



APPENDIX 13-1

TRAFFIC IMPACT ASSESSMENT



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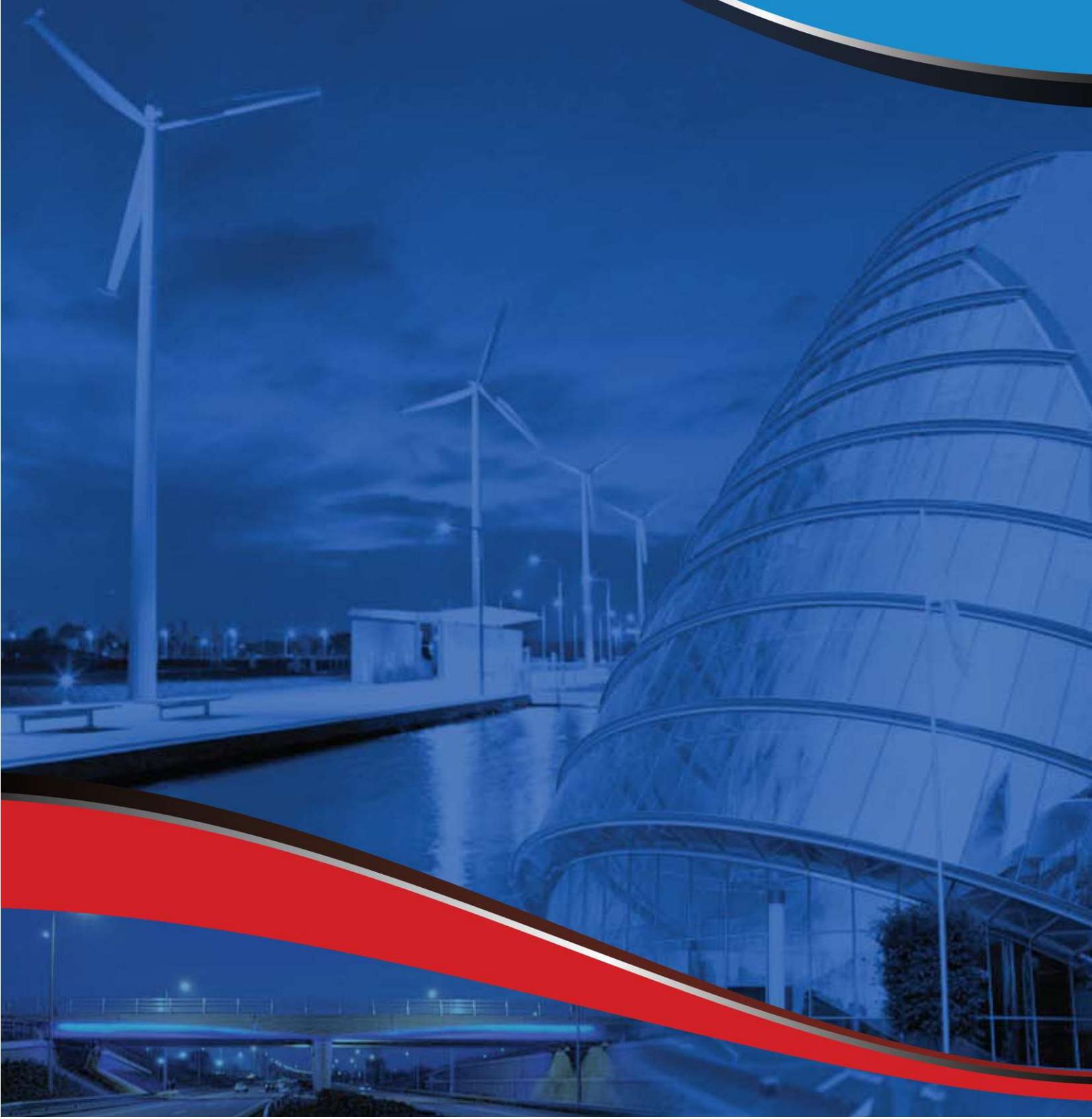
TRAFFIC IMPACT ASSESSMENT

MOYGADDY CASTLE SHD

Sky Castle Ltd

S665

26 August 2022



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1 INTRODUCTION

APPOINTMENT

O'Connor Sutton Cronin & Associates (OCSC) have been appointed by Sky Castle Ltd to carry out the design of the civil engineering services associated with the proposed 360nr. unit residential and crèche development at Moygaddy, Co. Meath, which is located northeast of the town of Maynooth, Co. Kildare.

SETTING

Maynooth environs is a large growth area, category II Town status located in south County Meath, and is an economically vibrant area with high-quality transport links to larger towns/cities. The Meath Development Plan 2021-2027 outlines the social, economic, and planning context for the Maynooth environ lands, setting the framework for the plan's policies and objectives. It has a core strategic vision that seeks to ensure that future growth is based on principles of sustainable development that meet the needs of residents per National and Regional guidelines. The environs of Maynooth is a Core Economic Area included in the Gateway Core Economic Area located on the M4 corridor. The wider Maynooth Environs Lands proposed land-use zoning includes A2 – New Residential, E1 – Strategic Employment Zones, G1 – Community Infrastructure, D1 – Tourism and H1 – High Amenity.

The delivery of the Maynooth Outer Orbital Route (MOOR) is critical to facilitating residential, high-end employment, tourist, and leisure development in the Maynooth environ lands and fulfilling the transport infrastructure needs in proximity to Maynooth University and Maynooth town.

ADMINISTRATIVE JURISDICTION

The proposed development is located primarily in the jurisdiction of Meath County Council (MCC), and therefore the Maynooth Outer Orbital Route design and the associated civil engineering services were carried out with reference to the following:

- Meath County Development Plan 2021-2027;
- Maynooth Environs Local Area Plan 2014 (incorporated into adopted MCDP);
- Regional Spatial and Economic Strategy for the Eastern and Midland Region (2019);

Even though Maynooth Environs is situated in Meath County Council administrative area the Maynooth Environs Local Area Plan contains an objective to liaise with Kildare County Council in the identification, design, reservation and delivery of the section of the Maynooth Outer Relief Road located within the administrative area of Meath County Council. The administrative area of Kildare County Council is located immediately adjacent to the LAP environs lands and some infrastructure improvements will be located within the Kildare County Council (KCC) administrative area. Therefore, the design will also be conducted with due regard to:

- Maynooth LAP
- Kildare County Development Plan
- Maynooth Traffic Management Plan

OCSC held discussions with Kildare County Council (KCC) and Meath County Council (MCC) on this scheme, as detailed below:

- OCSC met with MCC on 19 July 2021 to open preliminary discussions on the design of the MOOR. In attendance were Martin Murry (Director of Services for Infrastructure) and Nicholas Whyatt (Senior Engineer Transportation). Since this meeting, a Traffic Modelling Scoping Report has been issued to MCC. It should be noted that KCC specifically requested a Dynamically Assigned traffic model for this scheme. The Developer opted to request OCSC to utilise the PTV Vissim micro-

simulation software package to prepare the requested model, which could then be incorporated into the wider KCC transport study for Maynooth as a whole.

- As noted previously, although the scheme is planned within the MCC jurisdiction, a separate application will be made to KCC for infrastructure within the County. It is however noted that as the largest nearby urban centre is within KCC jurisdiction, they have been consulted as a stakeholder. OCSC met with KCC on 9 August 2021, and 23 September 2021. In attendance were Brigette Rea, Daragh Conlan, George Willoughby, Jonathan Hennessy, and Lisa Kirwan, all from KCC. The same Traffic Modelling Scoping Report has also been issued to KCC.
- OCSC met with MCC on 20 June 2022. In attendance were Michael Costelloe, Joe McGarvey and Paul McNulty. This meeting aimed to establish the outstanding design requirements of the MOOR. Several comments were received, which were included in the design.

In addition, the following submissions were made as part of the proposed development:

- A submission was made on the Maynooth Transport Strategy as part of public consultation no. 1 on the 12th of November 2021. This submission outlines the proposed plans for the area and noted that it should be considered as part of the future Transport Strategy (Appended as Annexure D).
- A submission was made to BusConnects on the 15th of November 2021 noting the upcoming proposals as part of the MOOR that noted the BusConnects project should take cognisance of the upcoming works (Appended as Annexure E).

STUDY AREA

The subject site is located on the southernmost extent of County Meath, aligning with the county boundary to Co. Kildare, and is approximately 1.5km north of the town of Maynooth, Co. Kildare, as shown in Figure 1, and is immediately bound by:

- Agricultural lands, to the east;
- Agricultural lands, to the north;
- Agricultural lands to the west; and

- River Rye Water to the south.

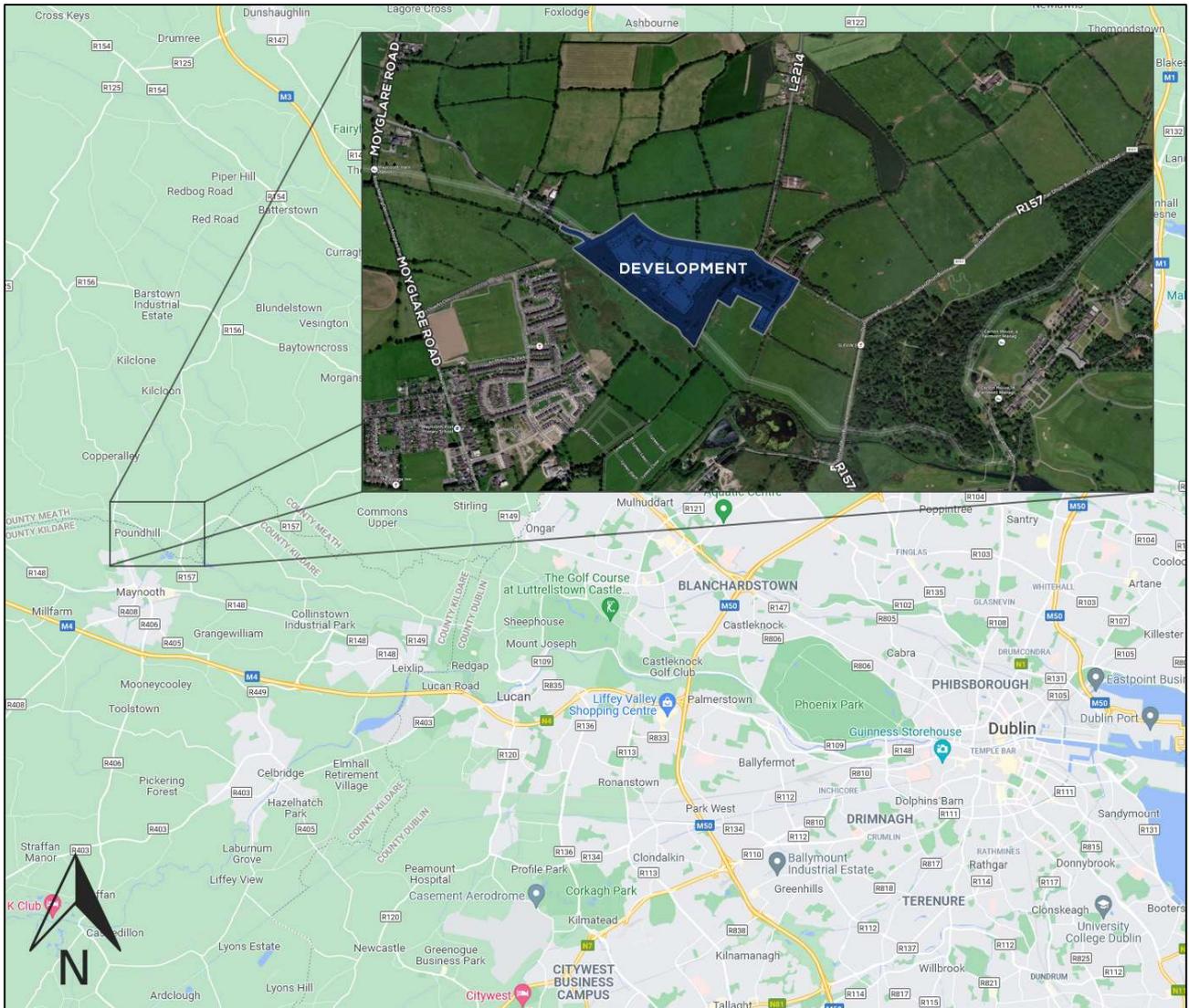


Figure 1: Development Locality Plan

DEVELOPMENT DESCRIPTION

Planning Permission is sought by Sky Castle Ltd. for the development of a site which extends to 19.52 hectares gross site area in the townland of Moygaddy, Maynooth Environs, Co. Meath. The net developable area equates to 7.89 hectares which equates to a residential density of 45.6 units per hectare.

The proposed development will consist of the following:

1. Construction of 360 no. residential units comprising:
 - (i) 196 no houses (including 19 no. 2 beds, 156 no. 3 beds and 21 no. 4 beds).
 - (ii) 102 no. duplexes (including 51 no. 1 beds and 51 no. 2 beds) set out in 6 no. blocks.
 - (iii) 62 no. apartments (including 26 no. 1 beds and 36 no. 2 beds) set out in 2 no. blocks.
2. Provision of a public park and playground with associated 42 no. car parking spaces adjacent to Moygaddy Castle and pedestrian and cyclist links along the River Rye. The overall public open space (including the High Amenity Lands) equates to 7.98 hectares.
3. Provision of private open spaces in the form of balconies and terraces is provided to all individual apartments and duplexes to all elevations.
4. Development of a two-storey creche facility (514 sqm), outdoor play area and associated parking of 29 no. spaces.
5. Provision of a single storey Scout Den facility, including a hall, kitchen, meeting room and ancillary facilities (220sqm) and associated parking of 6 no. spaces.
6. Provision of 4 no. bridge structures comprising:
 - (i) an integral single span bridge at Moyglare Hall over the River Rye Water to connect with existing road infrastructure in County Kildare and associated floodplain works and embankments.
 - (ii) a new pedestrian and cyclist bridge at Kildare Bridge which will link the proposed site with the existing road network in County Kildare.
 - (iii) a new pedestrian and cycle bridge across Blackhall Little Stream on the L22143 adjacent to the existing unnamed bridge.
 - (iv) a new pedestrian and cycle bridge over the Moyglare Stream linking the proposed residential site with the proposed Childcare Facility, Scout Den and Moygaddy Castle Public Park.
7. Provision of 500m of distributor road comprising of 7.0m carriageway with turning lane where required, footpaths, cycle tracks and grass verges. All associated utilities

and public lighting including storm water drainage with SuDS treatment and attenuation.

8. Proposed road improvement and realignment works including:
 - (i) realignment of a section of the existing L6219 local road, which will entail the demolition of an existing section of the road which extends to circa 2,500 sqm.
 - (ii) Provision of pedestrian and cycle improvement measures along the L6219 and L22143 which abuts the boundary of Moygaddy House which is a Protected Structure (RPS ref 91558).
 - (iii) Provision of pedestrian and cycle improvement measures along the R157 which abuts the Carton Demense Wall which is a Protected Structure (RPS Ref 91556).
9. Provision of 2 no. vehicular and pedestrian accesses from the L6219 local road, 1 no. vehicular and pedestrian entrance from the L22143 and an additional vehicular and pedestrian access from the R157 to the Childcare and Scout Den facilities.
10. The proposed development will provide 283 no. of bicycle parking spaces, of which 200 no. are long term spaces in secure bicycle stores and 83 no. are short term visitor bicycle parking spaces. 12 no. bicycle spaces are provided for the creche and 12 no. bicycle spaces are provided for the Scout Den.
11. A total of 667 no. car parking spaces are provided on site located at surface level. The car parking provision includes 10 no. Electric Vehicle charging and Universally Accessible spaces allocated for the Apartment & Duplex units. All Houses will be constructed with provision for EV Charging.
12. Provision of site landscaping, public lighting, bin stores, 3 no. ESB unit substations, site services and all associated site development works.
13. A Natura Impact Statement (NIS) and Environmental Impact Assessment Report (EIAR) has been included with this application.

The purpose of this report is to provide a detailed and conservative assessment of the development proposals and the potential traffic impact on the operation of the local road network. It should be noted that this report on the traffic & transportation analysis on this specific application has been prepared on the basis of an assessment which includes the phased buildout of the MOOR, as well as the entire Masterplan area and all components of the development that are deliverable between the base year and 2028 (Opening Year + 5). Furthermore, an additional assessment was conducted on the

strategic master planning for future phases that will be delivered from 2029 to 2038 (the Design Year) which includes the delivery of the entire MOOR within the same timeframe.

In carrying out the above, this assessment has given due consideration to the relevant guidelines including:

- *Traffic & Transport Assessment Guidelines (2014)* as published by the former National Roads Authority (NRA) now Transport Infrastructure Ireland (TII);
- *Guidelines for Traffic Impact Assessment (1997)* as published by the Chartered Institute of Highways & Transportation;

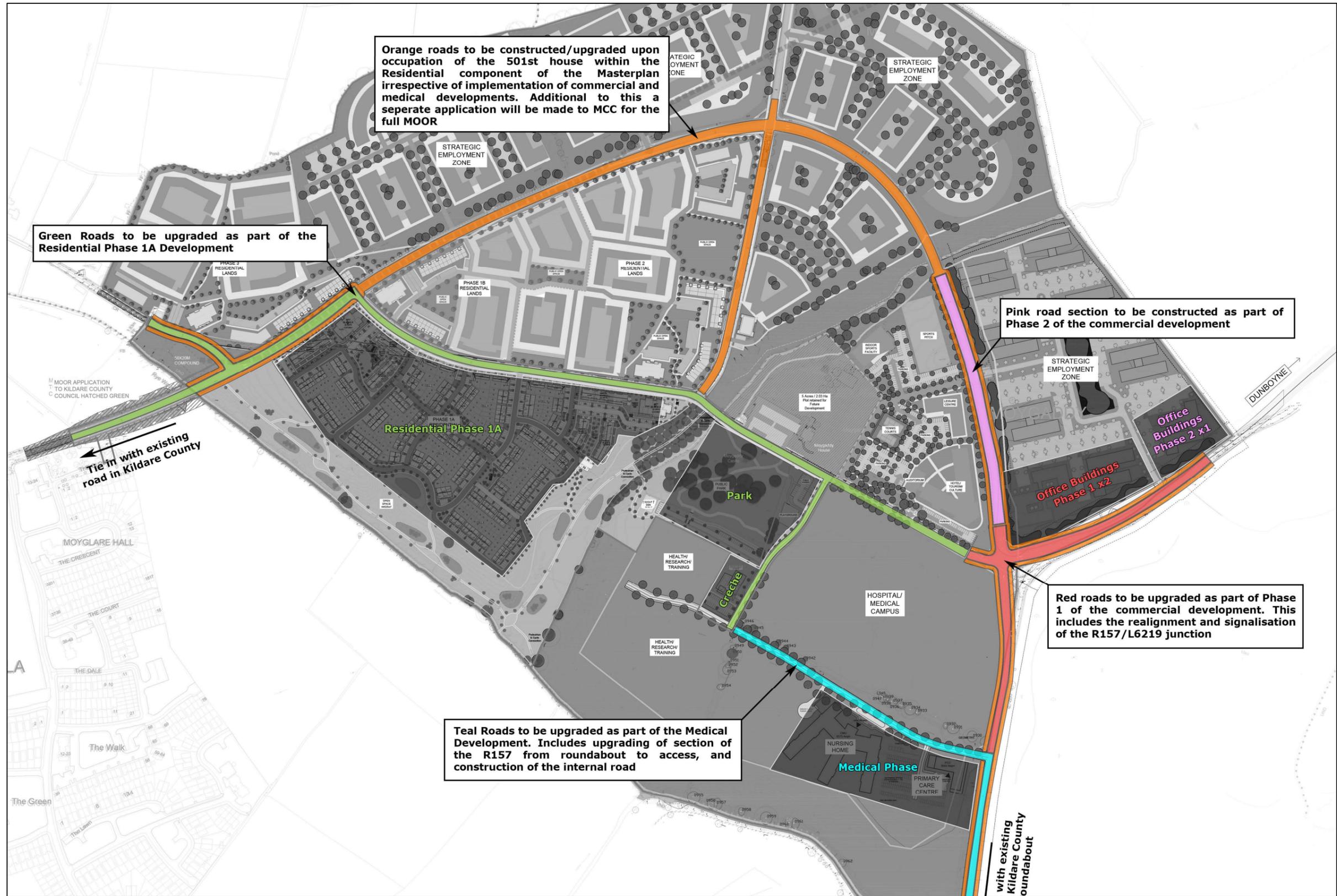
MASTERPLAN PHASING

This application is submitted on the basis that the MOOR will be delivered in phases, linked to individual planning applications which form part of the wider Masterplan for the Maynooth Environs/Moygaddy lands. A separate application will also be made to MCC for the full MOOR.

The colour of the first three columns links to the figure on the next page. Specific road infrastructure upgrades will be required depending on the timetable when each phase is constructed. The last column of the table indicates in which scenario year the trip generation of that section of the development will be relevant.

| Item | Linked Road Infrastructure | Trip Generation Year |
|-------------------------------------|--|-------------------------|
| Medical Phase | | |
| Primary Care Centre & Nursing Home | Upgrade the R157 from the roundabout in the south up to the access to medical facility | Opening Year (2025) |
| Medical Research Campus | Full MOOR already operational | Design Year (2040) |
| Public Hospital | Full MOOR already operational | Design Year (2040) |
| Office Phase | | |
| Office Buildings Phase 1 x2 | Upgrade the R157 north of medical facility access up to the junction between the R157 and the L22143 | Opening Year (2025) |
| | Upgrade R157/L22143 junction to 3-leg signalised junction | Opening Year (2025) |
| | Upgrade R157 east of junction towards Dunboyne | Opening Year (2025) |
| Office Buildings Phase 2 x1 | Construct the first section of the eastern leg of the MOOR (northern leg of junction) up to the stream | Opening Year (2025) |
| Office Buildings Phase 3 & 4 x6 | Full MOOR already operational | Design Year (2040) |
| Residential Phases | | |
| Residential Phase 1A, Park & Creche | Construct link road in the west and upgrade road up to junction with R157 | Opening Year (2025) |
| Residential Phase 1B | Full MOOR already operational | Opening Year + 5 (2030) |
| Residential Phase 2 | Full MOOR already operational | Design Year (2040) |
| Residential Phase 3 | Full MOOR already operational | Design Year (2040) |
| Other Phases | | |
| Tourism and Sports Campus | Full MOOR already operational | Opening Year + 5 (2030) |
| Hotel | Full MOOR already operational | Design Year (2040) |

Table 1: Moygaddy Masterplan Phasing



2 BACKGROUND TRAFFIC VOLUMES

At the time of writing, the ongoing Covid 19 pandemic and associated restrictions have had a significant impact on traffic and travel patterns across the country. As a result, procurement of new survey data, which would be a true reflection of typical traffic levels, has not been possible. However, survey data is available from 2019. The use of this survey data combined with TII traffic growth factors to account for any background traffic increase in the interim is considered to give the most accurate representation possible of the typical traffic levels experienced within the study area.

Details of the junction surveys used for this development are shown in Table 2:

| No | Junction | Source | Survey Date | Survey Times |
|----|--------------------------|----------------------------|-------------|----------------|
| 1 | Moyglare Road/L6219 | Nationwide Data Collection | 25/05/2019 | 07:00 to 19:00 |
| 2 | Moyglare Road/Mariavilla | Nationwide Data Collection | 25/05/2019 | 07:00 to 19:00 |
| 3 | L6219/L2214 | Nationwide Data Collection | 25/05/2019 | 07:00 to 19:00 |
| 4 | R157/L22143 | Nationwide Data Collection | 25/05/2019 | 07:00 to 19:00 |
| 5 | R157/Dunboyne Road | Nationwide Data Collection | 25/05/2019 | 07:00 to 19:00 |
| 6 | R148/R157 | Nationwide Data Collection | 25/05/2019 | 07:00 to 19:00 |

Table 2: Junction Survey Details

A seven-fold classification system was used which recorded cars, taxis, light goods vehicles, heavy goods vehicles, public service vehicles, motorcycles, and bicycles.

The exact locations of these junctions are highlighted in Figure 2.



Figure 2: Traffic Survey Locations

The junction surveys also include queue length surveys which recorded the maximum queue lengths observed on a per lane basis at each approach of each junction over 15-minute intervals.

A full copy of the results of all traffic surveys can be found in *Appendix A* of this document, attached to this report.

The recorded flows during the above peak hours, and across the course of an average day are shown in the following:

- Diagram 1: 2019 A.M. Peak Hour Base Flows (08:00 – 09:00);
- Diagram 2: 2019 P.M. Peak Hour Base Flows (17:00 – 18:00);
- Diagram 3: 2019 Annual Average Daily Traffic Base Flows.

These diagrams, and all others referenced in this text, can be found in *Appendix B* of this document, attached to this report. Any apparent discrepancy in flows between sites may be attributed to vehicles exiting the survey zone either by accessing developments or via minor roads between surveyed junctions.

3 STUDY METHODOLOGY

The short-term traffic counts were expanded to Annual Average Daily Traffic (AADT) using expansion factors¹ from TII. The base year flows were then adjusted to the predicted Year of Opening for the development (2025), Year of Opening + 5 (2030) and the Design Year (2040) using medium-range TII growth factors². This is conservative as traffic growth estimates are directly influenced by projections for economic activity which are now unlikely to be realised due to the impact of the global pandemic, while commuter patterns are also expected to be permanently impacted.

The traffic generation potential of the subject site was then assessed using the Trics³ planning database. This database contains information on thousands of sites in Ireland and the U.K. and can be used to predict the traffic that will be generated by numerous types of development.

VISSIM MICRO-SIMULATION SOFTWARE

For this project, a dynamic traffic model was built utilizing the Vissim software package, developed by PTV.

Dynamic Assignment

A model was developed for this project using dynamic assignment. The reason for this is due to the objectives of the study. Developing a static model would not yield the desired outcome, as the traffic redistribution due to the implementation of the MOOR would not be accounted for. A further redistribution is possible to other road links should the demand at some junctions exceed the capacity.

¹ Project Appraisal Guidelines for National Roads Unit 16.1 - Expansion Factors for Short Period Traffic Counts, TII (October 2016)

² Project Appraisal Guidelines for National Roads Unit 5.3 - Travel Demand Projections, TII (May 2019)

³ Trip Rate Information Computer System

Dynamic assignment uses an origin-destination (O-D) matrix to distribute traffic throughout the network. This means that vehicles can dynamically choose their route, to a certain destination in the network.

A good summary of the benefit of dynamic assignment for a study such as this is given in Vissim's documentation:

"In the static assignment, the vehicles follow routes in the road network which you have manually defined. Therefore, the drivers in the simulation have no choice which path to follow from their start point to their destination. For a lot of traffic flow simulation applications this is an appropriate way of modelling.

When the simulated road network grows, there are usually several options for the drivers can choose to go from one point in the road network to another. The simulated traffic must be realistically distributed among these alternatives. Using the traffic assignment, a given traffic demand is distributed among the various paths in the road network. Traffic assignment is one of the basic tasks in the transport planning process. It is essentially a path selection model of transport users, for example drivers of motorized and non-motorized vehicles.

For such a model, first a set of possible paths is determined. These alternatives must be assessed appropriately. A representation follows on how the drivers decide on the basis of this assessment. This path selection decision model is a special case of the general problem of decision based on discrete alternatives (discrete choice). A lot of theory behind traffic assignment models originates from the discrete decision theory. The most common assignment processes in transport planning belong to the class of static assignments. Static thereby means that neither the traffic demand, indicating how many trips should be made in the network, nor the road network changes. This does not correspond to reality. The traffic demand can vary significantly during the day. The road network can have time-dependent characteristics, such as when different signal programs run throughout the day at the signalized nodes and thus create time-dependent capacities for the individual flows. Dynamic assignment takes these temporal fluctuations into account.

The motivations to model the path selection in a Vissim simulation model:

- *With the increasing size of the simulated road network, it will become more and more difficult to enter all paths from sources to destinations by hand, even if no alternative paths are considered.*
- *The path selection behaviour can itself be the subject of your investigation if the effects of measures are to be judged. This would also affect the path selection."*

Origin-Destination Matrix

The O-D matrix was originally sourced from Kildare County Council's (KCC) existing 2016 macro model. However, the full study area comprised one zone within this model, with no zonal information available to the north. As the redistribution of northbound vehicles is an important outcome of this model, this lack of information required a different approach.

It was agreed with KCC & MCC that a different approach would be taken to obtain an O-D matrix. The approach which was agreed upon would be to use the junction surveys to develop an O-D matrix, with the assumption that all traffic travelling north on Moyglare Road and the L2214 would be destined for the R156. This would enable the model to determine a possible redistribution between these two roads, should the MOOR be constructed.

This approach led to the development of a 9x9 O-D matrix with the following zones:

- Zone 1: Moygaddy, south via Moyglare Road
- Zone 2: Moyglare Hall
- Zone 3: Moyglare Road West
- Zone 4: Moyglare Road North
- Zone 5: L2214/Kilcloon Road North
- Zone 6: R157 East
- Zone 7: Dunboyne Road
- Zone 8: Moygaddy, west via the R148
- Zone 9: R148 east

These zones are shown in the figure below:

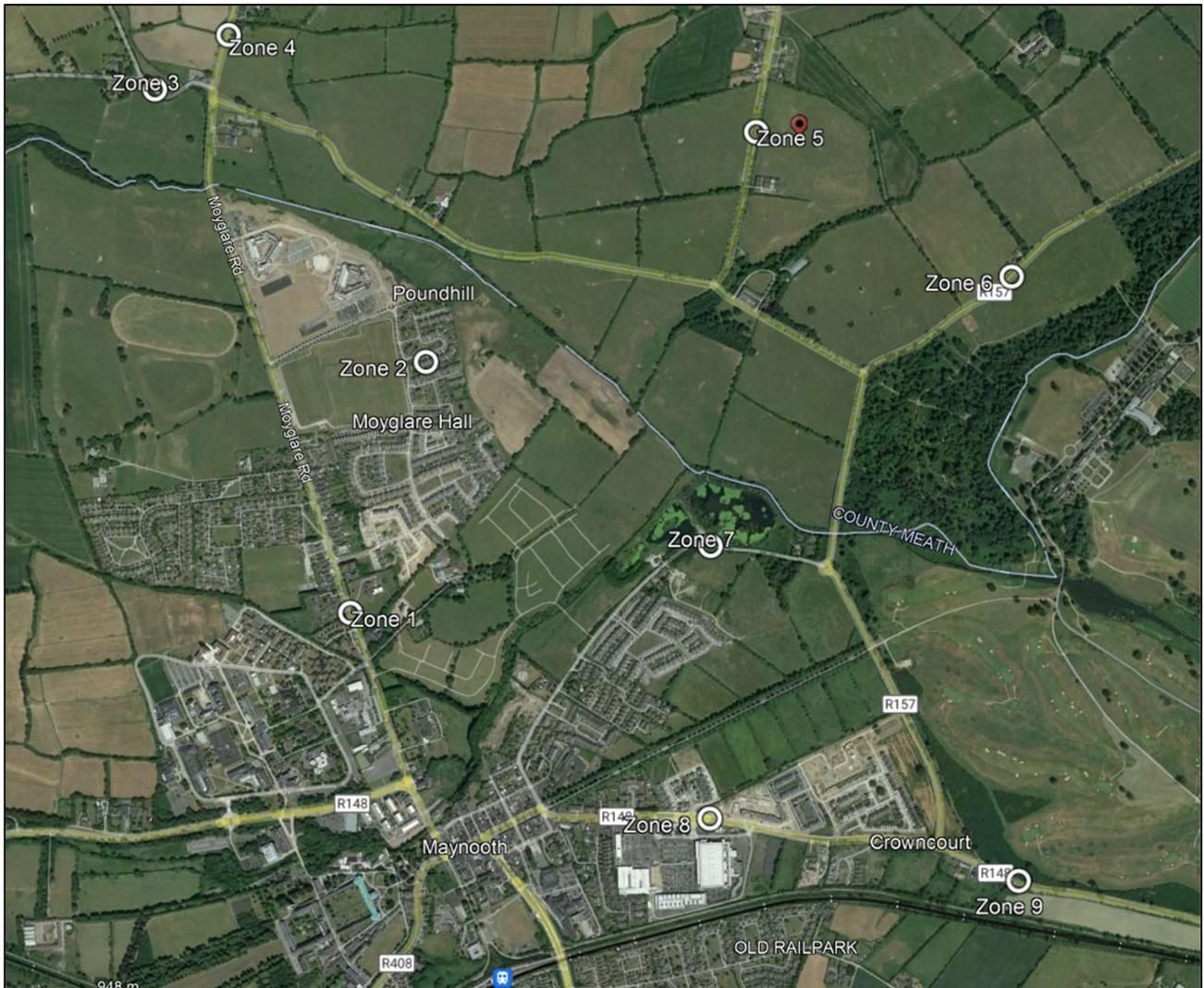


Figure 3: Model Zones

Road Network

The available capacity at certain junctions could potentially also lead to redistribution. Should capacity not be available along the L6219/L22143 or the MOOR, vehicles could reroute through Moygaddy itself. To determine this, the link between Zone 1 and Zone 8 was completed, providing an alternate route. However, in reality, the majority of road users will opt to use the MOOR as driving through town will increase the road user cost due to lower speeds, junctions, pedestrians, etc.

To simulate this increased cost, a reduced speed of 20km/h was added to the road section traversing the town. Combined with this, path pre-selection was also limited to rejecting any paths with a total cost higher than 50% as compared to the best path available.

Calibration Criteria

To assess the accuracy of a model, calibration is necessary. Dynamic models utilise origin-destination matrices as inputs, which means that vehicles leave a certain area, and are destined for a different area. These vehicles are then free to choose their routing, usually based on travel time, congestion, etc.

Calibration assesses the volumes in the model and compares them to traffic counts to determine, within certain criteria, the accuracy. This is done per vehicle class used in the model. Changes to the routing of vehicles, the input matrix, or the network itself can then be made to improve accuracy.

For this process, a certain set of calibration criteria is used. Should these criteria be fulfilled, the model can be certified to be accurate and correct in terms of traffic volumes. The criteria assumed for calibration are taken from the U.K. Department for Transport, Transport Analysis Guidance (TAG) Unit M3 and are shown below.

| Criteria and Measures | Acceptability Guidelines |
|---|--------------------------|
| Assigned Hourly flows compared with observed flows: | |
| Individual flows within 15% for flows 700 - 2 700 vph | > 85% of the cases |
| Individual flows within 100 vph for flows < 700 vph | > 85% of the cases |
| Individual flows within 400 vph for flow > 2 700 vph | > 85% of the cases |
| GEH statistic: | |
| Individual flows: GEH < 5 | > 85% of the cases |

Table 3: TAG Unit M3.1 Criteria (<https://www.gov.uk/transport-analysis-guidance-tag>)

The following section details the peak hour calibration results for each scenario, defined for the two vehicle classes used in the models, light vehicles, and heavy vehicles. A summary of the results is shown in the table below.

| Summary of TAG Calibration Statistics – Light Vehicles | | |
|--|--------------------------------------|--------------------------------------|
| Description | AM Model | PM Model |
| Individual flows within 15% for flows 700-2,700 vph | 98.9% | 96.8% |
| Individual flows within 100 vph for flows < 700 vph | No observations above 700 Vehicles | No observations above 700 Vehicles |
| Individual flows within 400 vph for flows > 2700 vph | No observations above 2 700 Vehicles | No observations above 2 700 Vehicles |
| Individual flows: GEH < 5 | 98.3% | 98.3% |

Table 4: TAG Calibration Results - Light Vehicles

| Summary of WebTAG Calibration Statistics – Heavy Vehicles | | |
|---|--------------------------------------|--------------------------------------|
| Description | AM Model | PM Model |
| Individual flows within 15% for flows 700-2,700 vph | 100.0% | 100.0% |
| Individual flows within 100 vph for flows < 700 vph | No observations above 700 Vehicles | No observations above 700 Vehicles |
| Individual flows within 400 vph for flows > 2700 vph | No observations above 2 700 Vehicles | No observations above 2 700 Vehicles |
| Individual flows: GEH < 5 | 100.0% | 100.0% |

Table 5: TAG Calibration Results - Heavy Vehicles

As can be seen from the above tables, all models are well within the calibration criteria. This confirms that no modelling errors are present.

Extent of the Model

The extent of the modelled area can be seen in Figure 4. The rationale for extending the model north towards the R156 is related to the redistribution assessment and explained in further detail in the assessment chapter of this report.



Figure 4: Extent of the Model

SCENARIOS

To assess the actual impact of the operational development on the local road network, three different scenarios have been analysed as follows:

- Base Year (2019) – The current performance of the local road network;
- Year of Opening (2025) – The performance of the local road network during the Year of Opening;
- Year of Opening + 5 (2030) – The performance of the local road network during the Year of Opening with a 5-year horizon;

- Design Year (2040) – The performance of the local road network during the Design Year.

The future year assessments considered the following scenarios:

- Do Nothing: - This assessment allows for only normal background traffic growth, with no other developments in the area, aside from the Maynooth Community College on the corner of Moyglare Road and the L6219.
- Do Something: - This assessment allows for everything considered in the Do Nothing scenario, with the addition of the trips generated by the development. Additional to this, two other approved developments earmarked for implementation during the Year of Opening are also included. These are:
 - A Primary Care Centre (PCC) and Nursing Home Unit to the west of R157, and south-east of the residential development;
 - Three office buildings (approximately 16,700 sqm) on the eastern side of the development area, also accessed off the R157.

For the Year of Opening + 5, a further two developments are included. These are:

- Residential phase 1B, which entails a total of 140 units located north of the R6219. This development is linked to the capped population allocations for the lands between 2022 and 2028. It is envisioned that the balance of residential lands will be brought on stream between 2028 and 2034 subject to additional population figures being allocated to the lands in the 2028 Meath Development Plan;
- Tourism and sports fields located north of the R6219, and east of the L2214, excluding the planned hotel development.
- As part of the Year of Opening + 5, the full MOOR is also in operation. The reasoning for this is that the MOOR is slated to be constructed prior to any additional residential developments, on top of what is described above, within the masterplan area. It is anticipated that additional residential units will be constructed just after 2030, which means that the MOOR should be operational by this analysis year.

- *Do Maximum:* - This assessment allows for everything considered in the Do Something scenario, with the addition of trips generated by future developments which form part of the masterplan, that are planned to be implemented by the design year. These include:
 - Six office buildings (approximately 33,300 sqm) on the eastern side of the development area;
 - A hospital located west of the R157, and south of the R6219;
 - The addition of a hotel to the tourism area located north of the R6219, and east of the L2214;
 - A medical research campus located west of the planned primary care centre, and will utilise the same access onto the road network;
 - Residential Phase 2 which includes a total of 296 residential units;
 - Residential Phase 3 which includes a total of 222 residential units.

As per the masterplan framework, there is a portion of land on the northern side of the MOOR, zoned for strategic employment. However, it is unrealistic to assume that these lands will be developed within the design year period. This will lead to an oversupply of employment opportunities without the associated demand being present.

As the masterplan development accounts for the majority of development in the area, no natural background traffic growth was applied to this Do Maximum scenario. Rather this scenario includes the full buildout of the masterplan, except for the previously mentioned strategic employment zones. Only natural background traffic growth is not included. The rationale behind this is that these developments will account for future traffic growth in the area. Applying background traffic growth in addition to the trips generated by these would lead to a significant overestimation of traffic in the area and indicate unrealistic capacity problems.

The addition of the background traffic growth to possible future developments outside of the design year has the potential to cause a large overestimation of vehicles from the development and will result in double, or even triple counts of some vehicles. In addition, the potential impact of the reduction of trips due to work-from-home changes as a result of the covid19 pandemic has not been allowed. Furthermore, the developments assessed in this scenario include several trip generators (residential) and

trip attractors (commercial). There will be a large element of internal and diverted trips within the development lands, which have not been accounted for in this assessment and no account has been taken of the modal shift that may arise from enhanced pedestrian & cycle connectivity. Given these facts, it is considered that the calculated traffic volumes used are conservative and wholly appropriate.

Should further trips be included, above what is already being considered, it will lead to an unrealistic view of future traffic. This in turn will lead to a requirement for unnecessarily extensive infrastructure, which will promote private car use and be to the detriment of the sustainable transport goals set out in the Development Plan.

In summary, the full scenario roadmap, which will be used as part of the assessment, is shown in Table 6:

| Number | Peak | Year | Scenario |
|--------|---------|------|--------------|
| 1 | AM Peak | 2019 | Do Nothing |
| 2 | | 2025 | Do Nothing |
| 3 | | 2025 | Do Something |
| 4 | | 2030 | Do Nothing |
| 5 | | 2030 | Do Something |
| 6 | | 2040 | Do Nothing |
| 7 | | 2040 | Do Something |
| 8 | | 2040 | Do Maximum |
| 9 | PM Peak | 2019 | Do Nothing |
| 10 | | 2025 | Do Nothing |
| 11 | | 2025 | Do Something |
| 12 | | 2030 | Do Nothing |
| 13 | | 2030 | Do Something |
| 14 | | 2040 | Do Nothing |
| 15 | | 2040 | Do Something |
| 16 | | 2040 | Do Maximum |

Table 6: Scenario Roadmap

TRAFFIC GROWTH

To accurately assess the impact of the proposed development in the future, the base traffic flows for the local network in 2019 have been expanded to the Year of Opening, Year of Opening + 5, and the Design Year using the medium-range TII growth factors detailed in Table 7:

| Year | Growth Rates | |
|-------------|----------------|----------------|
| | Light Vehicles | Heavy Vehicles |
| 2019 - 2025 | 10.84% | 24.00% |
| 2019 - 2030 | 20.76% | 48.34% |
| 2019 - 2040 | 29.49% | 78.36% |

Table 7: Background Traffic Growth Factors

The growth factors are based on table 6.2 in the *Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections* document. The medium-range rates that were used for the calculation of the above growth rates are shown in the table below:

| Region | Central Growth Rates | | | | | |
|--------|----------------------|--------|-----------|--------|-----------|--------|
| | 2016-2030 | | 2030-2040 | | 2040-2050 | |
| | LV | HV | LV | HV | LV | HV |
| Meath | 1.0173 | 1.0365 | 1.007 | 1.0186 | 1.0059 | 1.0207 |

Table 8: Rates used for Growth Calculation (TII, May 2019)

The application of the above growth factors should be further considered in the context of the Covid 19 pandemic and potential modal shift, which is expected to have a lasting impact on traffic growth potential and travel patterns over the coming years. Specifically, growth factors are generally developed using projections for economic growth. The global pandemic has had a significant impact in this regard which means such projections are now unlikely to be realised, meaning traffic growth is expected to be similarly over-estimated.

Furthermore, restrictions imposed because of the pandemic response have resulted in a significant portion of the population being forced to work from home. This has highlighted the viability of this approach in industries where it was previously thought to be incompatible. The knock-on effect is expected to be that a percentage of workers continue to be based at home on a part- or full-time basis even after the pandemic restrictions are lifted. This in turn will have a knock-on effect on commuter and peak traffic levels. The National Transport Authority (NTA) has acknowledged this likelihood in a recently circulated note titled "Alternative Future Scenario for Travel Demand" dated November 2020 where it defines the Covid 19 pandemic as a "shock wave" that "can lead to an acceleration in the natural rate of change in society". The note concludes that the total number of daily trips could be up to 8% lower than previous projections.

Thus, considering the above, the applied growth factors are very conservative.

Additional to the normal traffic growth, the following have been considered for future Do Nothing scenarios and included as part of the background traffic:

- The trips generated by the Manyooth Community College, east of Moyglare Road and south of the L6219. This development was not yet operational during the survey period. For these volumes, the approved planning trip generation rates have been used and included, as per KCC's Online Planning Enquiry System;
- Other large developments in the area have also been investigated and considered where applicable.

4 THE RECEIVING ENVIRONMENT

The receiving environment is rural in nature. The existing primary artery through the study area is the R157, which is a southwest to northeast road connecting Maynooth to Dunboyne. The R157 acts as an important regional distributor road, connecting the M7, M4 and N3 national corridors. Branching off from this road is the L6219 which is a county road, and traverses the Moygaddy areas west to east, changing to the L22143 after the junction with the L2214. The study area is bisected by the existing north-south L2214, which intersects with the L6219. This road is known as the Kilcloon Road. It follows a north-south direction before travelling eastwards to connect to the R156, which link Killucan and Dunboyne.

Outside of the study area, development generated traffic is expected to dissipate north towards the N3, east towards Dunboyne via the R157 and south towards Maynooth. The development will consist of trip generators (residential), while other planned developments in the nearby area, and are described further in chapter 5, act as trip attractors (nursing home, primary care centre and offices) and so it is expected that development trips will have a low impact on the operation of the wider network, with many internal trips between generators and attractors. While there is substantial variation in the type of traffic travelling on the links locally, during the peak travel hours, they would primarily be expected to carry commuter traffic.

As noted earlier, base traffic levels have been surveyed on the local network in 2019. By combining these base flows with the traffic generation estimates for the proposed development, the following peaks were identified:

- A.M. Peak Hour: 08:00 – 09:00;
- P.M. Peak Hour: 17:00 – 18:00.

The proposed development will impact several existing County roads. Details of these roads are shown in the table below:

| No | Street Name | Description | Design | | Average Road Width (m) | Traffic Classification |
|----|---------------------|--|----------------------|--|------------------------|------------------------|
| 1 | Moyglare Road | This north-south road connects the western side of Maynooth in the south, to the R156 in the north | Environment: | Rural to urban | 6.00 | Rural Link Road |
| | | | Layout: | Two-lane undivided road west of the development | | |
| | | | Verge: | Rural shoulders in the vicinity of the site | | |
| | | | NMT: | No specific provision | | |
| | | | Illumination: | None in the vicinity of the site | | |
| 2 | L6219/L22143 | This is a connecting road between Moyglare Road in the west and the R157 in the east | Environment: | Rural fringe | 5.80 | Rural Local Road |
| | | | Layout: | Two-lane undivided road central in the development | | |
| | | | Verge: | Rural shoulders | | |
| | | | NMT: | No specific provision | | |
| | | | Illumination: | None in the vicinity of the site | | |
| 3 | L2214 Kilcloon Road | This is a small connecting road, parallel to Moyglare Road. This road connects | Environment: | Rural to rural fringe | 5.00 | Rural Local Road |
| | | | Layout: | Two-lane undivided road north of the development | | |

| No | Street Name | Description | Design | | Average Road Width (m) | Traffic Classification |
|----|-------------|---|----------------------|--|------------------------|------------------------|
| | | L6219 in the south to the R156, passing by Kilcloon | Verge: | Narrow rural shoulders in the vicinity of the site | | |
| | | | NMT: | No specific provision | | |
| | | | Illumination: | None in the vicinity of the site | | |
| 4 | R157 | Road which links Maynooth in the south-west and Dunboyne in the north-east. | Environment: | Rural to urban | 7.00 | Rural Distributor Road |
| | | | Layout: | Two-lane undivided road east of the development | | |
| | | | Verge: | Rural shoulders in the vicinity of the site | | |
| | | | NMT: | Walkways from Maynooth up to River Rye Water. No provision in the vicinity of the site | | |
| | | | Illumination: | None in the vicinity of the site | | |

Table 9: Base Year Road Network

5 CHARACTERISTICS OF THE DEVELOPMENT

DEVELOPMENT & SITE OVERVIEW

The overall gross site area is **c.17.6-hectares**, with c.12.5ha of this zoned by Meath County Council for **A2 - New Residential** with the balance of 5.1ha zoned as high amenity.

The site is currently greenfield and used for agricultural purposes and can be accessed from the L6219 Road which aligns with the northern boundary of the subject site. Ground levels across the site typically fall gently from north to south, with a sharp decline at the southern and eastern boundaries, which align with the River Rye Water and Moyglare Stream respectively.

A separate application will be made to Kildare County Council for the provision of the section of MOOR south of the River Rye that ties into the already constructed section adjacent to Moyglare Hall that is within the Kildare County Council Jurisdiction, as well as for the upgrade of the R157 south of the Kildare Bridge. This overlap of applications will ensure unimpeded access to the proposed development lands for all modes of transport including vehicular and dedicated pedestrian and cyclists' facilities. A separate application will be made to Meath County Council for the full extent of the MOOR.

The proposed site layout is shown in Figure 5 below.



Figure 5: Proposed Development Layout

Two additional planning applications are scheduled to be lodged with Meath County Council, which comprise other sections of the full development. These are:

- A Primary Care Centre (PCC) and Nursing Home Unit to the west of R157, and south-east of the residential development;
- Three office buildings (approximately 16,700 sqm) on the eastern side of the development area, also accessed off the R157, immediately north of the PCC/Nursing Home proposal;

Since these applications are earmarked for development at a similar timeframe as the SHD development discussed in this study, **the traffic impact of all three developments will be considered in combination.**

TRIP GENERATION

SHD Development

The traffic generation potential of the proposed development has been estimated using the Trics software modelling database. This database contains records of surveys carried out at a range of development types across the UK and Ireland. It records a variety of details including the number and type of vehicles entering and exiting the site as well as several other site-specific factors.

When developing traffic generation estimates for any development, several surveys are selected from the database based on a range of factors including development type, size, location, public transport etc. The results are then used to establish trip rates for the development in question which is ultimately used to derive estimates for traffic generation.

The ancillary elements such as the amenities and childcare facility are expected to serve residents at the development and as a result, they are not expected to be independent trip generators and has not been included in this assessment from a trip generation perspective.

It is noted that the potential additional trips generated by the proposed SHD development are estimated by apartment and housing trips to allow the maximum estimated trips included as part of this assessment which will ensure a comprehensive and conservative assessment. Cognisance should be taken of the fact that the trip generation makes no allowance for any internal or diverted trips. This development is part of a masterplan with mixed land-uses, including several trip generators and attractors in the area. This aspect has not been considered for the trip generation, further highlighting the conservative nature of this calculation.

While the trips generated by the apartments and houses have different peak hours, the development is considered holistic, and the maximum trips are considered for the full development with a combination of trips from the two different land-uses.

The trip generation estimates for the proposed development are shown in Table 10 while the Trics output files relative to this assessment can be found in *Appendix C* of this report.

| Time Range | Apartments | | | Houses | | | SHD Development |
|---------------------|------------|------------|------------|------------|------------|------------|-----------------|
| | 166 | units | Total | 194 | units | Total | Total |
| | Arrivals | Departures | | Arrivals | Departures | | |
| 07:00-08:00 | 13 | 45 | 58 | 7 | 37 | 44 | 102 |
| 08:00-09:00 | 15 | 33 | 48 | 17 | 53 | 71 | 119 |
| 09:00-10:00 | 16 | 16 | 32 | 28 | 29 | 57 | 89 |
| 10:00-11:00 | 12 | 14 | 26 | 17 | 24 | 41 | 67 |
| 11:00-12:00 | 10 | 10 | 20 | 21 | 19 | 40 | 60 |
| 12:00-13:00 | 14 | 15 | 30 | 24 | 15 | 39 | 69 |
| 13:00-14:00 | 15 | 13 | 28 | 22 | 21 | 43 | 71 |
| 14:00-15:00 | 13 | 13 | 26 | 17 | 31 | 49 | 75 |
| 15:00-16:00 | 16 | 13 | 29 | 37 | 20 | 56 | 85 |
| 16:00-17:00 | 19 | 16 | 35 | 33 | 20 | 53 | 88 |
| 17:00-18:00 | 33 | 10 | 42 | 41 | 14 | 55 | 97 |
| 18:00-19:00 | 21 | 16 | 37 | 33 | 23 | 56 | 93 |
| 19:00-20:00 | 13 | 45 | 58 | 12 | 10 | 22 | 80 |
| 20:00-21:00 | 15 | 33 | 48 | 6 | 4 | 10 | 58 |
| Daily Trips: | 198 | 214 | 412 | 316 | 320 | 636 | 1048 |

Table 10: Estimated Future Trips Generated by the Development

Based on Table 10, the proposed SHD development is expected to generate approximately **1048 additional trips per day**. Of these, approximately **32 arrivals** and **86 departures** are expected during the A.M. peak (08:00 – 09:00) while approximately **74 arrivals** and **24 departures** are expected in the P.M peak hour (17:00 – 18:00).

Opening Year Developments

The trip generation for the other developments in the vicinity, anticipated to be operational by the Opening Year, as discussed in Chapter 0, are shown in the tables below:

| Time Range | Primary Care Centre | | | Nursing Home Unit | | | Medical Development |
|---------------------|---------------------|-----------------------|------------|-------------------|------------|------------|---------------------|
| | 30.49 | per 100m ² | Total | 156 | beds | Total | Total |
| | Arrivals | Departures | | Arrivals | Departures | | |
| 07:00-08:00 | 2 | 4 | 6 | 28 | 7 | 35 | 41 |
| 08:00-09:00 | 8 | 0 | 8 | 12 | 13 | 25 | 33 |
| 09:00-10:00 | 16 | 8 | 24 | 27 | 11 | 38 | 62 |
| 10:00-11:00 | 8 | 14 | 22 | 32 | 15 | 47 | 69 |
| 11:00-12:00 | 8 | 14 | 22 | 23 | 25 | 48 | 70 |
| 12:00-13:00 | 11 | 4 | 15 | 18 | 27 | 45 | 60 |
| 13:00-14:00 | 8 | 10 | 18 | 35 | 30 | 65 | 83 |
| 14:00-15:00 | 16 | 17 | 33 | 31 | 47 | 78 | 111 |
| 15:00-16:00 | 11 | 10 | 21 | 31 | 31 | 62 | 83 |
| 16:00-17:00 | 2 | 7 | 9 | 15 | 32 | 47 | 56 |
| 17:00-18:00 | 10 | 7 | 17 | 13 | 21 | 34 | 51 |
| 18:00-19:00 | 7 | 10 | 17 | 12 | 15 | 27 | 44 |
| 19:00-20:00 | 2 | 4 | 6 | 5 | 10 | 15 | 21 |
| 20:00-21:00 | 0 | 0 | 0 | 10 | 9 | 19 | 19 |
| Daily Trips: | 109 | 109 | 218 | 292 | 293 | 585 | 803 |

Table 11: Estimated Future Trips Generated by the Medical Development

| Time Range | Business Park – 3 Buildings | | |
|---------------------|-----------------------------|----------------|------------|
| | 267 | Parking spaces | Total |
| | Arrivals | Departures | |
| 07:00-08:00 | 55 | 6 | 62 |
| 08:00-09:00 | 106 | 12 | 118 |
| 09:00-10:00 | 44 | 12 | 56 |
| 10:00-11:00 | 16 | 11 | 27 |
| 11:00-12:00 | 14 | 14 | 28 |
| 12:00-13:00 | 19 | 27 | 47 |
| 13:00-14:00 | 24 | 21 | 45 |
| 14:00-15:00 | 15 | 18 | 34 |
| 15:00-16:00 | 11 | 31 | 42 |
| 16:00-17:00 | 10 | 52 | 62 |
| 17:00-18:00 | 7 | 80 | 87 |
| 18:00-19:00 | 4 | 41 | 45 |
| Daily Trips: | 325 | 327 | 652 |

Table 12: Estimated Future Trips Generated by the Office Development – 3 Buildings

Opening Year + 5 and Design Year Developments

The trip generation for the other developments in the vicinity, anticipated to be operational by either the Design Year only, or both the Opening Year + 5 and Design Year, as discussed in Chapter 0, are shown in the tables overleaf:

| Time Range | Residential Phase 1B ¹ | | |
|---------------------|-----------------------------------|------------|------------|
| | 140 | units | Total |
| | Arrivals | Departures | |
| 07:00-08:00 | 10 | 36 | 46 |
| 08:00-09:00 | 13 | 30 | 42 |
| 09:00-10:00 | 15 | 15 | 30 |
| 10:00-11:00 | 11 | 13 | 24 |
| 11:00-12:00 | 10 | 9 | 19 |
| 12:00-13:00 | 13 | 13 | 26 |
| 13:00-14:00 | 13 | 12 | 25 |
| 14:00-15:00 | 11 | 13 | 24 |
| 15:00-16:00 | 16 | 12 | 28 |
| 16:00-17:00 | 18 | 13 | 31 |
| 17:00-18:00 | 28 | 9 | 37 |
| 18:00-19:00 | 19 | 14 | 33 |
| 19:00-20:00 | 2 | 1 | 3 |
| Daily Trips: | 179 | 190 | 369 |

¹Included in both Opening Year + 5 and Design Year Scenarios

Table 13: Estimated Future Trips Generated by Residential Phase 1B

| Time Range | Residential Phase 2 | | |
|---------------------|---------------------|------------|------------|
| | 275 | units | Total |
| | Arrivals | Departures | |
| 07:00-08:00 | 22 | 75 | 97 |
| 08:00-09:00 | 26 | 54 | 79 |
| 09:00-10:00 | 26 | 27 | 53 |
| 10:00-11:00 | 20 | 23 | 43 |
| 11:00-12:00 | 17 | 17 | 34 |
| 12:00-13:00 | 24 | 26 | 50 |
| 13:00-14:00 | 25 | 22 | 46 |
| 14:00-15:00 | 22 | 21 | 43 |
| 15:00-16:00 | 26 | 22 | 48 |
| 16:00-17:00 | 32 | 26 | 58 |
| 17:00-18:00 | 54 | 17 | 70 |
| 18:00-19:00 | 34 | 26 | 61 |
| 19:00-20:00 | 22 | 75 | 97 |
| Daily Trips: | 328 | 354 | 682 |

Table 14: Estimated Future Trips Generated by Residential Phase 2

| Time Range | Residential Phase 3 | | |
|---------------------|---------------------|------------|------------|
| | 222 | units | Total |
| | Arrivals | Departures | |
| 07:00-08:00 | 18 | 60 | 78 |
| 08:00-09:00 | 21 | 44 | 64 |
| 09:00-10:00 | 21 | 22 | 43 |
| 10:00-11:00 | 16 | 19 | 35 |
| 11:00-12:00 | 14 | 13 | 27 |
| 12:00-13:00 | 19 | 21 | 40 |
| 13:00-14:00 | 20 | 18 | 38 |
| 14:00-15:00 | 18 | 17 | 34 |
| 15:00-16:00 | 21 | 18 | 39 |
| 16:00-17:00 | 26 | 21 | 47 |
| 17:00-18:00 | 44 | 13 | 57 |
| 18:00-19:00 | 28 | 21 | 49 |
| 19:00-20:00 | 18 | 60 | 78 |
| Daily Trips: | 265 | 286 | 551 |

Table 15: Estimated Future Trips Generated by Residential Phase 3

| Time Range | Hospital | | |
|---------------------|-------------|------------------------|-------------|
| | 270 | Per 100 m ² | Total |
| | Arrivals | Departures | |
| 07:00-08:00 | 211 | 41 | 252 |
| 08:00-09:00 | 254 | 87 | 341 |
| 09:00-10:00 | 231 | 108 | 339 |
| 10:00-11:00 | 173 | 163 | 336 |
| 11:00-12:00 | 158 | 175 | 333 |
| 12:00-13:00 | 121 | 131 | 252 |
| 13:00-14:00 | 148 | 145 | 293 |
| 14:00-15:00 | 134 | 150 | 285 |
| 15:00-16:00 | 123 | 167 | 289 |
| 16:00-17:00 | 106 | 205 | 312 |
| 17:00-18:00 | 108 | 200 | 308 |
| 18:00-19:00 | 79 | 158 | 237 |
| 19:00-20:00 | 61 | 109 | 170 |
| 20:00-21:00 | 29 | 102 | 131 |
| 21:00-22:00 | 5 | 29 | 34 |
| Daily Trips: | 1941 | 1969 | 3911 |

Table 16: Estimated Future Trips Generated by the Hospital

| Time Range | Medical Research Facility (Business Park) | | |
|---------------------|---|----------------|-------------|
| | 215 | Parking spaces | Total |
| | Arrivals | Departures | |
| 07:00-08:00 | 154 | 18 | 171 |
| 08:00-09:00 | 294 | 34 | 327 |
| 09:00-10:00 | 121 | 34 | 155 |
| 10:00-11:00 | 44 | 31 | 75 |
| 11:00-12:00 | 38 | 40 | 78 |
| 12:00-13:00 | 54 | 75 | 129 |
| 13:00-14:00 | 66 | 58 | 125 |
| 14:00-15:00 | 42 | 50 | 93 |
| 15:00-16:00 | 30 | 86 | 115 |
| 16:00-17:00 | 27 | 144 | 171 |
| 17:00-18:00 | 20 | 221 | 241 |
| 18:00-19:00 | 11 | 114 | 125 |
| Daily Trips: | 901 | 905 | 1806 |

Table 17: Estimated Future Trips Generated by the Medical Research Facility

| Time Range | Business Park – 6 Buildings | | |
|---------------------|-----------------------------|----------------|-------------|
| | 477 | Parking spaces | Total |
| | Arrivals | Departures | |
| 07:00-08:00 | 92 | 10 | 102 |
| 08:00-09:00 | 175 | 20 | 195 |
| 09:00-10:00 | 72 | 21 | 93 |
| 10:00-11:00 | 26 | 19 | 45 |
| 11:00-12:00 | 23 | 24 | 47 |
| 12:00-13:00 | 32 | 45 | 77 |
| 13:00-14:00 | 40 | 35 | 74 |
| 14:00-15:00 | 25 | 30 | 55 |
| 15:00-16:00 | 18 | 51 | 69 |
| 16:00-17:00 | 16 | 86 | 102 |
| 17:00-18:00 | 12 | 132 | 144 |
| 18:00-19:00 | 7 | 68 | 74 |
| Daily Trips: | 537 | 539 | 1077 |

Table 18: Estimated Future Trips Generated by the Office Development – 6 Buildings

| Hotel and Tourism Development | | | | | | | | | | | |
|-------------------------------|-----------------------------|-------------|----------------------|------------|----------------------------|-------------|------------|------------|------------|------------|-------------|
| Time Range | Leisure Centre ¹ | | Theatre ¹ | | Art Galleries ¹ | | Hotel | | Total | | |
| | 25 | per 100 sqm | 250 | seats | 10 | per 100 sqm | 118 | Beds | Arrivals | Departures | Total |
| | Arrivals | Departures | Arrivals | Departures | Arrivals | Departures | Arrivals | Departures | | | |
| 06:00-07:00 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 |
| 07:00-08:00 | 14 | 4 | 0 | 0 | 0 | 0 | 12 | 17 | 26 | 21 | 46 |
| 08:00-09:00 | 23 | 15 | 8 | 3 | 0 | 0 | 18 | 21 | 48 | 38 | 87 |
| 09:00-10:00 | 25 | 17 | 0 | 5 | 2 | 1 | 21 | 25 | 48 | 48 | 96 |
| 10:00-11:00 | 18 | 19 | 0 | 0 | 1 | 1 | 18 | 26 | 37 | 46 | 83 |
| 11:00-12:00 | 20 | 20 | 0 | 0 | 0 | 1 | 18 | 22 | 38 | 43 | 81 |
| 12:00-13:00 | 25 | 22 | 0 | 0 | 2 | 0 | 23 | 21 | 51 | 43 | 94 |
| 13:00-14:00 | 21 | 27 | 0 | 0 | 1 | 2 | 18 | 20 | 40 | 50 | 90 |
| 14:00-15:00 | 22 | 20 | 15 | 8 | 3 | 2 | 21 | 22 | 61 | 52 | 114 |
| 15:00-16:00 | 31 | 25 | 5 | 3 | 4 | 2 | 20 | 19 | 60 | 48 | 108 |
| 16:00-17:00 | 35 | 32 | 23 | 20 | 1 | 5 | 25 | 22 | 84 | 79 | 163 |
| 17:00-18:00 | 40 | 43 | 0 | 3 | 0 | 1 | 33 | 23 | 73 | 69 | 143 |
| 18:00-19:00 | 38 | 40 | 33 | 7 | 0 | 0 | 22 | 17 | 93 | 63 | 157 |
| 19:00-20:00 | 39 | 36 | 82 | 11 | 0 | 0 | 16 | 15 | 137 | 62 | 199 |
| 20:00-21:00 | 24 | 27 | 5 | 3 | 0 | 0 | 12 | 12 | 41 | 42 | 83 |
| 21:00-22:00 | 5 | 32 | 0 | 38 | 0 | 0 | 13 | 18 | 17 | 88 | 106 |
| 22:00-23:00 | 2 | 3 | 0 | 5 | 0 | 0 | 12 | 16 | 13 | 24 | 37 |
| 23:00-24:00 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 3 |
| Daily Trips: | 386 | 383 | 170 | 104 | 15 | 16 | 305 | 316 | 875 | 818 | 1693 |

¹Included in both Opening Year + 5 and Design Year Scenarios

Table 19: Estimated Future Trips Generated by the Hotel and Tourism Development

TRIP DISTRIBUTION

Trip distribution was done through an origin-destination assessment, using the junction surveys. A percentage arrival/departure split was calculated according to the peak hour. These percentages are shown in the table below:

| Origin/Destination | AM | | PM | | AADT | |
|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | Arr | Dep | Arr | Dep | Arr | Dep |
| Moyglare Road (S) | 8% | 18% | 14% | 9% | 12% | 13% |
| Moyglare Road (N) | 8% | 2% | 3% | 8% | 6% | 5% |
| Moyglare Road (W) | 11% | 3% | 3% | 9% | 6% | 6% |
| Mariavilla | 10% | 3% | 3% | 6% | 6% | 5% |
| L2214 | 6% | 3% | 3% | 6% | 6% | 5% |
| R157 (N) | 15% | 28% | 24% | 13% | 18% | 18% |
| Dunboyne Road | 12% | 7% | 5% | 11% | 1% | 8% |
| R148 (W) | 15% | 16% | 23% | 18% | 23% | 19% |
| R148 (E) | 16% | 20% | 23% | 20% | 22% | 21% |
| Total | 100% | 100% | 100% | 100% | 100% | 100% |

Table 20: Trip Distribution Percentages

The origin and destination values for the additional zones included in the various models to represent the developments, as discussed in the *Trip Generation* section of this document, were distributed according to the above table. The percentage of arrivals and departures of this development are shown in the figures overleaf. In reality, the model uses the percentages as the origin-destination values. The distribution along the roads are estimated, with the model assigning these trips automatically.

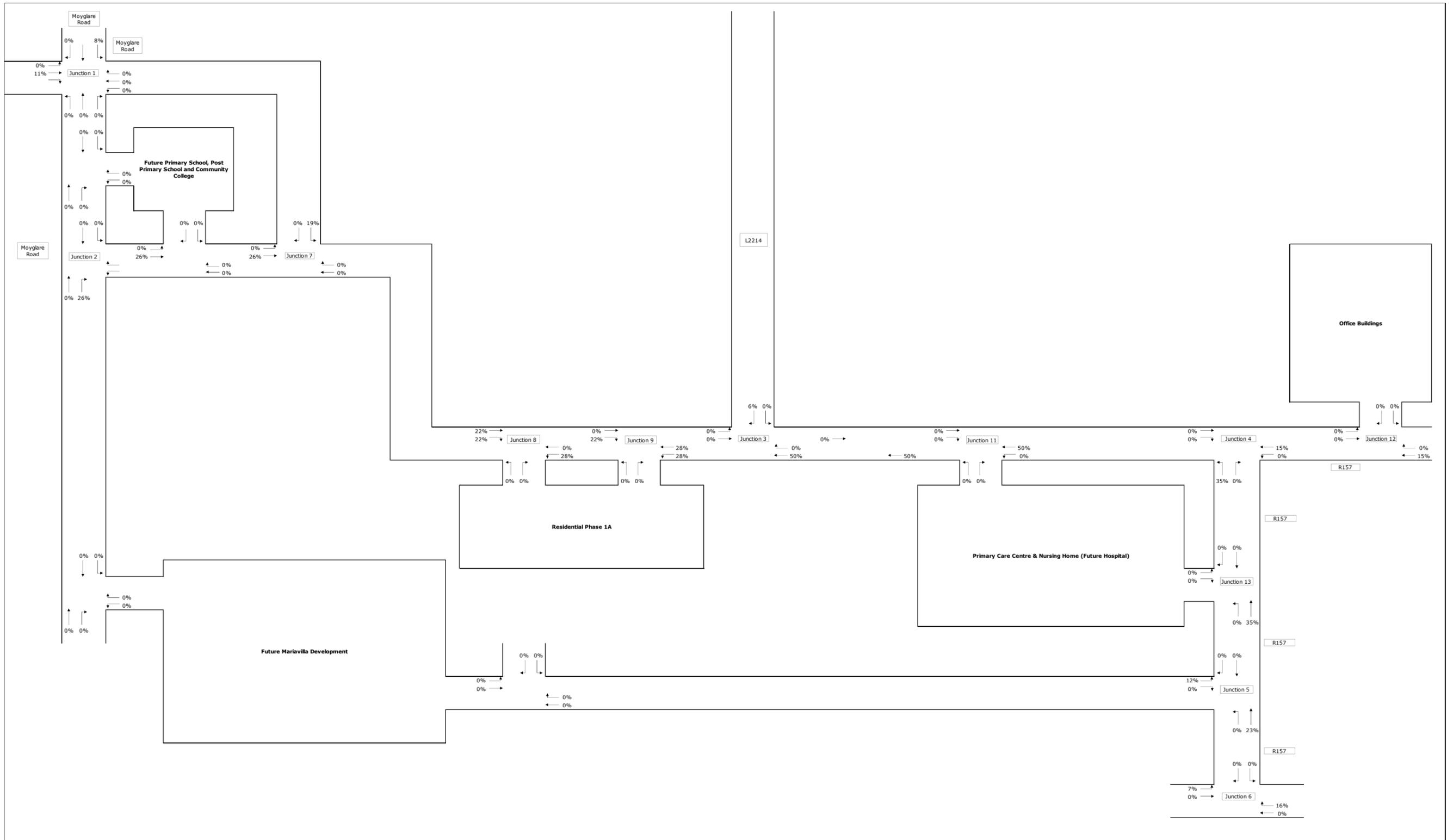


Figure 6: Development Trip Arrival Distribution – AM Peak

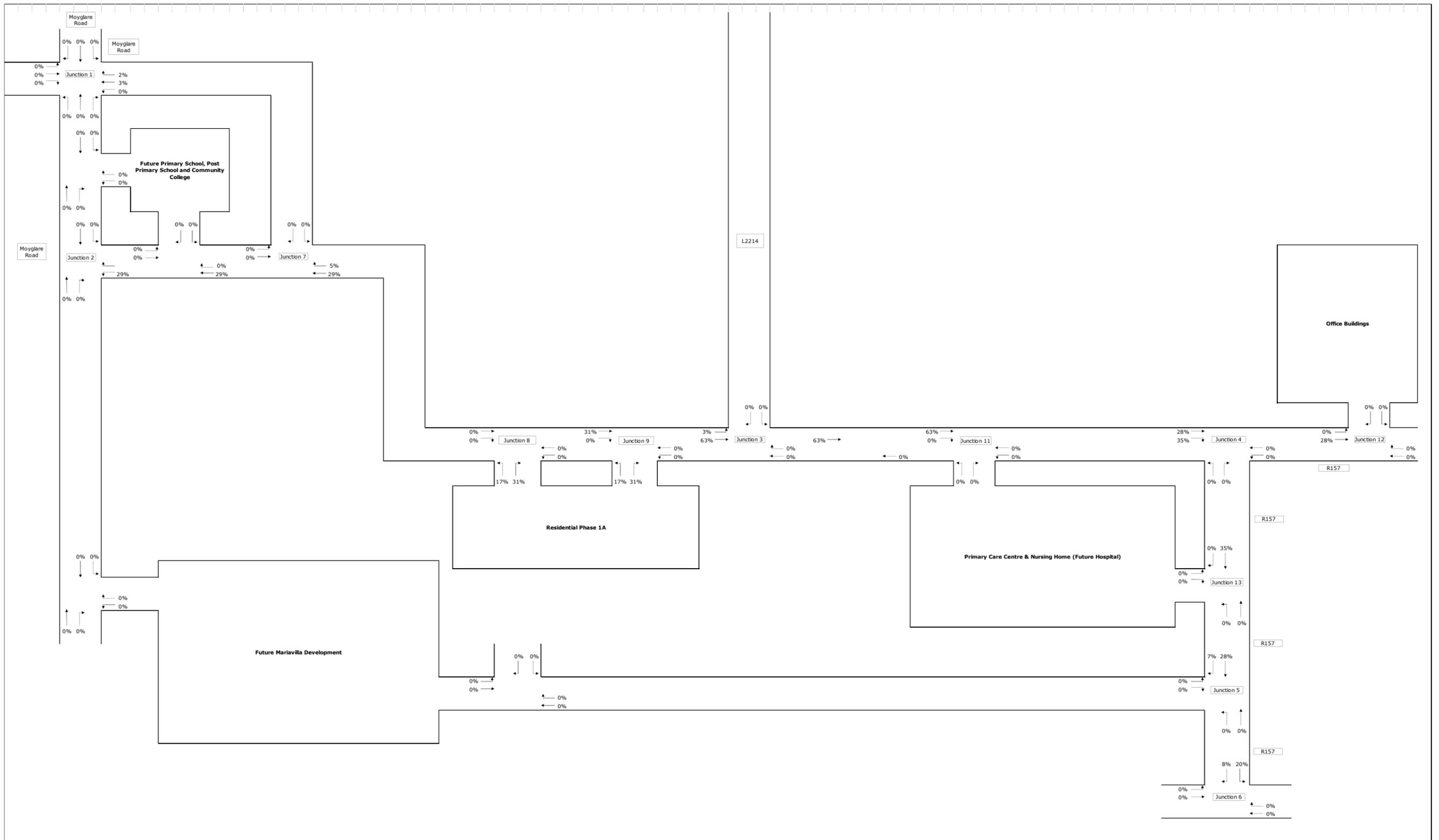


Figure 7: Development Trip Destination Distribution – AM Peak

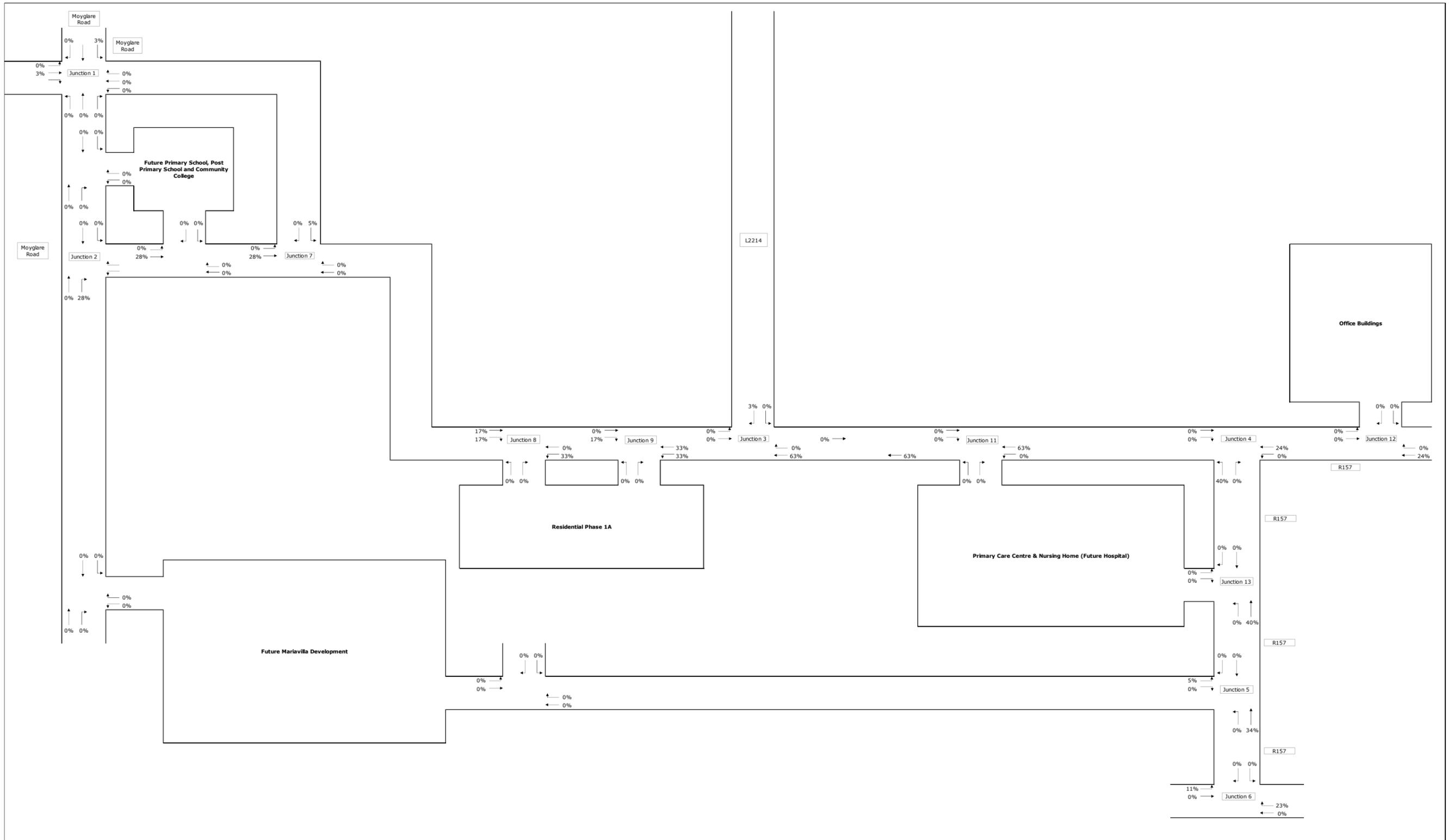


Figure 8: Development Trip Arrival Distribution – PM Peak

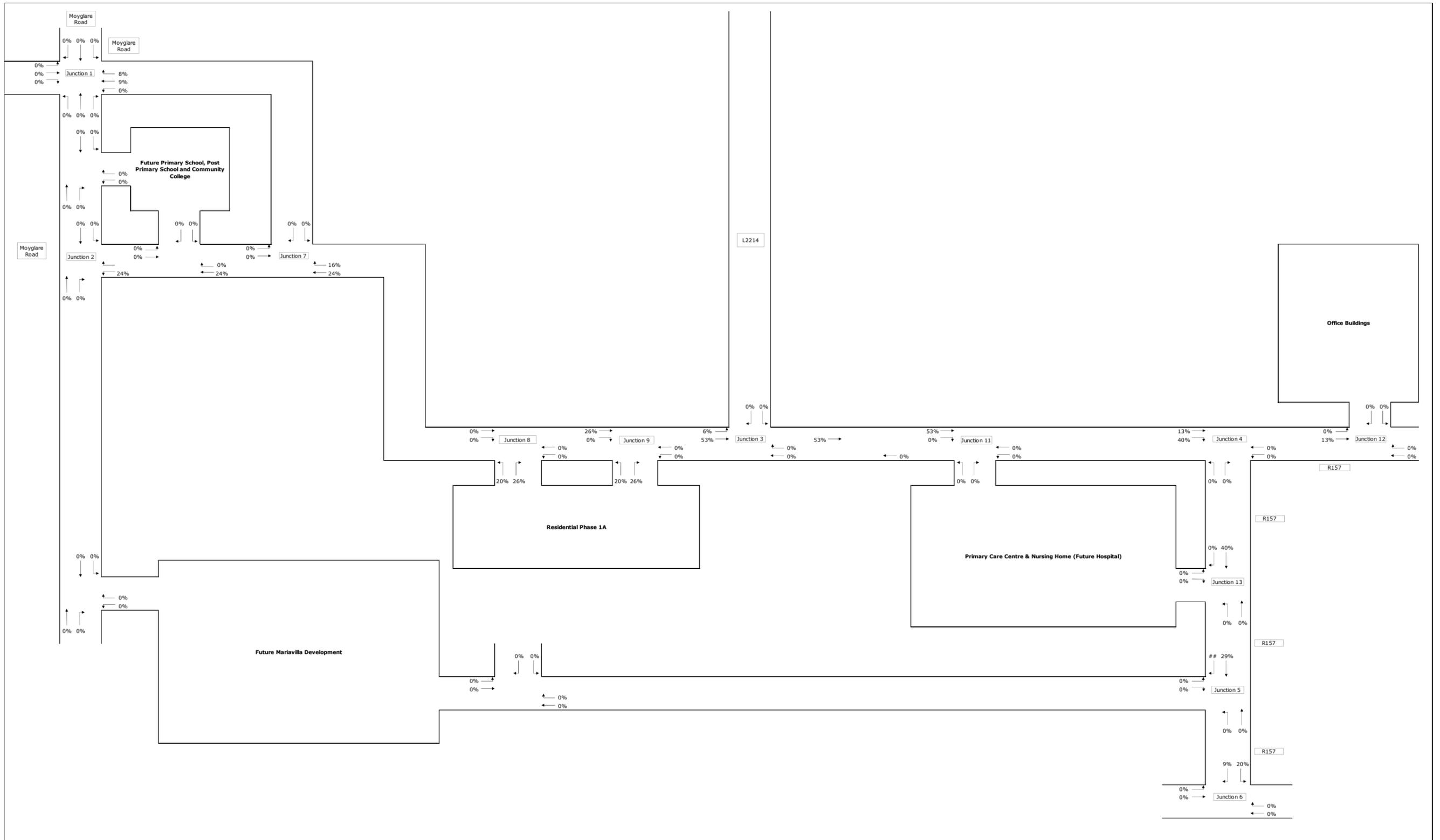


Figure 9: Development Trip Destination Distribution – PM Peak

6 CAR PARKING STRATEGY

In developing the car parking provision, consideration has been given to a wide variety of factors including the applicable standards, realistic demand and measures that can be put in place to manage and control parking at the SHD site. Each of these factors is discussed in further detail as follows:

CAR PARKING STANDARDS

As stated in Chapter 1, the development is primarily located within the jurisdiction of MCC, however, the Maynooth Environs Local Area Plan contains an objective to liaise with KCC in the identification, design, reservation and delivery of the section of the Maynooth Outer Relief Road located within the administrative area of MCC. However, as this SHD application is located solely within the MCC jurisdiction, this report will only reference the parking standards of the MCC Development Plan.

Apartment Guidelines

The "Sustainable Urban Housing: Design Standards for New Apartments" (December 2020) defines three types of urban areas:

- **Central/Accessible Urban** - In larger scale and higher density developments, comprising wholly of apartments in more central locations that are well served by public transport, the default policy is for car parking provision to be minimised, substantially reduced or wholly eliminated in certain circumstances (15 minutes' walk of city centre/employment location, 10 minutes of rail, 5 minutes of high-frequency bus services (10 min peak hour frequency));
- **Intermediate Urban Locations** - suburban/urban locations served by public transport or close to town centres or employment areas and particularly for housing schemes with more than 45 dwellings per hectare net (18 per acre), planning authorities must consider a reduced overall car parking standard and apply an appropriate maximum car parking standard;

- **Peripheral/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.

As this development is approximately 1.5 km north of the town of Maynooth, Co. Kildare, it can be considered a Peripheral and/or Less Accessible Urban Location. This results in a requirement of one car parking space per unit, together with an element of visitor parking such as one space for every 3-4 apartments.

Meath County Development Plan

The latest *Meath County Development Plan 2021 – 2027* plan was adopted on 22 September 2021 and came into effect on 3 November 2021.

The *MCC County Development Plan 2021 – 2027*, Section 9 – Parking Standards, Table 11.2, notes the following car parking requirements:

the County requires 2 spaces per flat or apartment and conventional dwellings, and 1 visitor space per 4 apartments. It is noted that reduced car parking requirements are available for developments adjacent to existing and future rail stations, and there are minimum requirements in peripheral/or less accessible urban locations, as per the “Sustainable Urban Housing: Design Standards for New Apartments” (December 2020) referenced above.

Furthermore, for the other parts of the development, the following is required as per the Development Plan:

- Creche – 1 space per 5 children, or 1 per employee & set-down
- Scout Den – 1 space per employee/Scout Leader

CAR PARKING PROVISION

It is proposed for the house-type units to provide parking in line with the local guidance as set out in the Development Plan, and for the apartment/duplex type units it is proposed to provide parking in line with national guidance as set out in the Apartment Guidelines. The following table shows the details of the development, as well as the provided car parking spaces:

| Unit Type | Provision (spaces per unit) | Number of Units | Number of Spaces | Percentage EV Charging Points |
|------------------------|-----------------------------|-----------------|------------------|-------------------------------|
| Apartments & Duplexes | 1.25 | 164 | 207 | 5% (10) |
| 2-Bedroom Houses | 1.5 | 19 | 29 | - |
| 3- & 4- Bedroom Houses | 2 | 177 | 354 | - |
| Total | - | 360 | 590 | 10 |

Table 21: Car Parking Provision - Residential

The comparison of the provided car parking and the requirements of the various documents mentioned earlier in this chapter is shown in the table below:

| Unit Type | Provided | Apartment Guidelines | MCC Development Plan |
|------------------------|------------|----------------------|----------------------|
| Apartments & Duplexes | 207 | 205 | - |
| 2-Bedroom Houses | 29 | - | 38 |
| 3- & 4- Bedroom Houses | 354 | - | 354 |
| Total | 590 | 597 | |

Table 22: Car Parking Comparison

From the above, the following conclusions can be drawn:

- In reference to the *Design Standards for New Apartments*, the required car parking spaces for apartments and duplexes are 164 for residents and 41 for visitors. The development provides for 207 car parking spaces, which meets the requirements;
- As the *Design Standards for New Apartments* do not specify requirements for houses, the *MCC Development Plan* takes precedence in this regard. This states a requirement of 392 car parking spaces for housing. The development provides for 354 at a rate of 2 spaces per 3- & 4- Bedroom House, and 29 spaces at a rate of 1.5 spaces per 2-Bedroom House.

The provided parking is under the relevant guidance, i.e. it is in line with the guidelines for apartments & duplexes, as per the Apartment Guidelines, and in line with the guidelines for houses, as per the MCC Development Plan.

The provision of car parking for the creche is in line with the requirements set out in the Meath County Development Plan 2021-2027. The requirement as set out in the development plan for a creche is for 1 car parking space per employee & dedicated set down and 1 car parking space for 4 children & dedicated set down.

Based on the number of children and staff expected at the creche, it is proposed to provide 29 no. car parking spaces plus set down to service the creche. This would be in line with the development plan requirements and is expected to adequately meet the expected demand.

The other developments within the SHD for which car parking is provided is:

- Scout Den – 6 car parking spaces;
- Playground & Moygaddy Castle Public Park – 42 car parking spaces (Includes 18 no. additional spaces for future creche expansion).

This means that the development provides a total of 667 no. car parking spaces, with 10 EV charging points for apartments and duplexes. These EV charging points will be provided at Visitor/Universally Accessible spaces. Furthermore, all houses will be provided with EV charger connection points in the external ESB box units.

BICYCLE PARKING

In the interest of sustainable transport, extensive, high-quality cycle parking is proposed at the development. The Local Development Plan requires 1 cycle parking space per unit and 1 cycle parking space per 2 units for visitors. This equates to a total of 246 cycle parking spaces. The current allocation of cycle parking is 1 cycle parking space per unit, and 1 visitor space per 2 units, which totals 164 long-term, secure cycle parking spaces and 82 no. on-surface, short-term visitor cycle parking spaces. The current quantum of cycle parking satisfies the requirements of the Local Development Plan.

Bicycle parking for the crèche will be proposed in line with the Meath County Development Plan 2021-2027. The standard applicable to the creche is for a standard of 1 bicycle parking space per employee. The development provides 12 bicycle spaces as per the development plan.

Furthermore, a total of 12 no. bicycle spaces are provided for the Scout Den and Playground & Public Park respectively.

This means that the development as a whole provides for a total of 200 no. long-term and 83 no. short-term bicycle spaces.

7 POTENTIAL IMPACT OF DEVELOPMENT CONSTRUCTION

Topsoil and subsoil/stones will be excavated to accommodate roads, footpaths, services, and construction. It is noted that for all areas of new construction (excluding green areas such as public open spaces and gardens) that the existing topsoil needs to be removed. As is good sustainable practice the topsoil excavated on the site will all be utilised on the site and added to the existing topsoil in areas such as gardens and open spaces. This will improve the depth of the growing medium in these areas and remove any requirement to transport topsoil from the site. The geotechnical investigations of the site suggest that there is generally 100mm of topsoil in the area for construction with some areas of 200mm of topsoil uncovered in the study area. As a conservative estimate of this, OCSC has assumed that the average depth of topsoil to be excavated is 150mm. This equates to a volume of topsoil to be excavated of approximately 9,000 m³. This volume of soil can be easily accommodated in the areas of gardens and open spaces (excluding areas close to the river and stream), therefore there will not be a requirement to remove topsoil from the site. Based on a 3d ground model of the existing site the expected volume of materials has been calculated. Given that the entire site is approximately 19.52 hectares, the following calculations have been made (see Table 2 over):

- Cut & Fill is taken from Site Strip Level to Formation Level. Topsoil is excluded from the calculation.
- 450mm Road Build Ups
- 450mm Building Pad Build Ups
- An allowance has been made for some soil not being acceptable for reuse on the site.

| Item | Cut Volume (m ³) | | Fill Volume (m ³) |
|----------------------|------------------------------|-----------------------|-------------------------------|
| Fill 4.4m – 5.5m | - | | 10 |
| Fill 3.3m – 4.4m | - | | 50 |
| Fill 2.2m – 3.3m | - | | 1 250 |
| Fill 1.1m – 2.2m | - | | 6 600 |
| Fill 0m – 1.1m | - | | 41 100 |
| Cut 0m – 1.1m | 17 300 | - | |
| Cut 1.1m – 2.2m | 3 300 | - | |
| Cut 2.2m – 3.3m | 1 400 | - | |
| Cut 3.3m – 4.4m | 400 | - | |
| Cut 4.4m – 5.5m | 50 | - | |
| Cut 5.5m – 6.6m | - | - | |
| Total Cut | Cut | Reuse | Export |
| | 22 450 m ³ | 17 450 m ³ | 5 000 m ³ |
| Total Fill | Fill | Reuse | Import |
| | 49 010 m ³ | 17 450 m ³ | 31 560 m ³ |
| Total Haulage | c. 84 100 Tonnes | | |

Table 23: Development Cut & Fill Calculations

The cited figures in the table above are overall cumulative cut and fill volumes and relate to all proposed works at the site. It should be noted that these numbers are approximated and will be subject to change depending on construction methodologies and ambient weather conditions at the time of the works. It was assumed that the density of excavated material is approximately 2.3 tons/m³.

Based on this, and from the experience of similar construction projects, it is considered that there will be a maximum of twelve HGVs serving the site during any given daytime hour. This is based upon the knowledge that it takes on average 10 minutes to load a lorry with spoil but could be as short as 5 minutes. As such, the two-way HGV traffic is unlikely to be higher than 24 vehicles per hour at any point of the day. Based on an 8-hour day and a 22-working day month, 24 vehicles per hour equates to 4,224 vehicles per month.

It is worth noting however that the 84 100 tonnes of combined recycling & disposal equate to just over 4 205 truckloads based on 20 tonnes per load. It should be further noted that two developments are earmarked for construction during a similar timeframe as this development, within the same area. It could be possible that excess cut volumes from these sites can be used for the shortfall of fill volume for this site, reducing the amount of material that needs to be imported.

Measures will be put in place to minimise the amount of construction traffic generated by the development. These measures will include the reuse of materials within the site for landscape purposes, or within adjacent sites for fill, to limit the amount of spoilage.

It will be an objective of this development to reuse as much material as possible and minimise the amount of material to be transported off-site. Furthermore, the possibility will be investigated of using excess cut material in other developments which form part of the wider masterplan, implemented within the same timeframe of this development. This will minimise the transportation distance, which will reduce the environmental impacts and cost of the development.

The contractor will maximise the use of precast materials or prefabricated materials wherever possible and economically viable. Adequate storage space will be provided on site for the storage of materials and a site strategy will be put in place to manage the timing of deliveries to the site. Trips by construction workers will be limited by the provision of car-sharing and Travel to Work Scheme benefits. Construction workers will be encouraged to use public transport to the maximum possible extent. Adequate storage space will be provided on site for the storage of materials and a site strategy will be put in place to manage the timing of deliveries to the site.

It is not anticipated that the amount of construction traffic will exceed the amount of operational traffic.

8 POTENTIAL IMPACT OF DEVELOPMENT OPERATION

TRAFFIC REDISTRIBUTION

To assess the potential redistribution of traffic due to the implementation of the development, the dynamically assigned Vissim model was consulted. It should be noted that route choice was limited to reject paths with a total cost higher than 50% as compared to the best path, as road users will in general avoid long detours. Two potential redistribution implications are relevant to this area.

Redistribution to Kilcloon Road (L2214)

The first potential redistribution entails vehicles north- and southbound on Moyglare Road and Kilcloon Road (L2214), to and from the R156 in the north. With the inclusion of the MOOR, the Kilcloon residents have historically raised a concern that the route along Kilcloon is an easier access route than along Moyglare Road, towards the R156 in the north, which could lead to redistribution and an increase in traffic through the village of Kilcloon.

To assess this potential redistribution, an assumption was made that all surveyed vehicles travelling north and south, north of the junctions between Moyglare Road and the L6219, and between the L6219 and L2214, travel to and from the R156. Although this is unlikely, it does represent a worst-case scenario and is a very conservative and robust assumption.

For Vissim to accurately determine this redistribution, Moyglare Road and the L2214 were extended up to the R156, with all associated speed changes along the way. This is important as the average speed will affect route choice.

It should be noted that through discussions with Meath County Council, it was identified that they are planning on implementing various traffic calming measures at Kilcloon to

deter traffic from using this road. The Kilcloon Traffic Calming Scheme proposes traffic calming at two locations, shown in the figure below, extracted from drawing number TRA-04-012-04-99-DG3802 of the Kilcloon Traffic Calming Scheme:



Figure 10: Proposed Site Location of Kilcloon Traffic Calming Scheme

Of particular importance to this assessment is the traffic calming proposed at the Catholic Church. The extent of proposed works at this location is shown in the figure overleaf, extracted from drawing number TRA-04-012-04-99-DG3804 of the Kilcloon Traffic Calming Scheme. Whilst these traffic calming works are not part of this SHD application, due consideration has been given to the impact of the works proposed by MCC.

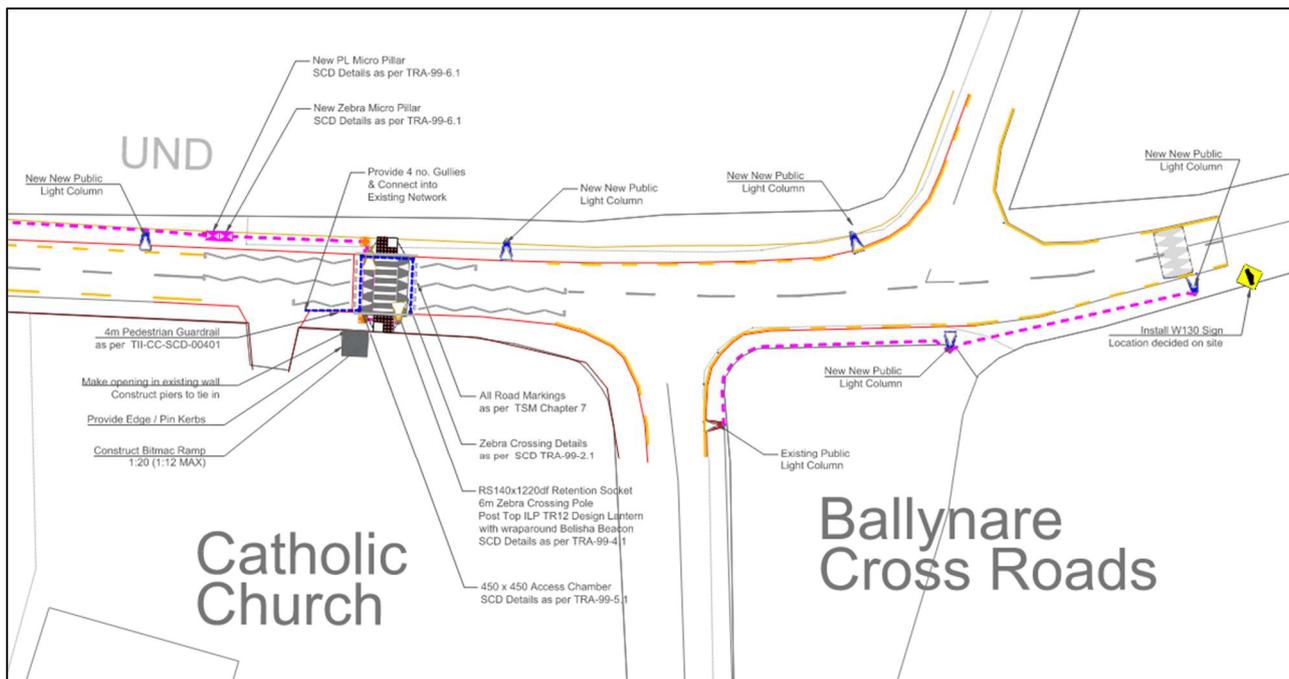


Figure 11: Extent of Traffic Calming Proposed at Kilcloon Catholic Church

Through discussions with MCC, it has been determined that these works are currently being tendered for, with tenders due from contractors on 11 August 2022. It is anticipated by MCC that all works will be completed by the end of November 2022, subject to receipt of a compliant tender.

In the interests of prudence, this traffic calming was not considered as part of the redistribution assessment so that a worst-case scenario could be assessed. The drawing pack for this scheme, as received from MCC, is included as *Appendix F* of this document.

The tables below show the vehicles travelling on these roads, as per the Vissim model, for all scenarios, and compare these volumes to the Do Nothing scenarios as a percentage increase/decrease:

| Scenario | Year | Moyglare Road | | | | L2214 – Kilcloon Road | | | |
|--------------|------|---------------|------|-------|------|-----------------------|-----|-------|-----|
| | | North | % | South | % | North | % | South | % |
| Do Nothing | 2019 | 50 | - | 131 | - | 54 | - | 116 | - |
| | 2023 | 64 | - | 174 | - | 59 | - | 145 | - |
| | 2028 | 70 | - | 186 | - | 59 | - | 155 | - |
| | 2038 | 67 | - | 188 | - | 75 | - | 162 | - |
| Do Something | 2023 | 59 | -8% | 166 | -5% | 69 | 17% | 160 | 10% |
| | 2028 | 72 | 3% | 196 | 5% | 72 | 22% | 153 | -1% |
| | 2038 | 74 | 10% | 204 | 9% | 84 | 12% | 178 | 10% |
| Do Max | 2038 | 60 | -10% | 168 | -11% | 74 | -1% | 217 | 34% |

Table 24: R156 Potential Traffic Redistribution - AM Peak

| Scenario | Year | Moyglare Road | | | | L2214 – Kilcloon Road | | | |
|--------------|------|---------------|-----|-------|------|-----------------------|-----|-------|-----|
| | | North | % | South | % | North | % | South | % |
| Do Nothing | 2019 | 156 | - | 56 | - | 142 | - | 56 | - |
| | 2023 | 176 | - | 70 | - | 163 | - | 60 | - |
| | 2028 | 165 | - | 75 | - | 165 | - | 67 | - |
| | 2038 | 217 | - | 88 | - | 173 | - | 70 | - |
| Do Something | 2023 | 176 | 0% | 74 | 6% | 174 | 7% | 66 | 10% |
| | 2028 | 197 | 19% | 77 | 3% | 193 | 17% | 76 | 13% |
| | 2038 | 219 | 1% | 87 | -1% | 198 | 14% | 73 | 4% |
| Do Max | 2038 | 215 | -1% | 75 | -15% | 182 | 5% | 72 | 3% |

Table 25: R156 Potential Traffic Redistribution - PM Peak

These results should be considered in the context of the link capacity. The table below indicates the available link capacity along Kilcloon Road, and the worst-case scenario volumes as per the scenarios shown in the table above.

| Link | Width (m) | Link Capacity (veh/hr) | A.M. Peak (veh/hr) | RFC (%) | P.M. Peak (veh/hr) | RFC (%) |
|------------------------------------|-----------|------------------------|--------------------|---------|--------------------|---------|
| L2214 – Kilcloon Road – Do Nothing | 5.00 | 1020 | 350 | 34% | 158 | 15% |
| L2214 – Kilcloon Road – Do Maximum | 5.00 | 1020 | 385 | 38% | 160 | 16% |

Table 26: Worst-Case Scenario (2040) Kilcloon Link Volumes

From the above tables, the following can be concluded:

- The volumes stay relatively consistent throughout the analysis years, as compared to the Do Nothing scenarios;
- An increase in the volumes of the Do Something and Do Maximum scenarios are to be expected as compared to the Do Nothing, as the development and masterplan trips are included;
- Compared to the Do Nothing scenarios within the same analysis years, the Do Something and Do Maximum scenarios have a negligible impact on Kilcloon Road;
- The table detailing link volumes shows that without specific development, just applying natural traffic growth as specific by TII will lead to a similar volume on this road as compared to the Do Maximum scenario;
- **The potential trip redistribution through Kilcloon due to the construction of the MOOR is negligible;**
- Furthermore, the expected impact will be further reduced with the inclusion of the Kilcloon Traffic Calming Scheme once it is implemented by MCC;

Redistribution to Maynooth

The second potential redistribution entails vehicles travelling through Maynooth towards their destination. Since the traffic along the L6219/L22143 and the R157 will increase, specifically at the junction between these two roads, there is a possibility that vehicles will opt to travel through Maynooth should the distance or travel time between their origins and destinations be similar. To assess this, a link was included between Zone 1 and Zone 8, through Maynooth. To simulate the cost of travelling through town, the speed of this road section was reduced to 20km/h. This section starts just north of the Maynooth Boys' National School and ends just east of the Carton Retail Park access.

The tables below show the vehicles travelling on this road for all scenarios, and compare these volumes to the Do Nothing scenarios as a percentage increase/decrease. It should be noted that junction surveys were not conducted within the town. The traffic on this link was estimated from the junction surveys at Moyglare Road and Moyglare Hall

Estate, and the R157 and R148. Although this does not represent an accurate volume of vehicles through town, the redistribution through town should be evident.

| Scenario | Year | Maynooth Town Road | | | |
|--------------|------|--------------------|------|-----------|------|
| | | Southeast | % | Northwest | % |
| Do Nothing | 2019 | 16 | - | 31 | - |
| | 2023 | 192 | - | 26 | - |
| | 2028 | 227 | - | 27 | - |
| | 2038 | 255 | - | 43 | - |
| Do Something | 2023 | 47 | -76% | 13 | -50% |
| | 2028 | 86 | -62% | 9 | -67% |
| | 2038 | 164 | -36% | 36 | -16% |
| Do Max | 2038 | 330 | 29% | 9 | -79% |

Table 27: Maynooth Potential Traffic Redistribution - AM Peak

During the morning peak period, a large volume of vehicles will redistribute through Maynooth in the future Do Nothing scenarios. This is due to the lack of capacity at the junction between the L22143 and the R157. It is evident that with the upgrade of this junction, as part of this development, the increased capacity will counteract this redistribution leading to much less traffic travelling through town. This emphasises the benefit of this development to the town of Maynooth in future.

| Scenario | Year | Maynooth Town Road | | | |
|--------------|------|--------------------|------|-----------|------|
| | | Southeast | % | Northwest | % |
| Do Nothing | 2019 | 1 | - | 14 | - |
| | 2023 | 10 | - | 35 | - |
| | 2028 | 9 | - | 69 | - |
| | 2038 | 22 | - | 79 | - |
| Do Something | 2023 | 14 | 40% | 46 | 31% |
| | 2028 | 11 | 22% | 62 | -10% |
| | 2038 | 46 | 109% | 67 | -15% |
| Do Max | 2038 | 32 | 45% | 369 | 367% |

Table 28: Maynooth Potential Traffic Redistribution - PM Peak

The results from the afternoon peak period differ slightly. The demand at the junction between the L22143 and the R157 is less during this peak as compared to the morning, which means sufficient capacity is available. When considering the Opening Year and Design Year scenarios, the situation is relatively similar with an increase in the southeast direction and a decrease in the northwest direction as compared to the Do Nothing scenarios. Even though the percentages seem significant, the actual difference isn't substantial for these scenarios.

LINK CAPACITIES

For this study, and the context in which this area will transition from a more rural to a more urban setting due to the nature of the development, the links within the study area are assessed using an urban criterion.

TA 79/99 "Traffic Capacity of Urban Roads" from the DMRB provides information on the capacity of urban roads based on classification and width. Table 29 following shows the capacities of various road types based on this manual and using a 60:40 split in flow.

| 2 Way Single Carriageway – Busiest Direction of Flow (60/40 split) | | | | | | | | | | |
|--|------|-----------------------|------|------|------|------|------|------|------|------|
| | | Total Number of lanes | | | | | | | | |
| | | 2 | | | | 2-3 | 3 | 3-4 | 4 | 4+ |
| Carriageway Width (m) | | 6.10 | 6.75 | 7.30 | 9.0 | 10.0 | | 12.3 | 13.5 | 18.0 |
| Road Type | UM | Not Applicable | | | | | | | | |
| | UAP1 | 1020 | 1320 | 1590 | 1860 | 2010 | 2550 | 2800 | 3050 | 3300 |
| | UAP2 | 1020 | 1260 | 1470 | 1550 | 1650 | 1700 | 1900 | 2100 | 2700 |
| | UAP3 | 900 | 1110 | 1300 | 1530 | 1620 | * | * | * | * |
| | UAP4 | 750 | 900 | 1140 | 1320 | 1410 | * | * | * | * |

Table 29: Urban Road Capacities

The local links have been classified based on the associated definitions in the DMRB. Using the previous table, link capacities have been calculated and current Ratio of Flow to Capacity (RFC) values have been assessed for the key links bordering the site.

It should be noted that given the variation in width across the links in question, an average figure for each has been used which is rounded down to the nearest value shown in the above table, thus ensuring a conservative assessment of link capacity.

These values were extracted from the Vissim model. The base year values are calibrated according to the junction surveys, with all future year traffic free to redistribute throughout the network, as detailed previously in this chapter.

Base Year (2019)

The Base Year RFC value for the links within the study area are shown in Table 30 below:

| Link | Width (m) | Link Capacity (veh/hr) | A.M. Peak (veh/hr) | RFC (%) | P.M. Peak (veh/hr) | RFC (%) |
|-----------------------|-----------|------------------------|--------------------|---------|--------------------|---------|
| Moyglare Road | 6.00 | 1020 | 345 | 34% | 339 | 33% |
| L6219/L22143 | 5.80 | 1020 | 429 | 42% | 437 | 43% |
| L2214 – Kilcloon Road | 5.00 | 1020 | 116 | 11% | 142 | 14% |
| R157 – Dunboyne Road | 7.00 | 1320 | 368 | 28% | 587 | 45% |

Table 30: Base Year Link RFC Values for Local Network

The link capacities during the base year are sufficient to accommodate the traffic with the highest ratio of flow to capacity occurring in the afternoon peak period on the L6219 and R157, with a value of 45%.

Opening Year (2025)

The Opening Year Do Something scenario RFC value for the links within the study area are shown in Table 31 below:

| Link | Width (m) | Link Capacity (veh/hr) | A.M. Peak (veh/hr) | RFC (%) | P.M. Peak (veh/hr) | RFC (%) |
|-----------------------|-----------|------------------------|--------------------|---------|--------------------|---------|
| Moyglare Road | 6.00 | 1260 | 884 | 70% | 739 | 59% |
| L6219/L22143 | 7.00 | 1260 | 988 | 78% | 804 | 64% |
| L2214 – Kilcloon Road | 5.00 | 1020 | 229 | 22% | 240 | 24% |
| R157 – Dunboyne Road | 7.00 | 1320 | 892 | 68% | 883 | 67% |

Table 31: Opening Year Do Something Link RFC Values for Local Network

For the Opening Year, the L6219 will be upgraded in the vicinity of the development and widened to 7.00m. This will increase the capacity of both roads, which will accommodate the increased flow caused by the development. The highest ratio of flow to capacity will occur on the L6219 during the morning peak with a value of 78%.

Opening Year + 5 (2030)

The Opening Year + 5 Do Something scenario RFC value for the links within the study area are shown in Table 32 below:

| Link | Width (m) | Link Capacity (veh/hr) | A.M. Peak (veh/hr) | RFC (%) | P.M. Peak (veh/hr) | RFC (%) |
|-----------------------|-----------|------------------------|--------------------|---------|--------------------|---------|
| Moyglare Road | 6.00 | 1260 | 945 | 75% | 820 | 65% |
| L6219/L22143 | 7.00 | 1260 | 347 | 28% | 284 | 23% |
| L2214 – Kilcloon Road | 5.00 | 1020 | 225 | 22% | 269 | 26% |
| R157 – Dunboyne Road | 7.00 | 1320 | 1000 | 76% | 1018 | 77% |

Table 32: Opening Year + 5 Do Something Link RFC Values for Local Network

For this scenario, the full MOOR will be in operation. Flow on the L6219 and L22143 will be restricted by means of chicanes. Furthermore, the section of the L2214 which traverses the Masterplan site area only, will be converted into a north-to-south one-way street with the adjacent lane converted into a pedestrian and cycling facility. The highest ratio of flow to capacity will again be on the R157 during the afternoon peak with a value of 77%.

Design Year (2040)

The Design Year Do Something scenario RFC value for the links within the study area are shown in Table 33 below:

| Link | Width (m) | Link Capacity (veh/hr) | A.M. Peak (veh/hr) | RFC (%) | P.M. Peak (veh/hr) | RFC (%) |
|-----------------------|-----------|------------------------|--------------------|---------|--------------------|---------|
| Moyglare Road | 6.00 | 1260 | 1021 | 81% | 887 | 70% |
| L6219/L22143 | 7.00 | 1260 | 281 | 22% | 264 | 21% |
| L2214 – Kilcloon Road | 5.00 | 1020 | 262 | 26% | 271 | 27% |
| R157 – Dunboyne Road | 7.00 | 1320 | 1060 | 80% | 1008 | 76% |

Table 33: Design Year Do Something Link RFC Values for Local Network

The road network will be identical to the Opening Year + 5 (2030) network. The highest ratio of flow to capacity will again be on Moyglare Road during the morning peak, with a value of 81%.

The links around the development will thus provide sufficient capacity for all scenarios.

JUNCTION CAPACITIES

The junction analysis was carried out using Vissim micro-simulation software as described earlier in this report. The scenarios in the table below correspond to the scenarios discussed previously in this document.

Analysis Criteria

The results of the intersection analysis will be based on a Level of Service (LOS) measurement, which uses measured delay experienced by a vehicle at the intersection and compares it to a scale of values defining the LOS. According to the National Roads Network Indicators 2019, published by TII, LOS is a quality measure describing operational conditions within a traffic stream and is a recognised international standard. The Level of Service (LOS) is based on the below, which has been taken from the Highway Capacity Manual (HCM) 2010. The type of intersection affects the allowable delay in each LOS bracket resulting in different values for a traffic signal and non-signalized intersection. An acceptable LOS is on an intersection where a LOS D and above (A, B and C) is achieved. An unacceptable LOS is represented by an E and an F.

| LOS | Signalized Intersection | Unsignalized Intersection |
|-----|-------------------------|---------------------------|
| A | ≤10 sec | ≤10 sec |
| B | 10–20 sec | 10–15 sec |
| C | 20–35 sec | 15–25 sec |
| D | 35–55 sec | 25–35 sec |
| E | 55–80 sec | 35–50 sec |
| F | >80 sec | >50 sec |

Table 34: Level of Service (Exhibit 18-4, HCM 2010)

Saturation flow measurements are not a built-in feature of Vissim, because, unlike statistical models, micro-simulation models are not validated by degree of saturation, but rather by delays and queue lengths.

Junction 1 - Moyglare Road/L6219

This junction is currently operating as a priority-controlled staggered four-leg junction with the north-south movement (Moyglare Road) as the major road. The worst-performing movement at each approach, for each scenario, is shown in the table below.

| Peak | Scenario | | Year | Moyglare (N) | | L6219 (E) | | Moyglare (S) | | Moyglare (W) | |
|------|----------|----|------|--------------|-------|-----------|-------|--------------|-------|--------------|-------|
| | | | | LOS | Queue | LOS | Queue | LOS | Queue | LOS | Queue |
| AM | 1 | DN | 2019 | A | 0.01 | A | 0.21 | A | 0.00 | A | 0.51 |
| | 2 | DN | 2025 | A | 0.00 | B | 1.59 | A | 0.83 | A | 1.27 |
| | 3 | DS | 2025 | A | 0.00 | A | 0.23 | A | 0.00 | A | 1.00 |
| | 4 | DN | 2030 | A | 0.00 | B | 2.13 | A | 1.36 | A | 1.46 |
| | 5 | DS | 2030 | A | 0.00 | A | 0.89 | A | 0.34 | A | 1.27 |
| | 6 | DN | 2040 | A | 0.01 | B | 3.38 | A | 0.93 | A | 1.39 |
| | 7 | DS | 2040 | A | 0.00 | A | 0.85 | A | 0.33 | A | 1.90 |
| | 8 | DM | 2040 | A | 0.00 | A | 0.92 | A | 0.75 | A | 1.58 |
| Peak | Scenario | | Year | Moyglare (N) | | L6219 (E) | | Moyglare (S) | | Moyglare (W) | |
| | | | | LOS | Queue | LOS | Queue | LOS | Queue | LOS | Queue |
| PM | 9 | DN | 2019 | A | 0.02 | A | 1.13 | A | 0.00 | A | 0.25 |
| | 10 | DN | 2025 | A | 0.00 | B | 4.44 | A | 0.05 | A | 0.24 |
| | 11 | DS | 2025 | A | 0.00 | A | 0.56 | A | 0.00 | A | 0.29 |
| | 12 | DN | 2030 | A | 0.03 | B | 4.50 | A | 0.06 | A | 0.24 |
| | 13 | DS | 2030 | A | 0.01 | A | 1.04 | A | 0.08 | A | 0.46 |
| | 14 | DN | 2040 | A | 0.02 | B | 4.75 | A | 0.10 | A | 0.47 |
| | 15 | DS | 2040 | A | 0.10 | A | 1.60 | A | 0.01 | A | 0.41 |
| | 16 | DM | 2040 | A | 0.00 | A | 4.91 | A | 0.22 | A | 0.34 |

Table 35: Junction 1 Analysis Results

The following conclusions can be drawn from the scenarios:

- **Do Nothing:** This junction performs adequately for all the analysed scenarios for DN, with no significant delays.

- Do Something: This junction performs adequately for all the analysed scenarios for DS, with no significant delays.
- Do Maximum: This junction performs adequately for the analysed scenarios of DM, with no significant delays.

Junction 2 - Moyglare Road/Mariavilla

This junction is currently operating as a priority-controlled T-junction with the north-south movement (Moyglare Road) as the major road. The worst-performing movement at each approach, for each scenario, is shown in the table below.

| Peak | Scenario | | Year | Moyglare (N) | | Mariavilla (E) | | Moyglare (S) | |
|------|----------|----|------|--------------|-------|----------------|-------|--------------|-------|
| | | | | LOS | Queue | LOS | Queue | LOS | Queue |
| AM | 1 | DN | 2019 | A | 0.00 | A | 0.17 | A | 0.02 |
| | 2 | DN | 2025 | A | 0.00 | A | 1.88 | A | 0.56 |
| | 3 | DS | 2025 | A | 0.00 | B | 1.71 | A | 0.91 |
| | 4 | DN | 2030 | A | 0.00 | B | 4.67 | A | 1.55 |
| | 5 | DS | 2030 | A | 0.00 | C | 9.57 | A | 0.46 |
| | 6 | DN | 2040 | A | 0.00 | C | 11.62 | A | 0.78 |
| | 7 | DS | 2040 | A | 0.00 | B | 4.01 | A | 0.73 |
| | 8 | DM | 2040 | A | 0.00 | C | 11.31 | A | 0.55 |
| Peak | Scenario | | Year | Moyglare (N) | | Mariavilla (E) | | Moyglare (S) | |
| | | | | LOS | Queue | LOS | Queue | LOS | Queue |
| PM | 9 | DN | 2019 | A | 0.00 | A | 0.11 | A | 0.10 |
| | 10 | DN | 2025 | A | 0.00 | A | 0.23 | A | 0.17 |
| | 11 | DS | 2025 | A | 0.00 | A | 0.32 | A | 0.08 |
| | 12 | DN | 2030 | A | 0.00 | A | 0.41 | A | 0.49 |
| | 13 | DS | 2030 | A | 0.00 | A | 0.73 | A | 0.26 |
| | 14 | DN | 2040 | A | 0.00 | B | 0.87 | A | 0.41 |
| | 15 | DS | 2040 | A | 0.00 | B | 1.88 | A | 0.23 |
| | 16 | DM | 2040 | A | 0.00 | E | 12.58 | A | 10.87 |

Table 36: Junction 2 Analysis Results

The following conclusions can be drawn from the scenarios:

- **Do Nothing:** This junction performs adequately for all the analysed scenarios for DN, with no significant delays.
- **Do Something:** This junction performs adequately for all the analysed scenarios for DS, with no significant delays.
- **Do Maximum:** There could be congestion at this junction during the afternoon peak on the eastern approach. This is mainly due to the majority of the masterplan trips being included in the analysis. However, as previously mentioned the traffic estimations for the masterplan is very conservative. It should be noted that this junction is earmarked to be upgraded as part of the extension of a section of the MOOR within County Kildare to the west, in future by Kildare County Council.

Junction 3 - L6219/L2214

This junction is currently operating as a priority-controlled T-junction with the east-west movement (L6219/L22143) as the major road. The worst performing movement at each approach, for each scenario, is shown in the table overleaf.

| Peak | Scenario | | Year | L6219 (W) | | L2214 (N) | | L22143 (E) | |
|------|----------|----|------|-----------|-------|-----------|-------|------------|-------|
| | | | | LOS | Queue | LOS | Queue | LOS | Queue |
| AM | 1 | DN | 2019 | A | 0.00 | A | 0.22 | A | 0.06 |
| | 2 | DN | 2025 | A | 0.00 | A | 0.29 | A | 0.29 |
| | 3 | DS | 2025 | A | 0.00 | B | 0.99 | A | 0.18 |
| | 4 | DN | 2030 | A | 0.00 | A | 0.66 | A | 0.20 |
| | 5 | DS | 2030 | A | 0.00 | A | 0.01 | A | 0.00 |
| | 6 | DN | 2040 | A | 0.00 | A | 0.73 | A | 0.03 |
| | 7 | DS | 2040 | B | 0.00 | A | 0.01 | A | 0.00 |
| | 8 | DM | 2040 | A | 0.00 | A | 0.01 | A | 0.00 |
| Peak | Scenario | | Year | L6219 (W) | | L2214 (N) | | L22143 (E) | |
| | | | | LOS | Queue | LOS | Queue | LOS | Queue |
| PM | 9 | DN | 2019 | A | 0.00 | A | 0.12 | A | 0.03 |
| | 10 | DN | 2025 | A | 0.00 | A | 0.11 | A | 0.10 |
| | 11 | DS | 2025 | A | 0.00 | A | 0.29 | A | 0.55 |
| | 12 | DN | 2030 | A | 0.00 | A | 0.09 | A | 0.26 |
| | 13 | DS | 2030 | A | 0.00 | A | 0.00 | A | 0.00 |
| | 14 | DN | 2040 | A | 0.00 | A | 0.21 | A | 0.18 |
| | 15 | DS | 2040 | A | 0.00 | A | 0.00 | A | 0.00 |
| | 16 | DM | 2040 | A | 0.00 | A | 0.00 | A | 0.00 |

Table 37: Junction 3 Analysis Results - DN & DS

- **Do Nothing:** This junction performs adequately for all the analysed scenarios for DN, with no significant delays.
- It should be noted that this junction will be modified for the Do Something scenarios in 2030 and 2040, as well as the Do Maximum scenario. Flows will be reduced on the L6219 and L22143 by means of chicanes as this area will change from a rural to a more urban area post development, and the section of the L2214 which traverses the wider Masterplan site will be changed to a north-to-south one-way road with the adjacent lane converted to a pedestrian and cyclist facility.
- **Do Something:** This junction performs adequately for all the analysed scenarios for DS, with no significant delays.

- **Do Maximum:** This junction performs adequately for all the analysed scenarios for DM, with no significant delays.

Junction 4 - R157/L22143

This junction is currently operating as a priority-controlled T-junction with the north-west movement (R157) as the major road. The worst-performing movement at each approach, for each scenario, is shown in the table below. **It should be noted that this junction is earmarked to be signalised as part of the nearby office development, as well as the full MOOR application**, the former of which is earmarked to be implemented within the same timeframe as this development. This means that only the Do Nothing scenarios were analysed with the aforementioned geometry.

| Peak | Scenario | | Year | R157 (E) | | R157 (S) | | L22143 (W) | |
|------|----------|----|------|----------|-------|----------|-------|------------|-------|
| | | | | LOS | Queue | LOS | Queue | LOS | Queue |
| AM | 1 | DN | 2019 | B | 6.60 | A | 0.54 | A | 0.00 |
| | 2 | DN | 2025 | E | 28.76 | A | 1.29 | A | 0.00 |
| | 4 | DN | 2030 | E | 32.68 | A | 2.27 | A | 0.00 |
| | 6 | DN | 2040 | F | 45.91 | A | 3.03 | A | 0.00 |
| Peak | Scenario | | Year | R157 (E) | | R157 (S) | | L22143 (W) | |
| | | | | LOS | Queue | LOS | Queue | LOS | Queue |
| PM | 9 | DN | 2019 | B | 0.80 | A | 1.41 | A | 0.00 |
| | 10 | DN | 2025 | C | 1.41 | A | 1.65 | A | 0.00 |
| | 12 | DN | 2030 | C | 2.73 | A | 3.26 | A | 0.00 |
| | 14 | DN | 2040 | C | 2.47 | A | 5.96 | A | 0.00 |

Table 38: Junction 4 Analysis Results – DN

As can be seen from the previous table, the junction performs within acceptable levels during the Base Year, with delays being experienced on the eastern approach for all future analysis years during the morning peak.

| Peak | Scenario | | Year | R157 (E) | | R157 (S) | | L22143 (W) | |
|------|----------|----|------|----------|-------|----------|-------|------------|-------|
| | | | | LOS | Queue | LOS | Queue | LOS | Queue |
| AM | 3 | DS | 2025 | B | 3.22 | C | 12.60 | C | 15.55 |
| Peak | Scenario | | Year | R157 (E) | | R157 (S) | | L22143 (W) | |
| | | | | LOS | Queue | LOS | Queue | LOS | Queue |
| PM | 9 | DS | 2025 | B | 7.45 | D | 17.02 | C | 3.30 |

Table 39: Junction 4 Analysis Results – DS

For the Opening Year Do Something scenario, this junction will be upgraded to a four-leg signalised junction. However, it should be noted that the northern leg of this junction, which will be constructed as part of Phase 2 of the office development, will be constructed, but will not be operational until the full MOOR is constructed. In essence, this junction will operate as a three-leg junction for the Opening Year Do Something scenario. Upgrading this junction will improve the delays to within acceptable levels, with the addition of the Do Something traffic volumes. As can be seen, the delays are improved compared to the Do Nothing scenarios, which emphasise the benefit of the development to the local road network. The four-leg junction layout is shown in the figure following:

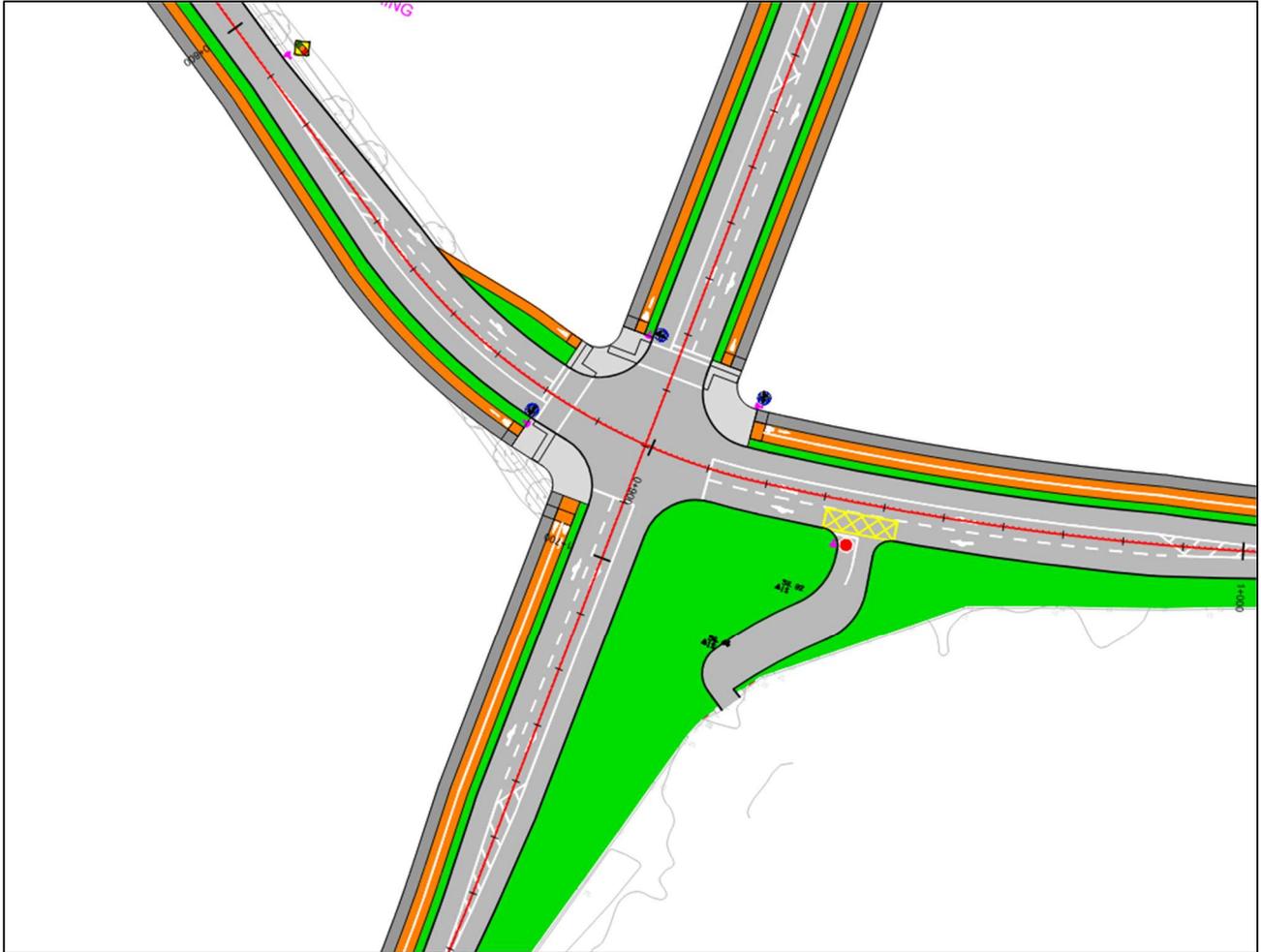


Figure 12: Junction 4 Do Something Layout

| Peak | Scenario | | Year | MOOR (N) | | R157 (E) | | R157 (S) | | R6219 (W) | |
|------|----------|----|------|----------|-------|----------|-------|----------|-------|-----------|-------|
| | | | | LOS | Queue | LOS | Queue | LOS | Queue | LOS | Queue |
| AM | 5 | DS | 2030 | C | 21.88 | D | 18.31 | D | 32.80 | D | 3.85 |
| | 7 | DS | 2040 | D | 35.16 | D | 23.41 | D | 34.20 | D | 9.21 |
| | 8 | DM | 2040 | D | 17.76 | D | 16.37 | C | 23.15 | D | 8.14 |
| Peak | Scenario | | Year | MOOR (N) | | R157 (E) | | R157 (S) | | R6219 (W) | |
| | | | | LOS | Queue | LOS | Queue | LOS | Queue | LOS | Queue |
| PM | 9 | DS | 2030 | C | 6.45 | C | 23.94 | D | 21.36 | C | 3.54 |
| | 13 | DS | 2040 | B | 7.36 | C | 35.05 | D | 19.02 | C | 2.92 |
| | 16 | DM | 2040 | C | 7.87 | C | 20.29 | C | 8.74 | C | 7.13 |

Table 40: Junction 4 Analysis Results – DM

For the Opening Year + 5 and Design Year scenarios, the northern leg of the junction will become operational.

It is emphasised that the full buildout of this junction will only be required once the transport needs of the entire Masterplan area, and not this individual planning application, needs to be met. This document includes the analysis of this junction to ensure a complete and robust analysis.

The demand at this junction will be fairly high, due to the trips generated by additional developments within the masterplan. In addition, the traffic estimation for the Do Maximum scenario is very conservative as described previously in this document. To achieve acceptable levels of service at the junction during this scenario, an additional left-turning lane might be required on the northern approach, as well as an east-to-south (R157 to MOOR) left-turning slip lane.

According to the layout of the current development proposals, there will be sufficient space available to implement these infrastructural upgrades, should they be required in the future. However, each masterplan development will be applied for separately, and these further upgrades will be identified as part of those future applications, if required.

Junction 5 - R157/Dunboyne Road

This junction is currently operating as a three-leg roundabout. The worst-performing movement at each approach, for each scenario, is shown in the table below.

| Peak | Scenario | | Year | R157 (N) | | R157 (S) | | Dunboyne Road (W) | |
|------|----------|----|------|----------|-------|----------|-------|-------------------|-------|
| | | | | LOS | Queue | LOS | Queue | LOS | Queue |
| AM | 1 | DN | 2019 | A | 0.44 | A | 0.20 | A | 0.82 |
| | 2 | DN | 2025 | A | 0.60 | A | 0.61 | A | 0.77 |
| | 3 | DS | 2025 | A | 1.73 | A | 0.73 | A | 0.77 |
| | 4 | DN | 2030 | A | 1.00 | A | 0.64 | A | 1.41 |
| | 5 | DS | 2030 | A | 3.19 | A | 1.42 | A | 3.55 |
| | 6 | DN | 2040 | A | 0.75 | A | 1.04 | A | 1.47 |
| | 7 | DS | 2040 | A | 5.39 | A | 1.52 | A | 2.74 |
| | 8 | DM | 2040 | A | 2.52 | A | 4.37 | C | 7.02 |
| Peak | Scenario | | Year | R157 (N) | | R157 (S) | | Dunboyne Road (W) | |
| | | | | LOS | Queue | LOS | Queue | LOS | Queue |
| PM | 9 | DN | 2019 | A | 0.37 | A | 0.58 | A | 0.25 |
| | 10 | DN | 2025 | A | 0.66 | A | 0.79 | A | 0.30 |
| | 11 | DS | 2025 | A | 0.65 | A | 1.45 | A | 0.41 |
| | 12 | DN | 2030 | A | 0.70 | A | 0.97 | A | 0.30 |
| | 13 | DS | 2030 | A | 5.57 | A | 2.95 | A | 0.56 |
| | 14 | DN | 2040 | A | 1.23 | A | 1.23 | A | 0.43 |
| | 15 | DS | 2040 | A | 4.02 | A | 3.36 | A | 0.58 |
| | 16 | DM | 2040 | A | 4.13 | A | 1.48 | A | 0.24 |

Table 41: Junction 5 Analysis Results

The following conclusions can be drawn from the scenarios:

- **Do Nothing:** This junction performs adequately for all the analysed scenarios for DN, with no significant delays.

- Do Something: This junction performs adequately for all the analysed scenarios for DS, with no significant delays.
- Do Maximum: This junction performs adequately for the analysed scenarios of DM, with no significant delays.

Junction 6 - R148/R157

This junction is currently operating as a priority-controlled T-junction with the east-west movement (R148) as the major road. The worst performing movement at each approach, for each scenario, is shown in the table overleaf.

| Peak | Scenario | | Year | R157 (N) | | R148 (E) | | R148 (W) | |
|------|----------|----|------|----------|--------|----------|-------|----------|-------|
| | | | | LOS | Queue | LOS | Queue | LOS | Queue |
| AM | 1 | DN | 2019 | A | 0.82 | A | 0.50 | A | 0.00 |
| | 2 | DN | 2025 | B | 3.32 | A | 1.56 | A | 0.00 |
| | 3 | DS | 2025 | B | 3.34 | A | 1.59 | A | 0.00 |
| | 4 | DN | 2030 | B | 2.78 | A | 2.66 | A | 0.00 |
| | 5 | DS | 2030 | D | 13.66 | B | 5.66 | A | 0.00 |
| | 6 | DN | 2040 | C | 3.45 | A | 3.58 | A | 0.00 |
| | 7 | DS | 2040 | D | 18.23 | A | 3.94 | A | 0.00 |
| | 8 | DM | 2040 | D | 10.76 | C | 16.15 | A | 0.00 |
| Peak | Scenario | | Year | R157 (N) | | R148 (E) | | R148 (W) | |
| | | | | LOS | Queue | LOS | Queue | LOS | Queue |
| PM | 9 | DN | 2019 | B | 2.00 | A | 2.34 | A | 0.00 |
| | 10 | DN | 2025 | C | 3.94 | A | 4.03 | A | 0.00 |
| | 11 | DS | 2025 | C | 3.37 | A | 6.28 | A | 0.00 |
| | 12 | DN | 2030 | D | 6.96 | A | 4.95 | A | 0.00 |
| | 13 | DS | 2030 | F | 26.92 | C | 24.05 | A | 0.00 |
| | 14 | DN | 2040 | F | 28.51 | B | 9.99 | A | 0.00 |
| | 15 | DS | 2040 | F | 113.13 | C | 42.20 | A | 0.00 |
| | 16 | DM | 2040 | F | 127.64 | A | 2.76 | A | 0.00 |

Table 42: Junction 6 Analysis Results

The following conclusions can be drawn from the scenarios:

- **Do Nothing:** This junction performs adequately for all morning peak scenarios of the DN. During the afternoon peak, delays occur on the northern approach in 2030 and 2040.
- **Do Something:** The junction performs adequately during the morning peak period for all analysis years aside from the Design Year, during which some congestion is experienced on the northern approach. During the afternoon peak, congestion could be present on the northern approach for most of the analysed scenarios.
- **Do Maximum:** Delays will be present on the northern approach during the morning peak period.

It should be noted that this junction is earmarked for upgrading as part of Kildare County Council's proposal for the Maynooth Eastern Ring Road (MERR) scheme, which will increase the capacity. The junction is poised to be upgraded to a four-leg signalised junction.

This upgrade should address all the identified capacity problems.

Internal Junctions and Accesses

The extension of the Mariavilla Access Road up to the L6219, which is planned for the Opening Year, will lead to the construction of a new junction between these two roads. Together with this junction, the two accesses to the SHD development have been assessed to ensure correct operations. The location of these junctions can be seen in the figure overleaf and are described under the headings Junction 7, Junction 8, Junction 9 and Junction 14:



Figure 13: Internal Junctions and Accesses

Junction 7: L6219/Mariavilla Access Road

This is a new junction that will be constructed with the extension of the Mariavilla Access Road to the R6219, as shown in Figure 13. The junction will operate as a priority-controlled T-junction with the east-west movement (Mariavilla Access Road/MOOR) as the major road. The worst performing movement at each approach, for each scenario, is shown in the table below.

| Peak | Scenario | | Year | L6219 (N) | | MOOR (E) | | Mariavilla (W) | |
|------|----------|----|------|-----------|-------|----------|-------|----------------|-------|
| | | | | DOS | Queue | DOS | Queue | DOS | Queue |
| AM | 3 | DS | 2025 | B | 0.54 | A | 0.18 | - | - |
| | 5 | DS | 2030 | A | 0.75 | A | 0.25 | - | - |
| | 7 | DS | 2040 | A | 2.06 | A | 0.21 | - | - |
| | 8 | DM | 2040 | A | 0.53 | A | 0.18 | - | - |
| Peak | Scenario | | Year | L6219 (N) | | MOOR (E) | | Mariavilla (W) | |
| | | | | DOS | Queue | DOS | Queue | DOS | Queue |
| PM | 11 | DS | 2025 | A | 0.02 | A | 0.30 | - | - |
| | 13 | DS | 2030 | A | 0.17 | A | 0.13 | - | - |
| | 15 | DS | 2040 | A | 0.17 | A | 0.48 | - | - |
| | 16 | DM | 2040 | B | 93.00 | A | 1.26 | - | - |

Table 43: Junction 7 – Worst DoS & Queue Results

This junction will function adequately for all scenarios.

Junction 8: SHD Development Western Access

This junction will act as the access to the SHD development on the western side. The junction will operate as a priority-controlled T-junction with the east-west movement (R6219) as the major road. The worst performing movement at each approach, for each scenario, is shown in the table below.

| Peak | Scenario | | Year | R6219 (E) | | Access (S) | | R6219 (W) | |
|------|----------|----|------|-----------|-------|------------|-------|-----------|-------|
| | | | | LOS | Queue | LOS | Queue | LOS | Queue |
| AM | 3 | DS | 2025 | - | - | A | 0.16 | A | 0.14 |
| | 5 | DS | 2030 | - | - | A | 0.00 | A | 0.04 |
| | 7 | DS | 2040 | - | - | A | 0.02 | A | 0.00 |
| | 8 | DM | 2040 | - | - | A | 0.01 | A | 0.03 |
| Peak | Scenario | | Year | R6219 (E) | | Access (S) | | R6219 (W) | |
| | | | | LOS | Queue | LOS | Queue | LOS | Queue |
| PM | 11 | DS | 2025 | - | - | A | 0.04 | A | 0.01 |
| | 13 | DS | 2030 | - | - | A | 0.00 | A | 0.02 |
| | 15 | DS | 2040 | - | - | C | 0.02 | A | 0.01 |
| | 16 | DM | 2040 | - | - | A | 0.65 | A | 16.46 |

Table 44: Junction 8 – Worst LOS & Queue Results

This junction will have sufficient capacity to satisfy the demand for all scenarios.

Junction 9: SHD Development Eastern Access

This junction will act as the access to the SHD development on the eastern side. The junction will operate as a priority-controlled T-junction with the east-west movement (R6219) as the major road. The worst performing movement at each approach, for each scenario, is shown in the table below.

| Peak | Scenario | | Year | R6219 (E) | | Access (S) | | R6219 (W) | |
|------|----------|----|------|-----------|-------|------------|-------|-----------|-------|
| | | | | LOS | Queue | LOS | Queue | LOS | Queue |
| AM | 3 | DS | 2025 | - | - | A | 0.14 | A | 0.00 |
| | 5 | DS | 2030 | - | - | A | 0.07 | A | 0.00 |
| | 7 | DS | 2040 | - | - | A | 0.00 | A | 0.00 |
| | 8 | DM | 2040 | - | - | A | 0.01 | A | 0.00 |
| Peak | Scenario | | Year | R6219 (E) | | Access (S) | | R6219 (W) | |
| | | | | LOS | Queue | LOS | Queue | LOS | Queue |
| PM | 11 | DS | 2025 | - | - | A | 0.05 | A | 0.05 |
| | 13 | DS | 2030 | - | - | A | 0.01 | A | 0.01 |
| | 15 | DS | 2040 | - | - | A | 0.01 | A | 0.00 |
| | 16 | DM | 2040 | - | - | A | 0.01 | A | 55.92 |

Table 45: Junction 9 – Worst LOS & Queue Results

This junction will have sufficient capacity to satisfy the demand for all scenarios.

Junction 14 – MOOR/R6219

This junction will be included as part of the Opening Year + 5 and Design Year scenarios, due to the build-out of the MOOR, as shown in Figure 13. The junction will operate as a priority-controlled T-junction with the east-west movement (MOOR) as the major road. The worst-performing movement at each approach is shown in the table below.

| Peak | Scenario | | Year | MOOR (E) | | R6219 (S) | | MOOR (W) | |
|------|----------|----|------|----------|-------|-----------|-------|----------|-------|
| | | | | LOS | Queue | LOS | Queue | LOS | Queue |
| AM | 5 | DS | 2030 | - | - | A | 0.37 | A | 1.15 |
| | 7 | DS | 2040 | - | - | A | 0.32 | A | 1.05 |
| | 8 | DM | 2040 | - | - | A | 0.51 | A | 0.20 |
| Peak | Scenario | | Year | MOOR (E) | | R6219 (S) | | MOOR (W) | |
| | | | | LOS | Queue | LOS | Queue | LOS | Queue |
| PM | 13 | DS | 2030 | - | - | A | 0.29 | A | 0.64 |
| | 15 | DS | 2040 | - | - | A | 0.66 | A | 1.18 |
| | 16 | DM | 2040 | - | - | A | 0.21 | A | 1.28 |

Table 46: Junction 14 – Worst DoS & Queue Results

This junction will have sufficient capacity to satisfy the demand for all scenarios.

9 REMEDIAL/MITIGATION MEASURES

The previous chapter details the link and junction analysis. From this, it is evident that all links will have sufficient capacity for each analysis period. In terms of junctions, no remedial measures are required during the Opening Year (2025), aside from the upgrading of junction 4 (R157/L22143) which is already discussed in this report.

There could potentially be some congestion present at Junctions 2 and 6 in future, however, these junctions are already earmarked to be upgraded as part of other road projects.

Junction 2 will be upgraded as part of the extension of a section of the MOOR within County Kildare to the west, in future by Kildare County Council.

Junction 6 will be upgraded as part of Kildare County Council's proposal for the Maynooth Eastern Ring Road (MERR) scheme, which will increase the capacity.

10 MOOR APPLICATION

This traffic impact assessment has been prepared as a worst-case analysis which envisages the delivery of sections of the MOOR on a phased basis. The applicant has submitted a separate planning application to deliver the MOOR in its entirety as a single phase. Under this scenario the traffic analysis would be further enhanced.

It should however be noted that with the phased road infrastructure proposed as part of this document, the network will provide sufficient capacity to accommodate the development trips.

11 MONITORING

While it has been demonstrated that the proposed development can be accommodated on the current road infrastructure with the proposed alterations, it is nevertheless recommended that the local area should be monitored in terms of transportation efficiencies in the future.

12 VERIFICATION

This report was compiled and verified by:

Wian Marais BE (US), BE (Hons) (UP), Professional Engineer (ECSA)

Civil Engineer

O'Connor Sutton Cronin & Associates



Appendix A **TRAFFIC SURVEY DATA**



| | | | | | | | | |
|--|--------------------------|-----------------------|-----------------------|-----------------------|---------------------|----------|------------------|----|
| | Sites / Location: | 1 to 6 / Moylagade | Project No.: | 10084 | Diagram No.: | 10084-01 | Drawn By: | AC |
| | Survey Date: | Tuesday 28th May 2019 | Project Name: | MOYLAGADE | | | | |
| | Survey Times: | 07:00 to 19:00 | Diagram Title: | General Location Plan | | | | |



Site No. 1
Location Moylagade Road(N) / Moylagade Road(W) / Moylagade Road(S) / Moylagade Road(E)
Date Tuesday 28 May 2019

| Time | A to D - Moylagade Road(N) to Moylagade Road(E) | | | | | | | Veh. Total | A to C - Moylagade Road(N) to Moylagade Road(S) | | | | | | | Veh. Total |
|-------|---|----------|----------|----------|----------|----------|----------|------------|---|----------|----------|----------|----------|----------|----------|------------|
| | CAR | Taxi | LGV | HGV | PSV | M/C | P/C | | CAR | Taxi | LGV | HGV | PSV | M/C | P/C | |
| 7:00 | 13 | 1 | 4 | 0 | 0 | 0 | 0 | 18 | 16 | 0 | 5 | 1 | 0 | 1 | 0 | 23 |
| 7:15 | 17 | 0 | 2 | 0 | 0 | 0 | 0 | 19 | 19 | 0 | 7 | 1 | 0 | 0 | 0 | 27 |
| 7:30 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 17 | 0 | 7 | 4 | 0 | 0 | 0 | 28 |
| 7:45 | 11 | 0 | 2 | 1 | 0 | 0 | 1 | 15 | 15 | 0 | 1 | 0 | 0 | 1 | 0 | 17 |
| 8:00 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 14 | 0 | 3 | 3 | 0 | 0 | 1 | 21 |
| 8:15 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 28 | 0 | 2 | 0 | 1 | 0 | 0 | 31 |
| 8:30 | 10 | 0 | 2 | 0 | 0 | 0 | 0 | 12 | 22 | 0 | 2 | 0 | 0 | 0 | 0 | 24 |
| 8:45 | 12 | 0 | 0 | 1 | 0 | 0 | 0 | 13 | 16 | 0 | 0 | 5 | 0 | 0 | 1 | 22 |
| 9:00 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 12 | 0 | 1 | 2 | 0 | 0 | 1 | 16 |
| 9:15 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 18 | 0 | 0 | 1 | 0 | 0 | 0 | 19 |
| 9:30 | 8 | 0 | 2 | 0 | 0 | 0 | 0 | 10 | 13 | 1 | 0 | 2 | 0 | 0 | 0 | 16 |
| 9:45 | 8 | 0 | 0 | 1 | 0 | 0 | 0 | 9 | 15 | 0 | 2 | 0 | 0 | 0 | 0 | 17 |
| 10:00 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 5 | 0 | 0 | 3 | 0 | 0 | 0 | 8 |
| 10:15 | 6 | 0 | 0 | 1 | 0 | 0 | 0 | 7 | 7 | 0 | 2 | 0 | 0 | 0 | 0 | 9 |
| 10:30 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 4 | 10 | 0 | 3 | 0 | 0 | 0 | 0 | 13 |
| 10:45 | 7 | 0 | 0 | 1 | 0 | 0 | 0 | 8 | 9 | 0 | 1 | 2 | 0 | 0 | 0 | 12 |
| 11:00 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 5 | 0 | 1 | 1 | 0 | 0 | 0 | 7 |
| 11:15 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 9 | 0 | 0 | 3 | 0 | 0 | 3 | 15 |
| 11:30 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 8 | 0 | 1 | 2 | 0 | 0 | 0 | 11 |
| 11:45 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 4 | 0 | 1 | 2 | 0 | 0 | 0 | 7 |
| 12:00 | 3 | 0 | 1 | 1 | 0 | 0 | 0 | 5 | 7 | 0 | 1 | 0 | 0 | 0 | 0 | 8 |
| 12:15 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 4 | 10 | 0 | 0 | 0 | 0 | 0 | 1 | 11 |
| 12:30 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 1 | 1 | 0 | 0 | 0 | 8 |
| 12:45 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 9 | 0 | 0 | 2 | 0 | 0 | 0 | 11 |
| 13:00 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 3 |
| 13:15 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 8 | 0 | 0 | 1 | 0 | 0 | 0 | 9 |
| 13:30 | 6 | 0 | 1 | 1 | 0 | 0 | 0 | 8 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 6 |
| 13:45 | 5 | 0 | 1 | 0 | 0 | 0 | 0 | 6 | 10 | 0 | 1 | 1 | 0 | 0 | 0 | 12 |
| 14:00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 12 | 0 | 2 | 0 | 0 | 0 | 0 | 14 |
| 14:15 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 14:30 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 8 | 0 | 2 | 2 | 0 | 0 | 1 | 13 |
| 14:45 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 8 | 0 | 0 | 2 | 0 | 0 | 0 | 10 |
| 15:00 | 4 | 0 | 3 | 0 | 0 | 0 | 0 | 7 | 11 | 0 | 1 | 3 | 0 | 0 | 0 | 15 |
| 15:15 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 5 | 1 | 2 | 2 | 0 | 0 | 0 | 10 |
| 15:30 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 4 | 9 | 0 | 1 | 1 | 0 | 0 | 0 | 11 |
| 15:45 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 5 | 15 | 0 | 1 | 1 | 0 | 0 | 0 | 17 |
| 16:00 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 10 | 0 | 4 | 0 | 0 | 0 | 0 | 14 |
| 16:15 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 7 | 0 | 0 | 0 | 1 | 0 | 0 | 8 |
| 16:30 | 7 | 0 | 0 | 1 | 0 | 0 | 0 | 8 | 8 | 0 | 1 | 0 | 1 | 0 | 0 | 10 |
| 16:45 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 9 | 0 | 0 | 1 | 0 | 0 | 0 | 10 |
| 17:00 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 7 | 0 | 3 | 0 | 0 | 0 | 0 | 10 |
| 17:15 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 5 | 0 | 4 | 0 | 0 | 0 | 0 | 9 |
| 17:30 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 10 | 0 | 3 | 0 | 0 | 0 | 0 | 13 |
| 17:45 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 5 | 10 | 1 | 1 | 0 | 0 | 0 | 0 | 12 |
| 18:00 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 18:15 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 13 | 1 | 1 | 2 | 0 | 0 | 0 | 17 |
| 18:30 | 6 | 0 | 1 | 0 | 0 | 0 | 1 | 8 | 8 | 1 | 2 | 1 | 0 | 0 | 0 | 12 |
| 18:45 | 7 | 0 | 2 | 0 | 0 | 0 | 0 | 9 | 10 | 0 | 0 | 0 | 0 | 0 | 1 | 11 |
| Total | 294 | 3 | 33 | 11 | 0 | 0 | 3 | 344 | 492 | 6 | 71 | 55 | 3 | 2 | 9 | 638 |



10084 / Moygaddy
May 2019
Junction Turning Count

Site No. 5
Location R157(N) / Dillow's Road / R157(S)
Date Tuesday 28 May 2019

| Time | C to B - R157(S) to Dillow's Road | | | | | | | Veh. Total | C to A - R157(S) to R157(N) | | | | | | | Veh. Total |
|-------|-----------------------------------|------|-----|-----|-----|-----|-----|------------|-----------------------------|------|-----|-----|-----|-----|-----|------------|
| | CAR | Taxi | LGV | HGV | PSV | M/C | P/C | | CAR | Taxi | LGV | HGV | PSV | M/C | P/C | |
| 7:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 0 | 4 | 2 | 0 | 0 | 0 | 29 |
| 7:15 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 24 | 0 | 5 | 2 | 1 | 0 | 0 | 32 |
| 7:30 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 35 | 0 | 2 | 4 | 0 | 0 | 0 | 41 |
| 7:45 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 46 | 0 | 7 | 3 | 1 | 0 | 0 | 57 |
| 8:00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 37 | 0 | 3 | 6 | 0 | 0 | 0 | 46 |
| 8:15 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 37 | 0 | 1 | 9 | 0 | 0 | 0 | 47 |
| 8:30 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 42 | 1 | 7 | 2 | 0 | 0 | 0 | 52 |
| 8:45 | 8 | 0 | 0 | 1 | 0 | 0 | 0 | 9 | 37 | 1 | 4 | 7 | 1 | 0 | 0 | 50 |
| 9:00 | 4 | 0 | 0 | 1 | 0 | 0 | 0 | 5 | 35 | 0 | 5 | 7 | 0 | 1 | 0 | 48 |
| 9:15 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 25 | 2 | 4 | 2 | 0 | 0 | 0 | 33 |
| 9:30 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 17 | 1 | 1 | 1 | 1 | 0 | 0 | 21 |
| 9:45 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 17 | 0 | 1 | 2 | 1 | 0 | 1 | 22 |
| 10:00 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 14 | 1 | 4 | 2 | 0 | 0 | 0 | 21 |
| 10:15 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 19 | 0 | 8 | 3 | 0 | 0 | 1 | 31 |
| 10:30 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 19 | 0 | 4 | 2 | 0 | 0 | 0 | 25 |
| 10:45 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 19 | 0 | 2 | 0 | 0 | 0 | 0 | 21 |
| 11:00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 16 | 0 | 2 | 3 | 0 | 0 | 0 | 21 |
| 11:15 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 25 | 1 | 1 | 2 | 0 | 0 | 0 | 29 |
| 11:30 | 6 | 0 | 0 | 1 | 0 | 0 | 0 | 7 | 24 | 1 | 0 | 3 | 0 | 0 | 0 | 28 |
| 11:45 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 25 | 0 | 2 | 3 | 0 | 0 | 0 | 30 |
| 12:00 | 4 | 0 | 0 | 1 | 0 | 0 | 0 | 5 | 40 | 0 | 1 | 0 | 0 | 0 | 0 | 41 |
| 12:15 | 1 | 0 | 0 | 4 | 0 | 0 | 0 | 5 | 31 | 0 | 3 | 5 | 0 | 0 | 0 | 39 |
| 12:30 | 10 | 1 | 0 | 1 | 0 | 0 | 0 | 12 | 24 | 1 | 2 | 4 | 0 | 0 | 0 | 31 |
| 12:45 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 29 | 1 | 3 | 2 | 0 | 0 | 0 | 35 |
| 13:00 | 3 | 0 | 1 | 3 | 0 | 0 | 0 | 7 | 36 | 0 | 2 | 4 | 0 | 0 | 0 | 42 |
| 13:15 | 5 | 0 | 0 | 1 | 0 | 0 | 0 | 6 | 35 | 1 | 2 | 5 | 0 | 0 | 0 | 43 |
| 13:30 | 5 | 0 | 2 | 0 | 0 | 0 | 0 | 7 | 31 | 2 | 3 | 4 | 1 | 0 | 0 | 41 |
| 13:45 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 5 | 31 | 0 | 5 | 4 | 2 | 0 | 0 | 42 |
| 14:00 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 40 | 0 | 6 | 1 | 0 | 0 | 0 | 47 |
| 14:15 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 27 | 0 | 6 | 1 | 0 | 0 | 0 | 34 |
| 14:30 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 35 | 1 | 2 | 1 | 0 | 0 | 0 | 39 |
| 14:45 | 11 | 0 | 0 | 1 | 0 | 0 | 0 | 12 | 69 | 1 | 2 | 5 | 1 | 0 | 0 | 78 |
| 15:00 | 11 | 0 | 1 | 2 | 0 | 0 | 0 | 14 | 48 | 1 | 2 | 1 | 0 | 0 | 0 | 52 |
| 15:15 | 13 | 0 | 1 | 0 | 0 | 0 | 0 | 14 | 32 | 1 | 7 | 4 | 2 | 0 | 0 | 46 |
| 15:30 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 43 | 1 | 4 | 2 | 0 | 1 | 0 | 51 |
| 15:45 | 9 | 0 | 3 | 0 | 0 | 0 | 0 | 12 | 43 | 0 | 7 | 2 | 0 | 0 | 0 | 52 |
| 16:00 | 6 | 0 | 1 | 0 | 0 | 0 | 0 | 7 | 50 | 0 | 11 | 2 | 0 | 0 | 0 | 63 |
| 16:15 | 17 | 0 | 3 | 0 | 0 | 0 | 0 | 20 | 49 | 0 | 8 | 1 | 0 | 0 | 0 | 58 |
| 16:30 | 8 | 0 | 1 | 0 | 0 | 0 | 0 | 9 | 74 | 1 | 12 | 0 | 0 | 0 | 0 | 87 |
| 16:45 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 63 | 0 | 5 | 0 | 0 | 0 | 0 | 68 |
| 17:00 | 12 | 0 | 1 | 0 | 0 | 0 | 0 | 13 | 71 | 0 | 13 | 4 | 0 | 0 | 0 | 88 |
| 17:15 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 69 | 0 | 5 | 3 | 0 | 0 | 0 | 77 |
| 17:30 | 17 | 0 | 2 | 0 | 0 | 0 | 0 | 19 | 87 | 0 | 5 | 3 | 0 | 0 | 0 | 95 |
| 17:45 | 21 | 0 | 2 | 0 | 0 | 0 | 0 | 23 | 67 | 0 | 4 | 0 | 0 | 0 | 1 | 72 |
| 18:00 | 10 | 0 | 1 | 0 | 0 | 0 | 0 | 11 | 84 | 0 | 15 | 2 | 0 | 0 | 1 | 102 |
| 18:15 | 15 | 0 | 1 | 0 | 0 | 0 | 0 | 16 | 70 | 0 | 4 | 0 | 0 | 0 | 0 | 74 |
| 18:30 | 6 | 0 | 1 | 0 | 0 | 0 | 0 | 7 | 51 | 0 | 4 | 1 | 0 | 0 | 1 | 57 |
| 18:45 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 43 | 0 | 7 | 2 | 0 | 1 | 2 | 55 |
| 25.75 | 305 | 1 | 22 | 18 | 0 | 0 | 0 | 346 | 1908 | 19 | 217 | 128 | 11 | 3 | 7 | 2293 |



10084 / Moygaddy
May 2019
Junction Turning Count

Site No. 5
Location R157(N) / Dillow's Road / R157(S)
Date Tuesday 28 May 2019

| Time | C to C - R157(S) to R157(S) | | | | | | | Veh. Total |
|-------|-----------------------------|------|-----|-----|-----|-----|-----|------------|
| | CAR | Taxi | LGV | HGV | PSV | M/C | P/C | |
| 7:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 8:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 9:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 15:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:30 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 15:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:30 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 17:45 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 18:00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 18:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 25.75 | 5 | 0 | 1 | 1 | 0 | 0 | 0 | 7 |



Site No. 5
Location R157(N) / Dillow's Road / R157(S)
Date Tuesday 28 May 2019

| Time | C to B - R157(S) to Dillow's Road | | | | | | | Veh. Total | C to A - R157(S) to R157(N) | | | | | | | Veh. Total |
|-------------|-----------------------------------|------|-----|------|-----|-----|-----|-------------|-----------------------------|------|-----|-------|-----|-----|-----|-------------|
| | CAR | Taxi | LGV | HGV | PSV | M/C | P/C | | CAR | Taxi | LGV | HGV | PSV | M/C | P/C | |
| 7:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 0 | 4 | 4.6 | 0 | 0 | 0 | 31.6 |
| 7:15 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 24 | 0 | 5 | 4.6 | 2 | 0 | 0 | 35.6 |
| 7:30 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 35 | 0 | 2 | 9.2 | 0 | 0 | 0 | 46.2 |
| 7:45 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 46 | 0 | 7 | 6.9 | 2 | 0 | 0 | 61.9 |
| 8:00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 37 | 0 | 3 | 13.8 | 0 | 0 | 0 | 53.8 |
| 8:15 | 1 | 0 | 0 | 2.3 | 0 | 0 | 0 | 3.3 | 37 | 0 | 1 | 20.7 | 0 | 0 | 0 | 58.7 |
| 8:30 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 42 | 1 | 7 | 4.6 | 0 | 0 | 0 | 54.6 |
| 8:45 | 8 | 0 | 0 | 2.3 | 0 | 0 | 0 | 10.3 | 37 | 1 | 4 | 16.1 | 2 | 0 | 0 | 60.1 |
| 9:00 | 4 | 0 | 0 | 2.3 | 0 | 0 | 0 | 6.3 | 35 | 0 | 5 | 16.1 | 0 | 0.4 | 0 | 56.5 |
| 9:15 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 25 | 2 | 4 | 4.6 | 0 | 0 | 0 | 35.6 |
| 9:30 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 17 | 1 | 1 | 2.3 | 2 | 0 | 0 | 23.3 |
| 9:45 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 17 | 0 | 1 | 4.6 | 2 | 0 | 0.2 | 24.8 |
| 10:00 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 14 | 1 | 4 | 4.6 | 0 | 0 | 0 | 23.6 |
| 10:15 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 19 | 0 | 8 | 6.9 | 0 | 0 | 0.2 | 34.1 |
| 10:30 | 3 | 0 | 0 | 2.3 | 0 | 0 | 0 | 5.3 | 19 | 0 | 4 | 4.6 | 0 | 0 | 0 | 27.6 |
| 10:45 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 19 | 0 | 2 | 0 | 0 | 0 | 0 | 21 |
| 11:00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 16 | 0 | 2 | 6.9 | 0 | 0 | 0 | 24.9 |
| 11:15 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 25 | 1 | 1 | 4.6 | 0 | 0 | 0 | 31.6 |
| 11:30 | 6 | 0 | 0 | 2.3 | 0 | 0 | 0 | 8.3 | 24 | 1 | 0 | 6.9 | 0 | 0 | 0 | 31.9 |
| 11:45 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 25 | 0 | 2 | 6.9 | 0 | 0 | 0 | 33.9 |
| 12:00 | 4 | 0 | 0 | 2.3 | 0 | 0 | 0 | 6.3 | 40 | 0 | 1 | 0 | 0 | 0 | 0 | 41 |
| 12:15 | 1 | 0 | 0 | 9.2 | 0 | 0 | 0 | 10.2 | 31 | 0 | 3 | 11.5 | 0 | 0 | 0 | 45.5 |
| 12:30 | 10 | 1 | 0 | 2.3 | 0 | 0 | 0 | 13.3 | 24 | 1 | 2 | 9.2 | 0 | 0 | 0 | 36.2 |
| 12:45 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 29 | 1 | 3 | 4.6 | 0 | 0 | 0 | 37.6 |
| 13:00 | 3 | 0 | 1 | 6.9 | 0 | 0 | 0 | 10.9 | 36 | 0 | 2 | 9.2 | 0 | 0 | 0 | 47.2 |
| 13:15 | 5 | 0 | 0 | 2.3 | 0 | 0 | 0 | 7.3 | 35 | 1 | 2 | 11.5 | 0 | 0 | 0 | 49.5 |
| 13:30 | 5 | 0 | 2 | 0 | 0 | 0 | 0 | 7 | 31 | 2 | 3 | 9.2 | 2 | 0 | 0 | 47.2 |
| 13:45 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 5 | 31 | 0 | 5 | 9.2 | 4 | 0 | 0 | 49.2 |
| 14:00 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 40 | 0 | 6 | 2.3 | 0 | 0 | 0 | 48.3 |
| 14:15 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 27 | 0 | 6 | 2.3 | 0 | 0 | 0 | 35.3 |
| 14:30 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 35 | 1 | 2 | 2.3 | 0 | 0 | 0 | 40.3 |
| 14:45 | 11 | 0 | 0 | 2.3 | 0 | 0 | 0 | 13.3 | 69 | 1 | 2 | 11.5 | 2 | 0 | 0 | 85.5 |
| 15:00 | 11 | 0 | 1 | 4.6 | 0 | 0 | 0 | 16.6 | 48 | 1 | 2 | 2.3 | 0 | 0 | 0 | 53.3 |
| 15:15 | 13 | 0 | 1 | 0 | 0 | 0 | 0 | 14 | 32 | 1 | 7 | 9.2 | 4 | 0 | 0 | 53.2 |
| 15:30 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 43 | 1 | 4 | 4.6 | 0 | 0.4 | 0 | 53 |
| 15:45 | 9 | 0 | 3 | 0 | 0 | 0 | 0 | 12 | 43 | 0 | 7 | 4.6 | 0 | 0 | 0 | 54.6 |
| 16:00 | 6 | 0 | 1 | 0 | 0 | 0 | 0 | 7 | 50 | 0 | 11 | 4.6 | 0 | 0 | 0 | 65.6 |
| 16:15 | 17 | 0 | 3 | 0 | 0 | 0 | 0 | 20 | 49 | 0 | 8 | 2.3 | 0 | 0 | 0 | 59.3 |
| 16:30 | 8 | 0 | 1 | 0 | 0 | 0 | 0 | 9 | 74 | 1 | 12 | 0 | 0 | 0 | 0 | 87 |
| 16:45 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 63 | 0 | 5 | 0 | 0 | 0 | 0 | 68 |
| 17:00 | 12 | 0 | 1 | 0 | 0 | 0 | 0 | 13 | 71 | 0 | 13 | 9.2 | 0 | 0 | 0 | 93.2 |
| 17:15 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 69 | 0 | 5 | 6.9 | 0 | 0 | 0 | 80.9 |
| 17:30 | 17 | 0 | 2 | 0 | 0 | 0 | 0 | 19 | 87 | 0 | 5 | 6.9 | 0 | 0 | 0 | 98.9 |
| 17:45 | 21 | 0 | 2 | 0 | 0 | 0 | 0 | 23 | 67 | 0 | 4 | 0 | 0 | 0 | 0.2 | 71.2 |
| 18:00 | 10 | 0 | 1 | 0 | 0 | 0 | 0 | 11 | 84 | 0 | 15 | 4.6 | 0 | 0 | 0.2 | 103.8 |
| 18:15 | 15 | 0 | 1 | 0 | 0 | 0 | 0 | 16 | 70 | 0 | 4 | 0 | 0 | 0 | 0 | 74 |
| 18:30 | 6 | 0 | 1 | 0 | 0 | 0 | 0 | 7 | 51 | 0 | 4 | 2.3 | 0 | 0 | 0.2 | 57.5 |
| 18:45 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 43 | 0 | 7 | 4.6 | 0 | 0.4 | 0.4 | 55.4 |
| 25:75 | 305 | 1 | 22 | 41.4 | 0 | 0 | 0 | 369.4 | 1908 | 19 | 217 | 294.4 | 22 | 1.2 | 1.4 | 2463 |



Site No. 5
Location R157(N) / Dillow's Road / R157(S)
Date Tuesday 28 May 2019

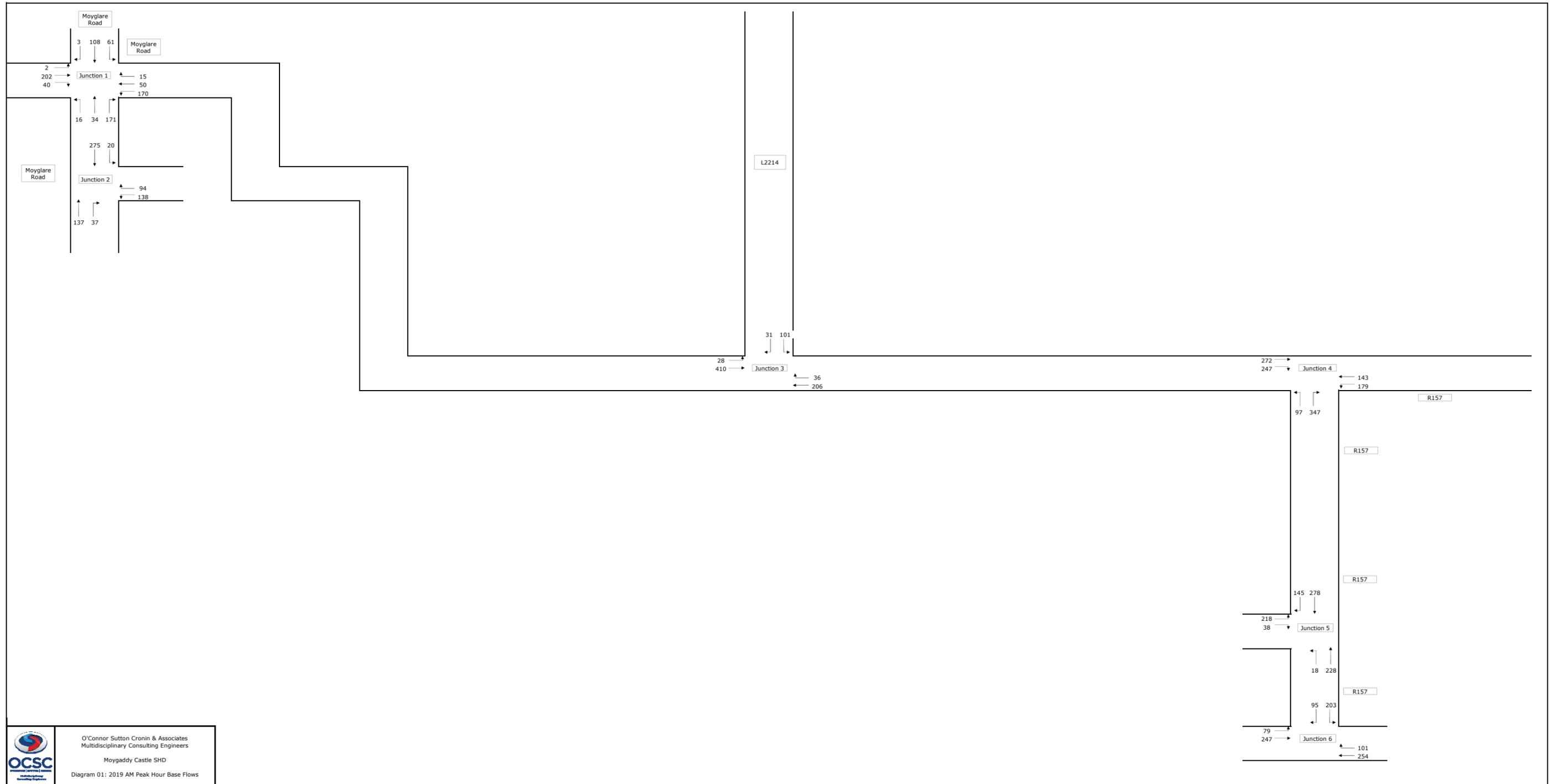
| Time | C to C - R157(S) to R157(S) | | | | | | | Veh. Total |
|-------------|-----------------------------|------|-----|-----|-----|-----|-----|------------|
| | CAR | Taxi | LGV | HGV | PSV | M/C | P/C | |
| 7:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 8:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 9:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15:00 | 0 | 0 | 0 | 2.3 | 0 | 0 | 0 | 2.3 |
| 15:15 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 15:30 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 15:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:30 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 17:45 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 18:00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 18:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 25:75 | 5 | 0 | 1 | 2.3 | 0 | 0 | 0 | 8.3 |

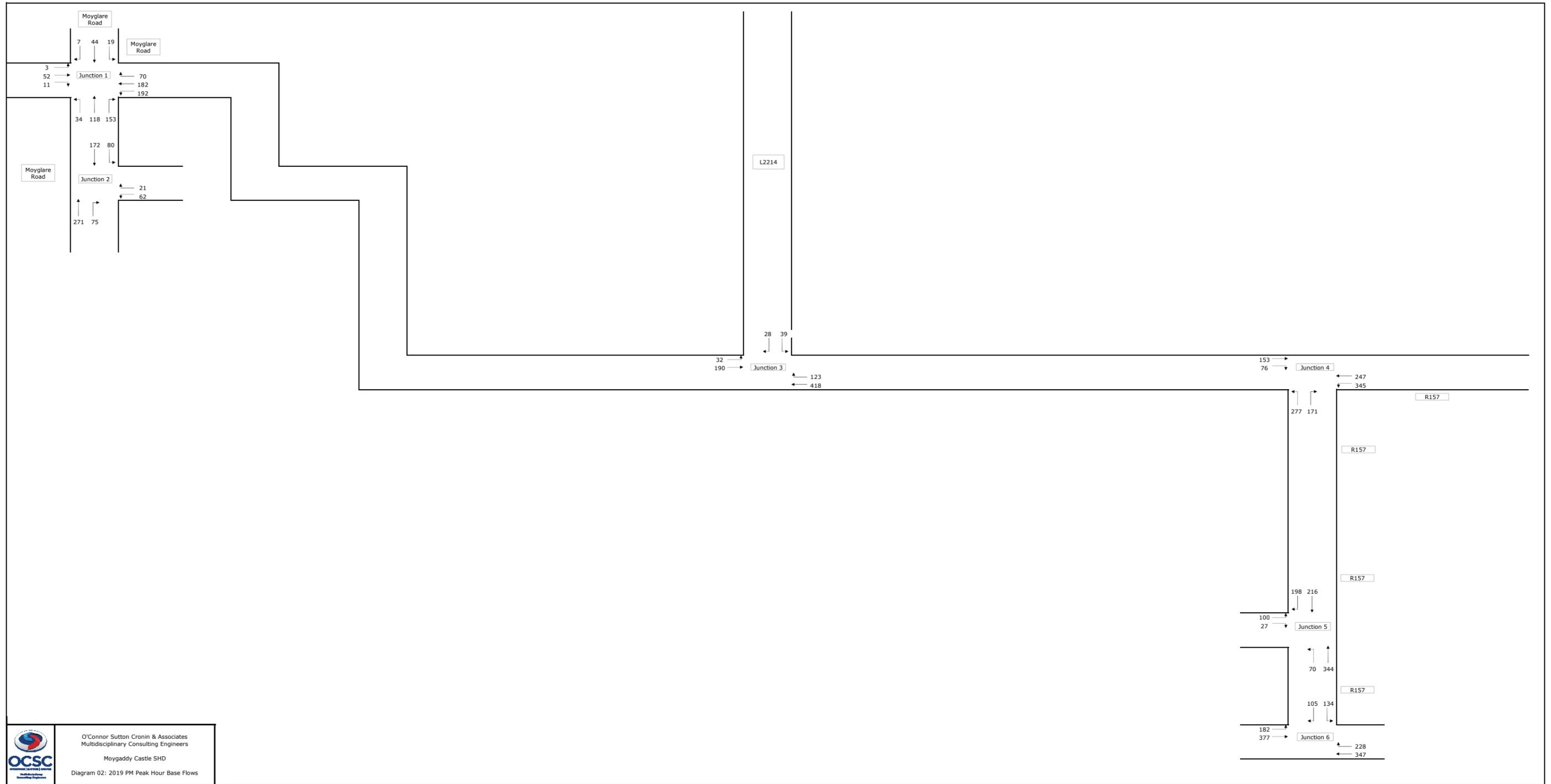


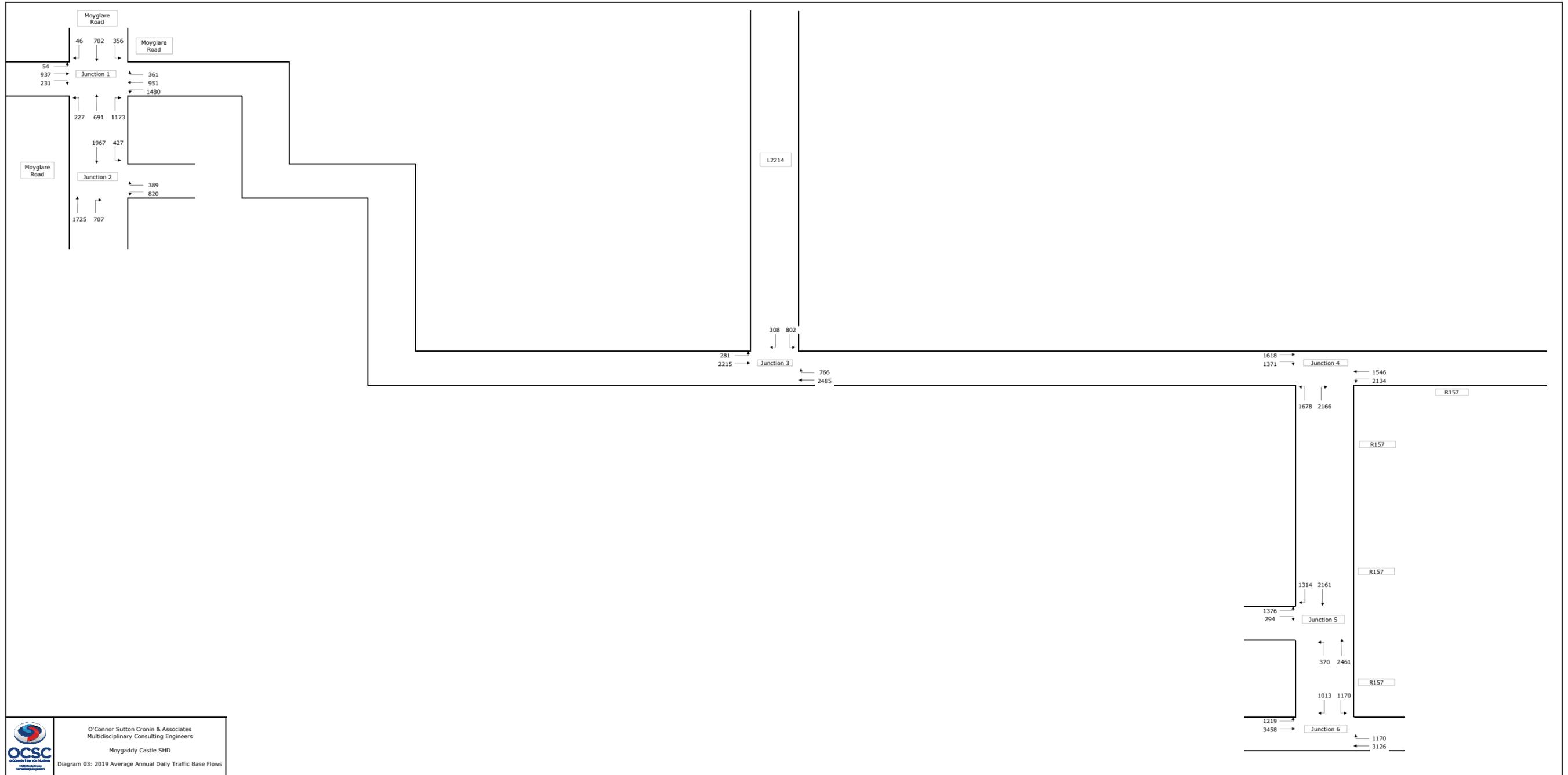
Site No. 6
Location R157 / R148(W) / R148(E)
Date Tuesday 28 May 2019

| Time | To Arm C - R148(E) | | | | | | | Veh. Total | From Arm C - R148(E) | | | | | | | Veh. Total |
|-------|--------------------|------|-----|-------|-----|------|-----|------------|----------------------|------|-----|-------|-----|-----|-----|------------|
| | CAR | Taxi | LGV | HGV | PSV | M/C | P/C | | CAR | Taxi | LGV | HGV | PSV | M/C | P/C | |
| 7:00 | 133 | 0 | 13 | 4.6 | 10 | 0.8 | 0.2 | 161.6 | 37 | 0 | 6 | 9.2 | 2 | 0 | 0 | 54.2 |
| 7:15 | 127 | 3 | 8 | 4.6 | 8 | 0 | 0.6 | 151.2 | 35 | 1 | 7 | 4.6 | 2 | 0.4 | 0 | 50 |
| 7:30 | 128 | 1 | 13 | 2.3 | 10 | 0 | 0 | 154.3 | 43 | 0 | 3 | 2.3 | 4 | 0 | 0 | 52.3 |
| 7:45 | 130 | 2 | 4 | 4.6 | 4 | 0 | 0.8 | 145.4 | 64 | 0 | 11 | 9.2 | 0 | 0 | 0.2 | 84.4 |
| 8:00 | 99 | 0 | 7 | 4.6 | 6 | 0 | 0.6 | 117.2 | 40 | 0 | 6 | 20.7 | 2 | 0 | 0 | 68.7 |
| 8:15 | 106 | 0 | 4 | 6.9 | 4 | 0 | 0.4 | 121.3 | 79 | 0 | 6 | 9.2 | 2 | 0 | 0 | 96.2 |
| 8:30 | 118 | 2 | 13 | 9.2 | 2 | 0 | 0.2 | 144.4 | 81 | 2 | 3 | 11.5 | 6 | 0 | 0.2 | 103.7 |
| 8:45 | 85 | 0 | 4 | 6.9 | 2 | 0.4 | 0 | 98.3 | 104 | 2 | 8 | 13.8 | 2 | 0 | 0 | 129.8 |
| 9:00 | 86 | 2 | 9 | 2.3 | 2 | 0 | 0 | 101.3 | 66 | 1 | 4 | 11.5 | 0 | 0 | 0 | 82.5 |
| 9:15 | 56 | 0 | 6 | 2.3 | 2 | 0.4 | 0 | 66.7 | 62 | 3 | 7 | 6.9 | 0 | 0 | 0.2 | 79.1 |
| 9:30 | 87 | 2 | 9 | 16.1 | 4 | 0.4 | 0 | 118.5 | 69 | 1 | 7 | 2.3 | 6 | 0 | 0.2 | 85.5 |
| 9:45 | 68 | 1 | 7 | 6.9 | 16 | 0 | 0 | 98.9 | 65 | 1 | 7 | 9.2 | 2 | 0 | 0.2 | 84.4 |
| 10:00 | 51 | 0 | 4 | 4.6 | 10 | 0.4 | 0 | 70 | 57 | 0 | 4 | 6.9 | 2 | 0 | 0 | 69.9 |
| 10:15 | 63 | 0 | 10 | 11.5 | 0 | 0 | 0 | 84.5 | 61 | 0 | 8 | 6.9 | 0 | 0 | 0.2 | 76.1 |
| 10:30 | 60 | 1 | 3 | 4.6 | 4 | 0 | 0 | 72.6 | 50 | 0 | 8 | 6.9 | 4 | 0 | 1.2 | 70.1 |
| 10:45 | 88 | 2 | 2 | 4.6 | 0 | 0 | 0.4 | 97 | 58 | 0 | 6 | 4.6 | 0 | 0 | 0 | 68.6 |
| 11:00 | 63 | 1 | 9 | 6.9 | 6 | 0.4 | 0 | 86.3 | 50 | 0 | 3 | 4.6 | 2 | 0.4 | 0 | 60 |
| 11:15 | 78 | 1 | 8 | 9.2 | 0 | 0 | 0 | 96.2 | 70 | 0 | 5 | 4.6 | 2 | 0.4 | 0 | 82 |
| 11:30 | 68 | 1 | 10 | 4.6 | 4 | 0 | 0 | 87.6 | 67 | 5 | 4 | 9.2 | 4 | 0 | 0 | 89.2 |
| 11:45 | 62 | 2 | 5 | 9.2 | 2 | 0 | 0.2 | 80.4 | 76 | 2 | 10 | 9.2 | 0 | 0 | 0 | 97.2 |
| 12:00 | 72 | 1 | 5 | 6.9 | 6 | 0.4 | 0 | 91.3 | 67 | 0 | 9 | 9.2 | 2 | 0 | 0 | 87.2 |
| 12:15 | 66 | 1 | 7 | 9.2 | 0 | 0 | 0.2 | 83.4 | 66 | 0 | 5 | 13.8 | 2 | 0.4 | 0 | 87.2 |
| 12:30 | 74 | 2 | 12 | 11.5 | 4 | 0 | 0 | 103.5 | 92 | 1 | 10 | 11.5 | 4 | 0 | 0.2 | 118.7 |
| 12:45 | 69 | 0 | 12 | 6.9 | 0 | 0 | 0 | 87.9 | 65 | 0 | 4 | 9.2 | 2 | 2.8 | 0.2 | 83.2 |
| 13:00 | 93 | 0 | 8 | 2.3 | 12 | 0 | 0 | 115.3 | 82 | 0 | 6 | 11.5 | 2 | 0 | 0 | 101.5 |
| 13:15 | 75 | 1 | 7 | 6.9 | 0 | 0 | 0 | 89.9 | 89 | 2 | 5 | 6.9 | 0 | 0 | 0 | 102.9 |
| 13:30 | 75 | 2 | 5 | 11.5 | 0 | 0 | 0.4 | 93.9 | 73 | 3 | 5 | 18.4 | 8 | 0 | 0 | 107.4 |
| 13:45 | 97 | 0 | 2 | 6.9 | 6 | 0.4 | 0 | 112.3 | 60 | 0 | 5 | 4.6 | 2 | 0 | 0.2 | 71.8 |
| 14:00 | 85 | 0 | 12 | 16.1 | 6 | 2.8 | 0.2 | 122.1 | 71 | 0 | 9 | 9.2 | 0 | 0.4 | 0 | 89.6 |
| 14:15 | 81 | 0 | 9 | 13.8 | 0 | 0 | 0.2 | 104 | 94 | 0 | 5 | 2.3 | 2 | 0 | 0.2 | 103.5 |
| 14:30 | 79 | 0 | 9 | 9.2 | 2 | 0 | 0 | 99.2 | 60 | 2 | 9 | 2.3 | 6 | 0 | 0 | 79.3 |
| 14:45 | 96 | 2 | 5 | 4.6 | 0 | 0.4 | 0 | 108 | 86 | 3 | 8 | 16.1 | 0 | 0 | 0 | 113.1 |
| 15:00 | 85 | 1 | 7 | 11.5 | 6 | 0 | 0 | 110.5 | 85 | 2 | 4 | 6.9 | 2 | 0 | 0 | 99.9 |
| 15:15 | 89 | 5 | 7 | 6.9 | 0 | 0.4 | 0.2 | 108.5 | 88 | 0 | 7 | 6.9 | 4 | 0 | 0.2 | 106.1 |
| 15:30 | 69 | 1 | 3 | 11.5 | 2 | 0 | 0 | 86.5 | 79 | 1 | 4 | 4.6 | 4 | 0 | 0 | 92.6 |
| 15:45 | 87 | 0 | 9 | 2.3 | 6 | 0 | 0 | 104.3 | 93 | 1 | 8 | 0 | 2 | 0 | 0.2 | 104.2 |
| 16:00 | 80 | 1 | 7 | 6.9 | 0 | 0 | 0.2 | 95.1 | 99 | 1 | 13 | 4.6 | 2 | 0.8 | 0 | 120.4 |
| 16:15 | 76 | 0 | 11 | 2.3 | 0 | 0.4 | 0.2 | 89.9 | 105 | 0 | 15 | 2.3 | 2 | 0.4 | 0.2 | 124.9 |
| 16:30 | 86 | 1 | 9 | 0 | 4 | 0.4 | 0 | 100.4 | 118 | 1 | 11 | 2.3 | 4 | 0 | 0.2 | 136.5 |
| 16:45 | 94 | 5 | 7 | 2.3 | 0 | 0 | 0.2 | 108.5 | 140 | 0 | 7 | 0 | 2 | 0 | 0.4 | 149.4 |
| 17:00 | 121 | 0 | 15 | 4.6 | 4 | 1.2 | 0.2 | 146 | 137 | 0 | 13 | 6.9 | 0 | 0 | 0.2 | 157.1 |
| 17:15 | 122 | 0 | 10 | 0 | 0 | 0 | 0 | 132 | 124 | 2 | 8 | 11.5 | 4 | 0 | 0 | 149.5 |
| 17:30 | 116 | 1 | 5 | 2.3 | 0 | 0.4 | 0.4 | 125.1 | 144 | 2 | 10 | 4.6 | 2 | 0 | 0.2 | 162.8 |
| 17:45 | 113 | 1 | 4 | 0 | 6 | 0 | 0 | 124 | 116 | 0 | 9 | 0 | 8 | 0 | 0.6 | 133.6 |
| 18:00 | 93 | 0 | 8 | 0 | 4 | 0.8 | 0 | 105.8 | 125 | 0 | 17 | 4.6 | 0 | 0.4 | 0.4 | 147.4 |
| 18:15 | 91 | 5 | 3 | 2.3 | 0 | 0 | 0 | 101.3 | 105 | 0 | 5 | 0 | 2 | 0.4 | 0.4 | 112.8 |
| 18:30 | 92 | 1 | 5 | 2.3 | 2 | 0 | 0.2 | 102.5 | 114 | 0 | 9 | 2.3 | 6 | 0 | 0.2 | 131.5 |
| 18:45 | 82 | 2 | 9 | 0 | 0 | 0 | 0.4 | 93.4 | 96 | 0 | 7 | 2.3 | 2 | 1.2 | 1.2 | 109.7 |
| 25:75 | 4214 | 54 | 360 | 287.5 | 166 | 10.4 | 6.4 | 5098.3 | 3907 | 39 | 350 | 338.1 | 118 | 8 | 7.6 | 4767.7 |

Appendix B **TRAFFIC FLOW DIAGRAMS**







O'Connor Sutton Cronin & Associates
 Multidisciplinary Consulting Engineers
 Moygaddy Castle SHD
 Diagram 03: 2019 Average Annual Daily Traffic Base Flows

Appendix C **TRICS OUTPUT FILES**

Calculation Reference: AUDIT-322901-211014-1033

TRIP RATE CALCULATION SELECTION PARAMETERS:

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

Selected regions and areas:

| | | |
|----|--|--------|
| 01 | GREATER LONDON EN ENFIELD | 1 days |
| 02 | SOUTH EAST HF HERTFORDSHIRE | 2 days |
| 03 | SOUTH WEST DC DORSET | 1 days |
| 05 | EAST MIDLANDS LE LEICESTERSHIRE | 1 days |
| 11 | SCOTLAND EB CITY OF EDINBURGH | 1 days |
| 13 | MUNSTER WA WATERFORD | 1 days |
| 15 | GREATER DUBLIN DL DUBLIN | 3 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

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: No of Dwellings
 Actual Range: 14 to 84 (units:)
 Range Selected by User: 6 to 493 (units:)

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/13 to 10/06/21

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

| | |
|-----------|--------|
| Monday | 2 days |
| Tuesday | 4 days |
| Wednesday | 1 days |
| Thursday | 1 days |
| Friday | 3 days |

This data displays the number of selected surveys by day of the week.

Selected survey types:

| | |
|-----------------------|---------|
| Manual count | 11 days |
| Directional ATC Count | 0 days |

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaken using machines.

Selected Locations:

| | |
|--|---|
| Suburban Area (PPS6 Out of Centre) | 6 |
| Edge of Town | 2 |
| Neighbourhood Centre (PPS6 Local Centre) | 3 |

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

C3 11 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS@.

Population within 500m Range:

All Surveys Included

Population within 1 mile:

| | |
|------------------|--------|
| 5,001 to 10,000 | 1 days |
| 10,001 to 15,000 | 1 days |
| 20,001 to 25,000 | 4 days |
| 25,001 to 50,000 | 5 days |

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

| | |
|--------------------|--------|
| 50,001 to 75,000 | 2 days |
| 125,001 to 250,000 | 3 days |
| 250,001 to 500,000 | 3 days |
| 500,001 or More | 3 days |

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

| | |
|-------------|--------|
| 0.5 or Less | 2 days |
| 0.6 to 1.0 | 5 days |
| 1.1 to 1.5 | 4 days |

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

| | |
|-----|--------|
| Yes | 2 days |
| No | 9 days |

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

| | |
|-----------------|---------|
| No PTAL Present | 10 days |
| 2 Poor | 1 days |

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

| | | | |
|---|---|-------------------|----------------------------|
| 1 | AN-03-C-02 BLOCK OF FLATS SUMMERHILL AVENUE BELFAST KNOCK Edge of Town Residential Zone Total No of Dwellings: 22 <i>Survey date: FRIDAY 28/11/14</i> | ANTRIM | <i>Survey Type: MANUAL</i> |
| 2 | DC-03-C-02 FLATS IN BLOCKS PALM COURT WEYMOUTH SPA ROAD Suburban Area (PPS6 Out of Centre) Residential Zone Total No of Dwellings: 14 <i>Survey date: FRIDAY 28/03/14</i> | DORSET | <i>Survey Type: MANUAL</i> |
| 3 | DL-03-C-13 BLOCK OF FLATS SANDYFORD ROAD DUBLIN Neighbourhood Centre (PPS6 Local Centre) Built-Up Zone Total No of Dwellings: 52 <i>Survey date: TUESDAY 10/09/13</i> | DUBLIN | <i>Survey Type: MANUAL</i> |
| 4 | DL-03-C-15 BLOCKS OF FLATS MONKSTOWN ROAD DUBLIN MONKSTOWN Suburban Area (PPS6 Out of Centre) Residential Zone Total No of Dwellings: 20 <i>Survey date: WEDNESDAY 01/10/14</i> | DUBLIN | <i>Survey Type: MANUAL</i> |
| 5 | DL-03-C-16 BLOCKS OF FLATS BOTANIC AVENUE DUBLIN DRUMCONDRA Suburban Area (PPS6 Out of Centre) Residential Zone Total No of Dwellings: 31 <i>Survey date: TUESDAY 22/11/16</i> | DUBLIN | <i>Survey Type: MANUAL</i> |
| 6 | EB-03-C-01 BLOCKS OF FLATS MYRESIDE ROAD EDINBURGH CRAIGLOCKHART Suburban Area (PPS6 Out of Centre) Residential Zone Total No of Dwellings: 32 <i>Survey date: TUESDAY 26/05/15</i> | CITY OF EDINBURGH | <i>Survey Type: MANUAL</i> |
| 7 | EN-03-C-01 BLOCK OF FLATS SOUTH STREET ENFIELD Suburban Area (PPS6 Out of Centre) Built-Up Zone Total No of Dwellings: 16 <i>Survey date: MONDAY 16/11/15</i> | ENFIELD | <i>Survey Type: MANUAL</i> |

LIST OF SITES relevant to selection parameters (Cont.)

| | | | | |
|----|---|-----------------|----------------|----------------------------|
| 8 | HF-03-C-04 OXHEY DRIVE WATFORD SOUTH OXHEY Neighbourhood Centre (PPS6 Local Centre) Residential Zone Total No of Dwellings: 84 <i>Survey date: THURSDAY 10/06/21</i> | BLOCKS OF FLATS | HERTFORDSHIRE | <i>Survey Type: MANUAL</i> |
| 9 | HF-03-C-05 FERNDOWN ROAD WATFORD SOUTH OXHEY Edge of Town Residential Zone Total No of Dwellings: 26 <i>Survey date: MONDAY 07/06/21</i> | BLOCKS OF FLATS | HERTFORDSHIRE | <i>Survey Type: MANUAL</i> |
| 10 | LE-03-C-01 NEW STREET LEICESTER OADBY Neighbourhood Centre (PPS6 Local Centre) Residential Zone Total No of Dwellings: 19 <i>Survey date: FRIDAY 16/10/20</i> | BLOCK OF FLATS | LEICESTERSHIRE | <i>Survey Type: MANUAL</i> |
| 11 | WA-03-C-01 UPPER YELLOW ROAD WATERFORD Suburban Area (PPS6 Out of Centre) Residential Zone Total No of Dwellings: 51 <i>Survey date: TUESDAY 12/05/15</i> | BLOCKS OF FLATS | WATERFORD | <i>Survey Type: MANUAL</i> |

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

| Site Ref | Reason for Deselection |
|------------|------------------------|
| CA-03-C-03 | PT |
| CB-03-C-02 | PT |
| CB-03-C-03 | PT |
| DL-03-C-12 | PT |
| DL-03-C-14 | PT |
| DL-03-C-17 | PT |
| DS-03-C-03 | PT |
| EN-03-C-03 | PT |
| ES-03-C-01 | PT |
| GA-03-C-01 | PT |
| HF-03-C-01 | PT |
| HG-03-C-02 | PT |
| HK-03-C-03 | PT |
| HO-03-C-04 | PT |
| HO-03-C-05 | PT |
| HV-03-C-01 | PT |
| NF-03-C-02 | PT |
| NH-03-C-01 | PT |
| NT-03-C-01 | PT |
| NT-03-C-02 | PT |
| RD-03-C-03 | PT |
| RD-03-C-04 | PT |
| RI-03-C-01 | PT |
| SF-03-C-03 | PT |
| SR-03-C-03 | PT |
| WA-03-C-01 | PT |
| WA-03-C-01 | PT |

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED

TOTAL VEHICLES

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

| Time Range | ARRIVALS | | | DEPARTURES | | | TOTALS | | |
|---------------|----------|-------------|-----------|------------|-------------|-----------|----------|-------------|-----------|
| | 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 | 11 | 33 | 0.079 | 11 | 33 | 0.272 | 11 | 33 | 0.351 |
| 08:00 - 09:00 | 11 | 33 | 0.093 | 11 | 33 | 0.196 | 11 | 33 | 0.289 |
| 09:00 - 10:00 | 11 | 33 | 0.095 | 11 | 33 | 0.098 | 11 | 33 | 0.193 |
| 10:00 - 11:00 | 11 | 33 | 0.074 | 11 | 33 | 0.084 | 11 | 33 | 0.158 |
| 11:00 - 12:00 | 11 | 33 | 0.063 | 11 | 33 | 0.060 | 11 | 33 | 0.123 |
| 12:00 - 13:00 | 11 | 33 | 0.087 | 11 | 33 | 0.093 | 11 | 33 | 0.180 |
| 13:00 - 14:00 | 11 | 33 | 0.090 | 11 | 33 | 0.079 | 11 | 33 | 0.169 |
| 14:00 - 15:00 | 11 | 33 | 0.079 | 11 | 33 | 0.076 | 11 | 33 | 0.155 |
| 15:00 - 16:00 | 11 | 33 | 0.095 | 11 | 33 | 0.079 | 11 | 33 | 0.174 |
| 16:00 - 17:00 | 11 | 33 | 0.117 | 11 | 33 | 0.095 | 11 | 33 | 0.212 |
| 17:00 - 18:00 | 11 | 33 | 0.196 | 11 | 33 | 0.060 | 11 | 33 | 0.256 |
| 18:00 - 19:00 | 11 | 33 | 0.125 | 11 | 33 | 0.095 | 11 | 33 | 0.220 |
| 19:00 - 20:00 | | | | | | | | | |
| 20:00 - 21:00 | | | | | | | | | |
| 21:00 - 22:00 | | | | | | | | | |
| 22:00 - 23:00 | | | | | | | | | |
| 23:00 - 24:00 | | | | | | | | | |
| Total Rates: | | | 1.193 | | | 1.287 | | | 2.480 |

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.

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Parameter summary

| | |
|---|---------------------|
| Trip rate parameter range selected: | 14 - 84 (units:) |
| Survey date range: | 01/01/13 - 10/06/21 |
| Number of weekdays (Monday-Friday): | 11 |
| Number of Saturdays: | 0 |
| Number of Sundays: | 0 |
| Surveys automatically removed from selection: | 0 |
| Surveys manually removed from selection: | 27 |

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 shown. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

Calculation Reference: AUDIT-322901-211014-1002

TRIP RATE CALCULATION SELECTION PARAMETERS:

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

Selected regions and areas:

| | | |
|----|--------------------------------|--------|
| 02 | SOUTH EAST | |
| | EX ESSEX | 1 days |
| | WS WEST SUSSEX | 1 days |
| 03 | SOUTH WEST | |
| | DV DEVON | 1 days |
| 07 | YORKSHIRE & NORTH LINCOLNSHIRE | |
| | NY NORTH YORKSHIRE | 1 days |
| | SY SOUTH YORKSHIRE | 1 days |
| | WY WEST YORKSHIRE | 1 days |
| 09 | NORTH | |
| | DH DURHAM | 2 days |
| 11 | SCOTLAND | |
| | FA FALKIRK | 1 days |

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

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: No of Dwellings
 Actual Range: 21 to 197 (units:)
 Range Selected by User: 4 to 4334 (units:)

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/13 to 16/06/21

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

| | |
|-----------|--------|
| Monday | 4 days |
| Tuesday | 1 days |
| Wednesday | 2 days |
| Thursday | 2 days |

This data displays the number of selected surveys by day of the week.

Selected survey types:

| | |
|-----------------------|--------|
| Manual count | 9 days |
| Directional ATC Count | 0 days |

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaken using machines.

Selected Locations:

| | |
|--|---|
| Suburban Area (PPS6 Out of Centre) | 5 |
| Edge of Town | 2 |
| Neighbourhood Centre (PPS6 Local Centre) | 2 |

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

| | |
|------------------|---|
| Residential Zone | 9 |
|------------------|---|

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

C3 9 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS@.

Population within 500m Range:

All Surveys Included

Population within 1 mile:

| | |
|------------------|--------|
| 1,001 to 5,000 | 1 days |
| 5,001 to 10,000 | 2 days |
| 10,001 to 15,000 | 3 days |
| 15,001 to 20,000 | 1 days |
| 20,001 to 25,000 | 1 days |
| 25,001 to 50,000 | 1 days |

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

| | |
|--------------------|--------|
| 5,001 to 25,000 | 2 days |
| 75,001 to 100,000 | 2 days |
| 125,001 to 250,000 | 3 days |
| 250,001 to 500,000 | 2 days |

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

| | |
|------------|--------|
| 0.6 to 1.0 | 5 days |
| 1.1 to 1.5 | 4 days |

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

| | |
|-----|--------|
| Yes | 1 days |
| No | 8 days |

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

| | |
|-----------------|--------|
| No PTAL Present | 8 days |
| 2 Poor | 1 days |

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

- | | | | |
|---|---|-----------------|----------------------------|
| 1 | DH-03-A-01 SEMI DETACHED GREENFIELDS ROAD BISHOP AUCKLAND Suburban Area (PPS6 Out of Centre) Residential Zone Total No of Dwellings: 50 <i>Survey date: TUESDAY 28/03/17</i> | DURHAM | <i>Survey Type: MANUAL</i> |
| 2 | DH-03-A-02 MIXED HOUSES LEAZES LANE BISHOP AUCKLAND ST HELEN AUCKLAND Neighbourhood Centre (PPS6 Local Centre) Residential Zone Total No of Dwellings: 125 <i>Survey date: MONDAY 27/03/17</i> | DURHAM | <i>Survey Type: MANUAL</i> |
| 3 | DV-03-A-03 TERRACED & SEMI DETACHED LOWER BRAND LANE HONITON Suburban Area (PPS6 Out of Centre) Residential Zone Total No of Dwellings: 70 <i>Survey date: MONDAY 28/09/15</i> | DEVON | <i>Survey Type: MANUAL</i> |
| 4 | EX-03-A-02 DETACHED & SEMI -DETACHED MANOR ROAD CHIGWELL GRANGE HILL Edge of Town Residential Zone Total No of Dwellings: 97 <i>Survey date: MONDAY 27/11/17</i> | ESSEX | <i>Survey Type: MANUAL</i> |
| 5 | FA-03-A-01 SEMI -DETACHED/TERRACED MANDELA AVENUE FALKIRK Suburban Area (PPS6 Out of Centre) Residential Zone Total No of Dwellings: 37 <i>Survey date: THURSDAY 30/05/13</i> | FALKIRK | <i>Survey Type: MANUAL</i> |
| 6 | NY-03-A-08 TERRACED HOUSES NICHOLAS STREET YORK Suburban Area (PPS6 Out of Centre) Residential Zone Total No of Dwellings: 21 <i>Survey date: MONDAY 16/09/13</i> | NORTH YORKSHIRE | <i>Survey Type: MANUAL</i> |
| 7 | SY-03-A-01 SEMI DETACHED HOUSES A19 BENTLEY ROAD DONCASTER BENTLEY RISE Suburban Area (PPS6 Out of Centre) Residential Zone Total No of Dwellings: 54 <i>Survey date: WEDNESDAY 18/09/13</i> | SOUTH YORKSHIRE | <i>Survey Type: MANUAL</i> |

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED

TOTAL VEHICLES

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

| Time Range | ARRIVALS | | | DEPARTURES | | | TOTALS | | |
|---------------|----------|-------------|-----------|------------|-------------|-----------|----------|-------------|-----------|
| | 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 | 9 | 77 | 0.037 | 9 | 77 | 0.189 | 9 | 77 | 0.226 |
| 08:00 - 09:00 | 9 | 77 | 0.089 | 9 | 77 | 0.275 | 9 | 77 | 0.364 |
| 09:00 - 10:00 | 9 | 77 | 0.145 | 9 | 77 | 0.148 | 9 | 77 | 0.293 |
| 10:00 - 11:00 | 9 | 77 | 0.090 | 9 | 77 | 0.123 | 9 | 77 | 0.213 |
| 11:00 - 12:00 | 9 | 77 | 0.106 | 9 | 77 | 0.100 | 9 | 77 | 0.206 |
| 12:00 - 13:00 | 9 | 77 | 0.122 | 9 | 77 | 0.079 | 9 | 77 | 0.201 |
| 13:00 - 14:00 | 9 | 77 | 0.113 | 9 | 77 | 0.109 | 9 | 77 | 0.222 |
| 14:00 - 15:00 | 9 | 77 | 0.089 | 9 | 77 | 0.162 | 9 | 77 | 0.251 |
| 15:00 - 16:00 | 9 | 77 | 0.189 | 9 | 77 | 0.102 | 9 | 77 | 0.291 |
| 16:00 - 17:00 | 9 | 77 | 0.172 | 9 | 77 | 0.102 | 9 | 77 | 0.274 |
| 17:00 - 18:00 | 9 | 77 | 0.211 | 9 | 77 | 0.070 | 9 | 77 | 0.281 |
| 18:00 - 19:00 | 9 | 77 | 0.172 | 9 | 77 | 0.119 | 9 | 77 | 0.291 |
| 19:00 - 20:00 | 1 | 97 | 0.062 | 1 | 97 | 0.052 | 1 | 97 | 0.114 |
| 20:00 - 21:00 | 1 | 97 | 0.031 | 1 | 97 | 0.021 | 1 | 97 | 0.052 |
| 21:00 - 22:00 | | | | | | | | | |
| 22:00 - 23:00 | | | | | | | | | |
| 23:00 - 24:00 | | | | | | | | | |
| Total Rates: | | | 1.628 | | | 1.651 | | | 3.279 |

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.

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Parameter summary

| | |
|---|---------------------|
| Trip rate parameter range selected: | 21 - 197 (units:) |
| Survey date range: | 01/01/13 - 16/06/21 |
| Number of weekdays (Monday-Friday): | 9 |
| Number of Saturdays: | 0 |
| Number of Sundays: | 0 |
| Surveys automatically removed from selection: | 0 |
| Surveys manually removed from selection: | 32 |

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 shown. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

Calculation Reference: AUDIT-322901-210928-0915

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 05 - HEALTH
 Category : F - CARE HOME (ELDERLY RESIDENTIAL)
 TOTAL VEHICLES

Selected regions and areas:

| | | |
|----|--|--------|
| 02 | SOUTH EAST HC HAMPSHIRE | 1 days |
| 07 | YORKSHIRE & NORTH LINCOLNSHIRE NY NORTH YORKSHIRE | 1 days |
| 11 | SCOTLAND SR STIRLING | 1 days |
| 12 | CONNAUGHT CS SLIGO | 1 days |
| 15 | GREATER DUBLIN DL DUBLIN | 1 days |

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

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Number of residents
 Actual Range: 16 to 99 (units:)
 Range Selected by User: 16 to 180 (units:)

Parking Spaces Range: All Surveys Included

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/13 to 02/05/19

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

| | |
|-----------|--------|
| Monday | 2 days |
| Tuesday | 2 days |
| Wednesday | 1 days |

This data displays the number of selected surveys by day of the week.

Selected survey types:

| | |
|-----------------------|--------|
| Manual count | 5 days |
| Directional ATC Count | 0 days |

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaken using machines.

Selected Locations:

| | |
|------------------------------------|---|
| Suburban Area (PPS6 Out of Centre) | 2 |
| Edge of Town | 3 |

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

| | |
|------------------|---|
| Residential Zone | 4 |
| No Sub Category | 1 |

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

C2 5 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 500m Range:

All Surveys Included

Population within 1 mile:

5,001 to 10,000 4 days

10,001 to 15,000 1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to 25,000 1 days

25,001 to 50,000 3 days

250,001 to 500,000 1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

1.1 to 1.5 5 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes 1 days

No 4 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present 5 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

| | | | |
|---|---|--------------|----------------------------|
| 1 | CS-05-F-01 CHURCH HILL SLIGO | NURSING HOME | SLIGO |
| | Edge of Town Residential Zone Total Number of residents: 99 <i>Survey date: MONDAY 27/04/15</i> | | <i>Survey Type: MANUAL</i> |
| 2 | DL-05-F-01 MOUNT ANVILLE PARK DUBLIN GOATSTOWN | NURSING HOME | DUBLIN |
| | Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of residents: 16 <i>Survey date: TUESDAY 05/09/17</i> | | <i>Survey Type: MANUAL</i> |
| 3 | HC-05-F-01 BOTLEY ROAD SOUTHAMPTON | CARE HOME | HAMPSHIRE |
| | Edge of Town No Sub Category Total Number of residents: 42 <i>Survey date: TUESDAY 24/11/15</i> | | <i>Survey Type: MANUAL</i> |
| 4 | NY-05-F-05 SEAGRIM CRESCENT RICHMOND | NURSING HOME | NORTH YORKSHIRE |
| | Edge of Town Residential Zone Total Number of residents: 37 <i>Survey date: MONDAY 04/03/19</i> | | <i>Survey Type: MANUAL</i> |
| 5 | SR-05-F-01 PERTH ROAD DUNBLANE | NURSING HOME | STIRLING |
| | Suburban Area (PPS6 Out of Centre) Residential Zone Total Number of residents: 60 <i>Survey date: WEDNESDAY 18/06/14</i> | | <i>Survey Type: MANUAL</i> |

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

| Site Ref | Reason for Deselection |
|------------|------------------------|
| DS-05-F-01 | public transport |
| ES-05-F-02 | public transport |
| EX-05-F-01 | public transport |
| GM-05-F-03 | public transport |
| HF-05-F-02 | public transport |
| LC-05-F-02 | public transport |
| NT-05-F-02 | public transport |
| SF-05-F-01 | public transport |
| SW-05-F-01 | public transport |
| TW-05-F-03 | public transport |

TRIP RATE for Land Use 05 - HEALTH/F - CARE HOME (ELDERLY RESIDENTIAL)

TOTAL VEHICLES

Calculation factor: 1 RESIDE

BOLD print indicates peak (busiest) period

| Time Range | ARRIVALS | | | DEPARTURES | | | TOTALS | | |
|---------------|----------|-------------|-----------|------------|-------------|-----------|----------|-------------|-----------|
| | No. Days | Ave. RESIDE | Trip Rate | No. Days | Ave. RESIDE | Trip Rate | No. Days | Ave. RESIDE | 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 | 5 | 51 | 0.177 | 5 | 51 | 0.039 | 5 | 51 | 0.216 |
| 08:00 - 09:00 | 5 | 51 | 0.075 | 5 | 51 | 0.083 | 5 | 51 | 0.158 |
| 09:00 - 10:00 | 5 | 51 | 0.169 | 5 | 51 | 0.067 | 5 | 51 | 0.236 |
| 10:00 - 11:00 | 5 | 51 | 0.201 | 5 | 51 | 0.094 | 5 | 51 | 0.295 |
| 11:00 - 12:00 | 5 | 51 | 0.146 | 5 | 51 | 0.157 | 5 | 51 | 0.303 |
| 12:00 - 13:00 | 5 | 51 | 0.110 | 5 | 51 | 0.169 | 5 | 51 | 0.279 |
| 13:00 - 14:00 | 5 | 51 | 0.220 | 5 | 51 | 0.189 | 5 | 51 | 0.409 |
| 14:00 - 15:00 | 5 | 51 | 0.197 | 5 | 51 | 0.295 | 5 | 51 | 0.492 |
| 15:00 - 16:00 | 5 | 51 | 0.193 | 5 | 51 | 0.197 | 5 | 51 | 0.390 |
| 16:00 - 17:00 | 5 | 51 | 0.091 | 5 | 51 | 0.205 | 5 | 51 | 0.296 |
| 17:00 - 18:00 | 5 | 51 | 0.083 | 5 | 51 | 0.130 | 5 | 51 | 0.213 |
| 18:00 - 19:00 | 5 | 51 | 0.071 | 5 | 51 | 0.091 | 5 | 51 | 0.162 |
| 19:00 - 20:00 | 4 | 39 | 0.032 | 4 | 39 | 0.058 | 4 | 39 | 0.090 |
| 20:00 - 21:00 | 4 | 39 | 0.058 | 4 | 39 | 0.052 | 4 | 39 | 0.110 |
| 21:00 - 22:00 | | | | | | | | | |
| 22:00 - 23:00 | | | | | | | | | |
| 23:00 - 24:00 | | | | | | | | | |
| Total Rates: | | | 1.823 | | | 1.826 | | | 3.649 |

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.

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Parameter summary

Trip rate parameter range selected: 16 - 99 (units:)
 Survey date range: 01/01/13 - 02/05/19
 Number of weekdays (Monday-Friday): 5
 Number of Saturdays: 0
 Number of Sundays: 0
 Surveys automatically removed from selection: 0
 Surveys manually removed from selection: 10

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 shown. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

Calculation Reference: AUDIT-322901-210928-0901

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 05 - HEALTH
 Category : E - CLINICS
 TOTAL VEHICLES

Selected regions and areas:

| | | |
|----|-----------------|--------|
| 06 | WEST MIDLANDS | |
| | WK WARWICKSHIRE | 1 days |
| 14 | LEINSTER | |
| | KK KILKENNY | 1 days |

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

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Gross floor area
 Actual Range: 210 to 1720 (units: sqm)
 Range Selected by User: 17 to 4000 (units: sqm)

Parking Spaces Range: All Surveys Included

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/13 to 26/11/19

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Friday 2 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count 2 days
 Directional ATC Count 0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaken using machines.

Selected Locations:

| | |
|------------------------------------|---|
| Suburban Area (PPS6 Out of Centre) | 1 |
| Edge of Town | 1 |

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone 2

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

E(e) 2 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 500m Range:

All Surveys Included

Secondary Filtering selection (Cont.):

Population within 1 mile:

| | |
|------------------|--------|
| 1,001 to 5,000 | 1 days |
| 10,001 to 15,000 | 1 days |

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

| | |
|------------------|--------|
| 5,000 or Less | 1 days |
| 50,001 to 75,000 | 1 days |

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

| | |
|------------|--------|
| 0.6 to 1.0 | 1 days |
| 1.1 to 1.5 | 1 days |

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

| | |
|----|--------|
| No | 2 days |
|----|--------|

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

| | |
|-----------------|--------|
| No PTAL Present | 2 days |
|-----------------|--------|

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

- | | | | |
|---|---|-------------------------|----------------------------|
| 1 | KK-05-E-01 CLONMEL ROAD CALLAN | PHYSICAL THERAPY CLINIC | KILKENNY |
| | Suburban Area (PPS6 Out of Centre) Residential Zone Total Gross floor area: 1720 sqm <i>Survey date: FRIDAY 27/10/17</i> | | <i>Survey Type: MANUAL</i> |
| 2 | WK-05-E-01 ALCESTER ROAD STRATFORD-UPON-AVON | CHIROPRACTIC CLINIC | WARWICKSHIRE |
| | Edge of Town Residential Zone Total Gross floor area: 310 sqm <i>Survey date: FRIDAY 29/06/18</i> | | <i>Survey Type: MANUAL</i> |

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

| Site Ref | Reason for Deselection |
|------------|------------------------|
| AD-05-E-01 | public transport |
| MS-05-E-01 | public transport |
| NF-05-E-01 | public transport |
| NF-05-E-02 | public transport |
| WL-05-E-01 | public transport |

MANUALLY DESELECTED SURVEYS

| Site Ref | Survey Date | Reason for Deselection |
|------------|-------------|------------------------|
| LN-05-E-02 | 10/06/13 | Public transport |

TRIP RATE for Land Use 05 - HEALTH/E - CLINICS

TOTAL VEHICLES

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

| Time Range | ARRIVALS | | | DEPARTURES | | | TOTALS | | |
|---------------------|----------|----------|--------------|------------|----------|--------------|----------|----------|--------------|
| | 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 | | | | | | | | | |
| 07:00 - 08:00 | 1 | 1720 | 0.058 | 1 | 1720 | 0.116 | 1 | 1720 | 0.174 |
| 08:00 - 09:00 | 2 | 1015 | 0.246 | 2 | 1015 | 0.000 | 2 | 1015 | 0.246 |
| 09:00 - 10:00 | 2 | 1015 | 0.493 | 2 | 1015 | 0.246 | 2 | 1015 | 0.739 |
| 10:00 - 11:00 | 2 | 1015 | 0.246 | 2 | 1015 | 0.443 | 2 | 1015 | 0.689 |
| 11:00 - 12:00 | 2 | 1015 | 0.246 | 2 | 1015 | 0.443 | 2 | 1015 | 0.689 |
| 12:00 - 13:00 | 2 | 1015 | 0.345 | 2 | 1015 | 0.099 | 2 | 1015 | 0.444 |
| 13:00 - 14:00 | 2 | 1015 | 0.246 | 2 | 1015 | 0.296 | 2 | 1015 | 0.542 |
| 14:00 - 15:00 | 2 | 1015 | 0.493 | 2 | 1015 | 0.542 | 2 | 1015 | 1.035 |
| 15:00 - 16:00 | 2 | 1015 | 0.345 | 2 | 1015 | 0.296 | 2 | 1015 | 0.641 |
| 16:00 - 17:00 | 2 | 1015 | 0.049 | 2 | 1015 | 0.197 | 2 | 1015 | 0.246 |
| 17:00 - 18:00 | 2 | 1015 | 0.296 | 2 | 1015 | 0.197 | 2 | 1015 | 0.493 |
| 18:00 - 19:00 | 2 | 1015 | 0.197 | 2 | 1015 | 0.296 | 2 | 1015 | 0.493 |
| 19:00 - 20:00 | 2 | 1015 | 0.049 | 2 | 1015 | 0.099 | 2 | 1015 | 0.148 |
| 20:00 - 21:00 | | | | | | | | | |
| 21:00 - 22:00 | | | | | | | | | |
| 22:00 - 23:00 | | | | | | | | | |
| 23:00 - 24:00 | | | | | | | | | |
| Total Rates: | | | 3.309 | | | 3.270 | | | 6.579 |

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.

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Parameter summary

| | |
|---|-------------------------|
| Trip rate parameter range selected: | 210 - 1720 (units: sqm) |
| Survey date range: | 01/01/13 - 26/11/19 |
| Number of weekdays (Monday-Friday): | 3 |
| Number of Saturdays: | 0 |
| Number of Sundays: | 0 |
| Surveys automatically removed from selection: | 1 |
| Surveys manually removed from selection: | 5 |

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 shown. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

Calculation Reference: AUDIT-322901-210928-0944

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT
 Category : B - BUSINESS PARK
 TOTAL VEHICLES

Selected regions and areas:

| | | |
|----|--|--------|
| 06 | WEST MIDLANDS WO WORCESTERSHIRE | 1 days |
| 08 | NORTH WEST GM GREATER MANCHESTER | 1 days |
| 14 | LEINSTER LU LOUTH | 1 days |
| 15 | GREATER DUBLIN DL DUBLIN | 1 days |
| 16 | ULSTER (REPUBLIC OF IRELAND) DN DONEGAL | 1 days |

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

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Parking spaces
 Actual Range: 60 to 750 (units:)
 Range Selected by User: 7 to 4167 (units:)

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/13 to 21/11/19

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

| | |
|-----------|--------|
| Monday | 1 days |
| Tuesday | 1 days |
| Wednesday | 1 days |
| Thursday | 1 days |
| Friday | 1 days |

This data displays the number of selected surveys by day of the week.

Selected survey types:

| | |
|-----------------------|--------|
| Manual count | 5 days |
| Directional ATC Count | 0 days |

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaken using machines.

Selected Locations:

| | |
|--|---|
| Suburban Area (PPS6 Out of Centre) | 1 |
| Edge of Town | 3 |
| Neighbourhood Centre (PPS6 Local Centre) | 1 |

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

| | |
|-----------------|---|
| Industrial Zone | 1 |
| Commercial Zone | 2 |
| Village | 1 |
| No Sub Category | 1 |

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

Not Known 5 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Filter by Site Operations Breakdown:

All Surveys Included

Population within 500m Range:

All Surveys Included

Population within 1 mile:

| | |
|------------------|--------|
| 5,001 to 10,000 | 1 days |
| 10,001 to 15,000 | 2 days |
| 20,001 to 25,000 | 1 days |
| 25,001 to 50,000 | 1 days |

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

| | |
|-------------------|--------|
| 5,001 to 25,000 | 1 days |
| 25,001 to 50,000 | 1 days |
| 50,001 to 75,000 | 1 days |
| 75,001 to 500,000 | 2 days |

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

| | |
|------------|--------|
| 0.6 to 1.0 | 2 days |
| 1.1 to 1.5 | 3 days |

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling within a radius of 5-miles of selected survey sites.

Travel Plan:

| | |
|-----|--------|
| Yes | 1 days |
| No | 4 days |

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

| | |
|-----------------|--------|
| No PTAL Present | 5 days |
|-----------------|--------|

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

| | | | |
|---|--|---------------|---------------------|
| 1 | DL-02-B-07 | BUSINESS PARK | DUBLIN |
| | BURTON HALL AVENUE | | |
| | DUBLIN | | |
| | LEOPARDSTOWN | | |
| | Edge of Town | | |
| | Commercial Zone | | |
| | Total Parking spaces: | 174 | |
| | Survey date: WEDNESDAY | 01/10/14 | Survey Type: MANUAL |
| 2 | DN-02-B-02 | BUSINESS PARK | DONEGAL |
| | N56 | | |
| | LETTERKENNY | | |
| | KNOCKNAMONA | | |
| | Edge of Town | | |
| | No Sub Category | | |
| | Total Parking spaces: | 750 | |
| | Survey date: MONDAY | 29/09/14 | Survey Type: MANUAL |
| 3 | GM-02-B-04 | BUSINESS PARK | GREATER MANCHESTER |
| | SALMON FIELDS | | |
| | OLDHAM | | |
| | Suburban Area (PPS6 Out of Centre) | | |
| | Industrial Zone | | |
| | Total Parking spaces: | 92 | |
| | Survey date: THURSDAY | 22/10/15 | Survey Type: MANUAL |
| 4 | LU-02-B-01 | BUSINESS PARK | LOUTH |
| | N52 | | |
| | DUNDALK | | |
| | Edge of Town | | |
| | Commercial Zone | | |
| | Total Parking spaces: | 193 | |
| | Survey date: FRIDAY | 13/09/13 | Survey Type: MANUAL |
| 5 | WO-02-B-02 | BUSINESS PARK | WORCESTERSHIRE |
| | BIRMINGHAM ROAD | | |
| | NEAR BROMSGROVE | | |
| | LICKEY END | | |
| | Neighbourhood Centre (PPS6 Local Centre) | | |
| | Village | | |
| | Total Parking spaces: | 233 | |
| | Survey date: TUESDAY | 26/06/18 | Survey Type: MANUAL |

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

| Site Ref | Reason for Deselection |
|------------|------------------------|
| AD-02-B-02 | public transport |
| AN-02-B-02 | public transport |
| AN-02-B-03 | public transport |
| AN-02-B-04 | public transport |
| CA-02-B-02 | public transport |
| CF-02-B-04 | public transport |
| CF-02-B-05 | public transport |
| CF-02-B-06 | public transport |
| CH-02-B-01 | public transport |
| CR-02-B-01 | public transport |
| DL-02-B-06 | public transport |
| DL-02-B-08 | public transport |
| DV-02-B-01 | public transport |
| EX-02-B-01 | public transport |
| EX-02-B-02 | public transport |
| FA-02-B-02 | public transport |
| FI-02-B-01 | public transport |
| HC-02-B-02 | public transport |
| LN-02-B-02 | public transport |
| ST-02-B-04 | public transport |
| TW-02-B-05 | public transport |
| TW-02-B-06 | public transport |
| WG-02-B-02 | public transport |

MANUALLY DESELECTED SITES (Cont.)

| Site Ref | Reason for Deselection |
|------------|------------------------|
| WK-02-B-01 | public transport |
| WM-02-B-02 | public transport |
| WM-02-B-03 | public transport |
| WY-02-B-01 | public transport |
| WY-02-B-02 | public transport |
| WY-02-B-03 | public transport |

MANUALLY DESELECTED SURVEYS

| Site Ref | Survey Date | Reason for Deselection |
|------------|-------------|------------------------|
| AN-02-B-01 | 27/11/14 | Public Transport |
| CF-02-B-07 | 13/03/18 | Public Transport |
| CF-02-B-08 | 14/10/19 | Public Transport |
| WY-02-B-03 | 15/09/16 | Public Transport |

TRIP RATE for Land Use 02 - EMPLOYMENT/B - BUSINESS PARK

TOTAL VEHICLES

Calculation factor: 1 PARKING SPACES

BOLD print indicates peak (busiest) period

| Time Range | ARRIVALS | | | DEPARTURES | | | TOTALS | | |
|---------------|----------|--------------|--------------|------------|--------------|--------------|----------|--------------|--------------|
| | No. Days | Ave. PARKING | Trip Rate | No. Days | Ave. PARKING | Trip Rate | No. Days | Ave. PARKING | Trip Rate |
| 00:00 - 00:30 | | | | | | | | | |
| 00:30 - 01:00 | | | | | | | | | |
| 01:00 - 01:30 | | | | | | | | | |
| 01:30 - 02:00 | | | | | | | | | |
| 02:00 - 02:30 | | | | | | | | | |
| 02:30 - 03:00 | | | | | | | | | |
| 03:00 - 03:30 | | | | | | | | | |
| 03:30 - 04:00 | | | | | | | | | |
| 04:00 - 04:30 | | | | | | | | | |
| 04:30 - 05:00 | | | | | | | | | |
| 05:00 - 05:30 | | | | | | | | | |
| 05:30 - 06:00 | | | | | | | | | |
| 06:00 - 06:30 | | | | | | | | | |
| 06:30 - 07:00 | | | | | | | | | |
| 07:00 - 07:30 | 5 | 288 | 0.064 | 5 | 288 | 0.008 | 5 | 288 | 0.072 |
| 07:30 - 08:00 | 5 | 288 | 0.128 | 5 | 288 | 0.014 | 5 | 288 | 0.142 |
| 08:00 - 08:30 | 5 | 288 | 0.181 | 5 | 288 | 0.019 | 5 | 288 | 0.200 |
| 08:30 - 09:00 | 5 | 288 | 0.186 | 5 | 288 | 0.023 | 5 | 288 | 0.209 |
| 09:00 - 09:30 | 5 | 288 | 0.097 | 5 | 288 | 0.022 | 5 | 288 | 0.119 |
| 09:30 - 10:00 | 5 | 288 | 0.054 | 5 | 288 | 0.021 | 5 | 288 | 0.075 |
| 10:00 - 10:30 | 5 | 288 | 0.031 | 5 | 288 | 0.019 | 5 | 288 | 0.005 |
| 10:30 - 11:00 | 5 | 288 | 0.024 | 5 | 288 | 0.002 | 5 | 288 | 0.044 |
| 11:00 - 11:30 | 5 | 288 | 0.024 | 5 | 288 | 0.022 | 5 | 288 | 0.046 |
| 11:30 - 12:00 | 5 | 288 | 0.024 | 5 | 288 | 0.028 | 5 | 288 | 0.052 |
| 12:00 - 12:30 | 5 | 288 | 0.029 | 5 | 288 | 0.047 | 5 | 288 | 0.076 |
| 12:30 - 13:00 | 5 | 288 | 0.038 | 5 | 288 | 0.047 | 5 | 288 | 0.085 |
| 13:00 - 13:30 | 5 | 288 | 0.042 | 5 | 288 | 0.044 | 5 | 288 | 0.086 |
| 13:30 - 14:00 | 5 | 288 | 0.041 | 5 | 288 | 0.029 | 5 | 288 | 0.070 |
| 14:00 - 14:30 | 5 | 288 | 0.032 | 5 | 288 | 0.030 | 5 | 288 | 0.062 |
| 14:30 - 15:00 | 5 | 288 | 0.021 | 5 | 288 | 0.033 | 5 | 288 | 0.054 |
| 15:00 - 15:30 | 5 | 288 | 0.018 | 5 | 288 | 0.005 | 5 | 288 | 0.068 |
| 15:30 - 16:00 | 5 | 288 | 0.019 | 5 | 288 | 0.057 | 5 | 288 | 0.076 |
| 16:00 - 16:30 | 5 | 288 | 0.017 | 5 | 288 | 0.008 | 5 | 288 | 0.097 |
| 16:30 - 17:00 | 5 | 288 | 0.017 | 5 | 288 | 0.100 | 5 | 288 | 0.117 |
| 17:00 - 17:30 | 5 | 288 | 0.014 | 5 | 288 | 0.147 | 5 | 288 | 0.161 |
| 17:30 - 18:00 | 5 | 288 | 0.011 | 5 | 288 | 0.129 | 5 | 288 | 0.140 |
| 18:00 - 18:30 | 5 | 288 | 0.008 | 5 | 288 | 0.088 | 5 | 288 | 0.096 |
| 18:30 - 19:00 | 5 | 288 | 0.006 | 5 | 288 | 0.054 | 5 | 288 | 0.060 |
| 19:00 - 19:30 | | | | | | | | | |
| 19:30 - 20:00 | | | | | | | | | |
| 20:00 - 20:30 | | | | | | | | | |
| 20:30 - 21:00 | | | | | | | | | |
| 21:00 - 21:30 | | | | | | | | | |
| 21:30 - 22:00 | | | | | | | | | |
| 22:00 - 22:30 | | | | | | | | | |
| 22:30 - 23:00 | | | | | | | | | |
| 23:00 - 23:30 | | | | | | | | | |
| 23:30 - 24:00 | | | | | | | | | |
| Total Rates: | | | 1.126 | | | 1.131 | | | 2.257 |

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.

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Parameter summary

| | |
|---|---------------------|
| Trip rate parameter range selected: | 60 - 750 (units:) |
| Survey date date range: | 01/01/13 - 21/11/19 |
| Number of weekdays (Monday-Friday): | 9 |
| Number of Saturdays: | 0 |
| Number of Sundays: | 0 |
| Surveys automatically removed from selection: | 4 |
| Surveys manually removed from selection: | 29 |

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.

Calculation Reference: AUDIT-322901-210705-0718

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 07 - LEISURE
 Category : W - THEATRE
 TOTAL VEHICLES

Selected regions and areas:

| | | |
|----|----------------|--------|
| 02 | SOUTH EAST | |
| | WS WEST SUSSEX | 1 days |
| 12 | CONNAUGHT | |
| | CS SLIGO | 1 days |

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

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Number of seats
 Actual Range: 100 to 815 (units:)
 Range Selected by User: 100 to 1915 (units:)

Parking Spaces Range: All Surveys Included

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/93 to 25/10/13

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

| | |
|-----------|--------|
| Wednesday | 1 days |
| Friday | 1 days |

This data displays the number of selected surveys by day of the week.

Selected survey types:

| | |
|-----------------------|--------|
| Manual count | 2 days |
| Directional ATC Count | 0 days |

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaken using machines.

Selected Locations:

| | |
|---------------------|---|
| Town Centre | 1 |
| Edge of Town Centre | 1 |

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

| | |
|---------------|---|
| Built-Up Zone | 2 |
|---------------|---|

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

| | |
|-------------|--------|
| Sui Generis | 2 days |
|-------------|--------|

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 500m Range:

All Surveys Included

Secondary Filtering selection (Cont.):

Population within 1 mile:

| | |
|------------------|--------|
| Not Known | 1 days |
| 10,001 to 15,000 | 1 days |

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

| | |
|-----------------|--------|
| Not Known | 1 days |
| 5,001 to 25,000 | 1 days |

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

| | |
|------------|--------|
| 1.1 to 1.5 | 2 days |
|------------|--------|

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

| | |
|-----------|--------|
| Not Known | 1 days |
| No | 1 days |

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

| | |
|-----------------|--------|
| No PTAL Present | 2 days |
|-----------------|--------|

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

- | | | |
|---|--|----------------------------|
| 1 | CS-07-W-01 THEATRE LOWER QUAY STREET SLIGO | SLIGO |
| | Town Centre Built-Up Zone Total Number of seats: 100 <i>Survey date: FRIDAY 25/10/13</i> | <i>Survey Type: MANUAL</i> |
| 2 | WS-07-W-01 THEATRE HAWTH AVENUE CRAWLEY | WEST SUSSEX |
| | Edge of Town Centre Built-Up Zone Total Number of seats: 815 <i>Survey date: WEDNESDAY 28/04/93</i> | <i>Survey Type: MANUAL</i> |

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

| Site Ref | Reason for Deselection |
|------------|------------------------|
| AG-07-W-01 | public transport |
| DE-07-W-01 | public transport |
| NF-07-W-01 | public transport |
| NY-07-W-01 | public transport |
| SY-07-W-01 | public transport |
| WK-07-W-01 | public transport |
| WK-07-W-02 | public transport |

TRIP RATE for Land Use 07 - LEISURE/W - THEATRE

TOTAL VEHICLES

Calculation factor: 1 SEATS

BOLD print indicates peak (busiest) period

| Time Range | ARRIVALS | | | DEPARTURES | | | TOTALS | | |
|---------------------|----------|------------|-----------|------------|------------|-----------|----------|------------|-----------|
| | No. Days | Ave. SEATS | Trip Rate | No. Days | Ave. SEATS | Trip Rate | No. Days | Ave. SEATS | 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 | | | | | | | | | |
| 08:00 - 09:00 | 1 | 100 | 0.030 | 1 | 100 | 0.010 | 1 | 100 | 0.040 |
| 09:00 - 10:00 | 1 | 100 | 0.000 | 1 | 100 | 0.020 | 1 | 100 | 0.020 |
| 10:00 - 11:00 | 1 | 100 | 0.000 | 1 | 100 | 0.000 | 1 | 100 | 0.000 |
| 11:00 - 12:00 | 1 | 100 | 0.000 | 1 | 100 | 0.000 | 1 | 100 | 0.000 |
| 12:00 - 13:00 | 1 | 100 | 0.000 | 1 | 100 | 0.000 | 1 | 100 | 0.000 |
| 13:00 - 14:00 | 1 | 100 | 0.000 | 1 | 100 | 0.000 | 1 | 100 | 0.000 |
| 14:00 - 15:00 | 1 | 100 | 0.060 | 1 | 100 | 0.030 | 1 | 100 | 0.090 |
| 15:00 - 16:00 | 1 | 100 | 0.020 | 1 | 100 | 0.010 | 1 | 100 | 0.030 |
| 16:00 - 17:00 | 1 | 100 | 0.090 | 1 | 100 | 0.080 | 1 | 100 | 0.170 |
| 17:00 - 18:00 | 1 | 100 | 0.000 | 1 | 100 | 0.010 | 1 | 100 | 0.010 |
| 18:00 - 19:00 | 2 | 458 | 0.133 | 2 | 458 | 0.027 | 2 | 458 | 0.160 |
| 19:00 - 20:00 | 2 | 458 | 0.328 | 2 | 458 | 0.045 | 2 | 458 | 0.373 |
| 20:00 - 21:00 | 2 | 458 | 0.019 | 2 | 458 | 0.012 | 2 | 458 | 0.031 |
| 21:00 - 22:00 | 1 | 100 | 0.000 | 1 | 100 | 0.150 | 1 | 100 | 0.150 |
| 22:00 - 23:00 | 1 | 100 | 0.000 | 1 | 100 | 0.020 | 1 | 100 | 0.020 |
| 23:00 - 24:00 | | | | | | | | | |
| Total Rates: | | | 0.680 | | | 0.414 | | | 1.094 |

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.*

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Parameter summary

| | |
|---|---------------------|
| Trip rate parameter range selected: | 100 - 815 (units:) |
| Survey date range: | 01/01/93 - 25/10/13 |
| Number of weekdays (Monday-Friday): | 2 |
| Number of Saturdays: | 0 |
| Number of Sundays: | 0 |
| Surveys automatically removed from selection: | 0 |
| Surveys manually removed from selection: | 7 |

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 shown. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

Calculation Reference: AUDIT-322901-210705-0731

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 07 - LEISURE
 Category : I - ART GALLERIES/MUSEUMS/EXHIBITIONS
 TOTAL VEHICLES

Selected regions and areas:

| | | |
|----|------------------------------|--------|
| 13 | MUNSTER | |
| | CR CORK | 1 days |
| 16 | ULSTER (REPUBLIC OF IRELAND) | |
| | DN DONEGAL | 1 days |

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

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Gross floor area
 Actual Range: 200 to 10880 (units: sqm)
 Range Selected by User: 200 to 22662 (units: sqm)

Parking Spaces Range: All Surveys Included

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/00 to 23/11/19

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

| | |
|-----------|--------|
| Wednesday | 1 days |
| Thursday | 1 days |

This data displays the number of selected surveys by day of the week.

Selected survey types:

| | |
|-----------------------|--------|
| Manual count | 2 days |
| Directional ATC Count | 0 days |

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaken using machines.

Selected Locations:

| | |
|---------------------|---|
| Town Centre | 1 |
| Edge of Town Centre | 1 |

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

| | |
|---------------|---|
| Built-Up Zone | 1 |
| High Street | 1 |

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

| | |
|-------|--------|
| F1(c) | 2 days |
|-------|--------|

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 500m Range:

All Surveys Included

Secondary Filtering selection (Cont.):

Population within 1 mile:

| | |
|------------------|--------|
| 1,001 to 5,000 | 1 days |
| 15,001 to 20,000 | 1 days |

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

| | |
|-------------------|--------|
| 5,001 to 25,000 | 1 days |
| 75,001 to 100,000 | 1 days |

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

| | |
|------------|--------|
| 0.6 to 1.0 | 1 days |
| 1.1 to 1.5 | 1 days |

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

| | |
|----|--------|
| No | 2 days |
|----|--------|

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

| | |
|-----------------|--------|
| No PTAL Present | 2 days |
|-----------------|--------|

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

| | | | |
|---|------------|-------------------------|---------------------|
| 1 | CR-07-I-01 | CORK BUTTER MUSEUM | CORK |
| | | JOHN REDMOND STREET | |
| | | CORK | |
| | | SHANDON | |
| | | Town Centre | |
| | | Built-Up Zone | |
| | | Total Gross floor area: | 200 sqm |
| | | Survey date: THURSDAY | 25/06/09 |
| | | | Survey Type: MANUAL |
| 2 | DN-07-I-02 | COUNTY MUSEUM | DONEGAL |
| | | HIGH ROAD | |
| | | LETTERKENNY | |
| | | BALLYBOE GLENCAR | |
| | | Edge of Town Centre | |
| | | High Street | |
| | | Total Gross floor area: | 750 sqm |
| | | Survey date: WEDNESDAY | 10/10/18 |
| | | | Survey Type: MANUAL |

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

| Site Ref | Reason for Deselection |
|------------|------------------------|
| AD-07-I-01 | public transport |
| AD-07-I-02 | public transport |
| AD-07-I-03 | public transport |
| CF-07-I-01 | public transport |
| DC-07-I-02 | public transport |
| DS-07-I-01 | public transport |
| DU-07-I-01 | public transport |
| DU-07-I-02 | public transport |
| GC-07-I-02 | public transport |
| HI-07-I-01 | public transport |
| HI-07-I-02 | public transport |
| KH-07-I-01 | public transport |
| KH-07-I-02 | public transport |
| MS-07-I-01 | public transport |
| MS-07-I-02 | public transport |
| MS-07-I-03 | public transport |
| NR-07-I-01 | public transport |
| NY-07-I-01 | public transport |
| NY-07-I-02 | public transport |
| OX-07-I-01 | public transport |
| OX-07-I-01 | public transport |

MANUALLY DESELECTED SURVEYS

| Site Ref | Survey Date | Reason for Deselection |
|------------|-------------|------------------------|
| OX-07-I-01 | 11/06/03 | Public Transport |

TRIP RATE for Land Use 07 - LEISURE/I - ART GALLERIES/MUSEUMS/EXHIBITIONS

TOTAL VEHICLES

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

| Time Range | ARRIVALS | | | DEPARTURES | | | TOTALS | | |
|---------------------|----------|----------|-----------|------------|----------|-----------|----------|----------|-----------|
| | 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 | | | | | | | | | |
| 07:00 - 08:00 | | | | | | | | | |
| 08:00 - 09:00 | 1 | 200 | 0.000 | 1 | 200 | 0.000 | 1 | 200 | 0.000 |
| 09:00 - 10:00 | 2 | 475 | 0.211 | 2 | 475 | 0.105 | 2 | 475 | 0.316 |
| 10:00 - 11:00 | 2 | 475 | 0.105 | 2 | 475 | 0.105 | 2 | 475 | 0.210 |
| 11:00 - 12:00 | 2 | 475 | 0.000 | 2 | 475 | 0.105 | 2 | 475 | 0.105 |
| 12:00 - 13:00 | 2 | 475 | 0.211 | 2 | 475 | 0.000 | 2 | 475 | 0.211 |
| 13:00 - 14:00 | 2 | 475 | 0.105 | 2 | 475 | 0.211 | 2 | 475 | 0.316 |
| 14:00 - 15:00 | 2 | 475 | 0.316 | 2 | 475 | 0.211 | 2 | 475 | 0.527 |
| 15:00 - 16:00 | 2 | 475 | 0.421 | 2 | 475 | 0.211 | 2 | 475 | 0.632 |
| 16:00 - 17:00 | 2 | 475 | 0.105 | 2 | 475 | 0.526 | 2 | 475 | 0.631 |
| 17:00 - 18:00 | 2 | 475 | 0.000 | 2 | 475 | 0.105 | 2 | 475 | 0.105 |
| 18:00 - 19:00 | | | | | | | | | |
| 19:00 - 20:00 | | | | | | | | | |
| 20:00 - 21:00 | | | | | | | | | |
| 21:00 - 22:00 | | | | | | | | | |
| 22:00 - 23:00 | | | | | | | | | |
| 23:00 - 24:00 | | | | | | | | | |
| Total Rates: | | | 1.474 | | | 1.579 | | | 3.053 |

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.

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Parameter summary

| | |
|---|--------------------------|
| Trip rate parameter range selected: | 200 - 10880 (units: sqm) |
| Survey date range: | 01/01/00 - 23/11/19 |
| Number of weekdays (Monday-Friday): | 3 |
| Number of Saturdays: | 0 |
| Number of Sundays: | 0 |
| Surveys automatically removed from selection: | 1 |
| Surveys manually removed from selection: | 21 |

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 shown. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

Calculation Reference: AUDIT-322901-210705-0742

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 06 - HOTEL, FOOD & DRINK
 Category : A - HOTELS
 TOTAL VEHICLES

Selected regions and areas:

| | | |
|----|------------------|--------|
| 02 | SOUTH EAST | |
| | HC HAMPSHIRE | 2 days |
| | HF HERTFORDSHIRE | 1 days |
| 03 | SOUTH WEST | |
| | WL WILTSHIRE | 1 days |
| 09 | NORTH | |
| | DH DURHAM | 1 days |
| 11 | SCOTLAND | |
| | AG ANGUS | 1 days |
| | DU DUNDEE CITY | 1 days |
| | HI HIGHLAND | 1 days |
| 12 | CONNAUGHT | |
| | CS SLIGO | 1 days |
| 14 | LEINSTER | |
| | KK KILKENNY | 2 days |

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

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Number of bedrooms
 Actual Range: 4 to 156 (units:)
 Range Selected by User: 4 to 483 (units:)

Parking Spaces Range: All Surveys Included

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/00 to 26/11/20

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

| | |
|----------|--------|
| Tuesday | 3 days |
| Thursday | 6 days |
| Friday | 2 days |

This data displays the number of selected surveys by day of the week.

Selected survey types:

| | |
|-----------------------|---------|
| Manual count | 11 days |
| Directional ATC Count | 0 days |

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaken using machines.

Selected Locations:

| | |
|---------------------|---|
| Edge of Town Centre | 3 |
| Edge of Town | 8 |

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

| | |
|------------------|---|
| Commercial Zone | 1 |
| Development Zone | 1 |
| Residential Zone | 3 |
| Built-Up Zone | 1 |
| No Sub Category | 5 |

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

C1 11 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 500m Range:

All Surveys Included

Population within 1 mile:

| | |
|------------------|--------|
| 1,001 to 5,000 | 2 days |
| 5,001 to 10,000 | 4 days |
| 10,001 to 15,000 | 1 days |
| 15,001 to 20,000 | 4 days |

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

| | |
|--------------------|--------|
| 5,001 to 25,000 | 2 days |
| 25,001 to 50,000 | 2 days |
| 75,001 to 100,000 | 3 days |
| 100,001 to 125,000 | 1 days |
| 125,001 to 250,000 | 1 days |
| 250,001 to 500,000 | 2 days |

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

| | |
|-------------|--------|
| 0.5 or Less | 1 days |
| 0.6 to 1.0 | 3 days |
| 1.1 to 1.5 | 7 days |

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

| | |
|-----------|---------|
| Not Known | 1 days |
| No | 10 days |

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present 11 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

| | | | |
|---|--|---------------|----------------------------|
| 1 | AG-06-A-01 BOUTIQUE B&B CLIFFBURN ROAD ARBROATH HAYSHEAD Edge of Town Residential Zone Total Number of bedrooms: 4 <i>Survey date: TUESDAY 22/05/12</i> | ANGUS | <i>Survey Type: MANUAL</i> |
| 2 | CS-06-A-03 HOTEL STRANDHILL ROAD SLIGO Edge of Town Centre Built-Up Zone Total Number of bedrooms: 98 <i>Survey date: THURSDAY 31/10/13</i> | SLIGO | <i>Survey Type: MANUAL</i> |
| 3 | DH-06-A-01 PREMIER INN FREEMANS PLACE DURHAM MILLENNIUM PLACE Edge of Town Centre Development Zone Total Number of bedrooms: 103 <i>Survey date: THURSDAY 04/12/08</i> | DURHAM | <i>Survey Type: MANUAL</i> |
| 4 | DU-06-A-01 TRAVEL INN RIVERSIDE DRIVE DUNDEE DISCOVERY QUAY Edge of Town Centre No Sub Category Total Number of bedrooms: 40 <i>Survey date: TUESDAY 31/05/05</i> | DUNDEE CITY | <i>Survey Type: MANUAL</i> |
| 5 | HC-06-A-05 TRAVEL INN M27 WESTBOUND SOUTHAMPTON ROWNHAMS Edge of Town No Sub Category Total Number of bedrooms: 39 <i>Survey date: THURSDAY 18/07/02</i> | HAMPSHIRE | <i>Survey Type: MANUAL</i> |
| 6 | HC-06-A-06 HOTEL GRANGE ROAD SOUTHAMPTON HEDGE END Edge of Town No Sub Category Total Number of bedrooms: 56 <i>Survey date: THURSDAY 18/07/02</i> | HAMPSHIRE | <i>Survey Type: MANUAL</i> |
| 7 | HF-06-A-03 NOVOTEL A1(M) STEVENAGE KNEBORTH PARK Edge of Town No Sub Category Total Number of bedrooms: 100 <i>Survey date: THURSDAY 08/07/04</i> | HERTFORDSHIRE | <i>Survey Type: MANUAL</i> |
| 8 | HI-06-A-03 EXPRESS BY HOL.INN A96 INVERNESS STONEFIELD BUSINESS PK Edge of Town Commercial Zone Total Number of bedrooms: 94 <i>Survey date: THURSDAY 25/05/06</i> | HIGHLAND | <i>Survey Type: MANUAL</i> |
| 9 | KK-06-A-01 B&B CIRCULAR ROAD KILKENNY Edge of Town Residential Zone Total Number of bedrooms: 9 <i>Survey date: FRIDAY 21/11/08</i> | KILKENNY | <i>Survey Type: MANUAL</i> |

LIST OF SITES relevant to selection parameters (Cont.)

| | | | | |
|----|---|------------|-----------------|----------------------------|
| 10 | KK-06-A-02 COLLEGE ROAD KILKENNY | HOTEL | | KILKENNY |
| | Edge of Town Residential Zone Total Number of bedrooms: | | 138 | |
| | <i>Survey date: FRIDAY</i> | | <i>21/11/08</i> | <i>Survey Type: MANUAL</i> |
| 11 | WL-06-A-03 LAWRENCE HILL WINCANTON | TRAVELODGE | | WILTSHIRE |
| | Edge of Town No Sub Category Total Number of bedrooms: | | 57 | |
| | <i>Survey date: TUESDAY</i> | | <i>18/09/18</i> | <i>Survey Type: MANUAL</i> |

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

| Site Ref | Reason for Deselection |
|------------|------------------------|
| AN-06-A-02 | public transport |
| BU-06-A-01 | public transport |
| BU-06-A-02 | public transport |
| CA-06-A-01 | public transport |
| CA-06-A-02 | public transport |
| CA-06-A-03 | public transport |
| CF-06-A-02 | public transport |
| CF-06-A-03 | public transport |
| CF-06-A-05 | public transport |
| CR-06-A-01 | public transport |
| DL-06-A-01 | public transport |
| DL-06-A-02 | public transport |
| DL-06-A-03 | public transport |
| DL-06-A-05 | public transport |
| DL-06-A-06 | public transport |
| DL-06-A-07 | public transport |
| DO-06-A-01 | public transport |
| DS-06-A-01 | public transport |
| DV-06-A-02 | public transport |
| DV-06-A-03 | public transport |
| EB-06-A-01 | public transport |
| GC-06-A-02 | public transport |
| GM-06-A-06 | public transport |
| GM-06-A-07 | public transport |
| GS-06-A-01 | public transport |
| GS-06-A-02 | public transport |
| HF-06-A-02 | public transport |
| HI-06-A-05 | public transport |
| LC-06-A-04 | public transport |
| LE-06-A-01 | public transport |
| NF-06-A-04 | public transport |
| NT-06-A-01 | public transport |
| NT-06-A-02 | public transport |
| NY-06-A-01 | public transport |
| SW-06-A-01 | public transport |
| TV-06-A-02 | public transport |
| TW-06-A-01 | public transport |
| TW-06-A-02 | public transport |
| WM-06-A-03 | public transport |
| WM-06-A-04 | public transport |
| WO-06-A-02 | public transport |
| WO-06-A-03 | public transport |
| WS-06-A-02 | public transport |
| WS-06-A-03 | public transport |
| WY-06-A-01 | public transport |
| WY-06-A-02 | public transport |
| WY-06-A-03 | public transport |

MANUALLY DESELECTED SURVEYS

| Site Ref | Survey Date | Reason for Deselection |
|------------|-------------|------------------------|
| CF-06-A-01 | 21/10/02 | Public Transport |

TRIP RATE for Land Use 06 - HOTEL, FOOD & DRINK/A - HOTELS

TOTAL VEHICLES

Calculation factor: 1 BEDRMS

BOLD print indicates peak (busiest) period

| Time Range | ARRIVALS | | | DEPARTURES | | | TOTALS | | |
|---------------------|----------|-------------|-----------|------------|-------------|-----------|----------|-------------|-----------|
| | No. Days | Ave. BEDRMS | Trip Rate | No. Days | Ave. BEDRMS | Trip Rate | No. Days | Ave. BEDRMS | 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 | 10 | 70 | 0.104 | 10 | 70 | 0.144 | 10 | 70 | 0.248 |
| 08:00 - 09:00 | 11 | 67 | 0.156 | 11 | 67 | 0.176 | 11 | 67 | 0.332 |
| 09:00 - 10:00 | 11 | 67 | 0.179 | 11 | 67 | 0.210 | 11 | 67 | 0.389 |
| 10:00 - 11:00 | 11 | 67 | 0.149 | 11 | 67 | 0.222 | 11 | 67 | 0.371 |
| 11:00 - 12:00 | 11 | 67 | 0.150 | 11 | 67 | 0.188 | 11 | 67 | 0.338 |
| 12:00 - 13:00 | 11 | 67 | 0.198 | 11 | 67 | 0.182 | 11 | 67 | 0.380 |
| 13:00 - 14:00 | 11 | 67 | 0.154 | 11 | 67 | 0.173 | 11 | 67 | 0.327 |
| 14:00 - 15:00 | 11 | 67 | 0.179 | 11 | 67 | 0.190 | 11 | 67 | 0.369 |
| 15:00 - 16:00 | 11 | 67 | 0.168 | 11 | 67 | 0.157 | 11 | 67 | 0.325 |
| 16:00 - 17:00 | 11 | 67 | 0.213 | 11 | 67 | 0.186 | 11 | 67 | 0.399 |
| 17:00 - 18:00 | 11 | 67 | 0.283 | 11 | 67 | 0.192 | 11 | 67 | 0.475 |
| 18:00 - 19:00 | 11 | 67 | 0.183 | 11 | 67 | 0.141 | 11 | 67 | 0.324 |
| 19:00 - 20:00 | 9 | 71 | 0.132 | 9 | 71 | 0.128 | 9 | 71 | 0.260 |
| 20:00 - 21:00 | 9 | 71 | 0.104 | 9 | 71 | 0.098 | 9 | 71 | 0.202 |
| 21:00 - 22:00 | 7 | 64 | 0.107 | 7 | 64 | 0.156 | 7 | 64 | 0.263 |
| 22:00 - 23:00 | 2 | 72 | 0.098 | 2 | 72 | 0.133 | 2 | 72 | 0.231 |
| 23:00 - 24:00 | 1 | 40 | 0.025 | 1 | 40 | 0.000 | 1 | 40 | 0.025 |
| Total Rates: | | | 2.582 | | | 2.676 | | | 5.258 |

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.

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Parameter summary

| | |
|---|---------------------|
| Trip rate parameter range selected: | 4 - 156 (units:) |
| Survey date range: | 01/01/00 - 26/11/20 |
| Number of weekdays (Monday-Friday): | 12 |
| Number of Saturdays: | 0 |
| Number of Sundays: | 0 |
| Surveys automatically removed from selection: | 7 |
| Surveys manually removed from selection: | 47 |

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 shown. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

Appendix D **MAYNOOTH TRANSPORT STRATEGY SUBMISSION**

MAYNOOTH TRANSPORT STRATEGY SUBMISSION REPORT

MOYGADDY DEVELOPMENT

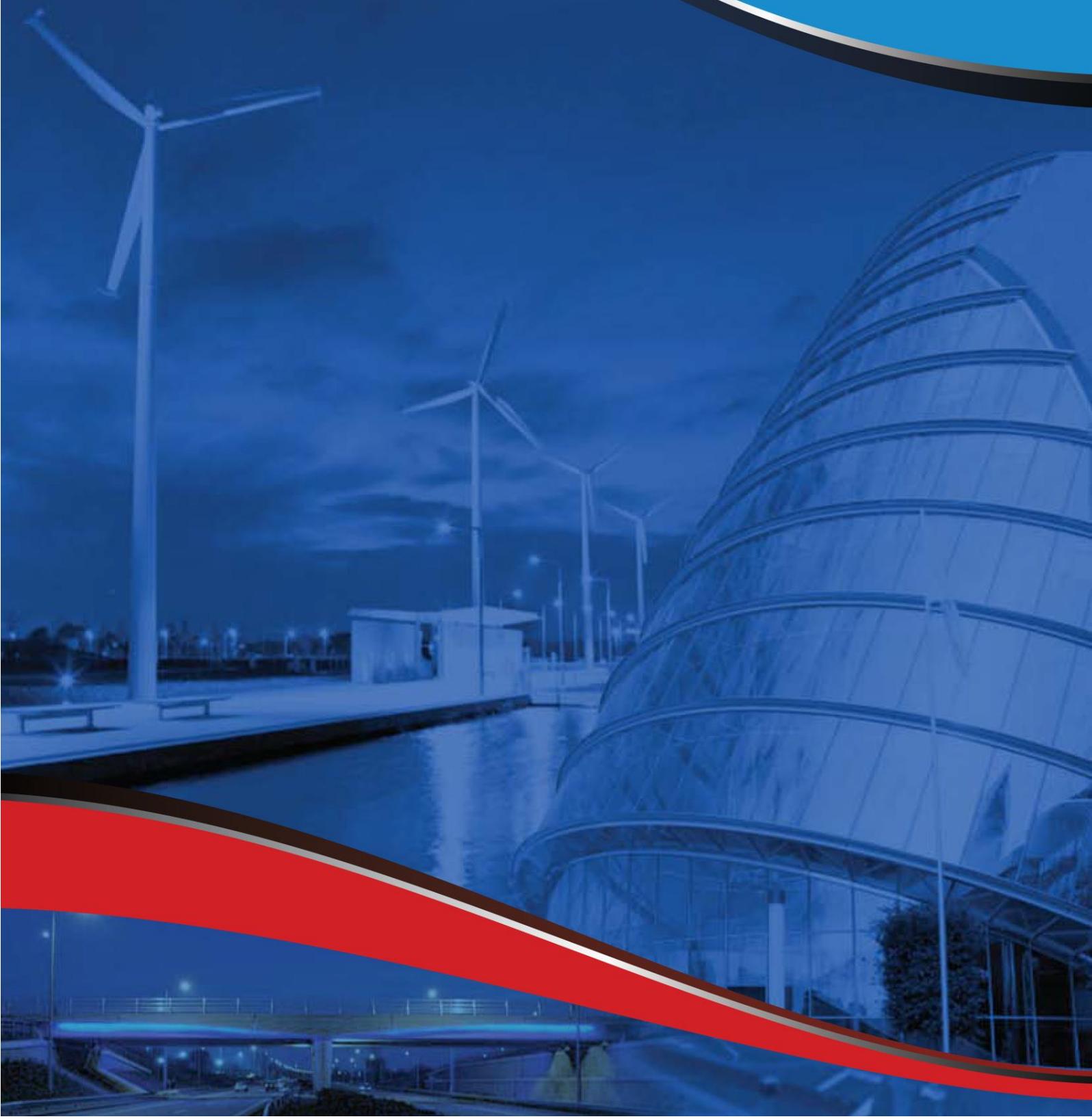
Sky Castle Ltd
S665
12 November 2021



OCSC

O'CONNOR | SUTTON | CRONIN

Multidisciplinary
Consulting Engineers



MAYNOOTH TRANSPORT STRATEGY SUBMISSION REPORT

MOYGADDY DEVELOPMENT



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DOCUMENT CONTROL & HISTORY

| | | | | | | | | | |
|----------------------------------|---------------------|-------------------|--------------------|--------------|------------------|------------------|---------------|----------------------------------|-----------------|
| OCSC Job No: S665 | Project Code | Originator | Zone Volume | Level | File Type | Role Type | Number | Status / Suitability Code | Revision |
| | S665 | OCSC | 1C | XX | RP | C | 0007 | S2 | P01 |

| Rev. | Status | Authors | Checked | Authorised | Issue Date |
|-------------|---------------|------------------|--------------------|-------------------|-------------------|
| | | | | | |
| P02 | S2 | W. Marais | S. McGivney | A. Horan | 12/11/2021 |
| P01 | S2 | W. Marais | S. McGivney | A. Horan | 12/11/2021 |

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| 2 | OVERVIEW OF THE MAYNOOTH TRANSPORT STRATEGY | 3 |
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| 4 | IMPACT ON THE MAYNOOTH TRANSPORT STRATEGY | 6 |
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1 INTRODUCTION

O'Connor Sutton Cronin & Associates (OCSC) have been appointed by Sky Castle Ltd to prepare a submission on the current proposals for the developments at Moygaddy, Co. Meath, which forms part of the Maynooth environs and its potential impact, if any, on the Maynooth Transport Strategy (MTS).

The Maynooth Outer Orbital Route is located within the Sky Castle land holding and therefore the delivery of this strategic road infrastructure is a key consideration in the context of the MTS.

The Moygaddy Masterplan is a non-statutory plan that has been prepared by the developer to assist with the co-ordination and phased delivery of the project. Pre-planning discussions have been undertaken with Meath County Council and lodging of the full planning applications are imminent. The full Moygaddy Development consists of the following parts:

- Pre-planning applications:
 - Medical phase (Primary Care Centre and Nursing Home Unit)
 - Offices phase 1 (three office buildings, approximately 16,700 m²)
 - Residential phase 1A (360 no. residential units, 289m² creche, and public park)
- Future Applications:
 - Offices phase 2 & 3 (six office buildings, approximately 33,400 m²)
 - Future Residential phases
 - Public hospital
 - Hotel & leisure facilities

Included with these developments are a number of road infrastructure upgrades, which are described in full detail in Section 3 of this report.

The location of the Moygaddy Development can be seen in Figure 1 overleaf.



Figure 1: Locality Plan

The purpose of this report is to:

- Summarise the proposed developments within the wider Maynooth Environs;
- List the infrastructural upgrades planned as part of these developments;
- **Assess the impact of these infrastructural upgrades on the Maynooth Transport Strategy.**

2 OVERVIEW OF THE MAYNOOTH TRANSPORT STRATEGY

According to the Maynooth Transport Strategy document prepared on behalf of Kildare County Council (KCC), the MTS can be summarised as below:

- A transport strategy is being developed which will **propose** measures to improve walking, cycling, public transport, roads and parking in Maynooth and its environs
- The strategy will place particular focus on improving conditions for pedestrians, **cyclists**, and public transport users
- Measures from the transport strategy will be incorporated into the new Local Area Plan for Maynooth and its environs
- The document presents information based on Census 2016 to give an indication of the existing transport situation in the Maynooth. When developing the transport strategy, 2021 data will be used which is currently being collected.

The study area for the transport strategy is shown in the figure below, with the Moygaddy land holding highlighted in dark blue:

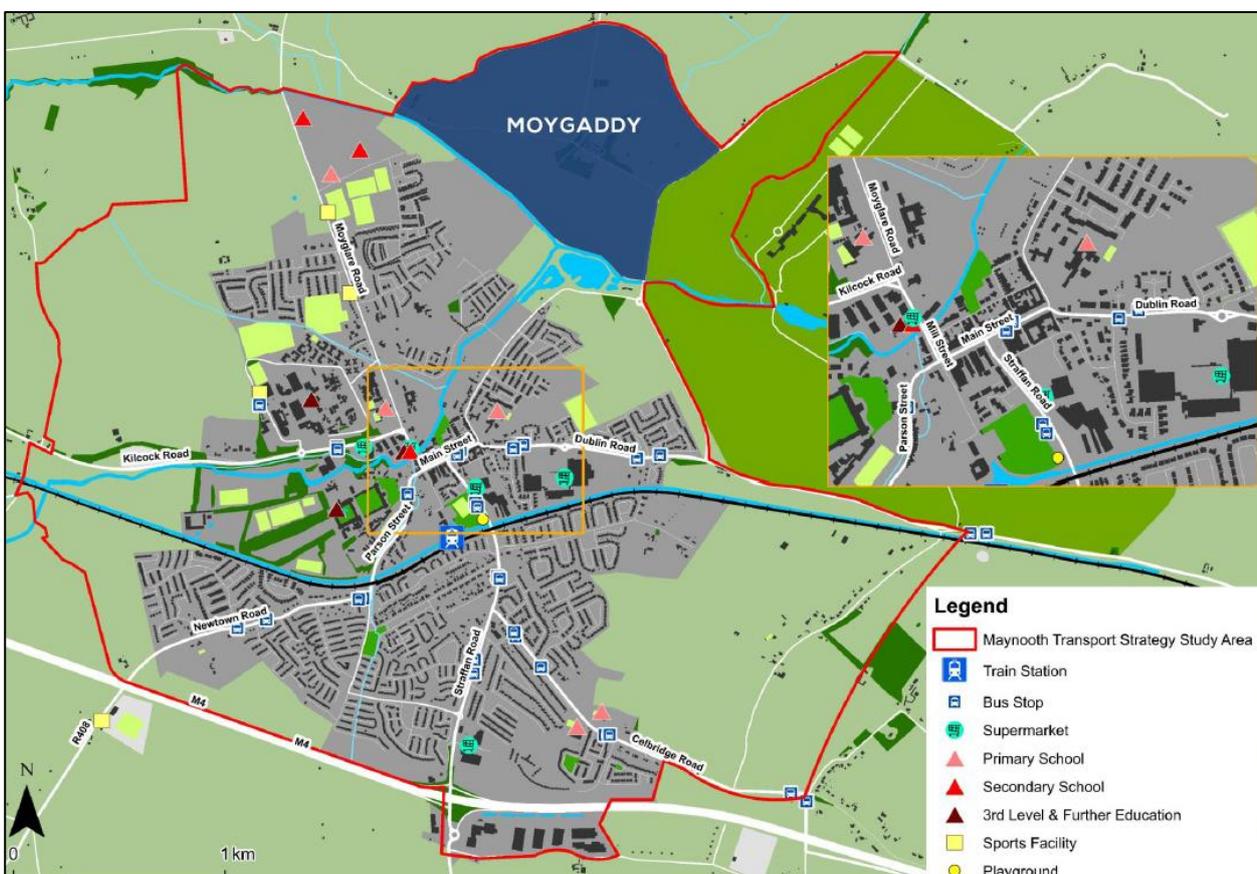


Figure 2: Transport Strategy Study Area

3 MOYGADDY INFRASTRUCTURAL UPGRADES

Several infrastructural upgrades are proposed as part of the development of the Moygaddy lands, which will have a direct impact on the town of Maynooth. These upgrades will be linked with the phasing plan discussed in Section 1 of this document.

The figure below indicates the road upgrades linked to specific phases of the development:



Figure 3: Moygaddy Development Phasing

As part of the proposed development, the following infrastructure upgrades will be introduced:

- Construction of the Maynooth Outer Orbital Route (MOOR) from **the existing section already constructed at Moyglare Hall, crossing the River Rye and Moyglare Stream and connecting to the R157 at the junction with the L6219 to include pedestrian and cycle facilities;**
- Upgrading of the R157/L6219 junction **to a signalised junction that includes pedestrian and cyclist crossings;**

- Upgrading of the L6219, **which will include pedestrian and cyclist infrastructure within the scheme area;**
- A new bridge section on a portion of the MOOR, over the adjacent River Rye that crosses into the jurisdiction of Kildare County Council at Moyglare;
- Segregated cyclist and pedestrian infrastructure along the MOOR;
- A shared pedestrian/cyclist path along the frontage of the SHD development along the L6219;
- A pedestrian and cycle bridge over the Moyglare Stream to link the residential SHD scheme with the new public park at Moygaddy Castle;
- A **new bridge crossing the Moyglare Stream as part of the MOOR that will accommodate vehicular, pedestrian and cyclist movements;**
- Dedicated crossing facilities that will accommodate pedestrians and cyclists at all junctions along the proposed MOOR;
- A new pedestrian and cycle bridge at the Kildare bridge which will link the Moygaddy lands with the network in County Kildare.

As part of the masterplan, a submission has been made to BusConnects, to advise them of the proposed development at Moygaddy and to request that due consideration be given to the expansion of the network to include the Maynooth Environ lands so that public transport services are extended to the new developments.

4 IMPACT ON THE MAYNOOTH TRANSPORT STRATEGY

The following benefits to the Maynooth Transport Strategy are expected as part of this development:

- Improvements to the connectivity in the area of the development;
- Increase in capacity of roads and junctions in the immediate vicinity;
- Provision of dedicated pedestrian and cycle infrastructure, enabling a strong modal shift towards sustainable transport;
- The upcoming proposals will also allow the BusConnects proposal to take account of the new infrastructure and further service the Maynooth area.

As part of the planning application for the this development, OCSC have been commissioned to prepare a Traffic Impact Assessment Report and associated traffic models. A copy of this report will be provided to both Meath County Council and Kildare County Council in ordinary course.

In summary, the infrastructural upgrades proposed as part of the Moygaddy development will have an overall positive impact on Maynooth and its environs.

5 VERIFICATION

This report was compiled and verified by:

Wian Marais BE (US), BE (Hons) (UP), Professional Engineer (ECSA)

Civil Engineer

O'Connor Sutton Cronin & Associates





OCSC

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Consulting Engineers

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Dublin | Belfast | Birmingham | Cork | Galway | London

Appendix E **BUSCONNECTS SUBMISSION**

Bus Connects
National Transport Authority
Dún Scéine
Hardcourt Lane
Dublin 2
D02 WT20

15/11/2021

Ref: T-SMG

Project No. S665



**RE: Maynooth Transport Strategy (MTS)
Our Client; Sky Castle Limited
Maynooth Environs – Lands At Moygaddy, Co, Meath, Maynooth**

Dear

We are writing to draw your attention to our client's submission to the Maynooth Transport Strategy (MTS) review initiated by Kildare County Council.

HEAD OFFICE
9 Prussia Street
Dublin 7
Ireland

T | +353 (0)1 8682000
F | +353 (0)1 8682100
E | ocsc@ocsc.ie
W | www.ocsc.ie

We enclose a copy of the submission to the MTS for your information.

We would like to draw your attention to the opportunity to expand the public transport network to include Bus Connects as part of the strategic Residential and Employment lead developments proposed on our client's landholding at Moygaddy Co. Meath which forms part of the Maynooth Environs.

We would welcome the opportunity to speak with you about this initiative and we look forward to your feedback in early course

Yours sincerely

Shane McGivney
Chartered Engineer
For O'Connor Sutton Cronin

CC. Ronan Barrett, Sky Castle Limited

cc. Meath County Council

cc. Kildare County Council



Civil | Structural | Mechanical | Electrical | Sustainability | Environmental

O'Connor Sutton Cronin & Associates Limited – Registered in Ireland No. 138329

Directors: Tony Horan (MD) | James Barrett (Secretary) | Paul Healy | Brian Madden | Martin McGrath | Francis McNulty | John Millar | Andrew O'Brien | Michael O'Reilly | Brian O'Rourke

Associate Directors: Shaun Doody | Brian Heron | Eddie Lyons | Anthony Horan | Paul McSteen

Associates: Derek Connolly | Ian Crehan | Paul Devine | Vernon McAllorum | Niall McMenamin | Pat Moynihan | Dan O'Keeffe | Patrick Raggett

Administrative Associate: Carrie Poettcker

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Appendix F **KILCLOON TRAFFIC CALMING SCHEME DRAWING PACK**



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| No. | Date | Amendment / Issue | Drn | Chk | App |
| T01 | 30/06/2022 | Tender Issue | PC | TK | PT |

Stage:

Comhairle Chontae na Mí
Meath
 County Council



Buvinda House, Dublin Road, Navan, Co Meath C15 Y291
 T: 046 909 7000 F: 046 909 7001 W: www.meath.ie

Project:
Kilcloon Traffic Calming Scheme

Title:
Proposed Site Location

| | | |
|----------------------------------|--------------------|--------------------------|
| Drawn by: PC | Checked by: TK | Approved by: P.Trappe |
| File Reference: TRA-04-012-04-99 | | |
| Scale: 1:250 @ A1 1:500 @ A3 | Drg. No: DG3802 | Rev: T01 |
| Date: 09/05/2022 | | |

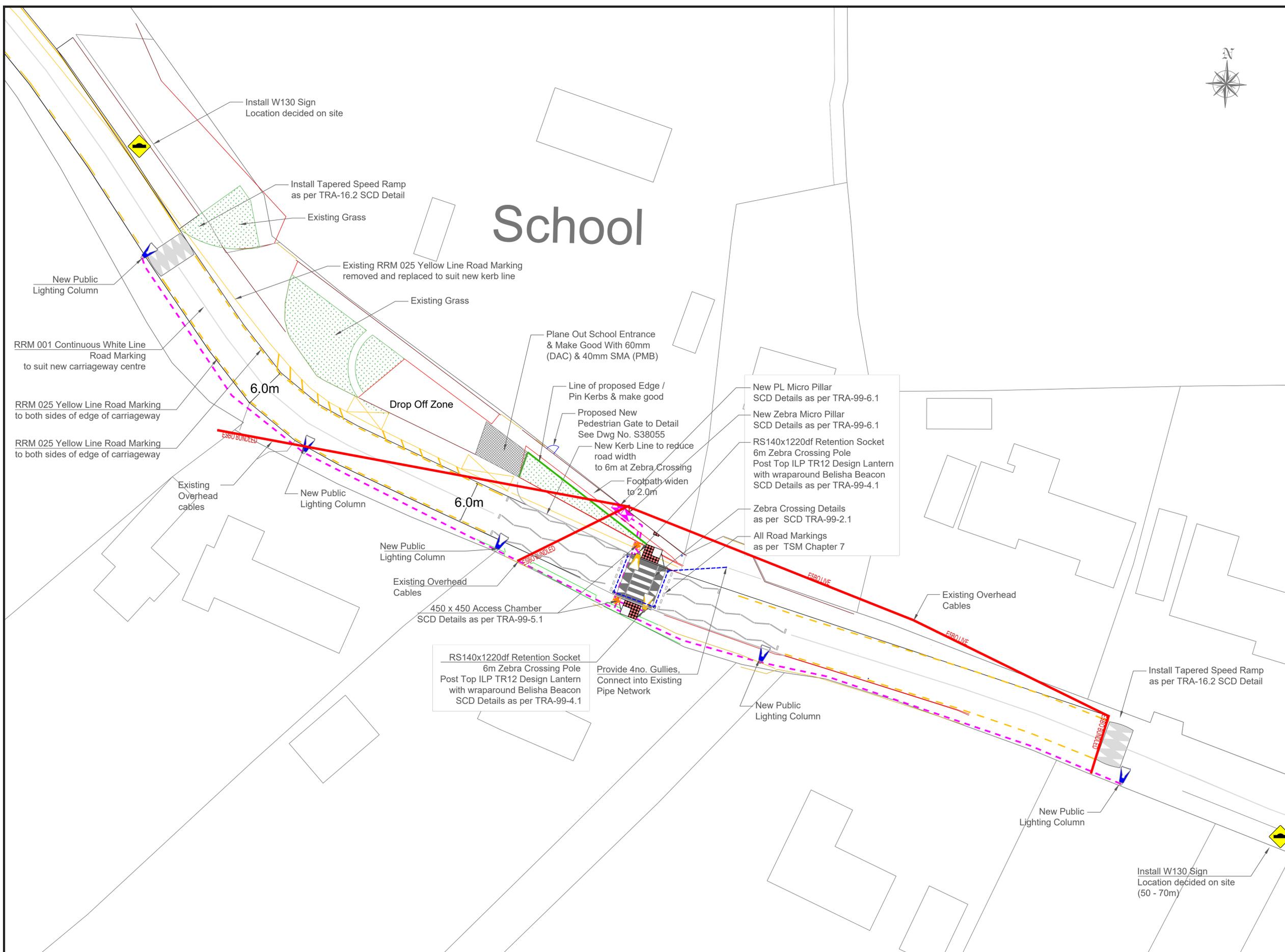


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| T01 | 30/06/2022 | Tender Issue | PC | TK | PT |
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Meath
County Council



Buvinda House, Dublin Road, Navan, Co Meath C15 Y291
T: 046 909 7000 F: 046 909 7001 W: www.meath.ie

Project:
Kilcloon Traffic Calming Scheme

Title:
Pedestrian Crossing at Kilcloon National School

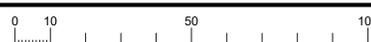
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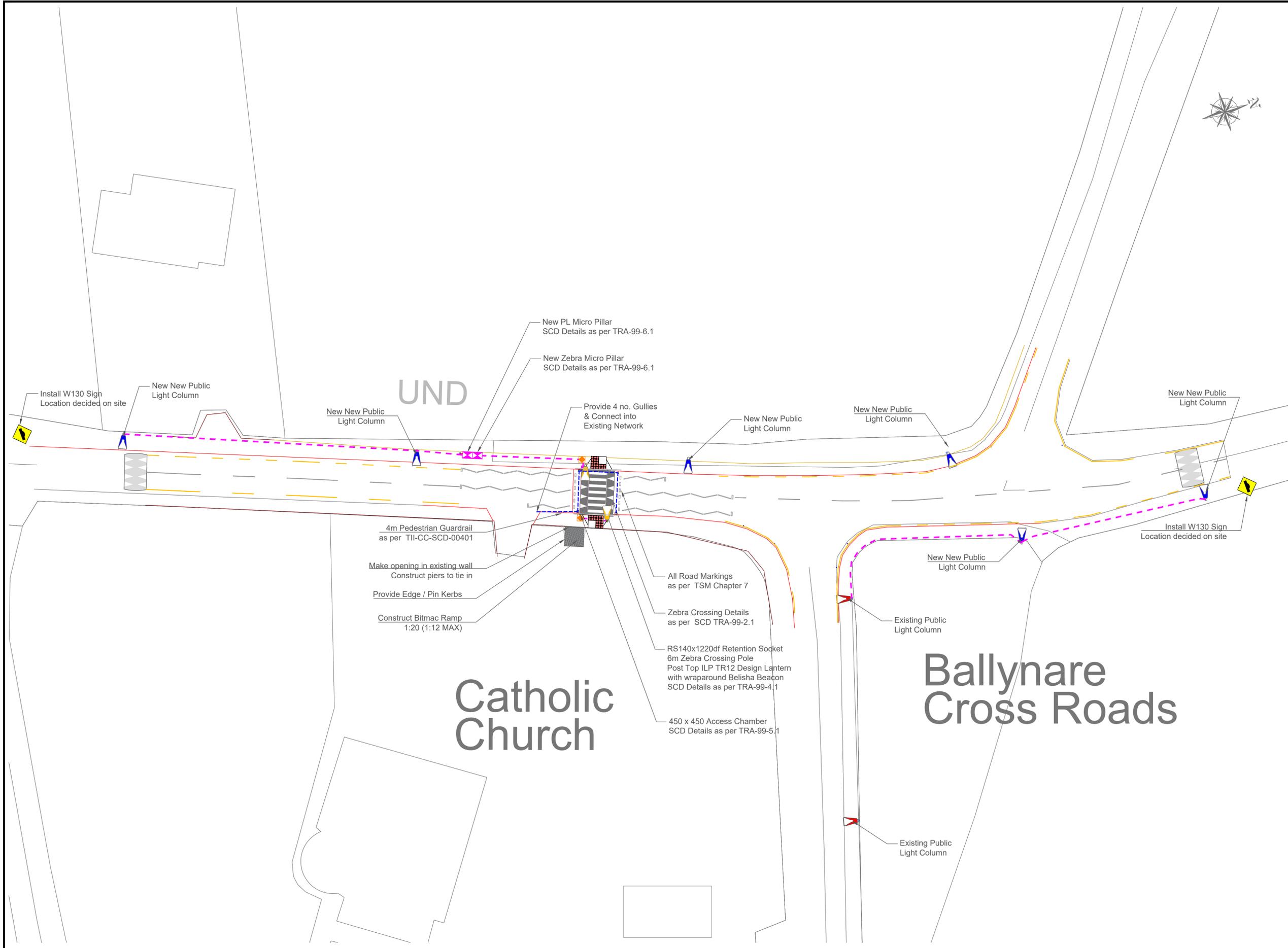
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| | | | |
|---|--|---|--|
|  | Philips LumiStreet_BGS212_DX70_5.2km_32W 6m Column_Post Top_0° Tilt |  | Proposed Drainage to Connect to Existing Network |
|  | ESB Networks Pole |  | Existing Overhead Network |
|  | Public Lighting 107mm Duct with draw rope | | |
|  | ESB Networks 50mm Duct with draw rope | | |



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Buvinda House, Dublin Road, Navan, Co Meath C15 Y291
T: 046 909 7000 F: 046 909 7001 W: www.meath.ie

Project:

Kilcloon Traffic Calming Scheme

Title:

Pedestrian Crossing at Kilcloon Catholic Church

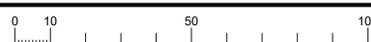
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| PC | TK | P.Trappe |
| File Reference: TRA-04-012-04-99 | | |
| Scale: 1:250 @ A1 | Drg. No. DG3804 | Rev. T01 |
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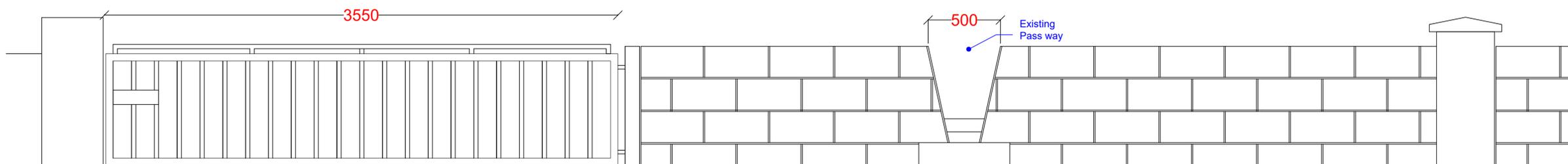
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6m Column_Post Top_0° Tilt
- ESB Networks Pole
- Public Lighting 107mm Duct with draw rope
- ESB Networks 50mm Duct with draw rope
- Proposed Drainage to Connect to Existing Network
- Existing Overhead Network

GENERAL NOTES

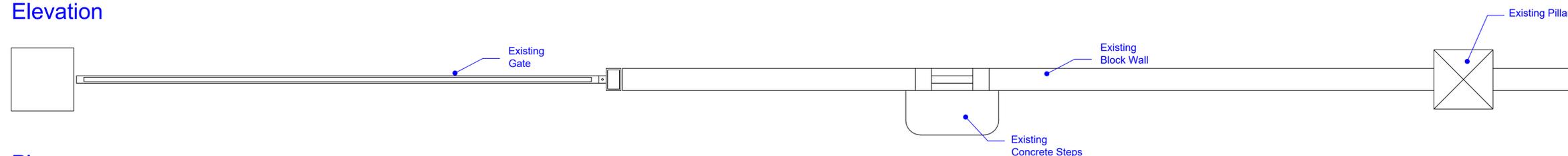
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SPECIFICATION FOR NEW PEDESTRIAN GATE

Single Leaf 90° Left gate of width required 1.0m high x 1.5.m wide infilled with 20mm Bar infill solid round bar. Frame 60 X 60mm SHS Mitred corners with fully welded joints Infill to be affixed to frame by full welds or by clips specified by Irfen®, to be supplied with Irfen® drop bolts and receivers, adjustable Irfen® hangers, and Sliding Bolt+Drop Bolts locking system. Installed to Gate Posts of 100 x 100 + Hangers. Finish: Galvanised & Powdercoated (Plasgalv®), Colour: Blue RAL

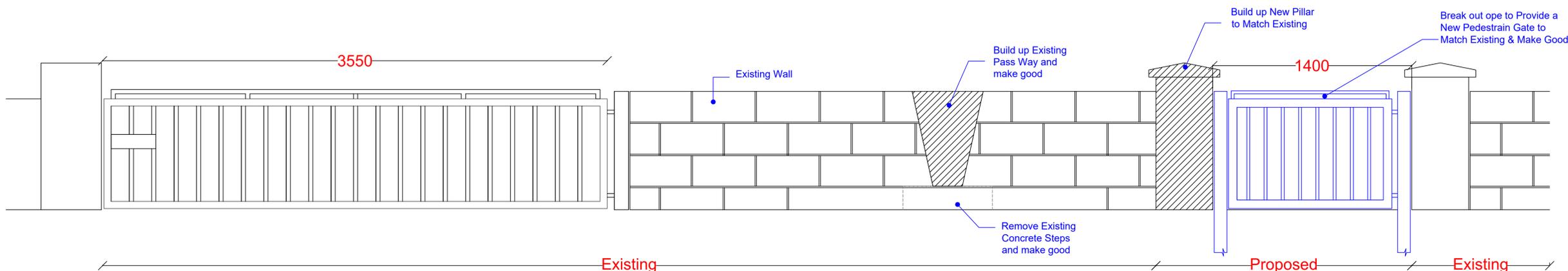


Elevation

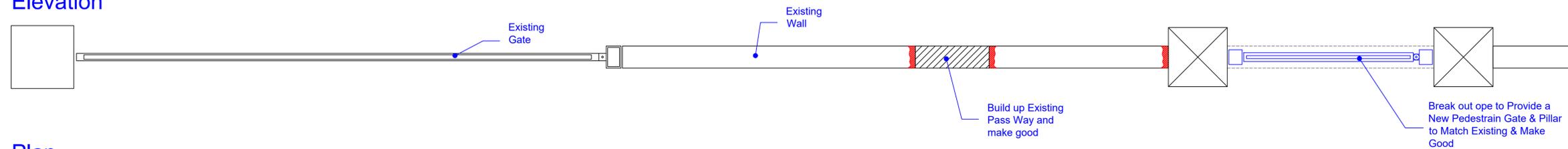


Plan

Existing Wall Detail



Elevation



Plan

Proposed New Pedestrian Gate Detail

| | | | | | |
|-----|------------|-------------------|-----|-----|-----|
| T01 | 30/06/2022 | Tender Issue | PC | TK | PT |
| No. | Date | Amendment / Issue | Drm | Chk | App |

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Buvinda House, Dublin Road, Navan, Co Meath C15 Y291
T: 046 909 7000 F: 046 909 7001 W: www.meath.ie

Project:
Kilcloon Traffic Calming Scheme

Title:
Proposed New Pedestrian Gate At School

| | | |
|----------------------------------|--------------------|--------------------------|
| Drawn by: PC | Checked by: TK | Approved by: P.Trappe |
| File Reference: TRA-04-012-04-99 | | |
| Scale: 1:50 @ A1 1:100 @ A3 | Drg. No: DG3805 | Rev: T01 |
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