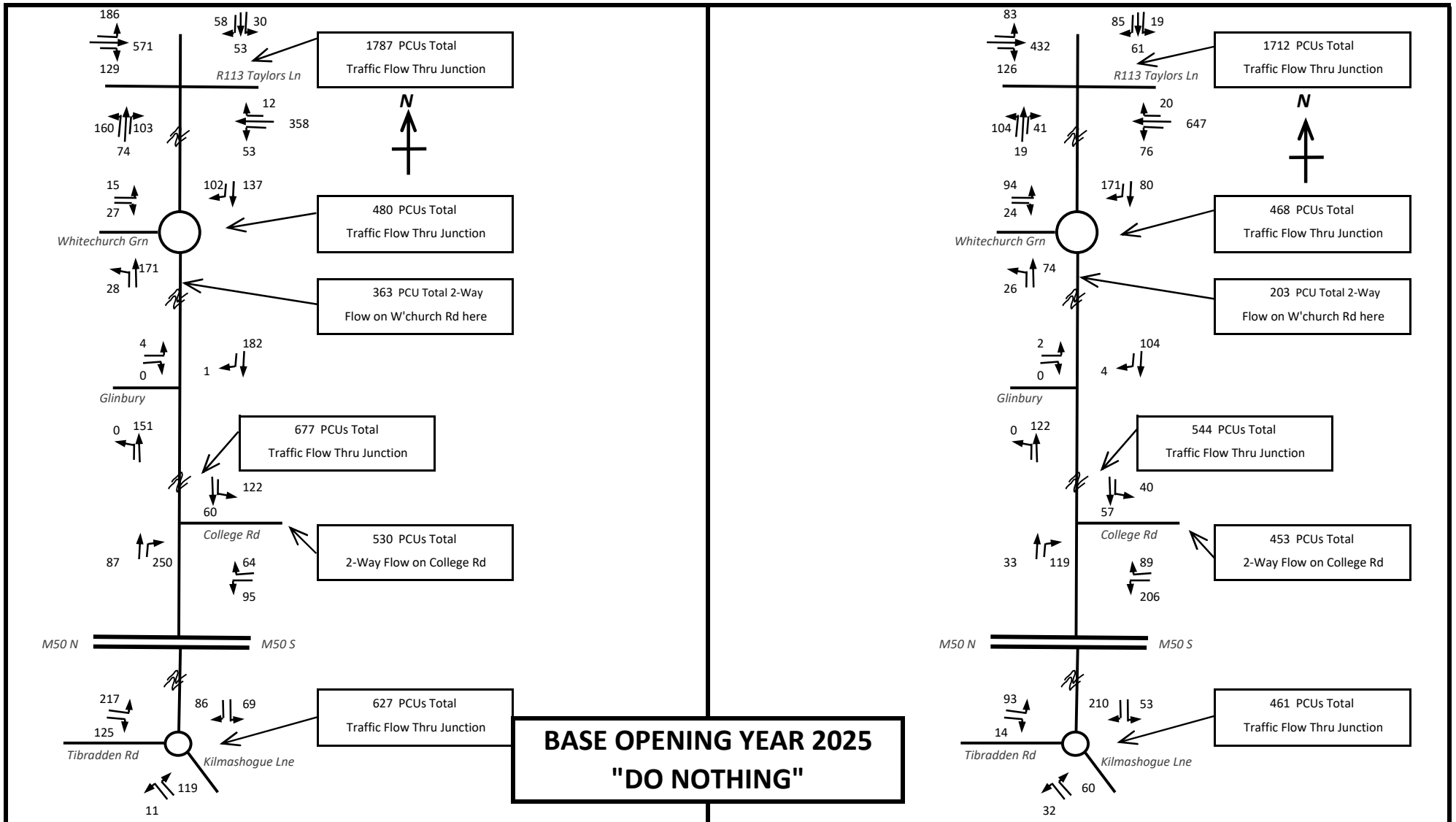


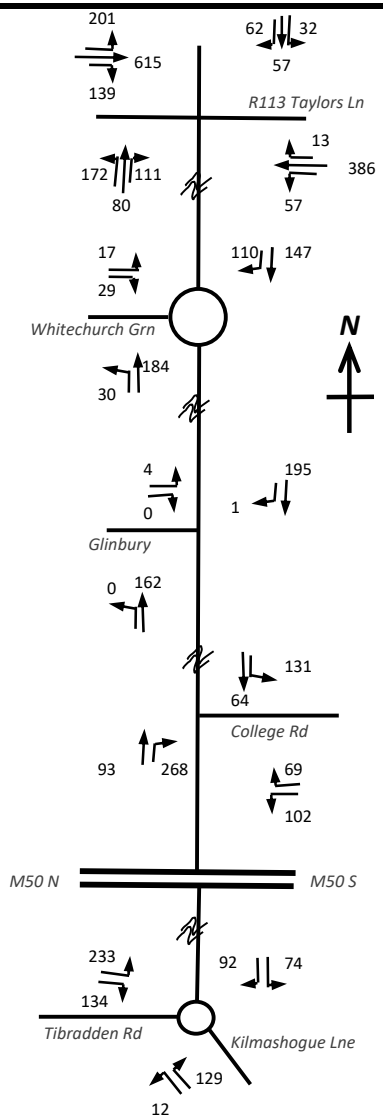
WEEKDAY AM PEAK HOUR 8-9AM

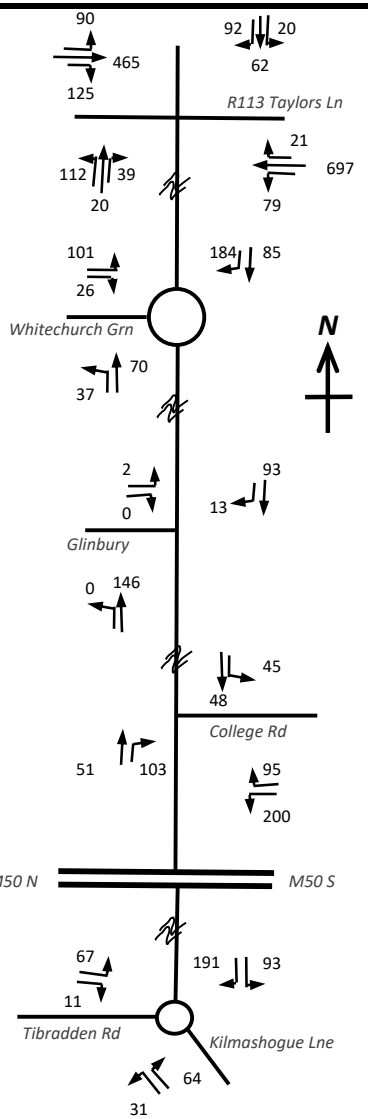


WEEKDAY PM PEAK HOUR 5-6PM

Assignment of COMMITTED Development Traffic to Road Network - 'Tibradden Sports Campus' & 'Glinbury Housing'


186
571
129
58
30
53
R113 Taylors Ln
1787 PCUs Total
Traffic Flow Thru Junction
N
160
103
74
12
358
53
15
27
102
137
Whitechurch Grn
480 PCUs Total
Traffic Flow Thru Junction
28
171
363 PCU Total 2-Way
Flow on W'church Rd here
4
0
1
182
Glinbury
0
151
677 PCUs Total
Traffic Flow Thru Junction
60
122
College Rd
530 PCUs Total
2-Way Flow on College Rd
87
250
64
95
M50 N
M50 S
217
125
86
69
627 PCUs Total
Traffic Flow Thru Junction
Tibradden Rd
Kilmashogue Lne
11
119
83
432
126
85
19
61
R113 Taylors Ln
1712 PCUs Total
Traffic Flow Thru Junction
N
104
41
19
20
647
76
94
24
171
80
Whitechurch Grn
468 PCUs Total
Traffic Flow Thru Junction
26
74
203 PCU Total 2-Way
Flow on W'church Rd here
2
0
4
104
Glinbury
0
122
544 PCUs Total
Traffic Flow Thru Junction
57
40
College Rd
453 PCUs Total
2-Way Flow on College Rd
33
119
89
206
M50 N
M50 S
93
14
210
53
461 PCUs Total
Traffic Flow Thru Junction
Tibradden Rd
Kilmashogue Lne
32
60
BASE OPENING YEAR 2025
"DO NOTHING"
WEEKDAY AM PEAK HOUR 8-9AM
WEEKDAY PM PEAK HOUR 5-6PM
PROJECTED SELECTED OPENING YEAR TRAFFIC CONDITIONS 2025 (PCUs) - WITH COMMITTED DEVELOPMENT TRAFFIC
BUT WITHOUT PROPOSED SUBJECT DEVELOPMENT





BASE DESIGN YEAR 2040 "DO NOTHING"

WEEKDAY AM PEAK HOUR 8-9AM	WEEKDAY PM PEAK HOUR 5-6PM

PROJECTED DESIGN YEAR (OPENING + 15) TRAFFIC CONDITIONS 2040 (PCUs) - WITH COMMITTED DEVELOPMENT TRAFFIC BUT WITHOUT PROPOSED SUBJECT DEVELOPMENT

Assessment of Traffic Generated by Northern Portion of SHD

	24 Apartments	Car Arrivals		Car Departures		Total 2-Way Traffic
	Network Period	Per Apt	Total	Per Apt	Total	
A	AM Peak Hr 8-9am	0.058	1	0.204	5	6
	PM Peak Hr 5-6pm	0.186	4	0.087	2	6
	24 Hr Period	1.114	27	1.199	29	56

Apartments

	29 Houses	Car Arrivals		Car Departures		Total 2-Way Traffic
	Network Period	Per Unit	Total	Per Unit	Total	
B	AM Peak Hr 8-9am	0.133	4	0.382	11	15
	PM Peak Hr 5-6pm	0.352	10	0.180	5	15
	24 Hr Period	2.249	65	2.329	68	133

Houses

Total Traffic Generated by Northern Portion

	Network Period	Car Arrivals	Car Departures	Total 2-Way
A+B	AM Peak Hr 8-9am	5	16	21
	PM Peak Hr 5-6pm	14	7	21
	24 Hr Period	92	97	189

Total

Assessment of Traffic Generated by Southern Portion of SHD

	82 Aparts/Duplex	Car Arrivals		Car Departures		Total 2-Way Traffic
	Network Period	Per Apt	Total	Per Apt	Total	
C	AM Peak Hr 8-9am	0.058	5	0.204	17	22
	PM Peak Hr 5-6pm	0.186	15	0.087	7	22
	24 Hr Period	1.114	91	1.199	98	190

Aparts/Duplex

	44 Houses	Car Arrivals		Car Departures		Total 2-Way Traffic
	Network Period	Per Unit	Total	Per Unit	Total	
D	AM Peak Hr 8-9am	0.133	6	0.382	17	23
	PM Peak Hr 5-6pm	0.352	15	0.180	8	23
	24 Hr Period	2.249	99	2.329	102	201

Houses

	306 m2 GFA Creche	Car Arrivals		Car Departures		Total 2-Way Traffic
	Network Period	per 100m2	Total	per 100m2	Total	
E	AM Peak Hr 8-9am	3.329	10	2.727	8	18
	PM Peak Hr 5-6pm	2.396	7	2.888	9	16
	24 Hr Period	15.877	49	15.722	48	97

Creché

	144 m2 GFA Café	Car Arrivals		Car Departures		Total 2-Way Traffic
	Network Period	per 100m2	Total	per 100m2	Total	
F	AM Peak Hr 8-9am	0.000	0	0.000	0	0
	PM Peak Hr 5-6pm	1.625	2	0.849	1	3
	24 Hr Period	19.274	28	18.478	27	55

Café

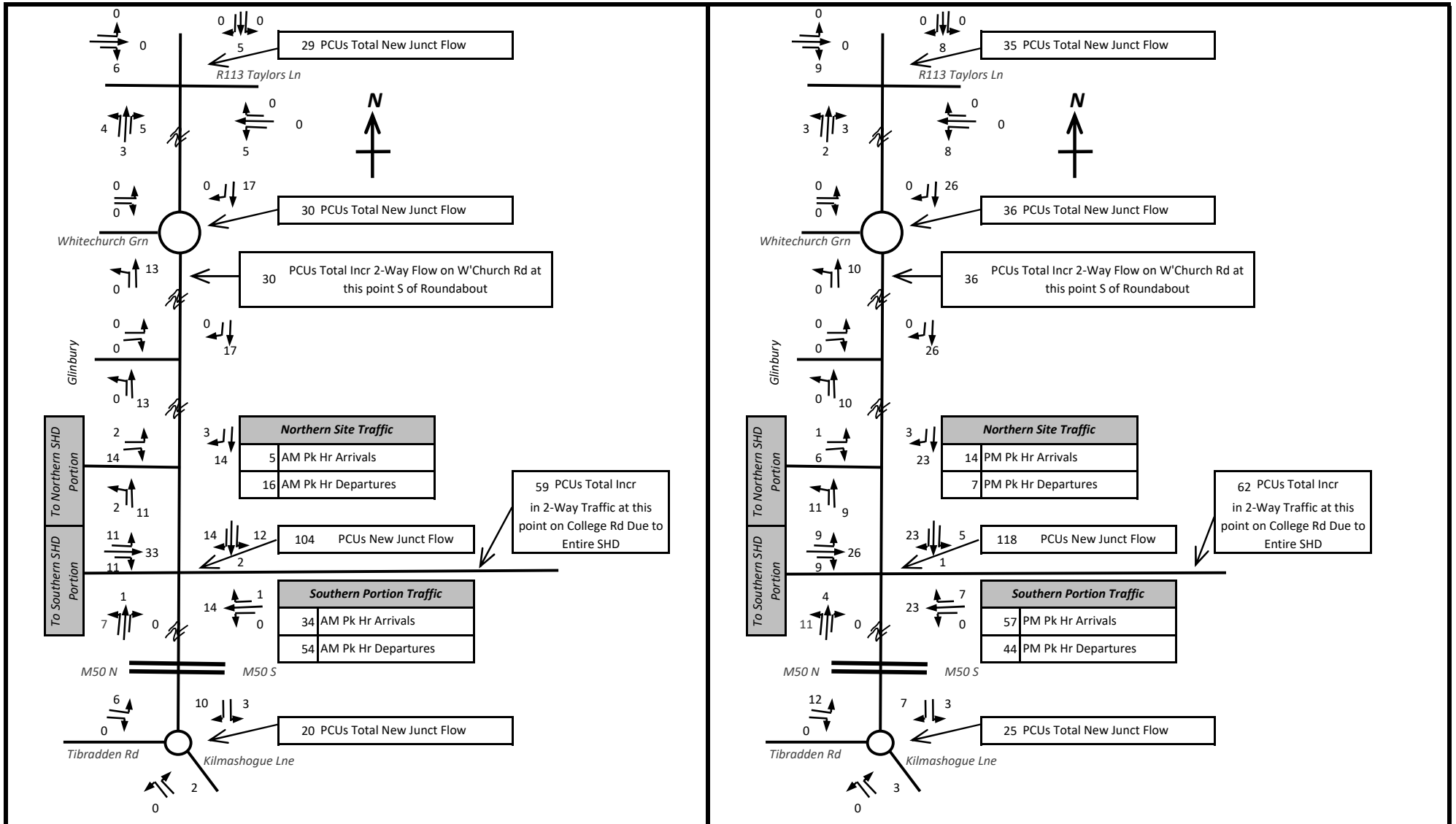
	403 m2 GFA Retail	Car Arrivals		Car Departures		Total 2-Way Traffic
	Network Period	per 100m2	Total	per 100m2	Total	
G	AM Peak Hr 8-9am	3.276	13	2.976	12	25
	PM Peak Hr 5-6pm	4.304	17	4.614	19	36
	24 Hr Period	62.709	253	62.512	252	505

Shop Units

Total Traffic Generated by Southern Portion

	Network Period	Car Arrivals	Car Departures	Total 2-Way
C + D + E + F + G	AM Peak Hr 8-9am	34	54	88
	PM Peak Hr 5-6pm	57	44	101
	24 Hr Period	519	527	1047

Total

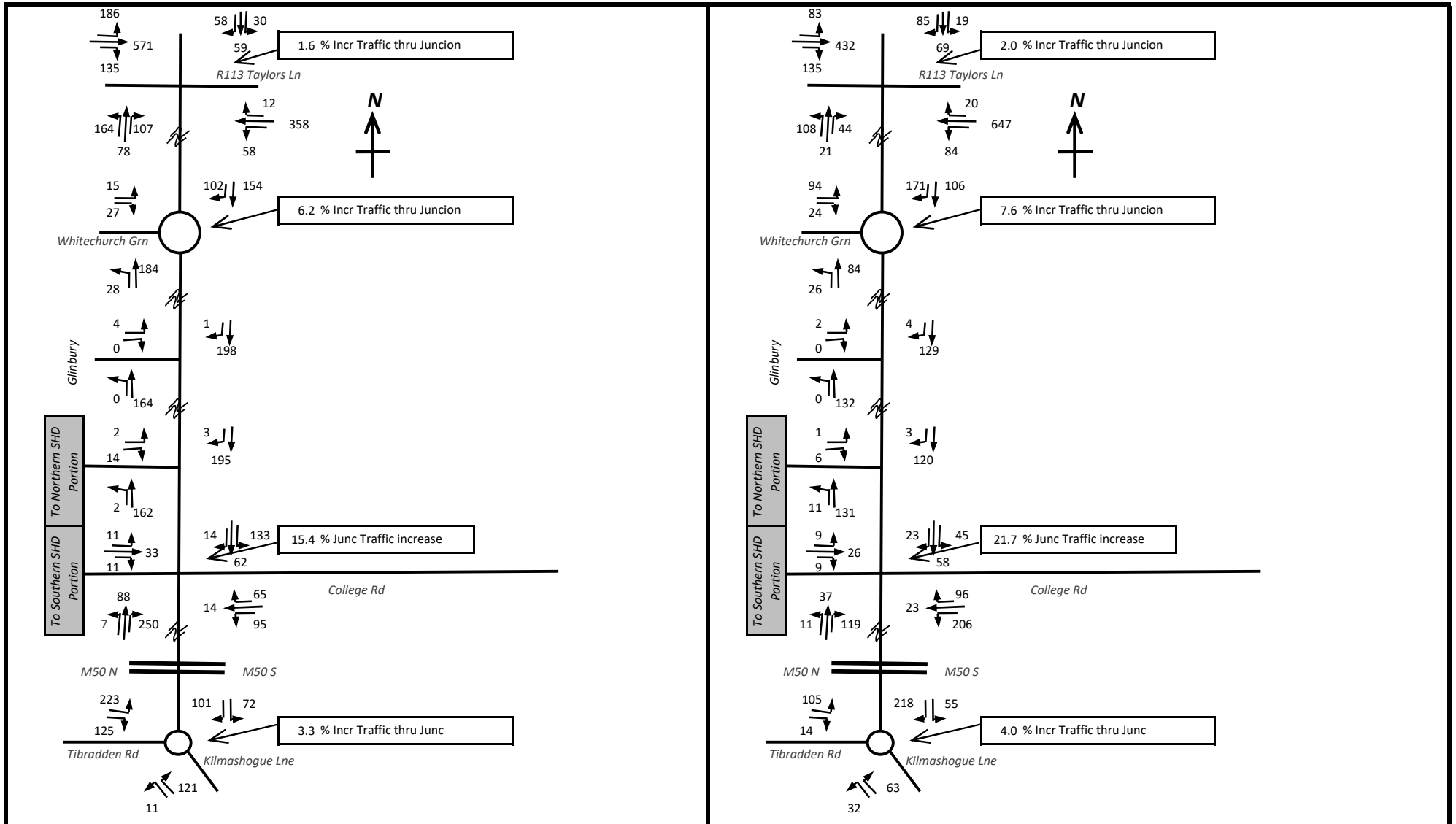


WEEKDAY AM PEAK HOUR 8-9AM

WEEKDAY PM PEAK HOUR 5-6PM

Assignment of ENTIRE SHD Operational Development Traffic to Road Network - Based on TRICS ***(Distribution***

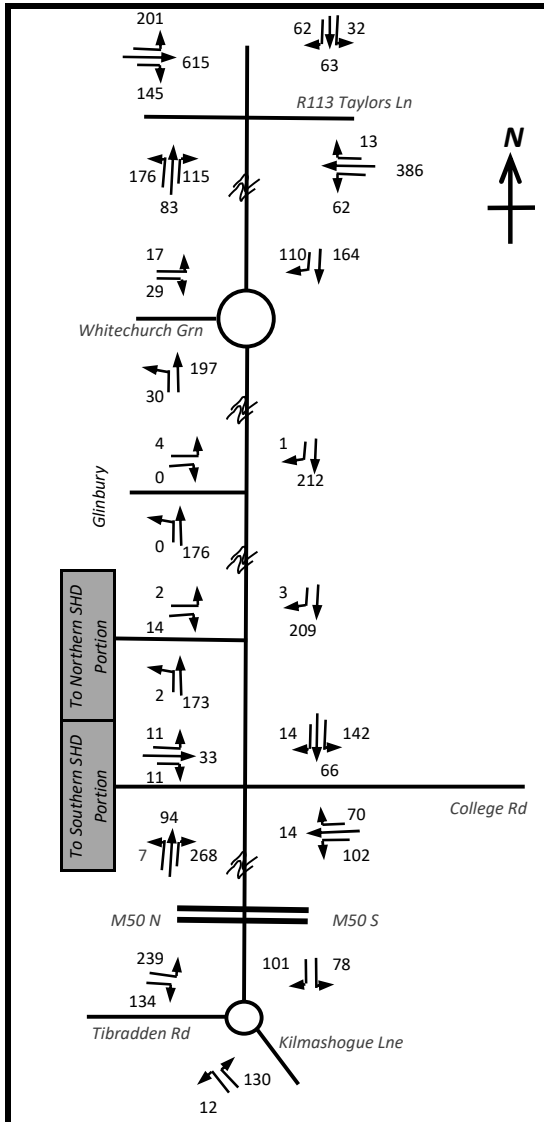
Matching Established Observed Patterns, in accordance with Industry-standard Methodology)

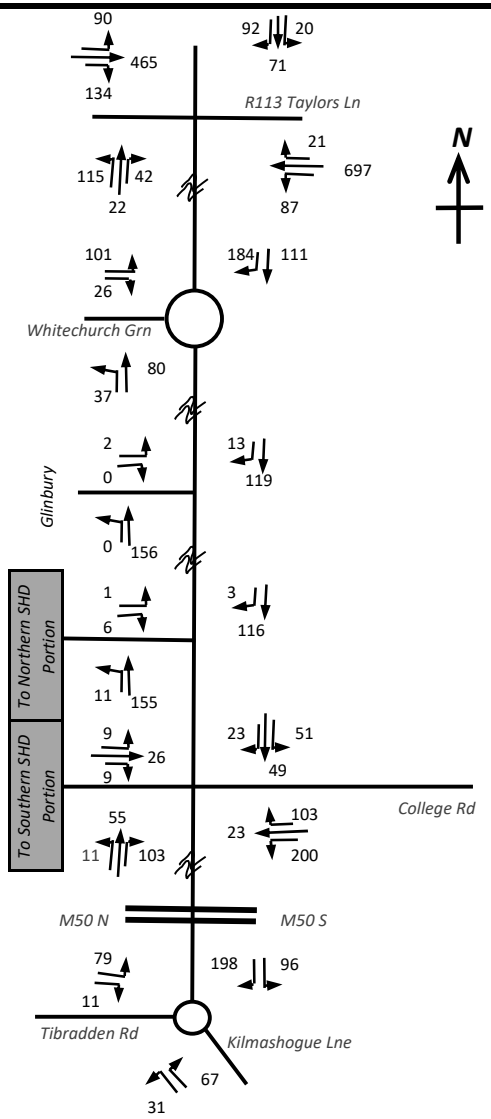


WEEKDAY AM PEAK HOUR 8-9AM

WEEKDAY PM PEAK HOUR 5-6PM

PROJECTED SELECTED OPENING YEAR TRAFFIC CONDITIONS 2025 (PCUs) - WITH COMMITTED DEVELOPMENT TRAFFIC, AND WITH ENTIRE PROPOSED SUBJECT SHD DEVELOPMENT OPEN & OPERATIONAL





WEEKDAY AM PEAK HOUR 8-9AM

WEEKDAY PM PEAK HOUR 5-6PM

PROJECTED DESIGN YEAR TRAFFIC CONDITIONS 2040 (OPE YEAR + 15) (PCUs) - WITH COMMITTED DEVELOPMENT TRAFFIC, AND WITH ENTIRE PROPOSED SUBJECT SHD DEVELOPMENT OPEN & OPERATIONAL

APPENDIX E

JUNCTION9 - PICADY
Simulation Capacity Model Output
Proposed Northern Site Access T-Junction

Proposed Northern Site Access T Junction on Whitechurch Rd
Summary PICADY Results in Order as included herein
(Robust & Worst Case)

Modelled Scenario	Period Mean Max Q (PCUs)	Period Max RFC
2025 Opening Year AM Peak	<1	0.04
2025 Opening Year PM Peak	<1	0.02
2040 Design Year AM Peak	<1	0.04
2040 Design Year PM Peak	<1	0.02

All Results Above are way below the recommended RFC of 0.85 (85% Capacity) and therefore no problems whatsoever are anticipated at the Junction in terms of Capacity or excessive vehicle Queues (This is unsurprising in light of the low traffic flows on Whitechurch Rd)

NB Any Small Changes to Selected Opening Year 2025 or Design Year 2040, due to phasing of development, or indeed significantly higher traffic volumes experienced, will clearly have no significant implications in terms of the conclusions of the Capacty Modelling of the Site Access.

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 2025AMPM.j9
Path: C:\Users\Eoin\NRB Consulting Engineers Ltd\NRB Server - Documents\2020\20-017 Edmondstown SHD\Calculations\N Site Access Picadys
Report generation date: 22/10/2020 10:22:45

Summary of junction performance

	AM				PM			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
	2025							
Stream B-AC	0.0	7.60	0.04	A	0.0	7.23	0.02	A
Stream C-AB	0.0	6.20	0.01	A	0.0	6.15	0.01	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle.

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	22/10/2020
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	NRB-004\Eoin
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2025	AM	ONE HOUR	07:45	09:15	15
D2	2025	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2025, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	N Site Access	T-Junction	Two-way	0.41	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Whitechurch Rd S		Major
B	N Portion Access		Minor
C	Whitechurch Rd N		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	6.50			90.0	✓	1.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	3.00	90	90

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	552	0.098	0.249	0.156	0.355
1	B-C	681	0.102	0.258	-	-
1	C-B	626	0.237	0.237	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2025	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	165	100.000
B		✓	18	100.000
C		✓	199	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	3	162
	B	15	0	3
	C	196	3	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	2
	B	0	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.04	7.60	0.0	A
C-AB	0.01	6.20	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	14	518	0.026	13	0.0	7.135	A
C-AB	2	597	0.004	2	0.0	6.050	A
C-A	148			148			
A-B	2			2			
A-C	122			122			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	16	508	0.032	16	0.0	7.324	A
C-AB	3	592	0.005	3	0.0	6.111	A
C-A	176			176			
A-B	3			3			
A-C	146			146			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	20	494	0.040	20	0.0	7.598	A
C-AB	3	584	0.006	3	0.0	6.196	A
C-A	216			216			
A-B	3			3			
A-C	178			178			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	20	494	0.040	20	0.0	7.598	A
C-AB	3	584	0.006	3	0.0	6.196	A
C-A	216			216			
A-B	3			3			
A-C	178			178			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	16	508	0.032	16	0.0	7.328	A
C-AB	3	592	0.005	3	0.0	6.111	A
C-A	176			176			
A-B	3			3			
A-C	146			146			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	14	518	0.026	14	0.0	7.141	A
C-AB	2	597	0.004	2	0.0	6.053	A
C-A	148			148			
A-B	2			2			
A-C	122			122			

2025, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	N Site Access	T-Junction	Two-way	0.27	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2025	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	146	100.000
B		✓	8	100.000
C		✓	127	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	14	132
	B	7	0	1
	C	124	3	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	2
	B	0	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.02	7.23	0.0	A
C-AB	0.01	6.15	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	6	525	0.011	6	0.0	6.930	A
C-AB	2	600	0.004	2	0.0	6.018	A
C-A	93			93			
A-B	11			11			
A-C	99			99			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	7	518	0.014	7	0.0	7.052	A
C-AB	3	595	0.005	3	0.0	6.072	A
C-A	111			111			
A-B	13			13			
A-C	119			119			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	9	507	0.017	9	0.0	7.228	A
C-AB	3	589	0.006	3	0.0	6.149	A
C-A	137			137			
A-B	15			15			
A-C	145			145			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	9	507	0.017	9	0.0	7.228	A
C-AB	3	589	0.006	3	0.0	6.149	A
C-A	137			137			
A-B	15			15			
A-C	145			145			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	7	518	0.014	7	0.0	7.056	A
C-AB	3	595	0.005	3	0.0	6.075	A
C-A	111			111			
A-B	13			13			
A-C	119			119			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	6	525	0.011	6	0.0	6.931	A
C-AB	2	600	0.004	2	0.0	6.018	A
C-A	93			93			
A-B	11			11			
A-C	99			99			

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: 2040AMPM.j9
Path: C:\Users\Eoin\NRB Consulting Engineers Ltd\NRB Server - Documents\2020\20-017 Edmondstown SHD\Calculations\N Site Access Picadys
Report generation date: 22/10/2020 10:23:32

Summary of junction performance

	AM				PM			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
	2040							
Stream B-AC	0.0	7.69	0.04	A	0.0	7.35	0.02	A
Stream C-AB	0.0	6.23	0.01	A	0.0	6.21	0.01	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle.

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	22/10/2020
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	NRB-004\Eoin
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2040	AM	ONE HOUR	07:45	09:15	15
D2	2040	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2040, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	N Site Access	T-Junction	Two-way	0.39	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Whitechurch Rd S		Major
B	N Portion Access		Minor
C	Whitechurch Rd N		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	6.50			90.0	✓	1.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	3.00	90	90

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	552	0.098	0.249	0.156	0.355
1	B-C	681	0.102	0.258	-	-
1	C-B	626	0.237	0.237	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2040	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	177	100.000
B		✓	18	100.000
C		✓	213	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	3	174
	B	15	0	3
	C	210	3	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	2
	B	0	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.04	7.69	0.0	A
C-AB	0.01	6.23	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	14	514	0.026	13	0.0	7.188	A
C-AB	2	595	0.004	2	0.0	6.072	A
C-A	158			158			
A-B	2			2			
A-C	131			131			

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	16	503	0.032	16	0.0	7.391	A
C-AB	3	589	0.005	3	0.0	6.137	A
C-A	189			189			
A-B	3			3			
A-C	156			156			

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	20	488	0.041	20	0.0	7.689	A
C-AB	3	581	0.006	3	0.0	6.229	A
C-A	231			231			
A-B	3			3			
A-C	192			192			

08:30 - 08:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	20	488	0.041	20	0.0	7.689	A
C-AB	3	581	0.006	3	0.0	6.229	A
C-A	231			231			
A-B	3			3			
A-C	192			192			

08:45 - 09:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	16	503	0.032	16	0.0	7.395	A
C-AB	3	589	0.005	3	0.0	6.140	A
C-A	189			189			
A-B	3			3			
A-C	156			156			

09:00 - 09:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	14	514	0.026	14	0.0	7.195	A
C-AB	2	595	0.004	2	0.0	6.074	A
C-A	158			158			
A-B	2			2			
A-C	131			131			

2040, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	N Site Access	T-Junction	Two-way	0.25	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2040	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
A		✓	170	100.000
B		✓	8	100.000
C		✓	135	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	14	156
	B	7	0	1
	C	132	3	0

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	2
	B	0	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
B-AC	0.02	7.35	0.0	A
C-AB	0.01	6.21	0.0	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	6	520	0.012	6	0.0	7.003	A
C-AB	2	596	0.004	2	0.0	6.061	A
C-A	99			99			
A-B	11			11			
A-C	117			117			

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	7	511	0.014	7	0.0	7.143	A
C-AB	3	590	0.005	3	0.0	6.125	A
C-A	119			119			
A-B	13			13			
A-C	140			140			

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	9	499	0.018	9	0.0	7.345	A
C-AB	3	582	0.006	3	0.0	6.215	A
C-A	145			145			
A-B	15			15			
A-C	172			172			

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	9	499	0.018	9	0.0	7.345	A
C-AB	3	582	0.006	3	0.0	6.215	A
C-A	145			145			
A-B	15			15			
A-C	172			172			

17:45 - 18:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	7	511	0.014	7	0.0	7.143	A
C-AB	3	590	0.005	3	0.0	6.125	A
C-A	119			119			
A-B	13			13			
A-C	140			140			

18:00 - 18:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
B-AC	6	520	0.012	6	0.0	7.006	A
C-AB	2	596	0.004	2	0.0	6.061	A
C-A	99			99			
A-B	11			11			
A-C	117			117			

APPENDIX F

JUNCTION9 - ARCADY
Simulation Capacity Model Output
Established Existing Whitechurch Rd/Green Roundabout

Established Existing Roundabout at Whitechurch Rd/Whitechurch Green
Summary ARCADY Results in Order as included herein
(Robust & Worst Case)

Modelled Scenario	Period Mean Max Q (PCUs)	Period Max RFC
2025 Opening Year AM Peak	<1	0.24
2025 Opening Year PM Peak	<1	0.27
2040 Design Year AM Peak	<1	0.26
2040 Design Year PM Peak	<1	0.28

All Results Above are way below the recommended RFC of 0.85 (85% Capacity) and therefore no problems whatsoever are anticipated at the Junction in terms of Capacity or excessive vehicle Queues (This is unsurprising in light of the low traffic flows on Whitechurch Rd)

NB Any Small Changes to Selected Opening Year 2025 or Design Year 2040, due to phasing of development, or indeed significantly higher traffic volumes experienced, will clearly have no significant implications in terms of the conclusions of the Capacty Modelling of the established existing junction.

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 2025AMPM.j9
Path: C:\Users\Eoin\NRB Consulting Engineers Ltd\NRB Server - Documents\2020\20-017 Edmondstown SHD\Calculations\Whitech Green & Rd Rndab Arcadys
Report generation date: 22/10/2020 10:18:00

Summary of junction performance

	AM				PM			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
	2025							
Arm 1	0.2	3.76	0.19	A	0.1	3.51	0.10	A
Arm 2	0.0	3.60	0.04	A	0.1	3.68	0.12	A
Arm 3	0.3	4.17	0.24	A	0.4	4.29	0.27	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle.

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	22/10/2020
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	NRB-004\Eoin
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2025	AM	ONE HOUR	07:45	09:15	15
D2	2025	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2025, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	Whitechurch Gn/Rd Rndabt	Standard Roundabout	3.95	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Whitechurch Rd S	
2	Whitechurch Green	
3	Whitechurch Rd N	

Roundabout Geometry

Arm	V (m)	E (m)	l' (m)	R (m)	D (m)	PHI (deg)	Exit only
1	3.00	4.50	15.0	15.0	30.0	20.0	
2	3.00	4.00	15.0	15.0	30.0	20.0	
3	3.00	4.00	15.0	15.0	30.0	20.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.577	1276
2	0.557	1180
3	0.557	1180

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2025	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
1		✓	213	100.000
2		✓	42	100.000
3		✓	257	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	28	185
	2	27	0	15
	3	155	102	0

Vehicle Mix

HV %s

		To		
		1	2	3
From	1	0	2	2
	2	2	0	2
	3	2	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
1	0.19	3.76	0.2	A
2	0.04	3.60	0.0	A
3	0.24	4.17	0.3	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	160	76	1232	0.130	160	0.2	3.422	A
2	32	139	1103	0.029	31	0.0	3.427	A
3	193	20	1169	0.166	193	0.2	3.758	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	191	92	1224	0.157	191	0.2	3.557	A
2	38	166	1087	0.035	38	0.0	3.497	A
3	231	24	1167	0.198	231	0.3	3.923	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	235	112	1212	0.194	234	0.2	3.756	A
2	46	203	1067	0.043	46	0.0	3.597	A
3	283	30	1163	0.243	283	0.3	4.168	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	235	112	1212	0.194	235	0.2	3.757	A
2	46	204	1067	0.043	46	0.0	3.598	A
3	283	30	1163	0.243	283	0.3	4.169	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	191	92	1223	0.157	192	0.2	3.561	A
2	38	166	1087	0.035	38	0.0	3.498	A
3	231	24	1167	0.198	231	0.3	3.927	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	160	77	1232	0.130	161	0.2	3.426	A
2	32	139	1102	0.029	32	0.0	3.431	A
3	193	20	1169	0.166	194	0.2	3.765	A

2025, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	Whitechurch Gn/Rd Rndabt	Standard Roundabout	3.98	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2025	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
1		✓	111	100.000
2		✓	118	100.000
3		✓	281	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	26	85
	2	24	0	94
	3	110	171	0

Vehicle Mix

HV %s

		To		
		1	2	3
From	1	0	2	2
	2	2	0	2
	3	2	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
1	0.10	3.51	0.1	A
2	0.12	3.68	0.1	A
3	0.27	4.29	0.4	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	84	128	1202	0.070	83	0.1	3.281	A
2	89	64	1145	0.078	88	0.1	3.477	A
3	212	18	1170	0.181	211	0.2	3.824	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	100	154	1188	0.084	100	0.1	3.374	A
2	106	76	1137	0.093	106	0.1	3.559	A
3	253	22	1168	0.216	252	0.3	4.009	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	122	188	1168	0.105	122	0.1	3.510	A
2	130	94	1128	0.115	130	0.1	3.678	A
3	309	26	1165	0.265	309	0.4	4.286	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	122	188	1168	0.105	122	0.1	3.511	A
2	130	94	1128	0.115	130	0.1	3.678	A
3	309	26	1165	0.265	309	0.4	4.289	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	100	154	1188	0.084	100	0.1	3.375	A
2	106	76	1137	0.093	106	0.1	3.563	A
3	253	22	1168	0.216	253	0.3	4.014	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	84	129	1202	0.070	84	0.1	3.285	A
2	89	64	1144	0.078	89	0.1	3.478	A
3	212	18	1170	0.181	212	0.2	3.835	A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: 2040AMPM.j9
Path: C:\Users\Eoin\NRB Consulting Engineers Ltd\NRB Server - Documents\2020\20-017 Edmondstown SHD\Calculations\Whitech Green & Rd Rndab Arcadys
Report generation date: 22/10/2020 10:21:57

Summary of junction performance

	AM				PM			
	Q (PCU)	Delay (s)	RFC	LOS	Q (PCU)	Delay (s)	RFC	LOS
	2040							
Arm 1	0.3	3.84	0.21	A	0.1	3.60	0.12	A
Arm 2	0.1	3.64	0.05	A	0.2	3.75	0.13	A
Arm 3	0.4	4.27	0.26	A	0.4	4.42	0.28	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle.

File summary

File Description

Title	(untitled)
Location	
Site number	
Date	22/10/2020
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	NRB-004\Eoin
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2040	AM	ONE HOUR	07:45	09:15	15
D2	2040	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2040, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	Whitechurch Gn/Rd Rndabt	Standard Roundabout	4.04	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Whitechurch Rd S	
2	Whitechurch Green	
3	Whitechurch Rd N	

Roundabout Geometry

Arm	V (m)	E (m)	l' (m)	R (m)	D (m)	PHI (deg)	Exit only
1	3.00	4.50	15.0	15.0	30.0	20.0	
2	3.00	4.00	15.0	15.0	30.0	20.0	
3	3.00	4.00	15.0	15.0	30.0	20.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.577	1276
2	0.557	1180
3	0.557	1180

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2040	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
1		✓	228	100.000
2		✓	46	100.000
3		✓	275	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	30	198
	2	29	0	17
	3	165	110	0

Vehicle Mix

HV %s

		To		
		1	2	3
From	1	0	2	2
	2	2	0	2
	3	2	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
1	0.21	3.84	0.3	A
2	0.05	3.64	0.1	A
3	0.26	4.27	0.4	A

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	172	82	1229	0.140	171	0.2	3.469	A
2	35	148	1097	0.032	34	0.0	3.454	A
3	207	22	1168	0.177	206	0.2	3.814	A

08:00 - 08:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	205	99	1219	0.168	205	0.2	3.618	A
2	41	178	1081	0.038	41	0.0	3.531	A
3	247	26	1166	0.212	247	0.3	3.996	A

08:15 - 08:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	251	121	1207	0.208	251	0.3	3.841	A
2	51	218	1059	0.048	51	0.1	3.641	A
3	303	32	1162	0.261	302	0.4	4.267	A

08:30 - 08:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	251	121	1207	0.208	251	0.3	3.842	A
2	51	218	1059	0.048	51	0.1	3.642	A
3	303	32	1162	0.261	303	0.4	4.272	A

08:45 - 09:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	205	99	1219	0.168	205	0.2	3.623	A
2	41	178	1081	0.038	41	0.0	3.534	A
3	247	26	1166	0.212	248	0.3	4.002	A

09:00 - 09:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	172	83	1229	0.140	172	0.2	3.477	A
2	35	149	1097	0.032	35	0.0	3.458	A
3	207	22	1168	0.177	207	0.2	3.825	A

2040, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction Type	Junction Delay (s)	Junction LOS
1	Whitechurch Gn/Rd Rndabt	Standard Roundabout	4.07	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2040	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (PCU/hr)	Scaling Factor (%)
1		✓	128	100.000
2		✓	133	100.000
3		✓	299	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		1	2	3
From	1	0	37	91
	2	32	0	101
	3	115	184	0

Vehicle Mix

HV %s

		To		
		1	2	3
From	1	0	2	2
	2	2	0	2
	3	2	2	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max delay (s)	Max Q (PCU)	Max LOS
1	0.12	3.60	0.1	A
2	0.13	3.75	0.2	A
3	0.28	4.42	0.4	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	96	138	1197	0.081	96	0.1	3.336	A
2	100	68	1142	0.088	100	0.1	3.523	A
3	225	24	1167	0.193	224	0.2	3.891	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	115	165	1181	0.097	115	0.1	3.443	A
2	120	82	1134	0.105	119	0.1	3.617	A
3	269	29	1164	0.231	269	0.3	4.099	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	141	202	1160	0.122	141	0.1	3.603	A
2	146	100	1124	0.130	146	0.2	3.754	A
3	329	35	1160	0.284	329	0.4	4.413	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	141	203	1160	0.122	141	0.1	3.604	A
2	146	100	1124	0.130	146	0.2	3.754	A
3	329	35	1160	0.284	329	0.4	4.417	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	115	166	1181	0.097	115	0.1	3.445	A
2	120	82	1134	0.105	120	0.1	3.618	A
3	269	29	1164	0.231	269	0.3	4.106	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	LOS
1	96	139	1196	0.081	96	0.1	3.337	A
2	100	69	1142	0.088	100	0.1	3.527	A
3	225	24	1167	0.193	225	0.2	3.901	A

APPENDIX G

LiNSiG
Simulation Capacity Model Output
Proposed 4-Arm Signal Controlled Junction at College Rd

Whitechurch Rd/College Rd/New Link Rd 4-Arm Signal Controlled Junction
Summary LiNSiG Results in Order as included herein
(Robust & Worst Case)

Modelled Scenario	Practical Reserve Capacity (%)	Total delay/Veh PCUHr
2025 Opening Year AM Peak	183	3.22
2025 Opening Year PM Peak	251	2.63
2040 Design Year AM Peak	162	3.4
2040 Design Year PM Peak	240	2.68

Whilst there can sometimes be a design debate (eg regarding staging, phasing, lane arrangement, sequencing of signals or layout) at Preliminary Design Stage, the results above clearly demonstrate the reserve capacity that is available in the proposed junction, irrespective of any possibly required tweaking.

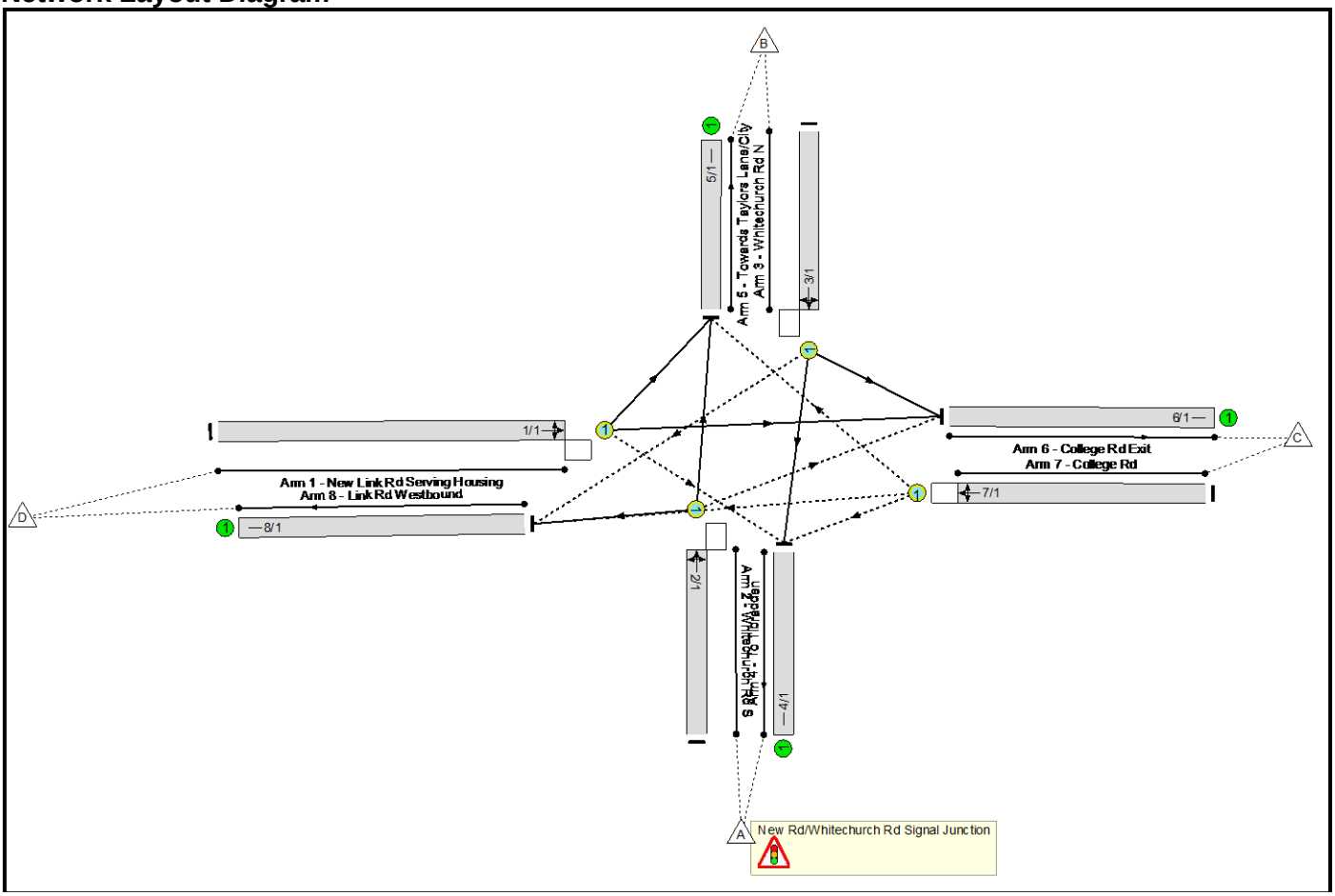
NB Any Small Changes to Selected Opening Year 2025 or Design Year 2040, due to phasing of development, or indeed significantly higher traffic volumes experienced, will clearly have no significant implications in terms of the conclusions of the Modelling.

Full Input Data And Results

User and Project Details

Project:	**Edmondstown SHD**
Title:	**LiNSiG – Capacity Assessment of New Signal Junction**
Location:	Whitechurch Rd/College Rd/New Road
File name:	2025 AM.lsg3x (2025 Selected Opening Year with Entire Development)
Author:	ER
Company:	NRB Consulting Engineers Ltd
Address:	
Notes:	

Network Layout Diagram



Full Input Data And Results

Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Pedestrian		10	10
E	Traffic		7	7

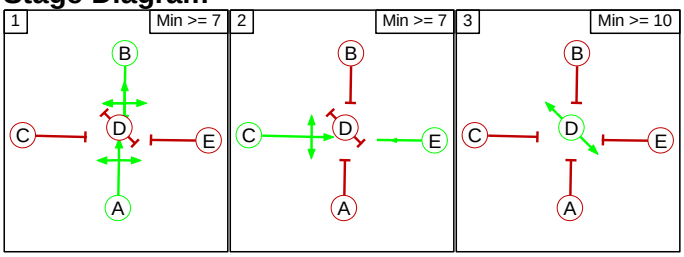
Phase Intergreens Matrix

		Starting Phase				
		A	B	C	D	E
Terminating Phase	A		-	7	7	7
	B	-		7	7	7
	C	7	7		7	-
	D	7	7	7		7
	E	7	7	-	7	

Phases in Stage

Stage No.	Phases in Stage
1	A B
2	C E
3	D

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

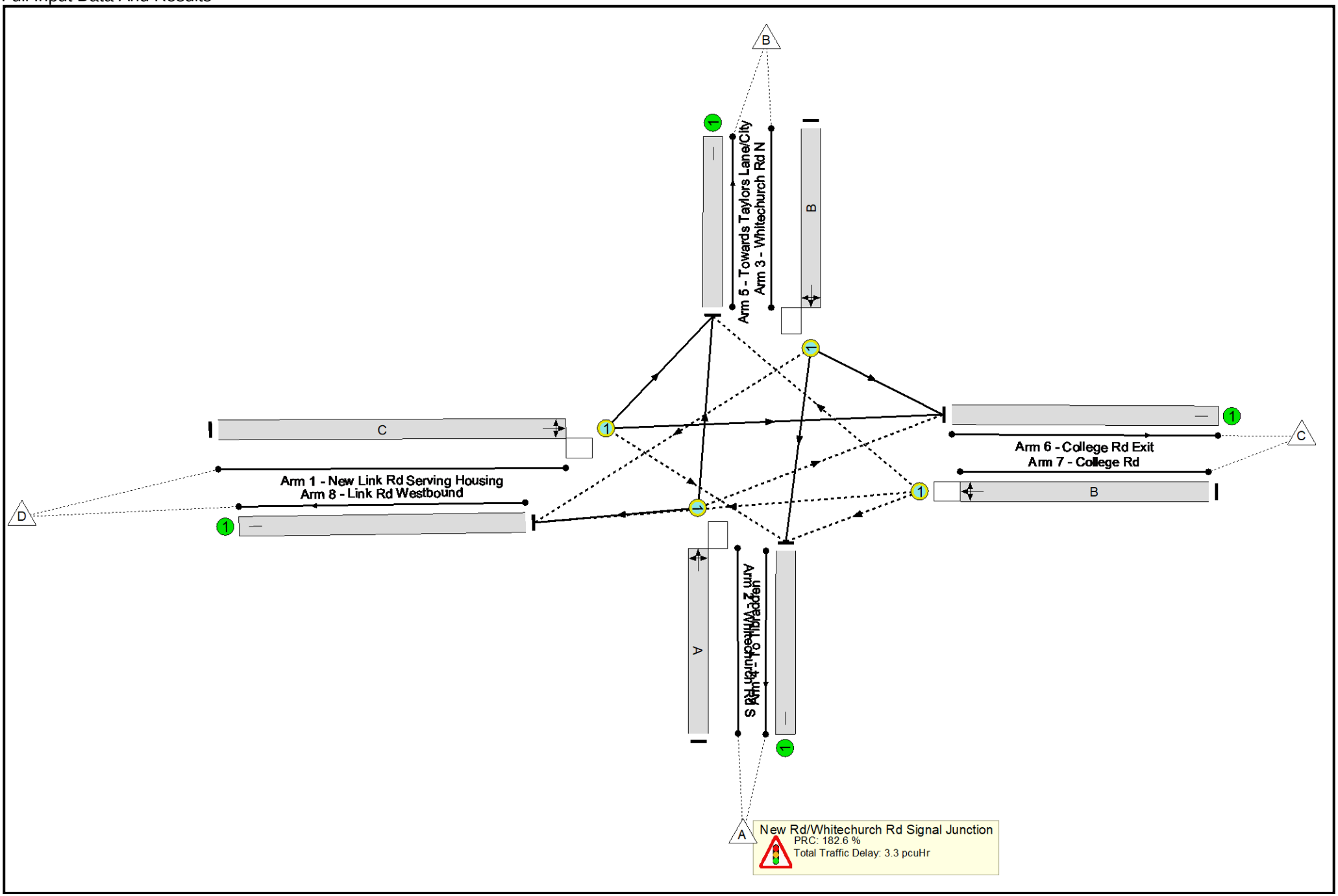
		To Stage		
		1	2	3
From Stage	1		7	7
	2	7		7
	3	7	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: New Rd/Whitechurch Rd Signal Junction											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
1/1 (New Link Rd Serving Housing)	4/1 (Right)	1439	0	7/1	1.09	All	2.00	2.00	0.50	2	2.00
2/1 (Whitechurch Rd S)	6/1 (Right)	1439	0	3/1	1.09	All	2.00	2.00	0.50	2	2.00
3/1 (Whitechurch Rd N)	8/1 (Right)	1439	0	2/1	1.09	All	2.00	2.00	0.50	2	2.00
7/1 (College Rd)	4/1 (Left)	1439	0	1/1	1.09	All	2.00	-	0.50	2	2.00
	5/1 (Right)	1439	0	1/1	1.09	All					
	8/1 (Ahead)	1439	0	1/1	1.09	All					

Full Input Data And Results



Full Input Data And Results

Network Results 2025 Weekday AM – Full SHD Operational

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**31.8%**
New Rd/Whitechurch Rd Signal Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**31.8%**
1/1	New Link Rd Serving Housing Right Left Ahead	O	N/A	N/A	C		1	10	-	56	2065	189	29.6%
2/1	Whitechurch Rd S Ahead Right Left	O	N/A	N/A	A		1	79	-	345	2080	1083	31.8%
3/1	Whitechurch Rd N Ahead Left Right	O	N/A	N/A	B		1	79	-	212	1800	1200	17.7%
4/1	To Tibradden	U	N/A	N/A	-		-	-	-	168	1800	1800	9.3%
5/1	Towards Taylors Lane/City	U	N/A	N/A	-		-	-	-	165	Inf	Inf	0.0%
6/1	College Rd Exit	U	N/A	N/A	-		-	-	-	419	Inf	Inf	0.0%
7/1	College Rd Left Right Ahead	O	N/A	N/A	B		1	79	-	176	1965	1310	13.4%
8/1	Link Rd Westbound	U	N/A	N/A	-		-	-	-	37	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**265**	**184**	**3**	**2.4**	**0.7**	**0.2**	**3.3**	**-**	**-**	**-**	**-**
New Rd/Whitechurch Rd Signal Junction	**-**	**-**	**265**	**184**	**3**	**2.4**	**0.7**	**0.2**	**3.3**	**-**	**-**	**-**	**-**
1/1	56	56	0	11	0	0.8	0.2	0.0	1.0	64.4	1.7	0.2	2.0
2/1	345	345	250	0	0	0.8	0.2	0.2	1.2	12.8	5.1	0.2	5.3
3/1	212	212	15	0	0	0.4	0.1	0.0	0.6	9.4	2.7	0.1	2.8
4/1	168	168	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
5/1	165	165	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	419	419	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	176	176	0	173	3	0.4	0.1	0.0	0.4	8.9	2.1	0.1	2.2
8/1	37	37	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

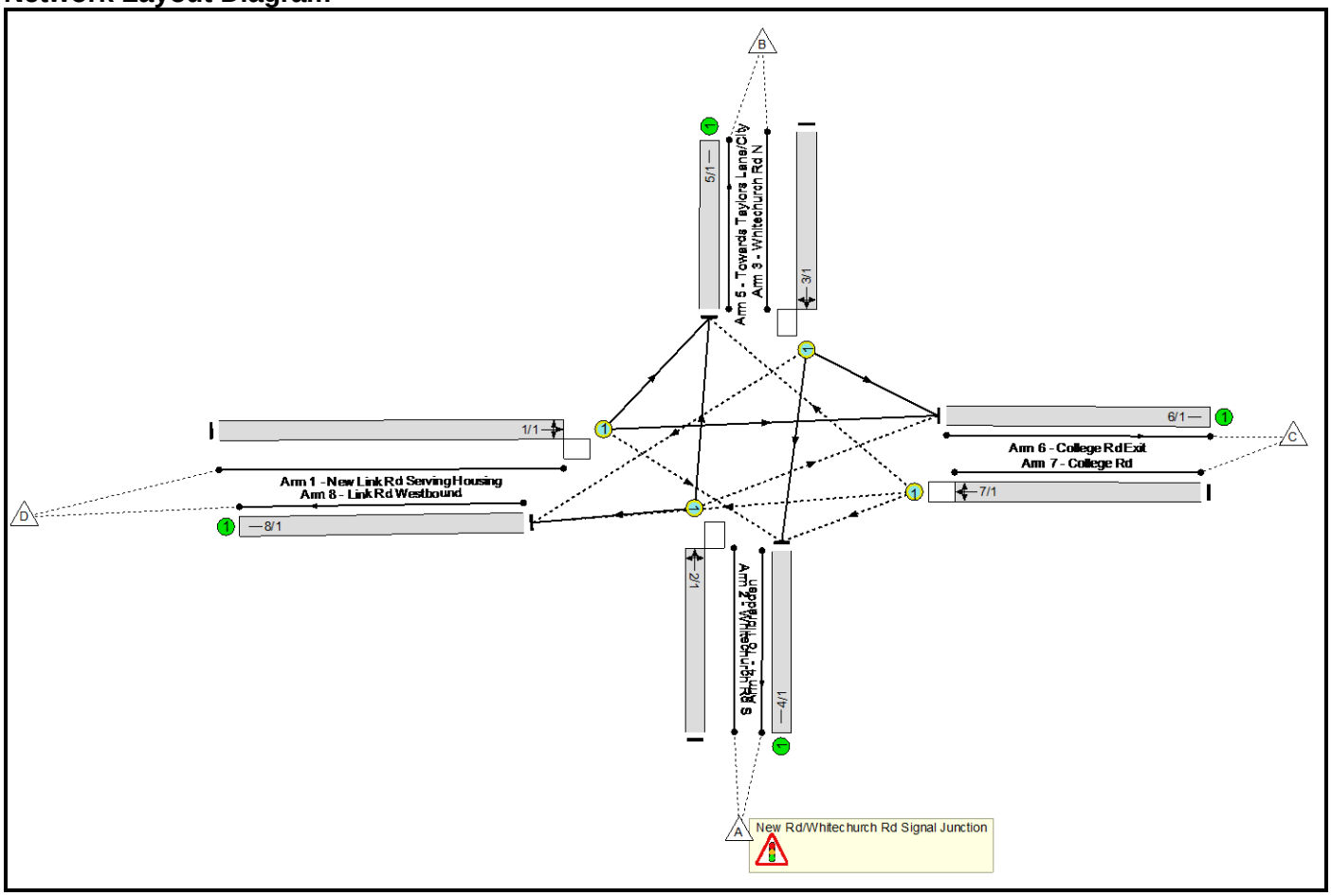
C1 PRC for Signalled Lanes (%): 182.6 Total Delay for Signalled Lanes (pcuHr): 3.22 Cycle Time (s): 120
PRC Over All Lanes (%): 182.6 Total Delay Over All Lanes(pcuHr): 3.27

Full Input Data And Results

User and Project Details

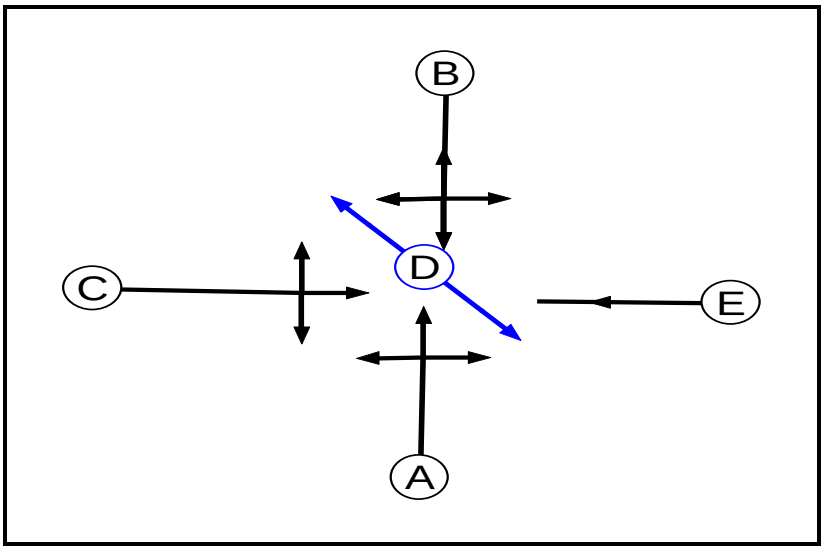
Project:	**Edmondstown SHD**
Title:	**LiNSiG – Capacity Assessment of New Signal Junction**
Location:	Whitechurch Rd/College Rd/New Road
File name:	2025 PM.lsg3x (2025 Selected Ope Year PM Pk Hr with Entire Development)
Author:	ER
Company:	NRB Consulting Engineers Ltd
Address:	
Notes:	

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Pedestrian		10	10
E	Traffic		7	7

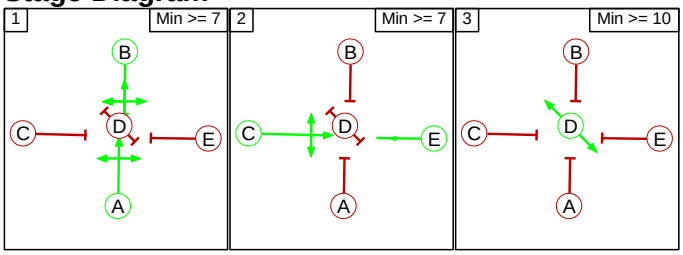
Phase Intergreens Matrix

		Starting Phase				
		A	B	C	D	E
Terminating Phase	A		-	7	7	7
	B	-		7	7	7
	C	7	7		7	-
	D	7	7	7		7
	E	7	7	-	7	

Phases in Stage

Stage No.	Phases in Stage
1	A B
2	C E
3	D

Stage Diagram



Full Input Data And Results

Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

	To Stage			
		1	2	3
From Stage	1		7	7
	2	7		7
	3	7	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: New Rd/Whitechurch Rd Signal Junction											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
1/1 (New Link Rd Serving Housing)	4/1 (Right)	1439	0	7/1	1.09	All	2.00	2.00	0.50	2	2.00
2/1 (Whitechurch Rd S)	6/1 (Right)	1439	0	3/1	1.09	All	2.00	2.00	0.50	2	2.00
3/1 (Whitechurch Rd N)	8/1 (Right)	1439	0	2/1	1.09	All	2.00	2.00	0.50	2	2.00
7/1 (College Rd)	4/1 (Left)	1439	0	1/1	1.09	All	2.00	-	0.50	2	2.00
	5/1 (Right)	1439	0	1/1	1.09	All					
	8/1 (Ahead)	1439	0	1/1	1.09	All					

Full Input Data And Results

Lane Input Data

Junction: New Rd/Whitechurch Rd Signal Junction												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (New Link Rd Serving Housing)	O	C	2	3	5.2	Geom	-	3.10	0.00	N	Arm 4 Right	Inf
											Arm 5 Left	Inf
											Arm 6 Ahead	Inf
2/1 (Whitechurch Rd S)	O	A	2	3	60.0	Geom	-	3.25	0.00	N	Arm 5 Ahead	Inf
											Arm 6 Right	Inf
											Arm 8 Left	Inf
3/1 (Whitechurch Rd N)	O	B	2	3	60.0	User	1800	-	-	-	-	-
4/1 (To Tibradden)	U		2	3	60.0	User	1800	-	-	-	-	-
5/1 (Towards Taylors Lane/City)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (College Rd Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (College Rd)	O	B	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 4 Left	Inf
											Arm 5 Right	Inf
											Arm 8 Ahead	Inf
8/1 (Link Rd Westbound)	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2025 PM Peak Full SHD Development'	17:00	18:00	01:00	

Full Input Data And Results

Scenario 1: 'Scenario' (FG1: '2025 PM Peak Full SHD Development', Plan 1: 'Signal Plan No. 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	38	119	13	170
	B	58	0	46	27	131
	C	206	97	0	27	330
	D	10	10	30	0	50
	Tot.	274	145	195	67	681

Traffic Lane Flows

Lane	Scenario 1: Scenario
Junction: New Rd/Whitechurch Rd Signal Junction	
1/1	50
2/1	170
3/1	131
4/1	274
5/1	145
6/1	195
7/1	330
8/1	67

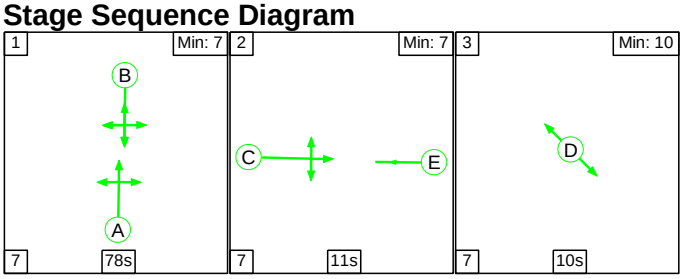
Full Input Data And Results

Lane Saturation Flows

Junction: New Rd/Whitechurch Rd Signal Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (New Link Rd Serving Housing)	3.10	0.00	N	Arm 4 Right	Inf	20.0 %	2065	2065
				Arm 5 Left	Inf	20.0 %		
				Arm 6 Ahead	Inf	60.0 %		
2/1 (Whitechurch Rd S)	3.25	0.00	N	Arm 5 Ahead	Inf	22.4 %	2080	2080
				Arm 6 Right	Inf	70.0 %		
				Arm 8 Left	Inf	7.6 %		
3/1 (Whitechurch Rd N Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (To Tibradden Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Towards Taylors Lane/City Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (College Rd Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (College Rd)	3.50	0.00	Y	Arm 4 Left	Inf	62.4 %	1965	1965
				Arm 5 Right	Inf	29.4 %		
				Arm 8 Ahead	Inf	8.2 %		
8/1 (Link Rd Westbound Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 1: 'Scenario' (FG1: '2025 PM Peak Full SHD Development', Plan 1: 'Signal Plan No. 1')

Stage Sequence Diagram

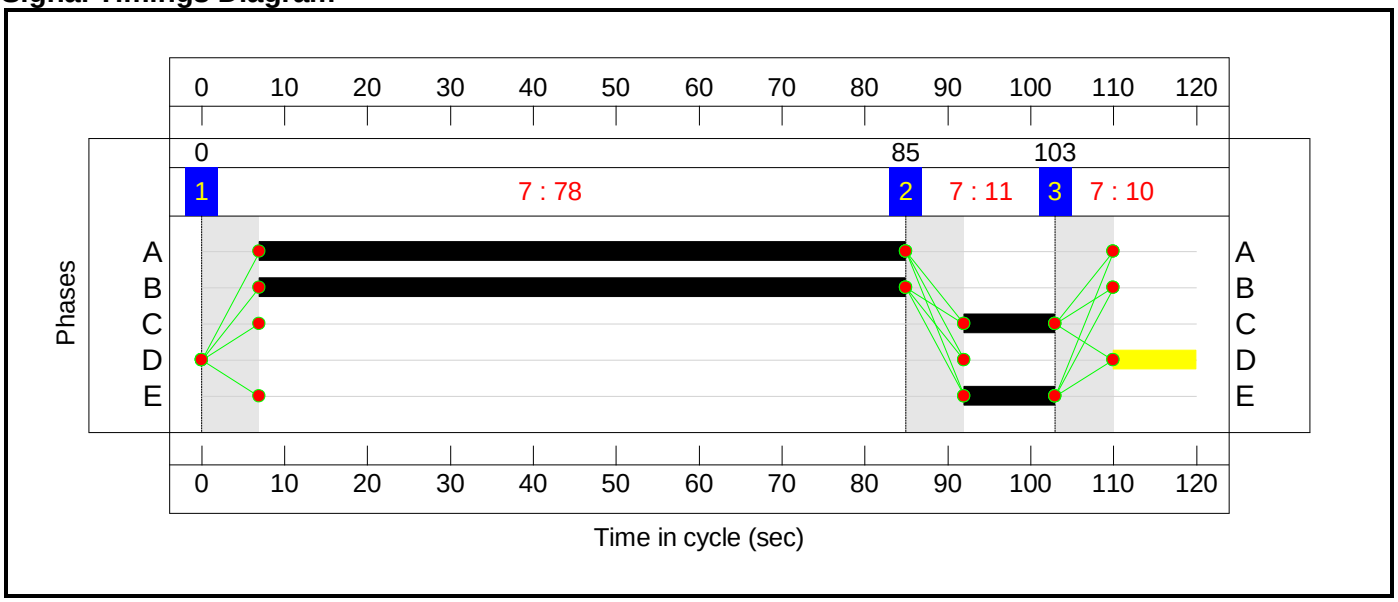


Stage Timings

Stage	1	2	3
Duration	78	11	10
Change Point	0	85	103

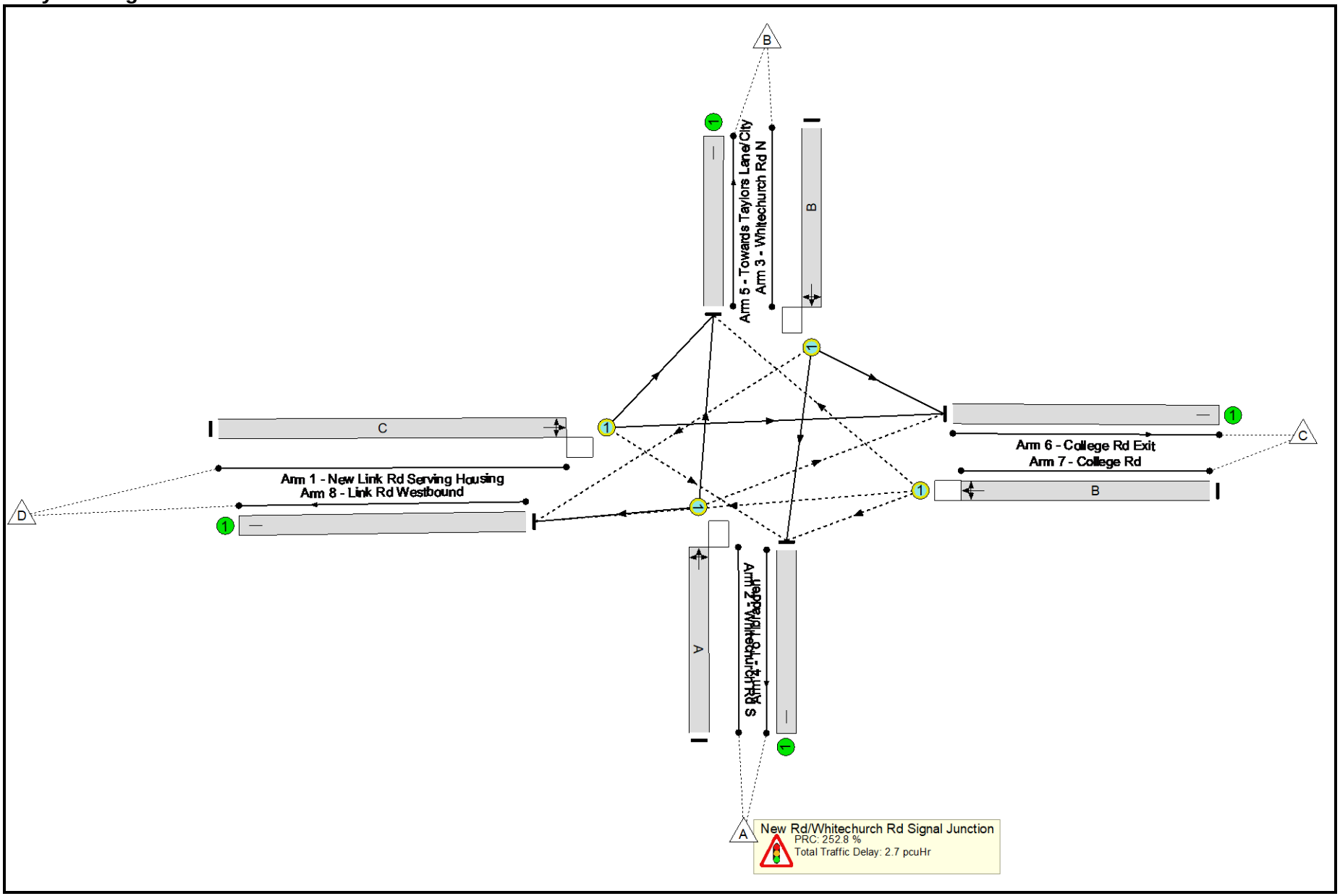
Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**25.5%**
New Rd/Whitechurch Rd Signal Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**25.5%**
1/1	New Link Rd Serving Housing Right Left Ahead	O	N/A	N/A	C		1	11	-	50	2065	206	24.2%
2/1	Whitechurch Rd S Ahead Right Left	O	N/A	N/A	A		1	78	-	170	2080	1208	14.1%
3/1	Whitechurch Rd N Ahead Left Right	O	N/A	N/A	B		1	78	-	131	1800	1185	11.1%
4/1	To Tibradden	U	N/A	N/A	-		-	-	-	274	1800	1800	15.2%
5/1	Towards Taylors Lane/City	U	N/A	N/A	-		-	-	-	145	Inf	Inf	0.0%
6/1	College Rd Exit	U	N/A	N/A	-		-	-	-	195	Inf	Inf	0.0%
7/1	College Rd Left Right Ahead	O	N/A	N/A	B		1	78	-	330	1965	1294	25.5%
8/1	Link Rd Westbound	U	N/A	N/A	-		-	-	-	67	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**146**	**334**	**6**	**2.1**	**0.6**	**0.1**	**2.7**	**-**	**-**	**-**	**-**
New Rd/Whitechurch Rd Signal Junction	**-**	**-**	**146**	**334**	**6**	**2.1**	**0.6**	**0.1**	**2.7**	**-**	**-**	**-**	**-**
1/1	50	50	0	10	0	0.7	0.2	0.0	0.9	61.3	1.5	0.2	1.7
2/1	170	170	119	0	0	0.4	0.1	0.1	0.5	10.5	2.1	0.1	2.2
3/1	131	131	27	0	0	0.3	0.1	0.0	0.3	9.3	1.6	0.1	1.7
4/1	274	274	-	-	-	0.0	0.1	-	0.1	1.2	0.0	0.1	0.1
5/1	145	145	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	195	195	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	330	330	0	324	5	0.8	0.2	0.0	0.9	10.3	4.5	0.2	4.7
8/1	67	67	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

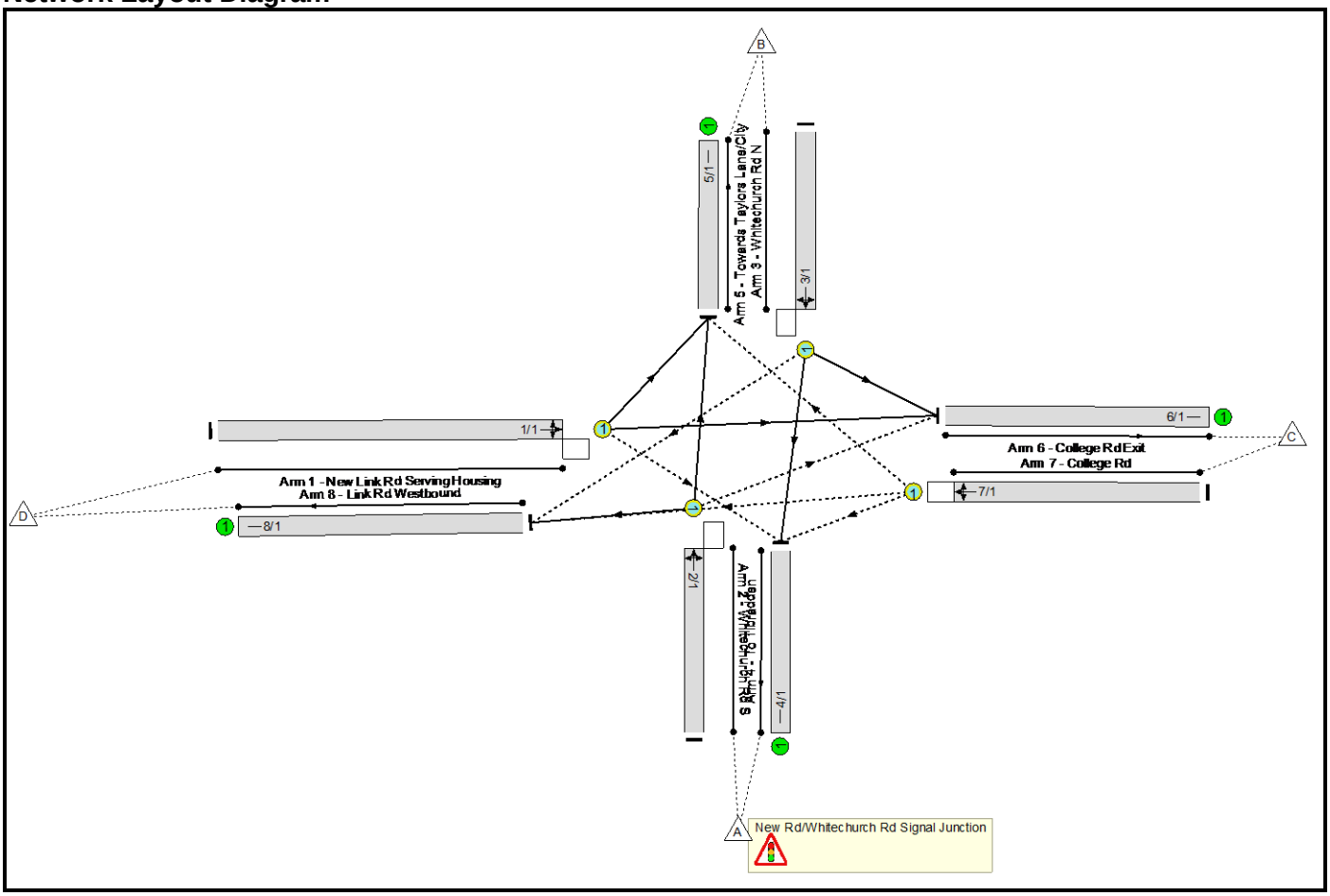
C1 PRC for Signalled Lanes (%): 252.8 Total Delay for Signalled Lanes (pcuHr): 2.63 Cycle Time (s): 120
PRC Over All Lanes (%): 252.8 Total Delay Over All Lanes(pcuHr): 2.72

Full Input Data And Results

User and Project Details

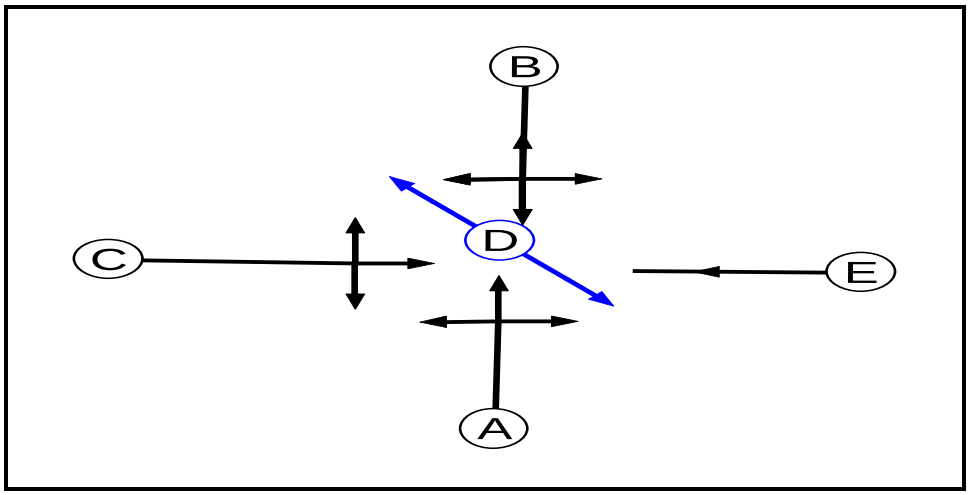
Project:	**Edmondstown SHD**
Title:	**LiNSiG – Capacity Assessment of New Signal Junction**
Location:	Whitechurch Rd/College Rd/New Road
File name:	2040 AM.lsg3x (2040 Design Year AM Peak Hr with Entire Development)
Author:	ER
Company:	NRB Consulting Engineers Ltd
Address:	
Notes:	

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Pedestrian		10	10
E	Traffic		7	7

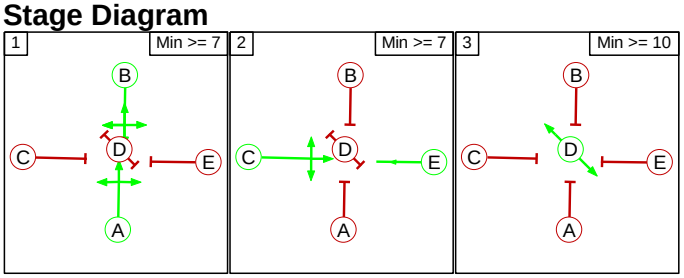
Phase Intergreens Matrix

		Starting Phase				
		A	B	C	D	E
Terminating Phase	A		-	7	7	7
	B	-		7	7	7
	C	7	7		7	-
	D	7	7	7		7
	E	7	7	-	7	

Phases in Stage

Stage No.	Phases in Stage
1	A B
2	C E
3	D

Stage Diagram



Full Input Data And Results

Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

	To Stage			
		1	2	3
From Stage	1		7	7
	2	7		7
	3	7	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: New Rd/Whitechurch Rd Signal Junction											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
1/1 (New Link Rd Serving Housing)	4/1 (Right)	1439	0	7/1	1.09	All	2.00	2.00	0.50	2	2.00
2/1 (Whitechurch Rd S)	6/1 (Right)	1439	0	3/1	1.09	All	2.00	2.00	0.50	2	2.00
3/1 (Whitechurch Rd N)	8/1 (Right)	1439	0	2/1	1.09	All	2.00	2.00	0.50	2	2.00
7/1 (College Rd)	4/1 (Left)	1439	0	1/1	1.09	All	2.00	-	0.50	2	2.00
	5/1 (Right)	1439	0	1/1	1.09	All					
	8/1 (Ahead)	1439	0	1/1	1.09	All					

Full Input Data And Results

Lane Input Data

Junction: New Rd/Whitechurch Rd Signal Junction												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (New Link Rd Serving Housing)	O	C	2	3	5.2	Geom	-	3.10	0.00	N	Arm 4 Right	Inf
											Arm 5 Left	Inf
											Arm 6 Ahead	Inf
2/1 (Whitechurch Rd S)	O	A	2	3	60.0	Geom	-	3.25	0.00	N	Arm 5 Ahead	Inf
											Arm 6 Right	Inf
											Arm 8 Left	Inf
3/1 (Whitechurch Rd N)	O	B	2	3	60.0	User	1800	-	-	-	-	-
4/1 (To Tibradden)	U		2	3	60.0	User	1800	-	-	-	-	-
5/1 (Towards Taylors Lane/City)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (College Rd Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (College Rd)	O	B	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 4 Left	Inf
											Arm 5 Right	Inf
											Arm 8 Ahead	Inf
8/1 (Link Rd Westbound)	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2040 AM Peak Full SHD Development'	08:00	09:00	01:00	

Full Input Data And Results

Scenario 1: 'Scenario' (FG1: '2040 AM Peak Full SHD Development', Plan 1: 'Signal Plan No. 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	94	268	7	369
	B	67	0	144	15	226
	C	102	71	0	15	188
	D	11	11	34	0	56
	Tot.	180	176	446	37	839

Traffic Lane Flows

Lane	Scenario 1: Scenario
Junction: New Rd/Whitechurch Rd Signal Junction	
1/1	56
2/1	369
3/1	226
4/1	180
5/1	176
6/1	446
7/1	188
8/1	37

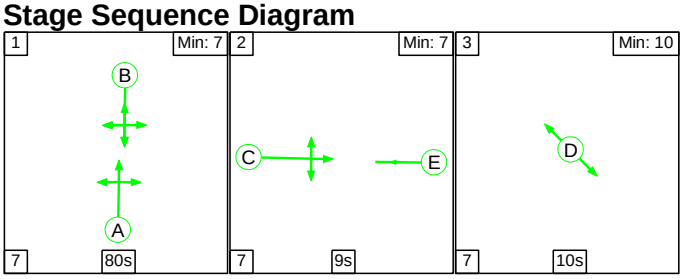
Full Input Data And Results

Lane Saturation Flows

Junction: New Rd/Whitechurch Rd Signal Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (New Link Rd Serving Housing)	3.10	0.00	N	Arm 4 Right	Inf	19.6 %	2065	2065
				Arm 5 Left	Inf	19.6 %		
				Arm 6 Ahead	Inf	60.7 %		
2/1 (Whitechurch Rd S)	3.25	0.00	N	Arm 5 Ahead	Inf	25.5 %	2080	2080
				Arm 6 Right	Inf	72.6 %		
				Arm 8 Left	Inf	1.9 %		
3/1 (Whitechurch Rd N Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (To Tibradden Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Towards Taylors Lane/City Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (College Rd Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (College Rd)	3.50	0.00	Y	Arm 4 Left	Inf	54.3 %	1965	1965
				Arm 5 Right	Inf	37.8 %		
				Arm 8 Ahead	Inf	8.0 %		
8/1 (Link Rd Westbound Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 1: 'Scenario' (FG1: '2040 AM Peak Full SHD Development', Plan 1: 'Signal Plan No. 1')

Stage Sequence Diagram

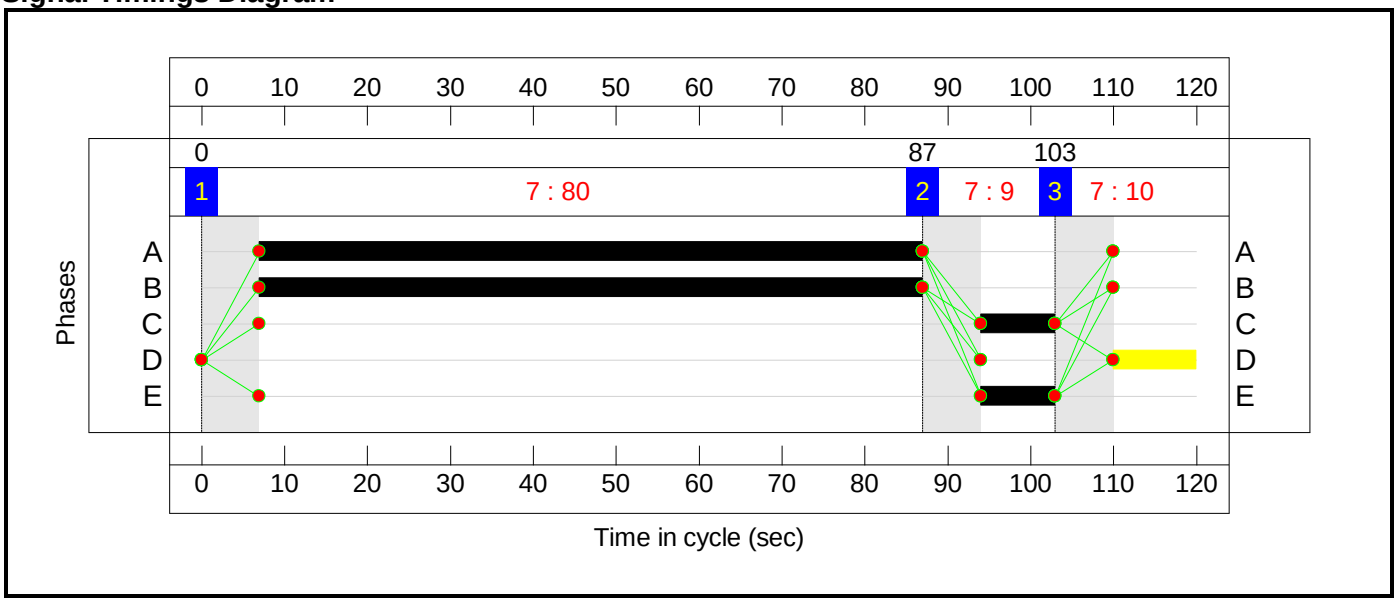


Stage Timings

Stage	1	2	3
Duration	80	9	10
Change Point	0	87	103

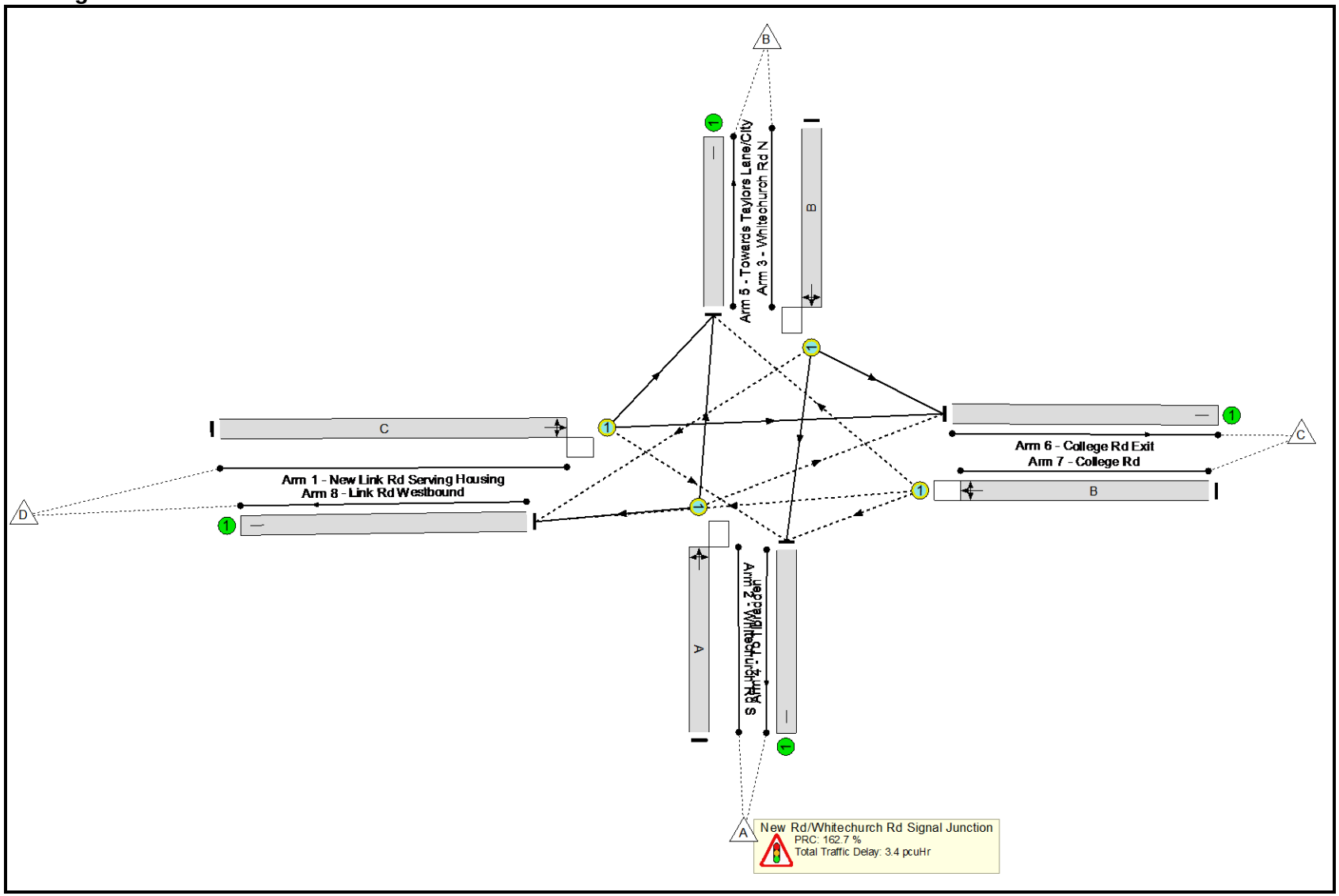
Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**34.3%**
New Rd/Whitechurch Rd Signal Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**34.3%**
1/1	New Link Rd Serving Housing Right Left Ahead	O	N/A	N/A	C		1	9	-	56	2065	172	32.5%
2/1	Whitechurch Rd S Ahead Right Left	O	N/A	N/A	A		1	80	-	369	2080	1077	34.3%
3/1	Whitechurch Rd N Ahead Left Right	O	N/A	N/A	B		1	80	-	226	1800	1215	18.6%
4/1	To Tibradden	U	N/A	N/A	-		-	-	-	180	1800	1800	10.0%
5/1	Towards Taylors Lane/City	U	N/A	N/A	-		-	-	-	176	Inf	Inf	0.0%
6/1	College Rd Exit	U	N/A	N/A	-		-	-	-	446	Inf	Inf	0.0%
7/1	College Rd Left Right Ahead	O	N/A	N/A	B		1	80	-	188	1965	1326	14.2%
8/1	Link Rd Westbound	U	N/A	N/A	-		-	-	-	37	Inf	Inf	0.0%

Full Input Data And Results

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**283**	**196**	**3**	**2.5**	**0.8**	**0.2**	**3.4**	**-**	**-**	**-**	**-**
New Rd/Whitechurch Rd Signal Junction	**-**	**-**	**283**	**196**	**3**	**2.5**	**0.8**	**0.2**	**3.4**	**-**	**-**	**-**	**-**
1/1	56	56	0	11	0	0.8	0.2	0.0	1.0	67.3	1.8	0.2	2.0
2/1	369	369	268	0	0	0.9	0.3	0.2	1.3	12.8	5.4	0.3	5.7
3/1	226	226	15	0	0	0.5	0.1	0.0	0.6	9.1	2.8	0.1	2.9
4/1	180	180	-	-	-	0.0	0.1	-	0.1	1.1	0.0	0.1	0.1
5/1	176	176	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	446	446	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	188	188	0	185	3	0.4	0.1	0.0	0.4	8.6	2.2	0.1	2.3
8/1	37	37	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

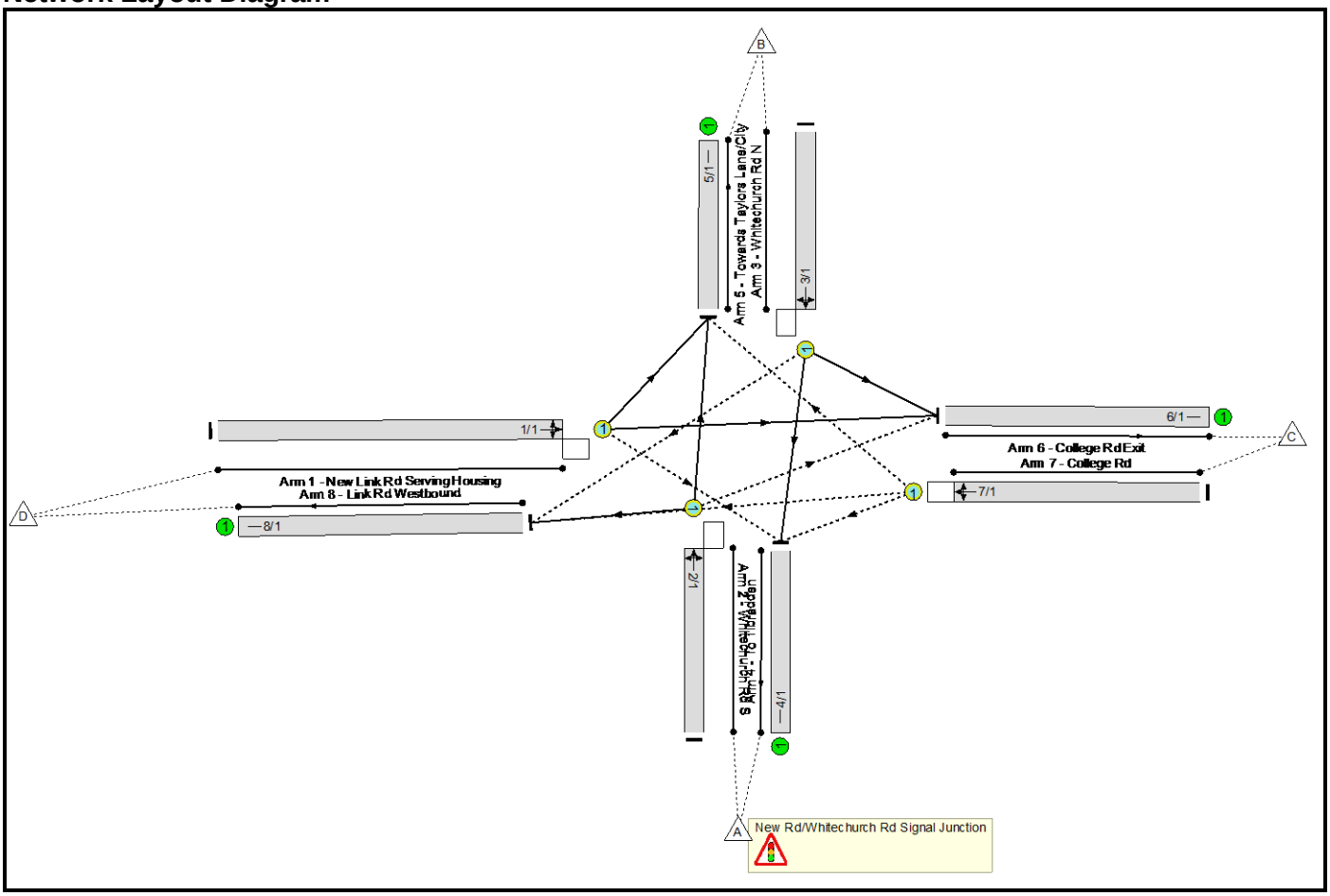
C1 PRC for Signalled Lanes (%): 162.7 Total Delay for Signalled Lanes (pcuHr): 3.38 Cycle Time (s): 120
PRC Over All Lanes (%): 162.7 Total Delay Over All Lanes(pcuHr): 3.43

Full Input Data And Results

User and Project Details

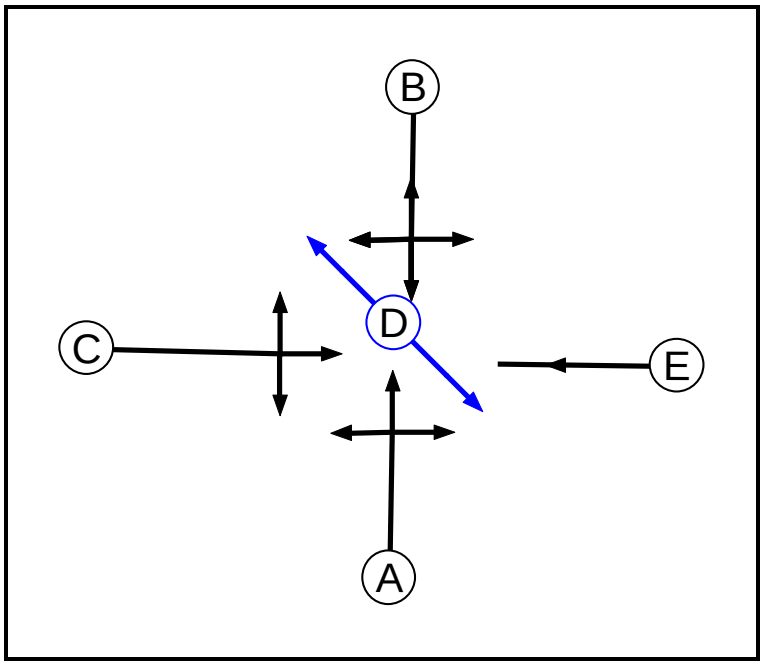
Project:	**Edmondstown SHD**
Title:	**LiNSiG – Capacity Assessment of New Signal Junction**
Location:	Whitechurch Rd/College Rd/New Road
File name:	2040 PM.lsg3x (2040 Selected Dersign Yr Pm Pk Hr with Entire Development)
Author:	ER
Company:	NRB Consulting Engineers Ltd
Address:	
Notes:	

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Pedestrian		10	10
E	Traffic		7	7

Phase Intergreens Matrix

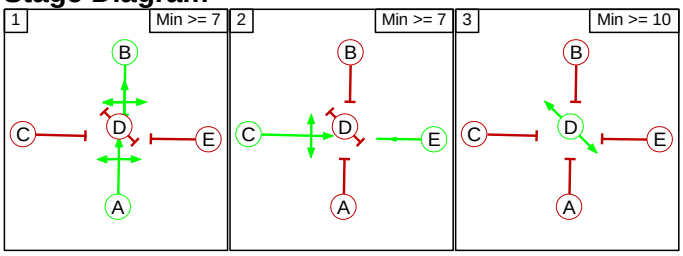
Terminating Phase	Starting Phase					
		A	B	C	D	E
	A		-	7	7	7
	B	-		7	7	7
	C	7	7		7	-
	D	7	7	7		7
	E	7	7	-	7	

Phases in Stage

Stage No.	Phases in Stage
1	A B
2	C E
3	D

Full Input Data And Results

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

	To Stage			
		1	2	3
From Stage	1		7	7
	2	7		7
	3	7	7	

Full Input Data And Results

Give-Way Lane Input Data

Junction: New Rd/Whitechurch Rd Signal Junction											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
1/1 (New Link Rd Serving Housing)	4/1 (Right)	1439	0	7/1	1.09	All	2.00	2.00	0.50	2	2.00
2/1 (Whitechurch Rd S)	6/1 (Right)	1439	0	3/1	1.09	All	2.00	2.00	0.50	2	2.00
3/1 (Whitechurch Rd N)	8/1 (Right)	1439	0	2/1	1.09	All	2.00	2.00	0.50	2	2.00
7/1 (College Rd)	4/1 (Left)	1439	0	1/1	1.09	All	2.00	-	0.50	2	2.00
	5/1 (Right)	1439	0	1/1	1.09	All					
	8/1 (Ahead)	1439	0	1/1	1.09	All					

Full Input Data And Results

Lane Input Data

Junction: New Rd/Whitechurch Rd Signal Junction												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (New Link Rd Serving Housing)	O	C	2	3	5.2	Geom	-	3.10	0.00	N	Arm 4 Right	Inf
											Arm 5 Left	Inf
											Arm 6 Ahead	Inf
2/1 (Whitechurch Rd S)	O	A	2	3	60.0	Geom	-	3.25	0.00	N	Arm 5 Ahead	Inf
											Arm 6 Right	Inf
											Arm 8 Left	Inf
3/1 (Whitechurch Rd N)	O	B	2	3	60.0	User	1800	-	-	-	-	-
4/1 (To Tibradden)	U		2	3	60.0	User	1800	-	-	-	-	-
5/1 (Towards Taylors Lane/City)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (College Rd Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
7/1 (College Rd)	O	B	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 4 Left	Inf
											Arm 5 Right	Inf
											Arm 8 Ahead	Inf
8/1 (Link Rd Westbound)	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2040 PM Peak Full SHD Development'	17:00	18:00	01:00	

Full Input Data And Results

Scenario 1: 'Scenario' (FG1: '2040 PM Peak Full SHD Development', Plan 1: 'Signal Plan No. 1')

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	55	103	13	171
	B	49	0	51	27	127
	C	200	104	0	27	331
	D	10	10	30	0	50
	Tot.	259	169	184	67	679

Traffic Lane Flows

Lane	Scenario 1: Scenario
Junction: New Rd/Whitechurch Rd Signal Junction	
1/1	50
2/1	171
3/1	127
4/1	259
5/1	169
6/1	184
7/1	331
8/1	67

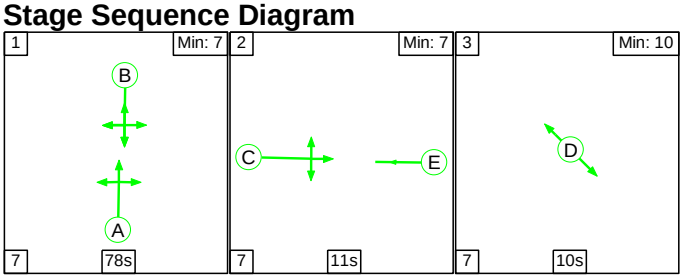
Full Input Data And Results

Lane Saturation Flows

Junction: New Rd/Whitechurch Rd Signal Junction								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (New Link Rd Serving Housing)	3.10	0.00	N	Arm 4 Right	Inf	20.0 %	2065	2065
				Arm 5 Left	Inf	20.0 %		
				Arm 6 Ahead	Inf	60.0 %		
2/1 (Whitechurch Rd S)	3.25	0.00	N	Arm 5 Ahead	Inf	32.2 %	2080	2080
				Arm 6 Right	Inf	60.2 %		
				Arm 8 Left	Inf	7.6 %		
3/1 (Whitechurch Rd N Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
4/1 (To Tibradden Lane 1)	This lane uses a directly entered Saturation Flow						1800	1800
5/1 (Towards Taylors Lane/City Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (College Rd Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
7/1 (College Rd)	3.50	0.00	Y	Arm 4 Left	Inf	60.4 %	1965	1965
				Arm 5 Right	Inf	31.4 %		
				Arm 8 Ahead	Inf	8.2 %		
8/1 (Link Rd Westbound Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 1: 'Scenario' (FG1: '2040 PM Peak Full SHD Development', Plan 1: 'Signal Plan No. 1')

Stage Sequence Diagram

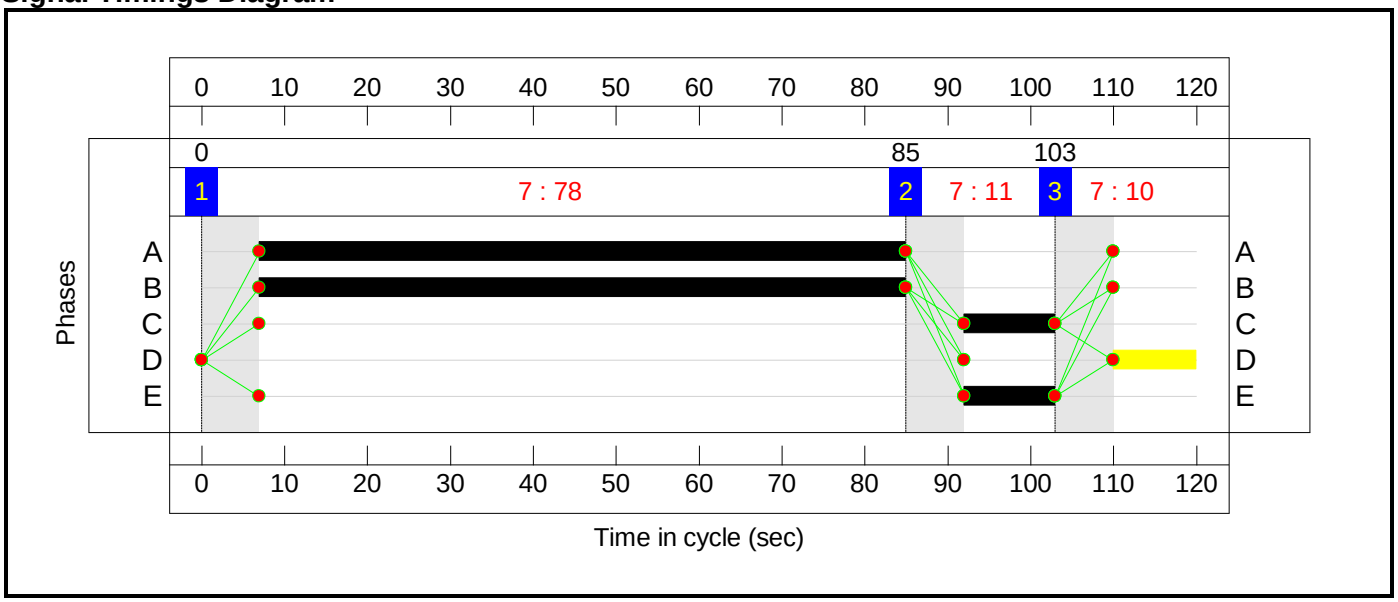


Stage Timings

Stage	1	2	3
Duration	78	11	10
Change Point	0	85	103

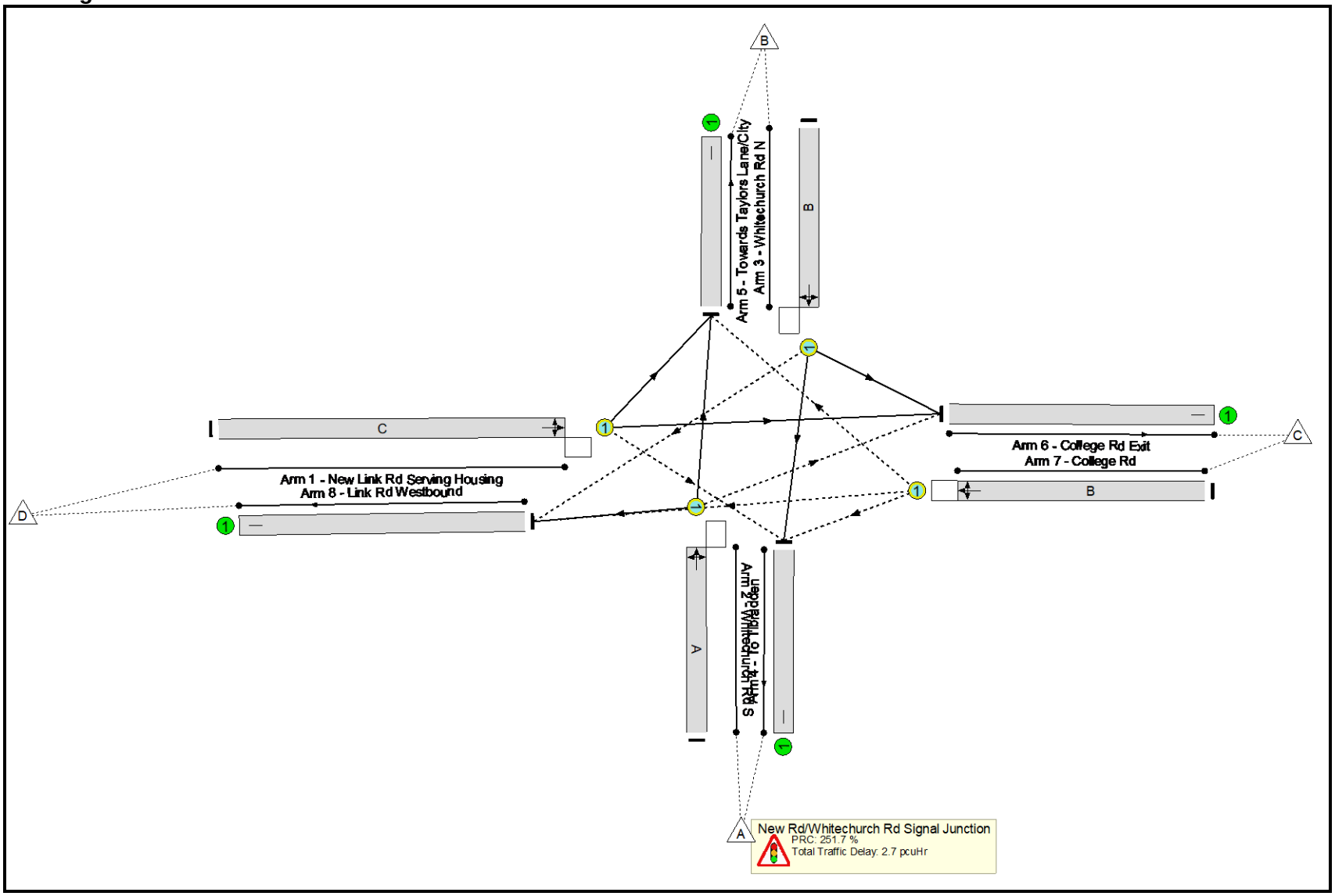
Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**25.6%**
New Rd/Whitechurch Rd Signal Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**25.6%**
1/1	New Link Rd Serving Housing Right Left Ahead	O	N/A	N/A	C		1	11	-	50	2065	206	24.2%
2/1	Whitechurch Rd S Ahead Right Left	O	N/A	N/A	A		1	78	-	171	2080	1342	12.7%
3/1	Whitechurch Rd N Ahead Left Right	O	N/A	N/A	B		1	78	-	127	1800	1185	10.7%
4/1	To Tibradden	U	N/A	N/A	-		-	-	-	259	1800	1800	14.4%
5/1	Towards Taylors Lane/City	U	N/A	N/A	-		-	-	-	169	Inf	Inf	0.0%
6/1	College Rd Exit	U	N/A	N/A	-		-	-	-	184	Inf	Inf	0.0%
7/1	College Rd Left Right Ahead	O	N/A	N/A	B		1	78	-	331	1965	1294	25.6%
8/1	Link Rd Westbound	U	N/A	N/A	-		-	-	-	67	Inf	Inf	0.0%

Full Input Data And Results

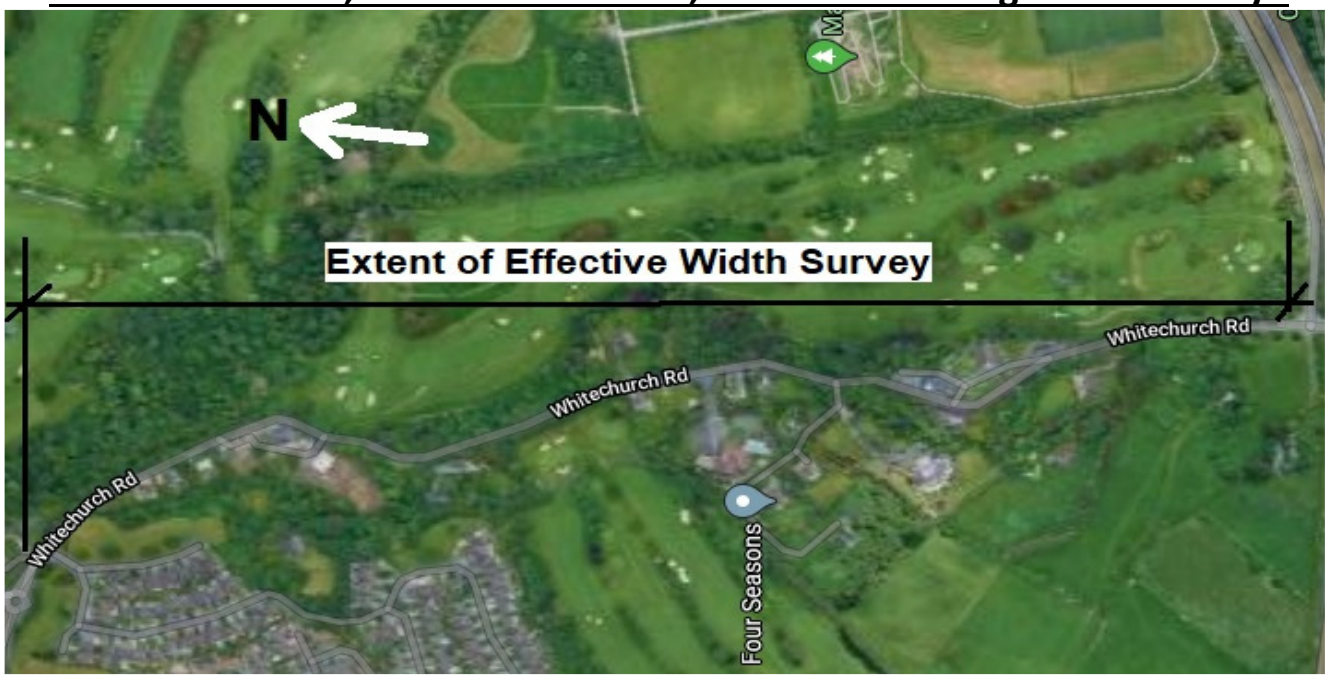
Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**130**	**335**	**6**	**2.1**	**0.5**	**0.0**	**2.7**	**-**	**-**	**-**	**-**
New Rd/Whitechurch Rd Signal Junction	**-**	**-**	**130**	**335**	**6**	**2.1**	**0.5**	**0.0**	**2.7**	**-**	**-**	**-**	**-**
1/1	50	50	0	10	0	0.7	0.2	0.0	0.9	61.3	1.5	0.2	1.7
2/1	171	171	103	0	0	0.4	0.1	0.0	0.5	10.0	2.1	0.1	2.2
3/1	127	127	27	0	0	0.3	0.1	0.0	0.3	9.2	1.6	0.1	1.6
4/1	259	259	-	-	-	0.0	0.1	-	0.1	1.2	0.0	0.1	0.1
5/1	169	169	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	184	184	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
7/1	331	331	0	325	6	0.8	0.2	0.0	0.9	10.3	4.5	0.2	4.7
8/1	67	67	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 251.7 Total Delay for Signalled Lanes (pcuHr): 2.60 Cycle Time (s): 120
PRC Over All Lanes (%): 251.7 Total Delay Over All Lanes(pcuHr): 2.68

APPENDIX H

Measurements – Effective Width Whitechurch Rd., from College Rd Northwards

Whitechurch Rd., Flexible Pavement, Effective Running Width Survey.



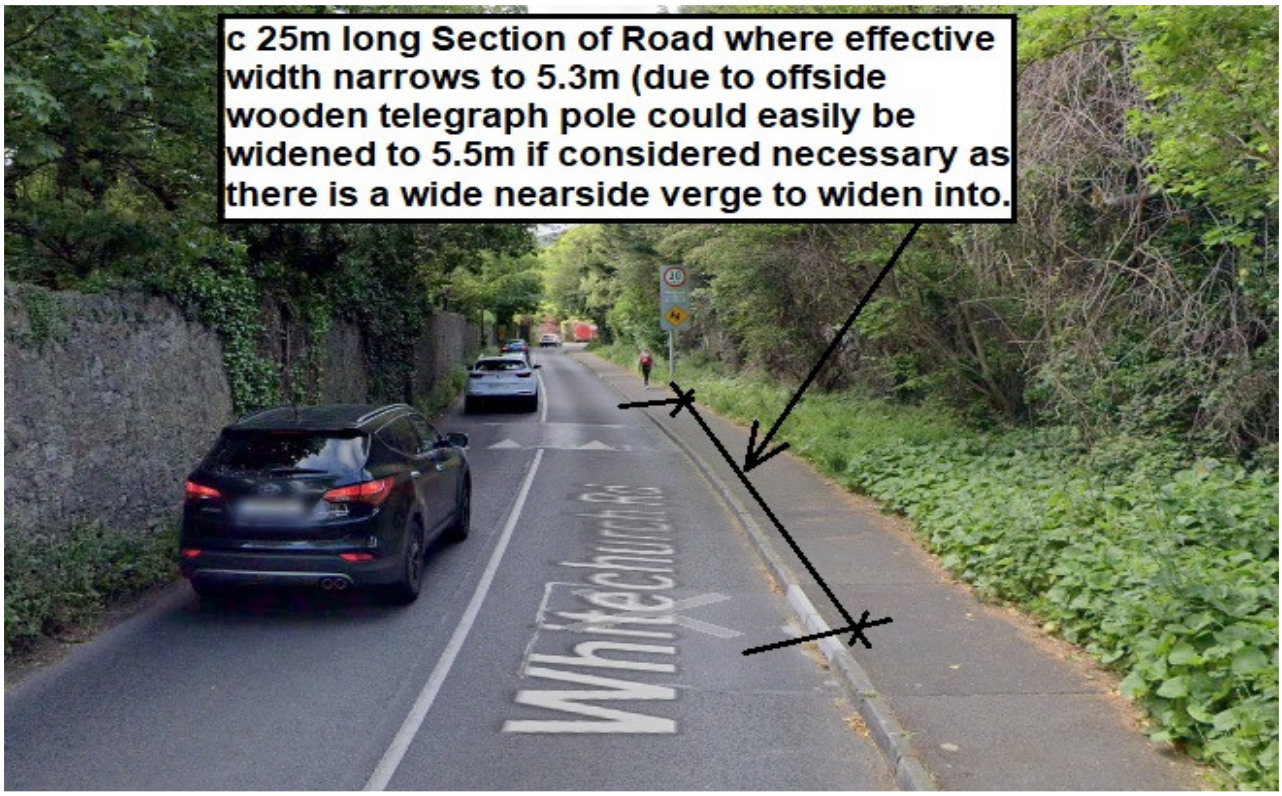
Chainage (m)	Effective Width (m)	Notes (if Required)
0	7.6	**Refer to Note #1 Below**
30	7.5	
60	6.02	
90	6.3	
120	6.2	
150	5.9	
180	6	
210	6.24	
240	5.8	
270	6.3	
300	5.95	
330	6.3	
360	5.5	
390	5.5	
420	5.7	
450	5.8	
480	5.8	
510	6	
540	5.9	
570	5.7	
600	5.55	
630	5.68	
660	5.8	
690	5.6	
720	5.6	
750	5.3	**Refer to Note #2 Below**
780	5.6	
810	5.9	
840	6.3	
870	6.2	
900	5.9	

Chainage (m)	Effective Width (m)	Notes (if Required)
930	5.5	
960	6.3	
990	5.7	
1020	6.5	
1050	6.35	
1080	5.9	
1110	5.7	
1140	5.9	
1170	5.5	
1200	5.5	**Refer to Note #3 Below**
1230	5.8	
Avg Width	***5.95***	

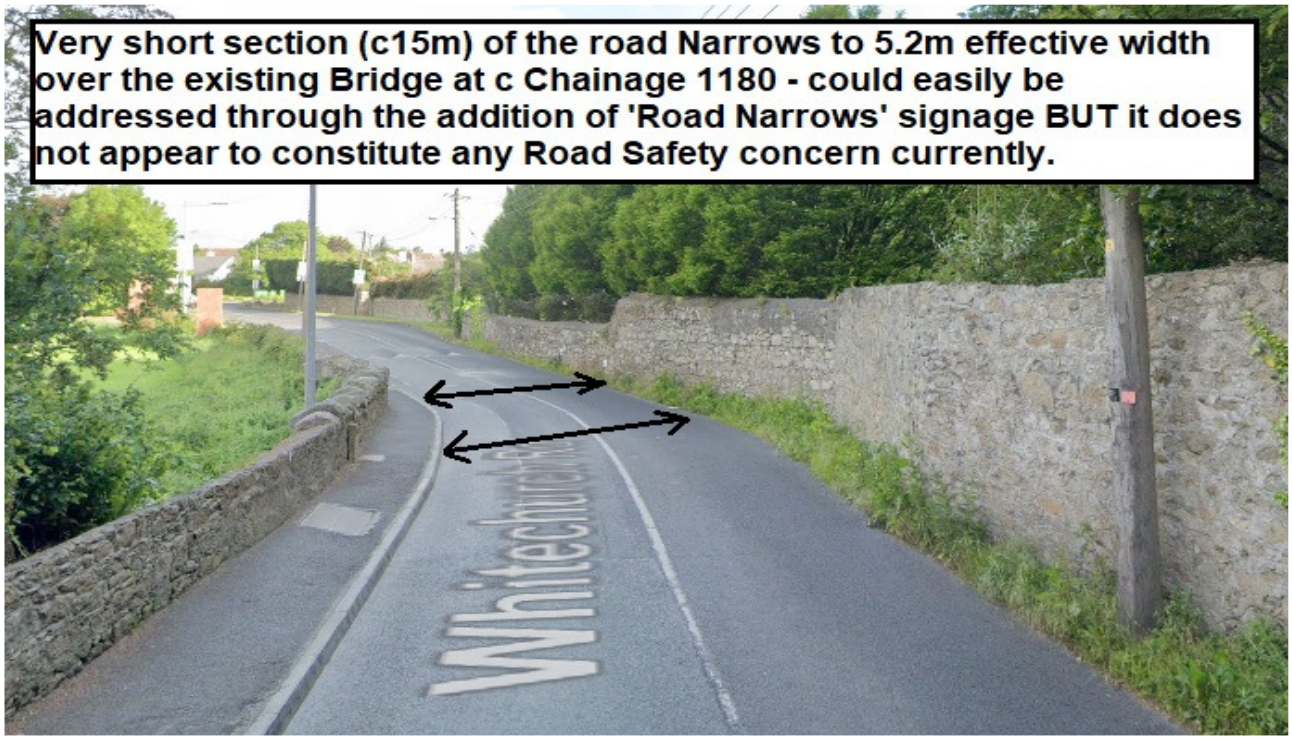
As a Comparitive Example Refer to Note #4 Below

Note #1	***Chainage Zero was Taken at the Dropped Kerb at the Junction of College Rd (as per below), subsequent chainages at 30m intervals along nearside kerb heading north.***

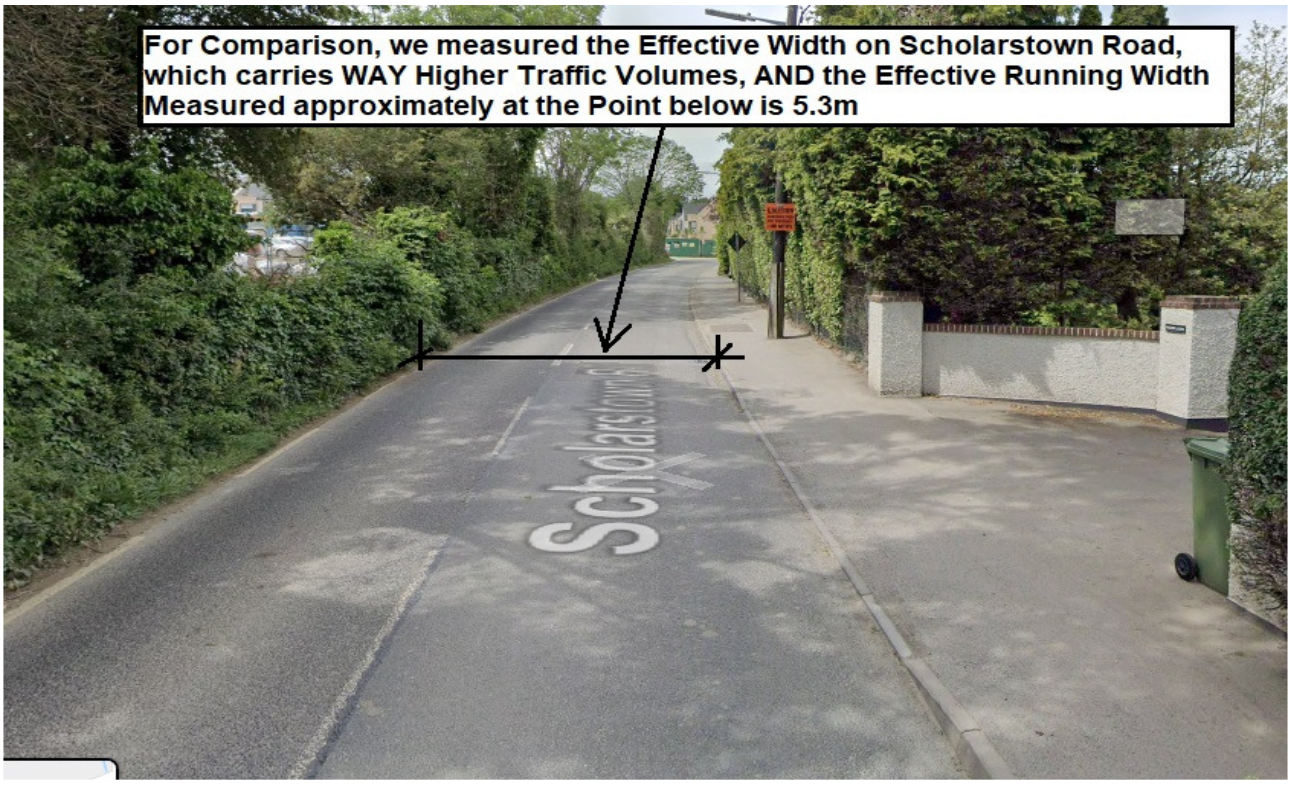
Note #2	***At Chainage 750, there is a short section where the effective width narrows to 5.3m BUT this can easily be increased to 5.5m if considered necessary, Refer Image below....***



Note #3	***Road Narrows for c 15m over the existing Bridge to Northern end of Survey (Refer Image)***



Note #4	***Scholarstown Rd Carries WAY Higher Traffic Volumes (Volume TBC) AND there have been very significant Recent Planning Permissions for Large Scale Houses AND the effective Width is Similar and in MANY CASES Less than Whitechurch Rd.....***



APPENDIX I

Spatial Framework Document
(incl Site Connectivity Illustration/Image)

New Edmondstown Neighbourhood - Spatial Framework Study (Overview)

Planning Context Report For
Strategic Housing Development at
Edmondstown,
Whitechurch Road, Rathfarnham, Dublin 16

November 2021


Linking to Dundrum & Ballaly Luas Park & Ride and onwards to city centre
Linking to South Dublin employment centres.
Link to M50 at Junction 12
Slang River Greenway
Linking to Dundrum and Ballaly PP&R
Whitechurch Road
MARLAY PARK
Junction 12
Potential for future connections
Proposed new link street
Zoned Lands
Wicklow Way Start/ End Point
To Sandyford and South Dublin Employment Centres
Junction 13
The Southern Cross Route
Proposed new bus terminus
Potential extension to Slang River Greenway
To Sandyford, Dun Laoghaire & Stepaside
Stillorgan Rugby Club, under construction.
Site of Regional Sports Campus St. Thomas', Tibradden Road, currently under construction

1. Edmondstown Neighbourhood Lands

This Spatial Framework Study has been prepared in respect of lands at Edmondstown, Whitechurch Road, Rathfarnham, Co Dublin. The lands included in this Spatial Framework Study, and the context of the lands zoned for residential development are illustrated here.

The Spatial Framework Study seeks to provide a development framework for the sustainable, phased and integrated development of these residentially zoned lands to provide for a comprehensive approach to the development of these zoned lands as a new neighbourhood at Edmondstown.

The lands are within and bounded by the M50 to the south (10 km from the City Centre) within easy reach of Rathfarnham village, Sandyford, Dundrum and South Dublin residential neighbourhoods. College Road is immediately to the east across the junction with Whitechurch Road. To the north the lands adjoin low density residential development and Edmondstown Golf Club, to the east the lands are bounded by the Whitechurch Road and The Grange Golf club with Marlay Park to the east of Whitechurch Road. The Whitechurch Stream, a tributary of the River Dodder, traverses the east of the site along Whitechurch Road. The stream is important as a natural heritage feature. A riparian strip, free of development while facilitating access to the stream, is required. To the south of the M50, accessed from Kilmashogue Lane new Sports Campuses are under construction at Tibradden/ St Thomas Sports Centre and for Stillorgan Rugby Club.

The overall Edmondstown lands are currently in agricultural use with a varying topography and bounded to the east by the Whitechurch Stream. The lands contain mature trees and hedgerows interspersed within the lands and along the field boundaries. The site development strategy seeks to protect these features where appropriate. The Edmondstown lands are unique in the Rathfarnham area as they are on the edge of the built up area adjacent to Marlay Park, the new Sports Campus at St Thomas's and two golf courses and within the M50, in proximity to Whitechurch National School and Whitechurch Church.

The lands are within walking distance of Marlay Park and other recreational amenities all of which are accessible by bicycle including the Slang River Greenway.

There are bus connections nearby on Whitechurch Road, Taylor's Lane and Edmondstown Road. Luas park and ride are accessed via bus services from Whitechurch Green and the Slang River Greenway at Balally Park and Ride. Proposals have been made by an independent bus operator (Wexford Bus) to the NTA to provide for a new bus service to serve the Sports Campus and the general area which will also support proposed development of the Edmondstown Lands.

Edmondstown

2. Introduction

This document has been jointly prepared by Simon Clear and Associates, Doyle Kent Planning Partnership; JFOC Architects, Ait Landscape and Urbanism, NRB Consulting Engineers (Traffic and Transportation) and Cronin Sutton, Consulting Engineers (Infrastructural Services, Sustainable Drainage and Flood Risk Assessment).

- Baseline inspections and reports have been prepared by:
- Openfield Ecological Services - ecology including bat surveys by Faith Wilson;
- CMK & Felim Sheridan, Arborists - Tree and hedgerow surveys;
- ACS Archaeology – Archaeology;
- Traffinomics - Traffic surveys carried out in Autumn 2019 to assess the use, capacity and traffic speeds in the area and along College Road.

These lands are part of what is referenced in the South Dublin County Council Development Plan (SDCDP) 2016- 2022 as the 'Edmondstown Lands' and are subject to zoning 'Objective RES – to protect and/or improve residential amenity.' . The Edmondstown Lands are:

- Located within the SDCC jurisdiction adjacent to the Dun Laoghaire Rathdown County Council (DLRCC) boundary to the west side of Marlay Park;
- Located within the M50 immediately adjacent to and in close proximity to the county boundary with DLRCC;
- Zoned for Residential Development;
- Capable of delivering a significant quantum of residential dwellings and associated neighbourhood facilities, as provided for in the South Dublin County Development Plan.
- Identified as a consolidation area within the core strategy as set out Variation No. 4 of the Development Plan - Alignment with the Regional Spatial and Economic strategy (RSES)

Content of this Spatial Framework Study

This Spatial Framework Study seeks to demonstrate, having regard to the existing site context and character the following:

- Improvements to the existing road infrastructure in the immediate vicinity of the Edmondstown lands at College Road and Whitechurch Road;
- First stage of a potential new link between Edmondstown Road and College Road;
- Delivery of a new link street parallel with the M50 that may be extended to form part of a pedestrian/ cycle/ bus and car connection from College Road to Edmondstown Road
- Provision of a sustainable residential neighbourhood which supports a balanced mix of household types and to provide for market choice;
- Facilitate a range of neighbourhood commercial uses of various types and sizes, with accompanying local facilities to support a sustainable residential community;
- Overall layout and distribution of open spaces to provide a network and hierarchy of spaces with the retention of natural features and the incorporation of existing green Infrastructure links such as tress, hedgerows and watercourses;
- Identify strategic links throughout the area for principal pedestrian and cycle routes showing key access points to promote a highly cyclable and walkable environment for pedestrians and bicycle users;
- Details of services, including foul and water supply, and compliance with SUD's
- Phasing

The Spatial Framework Study seeks to protect existing residential amenity, protect significant features including hedgerow, trees and biodiversity and seek to provide open space in accordance with the Development Plan requirements including an ecological corridor along the Whitechurch Stream. The study sets out broad principles on how the lands should be developed with pedestrian and vehicular connectivity across there lands.

The Spatial Framework Study seeks to establish the broad development principles for the Edmondstown Lands. It will set out in broad terms the general distribution of land uses, circulation systems and key access points. It will also indicate how future development by others can successfully integrate with the subject lands. Details of transport proposals including road layout, provision of services, amenities and open space will also be detailed .

3. Strategic Policy Context

National

National Planning Framework 2040

The National Planning Framework (NPF) signals a shift in Government policy towards securing more compact and sustainable urban development, to enable people to live nearer to where jobs and services are located. There will be a major new policy emphasis on renewing and developing existing built-up areas rather than continual expansion and sprawl of cities and towns out into the countryside, with a target of at least 50% of new housing to be delivered within the existing built-up areas of cities, towns and villages on infill and/or brownfield sites.

"At a metropolitan scale, this will require focus on a number of large regeneration and redevelopment projects, particularly with regard to underutilised land within the canals and the M50 ring and a more compact urban form, facilitated through well designed higher density development. "

Regional

Regional Spatial and Economic Strategy (RSES) for Eastern and Midland Region

The Settlement Strategy of the RSES is informed by the NPF which predicts that the population of Dublin will increase from 1,347,500in 2016, to between 1,489,000 -1,517,500in 2026 and to between 1,549,500 -1,590,000 by 2031. The Settlement Strategy for Dublin City and Suburbs builds on the objectives of the NPF and recognises the need for compact growth with the following summary provided:

"Promote compact, sequential and sustainable development of urban areas from large to small to realise targets of at least 50% of all new homes to be built, to be within or contiguous to the existing built up area of Dublin city and suburbs,"

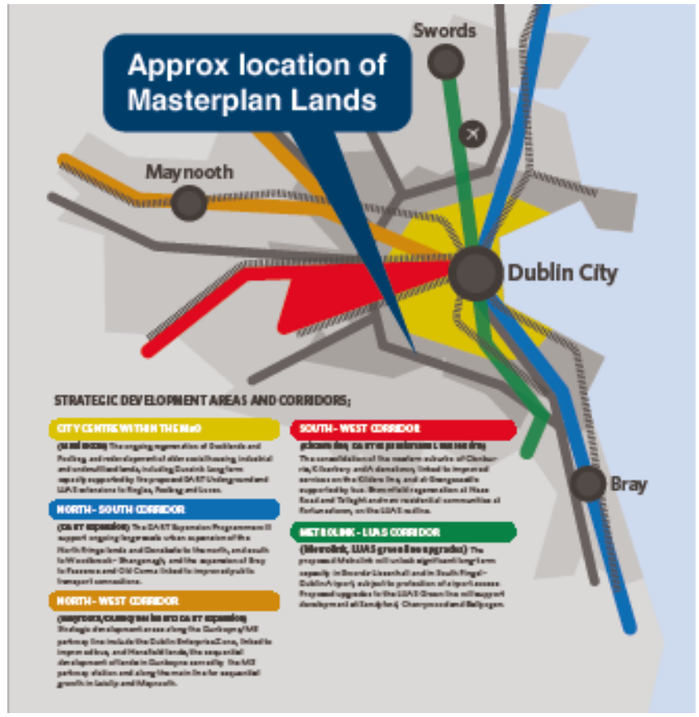
It is noted that the RSES supports continued population and economic growth in Dublin City and suburbs, with high quality new housing promoted and a focus on the role of good urban design, brownfield redevelopment and urban renewal and regeneration.

Consolidation and re-intensification is a specific objective of the Settlement Strategy for Dublin City and Suburbs as outlined in Regional Policy Objective (RPO) 4.3:

RPO 4.3: "Support the consolidation and re-intensification of infill/brownfield sites to provide high density and people intensive uses within the existing built up area of Dublin City and Suburbs and ensure that the development of future development areas is co-ordinated with the delivery of key water infrastructure and public transport projects."

RSO 5.5 is based on the need to provide quality, affordable housing which plays a key role in underpinning economic growth and competitiveness of the Dublin metropolitan area. In terms of Housing and Regeneration, RPO5.5 is also relevant to the proposed development:

RPO 5.5: "Future residential development supporting the right housing and tenure mix within the Dublin Metropolitan Area shall follow a clear sequential approach, with a primary focus on the consolidation of Dublin and suburbs, and the development of Key Metropolitan Towns, as set out in the Metropolitan Area Strategic Plan (MASP) and in line with the overall Settlement Strategy for the RSES. Identification of suitable residential development sites shall be supported by a quality site selection process that addresses environmental concerns."



Smarter Travel –A Sustainable Transport Future

This policy document recognises that current transport and travel trends in Ireland are unsustainable and that if we continue with present policies, congestion will get worse, transport emissions will continue to grow, economic competitiveness will suffer and quality of life will decline. 'Smarter Travel – A Sustainable Transport Future' outlines a number of key goals and targets to achieve its vision of a more sustainable transport system including the following:

- Future population and employment growth should predominantly take place in sustainable compact forms, which reduce the need to travel for employment and services;
- Alternatives such as walking, cycling and public transport will be supported, to ensure that a reduction in travel demand and reliance on the car can be achieved;
- The need to improve the alignment of spatial and transport planning to stop urban sprawl and urban-generated one-off housing in peri-urban areas.

Ministerial Guidelines

Apartment Guidelines (2018)

Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities, 2018 were issued by the Minister for Housing Planning and Local Government under Section28 of the Planning and Development Act.

The 2018 Apartment Guidelines contain specific Planning Policy Requirements (SPPR's) with which compliance is mandatory for developments consisting of apartments. The aim of these Guidelines is to ensure that apartment living is an increasingly attractive and desirable housing option for a range of household types and tenures resulting in greater delivery of apartments in Ireland's cities and towns. It outlines the importance of " building inwards and upwards rather than outwards".

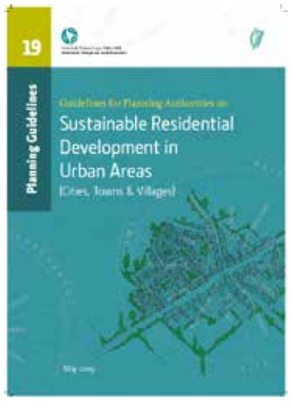
Urban Development & Building Height Guidelines (2018)

National planning guidance has been issued by the Minister in December 2018 'Urban Develop- ment and Building Heights, Guide- lines for Planning Authorities' (hereafter referred to as the 'Height Guidelines'). It sets out new and updated national policy on building heights in relation to urban areas, consistent with the strategic policy framework set out in the NPF.

These Height Guidelines form part of a suite of integrated measure intended to shift the current patterns and development trends for cities and towns to form more compact and integrated communities. It recognises the need to grow existing towns and cities upwards rather than ever outwards.

Reflecting the National Planning Framework strategic outcomes in relation to compact urban growth it is acknowledged that *"if much of the future development in and around existing urban areas, where two- storey development is currently the norm, was of four-storey form as the default objective, it would be possible to provide substantially more population growth within existing built-up areas where there is more infrastructure already in place, rather than in greenfield locations which would need services. Therefore, these guidelines require that the scope to consider general building heights of at least three to four storeys, coupled with appropriate density, in locations outside what would be defined as city and town centre areas, and which would include suburban areas, must be supported in principle at development plan and development management levels."*

Section 3 of the Height Guidelines outlines "development management principles" and "development management criteria" which the Planning Authority will consider in assessing development proposals for buildings taller than prevailing building height in urban areas.



Sustainable Residential Density in Urban Areas (2009)

The document 'Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas' (here-after SRDUA) was issued in 2009 under Section 28 of the 2000 Act. General principles of these Guidelines relate to prioritising walking, cycling and public transport over the use of cars, and to provide residents with a quality of life in terms of amenity, safety and convenience. For development in cities and larger towns it is noted that the objective should be "the achievement of an efficient use of land appropriate to its context.

Section 5.2 of the SRDUA provides a summary of the design criteria to be considered in the assessment of higher density residential development while detailed advice is provided in the accompanying Urban Design Manual. These factors include:

- Acceptable building heights;
- Avoidance of overlooking and overshadowing;
- Provision of adequate private and public open space, including landscaping where appropriate and safe play spaces;
- Adequate internal space standards in apartments;
- Suitable parking provision close to dwellings, and Provision of ancillary facilities, including childcare.

It is important that land use planning underpins the efficiency of public transport services and in this regard, higher densities are required on public transport corridors, i.e. within 500m walking distance of bus routes or within 1km walking distance of a light rail stop or rail station. It is stated that in general, minimum net densities of 50 dwellings per hectare, subject to design and amenity standards, should be applied within public transport corridors.

Edmondstown

4. Local Policy Context

Development Plan

The subject Edmondstown Lands are governed by the SDCC Development Plan 2016-2022 and the lands are zoned 'Objective RES – to protect and/or improve residential amenity.'

Extract from SDCC Development Plan 2016 - 2022

The subject lands have a specific objective H3 SLO 1, which is 'to facilitate the development of lands at Edmondstown (former Kilmashogue House) for the purpose of low density residential development at a net density of not more than 12 dwellings per hectare, and to promote housing for older people (nursing home, independent and semi-independent) as a fully integrated part of such development with an increased density of not more than 20 dwellings per hectare to apply to independent and semi-independent housing for older people. All residential development, including housing for older people, shall be integrated within a sustainable residential neighbourhood that is served by shared public open space, community and local facilities. Permissible densities may be increased in accordance with the relevant ministerial guide- lines where issues of accessibility have been fully resolved in an appropriate manner. Any future development should have regard to the boundaries with and the protection of the existing amenity and function of Edmondstown Golf Course'.

Core Strategy Plan

The Core Strategy of the Development Plan identifies Rathfarnham as a Consolidation Area within the Gateway. Map

1.3 of the Core Strategy identifies the subject site as a 'Housing Capacity Site'.

Section 1.7.1 of the Development Plan describes consolidation areas as suburban areas with established identities and communities with distinct heritage and character. These areas have a range of urban services such as transport, retail, medical and community facilities. Recent Census data identifies an aging population and stagnant or falling populations, which presents a serious risk for the viability of services and facilities into the future.

A key element of the overall Settlement Strategy is to promote the consolidation and sustainable intensification of the existing urban/suburban built form to the east of the M50 and south of the River Dodder, thereby maximising efficiencies from established physical and social infrastructure.

CS1 Objective 1: To promote and support high quality infill development.

The proposal will support the Core Strategy by consolidating development in the suburbs and providing high quality homes.

Housing Strategy

The following Housing Strategy policies are relevant to the proposed development, which is a suburban development located outside a high capacity public transport corridor.

HOUSING Policy 8 Residential Densities

It is the policy of the Council to promote higher residential densities at appropriate locations and to ensure that the density of new residential development is appropriate to its location and surrounding context.

HOUSING Policy 9 Residential Building Heights

It is the policy of the Council to support varied building heights across residential and mixed use areas in South Dublin County.

HOUSING Policy 10 Mix of Dwelling Types

It is the policy of the Council to ensure that a wide variety of adaptable housing types, sizes and tenures are provided in the County in accordance with the provisions of the Interim South Dublin County Council Housing Strategy 2016-2022.

HOUSING Policy 11 Residential Design and Layout

It is the policy of the Council to promote a high quality of design and layout in new residential development and to ensure a high quality living environment for residents, in terms of the standard of individual dwelling units and the overall layout and appearance of the development.

HOUSING Policy 12 Public Open Space

It is the policy of the Council to ensure that all residential development is served by a clear hierarchy and network of high quality public open spaces that provides for active and passive recreation and enhances the visual character, identity and amenity of the area.

HOUSING Policy 13

Private and Semi-Private Open Space

It is the policy of the Council to ensure that all dwellings have access to high quality private open space (inc. semi-private open space for duplex and apartment units) and that private open space is carefully integrated into the design of new residential developments.

HOUSING Policy 14

Internal Residential Accommodation

It is the policy of the Council to ensure that all new housing provides a high standard of accommodation that is flexible and adaptable, to meet the long term needs of a variety of household types and sizes.

HOUSING Policy 15 Privacy and Security

It is the policy of the Council to promote a high standard of privacy and security for existing and proposed dwellings through the design and layout of housing.

HOUSING Policy 16

Steep or Varying Topography Sites

It is the policy of the Council to ensure that development on lands with a steep and/or varying topography is designed and sited to minimise impacts on the natural slope of the site.

HOUSING Policy 17 Residential Consolidation

It is the policy of the Council to support residential consolidation and sustainable intensification at appropriate locations, to support ongoing viability of social and physical infrastructure and services and meet the future housing needs of the County

Green Infrastructure Network

G2 Objective 1: To reduce fragmentation of the Green Infrastructure network and strengthen ecological links between urban areas, Natura 2000 sites, proposed Natural Heritage Areas, parks and open spaces and the wider regional Green Infrastructure network.

G2 Objective 2: To protect and enhance the biodiversity value and ecological function of the Green Infrastructure network.

G2 Objective 3:To restrict development that would fragment or prejudice the Green Infrastructure network.

G2 Objective 4:To repair habitat fragmentation and provide for regeneration of flora and fauna where weaknesses are identified in the network.

G2 Objective 5: To integrate Green Infrastructure as an essential component of all new developments

G2 Objective 6: To protect and enhance the County's hedgerow network, in particular hedgerows that form townland, parish and barony boundaries, and increase hedgerow coverage using locally native species.

G2 Objective 7: To incorporate items of historical or heritage importance in situ within the Green Infrastructure network as amenity features.

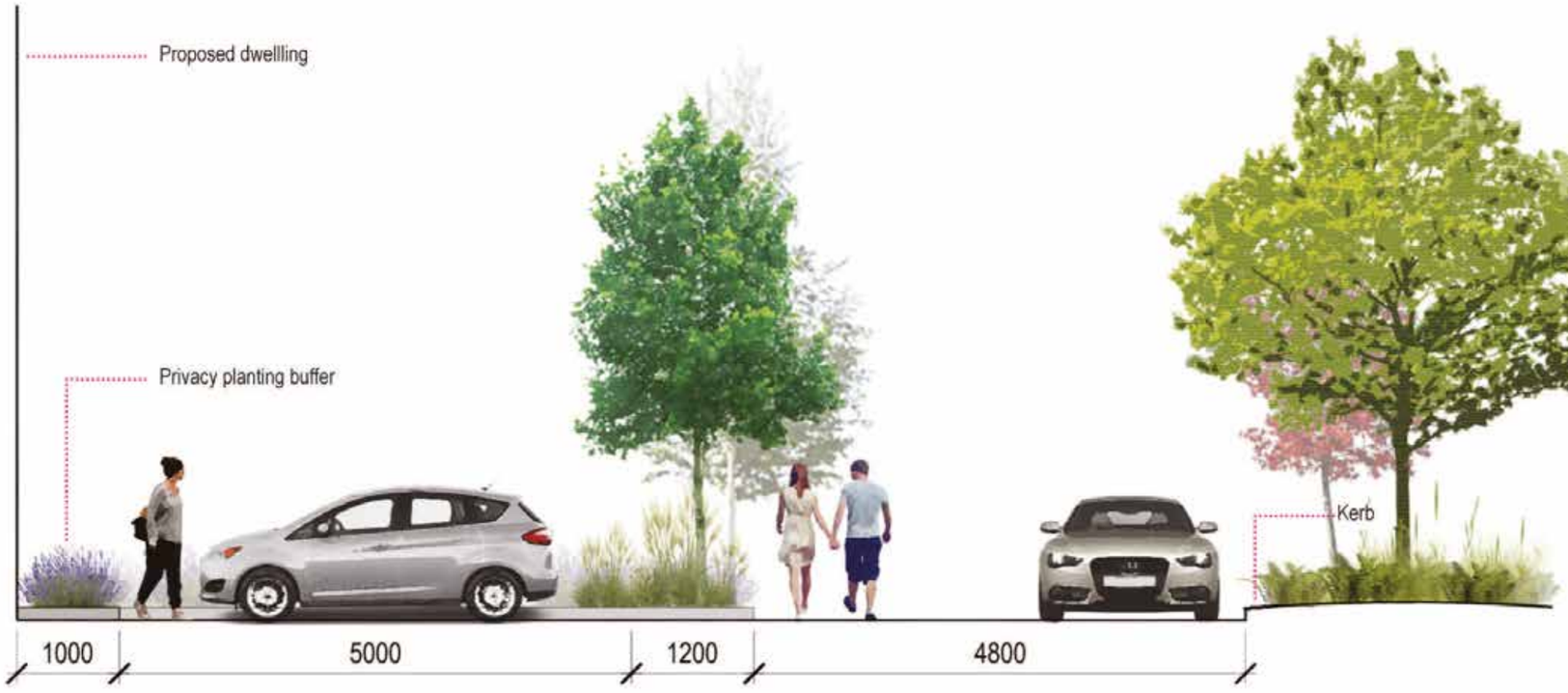
G2 Objective 9: To preserve, protect and augment trees, groups of trees, woodlands and hedgerows within the County by increasing tree canopy coverage using locally native species and by incorporating them within design proposals and supporting their integration into the Green Infrastructure network.

G2 Objective 13: To seek to prevent the loss of woodlands, hedgerows, aquatic habitats and wetlands wherever possible including requiring a programme to monitor and restrict the spread of invasive species such as those located along the River Dodder.

Green Infrastructure Policy G3 Objective 2:

"To maintain biodiversity protection zone of not less than 10 metres from the top of the bank of all watercourses in the county.

Illustration depicts Cross Section of Typical home Zone Treatment within the development



Garden planting	On-curtilage parking	Step-off zone	Homezone carriageway	Planting

Shared surface streets and junctions are particularly effective at calming traffic. Research has found that shared carriageways perform well in terms of safety and there is also evidence to suggest that well designed schemes in appropriate settings can bring benefits in terms of visual amenity, economic performance and perceptions of personal safety.

- Design Manual for Urban Roads and Streets

Draft County Development Plan 2022 – 2028

We note that South Dublin County Council are in the process of preparing a new County Development Plan for 2022 – 2028. The Draft South Dublin County Development Plan 2022 - 2028 is being prepared in accordance with the provision of the Planning and Development Act 2000 (as amended). These Edmondstown Lands have a similar zoning to that under the current development plan - 'Objective RES – to protect and/or improve residential amenity.' The following Specific Objectives have also been included in the draft development plan:

Objective SM4 SLO1

To ensure that development on these lands at Whitechurch/ Edmondstown only occurs where it can be delivered in tandem with the necessary transport infrastructure, including provision for walking and cycling, to facilitate such development.

Specific Objective COS4 SLO5:

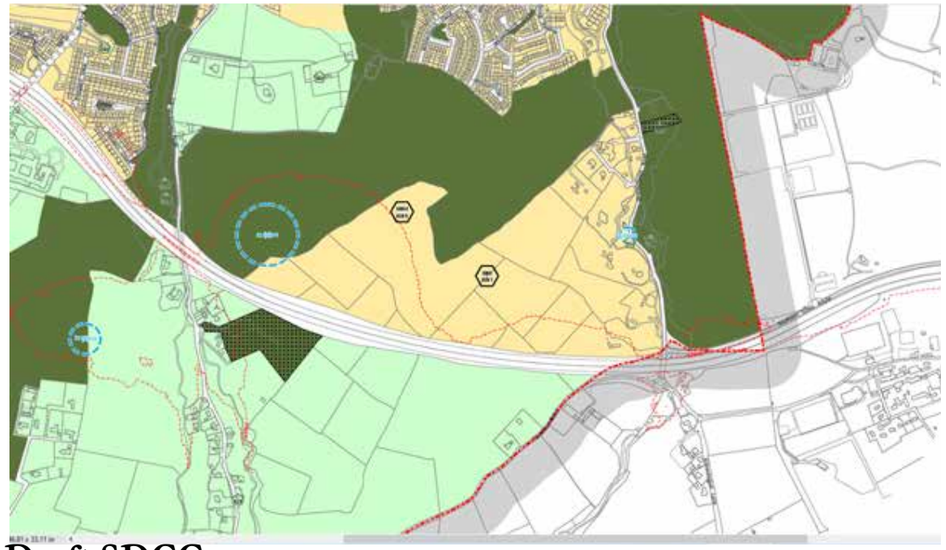
To ensure that any future development has regard to the boundary with and protection of the amenity and function of Edmondstown Golf Course..

Appendix 4 – Green Infrastructure:

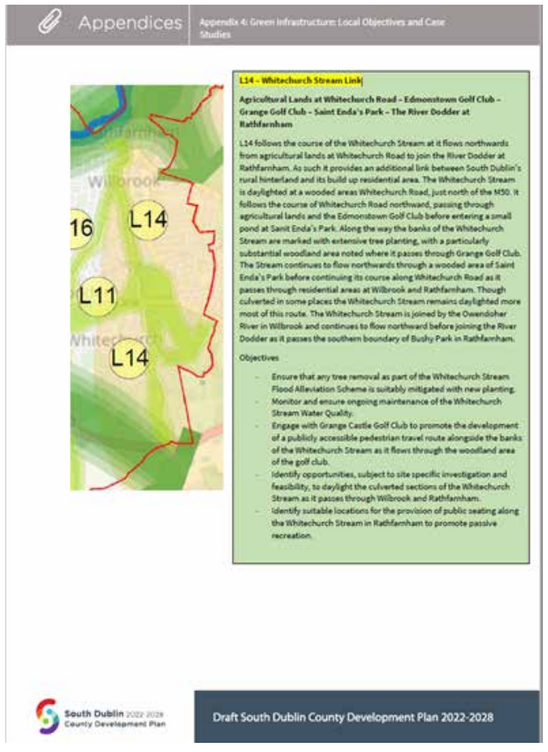
Local Objectives and Case Studies

:

L14 – Whitechurch Stream Link



Extract from Draft SDCC Development Plan 2022 – 2028 –



Extract from Draft SDCC Development Plan 2022 – 2028 – Appendix 4

Edmondstown

Case Study 7: Whitechurch Road	
Typology	Urban Edge
Description	

The area around Whitechurch Road, South Dublin's eastern boundary with the administrative area of DLRCC, includes two tributaries of the River Dodder, located to the north and the south of the M50. These tributaries, as well as their banks and the associated shrubberies and woodlands, are important local green and blue infrastructure assets. Other GI assets in the vicinity include the large block of woodland along Whitechurch Road's eastern boundary, local hedgerows and the cemetery at Whitechurch Parish, beside Whitechurch Road. Assessment of this area resulted in the following preliminary observations:

- Opportunity to maximise value of Dodder tributaries as greenways of value for recreation and biodiversity
- Need to consider how to treat highly constrained sites with high value GI resource
- Consider how to incentivise developers to improve ecological connectivity
- Need to consider relationship between heritage features and GI.
- How to leverage the visual impact of the transition between South Dublin's urban and rural areas.
- Scope to further identify appropriate ecological features that make appropriate urban-rural gateways.

Policy Recommendations	
GP-1	Optimise biodiversity and connectivity along the Whitechurch Stream to the greatest extent possible.
GP-2	To investigate the provision of a local greenway along the course of Whitechurch Stream and other minor watercourses within the county to improve accessibility from the county's residential suburbs to surrounding recreational opportunities and amenities.
GP-3	Ensure that areas of high biodiversity value are identified, preserved and incorporated into development. Accommodations must be made to ensure that the biodiversity value is not reduced. Measures to be considered include; improving access where appropriate, incorporation of SUDS measures which enhance not just flood attenuation but also amenity value
GP-4	Protect the geodiversity interest of the landscape and prohibit landfills which damage geodiversity interest.
GP-4	Recognising that flood relief schemes may involve the loss of certain flora, ensure that development on these lands gives the greatest protection possible to mature trees and heritage and ecological features which enhance its character.
GP-5	Retain and incorporate broad leaf woodland in amenity parkland or within open space areas and ensure that where loss of broadleaf cannot be avoided it is suitably mitigated.
GP-6	Retain and protect existing cemeteries which are a feature of this area and to increase their contribution to the ecosystems services of the area by measures such as; biodiversity friendly landscaping and appropriate management of the GI value and facilitation of access where appropriate.
GP-7	Ensure bat surveys carried out due to the high potential for bat roosts within the existing buildings and mature
GP-8	Promote public understanding and engagement in biodiversity management such as in the areas of cemetery management, golf course management and private gardens.
GP-9	Retain and protect local heritage features which exist in the area such as granite walls, site for water pump, and small houses. Use of local materials within new development is important in this regard.
GP-10	Ensure that all new planting is reflective of the character and local biodiversity of the area, and encourage the use of native planting and discourage the use of non-native planting.

County wide applications of the key lessons from this Case Study:
This case study forms the 'urban edge' typology and as such is concerned with the transition areas between South Dublin's urban / suburban and rural areas. Of particular interest is the further identification of appropriate ecological features that make appropriate urban-rural gateways. Applicable lessons in this regard include:

- Promote public understanding and engagement in biodiversity management such as in the areas of cemetery management, golf course management and private gardens.
- Ensure that all new planting is reflective of the character and local biodiversity of the area and encourage the use of native planting while discouraging the use of non-native planting.
- Ensure that areas of high biodiversity value are identified, preserved and incorporated into new development. Accommodations must be made to ensure that the biodiversity value is not reduced. Measures to be considered include; improving access where appropriate, incorporation of SUDS measures which enhance not just flood attenuation but also amenity value

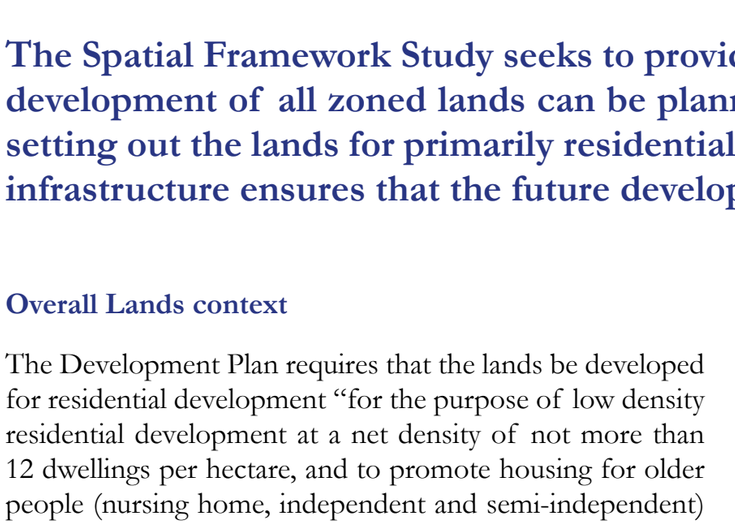
5. Neighbourhood Development Strategy

The Spatial Framework Study seeks to provide a comprehensive approach to the lands at Edmondstown which will ensure that the future development of all zoned lands can be planned to address the issue of sustainable accessibility in an appropriate manner. The study in setting out the lands for primarily residential use with associated neighbourhood and community facilities, open space, roads and service infrastructure ensures that the future development of adjoining lands can be fully accommodated.

Overall Lands context

The Development Plan requires that the lands be developed for residential development "for the purpose of low density residential development at a net density of not more than 12 dwellings per hectare, and to promote housing for older people (nursing home, independent and semi-independent) as a fully integrated part of such development with an increased density of not more than 20 dwellings per hectare to apply to independent and semi-independent housing for older people whereby permissible densities may be increased in accordance with the relevant ministerial guidelines where is- sues of accessibility have been fully resolved in an appropriate manner".

The overall site strategy as illustrated in the Spatial Framework drawings sets out a layered approach to how the



The overall Edmondstown lands amount to 28 Hectares of land within the Residential Zoned area, providing 23.6 Hectares of developable lands (excluding the Riparian corridor, Link Street from Whitechurch to Edmondstown Road and exclusion zone for overhead electricity line). The development of all the zoned Edmondstown lands provides for a potential future residential development of circa 1,000 residential dwellings allowing for a population of between 2,500 and 3,180..

Public open space will be provided at a rate of 16% as a part of these proposals. The riparian corridor is provided along the Whitechurch Stream running parallel to Whitechurch Road. Provision is made for the delivery of a Green Infrastructure which includes mature trees, hedgerows, and woodland. The retention of trees and hedgerows has significant ecological benefits supporting habitats and forming part of the Green Infrastructure Network. The retention of trees and hedgerows will provide visual amenity and aid in the process of placemaking on the Edmondstown Lands.

5. Neighbourhood Development Strategy (Continued)

Transportation

Accessibility for pedestrians, cyclists and public transport is key to the sustainable development of this strategic land development resource. The NTA, in an observation as a statutory body in relation to a recent planning application for part of the Edmondstown lands indicated no objection in principle to their development for residential purposes and has: -

Expressed an opinion that, in advance of any development of these lands, an assessment of the cumulative impacts of the development of the full Edmondstown Lands should be undertaken;

That a programme of investment in transport infrastructure and services, and other local services, which would facilitate the development of the Edmondstown Lands in a sustainable manner, should be prepared - so that any development could proceed in a manner that would be considered consistent with the NTA's Transport Strategy for the GDA 2016-2035.

In summary, the Feasibility Study carried out by NRB indicates: -

- A future inner relief road can be accommodated, running parallel to and inside the M50, to link Whitechurch Road to Edmondstown Road, as an extension to the well-used College Road;
- This link could run inside and parallel to the M50 and would link suburbs and facilitate public transport without the need to use the M50 for inter-suburb trips;
- The route can be built to modern requirements and design standards, linking across the entire southern suburbs;
- The relief road link consists of a single carriageway road with footpaths and cycle lanes provided;
- It is intended to accommodate a bus terminus / turning area as a part of this planning application to facilitate the extension of Dublin Bus Services to serve the area (the intention being that services that currently 'terminate' on Whitechurch Road can be extended to service lands to the M50 cordon boundary in the short to medium term);
- Improvements to College Road, can provide for DMURS compatible Traffic
- Calming and the addition of a 2-way continuous cycle lane from the rear of Marlay Park, with enhanced connectivity to DLRCC's Slang River Greenway, which provides a safe cycling route to recreation, shopping, employment and education locations;
- The route, designed based on a Topographical Survey, includes an improved junction at Whitechurch Rd/ College Rd, where it is also proposed to install a 'Toucan' Pedestrian / Cyclist Crossing which will provide for safe crossing.
- All of the Designs are informed by comprehensive Classified Traffic Surveys (and by way of 85%ile speed surveys of College Rd carried out at appropriate times in Autumn 2019). College Road was found to have high traffic speeds as surveyed in 2019.

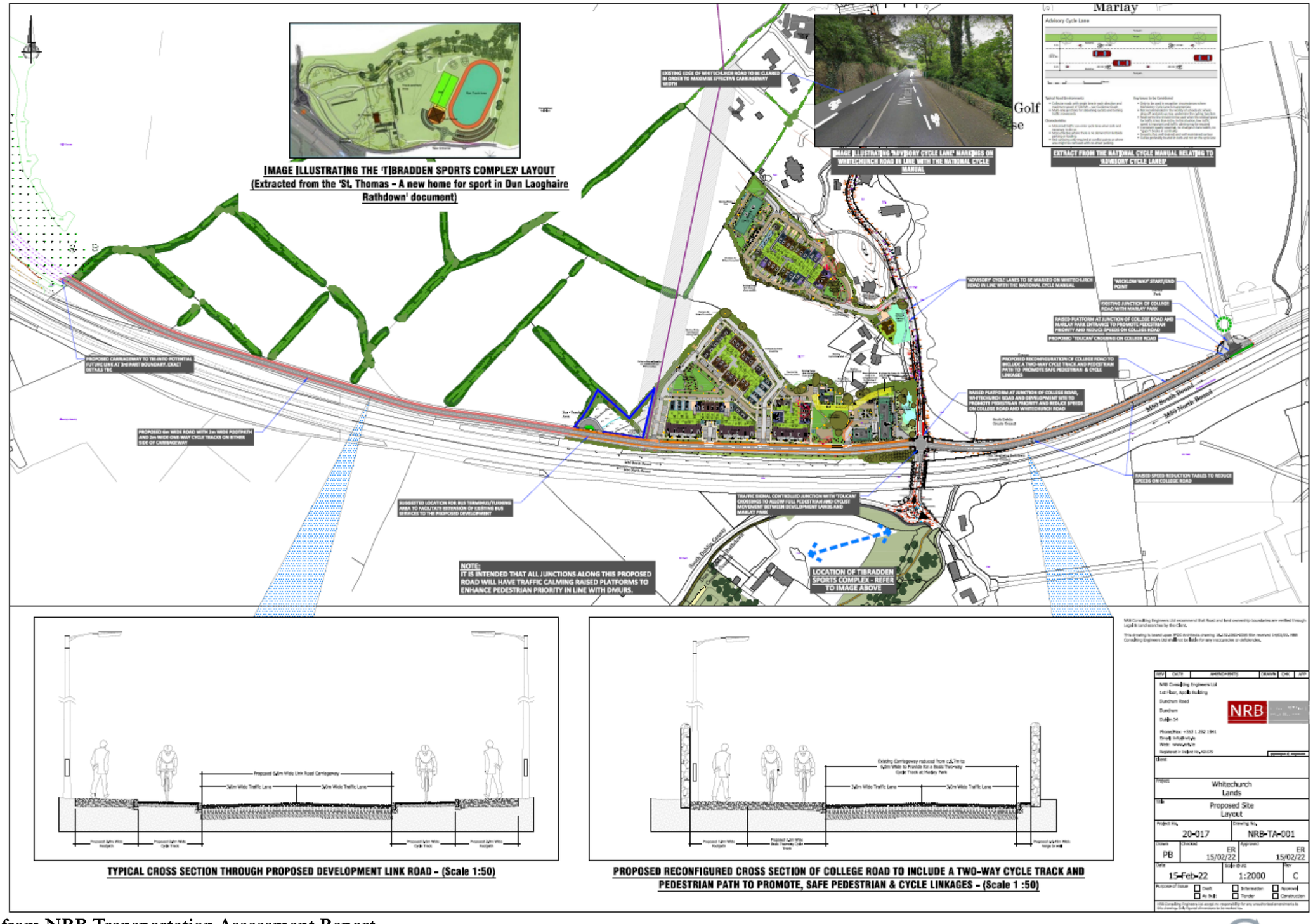
An important benefit of the proposed College Road works is the improved access to the approved and funded DLRCC Sports Campus at Tibradden Road. This Regional Sports Campus (due to be part operational in Q3 2022) and the adjacent Stillorgan Rugby Club are under construction at present. There will be clear benefits for safe pedestrian and cyclist access to the Sports Campus, in terms of the Traffic Calming and the Cyclists permeability locally via an extension to the Slang River Greenway along College Road.

This spatial framework study for the Edmondstown Neighbourhood promotes more environmentally friendly travel modes, improving energy efficiency; reducing congestion; creating more liveable neighbourhoods and reducing green- house gas emissions and recognises that with the future concentration of high density population within the M50, there is a need to address, at an early stage, existing and potential congestion and promotion of sustainable modes of transport throughout the southern suburbs of the core metropolitan area.

IMAGE ILLUSTRATING THE 'TIBRADDEN SPORTS COMPLEX' LAYOUT
(Extracted from the 'St. Thomas – A new home for sport in Dun Laoghaire Rathdown' document)

IMAGE ILLUSTRATING 'ADVISORY CYCLE LANE' MARKINGS ON WHITECHURCH ROAD IN LINE WITH THE NATIONAL CYCLE MANUAL

EXTRACT FROM THE NATIONAL CYCLE MANUAL RELATING TO 'ADVISORY CYCLE LANES'

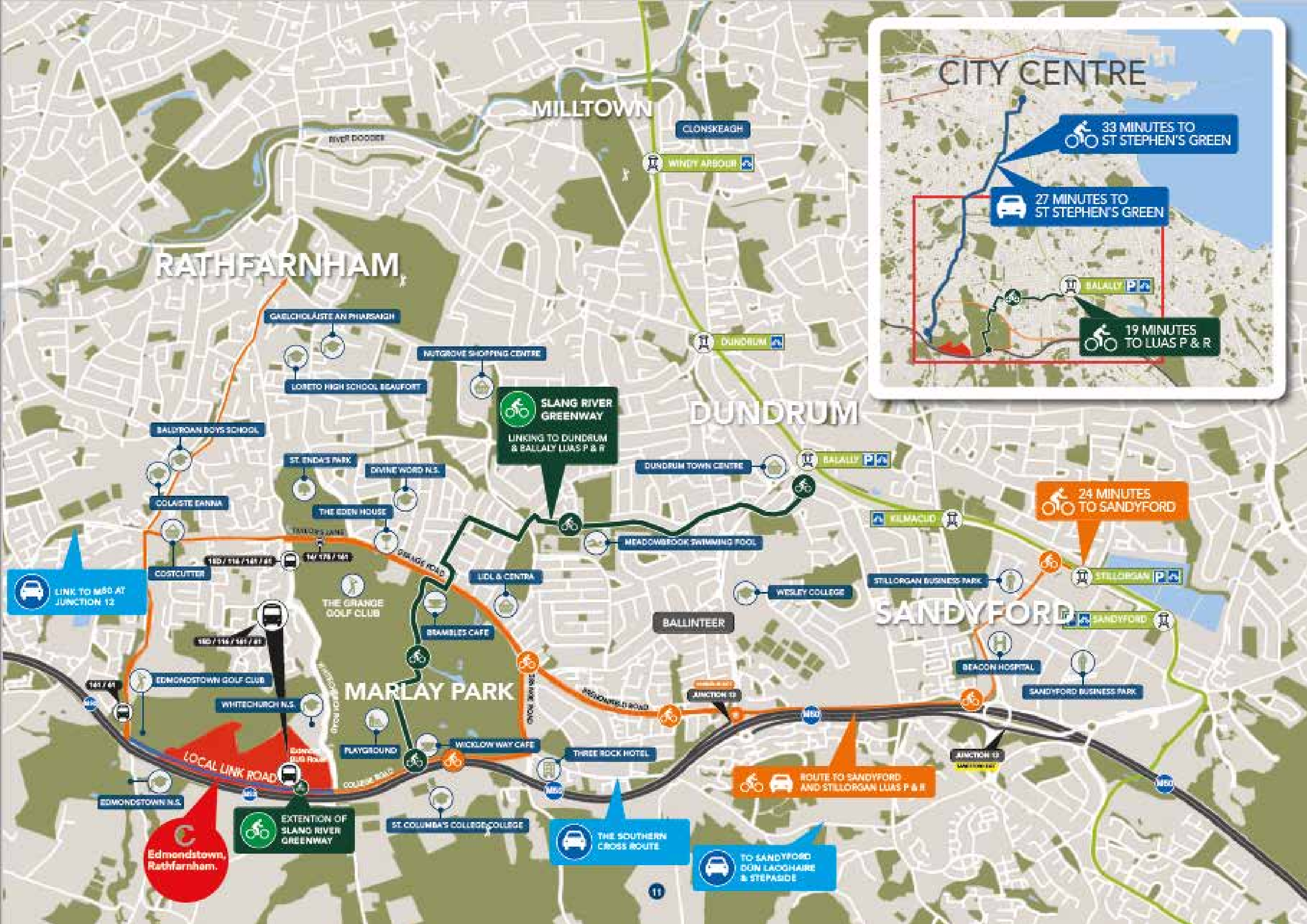


TYPICAL CROSS SECTION THROUGH PROPOSED DEVELOPMENT LINK ROAD – (Scale 1:50)

PROPOSED RECONFIGURED CROSS SECTION OF COLLEGE ROAD TO INCLUDE A TWO-WAY CYCLE TRACK AND PEDESTRIAN PATH TO PROMOTE, SAFE PEDESTRIAN & CYCLE LINKAGES – (Scale 1 :50)

Extract from NRB Transportation Assessment Report

Edmondstown


CITY CENTRE
33 MINUTES TO ST STEPHEN'S GREEN
27 MINUTES TO ST STEPHEN'S GREEN
BALALLY P
19 MINUTES TO LUAS P & R
MILLTOWN
CLONSKEAGH
WINDY ARBOUR
RIVER DODDER
RATHFARNHAM
DUNDRUM
GAELCHOLÁISTE AN PHEARSAIGH
LORETO HIGH SCHOOL BEAUFORT
NUTGROVE SHOPPING CENTRE
SLANG RIVER GREENWAY
LINKING TO DUNDRUM & BALALLY LUAS P & R
BALDYDOAN BOYS SCHOOL
COLAISTE DANNA
ST. ENDA'S PARK
DIVINE WORD N.S.
THE EDEN HOUSE
TAYLOR'S LANE
GRANGE ROAD
DUNDRUM TOWN CENTRE
BALALLY P
MEADOWBROOK SWIMMING POOL
KILMACUD
24 MINUTES TO SANDYFORD
LINK TO M50 AT JUNCTION 12
COSTCUTTER
145 / 46
THE GRANGE GOLF CLUB
LIDL & CENTRA
BRAMBLES CAFE
WESLEY COLLEGE
STILLORGAN BUSINESS PARK
STILLORGAN P
SANDYFORD
BALLINTEER
SANDYFORD
EDMONDSTOWN GOLF CLUB
WHITECHURCH N.S.
MARLAY PARK
BEACON HOSPITAL
SANDYFORD BUSINESS PARK
PLAYGROUND
WICKLOW WAY CAFE
THREE ROCK HOTEL
JUNCTION 13
LOCAL LINK ROAD
ROUTE TO SANDYFORD AND STILLORGAN LUAS P & R
EDMONDSTOWN N.S.
EXTENTION OF SLANG RIVER GREENWAY
ST COLUMBA'S COLLEGE COLLEGE
THE SOUTHERN CROSS ROUTE
TO SANDYFORD DÚN LAOGHAIRE & STEPASIDE
Edmondstown, Rathfarnham.
11

A Zoned Residential Landbank within the M50

- A mix of uses at an appropriate density for the location are envisaged in this Neighbourhood.
- Such lands inside the M50 have been identified as suitable for development under the Regional Planning Guidelines.
- The existing bus services can be extended from the Whitechurch Road into the new link street in consultation with TII and the NTA.
- Local services can be integrated into proposed development. Walking, cycling and connectivity have been prioritised.

Edmondstown Neighbourhood response to its surroundings

- High levels of amenity space near these lands include Marlay Park, Grange Golf Club, Edmondstown Golf Club, St Thomas' Sports Campus and Stillorgan Rugby Club. These high quality spaces will be connected with and supported by new development
- Existing green infrastructure including streams and hedgerows have been identified and can be maintained and enhanced by development proposals
- Green links, pedestrian and cycle connections and vehicular access link open spaces and destinations
- Key features of the lands will be utilised to enhance and maximise the potential for a varied, sustainable and identifiable place making.
- A mixed development ranging from two storey houses to apartments are envisaged across the development lands.
- The Neighbourhood Centre will serve both new and existing communities
- A local landmark building is proposed within the lands at the entrance to the new Edmondstown Road link, defining the new neighbourhood.

Accessibility within the Edmondstown lands

- Universal Design will be a guiding principle in the design of the overall layouts and in the detailed design
- The principles of universal design underpin the design approach, such that the lands "may be accessed, understood and used to the greatest practicable extent, in the most independent and natural manner possible, and in the widest possible range of situations
- Public spaces, streets and parks, will be all designed so that every member of society can use them.
- Buildings will front these spaces so that they are passively supervised, creating safe spaces for everyone to use. Where Home Zones / Shared Spaces adjoin the public open spaces, the activity generated here enhances the open space realm.
- It is proposed that suitable sites and typologies for sheltered housing can be identified within and throughout the zoned Edmondstown lands. These may include flexible house or apartment designs that can easily be adapted to changing needs over the course of a lifetime.

Edmondstown Neighbourhood

- A Neighbourhood Centre at the southern access will provide for a range of local services including convenience store, shop/café and other retail to serve the new and existing communities
- A creche will be provided as a part of any new development Existing community services include schools and churches A variety of dwelling types, sizes and tenures will be provided by the new development
- The spatial framework study has taken care to identify and enhance existing landscape characteristics including field boundaries, hedgerows, trees and some attractive old stone buildings to create identifiable neighbourhoods and character areas
- A hierarchy of public open spaces are proposed on these lands, with the additional benefit of the high amenity of Marlay Park beside the site

Placemaking

- Existing hedgerows and historic boundaries will be retained where possible.
- Identifying features such as attractive stone walls and trees around which to focus public spaces and street fronts have been defined in the Study.
- A local landmark Building is proposed at the entrance to the site in the Neighbourhood Centre.
- An attractive courtyard style neighbourhood centre anchors the site and connects it to the surrounding context.
- Framing views and vistas from the site towards attractive landscape features will assist in placemaking.
- A refined and coherent architectural vision within this framework will ensure the sense of place and longevity of the development of these lands.

Green Infrastructure and Riparian Corridor

- The Whitechurch Stream is a tributary of the River Dodder and functions as an important part of the Liffey river system and its ecology. It begins in the Dublin Mountains and flows north through the residential zoned Edmondstown lands towards Rathfarnham where it meets the River Dodder.
- A riparian zone is protected along the Whitechurch stream Serving an important function as buffer elements protecting water quality from threats from surrounding land use.
- The riparian corridor also aids in natural flood management, helps prevent river bank erosion, and can offer very high recreational value.
- The range of landscape typologies found between the water, bank, and landscape within the riparian zone support a large number of different habitats and act as a conduit for the wildlife associated with these habitats
- The Whitechurch Stream is home to numerous species of wildlife and is rich in plant diversity and protecting its natural ecological conditions is an important imperative .
- The framework for the Edmondstown Neighbourhood sets out to enhance the biodiversity and strengthen the Whitechurch Stream ecological corridor by retaining healthy and valuable trees, removing unhealthy or hazardous trees, replacing them where necessary, and by improving the understory planting layer of the riparian edge.

Home Zones

- Design Manual for Urban Roads and Streets - Shared surface streets and junctions are particularly effective at calming traffic.
- Movement priorities within the Edmondstown lands are low and there will be a high place value in promoting more liveable streets.
- To provide pedestrians with a safer and more enjoyable experience, the pedestrian and vehicular environment within the Edmondstown lands will be promoted as a shared surface environment.
- A contrasting coloured surface will provide a visual cue for vehicles so that they recognise that they are making the transition from a segregated footway/road arrangement to a slow-speed shared-surface environment. A reduction in carriageway width to 4.8m and corner radii can be reduced in order to promote slower moving traffic, bring vehicles within pedestrians' peripheral vision, and reduce crossing distances.
- A 4.8m carriageway intended to be an equal priority environment used by both pedestrians and vehicles, for pedestrian safety together with an exclusive 1.2m verge where appropriate will provide ample space for pedestrians to step off the carriageway and allow for the occasional passing of two vehicles. In addition to enhancing pedestrian safety, the verge will facilitate the planting of street trees within the limited space available on site and help establish the verdurous character the landscape design strives to accomplish. This step-off zone will be clearly distinguished from the shared surface by using a contrasting paving block.

Servicing

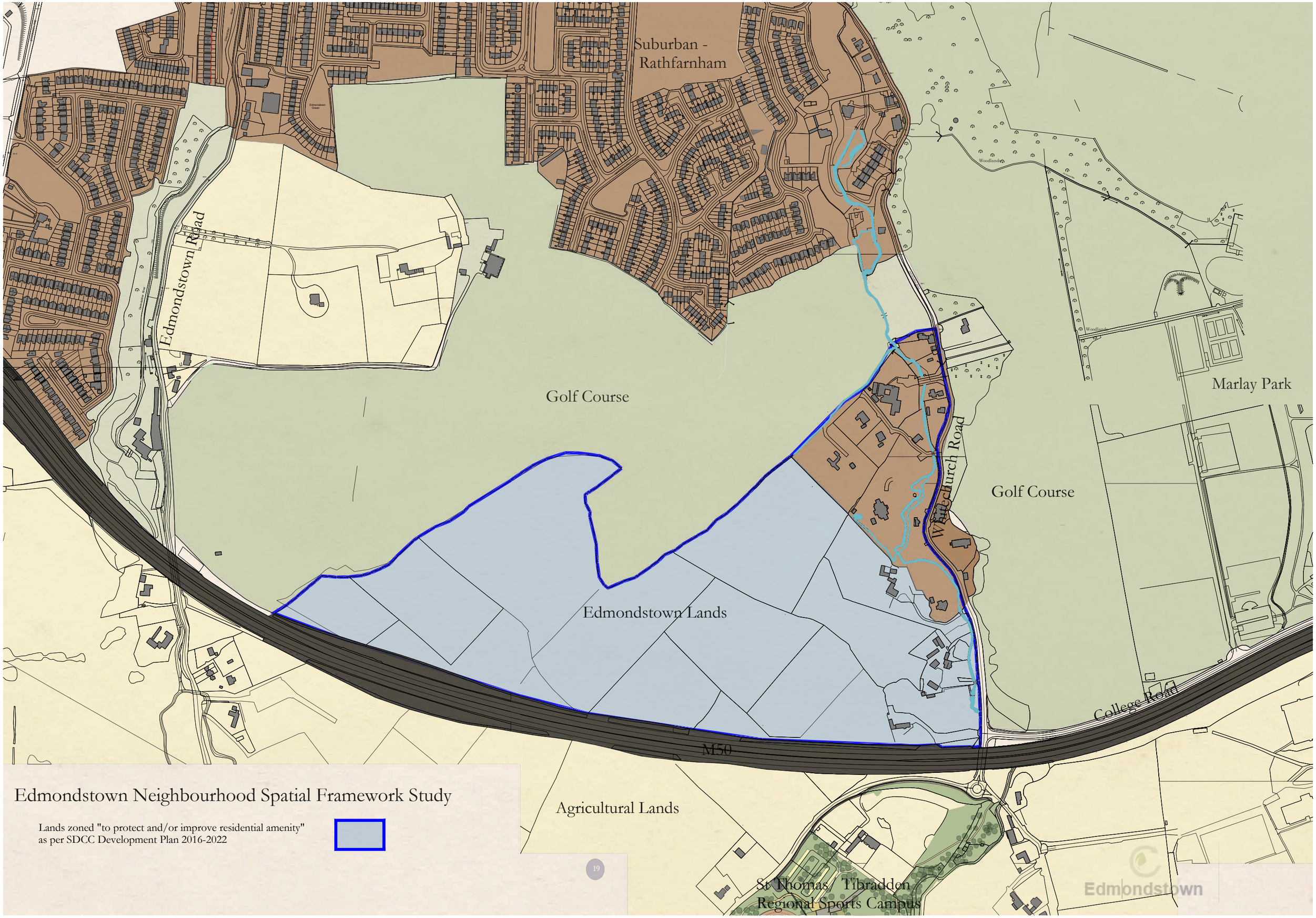
A comprehensive servicing strategy has been developed by CS consulting engineers to access the public foul sewerage system; to attenuate surface water drainage in accordance with SUDS principles; and to address any potential flood risk potential to affect the development lands.

Phasing

The first residential phase lands are accessed via the Whitechurch Road and College Road and their development can facilitate the development of a Neighbourhood Centre and new link street relief road from Whitechurch Road into the site. In the longer term this street could be extended across to Edmondstown Road, to provide a permeable extension to College Road to facilitate pedestrians, cyclists and vehicular traffic across the suburbs south of Rathfarnham, as well as providing access to the proposed new residential neighbourhood.

What does this mean for Edmondstown

All of the baseline assessments indicate there is no impediment to the sustainable development of the subject lands within the framework of this Spatial and Neighbourhood study. Accessibility for pedestrians, cyclists and public transport is key to the sustainable development of this strategic land development resource. This document has outlined a clear vision for development to provide for a sustainable residential community with supporting neighbourhood facilities and achieving high quality public open space.


Suburban -
Rathfarnham
Edmondstown Road
Golf Course
Marlay Park
Golf Course
Whitechurch Road
Edmondstown Lands
M50
College Road
Agricultural Lands
St Thomas' Tibradden
Regional Sports Campus
Edmondstown Neighbourhood Spatial Framework Study
Lands zoned "to protect and/or improve residential amenity"
as per SDCC Development Plan 2016-2022

LANDS IN THE OWNERSHIP OF
APPLICANTS OUTLINED IN RED

KEY FEATURES OF EDMONDSTOWN LANDS

Lands zoned "to protect and/or improve residential amenity" as per SDCC Development Plan 2016-2022

Lands the subject of Edmondstown Neighbouhood Feasibility Study

Existing Hedgerows and Trees

Existing Road Networks

Existing Watercourse

Area of Archaeological Interest

Over Head High Voltage Line

High Voltage Overhead Line exclusion zone

Existing River Slang Greenway

Edmondstown

Edmondstown Green

Rathfarnham Bypass

800m Walkband

Whitechurch National School

Edmondstown Golf-Club

Marlay Park

400m Walkband

Whitechurch Parish Church

Grange Golf-Club

Proposed Local Landmark

Location of proposed new bus turning circle to facilitate extension of existing public transport network.

PEDESTRIAN/ CYCLE NETWORK & GREEN INFRASTRUCTURE

- Existing River Slang Greenway
- Potential Extension to River Slang Greenway
- Approved Shared Cycle/ Pedestrian Path
- Riparian Corridor
- Potential Pedestrian / Cycle Connectivity

Spatial Framework Plan, Edmondstown, Planning Context Report For Strategic Housing Development at Edmondstown, Whitechurch Road, Rathfarnham, Dublin 16, November 2021.

APPENDIX J

Preliminary Planning Stage Mobility Management Plan (Travel Plan)

consulting engineers

NRB

Preliminary Mobility Management Plan (aka Travel Plan)

Appendix J

For

Residential Development

At

Whitechurch Rd,

Rathfarnham.

SUBMISSION ISSUE

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Registered in Ireland No. 491679

Contents

1.0 INTRODUCTION

1.1 NRB Consulting Engineers were commissioned to prepare a Mobility Management Plan for the proposed residential development on lands at Whitechurch Rd Rathfarnham, in order to explain the applicants commitment to the promotion of more sustainable and cost effective travel habits among the end occupiers/residents of the scheme .

1.2 Whilst it is widely accepted that an MMP is best adopted at development occupation, particularly for residential schemes in the early planning stages, the basis of the Report does provide a structure for the Management Company & the appointed Mobility Management Plan Co-Ordinator to follow from occupation.

What is a Mobility Management Plan?

1.3 ***Mobility Management Plans (MMPs)***, originated in the United States and the Netherlands in the late 1980s. In the US, employers over a certain size (generally over 100 employees) were required to implement 'Trip Reduction Plans' in order to reduce single-occupancy car commuting trips, and to increase car occupancy.

1.4 A MMP consists of a package of measures put in place by an organisation to encourage and support more sustainable travel patterns among residents, staff and other visitors. Such a plan usually concentrates on staff commuting patterns. In essence, a MMP is useful not only to reduce the attractiveness of private car use, but also for the ability to promote and support the use of more sustainable transport modes such as walking, cycling, shared transport and mass transit such as buses and trains.

Aims and Objectives of this Mobility Management Plan

1.5 The package generally includes measures to promote and improve the attractiveness of using public transport, cycling, walking, car sharing, flexible working or a combination of these as alternatives to single-occupancy car journeys to work. A MMP can consider all travel associated with the residential or work site, including business travel, fleet management, customer access and deliveries. It should be considered as a dynamic process where a package of measures and campaigns are identified, piloted and monitored on an on-going basis.

1.6 The changes which are being sought as part of any plan may be as simple as car sharing one-day per week, or walking on Wednesdays, or taking the bus on days which do not conflict with other commitments, leisure or work activities.

1.7 It is envisaged that once in place, the Mobility Management Plan will enable the following benefits to be realised for the Development:

- Reduced car parking demand and reduced congestion on the local road network

due to lower demand for private transport and/or more efficient use of private motor vehicles,

- Improved safety for cyclists and pedestrians, supported by the development plans
- Direct financial savings for those taking part in the developed initiatives, through higher than average vehicle occupancy rates,
- A reduction in car parking and car set-down demand, resulting in improved operational efficiency and safety for all,
- Improved social networking between all those participating in the shared initiatives,
- Improved environmental consideration and performance,
- Improved public image for the development, which sets an example to the broader community and may lead to residents making better travel decisions in the future,
- Improved health and well-being for those using active non-car transport modes,
- Regular liaison with the Local Authority and public transport providers to maintain, improve, and support transportation services to and from the site,
- Improved attractiveness of the development to prospective residents,
- Optimal levels of safety for all residents, staff and visitors.

Methodology

1.8 As part of this Mobility Management Plan, reference has been made to the following documents:

- Your Step By Step Guide To Travel Plans (NTA 2012);
- Achieving Effective Workplace Travel Plans (NTA 2011);
- Traffic and Transport Assessment Guidelines (TII);
- Traffic Management Guidelines (DoELG, 2003);
- Mobility Management Plans – DTO Advice Note (DTO, 2002);
- The Route to Sustainable Commuting (DTO 2001);
- Smarter Travel: A Sustainable Transport Future (DOT)

1.9 Consultation with key stakeholders is an essential part of any Mobility Management Plan. As discussed below, as part of the operational phase of this development, it is intended that a Mobility Management Plan Coordinator Role will be appointed from within the Management Company. Following on, once occupied, residents will be asked to complete detailed questionnaires on essential data in relation to their existing travel patterns. This information will be used to inform the ongoing implementation, monitoring and review of the plan for this development.

1.10 This information has been used herein as the basis for the assessment, conclusions and recommendations.

2.0 ACCESS TO THE SITE - BY MODE

Access By Roads

2.1 Eventually, when complete, the new road will create a continuous link from Grange Road along College Road to Whitechurch Road and onwards to Edmondstown Road, running along the southern boundary of the subject lands, parallel to the M50. This design of this link has been undertaken in 3-D by NRB, based on Topographical Survey information. This design conforms with the requirements of the Design Manual for Urban Road and Streets (DMURS) and the National Cycle Manual and has been prepared to ensure that any short term solution, with access-only via Whitechurch Road, will facilitate and accommodate the completion of the road link to Edmonstown Rd. in due course.

2.2 It is expected that in the longer term this road will provide very significant benefit to local traffic with increased accessibility and permeability within the M50 Ring, consistent with the requirements of DMURS which promotes permeability.

2.3 This Link Road consists of a traffic calmed single carriageway 2-way road, with DMURS compliant raised platforms and reduced radii at the internal housing road network junctions. We have also provided the Link Road with a continuous segregated cycle-ways incorporated.

2.4 It is clear from the Assessment within the Traffic/Transportation Report that College Road currently experiences inappropriate and excessive traffic speeds, with the average speed being greater than 60kph and the 85% ile Speed (ie the Road Design Speed) being 72kph. Therefore we have provided a traffic calmed design whereby;

- College Rd is reduced in width to from 6.5m to 6m, consistent with DMURS,
- We provided and created a 2-way cycle lane along the northern boundary linking to the DLRCC Slang River Greenway at Marlay Park, with a parallel footpath, all consistent with the National Cycle Manual and the DLRCC Request,
- We have provided intermediate Traffic Calming Features along the length of College Road,
- The creation of a Traffic Signal Controlled junction at the Whitechurch Rd junction will assist in calming traffic with an urban junction form, and
- We can provide additional Raised Platforms and Toucan crossings as necessary and as required by DLRCC and SDCC.

2.5 In terms of Road Width, DMURS states (Para 4.4.1); ***"Research from the UK has found that narrow carriageways are one of the most effective design measures that calm traffic".***

2.6 DMURS goes on to state; - ***"In new designs the standard lane widths on Arterial and Link Streets should be in the range of 2.75m to 3.5m. Within this range the preferred values are 3.0m and 3.25m"***

2.7 We believe that the proposed redesign with the reduction in carriageway width of College Road to 6m, with 3.0m wide lanes in each direction, consistent with the recommendations of DMURS, combined with the introduction of the intermediate and raised table arrangements at both Whitechurch Road and at the entrance to Marlay Park will have a significant and beneficial effect on both Traffic Speeds and Traffic Safety characteristics .

2.8 In the **Medium/Long Term**, with the full development of all of the adjacent Zoned Lands, the proposed new Link Road could extend fully to Edmondstown Road as illustrated in our design drawings included as ***Appendix A***. The completion of this road would further enhance road network permeability and would assist in reducing any network traffic impact of the proposed development. An extract from our Plans showing the preliminary detail of the TII Guideline (DMRB) Compliant Junction Design at Edmondstown Road is included below as ***Figure 2.1*** (Design based on Topographical Survey).

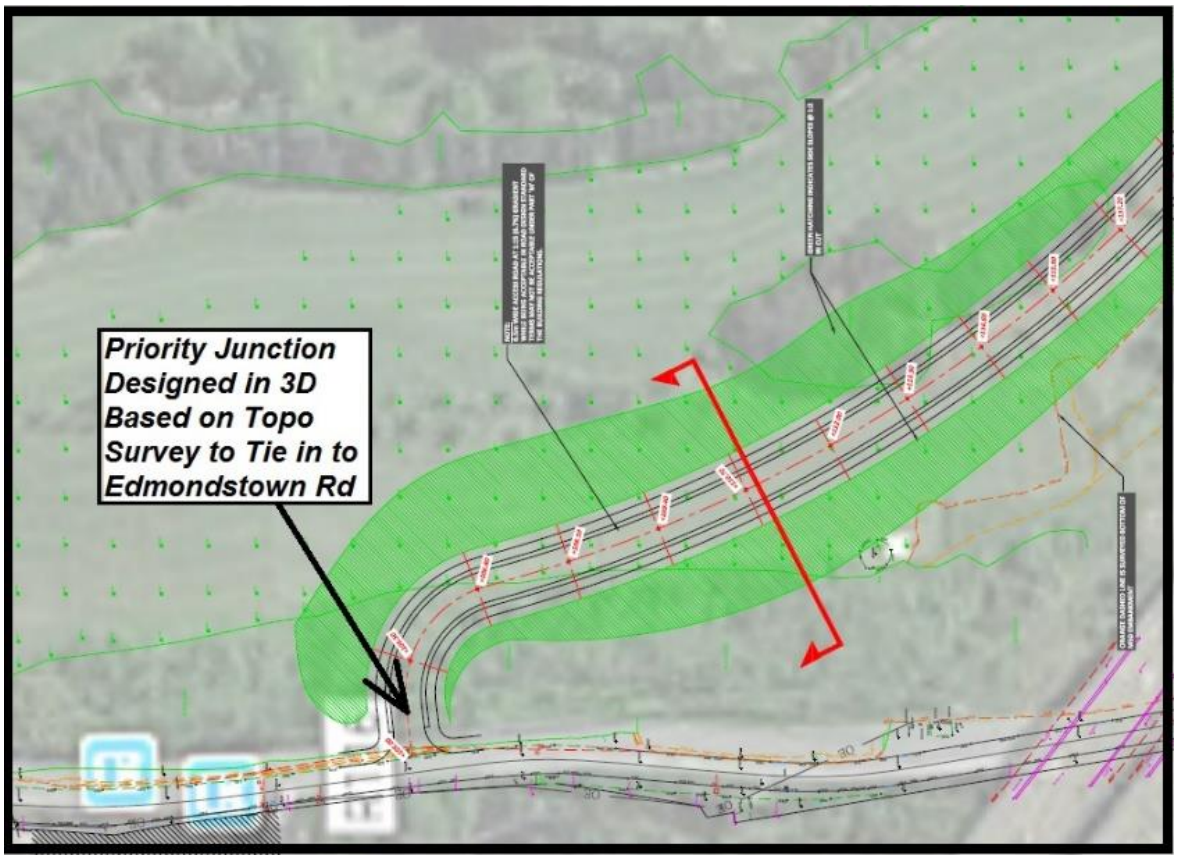


Figure 2.1 - DMRB Compliant Junction Design at Edmondstown Rd

Public Transport/Bus Provision

2.9 In the **short term**, with the anticipated significant increased demand for buses associated with the development (as indicated in Table 5.1 below), it is sensibly expected that a commercial demand will exist for **Dublin Bus**/**NTA** to extend the Whitechurch Area Bus Services to serve the lands (or an alternative as deemed appropriate). The location of the under-construction DLRCC Regional St Thomas Sports Campus on the other side of the M50 at Tibradden supports this (refer details below). Clearly, the anticipated resulting demand of any new residential area combined with a Regional Sports Campus, would make the logical extension of the current services commercially viable.

2.10 To this end we have designed the Link Rd Road with a dedicated turning and waiting area for Dublin Bus Services, and this is detailed on the drawings included herein as ***Appendix A***. An illustration of the possible Bus Penetration of the site to serve the lands is included below as ***Figure 2.2***

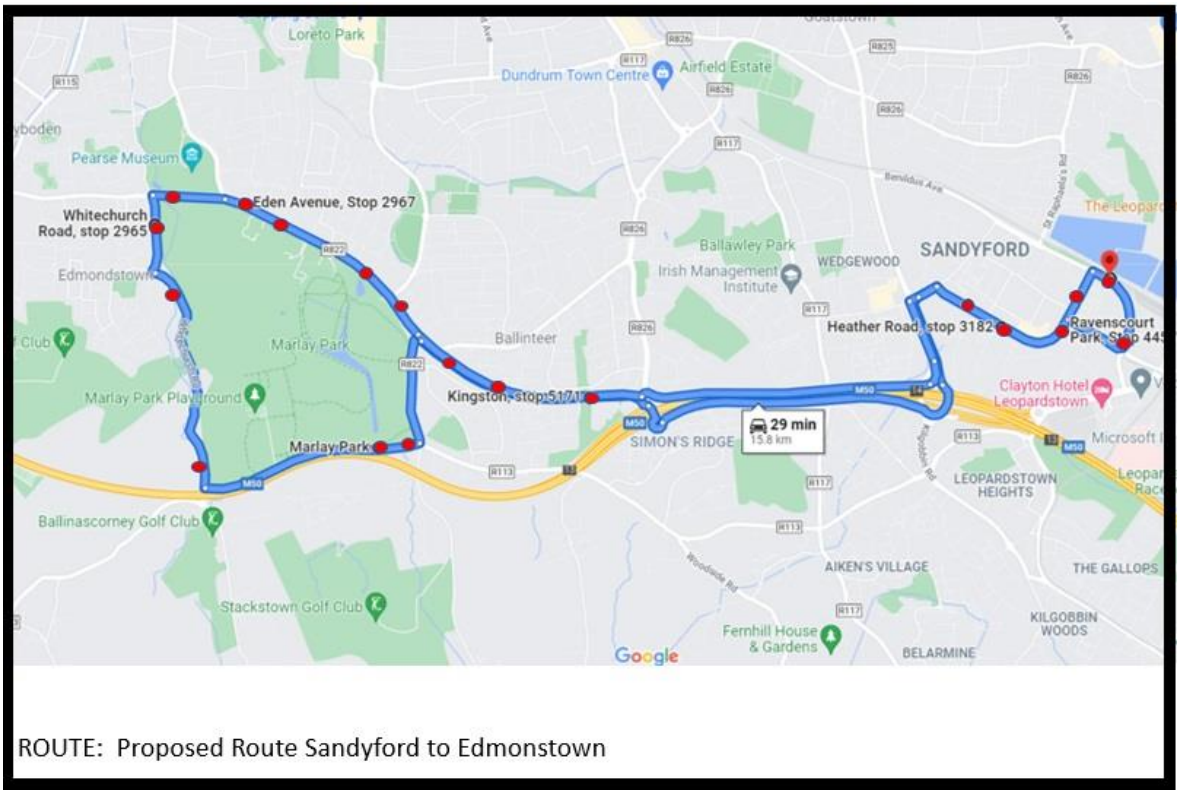
Figure 2.2 - Short Term Bus Plans

2.11 In the **Medium/Long Term**, with the eventual inevitable continuation of the New Link Road through to Edmondstown Road, there will be an opportunity for Dublin Bus to maintain, extend or

improve the services. For example, services could run up Whitechurch Road and back towards the City along Edmondstown Road or vice-versa. Any such Bus Route choices would be a matter for Dublin Bus and the NTA - however the key point is that the extension of the new Relief Road creates a permeable network for buses as well as for other transport modes.

2.12 The current plans do not show new bus services passing the sites on Whitechurch Road, as of course commercial operations rely on a market and demand for services. In this case therefore an increased demand will of course be created by the building of new homes and a requirement to connect to the new Regional Sports Campus.

2.13 This demand that currently exists, and which will be improved in the future, is evidenced by the following; - We understand that there has been a recent application by a Private Bus Operator for a licence to operate a private bus service linking Edmondstown, Marlay Park and Whitechurch Road to Sandyford in a loop arrangement, as illustrated in ***Figure 2.3*** below



ROUTE: Proposed Route Sandyford to Edmonstown

Figure 2.3 – Route of Service, As Per Recent Application to NTA

2.14 Clearly, Whilst this is not a 100% commitment to the private bus service provision, it is nonetheless currently under consideration by the NTA. It does however indicate a need for such a bus provision, and provides a measure of reassurance in terms of the commercial viability of same.

2.15 The NTA have published plans for the new Bus Connects Network for Dublin, and an annotated extract from the plan showing the site and the Regional Sports Campus is below as ***Figure 2.4***

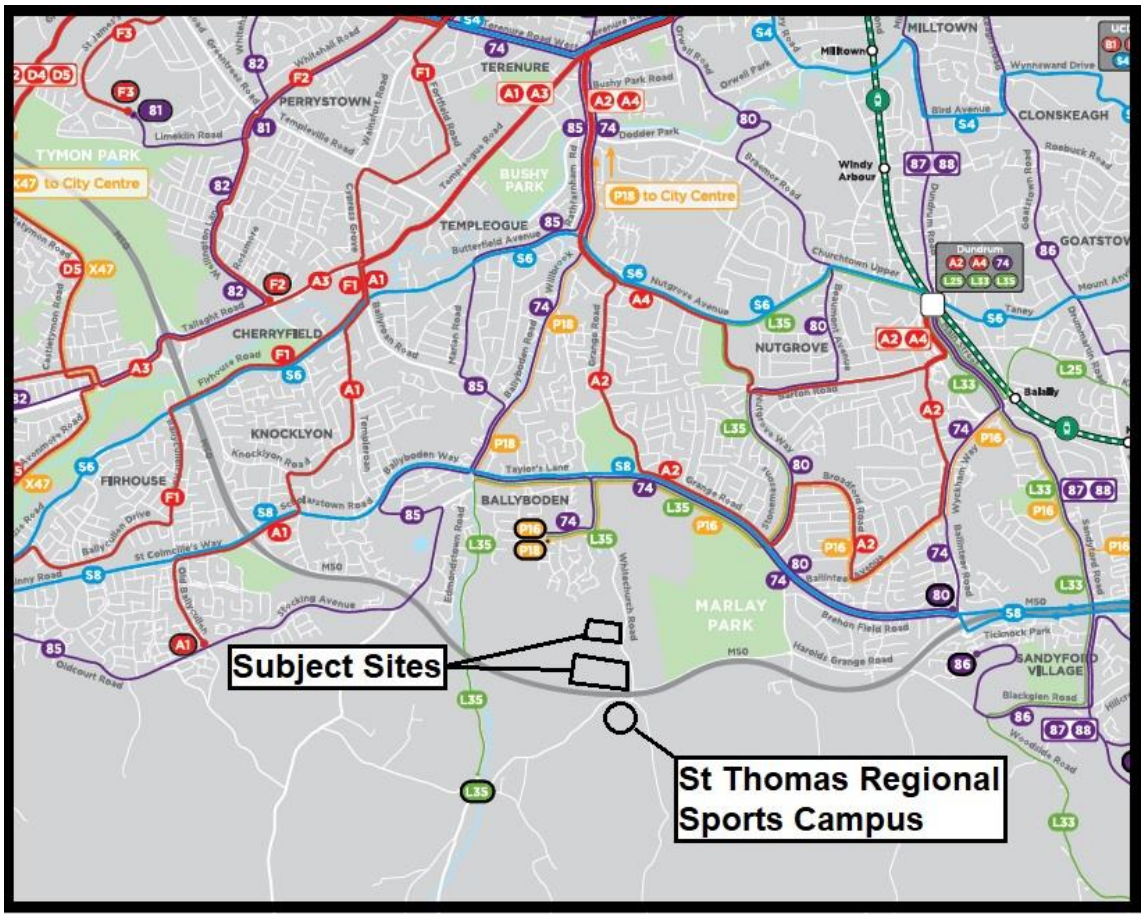


Figure 2.4 – NTA Network Plans & Site

2.16 The current plans do not show new bus services passing the sites on Whitechurch Road, as of course commercial operations rely on a market for services. In this case therefore a demand will be enhanced by the building of new homes and a requirement to connect to the new Regional Sports Campus.

2.17 As mentioned, DLRCC granted planning permission for a major Regional Sports Campus at Tibradden just on the other side of the M50. Dundrum South Dublin Athletics Club, in partnership with DLRCC, are currently building the new St Thomas **Regional Sports Campus**. Supported by the Council, **Dundrum South Dublin Athletics Club (DSD AC) & seven national governing sports bodies, the centre will feature an outdoor 400 metre running track, an indoor sprint track, a multi-use gymnasium and other high quality indoor and outdoor amenities for gymnastics, archery, fencing, cycling and triathlon, as well as Special Olympics facilities**.

2.18 Moving from having few dedicated facilities to a top-class multi-sport campus, these sporting bodies will now have the opportunity to train and produce athletes in a range of disciplines who can compete on the international stage, while also reaching a wider public. In addition, the multi-sport nature of the project, which involves clubs sharing the facilities, will see synergies between the sporting bodies which will bring about mutual enhancement and will lead to a greater participation in sports by people in this part of the country and beyond.

2.19 DSD AC, and the National Bodies, are keen to promote sustainable transport, and accessibility for all, consistent with the ethos of the participating clubs. The campus will generate interest on a National and indeed International basis. Provision of a reliable and frequent Public Transport Link to the facility to/from the City Centre is therefore critical to the Club and National Bodies. We are aware that DSD AC have written to the NTA to request that a service or services are extended to the facility. **In this regard, we believe that the extension of bus services along Whitechurch Road is inevitable, and this is further evidenced by the recent application to the NTA for the operation of such a service as outlined above**.

2.20 Notwithstanding the above, the proposed bus facilities are clearly accessible to the site, as illustrated in the Annotated extract included below as ***Figure 2.5***, which shows the accessibility of services within a 2km iso-distance.

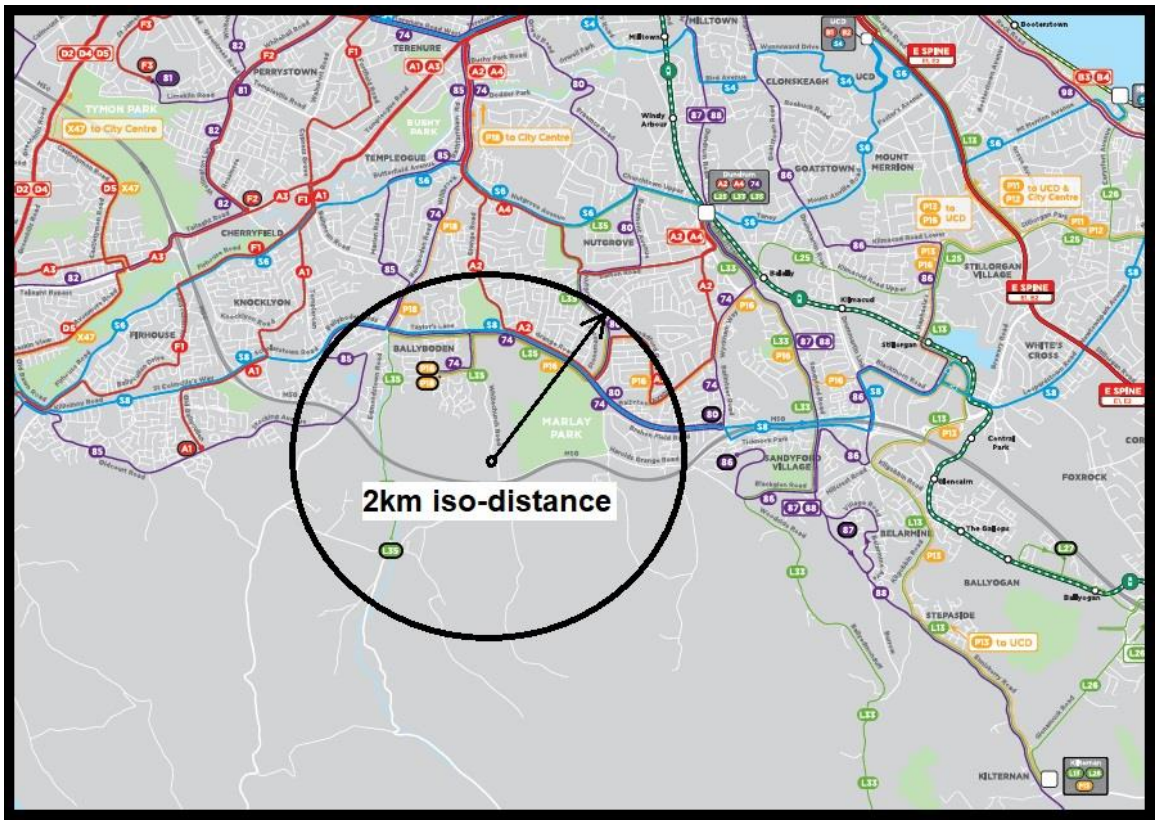


Figure 2.5 – 2km Iso-Distance of NTA Network

2.21 It is clear from the above that the following services are within a 15 min walk;- 'Express Routes' P16 & P18 (Yellow), 'Radial Route' #74 (Purple) and 'Local Route' L35 (Green) – all of which terminate at Whitechurch Green just north of the site. The following services are within a 25 minute walk or less; - 'Spine Route' A2 (Red) and 'Orbital Route' S8 (Blue). The site is therefore easily accessible by bus by a wide range of current planned routes, even in the adsence of an extension of the current services.

Cycle & Pedestrian Access & Networks

2.22 The DLRCC ***Slang River Greenway extends to and through Marlay Park*** and terminates at the Southern College Road Access Gate to the Park, which is approximately 400m distance from the subject lands. Details of the Slang River Greenway are included in the Spatial straytegy Document as ***Appendix I*** of the TA Report. Connectivity to and through this Greenway would enable the NTA's Greater Dublin Area Cycle Network to be accessed by residents of the site. This is illustrated in the extract from the NTA Network Plans included below as ***Figure 2.6***

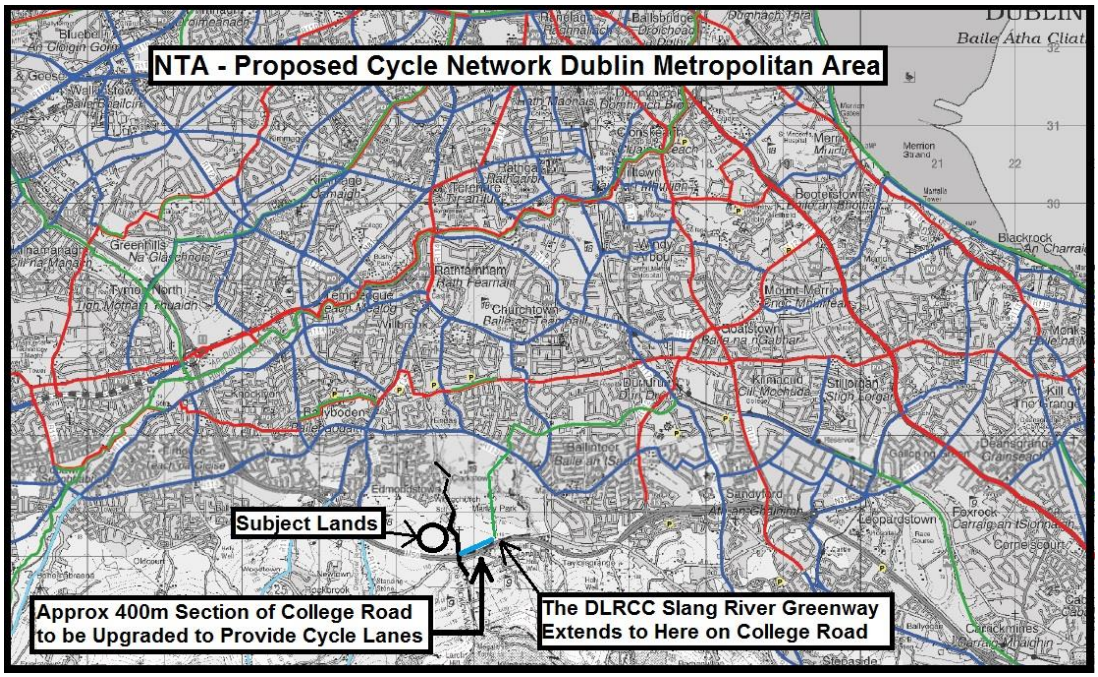


Figure 2.6 - Connectivity to NTA GDA Cycle

2.23 In the Short Term, given the proximity of the subject site to the DLRCC Slang River Greenway, and onwards to the Greater Dublin Area Cycle Network, the **key issue will be to deliver a safe and appropriate cycle link to the Southern Access to Marlay Park along College Road**. To this end, we have reviewed the current road-width and traffic conditions on College Road, with a view to now retro-fitting an appropriate design. College Road is currently 6.5m wide with a single footpath provided along the northern boundary, and a wide grassed verge along the southern boundary. With the reduction of the road running width to c 6m (thereby remaining consistent with

the width requirements of DMURS for a 50kph "Arterial and Link Street", with "Low-Moderate design Speeds"), it is possible to provide a 2-way cycle link along College Road (with the design being fully in accordance with the ***Width Calculator Section 1.5.2 of the National Cycle Manual)***

2.24 In consultation with DLRCC, we have prepared a design demonstrating that this can be achieved based on survey mapping, and this is included within **Appendix A**. A safe and appropriate dedicated link to the GDA Cycle Network via the DLRCC Slang River Greenway can therefore easily be provided by the Landowners in consultation with the Local Authority prior to occupation of any housing on the subject lands. This connection, and the associated calming of College Rd, will also be of benefit to the DLRCC St Thomas Sports Campus to the south, which was approved by DLRCC without any improved connectivity whatsoever, as we understand it.

2.25 An extract image showing the proposed new cross section on College Road, with the new 2-way NCM compliant cycle lanes, to provide the link to the Slang River Greenway is included below as ***Figure 2.7***

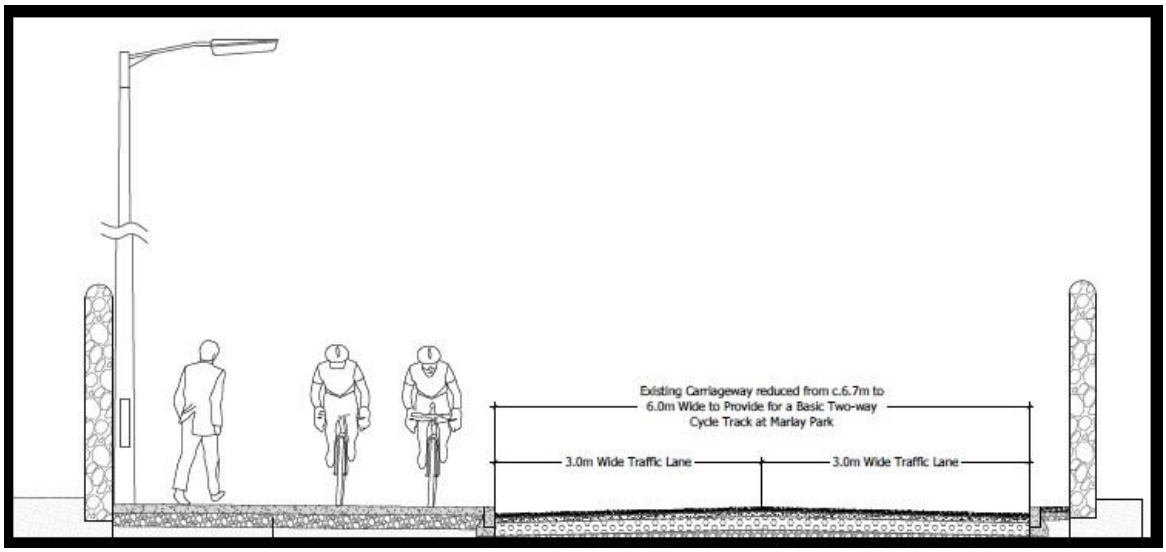


Figure 2.7 – Proposed New Cross Section on College Rd

2.26 In the Medium/Long Term, there will be a continuous 2-way off-road cycle lane provided along the New Link Road connecting Whitechurch Road and Edmondstown Road. This, combined with the provision of c400m of New Cycle Lane on College Road, represents a total provision of approximately 1.8km of off-road dedicated 2-way cycle lane, linking with the NTA's GDA Network at both ends - thereby significantly increasing cyclist permeability & improving local access. This is illustrated in ***Figure 2.8*** below.

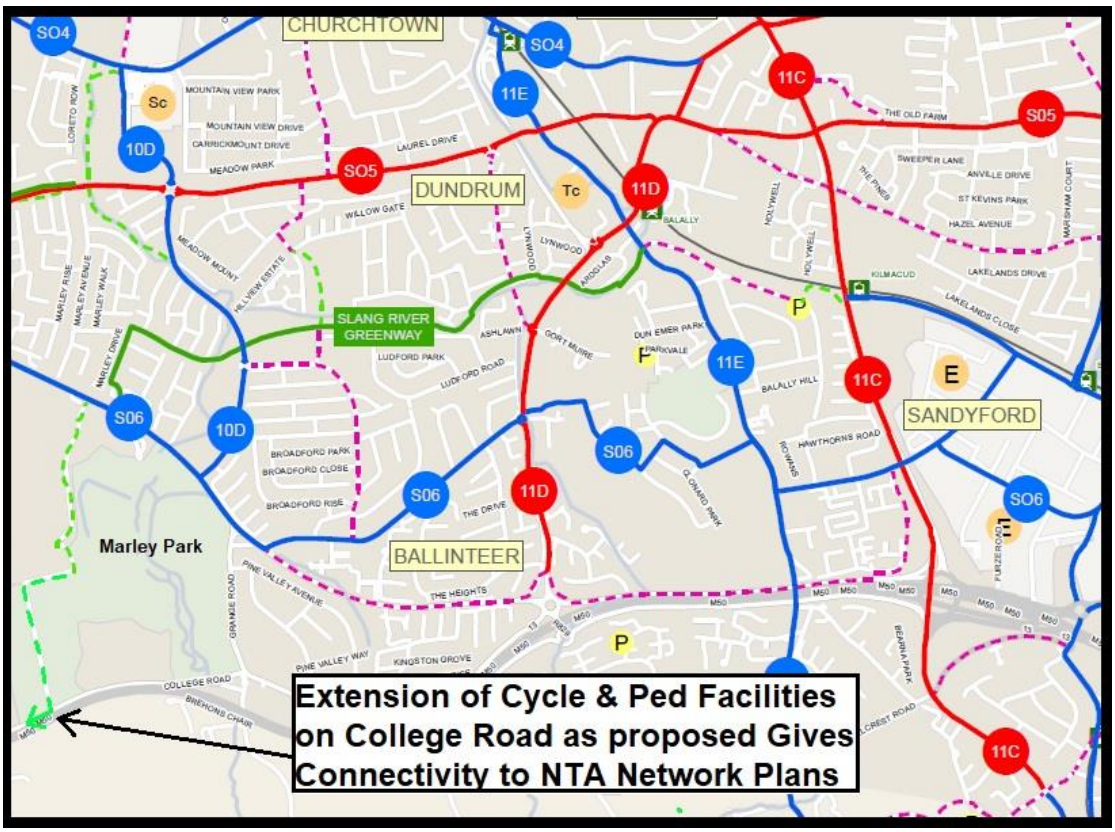


Figure 2.8 – Short Term Connectivity with NTA GDA Cycle Network

2.27 In the medium to longer term when the street link to Edmondstown Road is completed this will further enhance the cycle network linkage as illustrated below as ***Figure 2.9***

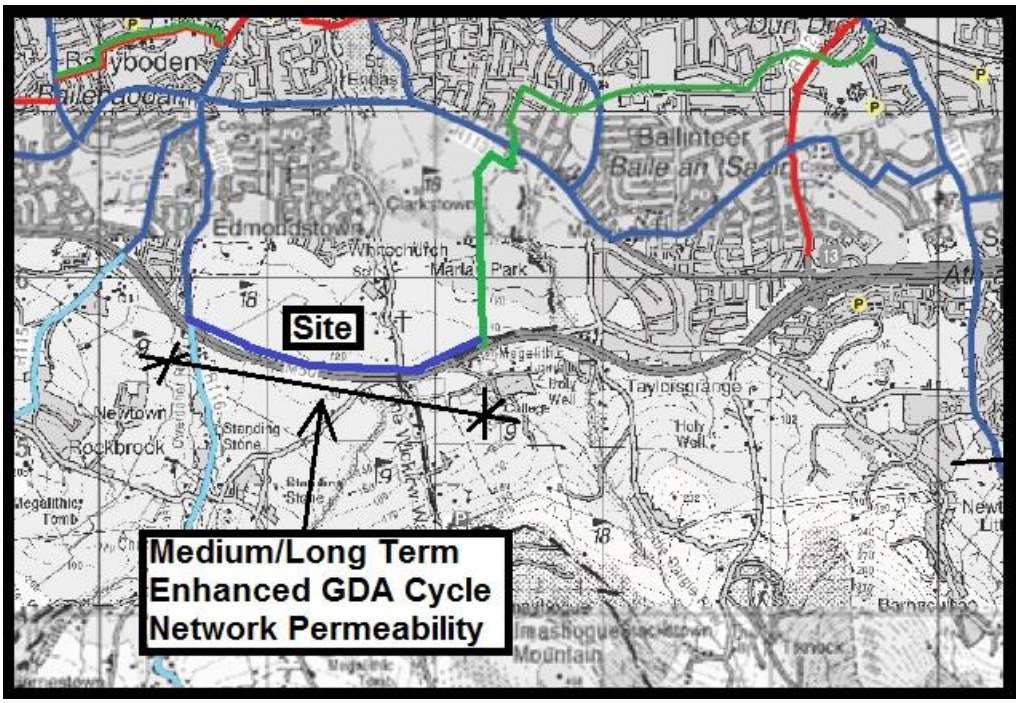


Figure 2.9 – Medium to Longer Term Connectivity to NTA Cycle Network

Whitechurch Road - Advisory Cycle Lanes

2.28 In the short/medium term, it is proposed to provide dedicated on-road advisory cycle facilities on the southern section of Whitechurch Road, ***consistent with the detail as set out on P58 of the National Cycle Manual***. This proposal is illustrated in ***Figure 2.10*** below.

Figure 2.10 - Proposed Advisory Cycle Lanes on Whitechurch Rd

2.29 The extract from the NCM (Page 58) is reproduced below as ***Figure 2.11*** for ease of reference.

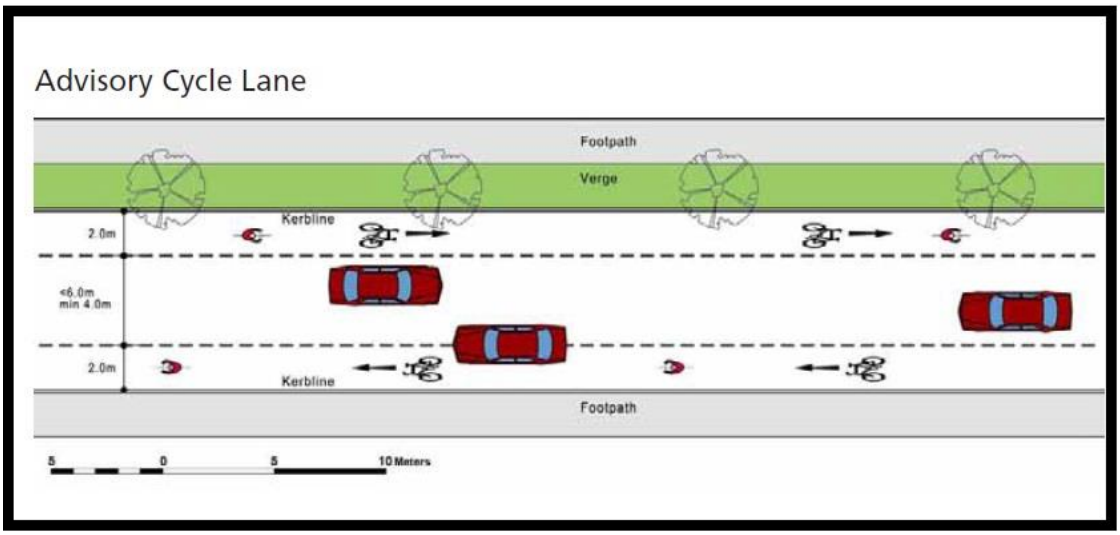


Figure 2.11 - Advisory Cycle Lane Detail as per NCM

2.30 As demonstrated in the TA Report, ***this section of Whitechurch Rd is demonstrably very lightly trafficked indeed*** - the traffic survey revealed that the weekday AM Peak Hour 2-Way Traffic flow here is 315 PCUs, the weekday PM Peak Hour 2-Way Traffic flow here is 193 PCUs AND the 24 Hr AADT is only 2,261 PCUs. To set these flows in context, a road of the nature of Whitechurch Rd has a 2-Way traffic link capacity of c 2,000 PCUs per hour and an associated AADT Capacity of c 48,000 PCUs. So, by this measure, it currently operates at 15% of its capacity in the AM Peak Hour, at 9% of its capacity in the PM Peak Hour and at less than 5% of its capacity on a 24Hr basis. In this regard, the road is very lightly trafficked indeed, and the introduction of Advisory Cycle Lanes as recommended in the NCM does not therefore in our view represent any Traffic Safety concern in light of the current and projected traffic volumes.

Pedestrians

2.31 The proposed development is designed in accordance with the requirements of the Design Manual for Urban Roads and Streets (DMURS), with 30kph 'Homezones'. In these terms the layout is arranged to optimise and prioritise accessibility by Cyclist & Pedestrians, with significant reduced emphasis on accessibility by car. The Spatial straytegy layout clearly shows that it is intended to create a cyclist and pedestrian friendly environment with a permeable network combined with a traffic calmed environment.

2.32 Clearly, the development includes a carefully designed network of internal footpaths linking to the facilities already available on both Whitechurch Road and on College Road. These provide safe and appropriate off-road dedicated footpaths linking to neighbouring areas and amenities. It is proposed that safe crossing of roads will be enhanced through the incorporation of Toucan Controlled Pedestrian/Cyclist crossing points at key junctions including the traffic signal controlled junction at Whitechurch Rd/College Rd, and these also incorporate raised platforms and traffic signage to further regulate and reduce traffic speeds.

2.33 Importantly, the small local neighbourhood shops being introduced significantly reduce the need to travel by car for bread, milk, short term top-up provisions and daily 'basket-shop' groceries.

2.34 For journeys greater than 8km, it is recognised that a modal shift to cycling could be achievable for some, but not all, and options such as public transport and car sharing should be considered. Journeys up to 8km is accepted as the distance which can be easily undertaken by bicycle and journeys up to 2-4km could be undertaken by either walking or cycling.

2.35 To illustrate the extent of the Greater Dublin Area, Employment Zones, Schools and Services accessible by both Bicycle (8km) and on foot (2km, which represents a c25 min walk) we have included below approximate 'Iso-Distance Mapping' for an 8km and 2km Radius from the site. These illustrate the extent of the facilities within the current sustainable travel distance of the site, as ***Figure 2.12*** and ***Figure 2.13***.

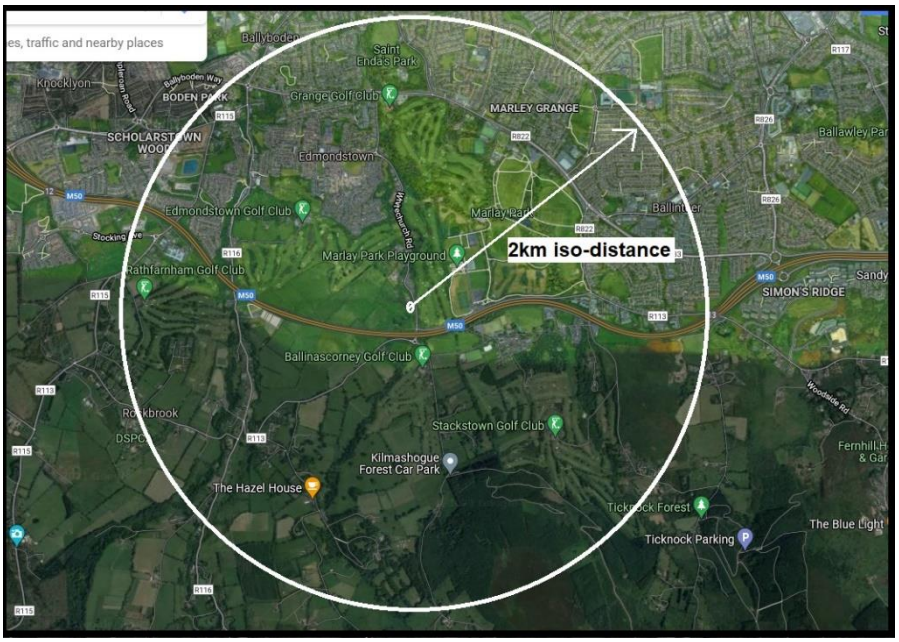


Figure 2.12 – 2km iso-distance of Subject Sites

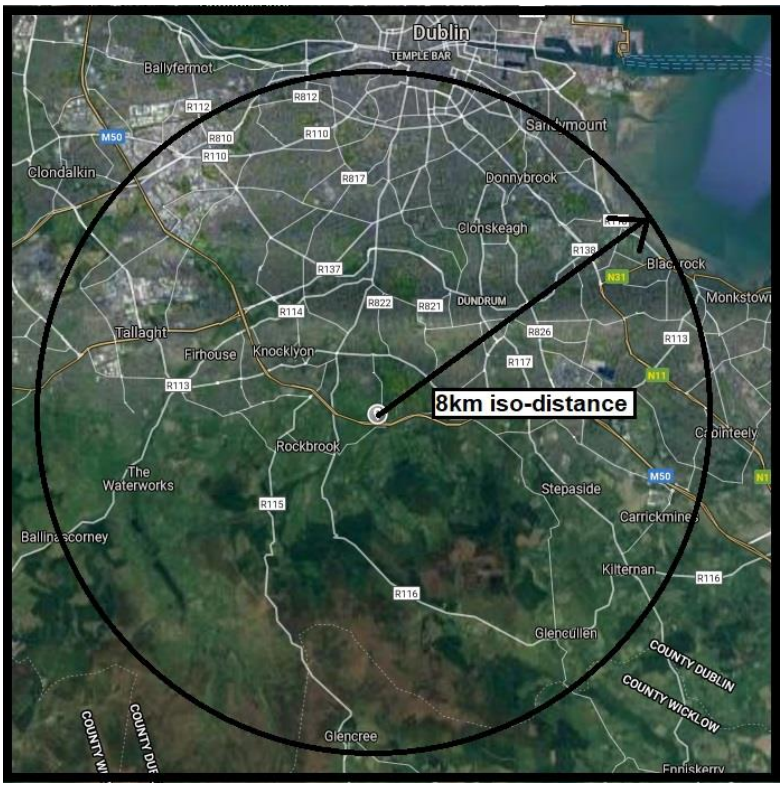


Figure 2.13 – 8km iso-distance of Subject Site

2.36 In these terms, residents would clearly not have a need to own a car, and certainly not multiple car households, thereby supporting sustainable modern living.

Multi-Modal Demand - Assessment

2.37 In this case we have undertaken an assessment of ***Multi Modal TRICS Generation Rates*** associated with the development of the **entire zoned** landholding. It is anticipated that the combined **entire zoned lands** will accommodate a mix of Residential Houses and Apartments (giving an approximate Housing Density of 37 Residential Units per Hectare).

2.38 The use of the "Multi Modal" feature within the TRICS Database allows us to calculate the demand per-mode for a development of this scale. This is illustrated in ***Table 2.1 and Table 2.2*** below.

2.39 It should be remembered that these mode trip rates are based on current and historic datasets, and as travel habits change with altering working arrangements, and more home working, the amount of car travel will of course continue to reduce below the values presented herein.

Table 2.1 – Approximate Expected Modal Split for Houses (based on TRICS Data)

Multi Modal Assessment Private Houses						
Mode of Travel	Network Period	Arrivals		Departures		Total (2-Way)
		per Unit	Dev	per Unit	Dev	
Public Transport (Bus)	AM Peak Hour 8-9am	0.006	4	0.081	56	60
	PM Peak Hour 5-6pm	0.070	49	0.011	8	56
	24 Hour Day	0.321	223	0.191	133	355
Pedestrians	AM Peak Hour 8-9am	0.041	28	0.144	100	128
	PM Peak Hour 5-6pm	0.053	37	0.042	29	66
	24 Hour Day	1.166	809	1.036	719	1528
Cyclists	AM Peak Hour 8-9am	0.012	8	0.034	24	32
	PM Peak Hour 5-6pm	0.031	22	0.016	11	33
	24 Hour Day	0.123	85	0.080	56	141
Cars	AM Peak Hour 8-9am	0.140	97	0.407	282	379
	PM Peak Hour 5-6pm	0.383	266	0.173	120	386
	24 Hour Day	2.994	2078	2.860	1985	4063

Table 2.2 – Approximate Expected Modal Split for Apartments (based on TRICS Data)

Multi Modal Assessment Private Apartments						
Mode of Travel	Network Period	Arrivals		Departures		Total (2-Way)
		per Unit	Dev	per Unit	Dev	
Public Transport (Bus)	AM Peak Hour 8-9am	0.035	13	0.331	127	141
	PM Peak Hour 5-6pm	0.273	105	0.085	33	138
	24 Hour Day	0.743	285	0.695	267	552
Pedestrians	AM Peak Hour 8-9am	0.074	28	0.182	70	98
	PM Peak Hour 5-6pm	0.184	71	0.123	47	118
	24 Hour Day	0.833	320	0.844	324	644
Cyclists	AM Peak Hour 8-9am	0.004	2	0.027	10	12
	PM Peak Hour 5-6pm	0.017	7	0.005	2	9
	24 Hour Day	0.071	27	0.062	24	51
Cars	AM Peak Hour 8-9am	0.046	18	0.156	60	78
	PM Peak Hour 5-6pm	0.143	55	0.062	24	79
	24 Hour Day	1.033	397	1.026	394	791

2.40 Bicycle sharing facilities are becoming ever more popular with initiatives spreading ever further throughout the City and into Suburbs. These facilities offer a bicycle sharing alternative mode of transport.

2.41 It is anticipated that a very significant number of residents can be encouraged to cycle to work and school etc. with the improved safe links and secure parking provided, using a carrot rather than s stick approach. It is acknowledged that cyclists need to be confident that their cycles will not be tampered with. This development includes secure accessible cycle parking spaces including in areas which are beneficially subject to passive surveillance and could also be monitored by CCTV.

2.42 The vision is to cultivate a 'cycling culture', through the implementation of the proposed infrastructure supported by promotional measures, which will positively encourage all members of the new community to cycle at all life stages and abilities, as a mode of sustainable transport that delivers environmental, health and economic benefits to both the individual and the community.

2.43 Up to date public transport maps and timetables are readily available online and access is therefore already available to residents. In addition, such information is readily available by way of Mobile Phone Apps managed by service providers. When operational, the Mobility Management Plan Coordinator will also provide public transport posters for display in communal areas and prominent suitable locations

2.44 In terms of number of current and future routes and frequency of buses easily available to the residents, it is considered that the proposed development is very highly sustainable in terms of

public transport accessibility. The accessibility of the development to alternative transport means that residents will have viable alternatives to the private car for accessing the site and will not be reliant upon the car as a primary mode of travel.

Mainline Bus & Rail

2.45 Of course, with the bus services to the city, the site is therefore also within easy reach of the mainline trains via Heuston & Connolly Stations and to nationwide bus services via Busarus. With ease of accessibility to nationwide Bus & Rail, and in particular with the relatively high frequency existing bus services, it is therefore considered that the proposed development is further sustainable in terms of public transport accessibility.

Accessibility by Taxi

2.46 In terms of taxis, modern communication devices (e.g. 'FreeNow' and 'Lynk') now allow taxis to be ordered on a demand-basis, without any requirement for formal taxi ranks or dedicated taxi holding areas.

Communication

2.47 Prior to moving in, the Management Company will issue welcome packs to all new residents. These packs include details of the development and how it is run, advice on moving in, public transport information, useful local information and can require confirmation of a time-slot to move in. The preparation of this information ensures residents are familiar with the operation of the development before moving in.

2.48 In terms of number of transport alternatives easily available to Residents, it is considered that the proposed development is highly sustainable in terms of public and alternative transport accessibility. The proximity of the development to existing public transport services means that all residents will have viable alternatives to the private car for accessing the site and will not be reliant upon the car as a primary mode of travel.

2.49 Direct and high-quality pedestrian linkages are provided between the site and the existing pedestrian facilities on the surrounding road network. The entrances to the site will be well lit, so that people can feel secure in using the facilities and can also be monitored by CCTV.

2.50 Public transport maps and timetables can be provided in prominent locations on site and the information will be kept up to date by the appointed Mobility Management Plan Coordinator, a role for the Management Company.

2.51 Working Residents are generally now offered the opportunity to purchase public transport commuter tickets under the current ‘Employer Pass’ and ‘TaxSaver’ programmes, by individual Employers. Under these schemes the employer applies to Iarnród Éireann / Bus Éireann for tax

free public transport tickets for their employees as an incentive for them to use public transport to travel to work.

2.52 With this in mind, the main focus of the working Mobility Management Plan will be to promote and support the use of alternative modes to the private car.

3.0 COLLECTION OF BASELINE INFORMATION

Possible Travel Pattern Questionnaires

3.1 Once occupied, and when the Mobility Management Plan Coordinator is appointed, the occupiers of the proposed development will be encouraged to regularly monitor the Mobility Management Plan initiatives in order to maximise on their success.

3.2 This Report provides a structure for the Management Company and the appointed Mobility Management Plan Co-Ordinator to follow from occupation.

3.3 Shortly after occupation of the new development, a detailed travel-questionnaire will be compiled and distributed to Residents for completion. The aim of the travel questionnaire will be to establish travel patterns between work and home and school among other travel demands. The information gathered from this survey will be used to inform the further development of the Mobility Management Plan.

3.4 The Baseline Survey information will also allow the Mobility Management Plan Coordinator for the development to set realistic modal-split targets for the development.

3.5 It is anticipated that, given the location and good transport links at this development, with the improved pedestrian and cyclist links, combined with the reduced level of available car parking on site, there will be a high percentage of use via public and alternative transport.

3.6 The Mobility Management Plan will need to maintain this positive modal split and improve it, where possible.

4.0 THE MOBILITY MANAGEMENT PLAN

4.1 The successful implementation of a Mobility Management Plan will ensure that, in-so-far-as-possible, the impacts of traffic are reduced and minimised where practical, while providing several environmental and economic advantages detailed below.

4.2 The following sub-sections detail the available initiatives which will serve to better manage travel demand, and therefore the traffic impact of work-related journeys, focused on the movement of residents during peak times. This Report provides a structure for the Management Company and the appointed Mobility Management Plan Co-Ordinator to follow from occupation.

Walking

Walking - Key Information	
Approx. Zone of Influence	3.5km
Percentage of end occupiers/residents in area of influence	TBC in each survey when occupied
Percentage of end occupiers/residents interested in Walking	TBC in each survey when occupied

Table 4.1 – Key Information: Walking

4.4 There are many local, global, and personal benefits to walking, a few of which are listed following:

- **W** - Wake Up! - Studies have shown that people who walk to work are more awake and find it easier to concentrate.
- **A** - Always one step ahead - Walking makes people more aware of road safety issues and helps them develop stronger personal safety skills.
- **L** - Less congestion - If you leave the car at home and walk, there are fewer cars on the road which makes it safer for those who walk and cycle.
- **K** - Kinder to the environment - By leaving the car at home you are reducing the amount of CO 2 produced and helping to reduce the effects of climate change and air pollution.
- **I** - Interpersonal skills - Walking to work or school can be a great way to meet other walkers, share the experience, and develop personal skills.
- **N** - New adventures - Walking to work or school is a great way to learn about your local environment and community. It's also a fun way to learn about the weather, landscape, and local ecosystems.
- **G** - Get fit and stay active - Walking to and from work or school helps people incorporate physical activity into their daily routines. Research shows that regular physical activity can benefit your body and mind.

4.5 Most adults will consider walking a maximum of 3.5 km (Approx. 30/40 minutes) to work. Residents working within a 3.5 km radius of the site will be encouraged to walk to work as often as their schedule permits. Similarly, school trips can be encouraged on foot.

4.6 The following initiatives and incentives can be used to encourage walking to work or school:

- Take part in a 'Pedometer Challenge' which is organised through the Irish Heart Foundation or Smarter Travel Workplaces;
- Organise special events such as a 'Walk to work/school on Wednesdays' where participants are rewarded for their participation;
- Keep umbrellas in public areas on a deposit system for use when raining;
- Display Smarter Travel Workplaces Accessibility Walking maps on notice boards areas so Residents can plan journeys;
- Organise lunch time or afternoon walks as part of a health and well-being programme;
- Highlight the direct savings gained due to reduced use of private vehicles.

Cycling

Cycling – Key Information	
Approx. zone of influence	10km
Percentage of end occupiers/residents in area of influence	TBC in each survey when occupied
Percentage of end occupiers/residents interested in cycling	TBC in each survey when occupied

Table 4.2: Key Information - Cycling

4.7 Research suggests that cycling is a viable mode of transport for people who live up to 10 km from work or school.

4.8 Cycling is a great way to travel. It helps foster independence, raises awareness of road safety, and helps the environment.

4.9 Some positive aspects of cycling to work or school are listed following:

- **C** - Cycling is fun! - Cycling is a great form of transport but it's also a great recreational activity. Cycling is a skill that stays with you for life and it's a fantastic way to explore your local community.

- **Y** - You save time & money - cycling to work reduces the need to travel by car thus reducing fuel costs and freeing up road space for more cyclists;
- **C** - Confidence building - travelling to work as an independent cyclist can give people increased confidence proving beneficial in all aspects of life;
- **L** - Less congestion - If you leave the car at home and cycle to work there are fewer cars on the road which makes it safer for those who cycle and walk to work or school;
- **I** - Interpersonal skills - Cycling to work or to school can be a great way to meet other cyclists and share the experience;
- **N** - New adventures - Cycling to work or school is a great way to learn about your local environment and community. It helps people to understand where they live and how their actions affect their local environment;
- **G** - Get fit and stay active - cycling to and from work or school helps people incorporate physical activity into their daily routines. Research shows that regular physical activity can benefit your body and mind.

4.10 The provision of enhanced and attractive cycle parking facilities at the site will clearly play a critical role in promoting journeys by bicycle.

4.11 The following initiatives and incentives can be used to encourage cycling to work and school:

- New cycle parking installed within the development, secure and well lit;
- Publicise cycle parking availability by way of signage and on notice boards;
- Display maps on notice boards areas so people can plan journeys;
- The development can provide free cycle accessories (panniers, lights, visi-vests, helmets) in periodic draws for cyclists,
- The Mobility Management Plan Coordinator can organise cycle training sessions on site on the rules of the road and the specific risks associated with the locality;
- The Mobility Management Plan Coordinator can invite bike suppliers on site for a 'Green Day' or 'Green Week' so that people can try bikes before buying;
- The Mobility Management Plan Coordinator can set up a Bicycle User Group (BUG) to promote cycling;
- The Mobility Management Plan Coordinator can highlight the direct savings gained due to reduced use of private vehicles;
- The Mobility Management Plan Coordinator can encourage residents to take part in National Bike Week, see www.bikeweek.ie.

Public Transport

Public Transport – Key Information	
Approx. zone of influence	All Residents
Percentage of end occupiers/residents in area of influence	100%
Percentage of end occupiers/residents interested in Public Transport	TBC in each survey when occupied

Table 4.3: Key Information: Public Transport

4.12 There are many benefits to taking public transport, some of which include:

- Personal Opportunities – Public transportation provides personal mobility and freedom;
- Saving fuel – Every full standard bus can take more than 50 cars off the road, resulting in fuel savings from reduced congestion;
- Reducing congestion – The more people who travel to work or to school on public transport, especially during peak periods, the less people travelling by private car;
- Saving money – Taking public transport to and from work or school is a lot cheaper than travelling by car and saves the cost of buying, maintaining and running a vehicle;
- Reducing fuel consumption – A full standard bus uses significantly less fuel per passenger than the average car;
- Reducing carbon footprint – Public transport is at least twice as energy efficient as private cars. Buses produce less than half the CO2 emissions per passenger kilometre compared to cars and a full bus produces 377 times less carbon monoxide than a full car;
- Get fit and stay active - Walking to and from work or school to public transport helps people incorporate physical activity into their daily routines. Research shows that regular physical activity can benefit your body and mind.
- Less stress – Using public transport can be less stressful than driving yourself, allowing you to relax, read, or listen to music.

4.13 The following initiatives and incentives can be used to encourage people to take public transport:

- Publicise Employee Tax Saver Commuter tickets, which offer savings to employers in PSRI per ticket sold and significant savings to employees in marginal tax rate and levies on the price of their ticket;
- Encourage public transport use for travel by promoting smart cards, advertising the availability of these tickets to Residents;
- Publicise the availability of Real Time Information. Real Time Information shows when your bus is due to arrive at your bus stop so you can plan your journey

more accurately;

- Provide maps of local bus routes and the nearest bus stops and the length of time it takes to walk to them;
- Contact local providers about issues such as location of existing and new bus stops, timing of routes, or where you have market information about a potential new route.

Go-Car/Car Sharing

Car Sharing – Key Information	
Approx. zone of influence	All Residents
Percentage of end occupiers/residents in area of influence	100%
Percentage of end occupiers/residents interested in Car Sharing	TBC in each survey when occupied

Table 4.4: Key Information - Go-Car/Car Sharing

4.14 Every day thousands of commuters drive to work or to school on the same routes to the same destinations, at the same time as their colleagues. By car sharing just once a week, a commuter's fuel costs can be reduced by 20%, and in a similar fashion, the demand for work place parking can be reduced by 20%. If every single-occupancy driver carried another driver, there would be 50% less cars on the road at peak times.

4.15 Although use of the car to get to work or to school is essential for some people, car sharing schemes such as ***GoCar*** (which are active in Dublin) have the potential to deliver a significant reduction in private vehicle trips by promoting higher than average occupancy rates for each vehicle.

4.16 Car sharing often happens informally, however some participants often prefer a formal scheme such as a GoCar facility which will normally generate a higher take-up for car sharing, and more efficiency in terms of increased occupancy rates.

4.17 Encouraging more Residents to share car journeys to work rather than driving alone as well as encouraging more to set up and take part in car sharing/pooling would prove a very effective means of reducing daily car trips to and from the site.

4.18 The following initiatives and incentives can be used to encourage car sharing:

- Provide information in relation to location for GoCar availability.
- Highlight to drivers that they do not have to share with a person that doesn't suit them – allow choice based on gender, route, smoking or non-smoking;

- Clarify the financial implications of the scheme – those accepting a lift could contribute towards fuel costs.
- Use existing online databases for car sharing. For example, the development could set up its own private car sharing site using www.carsharing.ie.

Action Plan Summary Table

4.25 The Summary Action Plan is described in the Table below. Modal Split Targets will be determined following on from the first Residential survey shortly after full occupation, typically within the first six months. This will be part of the role of the Mobility Management Plan Coordinator. This will show existing travel patterns with realistic targets set to improve the modal split of Residents.

	Initiative	Impact on Delivery	Difficulty Delivering	Current Modal Split	Target MS
Residents Initiatives	Walking	Medium	Low	TBC	TBC
	Cycling	Medium	Medium	TBC	TBC
	Public Transport	High	Low	TBC	TBC
	Other	Medium	Medium	TBC	TBC
	Car - Sharing	Medium	Medium	TBC	TBC
	Cars - 1 Passenger Only	High - Negative	High	TBC	TBC
Promoting the TP	Marketing the Plan	High	Low	Driven By MMP Coordinator	
	Measuring Success	High	Medium	Annual Surveys	

Action Plan Summary Table

5.0 IMPLEMENTING THE PLAN

Background

5.1 Setting realistic targets and a sustained approach to the promotion of the Mobility Management Plan is important if the measures are to be successful. The objectives and benefits of the Plan will be made clear and broadcast during the full lifecycle of the Plan.

5.2 The implementation of a successful Mobility Management Plan will require the upfront investment of resources. As well as reviewing objectives and initiatives regularly, it is equally important to measure results. This provides an indication of any Plan's success and ensures that the targets remain realistic.

The Mobility Management Plan Coordinator

5.4 The key objective of this Mobility Management Plan is to ensure that the traffic impacts and car usage associated with the operation any development are minimised. Achieving this objective will result in a wide array of benefits for the development and its stakeholders.

5.5 To ensure the plan is effective it is essential for a Mobility Management Plan Coordinator to be appointed for the Development upon occupation.

5.6 It is envisaged that the Coordinator will work closely with residents to enthusiastically promote and market the Mobility Management Plan. As Residents will be the focus of the plan; their involvement must be sought from the outset.

5.7 To support the Mobility Management Plan Coordinator's efforts, the Management Company must ensure that they have sufficient time to carry out their duties. In addition, it is essential that the powers of decision making are bestowed upon him/her, along with a suitable budget and programme for implementation.

Promoting the Mobility Management Plan

5.8 Active promotion and marketing is needed if the Mobility Management Plan is to have a positive impact on stakeholder travel patterns to and from the site.

5.9 All marketing initiatives should be focused on areas where there is willingness to change. Such information has been extracted from the questionnaires and has been described in Section 3 of this Plan.

- **Identify the Aim** – e.g. to reduce low occupancy car commuting, school, and business travel & to promote active travel, public transport & alternatives to travelling by car.

- **Brand the Plan** – as part of communicating the Mobility Management Plan, visually brand all work relating to it with a consistent look, slogan, identity or logo.

- **Identify the Target Audience** – 'segment the audience' (e.g. shift workers, school travel, sedentary workers, people travelling long/ short distances, mode used, members of a walking club or green team) so you can target the message and events towards these different groups.

5.10 As part of the marketing process, the Mobility Management Plan coordinator can personalise a plan for the Development, drawing attention to the benefits of participation and support for its implementation.

5.11 The Coordinator can identify communication tools and networks used by the different audiences in the development, and use these to communicate about travel.

5.13 Promotional material regardless of its quality is only as good as its distribution network; material incentives assist greatly in introducing people to alternative modes of commuting.

5.14 The plan should be about promoting equity among modes and offering choice and accessibility.

5.15 The Coordinator can promote positive messages associated with a plan, for example, reduced tax/PRSI payments, getting fit and active, reducing congestion, reducing CO2 emissions and so on, and encourage people to start small – changing one day per week for example, to explore their options.

5.16 Marketing drives which feature individual Residents who have reduced their car use can carry a strong message. This will serve to raise not only the profile of the Plan, but also send a clear message in relation to the Residents commitment to the Plan.

6.0 CONCLUSIONS

6.1 The permitted apartment development accords with the principles of sustainable development, being located within an established serviced residential neighbourhood within clear and easy access to alternative modes of travel. With reduced car parking provided this also acts as a travel demand management measure. The Management Company, once the development is occupied, will utilise pragmatic measures that encourage safe and viable alternatives to the private car for accessing the development.

6.2 Good Travel Planning is not a one-off event, it is instead an on-going iterative process requiring continued effort. This initial MMP Report assists these efforts by forming an outline framework and providing guidance for its success. Monitoring and reviewing the initiatives set out within the plan will form a far greater part of the working Mobility Management Plan itself.

6.3 The key to the Plans success will be the appointment of a ***Mobility Management Plan Coordinator*** for the development, once occupied. They will be vested with total responsibility for implementing the plan. They should be granted the authority and time to execute the Plan and be provided with sufficient resources to realise the Plans success.

6.4 As Residents are the focus of the plan; their involvement should be sought from the outset following occupation. To this end, the Plan Coordinator should be assisted and supported by the Management Company and Residents. This will serve to spread the workload, and also give the Residents a valuable input into the operation of the Plan.

6.5 Successful Mobility Management Plans require marketing **and** regular review. The measures set out in the Action Plan Summary Table (Chapter 4) should form the basis of a sound, realistic Plan and should be clearly set out and be fully transparent to all users.

6.6 Residents also have an essential responsibility in terms of co-operating with and taking an active part in the plan. They are, after all, the plan's primary focus.

6.7 It is recommended that the working Mobility Management Plan be set in motion, sensibly at full residential occupation. The plan should evolve and develop with the development, taking into account changing Residents and their travel preferences and needs.

6.8 Annual reviews of the Plan should include a full stakeholder survey, providing valuable information for target setting and marketing target groups. It is emphasised that failing to meet initial targets should not be seen as failure, as the preliminary 12 to 18 months of the plan should be viewed as a calibration exercise for target setting.

APPENDIX K

DMURS Statement of Consistency

consulting engineers

NRB

DMURS Design Statement
Technical Note
(Appendix K)

for

Proposed Residential Development

at

Whitechurch Rd.,
Rathfarnham.

SUBMISSION ISSUE

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1.0 INTRODUCTION

1.1 It is NRB's opinion that the proposed Residential Development Layout is consistent with both the principles and guidance outlined within the *Design Manual for Urban Roads and Streets* (DMURS) 2013, as amended in 2019. The scheme proposals are the outcome of an integrated design approach. This approach seeks to implement a sustainable community connected by well-designed links, layout and accesses - which combined deliver attractive, convenient and safe access in addition to promoting modal shift and viable alternatives to car based journeys.

1.2 The following section discusses design features which are incorporated within the proposed scheme with the objective of delivering a design that is consistent with the principles of DMURS.

1.3 The proposed development is also consistent with both the principles and guidance outlined within the *National Cycle Manual*. The following section also discusses design features which are incorporated within the proposed scheme with the objective of delivering a design that is also consistent with the principles of the National Cycle Manual.

2.0 DESIGN ATTRIBUTES

2.1 The proposed layout strategy seeks to maximise connectivity between key local destinations through the provision of a high level of permeability and legibility for all journeys, particularly for sustainable forms of travel (cycling and walking).

2.2 The proposed scheme delivers greater mode and route choices along direct, attractive and safe linkages to local amenities and in particular to local schools/service destinations. This is reinforced through linking proposed facilities on site to the current facilities provided along college Rd to and through Marlay Park.

2.3 The Residential areas of the development will be 30kph Slow-Zones in line with the recent Department of Tourism and Transport advice note TSAN-2016-02.

2.4 High Quality Connections between the proposed development and the local roads are provided, ensuring permeability and route choice. The internal road network has itself been designed to deliver a hierarchy of local streets which provide access within / across the proposed new residential community, linking the site and community with the established network.

2.5 As part of the development the movement function is designed to respect the different levels of motorised traffic whilst optimising access to/from alternative transport and catering for higher number of pedestrians and cyclists. In parallel the adopted design philosophy has sought to consider the context / place status of the scheme in terms of level of connectivity provided, quality of the proposed design, level of pedestrian / cyclists activity and vulnerable users requirements whilst identifying appropriate 'transition' solutions particularly at street junctions/intersections.

2.6 High levels of internal connectivity are also delivered for motorised vehicles, albeit at slower appropriate speeds, to that achievable along the main routes. The layout offers a well-connected traffic-calmed-by-design street network. Furthermore, in addition to pedestrian / bicycle connections at the main site accesses and links to the adjacent schools, the provision of other pedestrian and bicycle access points increases the permeability along key travel desire lines thereby delivering convenient, attractive and safe linkages for pedestrians and cyclists.

2.7 The layout of the proposed development seeks to **maximise permeability** and enhances legibility, and the design of appropriately sized blocks actively contributes to a highly permeable and accessible community for both pedestrians and cyclists.

2.8 The proposed layout seeks to successfully create an appropriate balance between the functional requirements of different network users whilst enhancing the 'sense of place'. Design attributes of the proposed layout which contribute to achieving this ***DMURS objective*** include:

a) self-regulating street environment created through the introduction of on-street parking, tight corner radii, reduced visibility splays and staggered junctions.

b) On-street activity promoted internally along the residential streets through the provision of on-street parking where appropriate,

c) Vehicular access to the development is via a traffic calmed and low speed network, with enhanced pedestrian access to the development and the open space.

d) Through the provision of two dedicated vehicle access / egress points onto the new link road for the southern lands and a single access onto Whitechurch Rd for the northern lands – in addition the spatial strategy offers a well-connected but permeable traffic-calmed 'by design' street network,

e) Under ***Section 3.4.1 Vehicle Permeability***, DMURS states that 'Permeable layouts provide more frequent junctions which have a traffic-calming effect as drivers slow and show greater levels of caution'.

f) DMURS also goes on to state that 'Designers may be concerned that more permeable street layouts will result in a higher rate of collisions. However, research has shown that there is no significant difference in the collision risk attributable to more permeable street layouts in urban areas and that more frequent and less busy junctions need not lead to higher numbers of accidents.' This supports the case for access arrangements proposed to serve the site,

g) Whilst the plan is to create a 30kph Home Zone, the proposed design deliberately seeks to specify minimal signage and line markings along the internal local streets, with such treatments used sensitively throughout and predominately at key nodes and 'transition' areas where raised platforms and road surface treatments are identified.

h) Footpaths no less than 1.8m (generally 2.0m or wider) will be provided within the scheme with connections and tie-ins to existing external pedestrian networks.

i) Appropriate clear unobstructed visibility splays, and forward stopping distances, as per DMURS requirements, are provided at the site access junctions to the external road network and internally within the scheme.

j) Well designed and frequent pedestrian crossing facilities will be provided along key travel desire lines throughout the scheme in addition to those located at street nodes. In addition, significant features are incorporated along College Road and at the new traffic signal controlled junction at College Rd/Whitechurch Rd.

k) All courtesy crossings will be provided with either dropped kerbs or at-grade 'flush' platforms - thereby allowing pedestrians to informally assert a degree of priority.

l) At the College Rd junction, and at the entrance to Marlay Park, formal signalised controlled crossings are provided for the benefit of both pedestrians and cyclists. The crossings are deliberately provided with a single straight direct movement, with no stagger or refuge, to minimise crossing distance and enhance pedestrian / cyclist convenience and comfort levels.

m) All informal pedestrian crossing facilities will be at least 2.0m wide, whilst all controlled pedestrian crossings will be a minimum of 2.4m wide (and wider in the case of Toucan facilities).

n) With the objective of encouraging low vehicle speeds and maximising pedestrian safety and convenience, corner radii will be 6m where swept path analysis permits and will be of further reduced radii where feasible in line with DMURS guidance.

o) Internally within the development, where carriageway kerb are required, heights will be typically 75-80mm in accordance with the objectives of DMURS.

p) Very significant dedicated off road cycle facilities are provided as part of the development plans. Within the development, as required, cyclists will share the carriageway with other street users as per the NCM guidance for such situations and best practice.

q) Once within the development, the proposed internal hierarchy of Local streets incorporates predominantly 5.5m wide carriageways consistent with DMURS.

r) At any at-grade flat top pedestrian crossing / traffic calming table treatments, different surface material treatments will be proposed to alert and subsequently influence driver behaviour and vehicle speeds.

s) Vertical deflections in the form of raised tables are to be strategically placed across the internal local street network to promote lower design speeds and enable pedestrians to cross the streets at-grade. The maximum height of these raised flat-top treatments is designed to be 75mm with a minimum flat-top width of 2.0m.

t) The provision of on-street car parking includes both parallel and perpendicular parking bays along either one or both sides of the internal streets. In accordance with DMURS the parallel parking bays are dimensioned 6.0m long by 2.5m wide. In contrast, the perpendicular parking spaces are a minimum of 4.8m (or more) and a minimum of 2.4m wide. In locations where the perpendicular parking may require additional manoeuvring area, this will be achieved by increasing the length / depth of the parking bay and not by widening the street carriageway.

u) Any required street signage and road markings will be in accordance with the Department of Transport Traffic Signs Manual, and the location and form will be agreed in advance with South Dublin County Council.

APPENDIX L

Independent Stage 1 Road Safety Audit & Designer Feedback Form

Title: **STAGE 1 ROAD SAFETY AUDIT**

For;

Proposed Development, Edmondstown, Whitechurch Road, Rathfarnham.

Client: **NRB Consulting Engineers.**

Date: **November 2021**

Report reference: **1211R01**

VERSION: **FINAL (February 2022)**

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1.0 Introduction

This report was prepared in response to a request from Mr. Eoin Reynolds, NRB Consulting Engineers, for a Stage 1 Road Safety Audit of the proposed residential development at Edmondstown, Whitechurch Road, Rathfarnham, Dublin 14.

The Road Safety Audit Team comprised of;

Team Leader: **Norman Bruton**, BE CEng FIEI, Cert Comp RSA

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TII Auditor Approval no. OO1291756

The Road Safety Audit comprised an examination of the drawings provided and a site visit by the Audit Team, together, on the 5th of November 2021.

The weather at the time of the daytime site visit was dry and the road surface was also dry.

This Stage 1 Road Safety Audit has been carried out in accordance with the requirements of TII, Publication Number GE-STY-01024, dated December 2017.

The scheme has been examined and this report compiled in respect of the consideration of those matters that have an adverse effect on road safety. It has not been examined or verified for compliance with any other standards or criteria.

The problems identified in this report are considered to require action in order to improve the safety of the scheme for road users.

If any of the recommendations within this safety audit report are not accepted, a written response is required, stating reasons for non-acceptance. Comments made within the report under the heading of Observation are intended to be for information only. Written responses to Observations are not required.

A location map showing where each problem occurs is provided in **Appendix A.**

A list of the documents provided to the Audit Team is provided in **Appendix B.**

The feedback form to be completed by the Design Team Leader is provided in **Appendix C.**

2.0 Background

It is proposed to construct a residential development at Edmondstown, Whitechurch Road, Rathfarnham Dublin 14.
proposed development will consist of;

- The construction of 172 No. residential dwelling units, a creche, shops and café in a neighbourhood centre of 1186m2 , and two basement carparks (1842m2 & 1339m2). The development will be in two areas, the northern area will be accessed off Whitechurch Road by means of a priority junction and will contain 62 residential units. The southern area will contain 118 residential units and the commercial units and creche. This area will be accessed off the new link street by four priority junctions.
- The first section of a new link street (approx. 438 linear metres) from the junction of Whitechurch Road & College Road. This includes footpaths and cycle tracks on both sides.
- Upgrade works to College Road & Whitechurch Road, including a new two-way cycle track beside Marley Park on College Rd.,
- A new signalised junction at the southern entrance to the proposed link street with Whitechurch Road & College Rd.,
- All associated and ancillary site development works.

Whitechurch Road has an existing footpath on its western side.

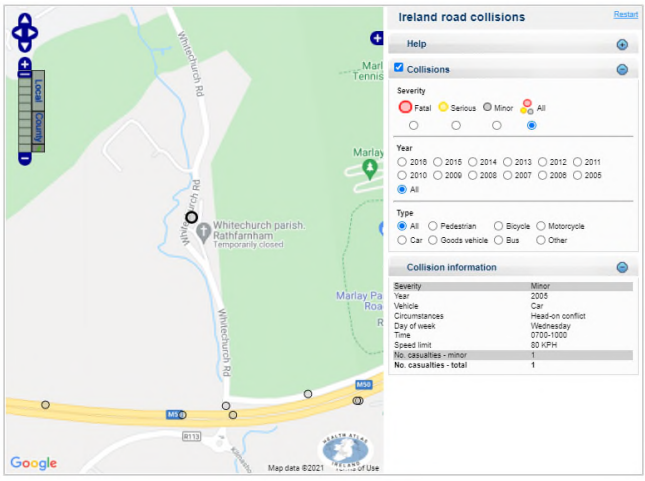
The speed limit on Whitechurch Road is 50km/hr.

It is assumed that the speed limit within the development will be 30km/hr. Traffic calming is proposed via a combination of the horizontal alignment, the carriageway width and the use of vertical deflection.

The site location is shown below.

Image courtesy of openstreetmap.org

The Road Safety Authority's website www.rsa.ie shows that there have been two minor injury collision on Whitechurch Road and one on College Road in the 12-year period 2005 to 2016.



3.0 Issues Raised in This Road Safety Audit.

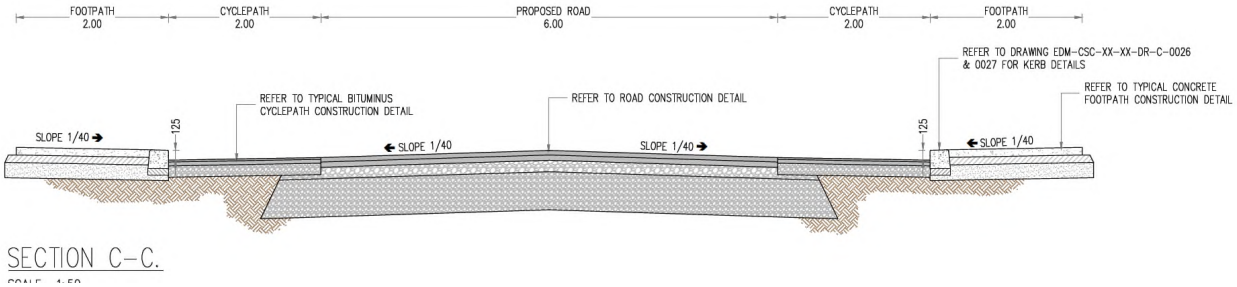
3.1 Problem

LOCATION

Drawing EDM-CSC-GF-XX-DR-C-0025 Rev P1, Typical Cross Sections.

PROBLEM

The typical cross section for Road 10 (New Link Road) shows the cycle track at grade with the carriageway. Without segregation there is a greater risk of collisions between general traffic and cyclists.



RECOMMENDATION

It is recommended that a raised cycle track be provided with transitions to street level at accesses and turning areas only. It is noted that a raised cycle track is shown on NRB drawing NRB-TA-001.

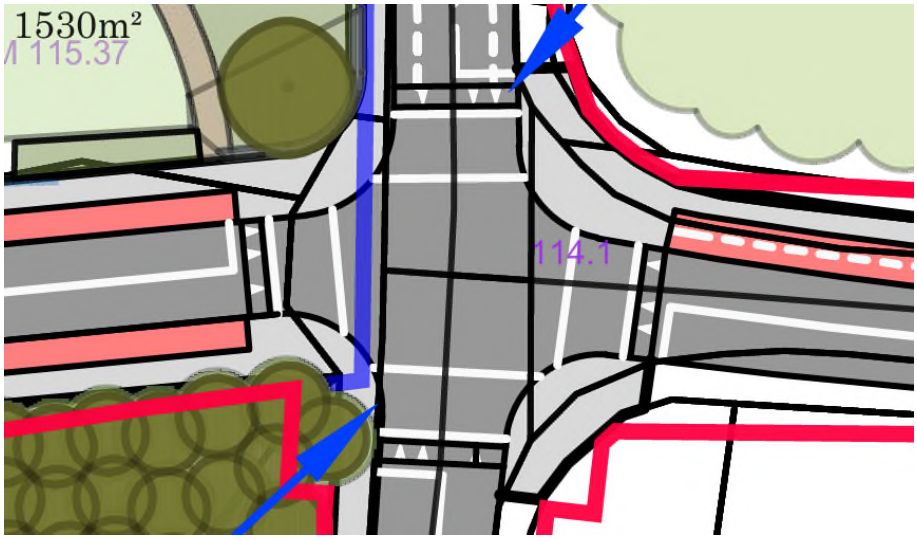
3.2 Problem

LOCATION

Drawing NRB -TA-001 Rev A.

PROBLEM

Shared use footpaths/cycletracks are proposed at the Link Road arm and College Road arm of the proposed signalised junction however only on-road advisory cycle lane markings are proposed along Whitechurch Road north of the junction and no cyclist facilities south of the junction. Without adequate facilities cyclists may transition from off-road to on-road at inappropriate locations leading to collisions with passing vehicles or may travel on the footpaths where they may collide with pedestrians.



RECOMMENDATION

It is recommended that provisions for cyclists be made on all approaches to the junction, for crossing and turning at the junction and for transitions from carriageway to raised /shared areas and from one-way cycle facilities to two-way facilities.

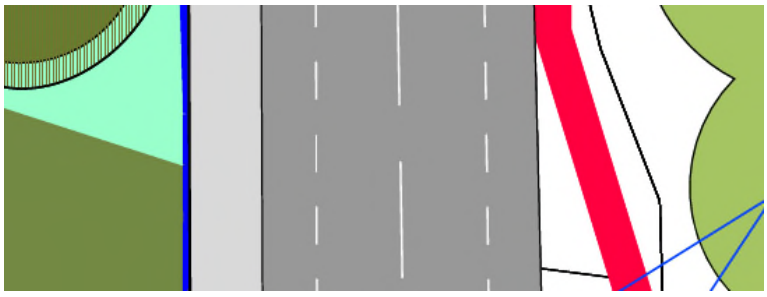
3.3 Problem

LOCATION

Drawing NRB -TA-001 Rev A.

PROBLEM

It is proposed to provide advisory cycle lane on the existing Whitechurch Road north of the proposed signalised junction. Whitechurch road has a narrow carriageway and the advisory cycle lanes will not leave enough room for cyclists and vehicles. The lane marking could be confusing for both users resulting in the appearance of four narrow lanes.



RECOMMENDATION

It is recommended that the centre line road marking be removed and that the advisory cycle lanes be provided with red surfacing and regular cycle road marking symbols.

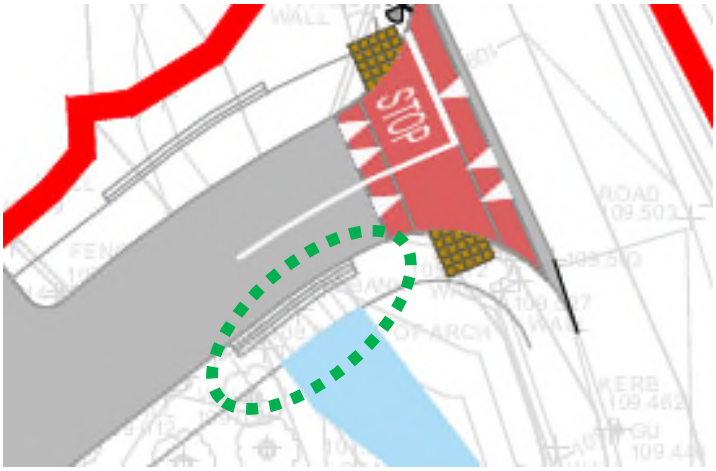
3.4 Problem

LOCATION

Drawing EDM-CSC-GF-XX-DR-C-0021 Rev P1, Road markings & Traffic Signs, Northern area , stream crossing.

PROBLEM

The parapet wall at the stream crossing appears to be tight to the carriageway edge. This could lead to material damage of vehicles as the pass. It also leads to a reduction in the effective width of the footpath to the rear of it which presumably will have some protection on the stream side.



RECOMMENDATION

Ensure suitable space is provided to have a buffer area between the carriageway edge and the parapet wall and to maintain a constant effective width of the footpath. It is noted that the landscape drawings do not show a southern footpath. It is assumed that a footpath will be provided.

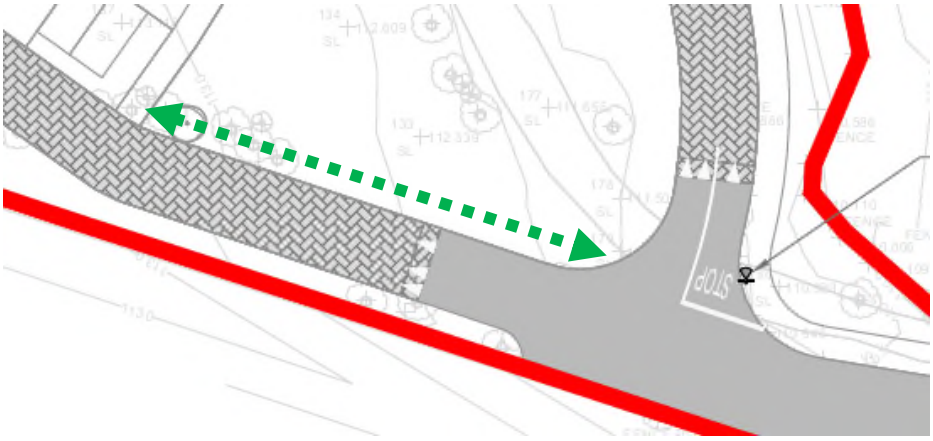
3.5 Problem

LOCATION

Drawing EDM-CSC-GF-XX-DR-C-0021 Rev P1, Road markings & Traffic Signs, Northern area , footpath discontinuity along a desire line.

PROBLEM

There is no proposed footpath link from the northern access to the footpath in front of units 131 to 141. This represents a desire line for pedestrians. Without a solid hardstanding area the mobility impaired may not find it accessible and walking on grassed areas could lead to slips and falls especially in wet or icy conditions.



RECOMMENDATION

It is recommended that a footpath link be provided.

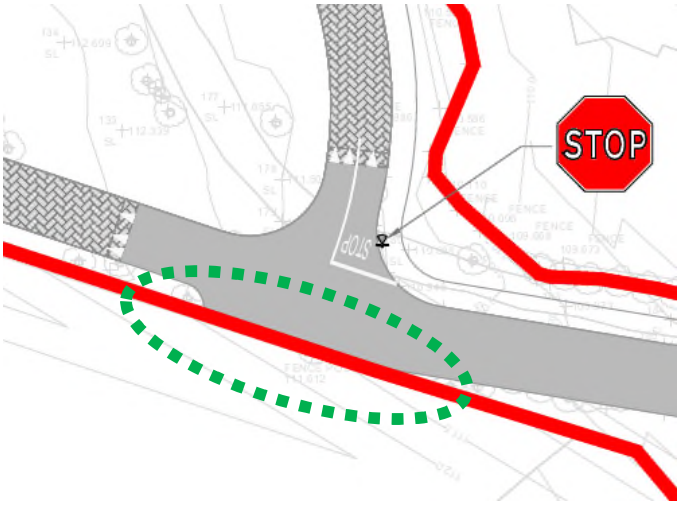
3.6 Problem

LOCATION

Drawing EDM-CSC-GF-XX-DR-C-0021 Rev P1, Road markings & Traffic Signs, Northern area , main access road.

PROBLEM

The carriageway of Road 08 in the northern area extends to the side boundary at the first internal junction. Without adequate space larger vehicles may scrape off the boundary treatment/fence if they are turning right.



RECOMMENDATION

It is recommended that a buffer area be provided between the carriageway and the site boundary to cater for the swept path of vehicles.

3.7 Problem

LOCATION

Throughout the development, visitor parking areas.

PROBLEM

There are visitor parking spaces throughout the development. Some are parallel spaces on the opposite side of the internal roads to the residential units. There is a risk that the mobility impaired may slip on the grassed areas if they get out on that side of the vehicle and may not be able to access the footway on the opposite side.

Exampel only

RECOMMENDATION

It is recommended that footpaths be provided to the rear of those spaces with suitable crossing points to the footpaths on the opposite side. Such footpaths are shown on some landscaping drawings.

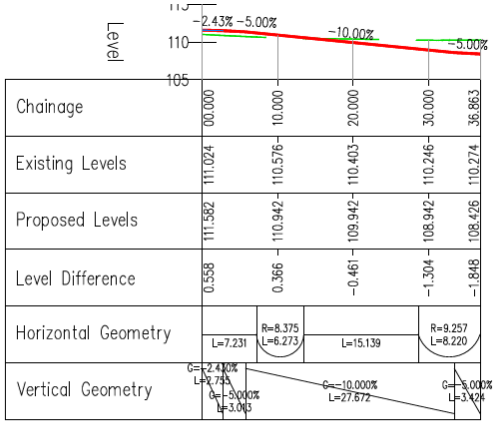
3.8 Problem

LOCATION

Drawing EDM-CSC-GF-XX-DR-C-0014 Rev P1, Basement gradients

PROBLEM

The basement gradients are 10%. It appears that cyclists will have to share the ramps. Cyclists may loose control if they travel too fast down the ramp and some less able bodied cyclists may not be able to push their bicycles up the ramp.



ROAD 09 – NORTHERN RAMP LONGSECTION

SCALE: H 1:500,V 1:500. DATUM: 105.000

RECOMMENDATION

It is recommended that ramps with suitable gradients for cyclists be provided.

4.0 Observations

4.1 Observation

There does not appear to be any disabled parking bays provided.

4.2 Observation

A swept path of the bus turning area on the link road has not been provided to the Audit Team.

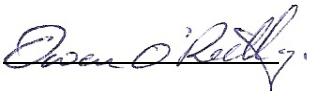
5.0 Audit Statement

We certify that we have examined the site on the 5th of November 2021. The examination has been carried out with the sole purpose of identifying any aspects of the design which could be added, removed or modified in order to improve the safety of the scheme.

The problems identified have been noted in this report together with associated safety improvement suggestions which we would recommend should be studied for implementation. The audit has been carried out by the persons named below who have not been involved in any design work on this scheme as a member of the Design Team.

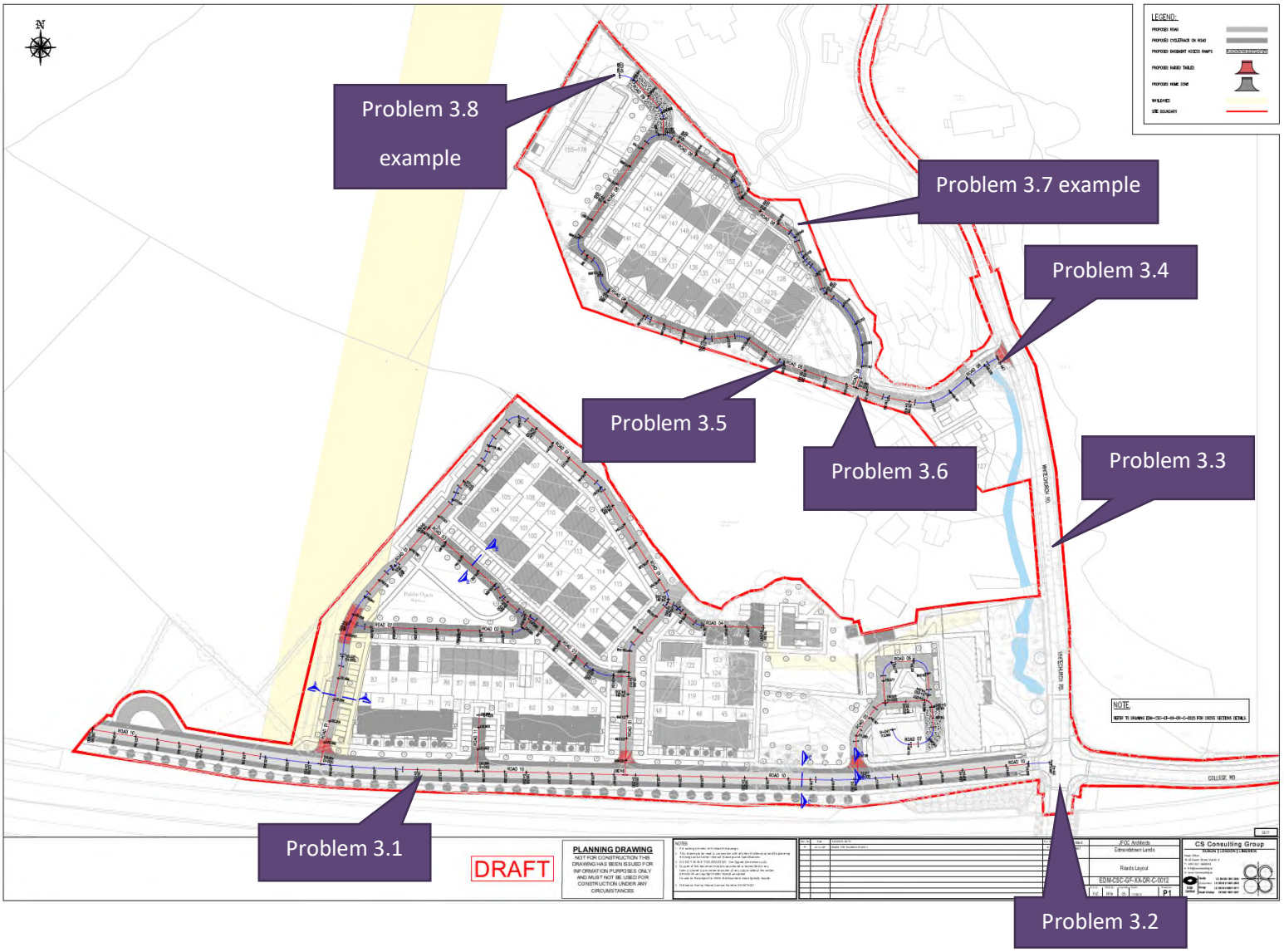
Norman Bruton **Signed:** 

(Audit Team Leader) **Dated: 23/2/2022**

Owen O'Reilly **Signed:** 

(Audit Team Member) **Dated: 23/2/2022**

Appendix A – Problem Location Map



Appendix B

Information Supplied to the Audit Team

- DrawingEDM-CSC-XX-XX-DR-C-0013 Road Longsections-Sheet 1 of 2
- DrawingEDM-CSC-XX-XX-DR-C-0014 Road Longsections-Sheet 2 of 2
- DrawingEDM-CSC-XX-XX-DR-C-0021 Road Markings and Traffic Signs
- DrawingEDM-CSC-XX-XX-DR-C-0022 Visibility Splay
- DrawingEDM-CSC-XX-XX-DR-C-0023 Swept Path Analysis-Fire Tender
- DrawingEDM-CSC-XX-XX-DR-C-0024 Swept Path Analysis-Refuse Vehicle
- DrawingEDM-CSC-XX-XX-DR-C-0025 Typical Cross Sections
- DrawingEDM-CSC-XX-XX-DR-C-0026 Road Details
- DrawingEDM-CSC-XX-XX-DR-C-0028 Basement Layouts
- Drawing20SD02_DR-200
- Drawing20SD02_DR-201
- Drawing20SD02_DR-202
- Drawing20SD02_DR-203
- DrawingEDM-CSC-XX-XX-DR-C-0012 Roads Layout
- Drawing NRB TA-001 Rev A
- Drawing NRB TA-002 Rev A

Information Supplied for Background Information

- Transport Assessment Report, Pre App issue- Draft NRB, November 2021

Appendix C

Feedback Form

SAFETY AUDIT FORM – FEEDBACK ON AUDIT REPORT

Scheme: Edmondstown, Whitechurch Road, Rathfarnham.
Stage: 1 Road Safety Audit
Date Audit (Site Visit) Completed: 5/11/2021

Paragraph No. in Safety Audit Report	Problem accepted (yes/no)	Recommended measure accepted (yes/no)	Alternative measures (describe)	Alternative measures accepted by Auditors (Yes/No)
3.1	Y	Y – cycle tracks to be raised in line with NRB-TA-001 except at junctions where they are to be at grade.		
3.2	Y	Y – appropriate dropped kerbs and tactile paving will be provided along with a Toucan crossing on each arm.		
3.3	Y	Y – cycle markings and red surfacing to be provided. Centre line removal to be removed subject to approval from DLRCC.		
3.4	Y	Y – parapet wall adjusted to provide buffer zone.		
3.5	Y	Y – Footpath link added along desire line in open space.		
3.6	Y	Y – road alignment adjusted to provide buffer zone.		
3.7	Y	Y – Hard standing/ footpath included to the rear of parallel parking bays		
3.8	Y	Y – direct access at grade level from the Whitechurch Road side of the Neighbourhood centre for cyclists into the basement. - sufficient bicycle parking for all apartments in the E-Block has been provided at surface level in the communal gardens to the rear (minimum of one secure space per bedroom)		

Observations:

4.1 Additional Wheelchair Spaces now included on architects' layouts.

Signed…… **Date**: 23/02/2022
Design Team Leader

Signed…… **Date**……23/2/2022…
Audit Team Leader

Signed…… **Date** 23/02/2022
PP Employer*

* ***Emails Received from Clients Confirming Authority to Sign this Feedback Form on Their Behalf.***

APPENDIX M

DLRCC Proposals for Cycle Facilities at St Thomas Regional Sports Campus

PC/PKS/01/19

MAIN FEATURES:

Item Description/Overview

1. Car Park
   Approx. 143no. spaces incl. disabled with car and coach set-down
2. Multi-Use Sports Building:
   Building to include reception/admin, internal & external storage, changing rooms, toilets, 60m sprint track, multi-use hall, gymnastics space, café, offices, meeting rooms, viewing terrace, etc
3. Running/Walking Trails:
   2.5-3m wide surfaced in compacted gravel or similar
4. Stepped Ramp:
   Steep ramp incorporating steps
5. Running Track & Field Facilities:
   8 Lane, 400m synthetic track with associated field facilities including long jump and triple jump, water jump, javelin throw, discuss and hammer throw, pole vault, shot put and high jump.
6. Shared Surface Pedestrian & Cycle Path:
   3m wide compacted gravel surface within current site boundary
7. Shared Surface Pedestrian & Cycle Path:
   3m wide running parallel to road - macadam surface
8. Vehicular Entrance:
   Granite pillars & steel gate to match the local vernacular and character of the area
9. Covered Area for Archers and Bicycle Stands:
   Archers covered space to include Shefield type bicycle stands on opposite side of wall
10. Location for Waste Water Treatment System:
    Treatment system and percolation area to be located within this zone
11. Attenuation Wetland
    Bio-retention area/detention basin with water infiltrating into ground

MAIN FEATURES:

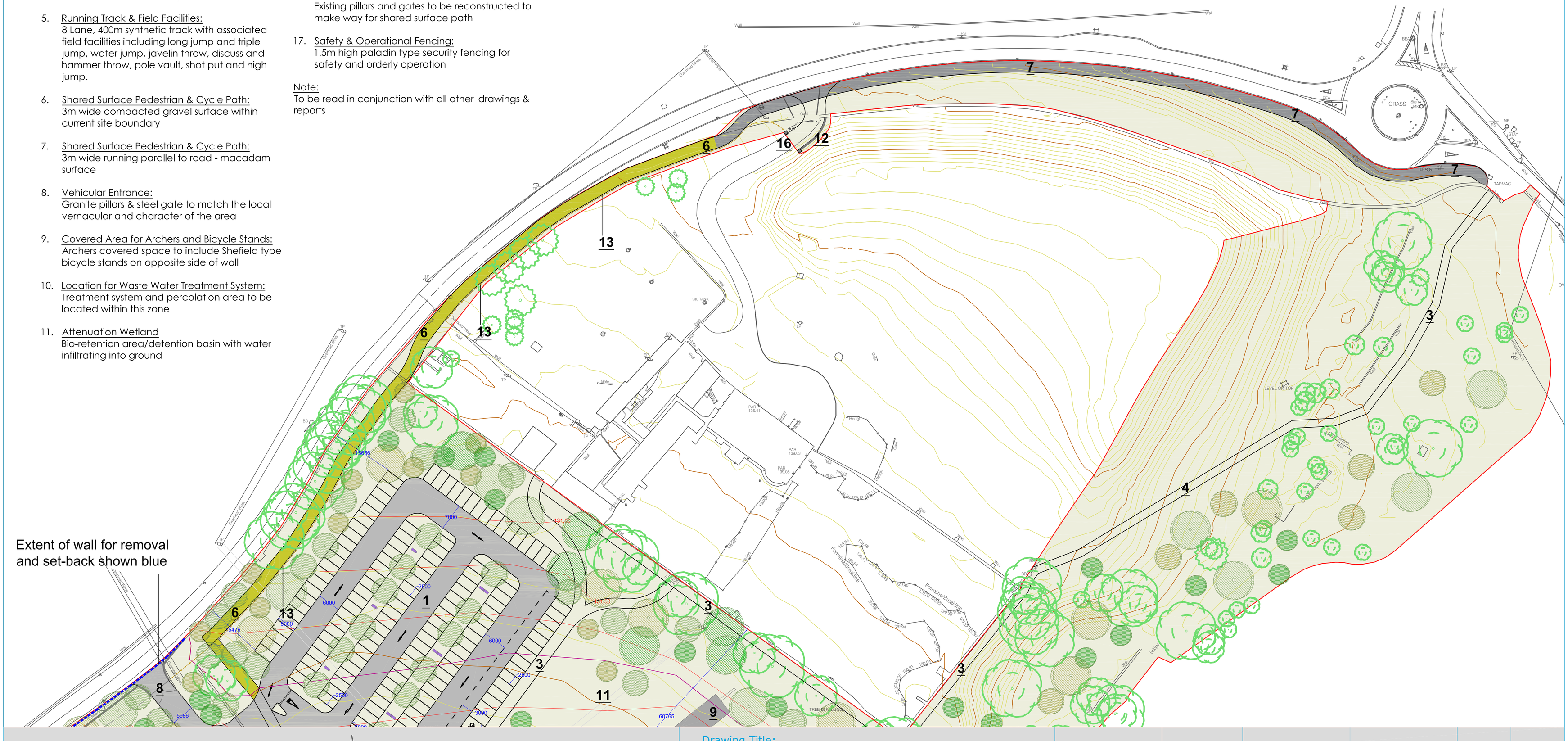
Item Description/Overview

12. Boundary Wall:
    Boundary wall set back and re-built using existing stone and traditional methods
13. Boundary Estate Railing:
    1.5m high boundary between the public path and the site to be powder coated to grey colour
14. Grass Seating Area
    Seating area alongside track with grass mounding
15. Farmers Access:
    Access to be maintained to neighboring field
16. Access to St. Thomas House:
    Existing pillars and gates to be reconstructed to make way for shared surface path
17. Safety & Operational Fencing:
    1.5m high paladin type security fencing for safety and orderly operation

Note:
To be read in conjunction with all other drawings & reports

LEGEND:

- Site Boundary/Extents
- Existing Trees to be Retained (approximate locations) For details see tree survey
- Proposed Woodland Screen Planting
- Floodlights to Track (approximate locations)For details see lighting design
- Existing Contours (0.5m & 2.5m intervals)
- Proposed Contours (0.5m & 2.5m intervals)
- Existing Overhead Lines to be Retained
- Light Columns/Bollard Lights (approximate locations)



dlr Comhairle Contae County Council PARKS

N

Do not scale from this drawing. Use figured dimensions only. Check all dimensions on site before commencing works. Report any discrepancies to the ER before proceeding. All levels to be clarified on site by the ER. These drawings and designs theron are copyright of Dun Laoghaire Rathdown County Council.

Drawing Title: RUNNING TRACK & ASSOCIATED FACILITIES - ST. THOMAS'S Layout Plan 2	Drawing Number:	Revision:	Scale:	Date:	Drawn:	Checked:
Senior Parks Superintendent : Ruairí O'Dulaing County Hall, Dun Laoghaire, Co. Dublin.	DRP 2434-03	A	1/500 @ A1	April 2019	EOB	ROD

APPENDIX N

Bus Services & Capacity Assessment Report

consulting engineers

NRB

Bus Services

&

Capacity Assessment Report

(Appendix N)

For

Proposed Residential Development

At

Whitechurch Road,

Rathfarnham, Dublin 14.

SUBMISSION ISSUE

1st Floor, Apollo Building, Dundrum Road, Dundrum, Dublin 14
Tel: +353 1 292 1941, E-mail: info@nrb.ie, Web: www.nrb.ie

Registered in Ireland No. 491679

Contents

Appendix..

1st Floor, Apollo Building, Dundrum Road, Dundrum, Dublin 14
Tel: +353 1 292 1941, E-mail: info@nrb.ie, Web: www.nrb.ie

Registered in Ireland No. 491679

1.0 INTRODUCTION

1.1 NRB Consulting Engineers Ltd were appointed to address the Traffic & Transportation issues associated with a Strategic Housing Development application comprising Residential Apartments/Housing and supporting elements at Whitechurch Road, Rathfarnham, Dublin 14.

1.2 The proposed development is on a site that extends to 6.77 hectares, includes the derelict Kilmashogue House (southern lands) and Coill Avon house (northern lands) and adjacent roads in the control of South Dublin County and Dun Laoghaire Rathdown County Councils. In terms of Residential elements the scheme comprises 72 Houses and 106 Apartments.

1.3 The NRB commission includes this assessment of current & future Bus Capacity, a 'Bus Services & Capacity Assessment Report'.

1.4 Whilst this Report contains an assessment of Bus Capacity, it should be remembered that Bus Operators are commercial in nature, running their businesses based on demand rather than medium to longer term future demand. Bus services are provided based on demand rather than potential. If there is an increased demand for services, or indeed if there is a deficit in a service provision, Operators generally react to improve facilities if it makes commercial sense to do so. More customers means more revenue generated.

1.5 Notwithstanding the above, the purpose of this Study is to review the potential impact of the development upon the existing and future bus services in the vicinity of the site.

1.6 The analysis of the existing and future bus services is based on an assessment methodology which includes trip generation assessment, modal split assumptions, and assignment/distribution. These assumptions have been based on real data extracted from the Central Statistics Office (CSO) 2016 Small Area Map Data, available through the online mapping tool. This data was used to quantify the anticipated demand for Buses as a result of the proposed development locally.

1.7 The first step was to review the current and future planned bus services. The bus stops within an easy walking distance of the subject site were identified, with the current bus services, bus service frequency and capacity studied and assessed.

1.8 *Bus Connects* is expected to be implemented within a relatively short timeframe. This initiative will reconfigure the bus services for the Greater Dublin Area completely. This Study therefore considers both the existing bus network and the planned *Bus Connects* Network.

1.9 The Study focuses on the peak commuter periods, and in particular the busiest weekday AM commuter peak demand for buses – this represents the period of highest demand on the network consistent with the TII Traffic & Transport Assessment Guidelines (May 2014). The methodology assumes that the trips will be assigned to the nearest available bus stops.

2.0 BUS STOP LOCATIONS & BUS SERVICES (CURRENT & FUTURE)

CURRENT BUS SERVICES

2.1 For commuting, a walk distance to/ from Bus Stops of up to 1km is generally considered to be acceptable. In the case of the subject site, the nearest existing Bus Stops are located at the Terminus Point on Whitechurch Green and on Taylors Lane located to the north. The Existing Bus Stop locations, together with the relevant Stop Reference Numbers, are as illustrated below as ***Figure 2.1***.

Figure 2.1 – Existing Bus Stops Nearest Site

2.2 All of the above existing Bus Stops are within an acceptable walk distance of the subject site for commuters. Google Street view walk distance/time feature, backed up by on-site measurements and checks, have been used to confirm the walking distance & time from the access to the subject lands. The walking distance to/from the nearest Whitechurch Green Bus Stops to the Northern Site Access is illustrated below as ***Figure 2.2***.

Figure 2.2 – Walk Distance to Whitechurch Green Bus Stops (Northern Site)

2.3 The walking distance to/from the nearest Whitechurch Green Bus Stops to the Northern Site Access is illustrated below as ***Figure 2.3***

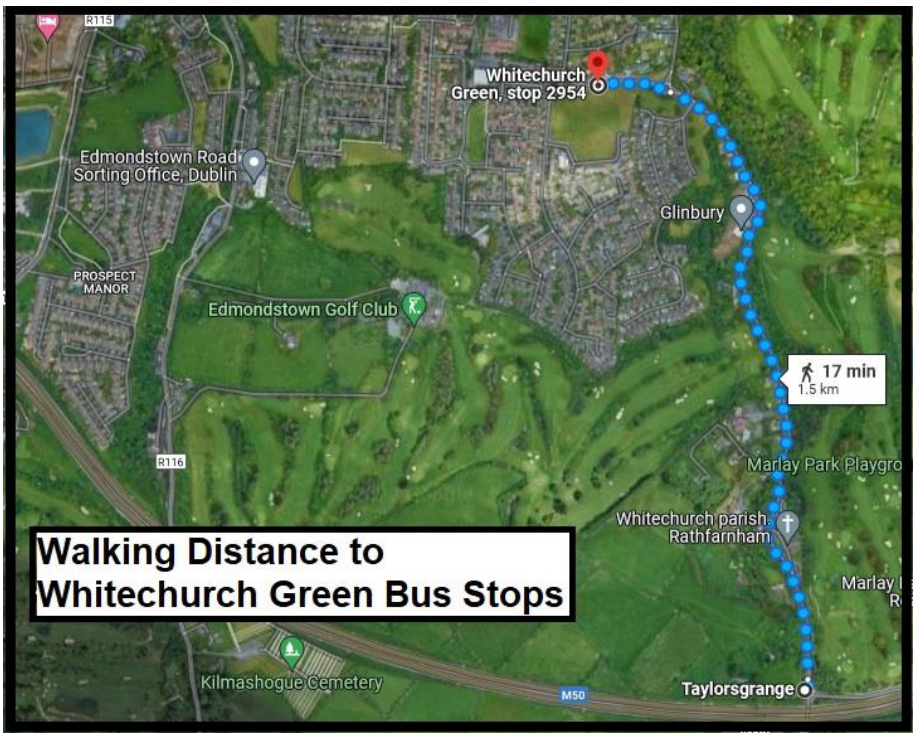


Figure 2.3 – Walk Distance to Whitechurch Green Bus Stops (Southern Site)

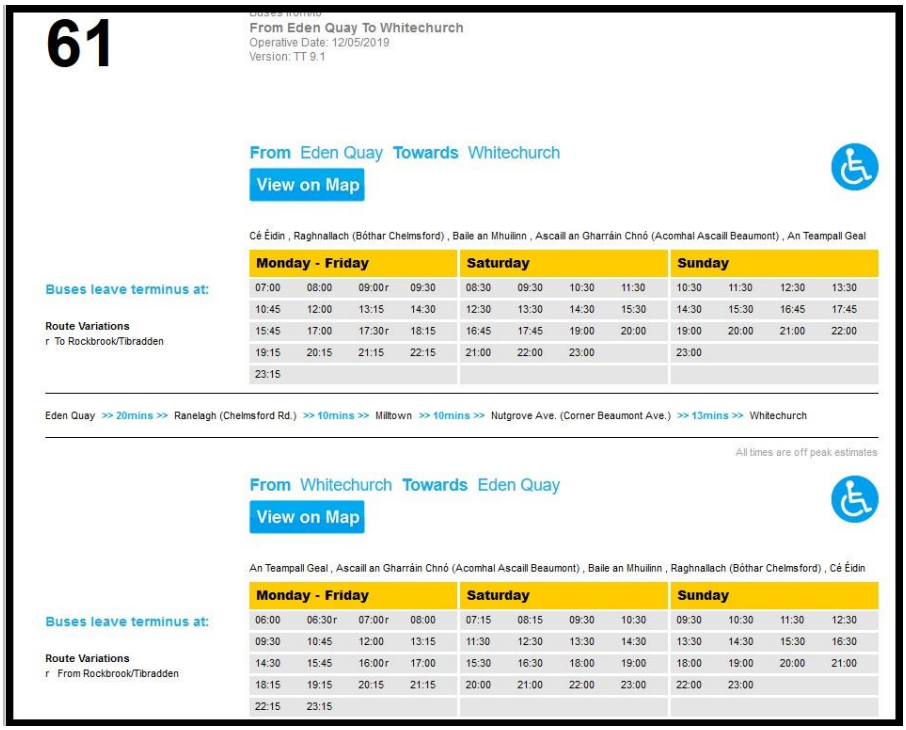
2.4 The nearest local Bus Stops are clearly within an acceptable walk distance of the subject site, with a walk time of 12-17 minutes, both considered appropriate for commuters. The Bus Stops served by the #16 service on Taylors Lane to the north are some 600m additional walk distance. An image showing the existing Stops and facilities provided at 'Whitechurch Green' is included below as ***Figure 2.4.***

Figure 2.4 – Existing Bus Stop Infrastructure at Whitechurch Green

2.5 In terms of the Existing Bus Service Provision and Service Frequency, the 'Terminus' Bus Stops on Whitechurch Green are served by City Service 15D, 61 and 116, in addition to the #161 Dundrum Service and the #175 Service to Belfield Campus. The Services #15D, #61 and #161 have a **combined** bus frequency of 4 buses departing the terminus during the weekday Commuter peak period.

2.6 The full **CURRENT** Timetables for these services are included as ***Appendix A***.

2.7 An extract from the Scheduled Service #61 (Eden Quay-Whitechurch-Eden Quay) timetable (accurate at the time of writing this Report) is included below as ***Figure 2.5.***



61

From Eden Quay To Whitechurch
Operative Date: 12/05/2019
Version: TT 9.1

From Eden Quay **Towards** Whitechurch

View on Map

Cé Éidin , Raghnallach (Bóthar Chelmsford) , Baile an Mhuilinn , Ascaill an Gharráin Chnó (Acomhal Ascaill Beaumont) , An Teampall Geal

Buses leave terminus at:

Route Variations
r To Rockbrook/Tibradden

Monday - Friday				Saturday				Sunday			
07:00	08:00	09:00r	09:30	08:30	09:30	10:30	11:30	10:30	11:30	12:30	13:30
10:45	12:00	13:15	14:30	12:30	13:30	14:30	15:30	14:30	15:30	16:45	17:45
15:45	17:00	17:30r	18:15	16:45	17:45	19:00	20:00	19:00	20:00	21:00	22:00
19:15	20:15	21:15	22:15	21:00	22:00	23:00		23:00			
23:15											

Eden Quay >> 20mins >> Ranelagh (Chelmsford Rd.) >> 10mins >> Milltown >> 10mins >> Nutgrove Ave. (Corner Beaumont Ave.) >> 13mins >> Whitechurch

All times are off peak estimates

From Whitechurch **Towards** Eden Quay

View on Map

An Teampall Geal , Ascaill an Gharráin Chnó (Acomhal Ascaill Beaumont) , Baile an Mhuilinn , Raghnallach (Bóthar Chelmsford) , Cé Éidin

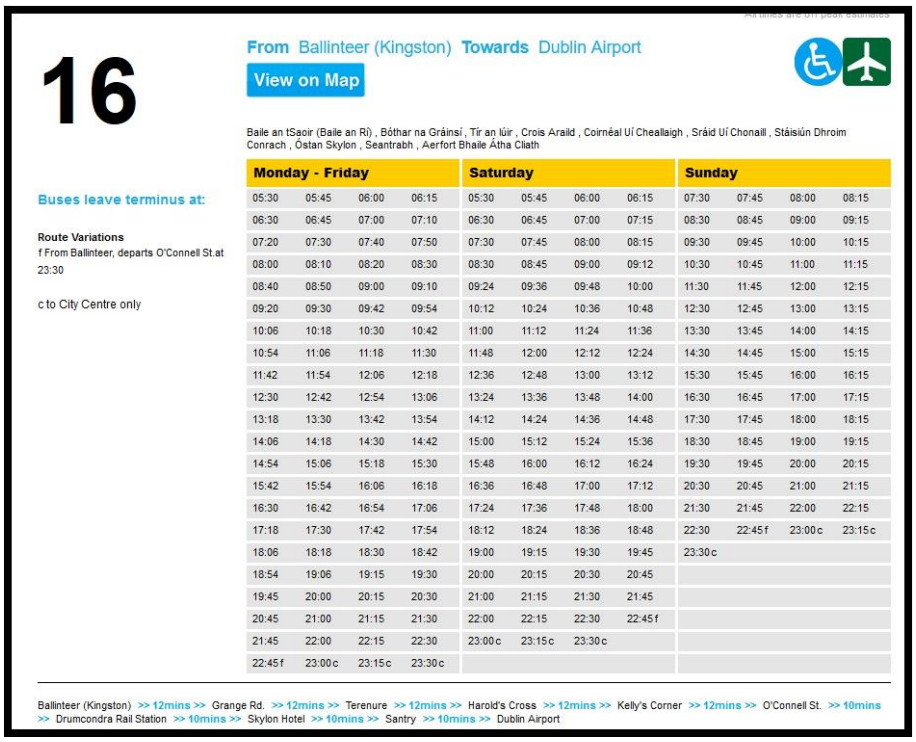
Buses leave terminus at:

Route Variations
r From Rockbrook/Tibradden

Monday - Friday				Saturday				Sunday			
06:00	06:30r	07:00r	08:00	07:15	08:15	09:30	10:30	09:30	10:30	11:30	12:30
09:30	10:45	12:00	13:15	11:30	12:30	13:30	14:30	13:30	14:30	15:30	16:30
14:30	15:45	16:00r	17:00	15:30	16:30	18:00	19:00	18:00	19:00	20:00	21:00
18:15	19:15	20:15	21:15	20:00	21:00	22:00	23:00	22:00	23:00		
22:15	23:15										

Figure 2.5 – Extract Service #215 Timetable

2.8 And of course, the bus services from Whitechurch provide for connectivity to Public Transports Hubs and Interchanges (Rail, Intercity Bus Services, LUAS etc). The services also provide a connection to the high frequency #16 service a short distance away on Taylors Lane. An extract from the Scheduled Service #16 (Ballinteer-Airport-Ballinteer) timetable (accurate at the time of writing this Report) is included below as ***Figure 2.6.***



16

From Ballinteer (Kingston) **Towards** Dublin Airport

View on Map

Baile an tSaoir (Baile an Rí) , Bóthar na Gráinsí , Tír an Iúir , Crois Araild , Coirnéal Uí Cheallaigh , Sráid Uí Chonaill , Stáisiún Dhroim Conrach , Óstan Skylon , Seantrabh , Aerfort Bhaile Átha Cliath

Buses leave terminus at:

Route Variations
f From Ballinteer, departs O'Connell St.at 23:30

c to City Centre only

Monday - Friday				Saturday				Sunday			
05:30	05:45	06:00	06:15	05:30	05:45	06:00	06:15	07:30	07:45	08:00	08:15
06:30	06:45	07:00	07:10	06:30	06:45	07:00	07:15	08:30	08:45	09:00	09:15
07:20	07:30	07:40	07:50	07:30	07:45	08:00	08:15	09:30	09:45	10:00	10:15
08:00	08:10	08:20	08:30	08:30	08:45	09:00	09:12	10:30	10:45	11:00	11:15
08:40	08:50	09:00	09:10	09:24	09:36	09:48	10:00	11:30	11:45	12:00	12:15
09:20	09:30	09:42	09:54	10:12	10:24	10:36	10:48	12:30	12:45	13:00	13:15
10:06	10:18	10:30	10:42	11:00	11:12	11:24	11:36	13:30	13:45	14:00	14:15
10:54	11:06	11:18	11:30	11:48	12:00	12:12	12:24	14:30	14:45	15:00	15:15
11:42	11:54	12:06	12:18	12:36	12:48	13:00	13:12	15:30	15:45	16:00	16:15
12:30	12:42	12:54	13:06	13:24	13:36	13:48	14:00	16:30	16:45	17:00	17:15
13:18	13:30	13:42	13:54	14:12	14:24	14:36	14:48	17:30	17:45	18:00	18:15
14:06	14:18	14:30	14:42	15:00	15:12	15:24	15:36	18:30	18:45	19:00	19:15
14:54	15:06	15:18	15:30	15:48	16:00	16:12	16:24	19:30	19:45	20:00	20:15
15:42	15:54	16:06	16:18	16:36	16:48	17:00	17:12	20:30	20:45	21:00	21:15
16:30	16:42	16:54	17:06	17:24	17:36	17:48	18:00	21:30	21:45	22:00	22:15
17:18	17:30	17:42	17:54	18:12	18:24	18:36	18:48	22:30	22:45f	23:00c	23:15c
18:06	18:18	18:30	18:42	19:00	19:15	19:30	19:45	23:30c			
18:54	19:06	19:15	19:30	20:00	20:15	20:30	20:45				
19:45	20:00	20:15	20:30	21:00	21:15	21:30	21:45				
20:45	21:00	21:15	21:30	22:00	22:15	22:30	22:45f				
21:45	22:00	22:15	22:30	23:00c	23:15c	23:30c					
22:45f	23:00c	23:15c	23:30c								

Ballinteer (Kingston) >> 12mins >> Grange Rd. >> 12mins >> Terenure >> 12mins >> Harold's Cross >> 12mins >> Kelly's Corner >> 12mins >> O'Connell St. >> 10mins >> Drumcondra Rail Station >> 10mins >> Skylon Hotel >> 10mins >> Santry >> 10mins >> Dublin Airport

Figure 2.6 – Extract Dublin Bus Timetable #16

2.9 Dublin Bus website and Mobile Phone Apps now provide a service that allows customers access up to date real information for Bus Arrivals and departures on a stop-by-stop basis. This information on Bus Arrivals and Departures allows customers to plan their arrivals and departures and associated walk times accurately, facilitating journey planning.

2.10 The local Dublin Bus Services & *Go-Ahead* Services consists of a fleet of high quality comfortable 'Double Decker' Buses, being accessible buses with 'low-floor' technology incorporated into their design.

2.11 Transport for Ireland also provides an interactive online tool that enables the user to plan journeys, with real time information on Bus & Rail services on a nationwide basis. An extract from the website provided for illustrative purposes is included below as ***Figure 2.7.***

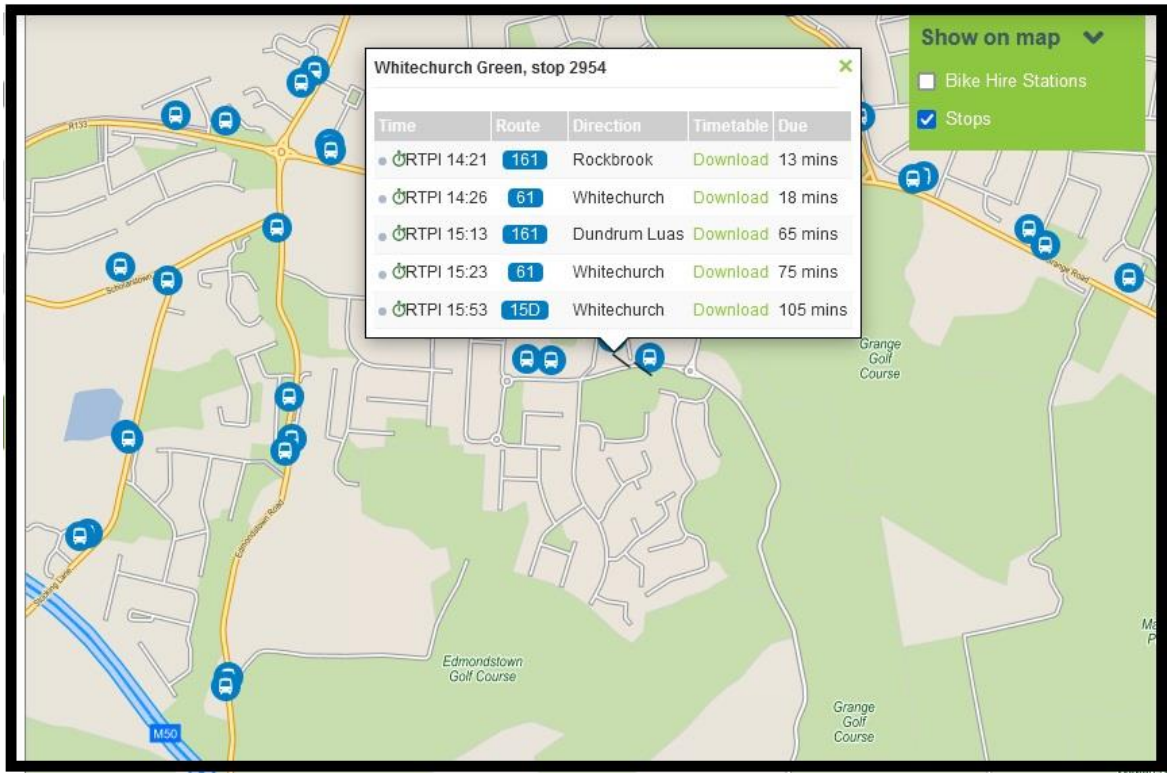


Figure 2.7 – Extract Transport for Ireland Real Time Information

2.12 In the **short term**, with the anticipated increased demand for buses associated with the development, it is sensibly expected that an additional demand will exist for **Dublin Bus/NTA** to extend the Whitechurch Area Bus Services to serve the lands (or an alternative as deemed appropriate). The location of the under-construction DLRCC St Thomas Regional Sports Campus on the south side of the M50 at Tibradden supports this

(refer details contained within the main body of the TA Report). Clearly, the anticipated resulting demand of any new residential area combined with a Regional Sports Campus, would make the logical extension of the current bus services commercially viable.

2.13 However, this Report addresses the increased capacity bus demand created by the Residential Development based on **current** Modal Split and Existing Bus Services.

FUTURE BUS SERVICES

2.14 In the Medium to Longer Term, with the eventual continuation of the New Link street through to Edmondstown Rd, proposed as part of this application, there will be a further opportunity for Dublin Bus to maintain, extend or improve the bus services. This would then alter mode share. For example, bus services could run up Whitechurch Rd and loop back to the City along Edmondstown Road or vice-versa.

2.15 The NTA have published plans for the new Bus Connects Network for Dublin, and an annotated extract from the plan showing the site and the Regional Sports Campus is shown below as ***Figure 2.8.***

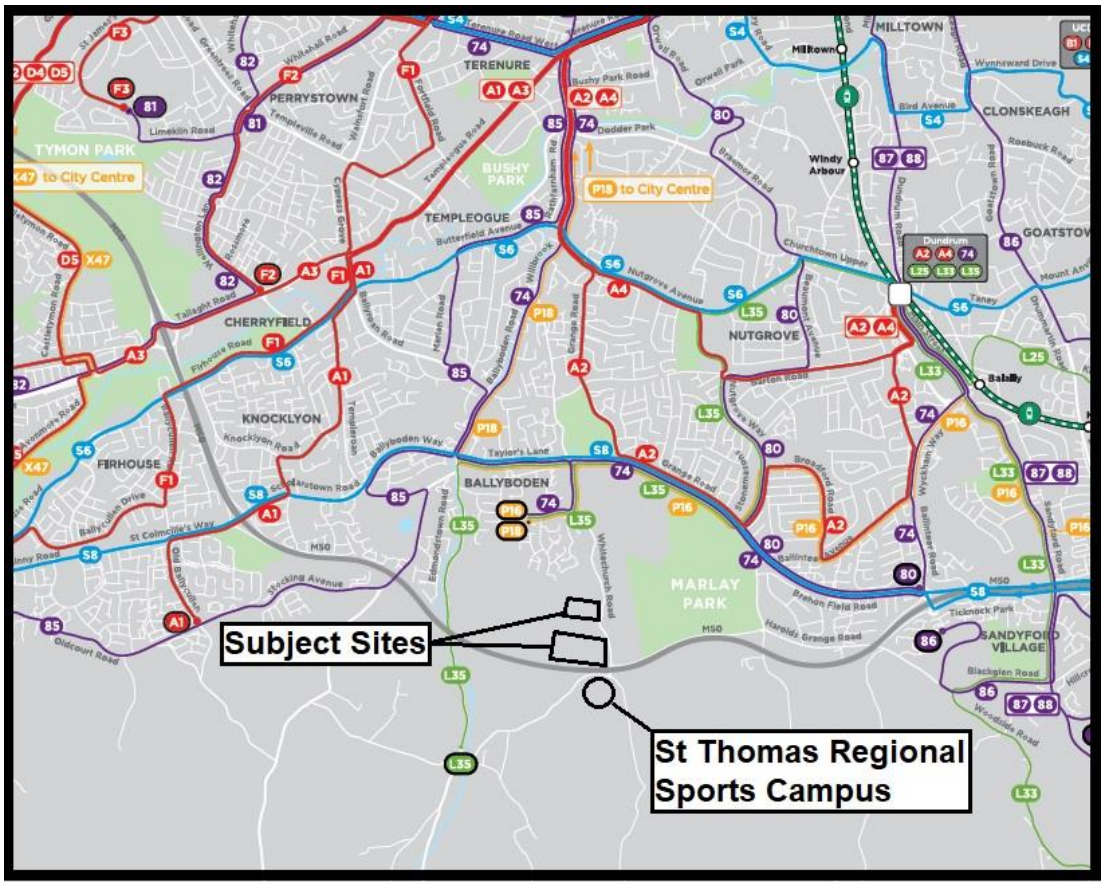


Figure 2.8 – Extract Current NTA Network Plans & Site(s)

2.16 The current plans do not show new bus services passing the sites on Whitechurch Road, as of course commercial operations rely on a market and demand for services. In this case therefore an increased demand will of course be created by the building of new homes and importantly a requirement to connect to the new Regional Sports Campus.

2.17 This demand that currently exists, and will be improved in the future, is evidenced by the following: - We understand that there has been a recent application by a Private Bus Operator for a licence to operate a bus service linking Edmondstown, Marlay Park and Whitechurch Road to Sandyford in a loop arrangement, as illustrated in ***Figure 2.9***.

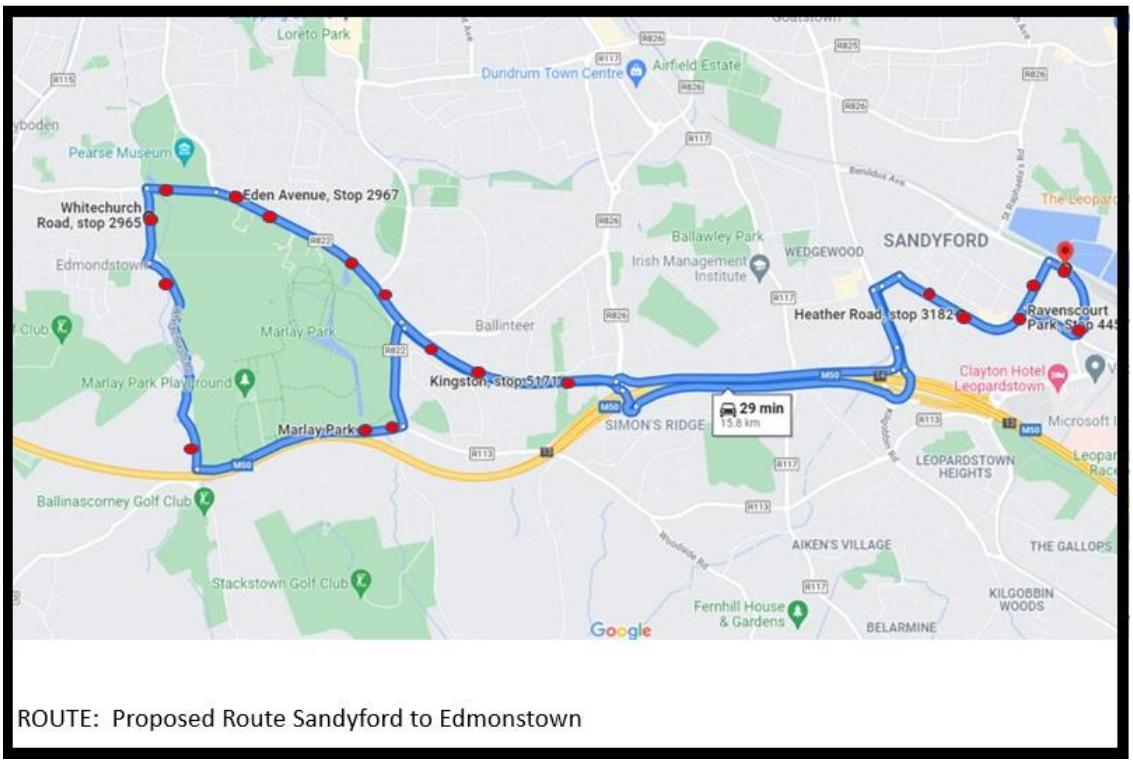


Figure 2.9 – Route of Proposed Service, As Per Recent Application to NTA

2.18 Whilst this is clearly not a 100% commitment to the service provision, it is currently under consideration by the NTA. It indicates an existing need for such a bus provision and provides a measure of reassurance in terms of the commercial viability of same.

2.19 As mentioned, DLRCC have granted planning permission for the major Regional Sports Campus at Tibradden just on the other side of the M50. Dundrum South Dublin Athletics Club, in partnership with DLRCC, are currently building the new St Thomas **Regional Sports Campus**. Supported by the Council, Dundrum South Dublin Athletics Club (DSD AC) & **seven national governing sports bodies, the centre will feature an outdoor 400**

metre running track, an indoor sprint track, a multi-use gymnasium and other high quality indoor and outdoor amenities for gymnastics, archery, fencing, cycling and triathlon, as well as Special Olympics facilities

2.20 DSD AC, and the National Bodies listed, are keen to promote sustainable transport, and accessibility for all, consistent with the ethos of the participating clubs & sports bodies. The campus will generate interest on a National and indeed international basis. Provision of a reliable and frequent Public Transport Link to the facility to/from the City Centre is therefore critical to the Club and National Bodies. We are aware that DSD AC have written to the NTA to request that a service or services are extended to the facility. **In this regard, we believe that the extension of existing or new bus services along Whitechurch Road is inevitable**

2.21 Notwithstanding the above, the proposed bus facilities are clearly accessible to the site, as illustrated in the Annotated extract included below as ***Figure 2.10***, which shows the accessibility of services within a 2km iso-distance.

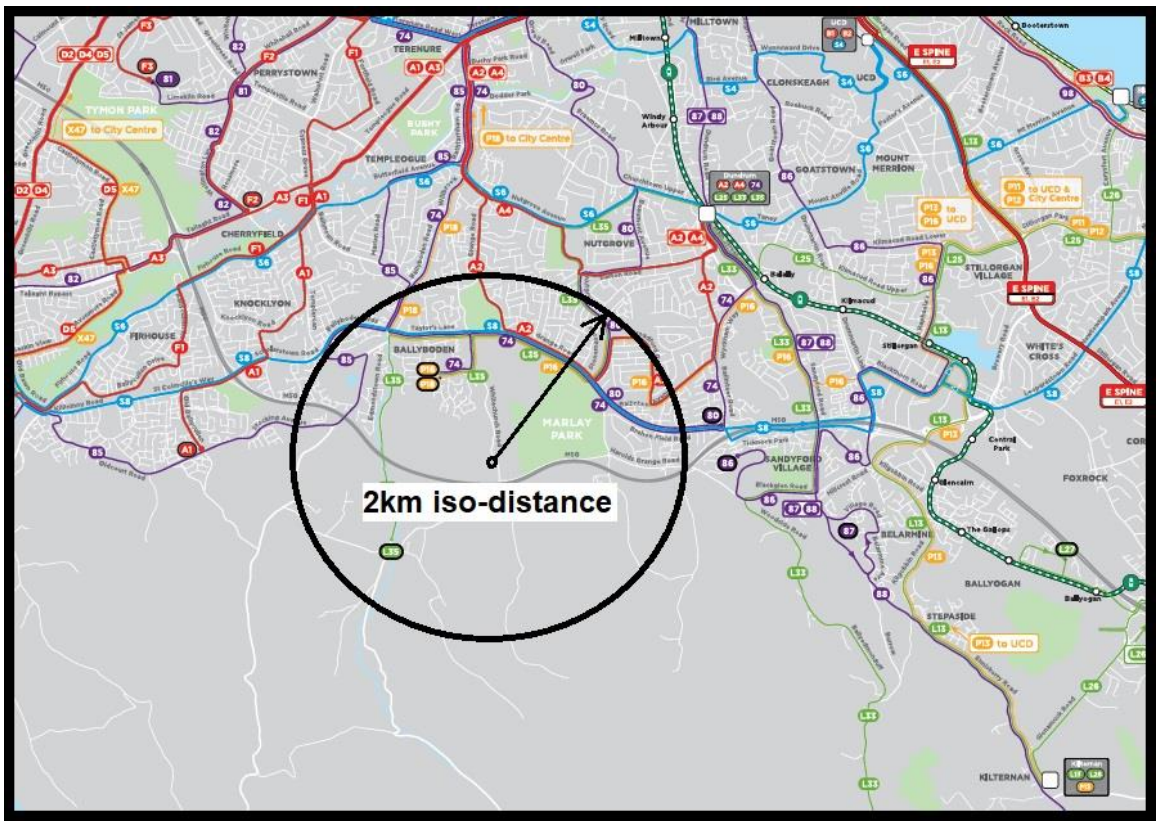


Figure 2.10 – 2km Iso-Distance of NTA Network

2.22 It is clear from the above that the following planned Bus Connects services are within a 15 min walk;- 'Express Routes' P16 & P18 (Yellow), 'Radial Route' #74 (Purple) and 'Local

Route' L35 (Green) – all of which terminate at Whitechurch Green just north of the site. The following services are within a 25 minute walk or less; - 'Spine Route' A2 (Red) and 'Orbital Route' S8 (Blue). The site is therefore easily accessible by bus by a wide range of Future Planned routes, even in the absence of an extension of the current bus services.

2.23 In terms of **Bus Passenger Capacity**, a typical Dublin Bus double decker bus has a capacity to accommodate ~91 passengers. However, it should be noted Dublin Bus are introducing new hybrid buses, some of which have extra capacity e.g. the new Wrightbus StreetDeck HEV 96 double-decker buses.

3.0 BUS USE PREDICTIONS, CAPACITY & DEMAND

3.1 We have used the CSO Local Small Area Mapping to establish the proportion of Bus Users within the area surrounding the site in order to estimate the additional demand for Buses. An annotated extract from the CSO Database Small Area Mapping used for this purpose is included below as ***Figure 3.1.***

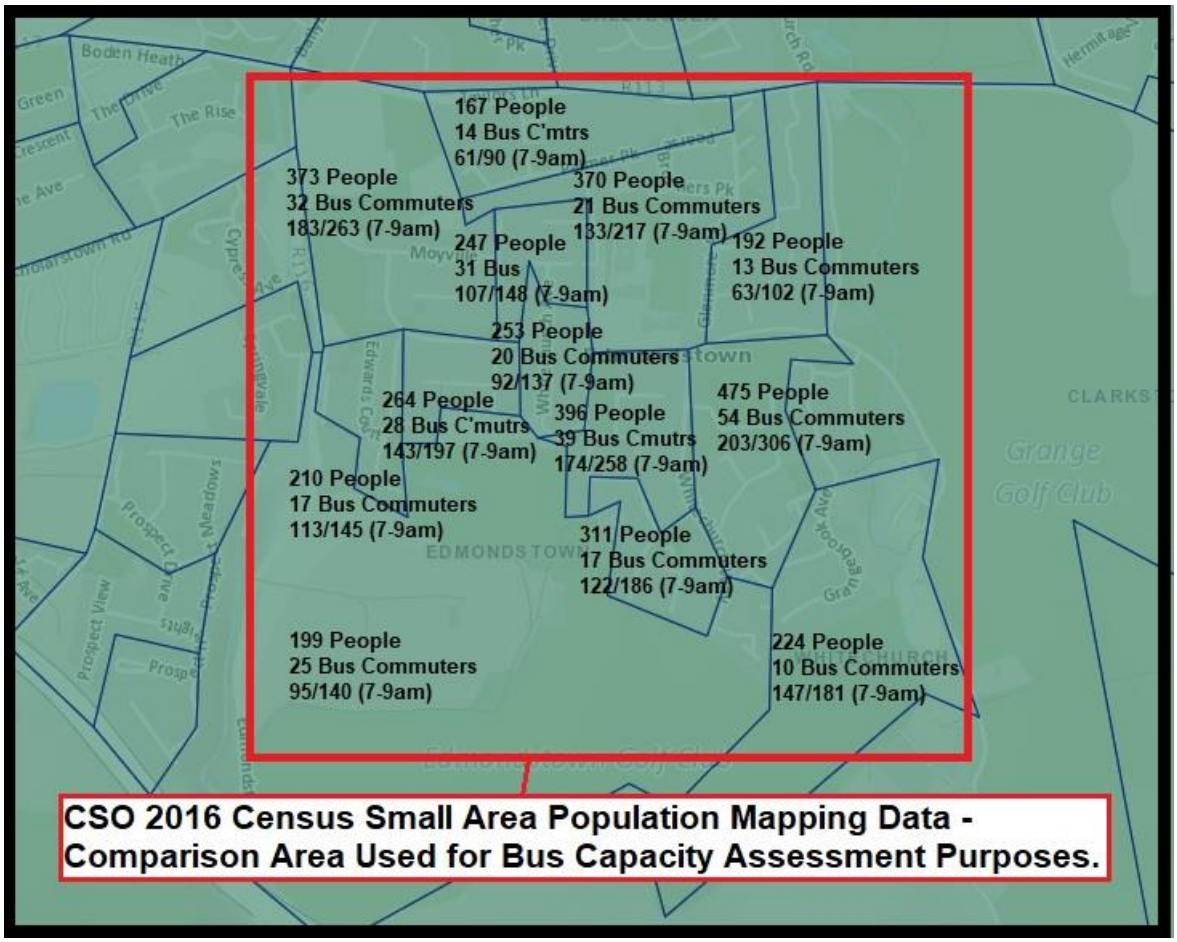


Figure 3.1 – Collated CSO Local Area Data

3.2 Utilising the CSO data, this confirms the following;

- 64% of the Total Local Population are at School, Studying and Working.
- 13.5% of these travel by Bus, and
- 69% leave home between 7am and 9am.

3.3 For the purposes of quantifying the residential population of the completed development, we have applied an average rate of 1.5 residents per 1-2 Bedroom Unit AND 3.5 residents per 3-4 Bedroom Units. Based on this information, an assessment of Capacity and Demand for Bus use can then be undertaken.

3.4 It is expected that the proposed development of 106 No Apartments and 72 No Housing Units will together accommodate a maximum total of 435 residents, based on the mix of unit types. The resulting demand for bus seats has then been calculated using the information gathered from the CSO database in Figure 3.1 and summarised in Section 3.2 above (as illustrated and explained in **Table 3.1** below). Of course, there will possibly be a very low contra-flow demand for bus seats created by the small number of Creche & Retail Staff, a number which is considered by us to be negligible in the context of this calculation.

Table 3.1; Total Current Peak Commuter Hr Demand for Bus Seats Due to SHD Development

No. of New Residents	64% Of Which Residents will be Working/School or Students	13.5% will be Travelling by Bus	69% will be Travelling during Peak Period 7am to 9am	Total Peak Period Demand for Bus Seats Created 7am to 9am
435	278	37	18	18

3.5 We reiterate that the weekday AM Peak period is the highest demand period for bus use. The above calculation confirms that the proposed development will result in an increased demand for buses of 18 seats, spread evenly across the 7-9am period, based on current local mode-split.

BUS CAPACITY & DEMAND

3.6 Each of the existing Buses has a capacity for 91 people commuting on each service. There are a total of 4 No. bus services operating from Whitechurch Green during each of the weekday AM and PM commuter peak periods. Based on CSO recorded Bus usage patterns locally, the proposed development will therefore create a demand for 4-5 seats per bus service at the Stop (which is of course a Terminus Point, with adequate seats currently available).

3.7 A total requirement for 5 places on any Bus represents an increase in demand of 5.4% based on the 91 person capacity bus. This should be considered in terms of the expected day-to-day variation of 10% in customer demand that traditionally occurs, and in terms of the increased uptake in Home-working which has reduced demand for commuting as a result of the Covid Pandemic.

3.8 This demand can easily be accommodated within the existing services based on our observation of current bus occupancy at Whitechurch Green Terminus. In future, there are additional services to be created as part of Bus Connects as set out within Section 2.0 above. There will therefore also be more than adequate capacity on the further improved services for the area.

4.0 CONCLUSIONS

4.1 NRB Consulting Engineers Ltd were appointed to address the Traffic & Transportation issues associated with the construction of a proposed residential development at Whitechurch Road, Rathfarnham, Dublin 14. In terms of Residential elements, the scheme comprises 72 Houses and 106 Apartments.

4.2 The NRB Commission includes this assessment of current and future Bus Capacity, entitled 'Bus Services & Capacity Assessment Report'. The purpose of this Study is to review the potential impact of the development upon the existing and future bus services in the vicinity of the site serving Whitechurch Road.

4.3 The analysis of the existing and future bus services has been undertaken based on an assessment methodology which includes trip generation assessment, modal split assumptions, and assignment/distribution. These assumptions have been based on real data extracted from the Central Statistics Office (CSO) 2016 Small Area Map Data, available through the CSO online mapping tool. This data was used to quantify the anticipated demand for Buses as a result of the proposed development.

4.4 This Report contains details of current and future Bus Services and Bus Capacity serving the site and the local area.

4.5 The assessment confirms that the completion and full occupation of the development will result in an increased demand for bus seats, with an additional 18 customers during each of the weekday AM and PM Commuter peak periods. This represents a total of 5.4% of the number of bus seats or capacity available locally (depending upon the bus type).

4.6 We conclude that the additional demand for Buses as a result of the proposed development can be accommodated on the existing and future improved bus services to/from the Whitechurch Road Area.

4.7 Whilst this Report contains an assessment of Bus Capacity, it should be remembered that Bus Operators are commercial in nature, running their businesses based on demand rather than medium to longer term future demand. Bus services are provided based on demand rather than potential. If there is an increased demand for services, or indeed if there is a deficit in a service provision, Operators generally react to improve facilities if it makes commercial sense to do so. More customers means more revenue generated.

APPENDICES - CONTENT

A A A

15d

Buses from/to
From Merrion Square Towards Whitechurch
Operative Date: 28/11/2021
Version: TT 21.1

From Merrion Sq. Towards Whitechurch

Cearnóg Mhuirfean , Sráid Aungier (Sráid an Easpaig) , Ráth Maonais , Tír an Iúir (Bóthar Pháirc na dTor) , An Teampall Geal

Buses leave terminus at:	Monday - Friday	Saturday	Sunday
	15:00 16:45		

Merrion Sq. >> 16mins >> Aungier St. (Bishop St.) >> 10mins >> Rathmines >> 12mins >> Terenure (Bushy Park Road) >> 20mins >> Whitechurch

All times are off peak estimates

From Whitechurch Towards Merrion Sq.

An Teampall Geal , Tír an Iúir (Bóthar Pháirc na dTor) , Ráth Maonais , Sráid Aungier (Sráid an Easpaig) , Cearnóg Mhuirfean

Buses leave terminus at:	Monday - Friday	Saturday	Sunday
	08:05		

Whitechurch >> 20mins >> Terenure (Bushy Park Road) >> 12mins >> Rathmines >> 10mins >> Aungier St. (Bishop St.) >> 16mins >> Merrion Sq.

All times are off peak estimates

Fare Stages

24 76 Merrion Sq.	33 67 Rathdown Park
25 75 Townsend Street / Pearse Street	34 66 Rathfarnham Castle
26 74 Sth. Great George's St.	35 65 Butterfield Ave. (Owendore Ave.)
27 73 Aungier St. (Bishop St.)	36 64 Marian Rd. (Marian Crescent)
28 72 Richmond St. South	37 63 Marian Rd. (Anne Devlin Park)
29 71 Rathmines Rd. Lwr. (Richmond Hill)	38 62 Ballyboden Rd. (Ballyroan House)
30 70 Rathmines Rd. (Rathgar Rd.)	39 61 Ballyboden Way (Boden Park)
31 69 Rathgar Rd. (Frankfort Ave.)	40 60 Whitechurch
32 68 Zion Rd. (Bushy Park Rd.)	

Customer Comment Desk: (01) 8734222
Phone lines open: Monday to Saturday 08:30hrs – 18:00hrs (except public holidays)

A A A

61

Buses from/to
From Eden Quay To Whitechurch
Operative Date: 12/05/2019
Version: TT 9.1

From Eden Quay Towards Whitechurch

Cé Éidin , Raghnallach (Bóthar Chelmsford) , Baile an Mhuilinn , Ascaill an Gharráin Chnó (Acomhal Ascaill Beaumont) , An Teampall Geal

Buses leave terminus at:

Route Variations
r To Rockbrook/Tibradden

Monday - Friday				Saturday				Sunday			
07:00	08:00	09:00r	09:30	08:30	09:30	10:30	11:30	10:30	11:30	12:30	13:30
10:45	12:00	13:15	14:30	12:30	13:30	14:30	15:30	14:30	15:30	16:45	17:45
15:45	17:00	17:30r	18:15	16:45	17:45	19:00	20:00	19:00	20:00	21:00	22:00
19:15	20:15	21:15	22:15	21:00	22:00	23:00		23:00			
23:15											

Eden Quay >> 20mins >> Ranelagh (Chelmsford Rd.) >> 10mins >> Milltown >> 10mins >> Nutgrove Ave. (Corner Beaumont Ave.) >> 13mins >> Whitechurch

All times are off peak estimates

From Whitechurch Towards Eden Quay

An Teampall Geal , Ascaill an Gharráin Chnó (Acomhal Ascaill Beaumont) , Baile an Mhuilinn , Raghnallach (Bóthar Chelmsford) , Cé Éidin

Buses leave terminus at:

Route Variations
r From Rockbrook/Tibradden

Monday - Friday				Saturday				Sunday			
06:00	06:30r	07:00r	08:00	07:15	08:15	09:30	10:30	09:30	10:30	11:30	12:30
09:30	10:45	12:00	13:15	11:30	12:30	13:30	14:30	13:30	14:30	15:30	16:30
14:30	15:45	16:00r	17:00	15:30	16:30	18:00	19:00	18:00	19:00	20:00	21:00
18:15	19:15	20:15	21:15	20:00	21:00	22:00	23:00	22:00	23:00		
22:15	23:15										

Whitechurch >> 13mins >> Nutgrove Ave. (Corner Beaumont Ave.) >> 10mins >> Milltown >> 10mins >> Ranelagh (Chelmsford Rd.) >> 20mins >> Eden Quay

All times are off peak estimates

Fare Stages

25 75 Eden Quay	37 63 Nutgrove Ave. (Corner Beaumont Ave.)
26 74 Merrion Sq. / Clare St.	38 62 Rathfarnham Church
27 73 Earlsfort Terrace	39 61 Ballyboden Rd. (Ballyroan House)
28 72 Charlemont Terrace	40 60 Ballyboden (Taylor's Lane)
29 71 Ranelagh Rd. (Dartmouth Rd.)	41 59 Whitechurch Rd. (Grange Golf Club)
30 70 Ranelagh (Chelmsford Rd.)	42 58 Whitechurch Rd. (Whitechurch Lodge)
31 69 Sandford Rd. (Marlboro Rd.)	43 57 Whitechurch National School
32 68 Milltown (Ramleh Park)	44 56 Taylor's Lane
33 67 Milltown (Church)	45 55 Edmonstown Post Office
34 66 Dundrum Rd. (Bird Ave.)	46 54 Reckett's Factory
35 65 Dundrum Rd. (Columbanus Rd.)	47 53 Newtown House
36 64 Dundrum Rd. (Frankfort Park)	48 52 Rockbrook

Customer Comment Desk: (01) 8734222
Phone lines open: Monday to Saturday 08:30hrs – 18:00hrs (except public holidays)

A A A

116

Buses from/to
From Parnell Sq. to Whitechurch
Operative Date: 05/03/2018
Version: TT 8.1

From Parnell Sq. Towards Whitechurch

Bóthar Sussex (Bóthar Burlington) , Stigh Lorgan , Áth an Ghainimh , Dún Droma , An Teampall Geal

Monday - Friday (except Bank Holidays)

Buses leave terminus at

From Leeson Street (Burlington Hotel) to Whitechurch 15:30

Sussex Road. (Burlington Road) » 15mins » Stillorgan » 25mins » Sandyford » 25mins » Dundrum » 15mins » Whitechurch

All times are off peak estimates

From Whitechurch Towards Parnell Sq.

An Teampall Geal , Dún Droma , Áth an Ghainimh , Stigh Lorgan , Bóthar Sussex (Bóthar Burlington)

Monday - Friday (except Bank Holidays)

Buses leave terminus at

From Whitechurch to Parnell Square East 07:40

Whitechurch » 15mins » Dundrum » 25mins » Sandyford » 25mins » Stillorgan » 15mins » Sussex Road. (Burlington Road)

All times are off peak estimates

Fare Stages

24	76	Parnell Sq. East	
25	75	O'Connell St.	
26	74	Kildare St. / Dawson St.	
27	73	Pembroke St. (Leeson St.)	
28	72	Leeson St. Bridge	
29	71	Wellington Place (Waterloo Rd.)	
30	70	Morehampton Rd. (Marlboro Rd.)	
31	69	Morehampton Rd. (Belmont Ave.)	
32	68	Stillorgan Rd. (Donnybrook Church)	
33	67	Stillorgan Rd. (Nutley Lane)	
34	66	Stillorgan Rd. (Woodbine Rd.)	
35	65	Stillorgan Rd. (Seafield Rd.)	
36	64	Stillorgan Rd. (Booterstown Ave.)	
37	63	Stillorgan Rd. (Mount Merrion Ave.)	
38	62	Stillorgan Rd. (Woodlands Ave.)	
39	61	Stillorgan (Shopping Centre)	
40	60	Upr. Kilmacud Rd. (Kilmacud Rd.)	
41	59	Sandyford Business District (Blackthorn Rd.)	
42	58	Blackthorn Drive	
43	57	Dundrum Shopping Centre	
44	56	Dundrum Rd. (Ballinteer Rd.)	
45	55	Ballinteer Rd. (Wyckham Park)	
46	54	Ballinteer Rd. (Ballinteer Park)	
47	53	Broadford Rd. (Corner Broadford Rise)	
48	52	Broadford Walk	
49	51	Grange Rd. (Glaxo)	
50	50	Grange Rd. (Eden Pub)	
51	49	Whitechurch Estate	

Route Information

Please note morning departure is from Whitechurch to Parnell Sq.

Customer Comment Desk: (01) 8734222
Phone lines open: Monday to Saturday 08:30hrs – 18:00hrs (except public holidays)

Rockbrook - Dundrum	161	Monday to Friday	Valid from 23rd of January 2022

Service Number	161	161	161	161	161	161	161	161
Rockbrook (2934)	07:30	08:55	10:35	12:05	13:35	15:05	16:45	18:15
Moyville (2940)	07:34	08:59	10:39	12:09	13:39	15:09	16:49	18:19
Whitechurch Way (7067)	07:39	09:04	10:44	12:14	13:44	15:14	16:54	18:24
Heather Lawn (4988)	07:46	09:11	10:50	12:20	13:50	15:20	17:00	18:30
Dundrum Luas (2825)	08:00	09:25	11:02	12:32	14:02	15:32	17:12	18:42

Dundrum - Rockbrook	161	Monday to Friday	Valid from 23rd of January 2022

Service Number	161	161	161	161	161	161	161	161
Dundrum Luas (2825)	08:10	09:55	11:25	12:55	14:25	15:55	17:25	18:55
Heather Lawn (4987)	08:19	10:04	11:34	13:04	14:34	16:07	17:37	19:04
Whitechurch Way (7067)	08:27	10:10	11:41	13:11	14:41	16:15	17:45	19:10
Ballyboden Crescent (7449)	08:31	10:14	11:45	13:15	14:45	16:20	17:50	19:14
Rockbrook (2933)	08:39	10:20	11:51	13:21	14:51	16:26	17:56	19:20

UCD - Citywest via Dundrum | **175** | **Monday to Friday** | **Valid from 23rd of January 2022**

Service Number	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175
UCD (765)	06:00	07:15	08:15	09:15	10:05	11:05	12:05	13:05	14:05	15:05	16:05	17:05	18:05	19:05	20:05	21:15	22:20	23:20
Deerpark Road (10096)	06:05	07:23	08:25	09:23	10:12	11:12	12:13	13:13	14:14	15:15	16:16	17:16	18:15	19:14	20:12	21:21	22:26	23:26
Dundrum Luas (2825)	06:10	07:29	08:32	09:29	10:18	11:18	12:19	13:20	14:20	15:28	16:27	17:24	18:22	19:21	20:18	21:25	22:30	23:30
The Rise (4397)	06:16	07:37	08:43	09:36	10:28	11:27	12:29	13:30	14:29	15:38	16:39	17:33	18:31	19:30	20:26	21:32	22:37	23:37
Scholarstown Park (10105)	06:23	07:50	08:56	09:48	10:38	11:37	12:39	13:44	14:41	15:57	16:54	17:48	18:45	19:41	20:36	21:41	22:45	23:45
Old Bawn Centre (2532)	06:30	08:04	09:12	09:56	10:46	11:45	12:48	13:54	14:50	16:10	17:07	18:01	18:54	19:49	20:44	21:47	22:52	23:52
Village Green (2617)	06:34	08:11	09:18	10:02	10:52	11:52	12:54	14:01	14:55	16:16	17:14	18:06	19:00	19:54	20:49	21:51	22:56	23:56
The Square Tallaght (4347)	06:41	08:21	09:26	10:09	11:00	12:00	13:03	14:08	15:02	16:25	17:21	18:14	19:06	20:00	20:56	21:57	23:01	24:00
Ard Mor Drive (10110)	06:48	08:31	09:36	10:17	11:09	12:09	13:12	14:17	15:11	16:35	17:31	18:24	19:16	20:10	21:05	22:05	23:09	24:07
Kingswood Avenue (6002)	06:53	08:39	09:42	10:23	11:15	12:16	13:19	14:24	15:18	16:41	17:39	18:30	19:22	20:15	21:10	22:10	23:14	24:12

Citywest - UCD via Dundrum | **175** | **Monday to Friday** | **Valid from 23rd of January 2022**

Service Number	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175
Kingswood Avenue (6001)	06:15	07:10	07:40	08:10	08:50	09:30	10:30	11:30	12:30	13:30	14:30	15:30	16:30	17:30	18:35	19:35	20:35	21:15
Ard Mor Drive (10150)	06:20	07:15	07:45	08:17	08:59	09:36	10:36	11:36	12:36	13:37	14:37	15:37	16:38	17:40	18:43	19:40	20:39	21:19
Tallaght Luas (4348)	06:29	07:25	07:55	08:28	09:09	09:46	10:45	11:45	12:46	13:46	14:47	15:47	16:48	17:50	18:53	19:49	20:47	21:27
Old Bawn Centre (2540)	06:41	07:37	08:07	08:43	09:21	09:59	10:57	11:59	13:00	13:59	15:02	16:01	17:04	18:06	19:06	20:00	20:56	21:36
Scholarstown Park (10154)	06:50	07:52	08:25	08:57	09:29	10:08	11:06	12:08	13:10	14:09	15:13	16:12	17:16	18:16	19:16	20:08	21:03	21:43
Marley Park (2969)	06:58	08:03	08:37	09:06	09:37	10:16	11:13	12:15	13:17	14:16	15:19	16:19	17:23	18:24	19:23	20:14	21:09	21:49
Ballinteer Avenue (2858)	07:02	08:09	08:42	09:11	09:41	10:20	11:18	12:21	13:23	14:21	15:24	16:24	17:27	18:29	19:28	20:18	21:13	21:53
Dundrum Centre (2841)	07:08	08:16	08:49	09:16	09:48	10:25	11:23	12:28	13:29	14:27	15:31	16:29	17:33	18:34	19:33	20:22	21:17	21:57
Dundrum Luas (2866)	07:11	08:19	08:51	09:20	09:52	10:29	11:27	12:32	13:33	14:31	15:34	16:33	17:38	18:38	19:37	20:26	21:19	21:59
Fosters Avenue (2052)	07:22	08:36	09:03	09:31	10:00	10:37	11:35	12:42	13:45	14:42	15:46	16:44	17:49	18:49	19:46	20:34	21:25	22:05
UCD (765)	07:30	08:47	09:16	09:37	10:07	10:45	11:45	12:52	13:51	14:50	15:54	16:57	17:58	18:58	19:54	20:39	21:30	22:10

Service Number	175
Kingswood Avenue (6001)	22:15
Ard Mor Drive (10150)	22:19
Tallaght Luas (4348)	22:27
Old Bawn Centre (2540)	22:36
Scholarstown Park (10154)	22:43
Marley Park (2969)	22:48
Ballinteer Avenue (2858)	22:51
Dundrum Centre (2841)	22:55
Dundrum Luas (2866)	22:58
Fosters Avenue (2052)	23:03
UCD (765)	23:07

TFI TRANSPORT FOR IRELAND

Go-Ahead Ireland

UCD - Citywest via Dundrum | **175** | **Saturday** | **Valid from 23rd of January 2022**

Service Number	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175
UCD (765)	08:15	09:15	10:05	11:05	12:05	13:05	14:05	15:05	16:05	17:05	18:05	19:05	20:05	21:15	22:20	23:20
Deerpark Road (10096)	08:21	09:22	10:13	11:13	12:13	13:13	14:13	15:13	16:13	17:13	18:13	19:13	20:12	21:21	22:26	23:26
Dundrum Luas (2825)	08:26	09:27	10:19	11:19	12:19	13:19	14:19	15:19	16:19	17:19	18:19	19:19	20:17	21:25	22:30	23:30
The Rise (4397)	08:32	09:34	10:27	11:28	12:28	13:28	14:28	15:28	16:28	17:28	18:28	19:28	20:25	21:32	22:37	23:37
Scholarstown Park (10105)	08:40	09:43	10:37	11:40	12:40	13:40	14:40	15:40	16:40	17:40	18:40	19:40	20:34	21:40	22:45	23:45
Old Bawn Centre (2532)	08:47	09:51	10:46	11:49	12:49	13:49	14:49	15:49	16:49	17:49	18:49	19:49	20:42	21:47	22:52	23:52
Village Green (2617)	08:51	09:57	10:52	11:55	12:55	13:55	14:55	15:55	16:55	17:55	18:55	19:55	20:46	21:51	22:56	23:56
The Square Tallaght (4347)	08:57	10:03	11:00	12:04	13:04	14:04	15:04	16:04	17:04	18:04	19:04	20:04	20:52	21:56	23:01	24:01
Ard Mor Drive (10110)	09:04	10:11	11:08	12:14	13:14	14:14	15:14	16:14	17:14	18:14	19:14	20:14	21:00	22:04	23:09	24:09
Kingswood Avenue (6002)	09:09	10:16	11:13	12:19	13:19	14:19	15:19	16:19	17:19	18:19	19:19	20:19	21:05	22:09	23:14	24:14

Citywest - UCD via Dundrum | **175** | **Saturday** | **Valid from 23rd of January 2022**

Service Number	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175
Kingswood Avenue (6001)	07:10	08:10	08:50	09:30	10:30	11:30	12:30	13:30	14:30	15:30	16:30	17:30	18:30	19:30	20:30	21:15	22:15
Ard Mor Drive (10150)	07:14	08:14	08:55	09:36	10:36	11:36	12:36	13:36	14:36	15:36	16:36	17:36	18:36	19:34	20:34	21:19	22:19
Tallaght Luas (4348)	07:22	08:22	09:04	09:46	10:46	11:46	12:46	13:46	14:46	15:46	16:46	17:46	18:46	19:42	20:42	21:27	22:27
Old Bawn Centre (2540)	07:31	08:31	09:14	09:57	10:57	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:51	20:51	21:36	22:36
Scholarstown Park (10154)	07:38	08:38	09:22	10:06	11:06	12:11	13:11	14:11	15:11	16:09	17:08	18:08	19:08	19:58	20:58	21:43	22:43
Marley Park (2969)	07:43	08:44	09:29	10:13	11:13	12:19	13:19	14:19	15:19	16:16	17:15	18:15	19:15	20:04	21:04	21:49	22:49
Ballinteer Avenue (2858)	07:47	08:48	09:33	10:17	11:17	12:25	13:25	14:25	15:25	16:22	17:19	18:19	19:19	20:08	21:08	21:53	22:53
Dundrum Centre (2841)	07:52	08:53	09:38	10:22	11:23	12:32	13:32	14:32	15:32	16:29	17:26	18:26	19:26	20:12	21:12	21:57	22:57
Dundrum Luas (2866)	07:54	08:55	09:41	10:25	11:26	12:35	13:35	14:35	15:35	16:32	17:29	18:29	19:29	20:15	21:14	21:59	22:59
Fosters Avenue (2052)	07:59	09:01	09:48	10:32	11:34	12:43	13:43	14:43	15:43	16:40	17:37	18:37	19:37	20:22	21:20	22:05	23:05
UCD (765)	08:04	09:06	09:55	10:39	11:42	12:51	13:51	14:51	15:51	16:48	17:45	18:45	19:45	20:27	21:25	22:10	23:10

TFI TRANSPORT FOR IRELAND

Go-Ahead Ireland

UCD - Citywest via Dundrum | **175** | **Sunday** | **Valid from 23rd of January 2022**

Service Number	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175
UCD (765)	09:15	10:05	11:05	12:05	13:05	14:05	15:05	16:05	17:05	18:05	19:05	20:05	21:15	22:20	23:20
Deerpark Road (10096)	09:22	10:12	11:12	12:12	13:12	14:12	15:12	16:12	17:12	18:12	19:12	20:12	21:21	22:26	23:26
Dundrum Luas (2825)	09:27	10:17	11:17	12:18	13:18	14:18	15:18	16:18	17:18	18:18	19:18	20:16	21:25	22:30	23:30
The Rise (4397)	09:34	10:24	11:24	12:26	13:26	14:26	15:26	16:26	17:26	18:26	19:26	20:26	21:33	22:38	23:38
Scholarstown Park (10105)	09:42	10:32	11:34	12:38	13:38	14:38	15:38	16:38	17:38	18:38	19:38	20:36	21:41	22:46	23:46
Old Bawn Centre (2532)	09:49	10:40	11:42	12:47	13:47	14:47	15:47	16:47	17:47	18:47	19:47	20:43	21:48	22:53	23:53
Village Green (2617)	09:53	10:44	11:46	12:52	13:52	14:52	15:52	16:52	17:52	18:52	19:52	20:48	21:52	22:57	23:57
The Square Tallaght (4347)	09:58	10:50	11:53	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:53	21:57	23:02	24:02
Ard Mor Drive (10110)	10:05	10:57	12:02	13:08	14:08	15:08	16:08	17:08	18:08	19:08	20:08	21:01	22:05	23:10	24:10
Kingswood Avenue (6002)	10:10	11:02	12:07	13:15	14:15	15:15	16:15	17:15	18:15	19:15	20:15	21:06	22:10	23:15	24:15

Citywest - UCD via Dundrum | **175** | **Sunday** | **Valid from 23rd of January 2022**

Service Number	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175	175
Kingswood Avenue (6001)	08:10	08:50	09:30	10:30	11:30	12:30	13:30	14:30	15:30	16:30	17:30	18:30	19:30	20:30	21:15	22:15
Ard Mor Drive (10150)	08:14	08:54	09:35	10:35	11:35	12:35	13:35	14:35	15:35	16:35	17:35	18:35	19:34	20:34	21:19	22:19
Tallaght Luas (4348)	08:22	09:02	09:44	10:44	11:44	12:44	13:44	14:44	15:44	16:44	17:44	18:44	19:42	20:42	21:27	22:27
Old Bawn Centre (2540)	08:32	09:12	09:54	10:56	11:56	12:56	13:56	14:56	15:56	16:56	17:56	18:56	19:51	20:51	21:36	22:36
Scholarstown Park (10154)	08:39	09:19	10:01	11:05	12:05	13:05	14:05	15:05	16:05	17:05	18:05	19:05	19:58	20:58	21:43	22:43
Marley Park (2969)	08:45	09:25	10:07	11:11	12:13	13:13	14:13	15:13	16:13	17:13	18:11	19:11	20:04	21:04	21:49	22:49
Ballinteer Avenue (2858)	08:50	09:30	10:12	11:16	12:18	13:18	14:18	15:18	16:18	17:18	18:16	19:16	20:08	21:08	21:53	22:53
Dundrum Centre (2841)	08:54	09:34	10:17	11:22	12:24	13:24	14:24	15:24	16:24	17:24	18:22	19:22	20:12	21:12	21:57	22:57
Dundrum Luas (2866)	08:57	09:37	10:21	11:26	12:28	13:28	14:28	15:28	16:28	17:28	18:26	19:26	20:15	21:14	21:59	22:59
Fosters Avenue (2052)	09:03	09:43	10:28	11:33	12:37	13:37	14:37	15:37	16:37	17:37	18:33	19:33	20:22	21:20	22:05	23:05
UCD (765)	09:10	09:50	10:35	11:41	12:45	13:45	14:45	15:45	16:45	17:45	18:41	19:41	20:27	21:25	22:10	23:10

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Buses from/to
From Dublin Airport Towards Ballinteer (Kingston)
Operative Date: 26/01/2020
Version: TT 20.1

From Dublin Airport Towards Ballinteer (Kingston)

Aerfort Bhaile Átha Cliath , Seantrabh , Óstan Skylon , Stáisiún Dhroim Conrach , Sráid Uí Chonaill , Coirnéal Uí Cheallaigh , Crois Araild , Tír an Iúir , Bóthar na Gráinsí , Baile an tSaoir (Baile an Rí)

Buses leave terminus at:

Route Variations
d Not serving Beaumont Village

f From Dublin Airport, departs O'Connell St.at 23:30

c to City Centre only

Monday - Friday				Saturday				Sunday			
06:00	06:15	06:30	06:45	06:00	06:15	06:30	06:45	08:00	08:15	08:30	08:45
07:00	07:10d	07:20	07:30d	07:00	07:15	07:30	07:45	09:00	09:15	09:30	09:45
07:40	07:50d	08:00	08:10d	08:00	08:15	08:30	08:45	10:00	10:15	10:30	10:45
08:20	08:30d	08:40	08:50d	09:00	09:12	09:24	09:36	11:00	11:15	11:30	11:45
09:00	09:10	09:20	09:30	09:48	10:00	10:12	10:24	12:00	12:15	12:30	12:45
09:42	09:54	10:06	10:18	10:36	10:48	11:00	11:12	13:00	13:15	13:30	13:45
10:30	10:42	10:54	11:06	11:24	11:36	11:48	12:00	14:00	14:15	14:30	14:45
11:18	11:30	11:42	11:54	12:12	12:24	12:36	12:48	15:00	15:15	15:30	15:45
12:06	12:18	12:30	12:42	13:00	13:12	13:24	13:36	16:00	16:15	16:30	16:45
12:54	13:06	13:18	13:30	13:48	14:00	14:12	14:24	17:00	17:15	17:30	17:45
13:42	13:54	14:06	14:18	14:36	14:48	15:00	15:12	18:00	18:15	18:30	18:45
14:30	14:42	14:54	15:06	15:24	15:36	15:48	16:00	19:00	19:15	19:30	19:45
15:18	15:30	15:42	15:54	16:12	16:24	16:36	16:48	20:00	20:15	20:30	20:45
16:06	16:18	16:30	16:42	17:00	17:12	17:24	17:36	21:00	21:15	21:30	21:45
16:54	17:06	17:18	17:30	17:48	18:00	18:12	18:24	22:00	22:15	22:30	22:45f
17:42	17:54	18:06	18:18	18:36	18:48	19:00	19:15	23:00c	23:15c	23:30c	
18:30	18:42	18:54	19:06	19:30	19:45	20:00	20:15				
19:15	19:30	19:45	20:00	20:30	20:45	21:00	21:15				
20:15	20:30	20:45	21:00	21:30	21:45	22:00	22:15				
21:15	21:30	21:45	22:00	22:30	22:45f	23:00c	23:15c				
22:15	22:30	22:45f	23:00c	23:30c							
23:15c	23:30c										

Dublin Airport >> 10mins >> Santry >> 10mins >> Skylon Hotel >> 10mins >> Drumcondra Rail Station >> 10mins >> O'Connell St. >> 12mins >> Kelly's Corner >> 12mins >> Harold's Cross >> 12mins >> Terenure >> 12mins >> Grange Rd. >> 12mins >> Ballinteer (Kingston)

All times are off peak estimates

From Ballinteer (Kingston) Towards Dublin Airport

Baile an tSaoir (Baile an Rí) , Bóthar na Gráinsí , Tír an Iúir , Crois Araild , Coirnéal Uí Cheallaigh , Sráid Uí Chonaill , Stáisiún Dhroim Conrach , Óstan Skylon , Seantrabh , Aerfort Bhaile Átha Cliath

Buses leave terminus at:

Route Variations
f From Ballinteer, departs O'Connell St.at 23:30

c to City Centre only

Monday - Friday				Saturday				Sunday			
05:30	05:45	06:00	06:15	05:30	05:45	06:00	06:15	07:30	07:45	08:00	08:15
06:30	06:45	07:00	07:10	06:30	06:45	07:00	07:15	08:30	08:45	09:00	09:15
07:20	07:30	07:40	07:50	07:30	07:45	08:00	08:15	09:30	09:45	10:00	10:15
08:00	08:10	08:20	08:30	08:30	08:45	09:00	09:12	10:30	10:45	11:00	11:15
08:40	08:50	09:00	09:10	09:24	09:36	09:48	10:00	11:30	11:45	12:00	12:15
09:20	09:30	09:42	09:54	10:12	10:24	10:36	10:48	12:30	12:45	13:00	13:15
10:06	10:18	10:30	10:42	11:00	11:12	11:24	11:36	13:30	13:45	14:00	14:15
10:54	11:06	11:18	11:30	11:48	12:00	12:12	12:24	14:30	14:45	15:00	15:15
11:42	11:54	12:06	12:18	12:36	12:48	13:00	13:12	15:30	15:45	16:00	16:15
12:30	12:42	12:54	13:06	13:24	13:36	13:48	14:00	16:30	16:45	17:00	17:15
13:18	13:30	13:42	13:54	14:12	14:24	14:36	14:48	17:30	17:45	18:00	18:15

14:06	14:18	14:30	14:42	15:00	15:12	15:24	15:36	18:30	18:45	19:00	19:15
14:54	15:06	15:18	15:30	15:48	16:00	16:12	16:24	19:30	19:45	20:00	20:15
15:42	15:54	16:06	16:18	16:36	16:48	17:00	17:12	20:30	20:45	21:00	21:15
16:30	16:42	16:54	17:06	17:24	17:36	17:48	18:00	21:30	21:45	22:00	22:15
17:18	17:30	17:42	17:54	18:12	18:24	18:36	18:48	22:30	22:45f	23:00c	23:15c
18:06	18:18	18:30	18:42	19:00	19:15	19:30	19:45	23:30c			
18:54	19:06	19:15	19:30	20:00	20:15	20:30	20:45				
19:45	20:00	20:15	20:30	21:00	21:15	21:30	21:45				
20:45	21:00	21:15	21:30	22:00	22:15	22:30	22:45f				
21:45	22:00	22:15	22:30	23:00c	23:15c	23:30c					
22:45f	23:00c	23:15c	23:30c								

Ballinteer (Kingston) >> 12mins >> Grange Rd. >> 12mins >> Terenure >> 12mins >> Harold's Cross >> 12mins >> Kelly's Corner >> 12mins >> O'Connell St. >> 10mins >> Drumcondra Rail Station >> 10mins >> Skylon Hotel >> 10mins >> Santry >> 10mins >> Dublin Airport

All times are off peak estimates

Fare Stages

11	89	Dublin Airport	
12	88	Corner Collinstown Rd.	
13	87	Cloghran Service Station	
14	86	Swords Rd. (Turnapin Lane)	
15	85	Swords Rd. (Santry Stadium)	
16	84	Swords Rd. (Santry Ave.)	
17	83	Swords Rd. (Lorcan Rd.) / Santry (Shanard Rd.)	
18	82	Swords Rd. (Shanowen Rd.) / Larkhill	
19	81	Swords Rd. (Collins Ave.)	
20	80	Drumcondra Rd. Upr. (Griffith Ave.)	
21	79	Drumcondra Rd. Upr. (Clonturk Park)	
22	78	Drumcondra Rail Station	
23	77	Dorset St. (North Circular Rd.)	
24	76	Dorset St. (North Frederick St.)	
25	75	O'Connell St.	
26	74	South Great George's St.	
27	73	Aungier St. (Bishop St.)	
28	72	Kelly's Corner (Harrington St.)	
29	71	Leonard's Corner	
30	70	Harold's Cross Green	
31	69	Harold's Cross Rd. (Kenilworth Rd.)	
32	68	Terenure Cross	
33	67	Rathfarnham Rd. (Rathdown Park)	
34	66	Rathfarnham Castle	
35	65	Rathfarnham Church	
36	64	Grange Rd. (St Enda's Dr.)	
37	63	Grange Rd. (Sarah Curran Ave.)	
38	62	Grange Rd. (Eden Ave.)	
39	61	Elm Park (Marley Grange Estate)	
40	60	The Grange	
41	59	Ballinteer (Kingston)	

Route Information

Please note for safety reasons there is limited capacity for luggage on this service. Dublin Bus cannot guarantee that you will be able to board this service with luggage.

Customer Comment Desk: (01) 8734222
Phone lines open: Monday to Saturday 08:30hrs – 18:00hrs (except public holidays)