PLANNING & DEVELOPMENT ACT 2000 (PART XI) (As Amended)
PLANNING & DEVELOPMENT REGULATIONS 2001 - 2013 (PART 8)

STATEMENT TO ACCOMPANY

GRANGE ROAD CYCLE SCHEME

PREPARED FOR
SOUTH DUBLIN COUNTY COUNCIL

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1 Introduction

1.1 Introduction

Grange Road is an important link in the Greater Dublin Area (GDA) Cycle Network Plan. The Primary Route, SO5, a radial route which will connect Dun Laoghaire to Tallaght via Knocklyon and crosses Grange Road between Park Avenue and Sarah Curran Avenue. The Secondary Route, 10B, runs along the full length of Grange Road, and connects Ballinteer to Rathfarnham.

The development of the GDA cycle network is a fundamental part of the infrastructure package needed to obtain a modal shift away from private car usage and to meet the national target of 10% of all trips by cycling by 2020, along with meeting with a range of other national and local policy objectives.

The GDA cycle network is a comprehensive plan for the creation of a high quality cycle network in the GDA area.

The cycle networks outlined in the Plan will treble the existing network in urban areas from 500km to approximately 1,500 km. It will also provide for over 1,300 km of connections between towns. The network consists of Primary and Secondary routes aswell as Greenway routes. It comprises of a mix of cycle tracks and cycle lanes, cycleways and infrastructure free cycle routes in low traffic environments.

The network has been developed following a detailed study of the areas, the condition of existing cycle facilities and of patterns of travel shown in census and household survey data.

Appendix A contains maps showing the overall GDA cycle network in the Dublin area and the GDA cycle network in the local area.

The Grange Road route has the potential to deliver immediate benefits for cyclists providing quality local cycle links to schools with close to 2,000 pupils (Loreto Primary School, St Marys BNS, Loreto High School etc.), local shops and services, local amenities and parks.

The route also has local tourism benefits in that it connects to St Enda’s park and is on the route to/from the Dublin mountains.

The route has the potential to deliver on a strategic level aswell, connecting to already constructed elements of the GDA cycle network, such as the Grange Downs Greenway and the cycle facilities along Taylors Lane and Nutgrove Ave.

When completed, the GDA cycle network will provide quality cycle facilities connecting the local area to Dundrum, Stillorgan, Terenure, City Centre, Knocklyon and Tallaght.

The cycle facilities along the routes that will form part of the GDA network must be of a high quality and provide safe, continuous, attractive and convenient routes for cyclists of all experiences.

The scheme has been designed in accordance with the National Cycle Design Manual and the Design Manual for Urban Roads and Streets (DMURS), and aims to creates a safe street corridor that caters for the needs of all users, pedestrians/cyclists/motorists that functions for people of all ages and abilities.

The scheme recognises the varying functions both in terms of place and movement along the length of the Grange Road, with locations such as the junction of Sarah Curran Ave / Grange Road having a higher potential place function (however at present it is just a space, not a place) whilst the southern section of Grange Road has more of a movement function than place. There are also sections of Grange Road that accommodate parking for access to local businesses and school drop-off/pick-up , this has been incorporated within the design.

The design of the scheme creates a multi-functional street that improves the urban character of the area and provides the high quality facilities for pedestrians and cyclists.

The extent of the Part 8 scheme is shown on Figure 1.1

Figure 1.1: Study Area

1.2 Planning and Policy Context

The proposed scheme supports a number of national, regional and local planning and policy documents. An overview of the most relevant policies that it supports are summarised below.

National and Regional Policy

Smarter Travel, a Sustainable Transport Future, A New Transport Policy for Ireland 2009-2020

Smarter Travel, A Sustainable Transport Future, (2009) is the transport policy for Ireland for the period 2009-2020. The policy focuses particularly on how existing unsustainable transport and travel patterns experienced in Ireland must be tackled. It recognises the vital importance of continued investment in transport to ensure an efficient economy and continued social development. It also sets out necessary steps to ensure that people choose more sustainable transport modes such as walking, cycling and public transport.

Design Manual for Urban Roads and Streets (DMURS)

DMURS provides guidance relating to the design of urban roads and streets. The Manual seeks to address street design within urban areas (i.e. cities, towns and villages). It sets out an integrated design approach. What this means is that the design must be:

- Influenced by the type of place in which the street is located, and
- Balance the needs of all users.

DMURS reorders the design priorities and requires designers to consider the needs of pedestrians first, then cyclists, public transport and finally private motor vehicles, when designing schemes within an urban environment.

National Cycling Policy Framework (2009)

The Irish Government's first National Cycling Policy Framework was adopted in 2009. The stated vision of the Framework is to "*create a strong cycling culture in Ireland*". The Framework sets out 19 specific objectives, and details 109 individual actions aimed at ensuring that a cycling culture is developed to the extent that, by 2020, 10% of all journeys in Ireland will be by bike.

Greater Dublin Area Transport Strategy 2016-2035 (DRAFT)

The GDA Transport Strategy 2016-2035 sets out the objectives and proposals in relation to how transport should evolve over that period in order to ensure that the Greater Dublin region continues to meet the needs of its citizens. As well as proposed infrastructure works it also sets out objectives to improve the attractiveness of walking and cycling and to increase availability and usage of public transport. A key element of the strategy is the delivery of the GDA Cycle Network.

Regional Planning Guidelines for The Greater Dublin Area 2010-2022

The Greater Dublin Area (GDA) RPG's have been prepared for the geographical area incorporating the administrative regions of Dublin City, Fingal, South Dublin, Dún Laoghaire – Rathdown, Meath, Kildare and Wicklow. This is a robust document which exists in the medium to long term and has been produced to inform the drafting of local area and development plans by the various local authorities within the GDA.

In terms of walking and cycling the RPG's set ambitious targets regarding cycling as a viable and mainstream transport mode in a "relatively compact urban form" such as Dublin.

GDA Cycle Network Plan

This document sets out the National Transport Authority's plan for a cycle network throughout the Greater Dublin Area, comprising of an Urban Network, Inter-Urban Network and Green Route Network. This plan has the aim of ensuring that cycling as a transport mode is supported and enhanced in order to achieve strategic objectives and reach national goals.

Figure 1.2 illustrates part of the GDA Cycle Network Plan that highlights the proposed cycle facilities along the Grange Road.

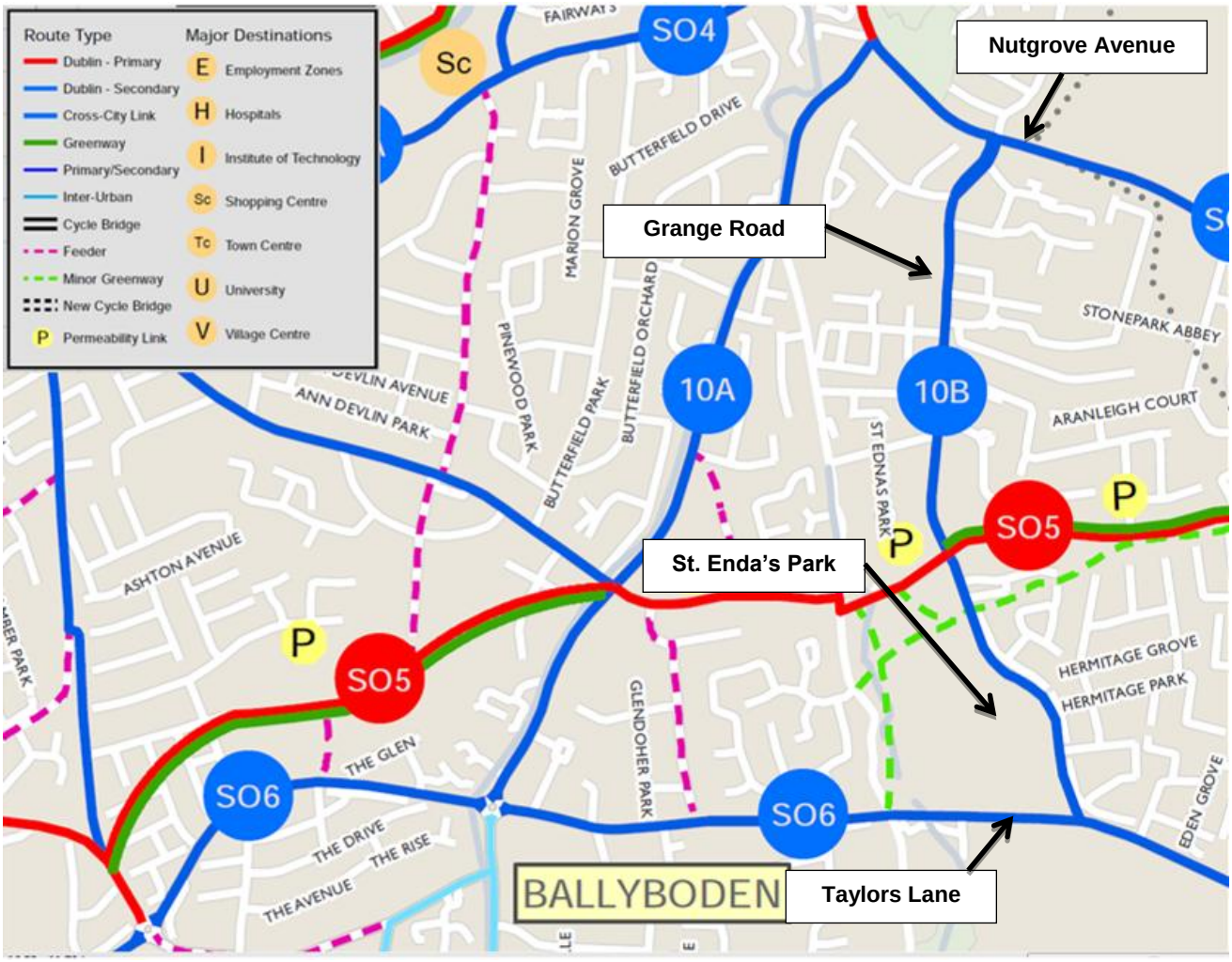


Figure1.2 – Extract from the GDA Cycle Network Plan

Grange Road has been highlighted as a secondary cycle route 10B, with the Barton Road allocated as a primary route SO5 which incorporates the pedestrian and cycle way along Grange Downs.

Local Policy

South Dublin County Council Development Plan 2010 - 2016

On a local level, this plan aims to promote and facilitate the development of walking and cycling facilities throughout the area. There are a number of specific policies within the Development Plan that focus primarily on sustainability and the cycling environment. They are as follows:

2.2.5.i Policy T1: Sustainable Modes of Transport - It is the policy of the Council to support sustainable modes of transport and to ensure that land-use zoning and management are fully integrated with the provision and development of high quality transportation systems.

2.2.13.i Policy T13: National Cycle Policy Framework - It is the policy of the Council to support the implementation of the National Cycle Policy Framework 2009-2020 and the DTO Cycle Policy.

There is also a specific objective in the Cycle Route Objectives section of the Development Plan to provide On Road and Off Road cycle facilities along Grange Road.

It is a main objective of the South Dublin County Council Development Plan to "design residential environments that impact positively on quality of life and comprise attractive safe streets with a mix of house

types, sizes and designs; that have good pedestrian, cycling and public transport links; and where housing is within walking distance of neighbourhood centres, community facilities and open space."

The Development Plan aims to affect a modal shift from private car to more sustainable modes of transport, including public transport, walking and cycling. This shift will be a paramount objective in the implementation of policies to support sustainable modes of transport.

2 Receiving Environment

2.1 Existing Landuse

Grange Road is located within a suburban area in County Dublin and is predominately residential in nature. Within the SDCC 2010 – 2016 zoning map, the residential areas surrounding Grange Road have been designated as “To protect and/or improve residential amenity”. The main features along Grange Road include a number of schools, local shopping area and St. Enda’s Park, these are outlined below and shown on Figure 2.1:

- St. Mary’s Boys National School – This is a primary school with approximately 470 students in attendance. It is located at the north eastern end of Grange Road and is accessed off Nutgrove Avenue.
- Loreto Beaufort – This school is a secondary school located to the north of Grange Road on the east side of the road. There are currently 636 students in attendance. The access to the school is on Grange Road.
- Loreto Primary School – This is a primary school with 518 students in attendance. This school is located opposite to the Loreto Beaufort school and is on the west side of the road. It is also accessed from Grange Road, at the Grange Road/Convent Lane junction.
- Gaelcholáiste an Phiarsaigh – This is an all Irish speaking secondary school. The school was opened in 2014. The school is located within the Loreto Abbey grounds.
- Rathfarnham Educate Together National School – The Rathfarnham Educate Together NS is a primary school with 226 students attending. The School is located in close proximity to Grange Road and is accessed off Loreto Avenue.
- Divine Word National School – This is a primary school located at the southern end of Grange Road. It is situated on the eastern side of the road and is in the middle of the large residential areas of Hermitage and Marley. This school can be accessed off Grange Road.
- Loreto Abbey – This is one of the more striking buildings located along Grange Road. It is a historical feature and is located on the east side of Grange Road.
- St. Enda’s Park – This is a large open space park located to the south west of Grange Road. It is designated as a National Historic Park. From the SDCC development plan, this park has been zoned “To preserve for open space and recreational amenities”. This park also has a historical link to 1916 and located within it is the Padraig Pearse Museum, one of the leaders of the 1916 rising.
- Local Shopping Area – This local shopping area is situated along Grange Road, opposite the Grange Road/Barton Drive junction. The shops contain a pharmacy, hairdressers, Centra, an Esso garage and an On-the-Run food store.

Title: Existing Landuse along Grange Road	AECOM	Created: Approved: Checked:
Project: Grange Road Cycle Scheme	4th Floor Adelphi Plaza George's Street Upper Dun Laoghaire Co. Dublin Tel: +353 (0)1 238 3100 Fax: +353 (0)1 238 3163 www.aecom.com	Date: 10-11-15

Figure 2.1 : Existing Landuse

2.2 Existing Road and Street Layout

Grange Road (R822) is a regional road in Rathfarnham, South Dublin. The section being studied is approximately 1.6km in length, between the Taylors Lane/Grange Road junction in the south and the Nutgrove Avenue/Grange Road junction to the north. The road consists of one lane in each direction and with the exception of two pinch points is generally greater than 7m wide.

The character of Grange Road changes a number of times along the length of the scheme.

At the southern end of the scheme, the roadway has a wide and open cross-section. It has on-road cycle lanes, 3.5m wide traffic lanes and a central hatch lane that accommodates a right turning lane. Footpaths are provided along both sides of the road and the boundary is defined by stones walls.

Figure 2.2 : Typical character of Grange Road at southern extents

Immediately north of the junction with Hermitage Avenue the character of the road changes, and the alignment curves along the end of St Enda's Park. The cross-section of roadway becomes narrower, with a 1.8m -2.0m footpath on the west side and a 6.5m wide road carriageway. A wide grass verge is provided along the east side, this varies in width from approximately 5m – 10m. A service/estate street runs parallel to Grange Road on the east side of this wide margin. This estate street provides access to a number of residential properties and the residential estates. The west side of the roadway is bounded by the stone wall for St Endas Park.

Figure 2.3 : Grange Road to the north of Hermitage Avenue

The original entrance to St Enda's park is on this section of Grange Road.

Figure 2.4 : Original Entrance to St Enda's Park (Protected Structure) (Google Streetview)

After the junction with Park Ave the character of Grange Road changes again. The wide grass verge along the east side is gone and the cross-section is much more constrained, there is a 1.8m footpath along the west side with a road carriageway of circa 6.5m. On the east side there is a 1.5m grass verge and 1.5m footpath.

Figure 2.4 : Typical character of Grange Road, north of Park Ave junction

The top of this section is the junction of the Sarah Curran Ave / Grange Road/ Barton Road. There is a triangular shaped hard standing area at this junction on the northwest corner. This area was historically part of St Edna's park , however it was converted to bus terminus area previously and it now a left over space. It has been used as a bottle bank and as a storage area previously, and it is currently used as an informal parking area, probably by people visiting the park.

Figure 2.5 : Junction of Grange Road/ Sarah Curran Ave/Barton Drive (Google Streetview)

To the north of this junction the road character again becomes much wider. There is a 2.0m footpath along the west side with direct access to the driveways for residential properties. On the east side there is a grass verge, two-way cycle track, another grass margin and then a footpath. Again a number of properties driveways are accessed directly from this section of the road.

Figure 2.6 : Existing two-way cycle track along Grange Road

Figure 2.7 : Grange Road immediately north of Barton Drive

At the junction for Barton Drive the character of the street changes again. The two-way cycle track and landscaping along the east side is gone and so too is the direct access to the residential properties. On –road cycle lanes are provided along both sides of the road, on the west side there is a footpath and on the east side there is a small verge and footpath provided.

This typical cross-section continues until the junction with Tara Hill Road. After this junction the road enters an existing 'Traffic Calmed' section. The cross-section is narrower and traffic calming features in the form of speed ramps have been installed. Traffic calming measures include two speed bumps located approximately 20m apart from each other located between Tara Hill and Loreto College and rumble strips at the southern narrow sections.

The road carriageway is reduced to approximately 6.5m and there are advisory cycle lanes, however they share the width with vehicle traffic. There are footpaths along both sides of the road. There are a number of schools located in close proximity to this section of the Grange Road. The protected structures of Beaufort House and Loreto Abbey are located along this section aswell.

Figure 2.8 : Existing traffic calmed section of Grange Road

Immediately north of the accesses to Beaufort House and Loreto Abbey the roadway becomes wider again. There are footpaths provided on both sides and on road cycle lanes aswell. The road carriageway becomes wider circa 8.0m, until it divides into two carriageways separated by a central landscape strip with large mature trees.

Figure 2.9 : Central Landscape Strip divided carriageway at northern end of scheme.

There is a variety of existing cycle provisions along Grange Road, some of its is off-road some on-road. There is a short section of two-way off road cycle track between Barton Road and St. Enda's Drive located in the verge on the eastern side of the road, however the existing cycle network is not connected or continuous. Surveys undertaken as part of this scheme show that more cyclists were staying on-road than using the existing two-way off road facility. This could be because the existing facility is not continuous and therefore not convenient for use.

The Grange Downs greenway is not connected to any cycle facilities on Grange Road. Going to or from this, users must cycle either on Grange Road or on the footpath. Cyclists travelling south on Grange Road from the greenway can do so through The Priory estate although high kerbs would force them to dismount.

There are three signalised junctions on the road at the Nutgrove Avenue/Grange Road junction, the Taylors Lane/Grange Road junction and at the Grange Road/Dispensary Lane (L8155) junction. A signalised crossing is situated on Grange Road between St. Enda's Drive and Barton Drive. The study area contains several unsignalised junctions, the most significant of which being at Sarah Curran Avenue, St. Enda's Drive and Grange Park.

Several bus stops are spread along Grange Road which are served by the Dublin Bus route 16 only, a high frequency service operating between Ballinteer and Dublin Airport at headways of approx. 10 minutes in peak periods.

2.3 Protected Structures

There are a number of protected structures along the route , the location of these structures along with the CDP reference no. are shown on Figure 2.10 and summarised within Table 2.1.

Figure 2.10: Location of Protected Structures

Table 2.1 : Summary of Protected Structures

Protected Structure Ref	Location	Description	Image
251	Beaufort House	House, Gates (2 sets)	

252/253	Loreto Abbey	Lodges (2) & Wrought Iron Gates	
254	Abbey View, 23 Grange Road	Detached Four-Bay Two-Storey House	
255/263/ 259	St. Patrick's Cottages, Grange Road	Semi-Detached Three-Bay Single Storey Houses	
256	Washington Lodge, 33 Grange Road	Detached Five-Bay Two-Storey with Attic Georgian House	
289	Rathfarnham Priory	House (Ruin)	

293	St. Enda's	Three Storey Georgian Style House, With Classical Style Columns & Steps, Gateway & Gate Lodge	
296	Grange Golf Club	Entrance Pillars & Iron Arch Over With Lettering	

2.4 Tree Survey

A Tree Survey was undertaken as part of the development of the scheme. This is provided as a standalone report.

2.5 Accident Records

The Road Safety Authority (RSA) road traffic database was investigated to determine if there were any pre-existing safety issues on Grange Road. Figure 3 shows the accidents that occurred on Grange Road between 2007 and 2012. It shows a small number of minor accidents evenly spread along the road. The database showed that none of these accidents involved vulnerable road users (pedestrians and cyclists).

The was a fatal accident on Barton Road, however this is outside the extents of this proposed scheme.

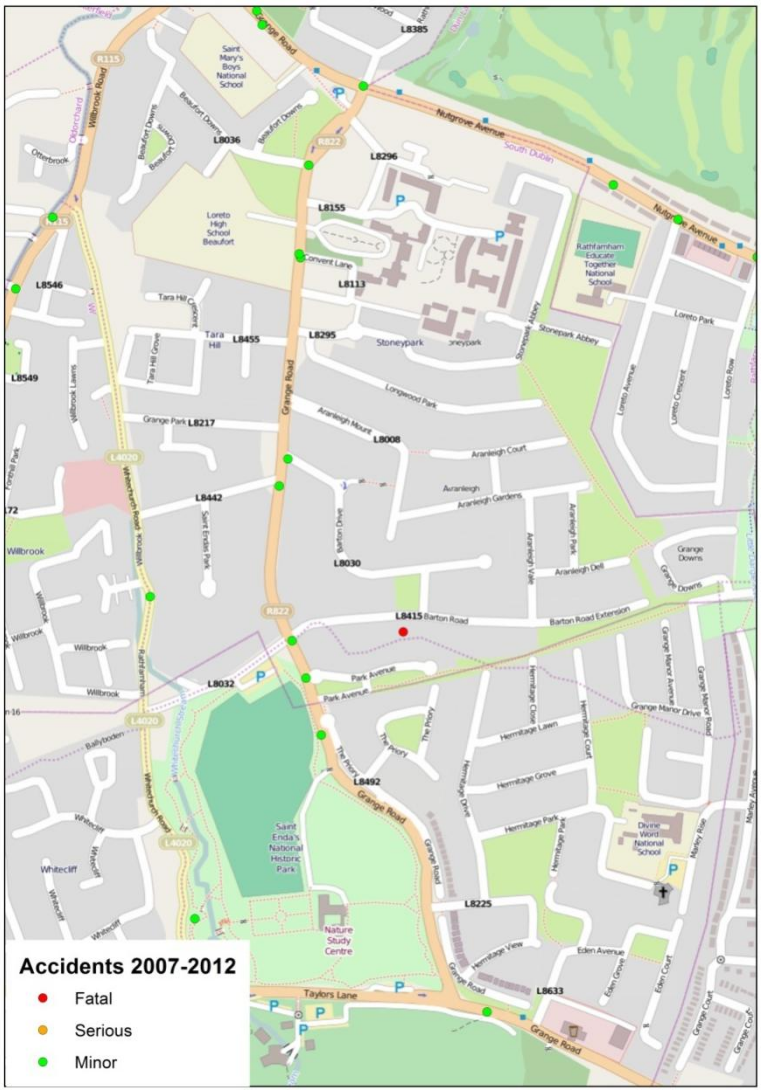


Figure 2.11 - RSA Road Accident Database 2007-2012

2.6 Traffic Surveys

Traffic surveys were carried out in 2014 and 2015 to quantify the existing traffic movements in the area. Surveys included Automated Traffic Counts, Junction Turning Counts, Queue surveys, pedestrian counts and a cycle count on the off-road cycle track. These were carried out over 7 days starting on May 19th. Full set of results for these surveys are shown in Appendix A..

The AM peak hour was identified from the surveys as 08:00-09:00 and the PM peak was 17:00-18:00.

Automated traffic counts were undertaken at three locations in order to investigate the speeds and volume of traffic on Grange Road. Results showed that the average AADT along Grange Road is 12,000 vehicles per day. The surveys also show that on section of the road some 42% of vehicles were exceeding the speed limit of 50kph.

Junction turning counts were undertaken at 7 locations along Grange Road. These counts helped to inform specific movements within the junctions along Grange Road. The Grange Road/Taylors Lane

junction has the highest volume of traffic running through it in both the AM and PM peak hours. The AM peak hour had a total of 2076 vehicles with the PM peak hour having a total of 2028 vehicles.

Pedestrian counts were carried out at 8 locations along Grange Road. Results show that pedestrian movement is high, in particular at the northern end of the study area.
Cycle counts were also carried out at 4 locations along Grange Road in order to gauge the number of cyclists currently travelling along Grange Road.. Results show that the highest volume of cyclists was recorded at cordon 1, which is situated close to the Loreto Beaufort entrance, with an average daily cycle movement of 313.

Car Parking Surveys

A site survey was carried out on the 29th May 2014. During this visit, it was noted that traffic volumes increased at the school starting and ending periods, in particular, at the northern end of the scheme where three local schools reside.

In May 2015, car parking surveys were carried out in and around the residential areas of Grange Road and in close proximity to the three local schools, Loreto Beaufort, St Mary's Boys National School and Loreto Primary school. The map in Figure 2.12 indicates the residential zones that were surveyed as well as the vehicle parking capacity within each zone.

It should be noted that during the site visit, certain locations along Grange Road where vehicles were parking, should be classed as illegal parking, ie, Zone 3 in the Orange Zone is in reference to the area outside of the Loreto Abbey. Vehicles currently park up here during peak times. Also, Zones 6 and 7 are also vehicles parking on the footpath along Grange Road.

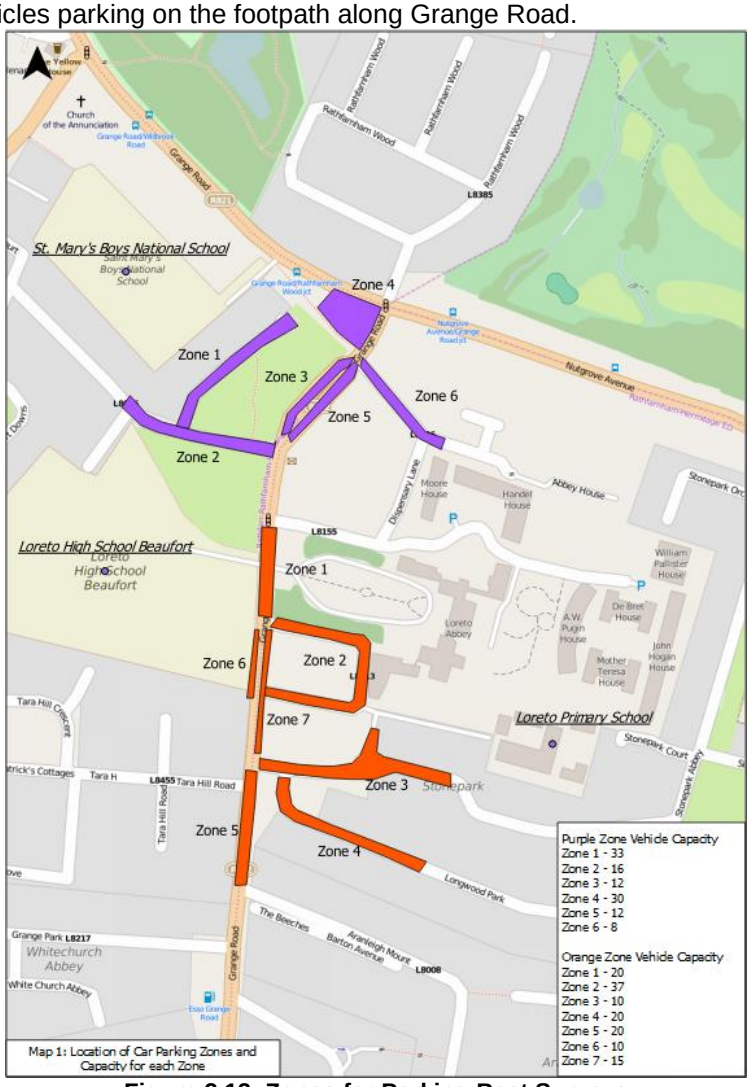


Figure 2.12 :Zones for Parking Beat Surveys

Surveys were taken at two time periods during the day; the first was taken in morning from 08:25 – 09:45. The second survey was taken in the afternoon from 13:00 – 15:30. There were a total of 12 streets surveyed, with surveys taken every 5 minutes.

These surveys were carried out in order to indicate the occupancy level of cars parking along these sections of road. Figures 2.13 and 2.14 show the occupancy results at peak time periods for the AM and PM respectively.

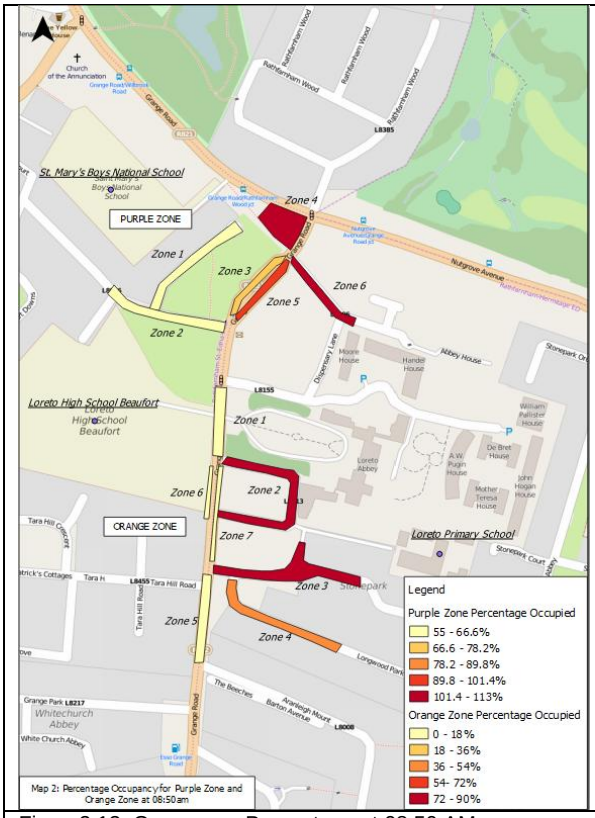


Figure2.13: Occupancy Percentage at 08:50 AM

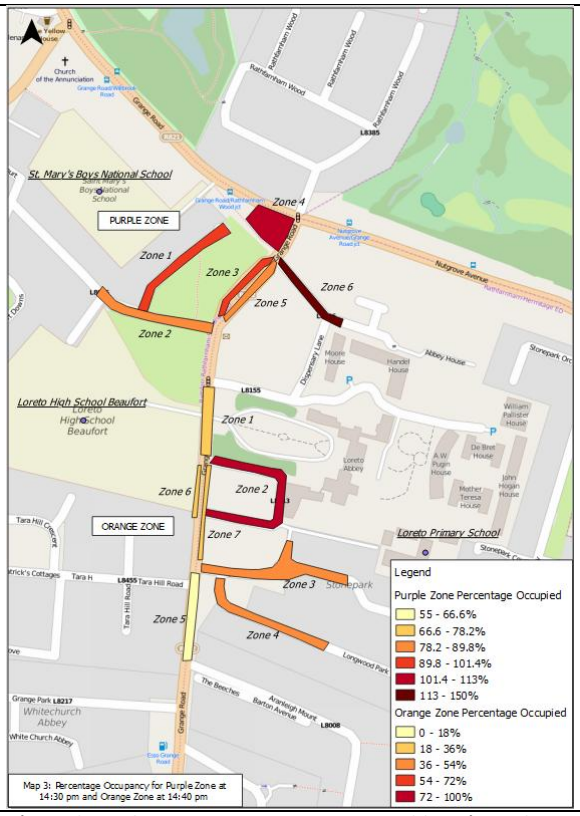


Figure 2.14: Occupancy Percentage at 14:30 and 14:40 PM

Results of the survey show that during specific time periods, certain streets are over their parking capacity. In the morning from approximately 08:45 to 08:55, parking increases significantly along some streets, reaching as high as 113% occupied. In the afternoon, parking peaks from 14:20 to 14:45 with occupancy levels reaching as high as 150% along one street.

Not all streets, however, were displaying occupancy issues. There were some streets within the survey that only peaked as high as 20% occupied during the entire survey.

3 Proposed Scheme

3.1 Scheme Options

Grange Road – Scheme Options
As part of the feasibility study undertaken in 2014, a number of options were considered for the cycle facilities along Grange Road, these included the following:

- Two-way segregated facilities on one side only
- On road cycle lanes on both sides
- No dedicated cycle facilities
- Segregated (raised adjacent) cycle facilities along both sides.

The option of providing segregated cycle facilities along both sides of the road was determined as the most appropriate. This option will provide a high quality of service and provide an attractive, continuous and safe cycle facility along Grange Road.

There are some sections where there is insufficient width to provide for cycle facilities along both sides of the road. Through these sections the cycle facilities will be 'shared with traffic'. The focus in these areas will be to reduce traffic speeds and ensure that the speed differential between car traffic and cyclists is kept to a minimum.

A number of different options were considered for how the S05 primary cycle route would continue from Grange Downs greenway to the Sarah Curran Ave, these included the possibility of continuing the scheme straight through St Enda's Park. This was not considered feasible, as it would require a section of the protected structure, (boundary wall of St Endas Park), to be demolished.

For a similar reason, the option of widening Grange Road at this location to provide for segregated cycle facilities was not considered feasible.

3.2 Places along Grange Road

As part of the design review a Link and Place Analysis was undertaken of the proposed scheme. The outcome of this analysis was the identification of 3 distinct areas along the route. A number of options were developed for each of these three areas with a view to enhancing the streetscape along Grange Road. The areas are as follows:

1. Loreto Abbey and Loreto High School Entrance
2. St. Enda's Park Corner and Junction Space
3. Pearse Museum Gatehouse Entrance

A workshop was held with SDCC, and following on from this, a number of decisions were put forward for the progression of the design for these areas. Following on from this, a meeting was held between SDCC and the NTA in order to discuss the progression of the preliminary drawings. Further development of the scheme options ensued from this meeting with final concepts drawn.

3.3 Consultation

In order to further progress some of the scheme options along the route, a design charrette was held over a two day period, 30th of June and the 1st of July 2015. On the 30th of June a stakeholder design event has held in Pearse Museum, on the 1st of July a public engagement event was held in the grounds of St Enda's park.

Figure 3.1 : Stakeholder Event (St Enda's House)

Figure 3.2: Public Consultation Event – St Enda's Park

Feedback from this public charrette was positive overall with some members of the public in particular expressing how beneficial and progressive the event was. All the potential options were explored with various comments, both positive and negative in parts, expressed. Results from this workshop helped to further develop the preferred design options for the scheme.

3.4 Scheme Description

The scheme is detailed upon three drawings:

- 60302419_P_101
- 60302419_P_102
- 60302419_P_103

The main objective of the scheme is to provide for continuous, high quality cycle provision along the route and to create a more cycle friendly environment with reduced traffic speeds and better provision for pedestrians. The scheme has been designed to improve the attractiveness of the street environment and to recognise the different places and historic features along the route.

South Dublin is also an Age Friendly county, so there is also an objective within the scheme to make the space/street more age friendly and accessible for older people. To achieve this the scheme includes for the provision of raised crossings at minor junctions and controlled safe crossings across Grange Road, removing the need for dished footpaths and providing a more level footpath. In addition, to this improved public lighting and seating will be provided along the scheme. The seating locations provide the opportunity for rest and for people to enjoy the space.

The new cycle facilities will be provided on both sides of the road and will be between 1.75m and 2m in width. Where sufficient width is not available to provide these off road cycling facilities, cyclists will be within a shared street provision within a traffic calmed environment.

Traffic speeds in these locations are to be reduced to 30kph. In order to highlight the presence of this shared street area, a raised surface and alternative road finish will be adopted for the entire length of the area. Signage will also be put at both ends to indicate to vehicles this change; other features such as radar speed signs will be provided. The 30kph zone will extend along Grange Road from just south of Park Avenue up to just north of Beaufort Downs.

Inset parking is to be provided at a number of locations along the northern end of Grange Road. It is envisaged that this will provide an alternative arrangement for the current issue of cars parking along Grange Road during school drop off/pick up times whereby on road cycle lanes are continuously blocked and footpaths are blocked.

Raised crossings and raised entry treatments are to be provided at the majority of junctions and entryways along the proposed route. With reference to DMURS, raised tables, or platforms, placed strategically throughout a network promote lower design speeds, slow turning vehicles at junctions and enable pedestrians to cross the street at grade.

A consultant artist created a stage 1 report which focused on how to best use the Percent for Art funding for the project and development of a commission brief. It is envisioned that an artist or craftsperson may create bespoke physical elements, for example the proposed interpretation features at the new St. Enda's Park entrance.

Further details on the proposed scheme are detailed below, the scheme description begins at Nutgrove Ave / Grange Road and proceeds in the southerly direction to the junction of Taylors Lane.

The scheme begins at the junction of Nutgrove Ave/Grange Road. At this junction it is proposed to reduce the length of the flared turning lane on the approach to the junction from Grange Road. LINSIG Analysis has been undertaken to determine the impact of this change on the performance of the junction during the peak AM and PM hour periods. These proposed changes are inline with the recommendations of the National Cycle Manual (NCM). Wider cycle lanes are to provided, again inline with the requirements of the NCM.

To the immediate south of the junction the cycle provision would become an off-road 'raised adjacent' cycle track. Dedicated parking bays will be provided along the west side of the road and the road carriageway will be reduced to 3.0 – 3.25m in width.

At the junction of Beaufort Downs a 30 kph speed zone is proposed to begin at this point. This 30 kph zone would extend down to the junction of Park Ave and would cover the existing school zone

towards the northern end, the local retail area and proposed new entrance to St Endas Park and public space at Sarah Curran Ave.

This cycle provision would continue to the junction of Grange Road/ Dispensary Lane. This is an existing signalised junction and it would be upgraded to make it more cycle friendly, with these changes the right turn lane would be removed from the junction layout. The junction will be raised to help provide a traffic calming effect and make it easier to cross for older people.

The space outside of Loreto Abbey would be upgraded by urban realm improvements, further details on this are given within the design statements for that area.

To the south of this space the cycle provision becomes a shared street provision. The objective of the scheme design here will be to reduce the traffic speeds by providing for the following features:

Treatment of Minor Side Roads.

At the minor side roads' it is proposed to provide a 'continuous footway' / 'raised entry' treatment.

This detail would provide for a continuous footpath provision and maintain continuity of the cycle track provision across the junction. This would improve the provision for pedestrians and cyclists, giving them priority over traffic coming from the minor road.

This proposal is subject to approval from SDCC and the NTA and would need to monitored.

Examples of this approach from the UK (Camden, London) and from Netherlands and is shown below.

- Reduction of the road carriageway to 6.0m.
- Removal of central road marking (for section of street).
- Provision of new street furniture – street trees.
- Change is surface material on the road carriageway with a different colour chip (not red).
- Raised junctions and traffic ramps
- Speed radar signs

Street Trees

The proposed cycle scheme and associated works would reconfigure the streetscape thus requiring the removal of some existing trees. This will provide an opportunity to plant new advanced nursery stock trees, which would enhance the appearance of the area. The proposed trees will visually consolidate the streetscape through well shaped tree crowns and consistent heights. South Dublin County Council's Tree Management Policy 'Living with Trees' 2015-2020 states that a key policy is 'The principle of planting the 'right tree in the right place'' and 'will apply for all new and replacement tree planting.' The key proposed replacement street tree is Corylus colurna (Turkish Hazel), which is recommended in the policy's 'Sample List of Tree Species Suitable for Street Planting'.

This arrangement continues until the junction with Stonepark Abbey.

After Stonepark Abbey the dedicated cycle facilities on both sides of the road resume. After St Enda's Drive junction, the existing two way cycle track on the east side of the road would be removed and one-way cycle tracks would be provided along both sides instead. This provides continuity to the cycle facilities and makes the provision more attractive and user friendly.

As part of these works the existing street trees would be removed and replaced with Corylus colurna and feature trees. This would provide a

more consistent provision to street trees along the street.

The objective of the design at the junction of Sarah Curran Ave / Grange Road is to produce a more calmed area and to create a new entrance to St Enda's Park. Further details on the design of this space is given within the design statements below.

This calmed space would consist of the following:

- Reduced road carriageway width
- Raise carriageway, with 50mm kerb upstand
- New public lighting
- Undergrounding of ESB
- New soft landscaping
- New quality paving at the new entrance to the park
- Wider, resurfaced footpaths
- New zebra crossing
- New street trees

This arrangement continues until the junction of Park Ave. After the Park Ave junction the 30 kph speed would end and the speed limit would revert back to 50 kph.

Re-use of Historic Materials

There are sections of traditional kerbing (granite & limestone) along Grange Road. This kerbing will need to be taken up as part of proposed scheme. The quality of this existing kerbing varies and some of it will be suitable for re-use within the scheme.

This kerbing will be re-used within the design and construction of the raised entry treatments and within the new plaza spaces at the new entrance to St Endas Park.

The cycle provision would go back to the off-road segregated cycle tracks along both sides of the road. On the east side there would be a landscape buffer between the cycle track and the road carriageway. This would vary in width and in some locations will be wide enough to allow for the planting of new street trees.

To achieve this new cross-section the road carriageway will need to be shifted eastwards and a portion of the landscaped grass margin in front of The Priory would need to be removed. This will require removal of some of the large trees here and removal of the entrance walls to The Priory estate – it is proposed to replace these walls with entrance trees, however the walls can be re-installed if the local residents prefer the walls instead.

At the original entrance to St Endas' Park a new plaza/landscaped area is proposed. The purpose of this area is to highlight the original entrance and to provide a traffic calming effect along the route. Further details on the design of this space are contained within the design statements below.

After the 'plaza area' at the original entrance the cycle provision continues within the segregated off-road provision. A number of new street trees are proposed within the grass area in front of The Priory. This will allow for the creation of a new pattern of street trees. Where possible the existing mature trees along this section would be incorporated within this pattern.

The cycle provision continues all the way until the junction with Hermitage Ave. At Hermitage Ave a toucan crossing will be provided. This junction would be a raised junction, providing a form of traffic calming and making it easier to cross. The unnecessary right turning lane would be remove aswell, again helping to calm traffic in the area.

After this junction the road width will be reduced (inline with the requirements of DMURS (page 101)) and the space reallocated. This allows for the provision of wide segregated off-road cycle tracks and increased pedestrian space and space for landscaping.

The following changes are proposed at the junction of Taylors Lane/Grange Road:

- Removal of left slip from Taylor's Lane
- Reduction in the length of the left turn lane on Grange Road
- A left slip for cyclists from Taylor's Lane onto Grange Road.
- Wider cycle lanes/tracks at the approach to the junction.

The objective of the changes at this junction is to improve cycle facilities by reducing vehicle speeds. These changes are in accordance with the design recommendations of DMURS and the National Cycle Manual. LINSIG analysis has been undertaken to determine the impact of these changes on the performance of the junction.

3.5 Design Statements for Specific Places

Place 1 – Loreto Abbey and Loreto High School Entrance

Place 1 – Loreto Abbey and Loreto High School Entrance

The Loreto Abbey and Loreto High School Entrance site currently comprises the space between the original entrances to the two historic sites, located on opposite sides of Grange Road. The existing entrances were the original entrances to the historic demesnes, but the eastern entrance, Loreto Convent, is now closed to traffic.

The space suffers from ad-hoc parking which is a safety hazard and detracts from the 'grandeur' of the entrances. The standard treatment of the space does not contribute positively to Grange Road or the historic sites beyond.

The key design concept is to highlight and enhance the original entrances and deter the ad-hoc parking. The design contains the following features:

- Street Trees and grass areas
- Higher quality hardsurfaces
- Seating
- Ground lights

The seating space can act as a gathering space for parents and pupils, potentially also providing rest spaces for those who require interim seat stops during walking trips. The original entrances will be highlighted by ground lights and feature hardsurfaces, potentially comprising exposed aggregate polished concrete with granite sett details. The proposed grass areas and trees will green the space and act to replace trees removed to facilitate the development.

The proposed palette of hard materials includes polished exposed aggregate concrete for the main space and natural stone setts for the details to the entrance area. This would create a shared visual identity with the other two feature spaces on Grange Road. The street light columns may extend into this space and should be positioned to respect the historic features. The proposed seats can be designed in an age friendly manner. The potential bollards are shown indicatively as a curved natural stone design. The requirement for bollards may be negated by the proposed high kerbs to the edge of the grass areas.

The existing walls and gates may benefit from restoration works and any such works should be completed before the construction of this project. The Loreto Abbey entrance may be open again in the future, for vehicle traffic, and the design proposals should not impede this.

The exact materials used will be agreed during the detailed design stage and will be informed by the Conservation Architect.

Place 2 : Sarah Curran Ave / Grange Road / Barton Road

This space is located across the junction of Sarah Curran Avenue/Barton Road and Grange Road. The north eastern portion of the space comprises an area of grass and tree planting within the network of public path and driveways. A feature road name sign 'Barton Road' is located in the grass. The southern portion of Space 3 is currently unsightly and impacts negatively on the surrounding streetscape. The ad-hoc car parking, cycle parking and hard surface area feel like a forgotten space and do not contribute positively to the adjacent St. Enda's Park.

The key design concept is to create a welcoming space, with a new pedestrian entrance, to invite visitors into the park and the museum. The whole space should read as a positive feature on Grange Road, with feature tree planting. The main features of the design are as follows:

- New entrance gate
- Interpretation of the former garden boundary
- High quality hard surface materials
- Tree planting and seating

The proposed planting will visually blur the prominence of the existing diagonal fence line. This space can act as a wayfinder for new visitors trying to find the nearby carpark and also be an external 'noticeboard' for their events.

The position of the original garden boundary wall is notionally highlighted by a strip of interpretation on the paving which runs along and is integrated into the adjacent street furniture. The position of the interpretation is approximate only, due to practical purposes, as historic maps indicate that the wall would have extended onto what is now public path and road. The interpretation 'steps down' in height from the corner fence, at Sarah Curran Avenue, through a short wall, to benches and seats and then interpretation on the linking paving. These elements celebrate the memory of the removed section of wall, while facilitating an open public realm space. The proposed short wall could also be designed to

aid way finding to the visitor carpark entrance. There is potential for the interpretive elements/street furniture/new pedestrian gates to be artist or craftsperson designed.

A feature tree is included within the space to mirror the existing parkland landscape within St Enda's park.


Granite Setts


Engraved Natural Stone


Exposed Aggregate Concrete

The proposed **palette** of hard materials includes polished concrete for the main space, natural stone paving for the entrance 'welcome mat' and potential re-use of local existing granite kerbs. Reclaimed granite Grange Road kerbs, which are not feasible for re-use on the roads, could be used as features in the main space or planting areas. This would create a shared visually identity for the 3 spaces along Grange Road. The street light columns will likely extend into the space. The interpretation elements could be designed as a suite of street furniture, including seats which are of age friendly design. The planting will include ornamental pear trees, feature trees and a feature shrubs and perennial plant mix.

There is potential for feature elements to be developed by an artist. A key design element should be wayfinding, especially the direction of St. Enda's Park/Pearse Museum visitors to the carpark.

The scheme offers an opportunity for the OPW to re-configure the existing carpark layout and adjacent path network to make optimum use of the carpark and create an integrated welcoming space. The carpark should ideally be screened by hedge planting and the new path would benefit from a re-configuration of the adjacent planting. This is would be an independent, separate project and is indicated on our proposals to illustrate the potential link-ups.

The exact materials used will be agreed during the detailed design stage and will be informed by the Conservation Architect.

Place 3: St Enda's Park Gatehouse

This site currently comprises the original entrance to St. Enda's Park and the area on the opposite side of Grange Road. This entrance was the original entrance to the historic demesne, it is currently used for disabled access users and service access and is not a public vehicle access.

The second part of the space is grass and tree planting, part of The Priory open space. The park entrance area currently has a standard road treatment which does not contribute positively to St. Enda's Park or Pearse Museum.

The key design concept is to highlight and enhance the original entrance and welcome pedestrian and cyclist visitors into the park and the museum. The main features of the design are:

- High quality hardsurfaces
- Tree planting and seats
- Ground Lights

This space can act as a local meeting space, providing rest spaces for those who require interim seat stops during walking trips. The original entrance is highlighted by ground lights and feature hardsurface details, potentially comprising decorative concrete and granite setts. The hardsurface treatment would be continued in the new space in front of The Priory. Proposed trees will green the space and act to replace trees removed to facilitate the development of the cycle scheme.

The proposed **palette** of hard materials includes polished concrete for the main space and natural stone setts for the details to the entrance area. This would create a shared visual identity with the other two spaces along Grange Road. The street light columns will likely extend into the space. The proposed seats can be designed in an age friendly manner. The proposed bollards are shown indicatively as a curved natural stone design, which is to be agreed with various stakeholders, including visually impaired pedestrians.

The entrance wall and gate could potential benefit from some conservation works. Ideally, any such works would be completed before the proposed project.

The OPW may provide future signage clarifying that the entrance is for disabled visitor and service access only and that public carpark is located off Sarah Curran Avenue. Any future signage should be positioned to complement the proposed enhancements.

The exact materials used will be agreed during the detailed design stage and will be informed by the Conservation Architect.

4 Impact of Proposed Scheme

4.1 Human Beings

No perceptible negative impacts on human beings are predicted.

4.2 Traffic and Transport

Grange Road (R822) is a Regional Road in South County Dublin. As stated previously, the average AADT along this route is 12,000 vehicles per day. This is not deemed to be excessively high in terms of traffic volumes over the entire day. With the introduction of this scheme, traffic speeds will be reduced over a section of this road from its current 50kph down to 30kph in what is being called a “30kph Zone”. This zone is intended to facilitate cyclists on road, with speed reductions necessary to achieve this as part of the scheme.

Slight alterations will be necessary at two of the larger junctions within the scheme in order to implement cycle facilities successfully within these junctions. Junction analysis has been undertaken at these junctions in order to determine any potential impacts that this may have on the capacity of the junctions. Analysis and results are outlined below.

Impact on Pedestrians

The proposed scheme will have an overall positive impact on pedestrians throughout the scheme. Junction upgrades at the majority of the junctions along Grange Road will see improvement of pedestrian crossing facilities and raised crossings will give priority to the pedestrians crossing. The introduction of the 30kph zone will reduce traffic speeds and give pedestrians further encouragement to cross the road in a safe and secure manner. The new landscaping and urban realm improvements will make the street more attractive and improve the sense of place. The environment will also be more friendly and easier to use for disabled users and for the elderly.

Impact on Cyclists

The proposed scheme will greatly improve facilities for cyclists. The scheme will provide for high quality continuous and attractive cycle facilities along the extent of the route. The reduce vehicle speeds and changes at the junctions will improve safety for cyclists.

Impact on Public Transport

The proposed scheme will have minimal impact on the operation of public transport facilities. The scheme will provide improved bus set-down facilities and waiting areas.

Impact on Traffic

Within an urban environment the capacity is defined by the junctions rather than the link capacity. The impact of this scheme on the performance of the key junctions along the route is detailed below.

Junction Analysis

Junction analysis was undertaken at two of the junctions within the study area, the Grange Road/Taylors lane junction and Grange Road/Nutgrove Avenue junction. Linsig models were developed for both of these junctions and were modelled for the existing base year and for the proposed scheme layout in order to determine any impacts that the proposed scheme may have on the junctions. The models were developed for both the AM and PM peak hour. Results of the LINSIG are shown in detail in Appendix B of this report with a summary of outputs below.

Results from the LINSIG models showed that there are minor impacts on the junctions as a result of the proposed scheme. At the Grange Road/Taylors Lane junction, the removal of the left hand slip lane from Taylors Lane to Grange Road has minimal impact on the capacity of the lane with the average delay increasing by a couple of seconds in each peak hour. This is due to the low volume of vehicles making this turn in both of the peak hours, with 102 vehicles per hour in the AM peak and 94 vehicles per hour in the PM peak. This equates to approximately 3 vehicles every cycle in both peak hours. Therefore, there is ample green time during each cycle and sufficient length of flare for these vehicles to get through the junction.

At the Grange Road/Nutgrove Avenue junction, the only arm which has been altered due to the proposed scheme is the Grange Road arm. This arm has been altered with the length of the flare lane reduced from a capacity of 5 vehicles to 3.

The impact of this alteration is a slight reduction in the performance of the junction. It will result in slight decrease of practical reserve capacity (PRC) throughout the junction and DOS and queuing will be increased. However, with reference to the existing analysis for the junction, the proposed junction will perform similarly to the current performance that the junction experiences.

Impact on Parking

At present, many vehicles are parking up on the footpaths along Grange Road; this blocks the existing cycle lanes and footpaths. Vehicles also park up outside the Loreto Abbey entrance. With the new scheme in place, it will not be possible for vehicles to park up on the footpaths as there will be kerb separation between the traffic lane and the cycle track and road width will not allow for parking on footpath. The area outside of Loreto Abbey is also going to be upgraded with parking not possible.

With the scheme in place, there will be a reduction in existing parking locations along Grange Road. Inset parking spaces have been allocated along sections of Grange Road however, these will be less than what is there presently. This will result in some of the school related parking being displaced onto the side roads, however the key to solving this issue is to reducing the parking demand by encouraging greater numbers of children to walk or cycle to the school.

Mitigation

As part of an overall mitigation measure for the reduction in allocated parking, SDCC are investigation the development of an area wide co-ordinated School Travel Plan.

This co-ordinated plan would further encourage walking and cycling within the area and help to reduce the demand for the parking associated with the school drop-off and pick-up.

4.3 Flora and Fauna

A tree survey and an Arborist Impact Assessment report was undertaken as part of the assessment works. These surveys are provided as standalone background documents to the Part 8.

Ecological Assessment (EA)

An Ecological Assessment of the Grange Road route was carried out subsequent to the AA Screening report. The EA involved a field walkover survey including a mammal and potential bat roost survey of the site, which was conducted on 09th October 2015. The preliminary bat assessment did not confirm any trees with high potential to support a bat roost. However as a precaution, it is recommended that trees no. 545ap, 547 and 549 may be felled

taking reasonable avoidance measures and tree sections should be retained in situ at the base of the tree for at least 24 hours before removal off Site.

On the basis of the desk study and informed by an ecological survey and assessment, indicators of significance show that there is no potential for localised short term or long term interference with any priority habitat, corresponding annex habitat, the breeding places of any protected species or red listed species through proposed works of engineering construction at the Site.

Mitigation Measures

As a result of the above assessment and in order to ensure the proposed cycleway does not significantly impact on the environment the following mitigation measures will be included within the Works Contract to ensure protection of the environment, in particular flora and fauna and landscape.

Protection of the linear habitats along the Grange Road

- Only those trees identified as part of the scheme construction works will be removed; and
- The footprint of works will be identified at the onset of works and will be demarcated to avoid unnecessary disturbance to habitats outside the works area.

Protection of wildlife

- As a precaution and to ensure no possible impact on bats, it is recommended that trees no. 545ap, 547 and 549 may be felled taking reasonable avoidance measures and tree sections should be retained in situ at the base of the tree for at least 24 hours before removal off Site.
- Any other tree felling along Grange Road will be carried out outside the bird nesting season (1st March to the 31st August), in order to avoid damage to nests and young birds.

The Ecological Assessment report is provided as a standalone report to this Part 8.

4.4 Screening for Appropriate Assessment

A Screening Report was produced to fulfil the requirements of EU Habitats Directive (92/34/EEC). The screening document provides the information required in order to establish whether or not the proposed development is likely to have a significant impact on the Natura 2000 sites in the context of their conservation objectives and specifically on the habitats and species for which the Natura 2000 sites have been designated. This assessment has confidently and objectively concluded that the project will have no potential effects either alone or in combination with other plans or projects, with respect to the structure and function of Natura 2000 sites and their conservation objectives.

The screening report is provided as a standalone report to this Part 8.

4.5 Soil and Groundwater

The scheme will utilise the existing road surface water drainage network along Grange Road. Where appropriate, sustainable urban drainage systems will be incorporated within the design of the landscape area outside of The Priory.

4.6 Air/Noise

No perceptible negative impacts on noise are predicted.

The proposed scheme will reduce traffic speeds along the street. The scheme will promote walking and cycling and make it more attractive for use by locals resulting in a reduction in car trips.

4.7 Air Quality

No perceptible negative impacts on air quality are predicted.

4.8 Landscape

The proposed scheme will require the removal of some existing trees of various age and condition; however these will be replaced with a higher number of trees. The new trees will be planted in an evenly spaces rows and patterns to enhance the structure of the streetscape and create feature 'places'. The proposed feature spaces will also enhance the appearance Grange Road, their condition will be transformed to create positive nodes. Whilst the initial impact will be negative, overtime the scheme will have a beneficial streetscape and visual impact.

The design has been revised to ensure that the two trees noted of being 'moderate' value by the arborculturlist are not impacted. These being the birch and beech tree within St Endas Park.

A summary of the report by the arboriculturalist is contained below.

A large number of trees will be removed to facilitate the proposed cycle scheme. The initial visual impact will be negative particularly on sections of Grange road and within the open space at the Priory housing estate however this will be mitigated over time by the replacement trees and additional landscaping. In overall terms the combination of the improved streetscape and new landscaping will have a positive visual impact on the street.

From an arboricultural perspective the value of the trees with two notable exceptions are moderate. The exceptions are the beech (#520) and birch (#516) within St Enda's park. The former has high landscape value and is an integral element of the tree scape within the park and the latter is a well developed specimen with no visible defects. The opportunity exists to retain these trees within the design of any internal changes to the park and it is recommended that the retention of the beech in particular is considered.

The quality of the planting along Grange road to date has been variable in terms of the suitability of the trees chosen to grow within paved areas and in close proximity to traffic. New tree planting of species / cultivars within appropriate locations and within viable planting pits will provide a new generation of trees with long-term potential.

Retained trees will be monitored for the duration of the works and a post construction report will be provided by the site arborist.

Proposed planting and mitigation

An extensive replanting programme is included within the design of the proposed scheme, resulting in an overall increase in the number of street trees along the route. A mature feature tree is proposed within the new plaza space at Sarah Curran Ave. All of the tree species will be in accordance with South Dublin County Council's Tree Management Policy. It is recommended that the mature category A beech (#520) and birch (#516) be retained within a revised path layout within St Enda's Park.

4.9 Material Assets

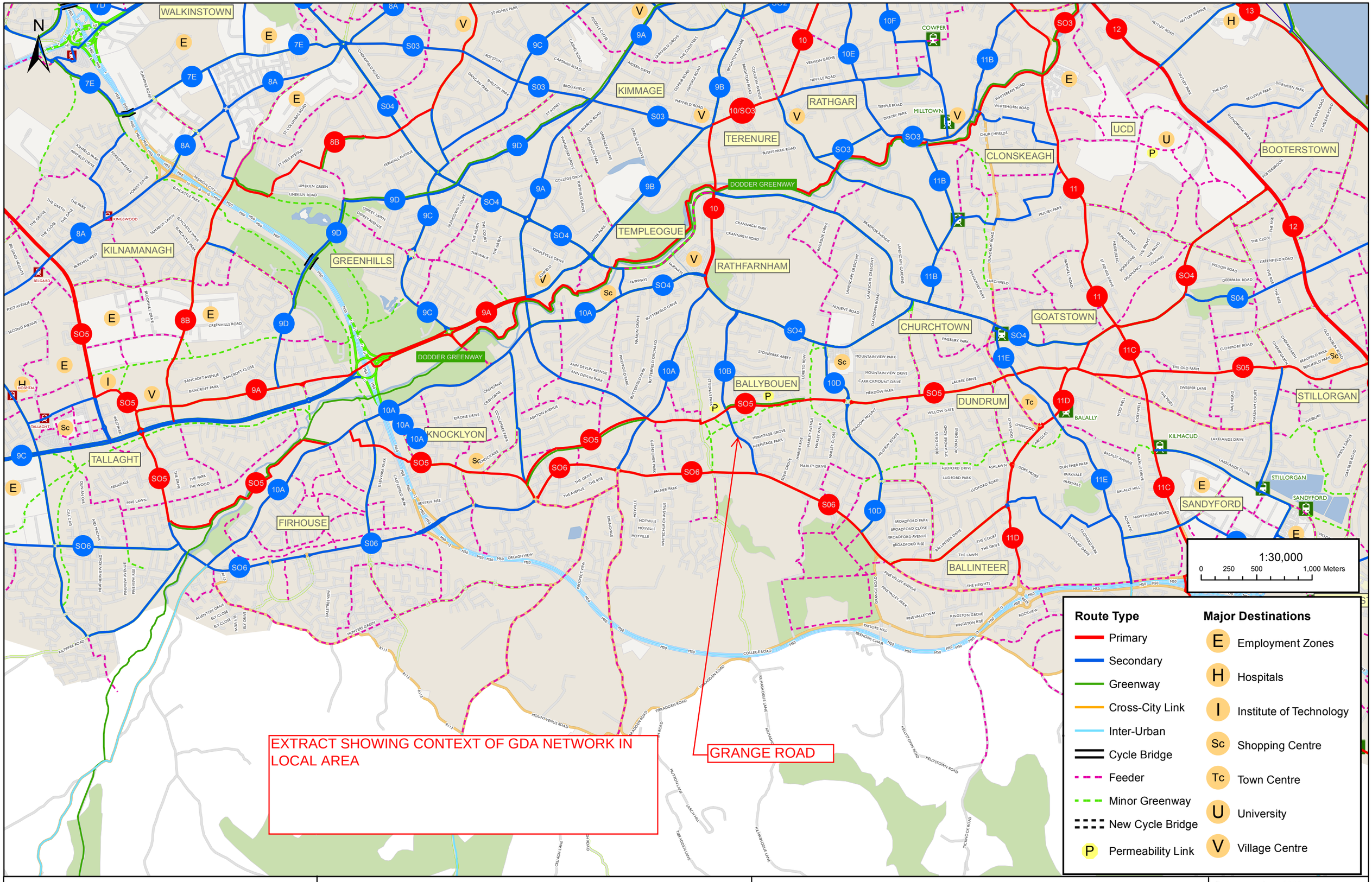
No perceptible negative impacts are predicted.

4.10 Cultural Heritage

Overall the scheme will have a positive impact on the Cultural and Built Heritage of the area. A report on the impact of the scheme on the built heritage has been prepared by Shaffrey and Associates.

Appendix A : GDA Cycle Network Maps

Appendix A : GDA Cycle Network Maps



Project:
CYCLE NETWORK PLAN FOR THE GREATER DUBLIN AREA

Title:
PROPOSED CYCLE NETWORK

SHEET N

Údarás Náisiúnta Iompair
National Transport Authority

AECOM ROD ROUGHAN & O'DONOVAN

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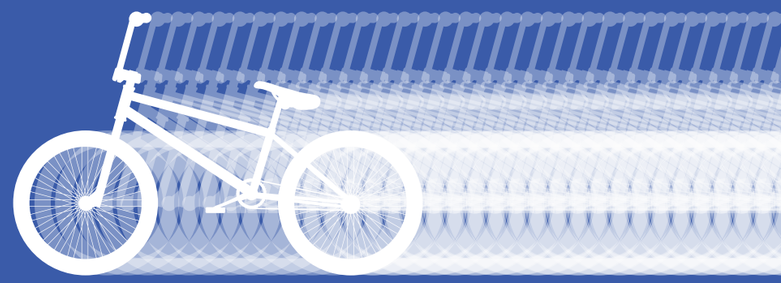
Date: June 2013
Drg No: N Rev A
Created: LA Approved: JS
Checked: SMG

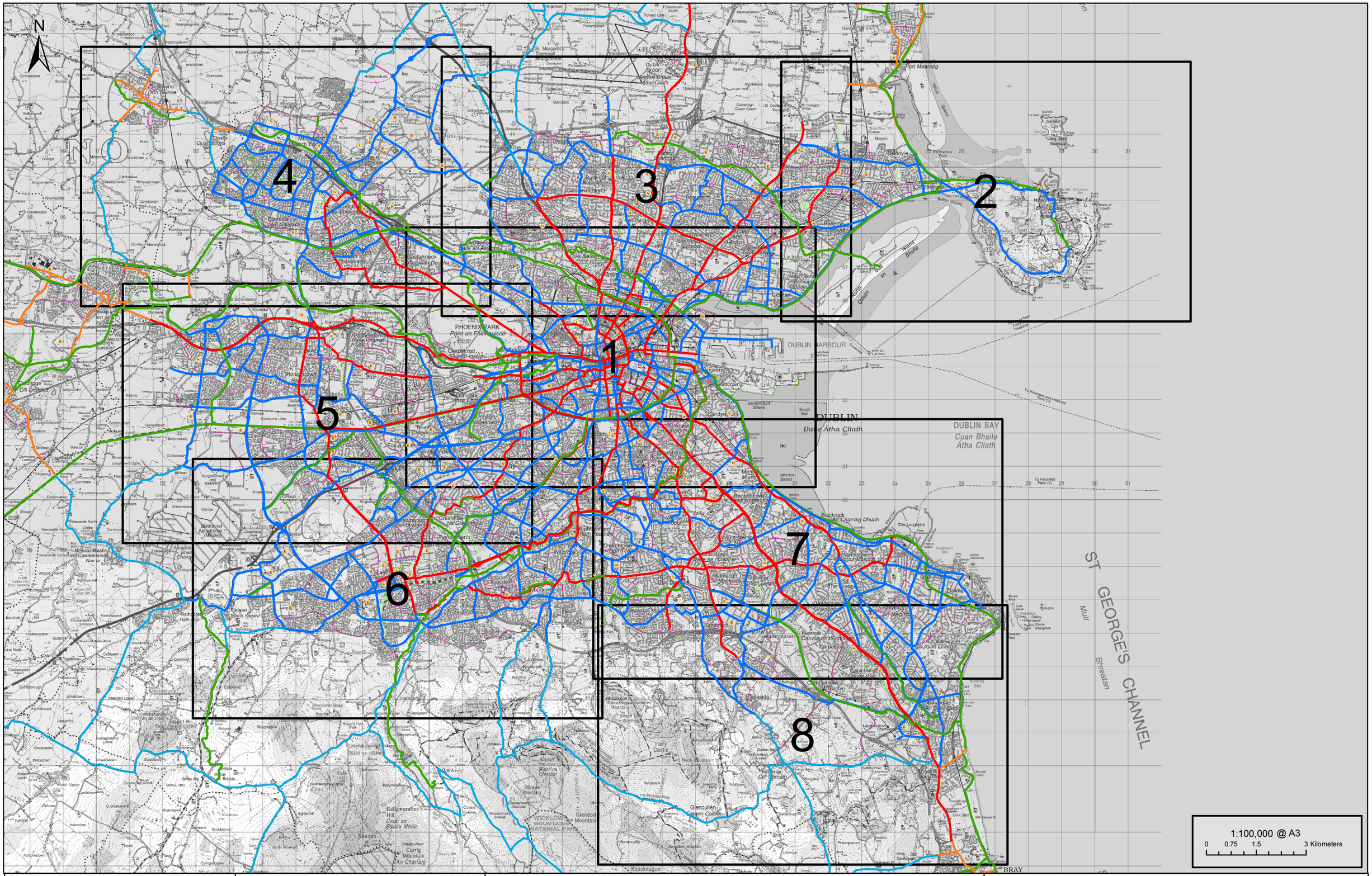
Greater Dublin Area

Cycle Network Plan

Part 4b:

Proposed Cycle Network Dublin Area





Project:

CYCLE NETWORK PLAN FOR THE GREATER DUBLIN AREA

Title:

PROPOSED CYCLE NETWORK DUBLIN AREA SHEET PLAN - DS

Legend:

- Primary
- Secondary
- Greenway
- Primary/Secondary
- Inter-Urban
- Feeder
- Minor Greenway
- New Cycle Bridge
- P Permeability Link
- E Employment Zones
- H Hospitals
- I Institute of Technology
- Sc Shopping Centre
- Tc Town Centre
- U University
- V Village Centre

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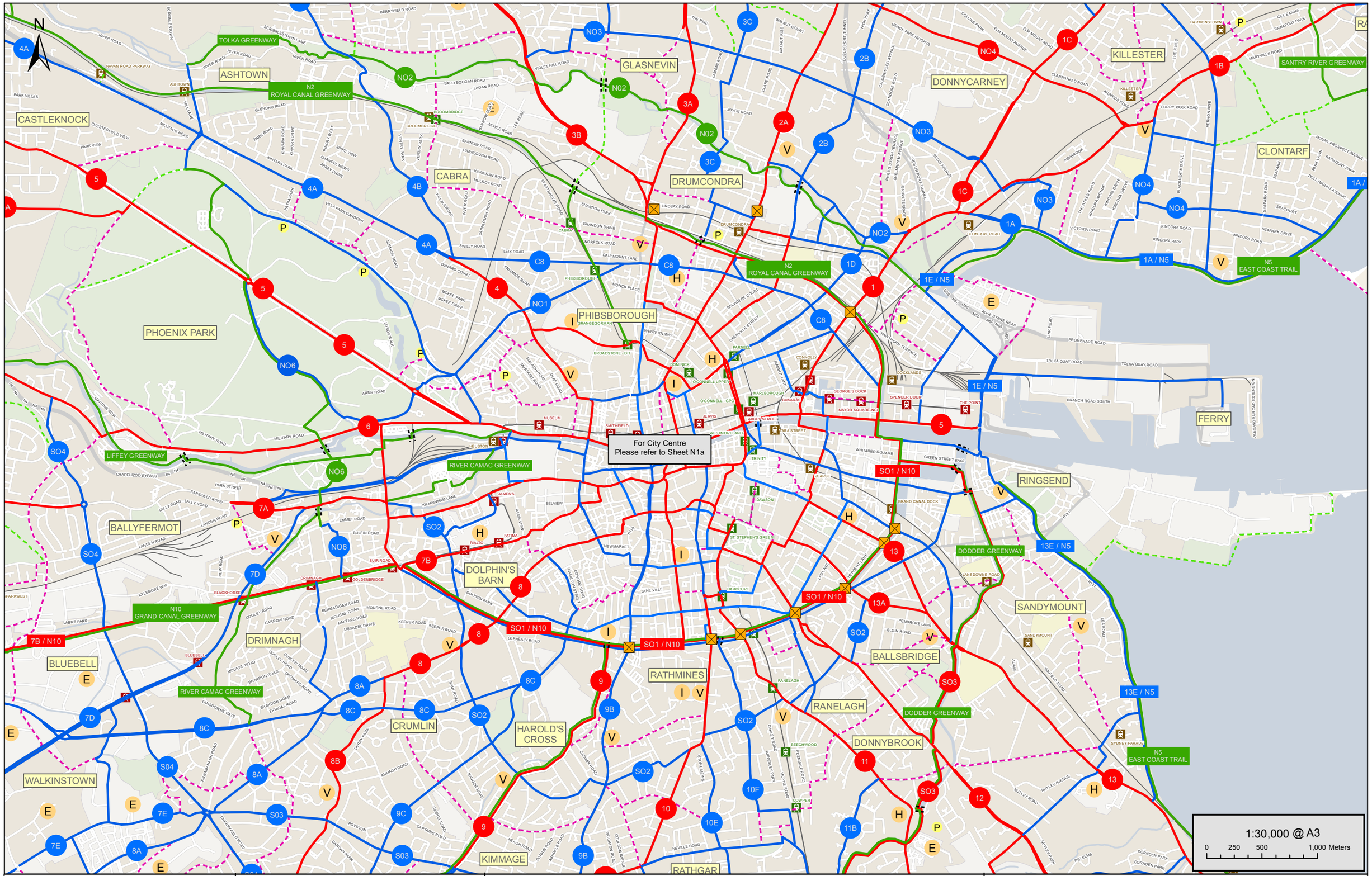

Project:	Title:	Legend:					
CYCLE NETWORK PLAN FOR THE GREATER DUBLIN AREA	PROPOSED CYCLE NETWORK DUBLIN CITY CENTRE SHEET N1	Primary Secondary Greenway Primary/Secondary	Inter-Urban Feeder Minor Greenway New Cycle Bridge	P Permeability Link Gateway E Employment Zones H Hospitals	I Institute of Technology Sc Shopping Centre Tc Town Centre U University V Village Centre	Greenline Tram Stops Redline Tram Stops Stations	

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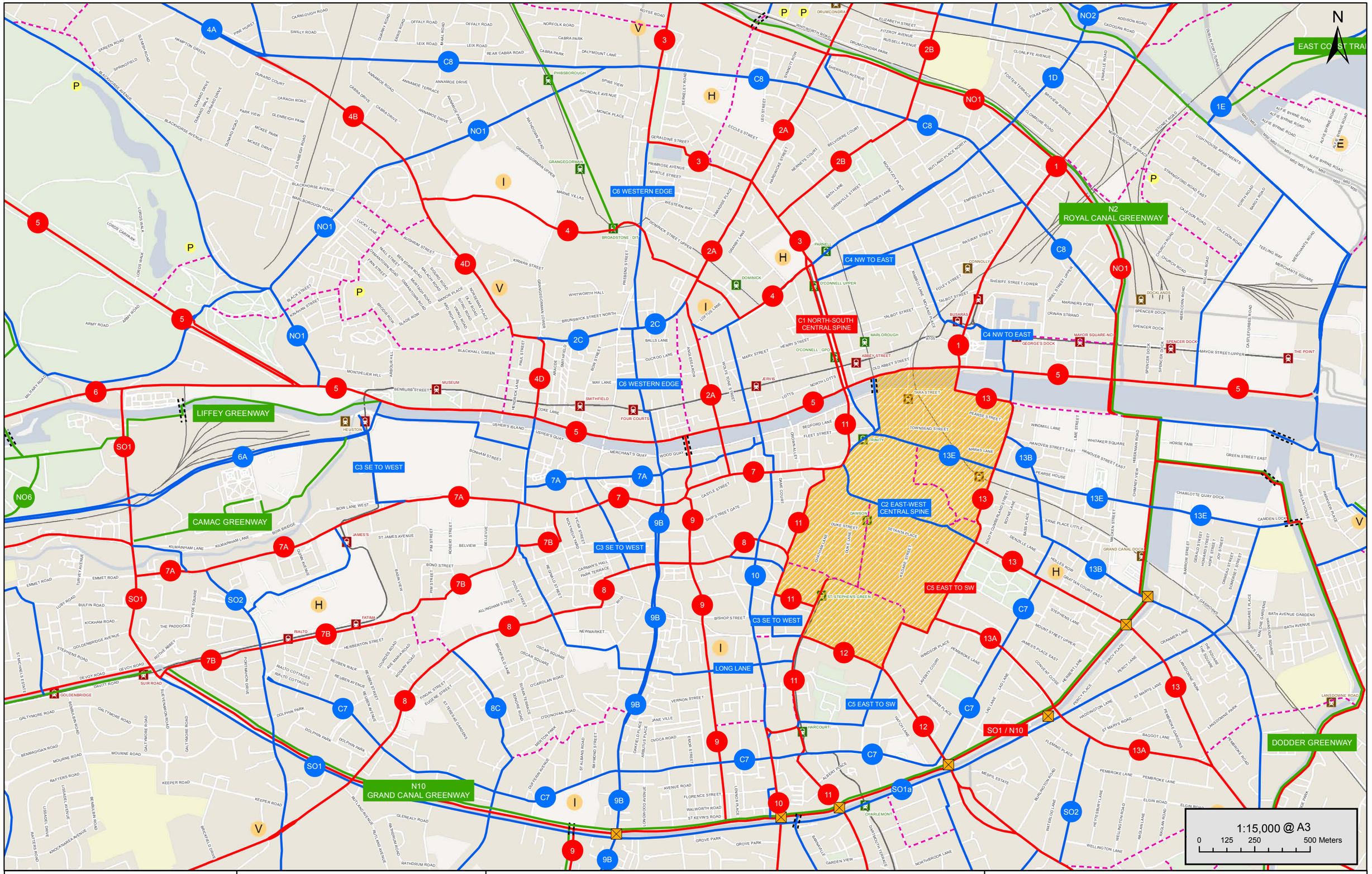

Project:

CYCLE NETWORK PLAN FOR THE GREATER DUBLIN AREA

Title:

PROPOSED CYCLE NETWORK DUBLIN CITY CENTRE SHEET N1a

Legend:

- Primary
- Secondary
- Greenway
- Primary/Secondary
- Inter-Urban
- Feeder
- Minor Greenway
- New Cycle Bridge
- P Permeability Link
- Gateway
- South Core City Centre (Trinity / Graffton)
- E Employment Zones
- H Hospitals
- I Institute of Technology
- Sc Shopping Centre
- Tc Town Centre
- U University
- V Village Centre
- Greenline Tram Stops
- Redline Tram Stops
- Stations

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NO1/N2
ROYAL CANAL GREENWAY

C1 NORTH-SOUTH
CENTRAL SPINE

SO1/N10
GRAND CANAL GREENWAY

SO1 / N10

DODDER GREENWAY

1:15,000 @ A3
0 125 250 500 Meters

Project:

CYCLE NETWORK PLAN FOR THE GREATER DUBLIN AREA

Title:

PROPOSED CYCLE NETWORK
DUBLIN CITY CENTRE
PRIMARY ROUTES
SHEET N1b

Legend:

- Dublin - Primary
- P Permeability Link
- New Cycle Bridge
- Gateway
- South Core City Centre (Trinity / Graffton)
- E Employment Zones
- H Hospitals
- I Institute of Technology
- Sc Shopping Centre
- Tc Town Centre
- U University
- V Village Centre
- Greenline Tram Stops
- Redline Tram Stops
- Stations

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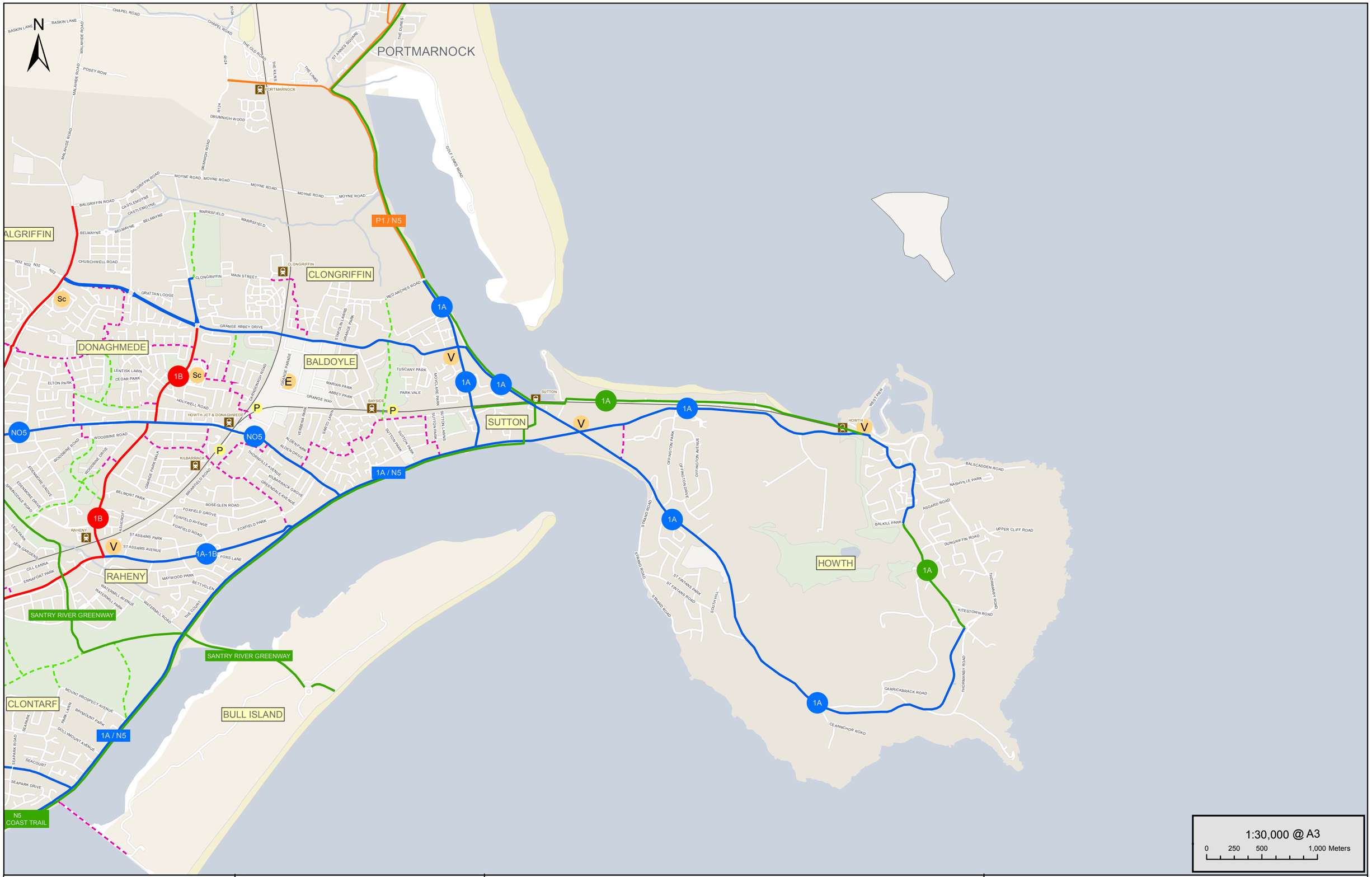

Project:

CYCLE NETWORK PLAN FOR THE GREATER DUBLIN AREA

Title:

PROPOSED CYCLE NETWORK DUBLIN NORTH EAST SHEET N2

Legend:

- Primary
- Secondary
- Greenway
- Primary/Secondary
- Inter-Urban
- Feeder
- Minor Greenway
- New Cycle Bridge
- P Permeability Link
- Gateway
- E Employment Zones
- H Hospitals
- I Institute of Technology
- Sc Shopping Centre
- Tc Town Centre
- U University
- V Village Centre
- Greenline Tram Stops
- Redline Tram Stops
- Stations

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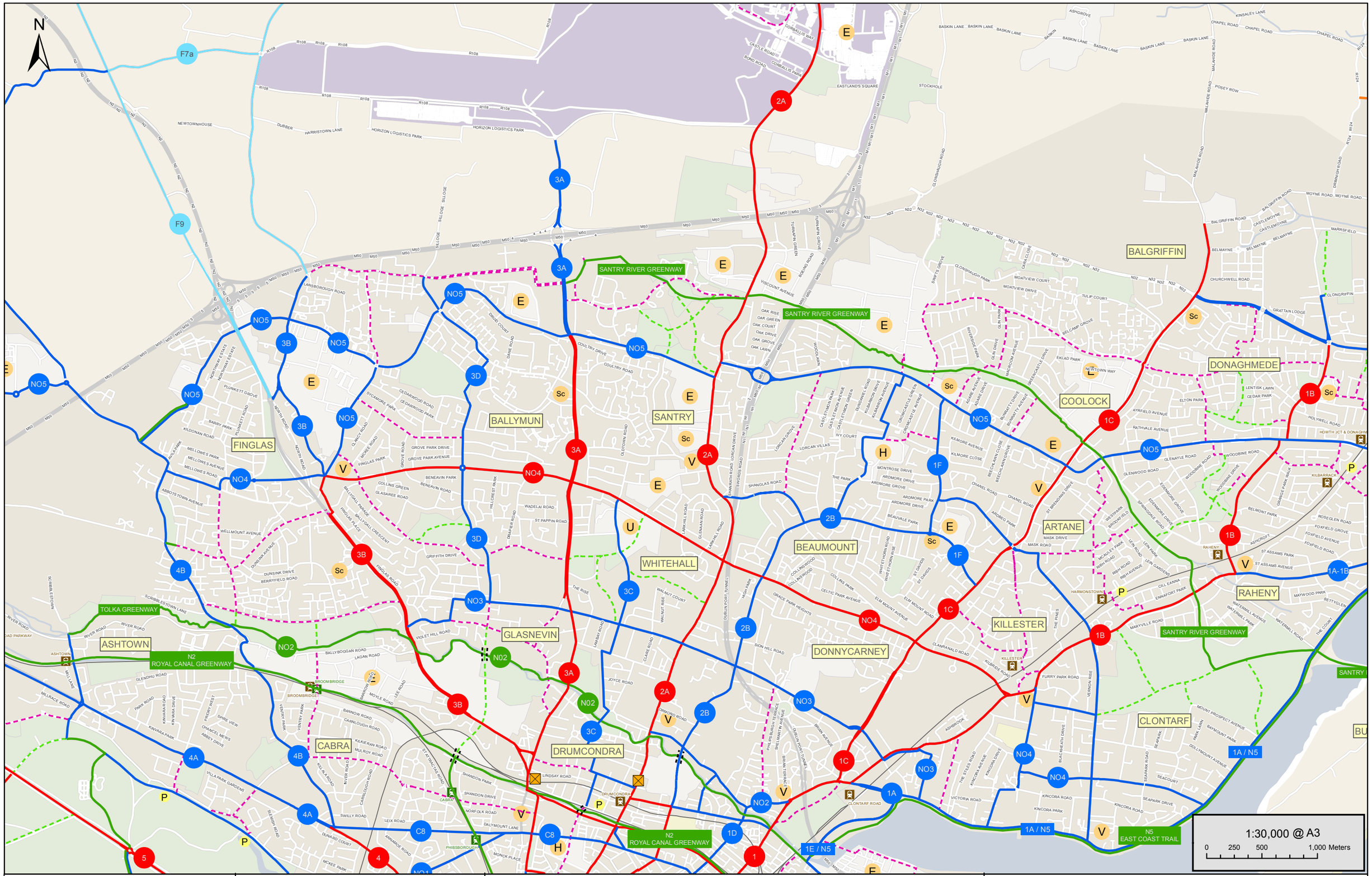

Project:	Title:	Legend:					
CYCLE NETWORK PLAN FOR THE GREATER DUBLIN AREA	PROPOSED CYCLE NETWORK DUBLIN NORTH CENTRAL SHEET N3	Primary Secondary Greenway Primary/Secondary	Inter-Urban Feeder Minor Greenway New Cycle Bridge	P Permeability Link Gateway E Employment Zones H Hospitals	I Institute of Technology Sc Shopping Centre Tc Town Centre U University V Village Centre	Greenline Tram Stops Redline Tram Stops Stations	

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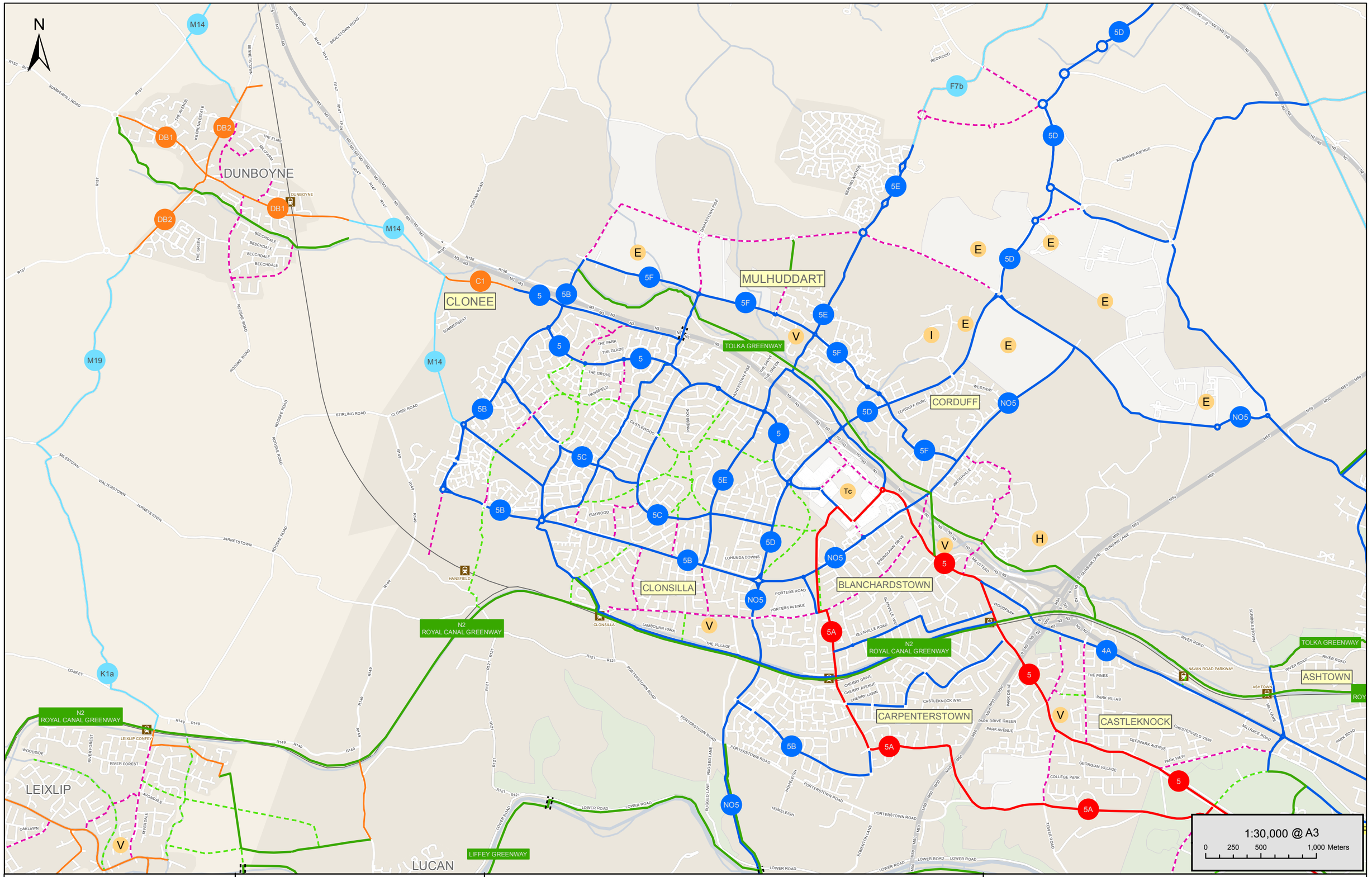

Project: CYCLE NETWORK PLAN FOR THE GREATER DUBLIN AREA	Title: PROPOSED CYCLE NETWORK DUBLIN NORTH WEST SHEET N4	Legend: Primary Secondary Greenway Primary/Secondary Inter-Urban Feeder Minor Greenway New Cycle Bridge P Permeability Link Gateway E Employment Zones H Hospitals I Institute of Technology Sc Shopping Centre Tc Town Centre U University V Village Centre Greenline Tram Stops Redline Tram Stops Stations

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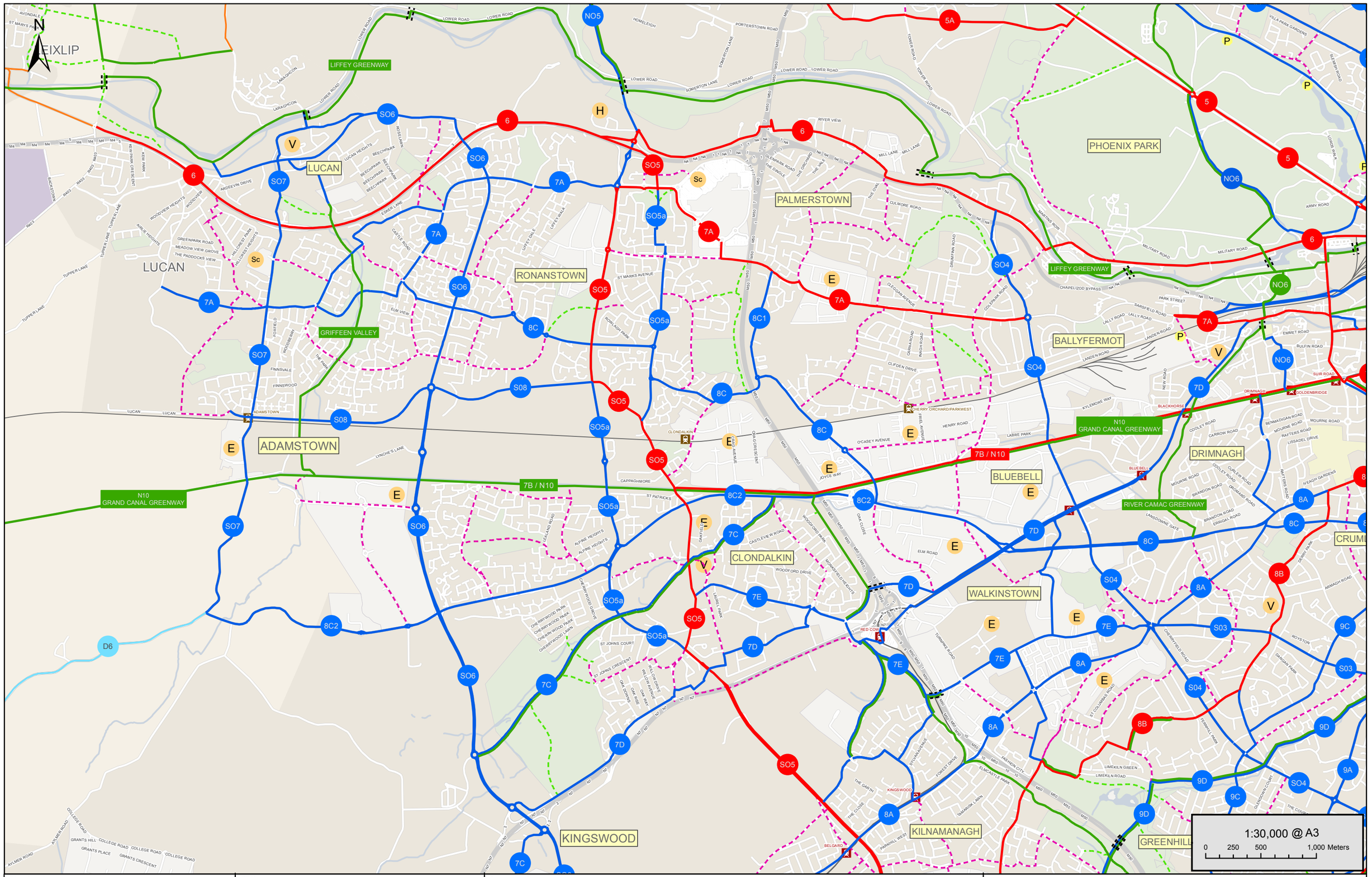

Project:

CYCLE NETWORK PLAN FOR THE GREATER DUBLIN AREA

Title:

PROPOSED CYCLE NETWORK
DUBLIN MID WEST
SHEET N5

Legend:

- Primary
- Secondary
- Greenway
- Primary/Secondary
- Inter-Urban
- Feeder
- Minor Greenway
- New Cycle Bridge
- P Permeability Link
- Gateway
- E Employment Zones
- H Hospitals
- I Institute of Technology
- Sc Shopping Centre
- Tc Town Centre
- U University
- V Village Centre
- Greenline Tram Stops
- Redline Tram Stops
- Stations

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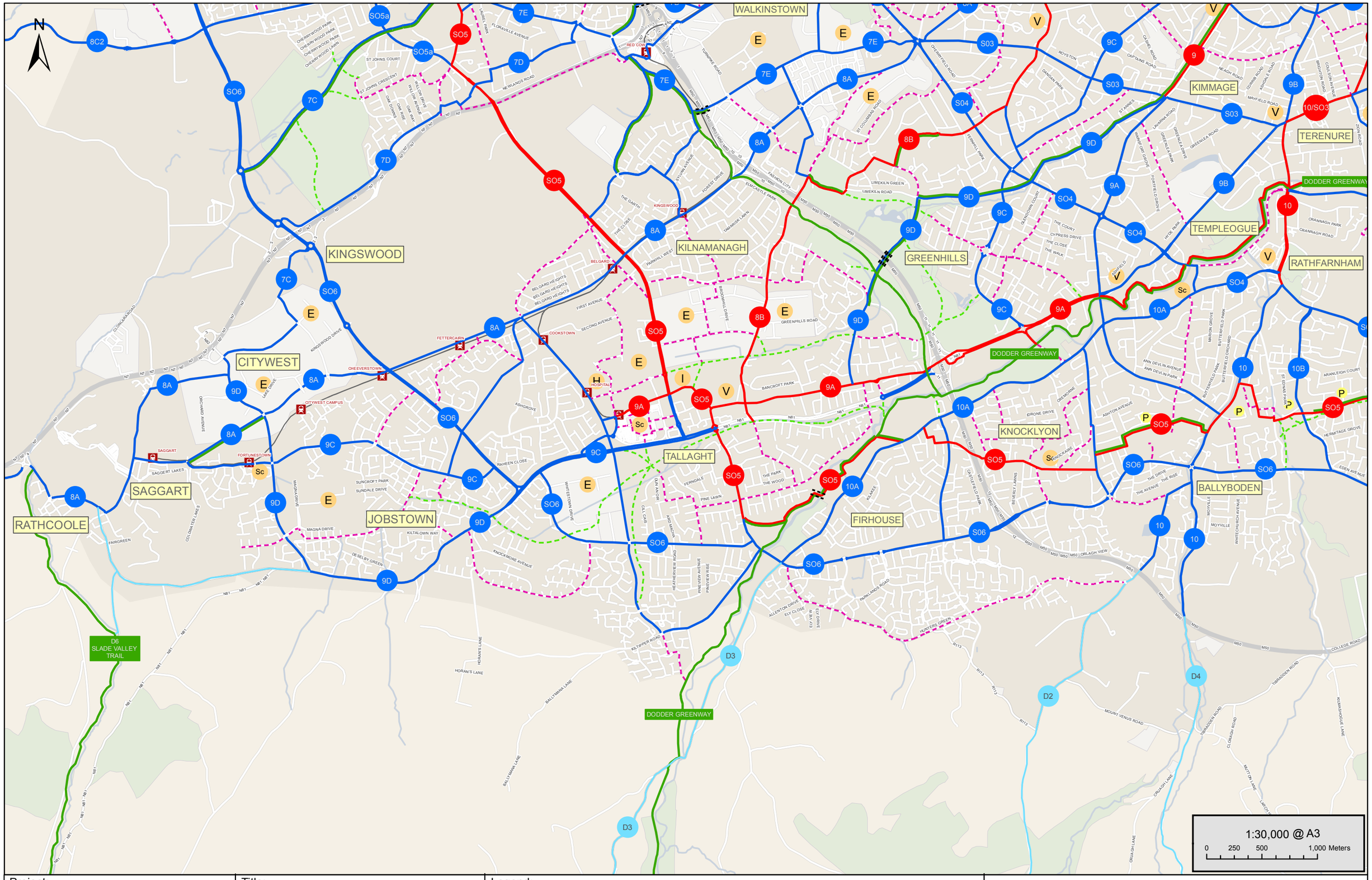

Project:	Title:	Legend:
CYCLE NETWORK PLAN FOR THE GREATER DUBLIN AREA	PROPOSED CYCLE NETWORK DUBLIN SOUTH WEST SHEET N6	Primary; Secondary; Greenway; Primary/Secondary; Inter-Urban; Feeder; Minor Greenway; New Cycle Bridge; P Permeability Link; Gateway; E Employment Zones; H Hospitals; I Institute of Technology; Sc Shopping Centre; Tc Town Centre; U University; V Village Centre; Greenline Tram Stops; Redline Tram Stops; Stations

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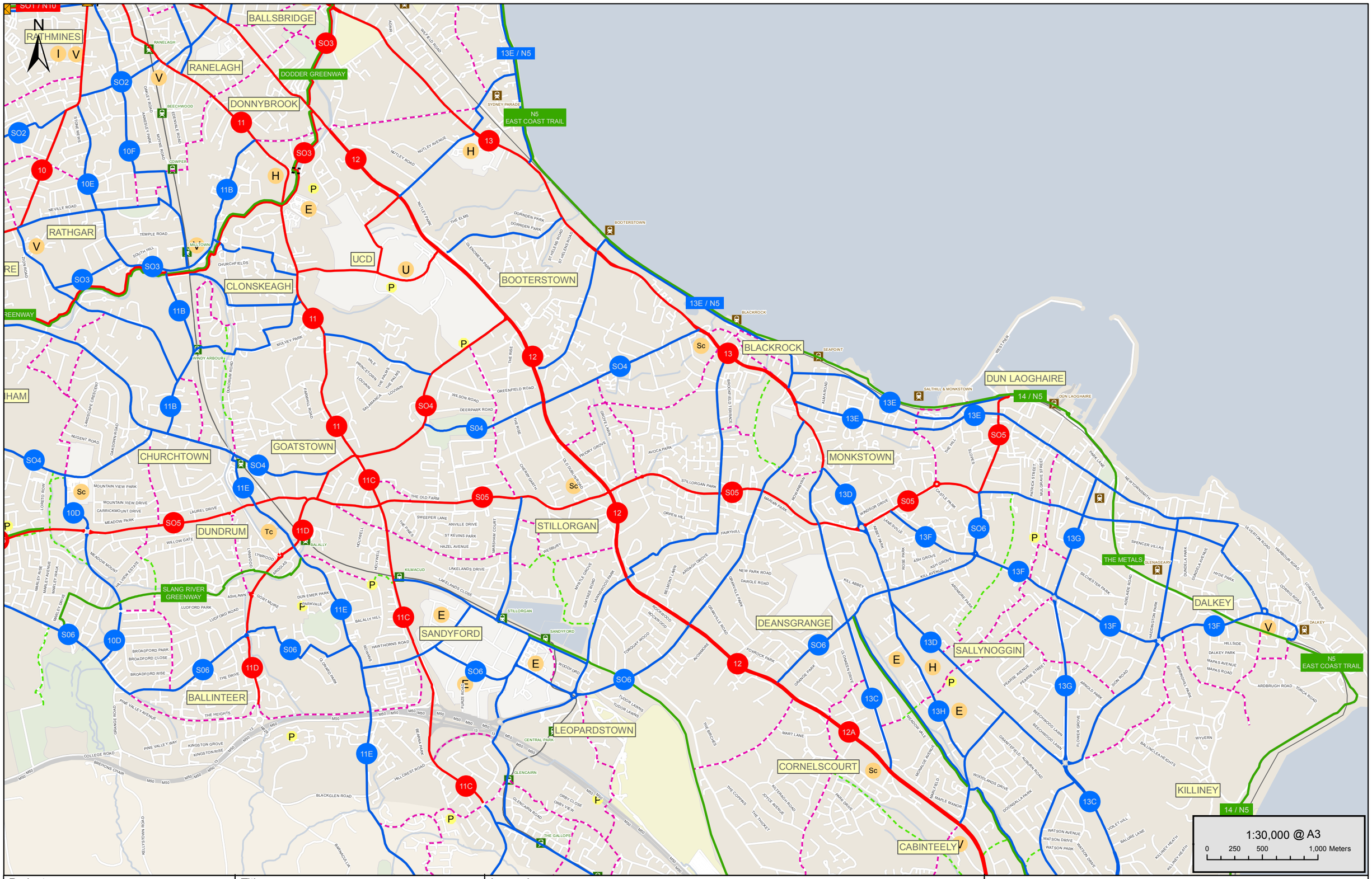

Project:	Title:	Legend:					
CYCLE NETWORK PLAN FOR THE GREATER DUBLIN AREA	PROPOSED CYCLE NETWORK DUBLIN SOUTH CENTRAL SHEET N7	Primary Secondary Greenway Primary/Secondary	Inter-Urban Feeder Minor Greenway New Cycle Bridge	P Permeability Link Gateway E Employment Zones H Hospitals	I Institute of Technology Sc Shopping Centre Tc Town Centre U University V Village Centre	Greenline Tram Stops Redline Tram Stops Stations	

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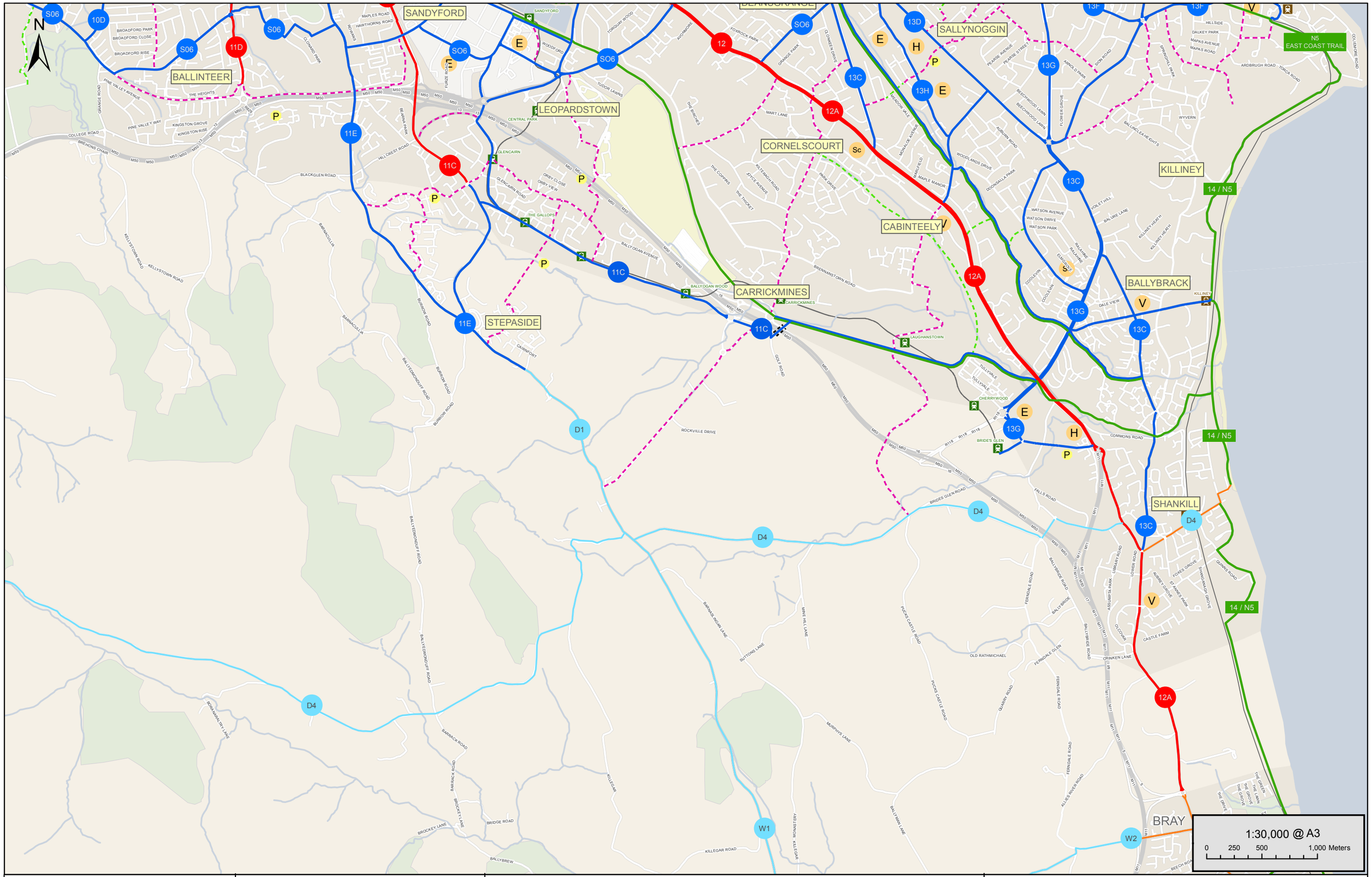

Project:	Title:	Legend:					
CYCLE NETWORK PLAN FOR THE GREATER DUBLIN AREA	PROPOSED CYCLE NETWORK DUBLIN SOUTH EAST SHEET N8	Primary Secondary Greenway Primary/Secondary	Inter-Urban Feeder Minor Greenway New Cycle Bridge	P Permeability Link Gateway E Employment Zones H Hospitals	I Institute of Technology Sc Shopping Centre Tc Town Centre U University V Village Centre	Greenline Tram Stops Redline Tram Stops Stations	

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Appendix B : Traffic Surveys

Capabilities on project:
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Appendix B : Traffic Surveys

Automated Traffic Counts (ATC)

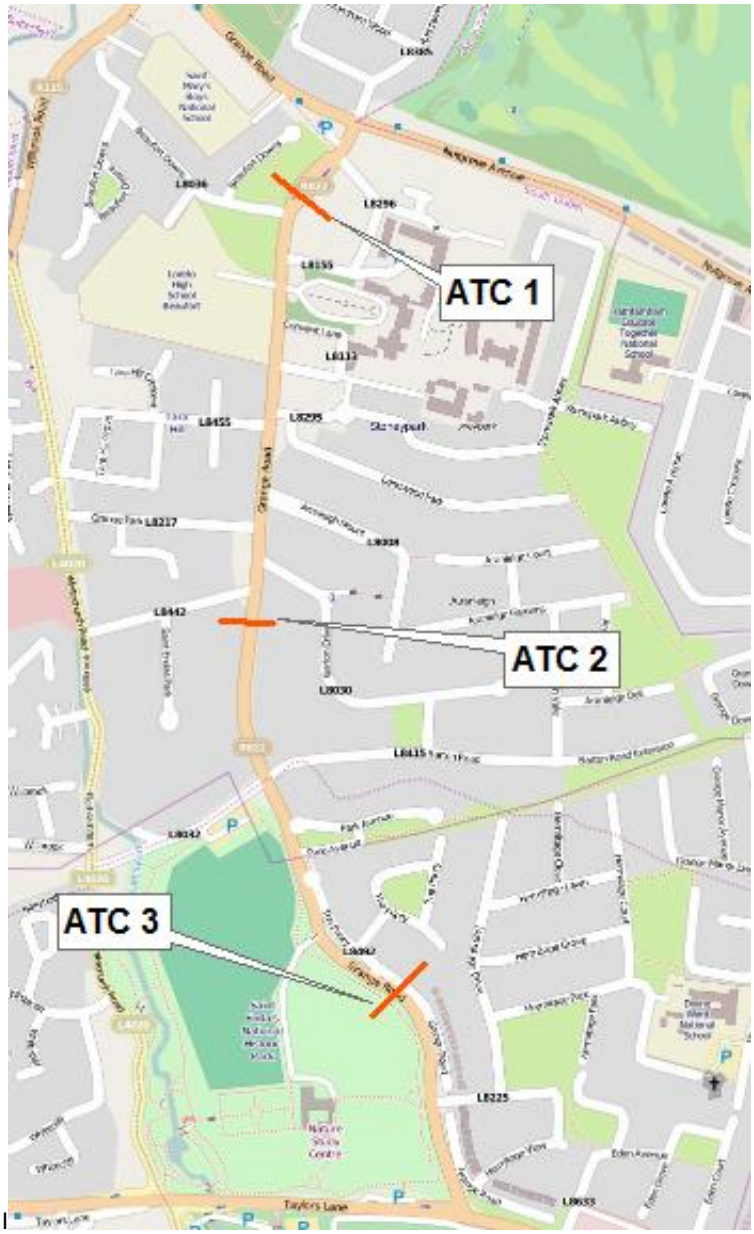


Figure 1 - ATC Locations

A summary of the results obtained from the ATCs is shown in Table 1.

Identifier	Location	AADT	85th Percentile Speed (km/h)	Over Speed Limit (%)
ATC 1	50m from Loreto Entrance	12,493	48.08	8
ATC 2	50m from St Enda's Drive	16,190	56.53	38
ATC 3	60m from The Priory	7,558	55.22	42

Table 1 - ATC Results Summary

Pedestrian Movements

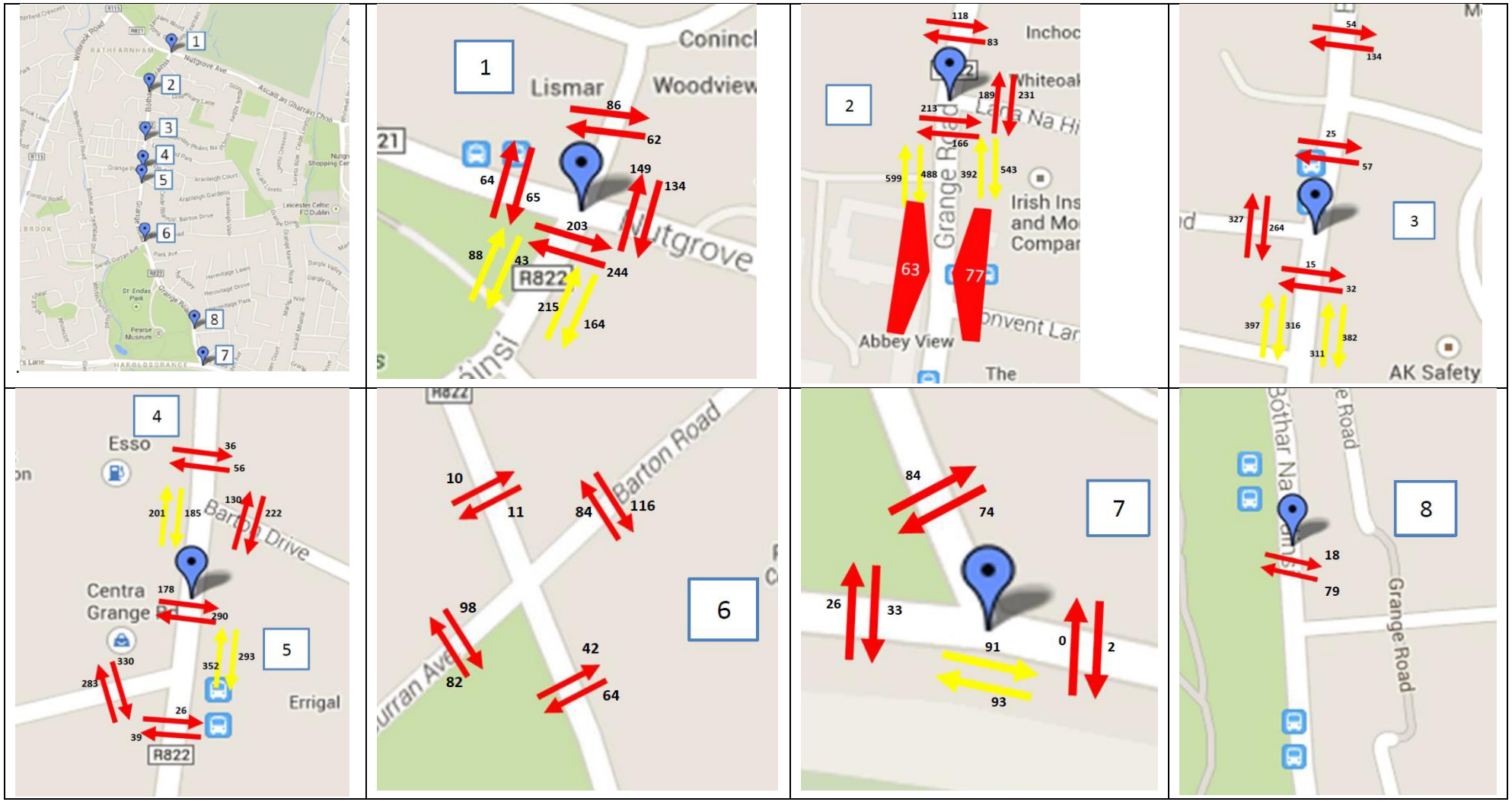


Figure 2 – Pedestrian Survey Results

Cyclist Movements

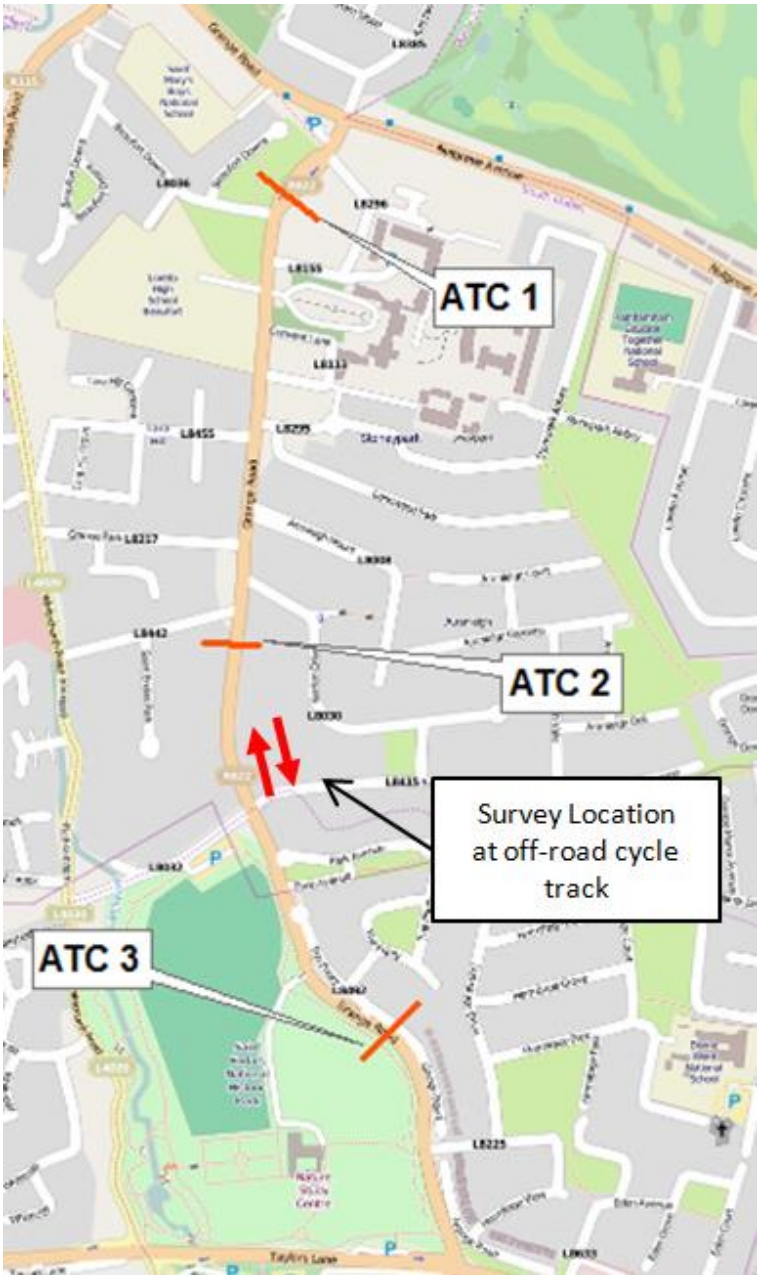


Figure 3 - ATC Locations

Identifier	Location	Average Cycle Movements per Day
ATC 1	50m from Loreto Entrance	313
ATC 2	50m from St Enda's Drive	249
ATC 3	60m from The Priory	110
Off Road Cycle Track		71

Table 2 - Cycle Movements Measured on Grange Road

Junction Turning Counts

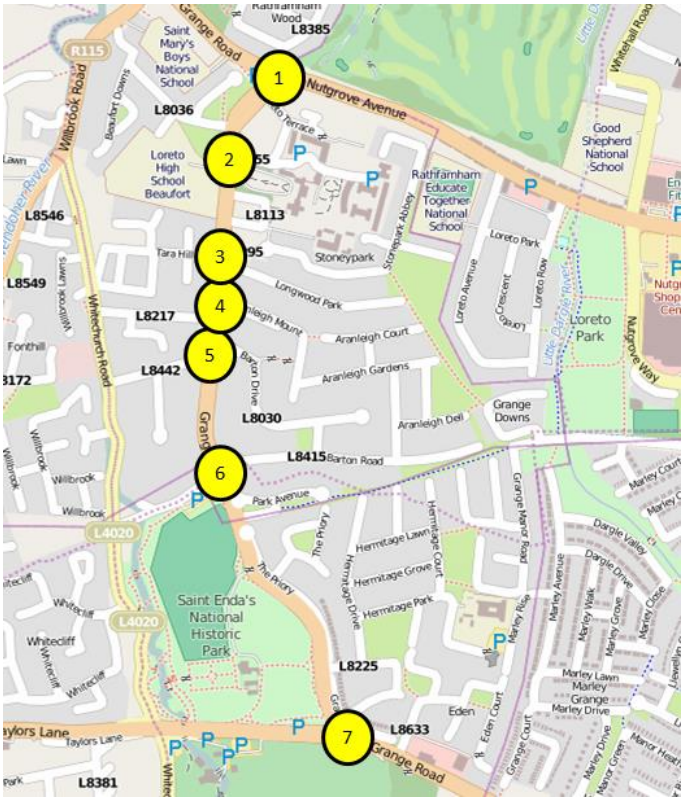


Figure 4 - JTC Locations

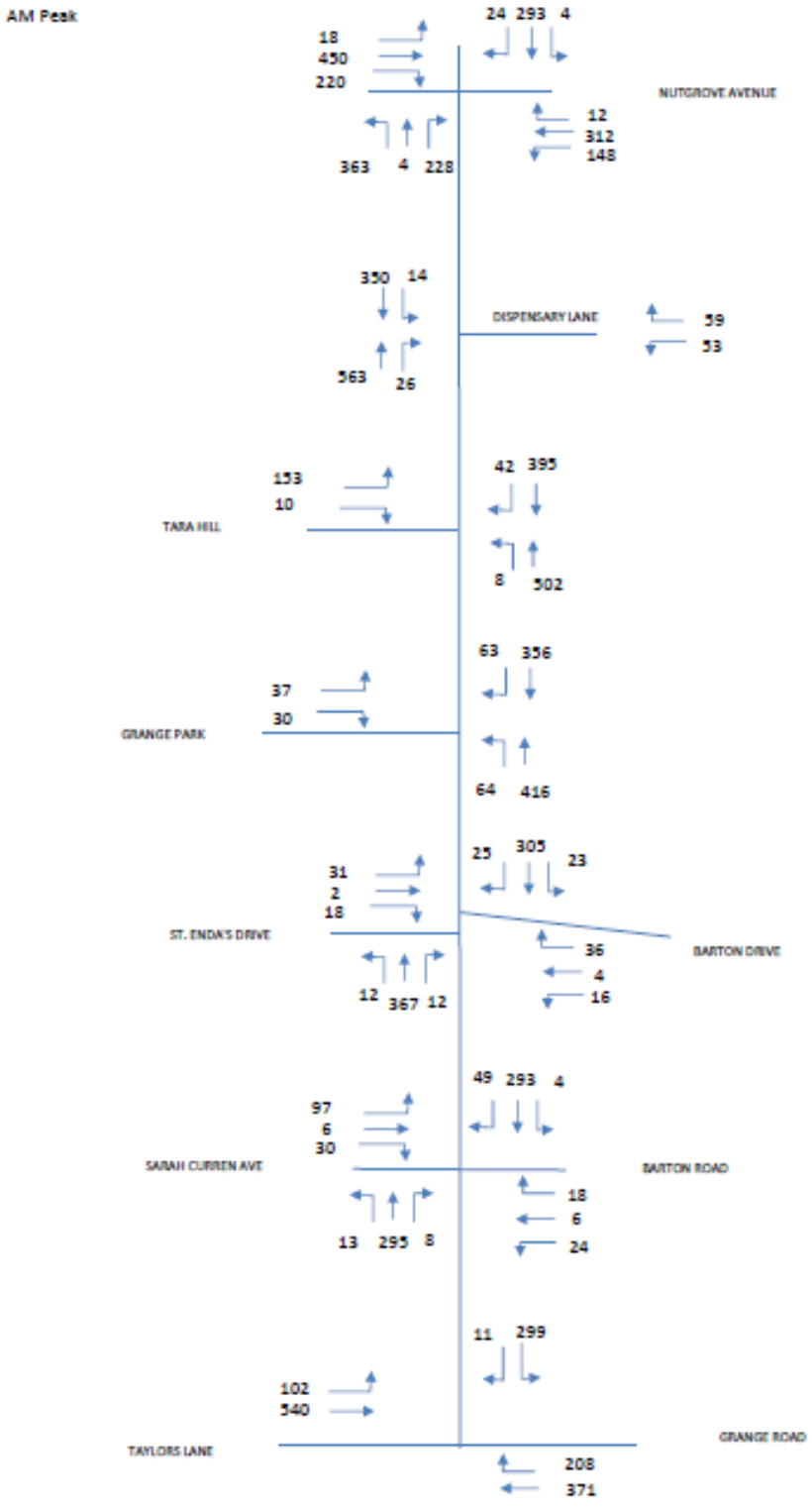


Figure 5 - AM Peak (08:00-09:00) Flow Diagrams

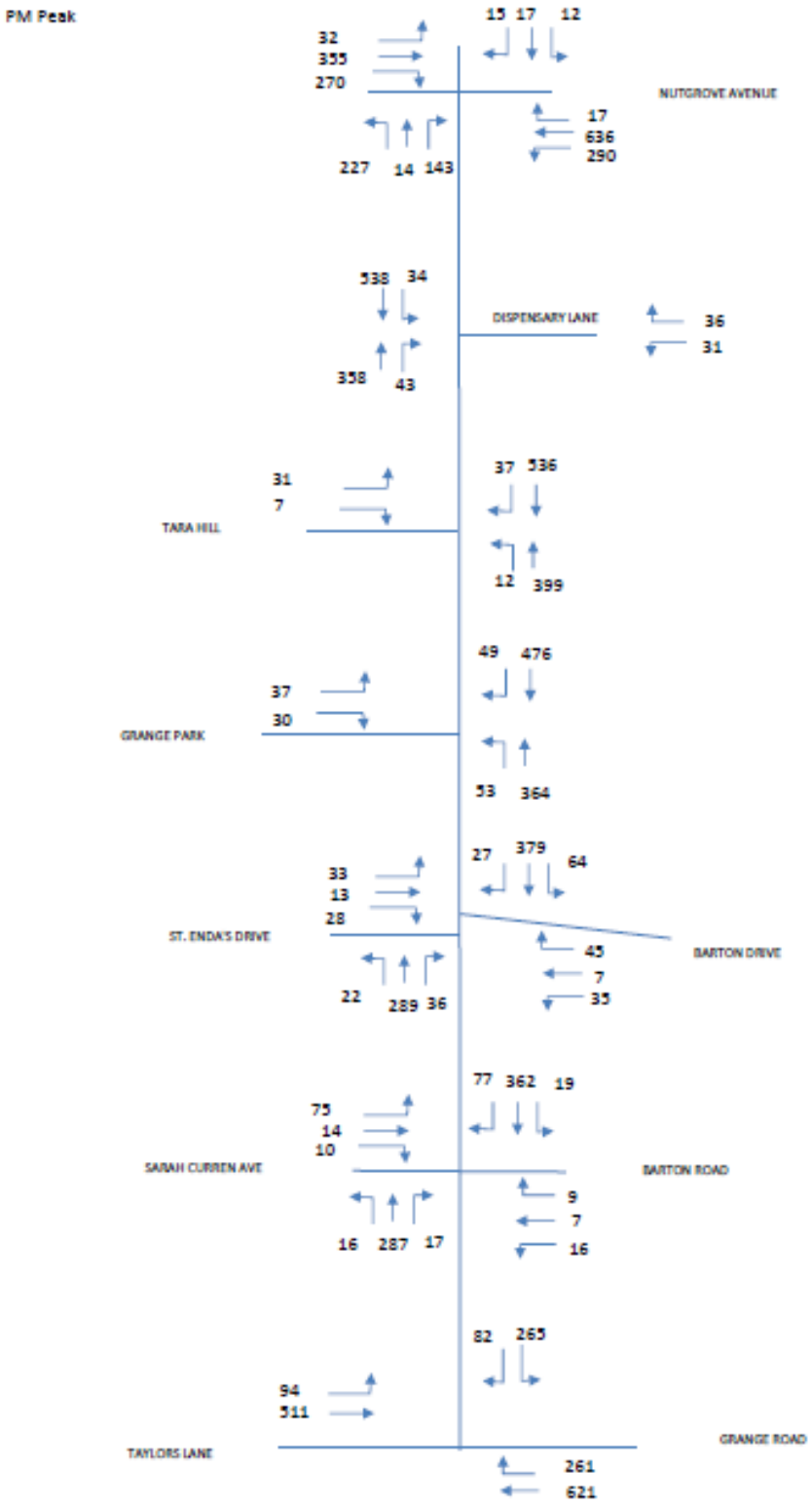


Figure 6 - PM Peak (17:00-18:00) Flow Diagrams

Appendix C : LINSIG results

Appendix C : LINSIG Results

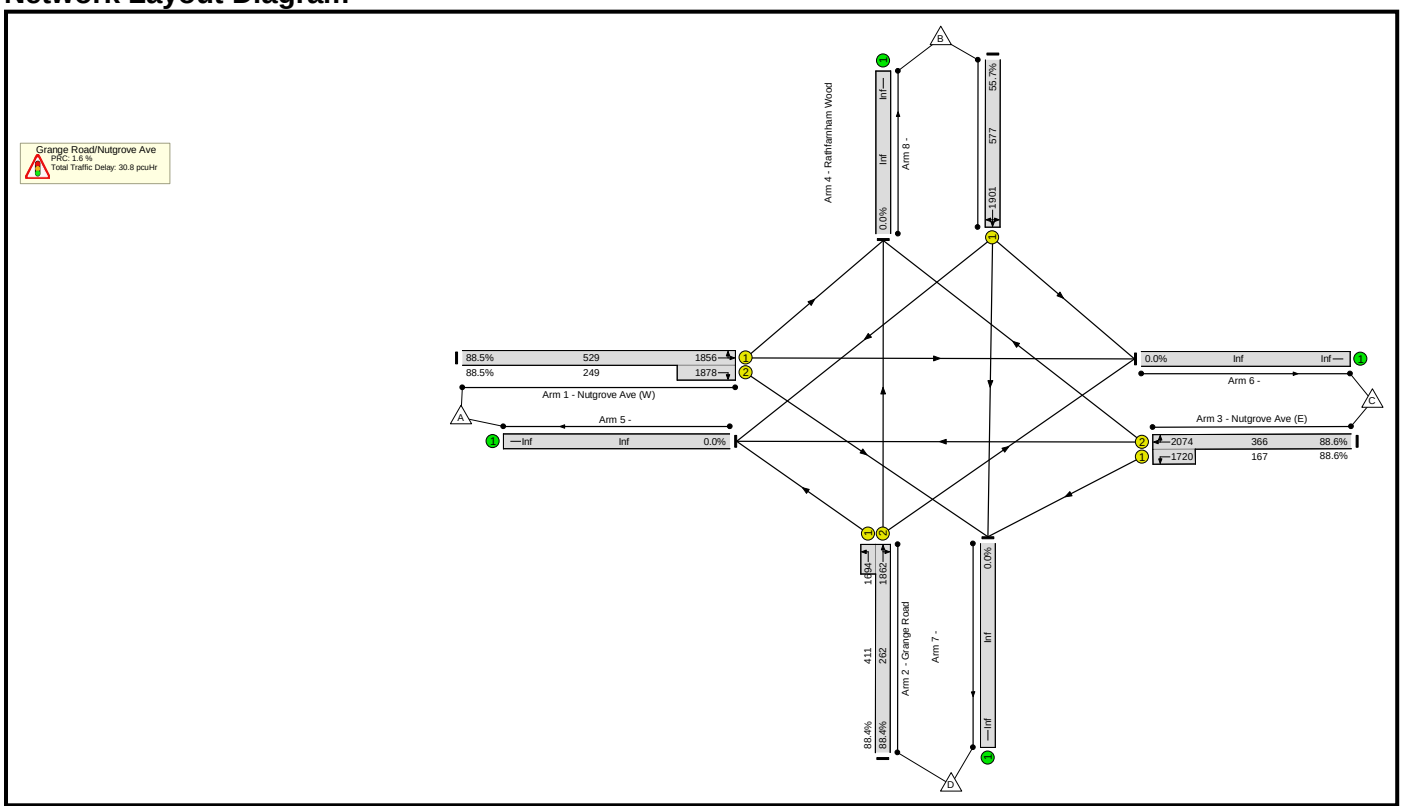
Basic Results Summary

User and Project Details

Project:	
Title:	
Location:	
File name:	Grange Road-Nutgrove Ave - Proposed.lsg3x
Author:	
Company:	
Address:	
Notes:	

Scenario 1: 'AM Peak' (FG1: 'AM Peak Hour', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

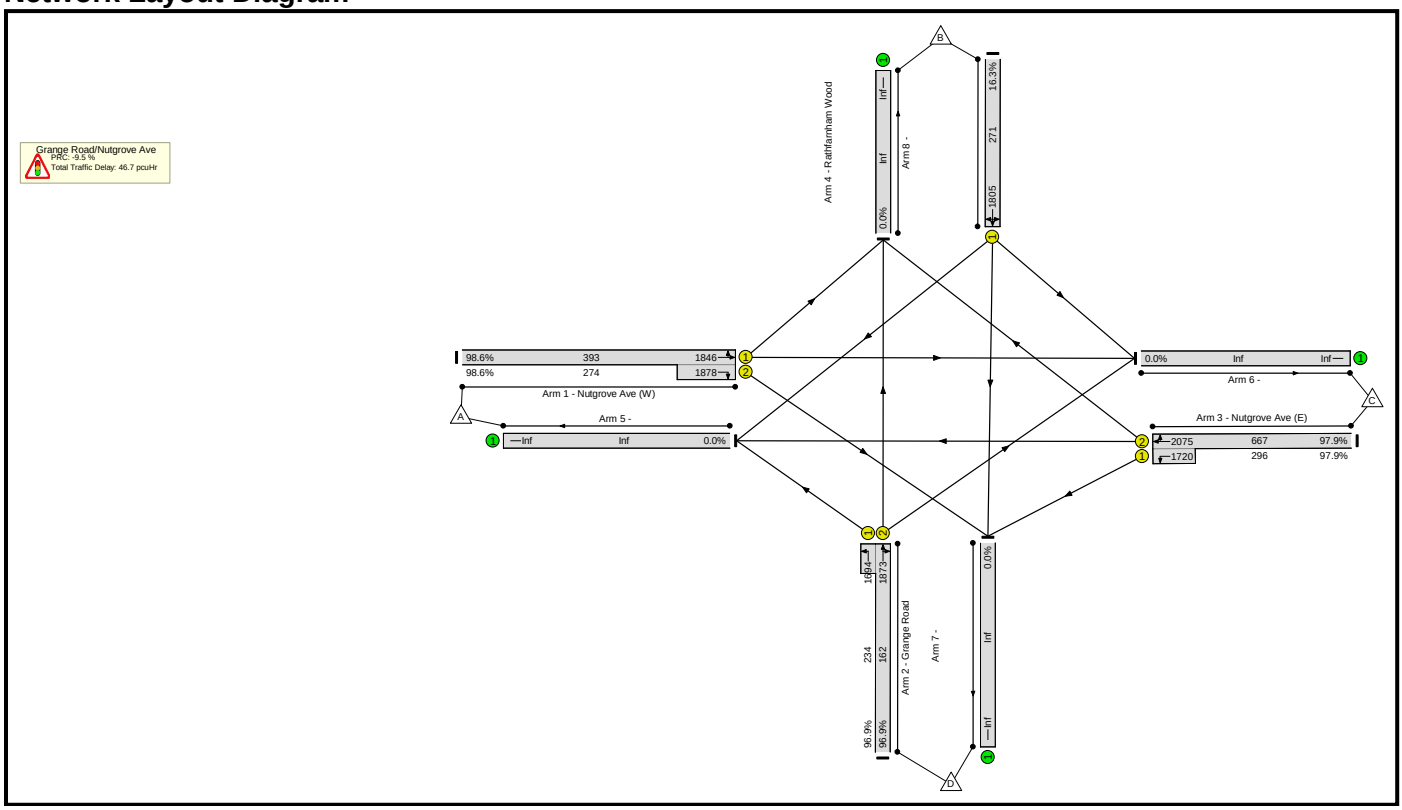
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**88.6%**	**0**	**0**	**0**	**30.8**	-	-
Grange Road/Nutgrove Ave	-	-	-		-	-	-	-	-	-	**88.6%**	**0**	**0**	**0**	**30.8**	-	-
1/1+1/2	Nutgrove Ave (W) Ahead Right Left	U	B C		1	58:25	-	688	1856:1878	529+249	88.5 : 88.5%	-	-	-	9.2	48.1	18.0
2/2+2/1	Grange Road Left Right Ahead	U	D G		1	36:64	-	595	1862:1694	262+411	88.4 : 88.4%	-	-	-	8.6	52.1	20.3
3/2+3/1	Nutgrove Ave (E) Ahead Left Right	U	A		1	28	-	472	2074:1720	366+167	88.6 : 88.6%	-	-	-	9.2	69.9	16.7
4/1	Rathfarnham Wood Right Left Ahead	U	E		1	36	-	321	1901	577	55.7%	-	-	-	3.8	42.6	9.7

C1 PRC for Signalled Lanes (%): 1.6 Total Delay for Signalled Lanes (pcuHr): 30.76 Cycle Time (s): 122
PRC Over All Lanes (%): 1.6 Total Delay Over All Lanes(pcuHr): 30.76

Basic Results Summary

Scenario 2: 'PM Peak' (FG2: 'PM Peak Hour', Plan 2: 'Network Control Plan 2')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**98.6%**	**0**	**0**	**0**	**46.7**	-	-
Grange Road/Nutgrove Ave	-	-	-		-	-	-	-	-	-	**98.6%**	**0**	**0**	**0**	**46.7**	-	-
1/1+1/2	Nutgrove Ave (W) Ahead Right Left	U	B C		2	168:50	-	657	1846:1878	393+274	98.6 : 98.6%	-	-	-	15.5	84.8	26.4
2/2+2/1	Grange Road Left Right Ahead	U	D G		2	34:90	-	384	1873:1694	162+234	96.9 : 96.9%	-	-	-	11.5	108.2	19.8
3/2+3/1	Nutgrove Ave (E) Ahead Left Right	U	A		2	108	-	943	2075:1720	667+296	97.9 : 97.9%	-	-	-	19.0	72.7	41.4
4/1	Rathfarnham Wood Right Left Ahead	U	E		2	34	-	44	1805	271	16.3%	-	-	-	0.7	53.3	1.6

C1

PRC for Signalled Lanes (%): -9.5
PRC Over All Lanes (%): -9.5

Total Delay for Signalled Lanes (pcuHr): 46.73
Total Delay Over All Lanes(pcuHr): 46.73

Cycle Time (s): 240

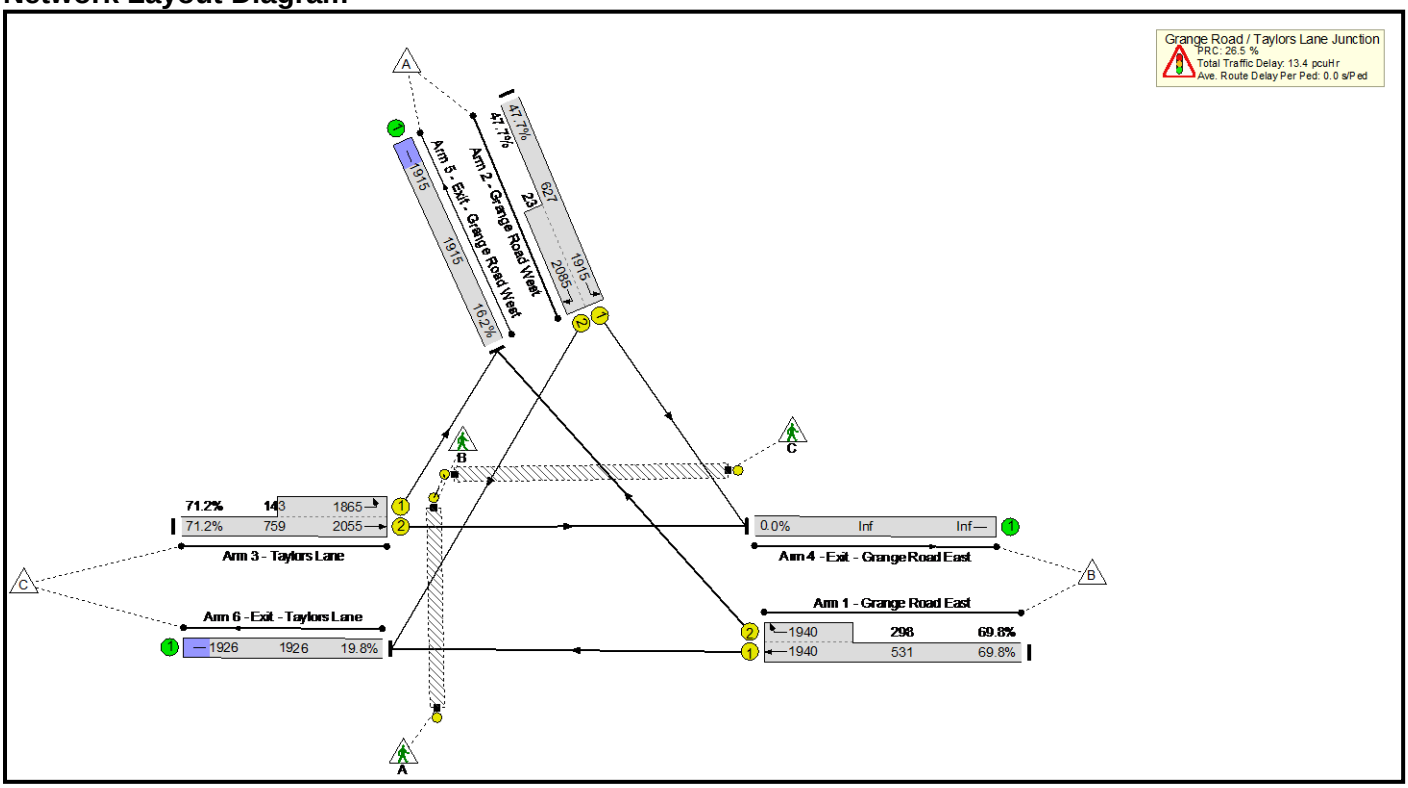
Basic Results Summary

User and Project Details

Project:	**Eden Avenue**
Title:	**Eden Avenue**
Location:	Eden Avenue/Grange Road Junction
File name:	Grange Road - Taylors Lane - Proposed.lsg3x
Author:	Steven Wyer
Company:	AECOM
Address:	Ground Floor, Grand Canal House, Grand Canal Street Upper, Dublin 4
Notes:	

Scenario 1: 'AM Peak' (FG1: 'AM Peak (08:00 - 09:00)', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

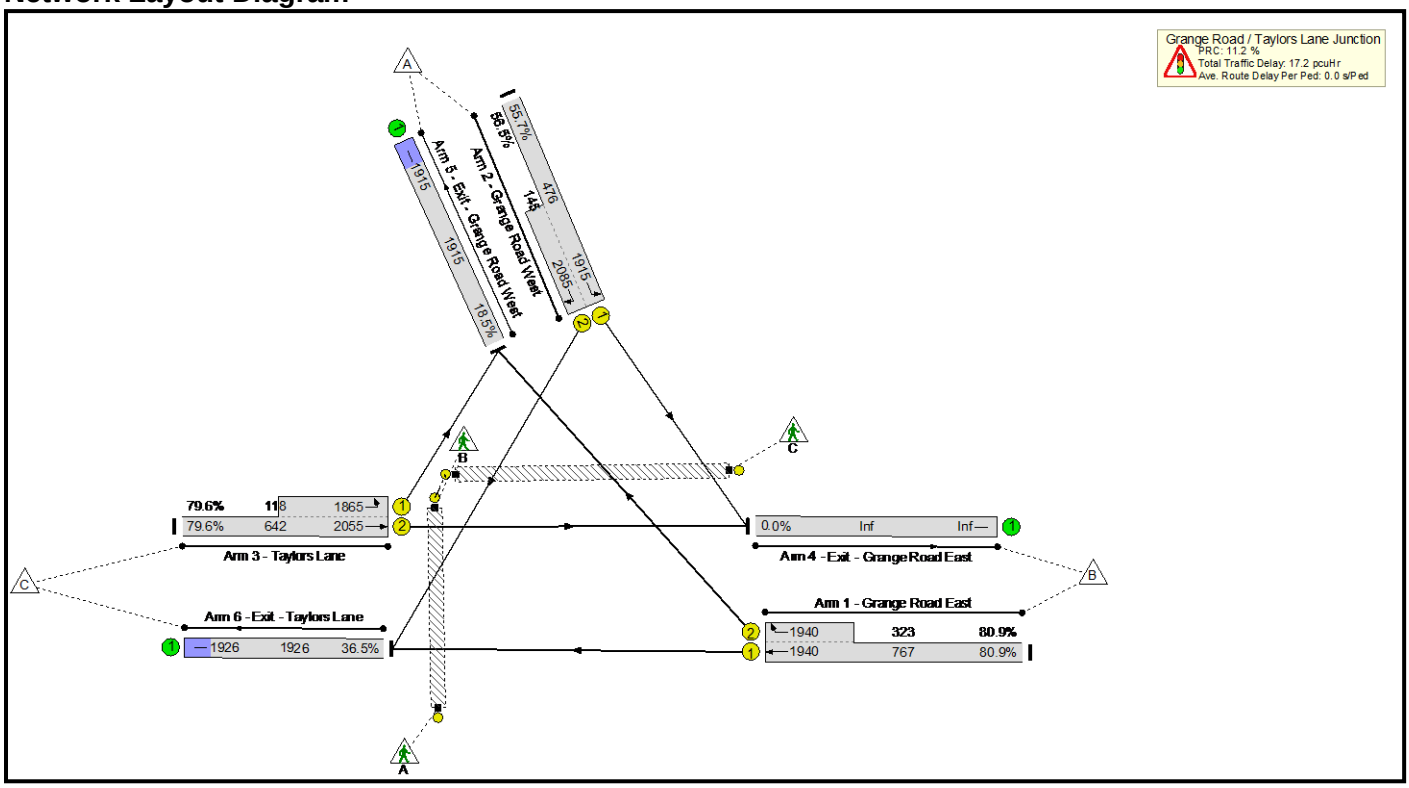
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Eden Avenue	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**71.2%**	**0**	**0**	**0**	**13.4**	**-**	**-**
Grange Road / Taylors Lane Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**71.2%**	**0**	**0**	**0**	**13.4**	**-**	**-**
1/1+1/2	Grange Road East Right Ahead	U	B G		1	78:25	-	579	1940:1940	531+298	69.8 : 69.8%	-	-	-	4.1	25.5	6.9
2/1+2/2	Grange Road West Left Right	U	A H		1	37:7	-	310	1915:2085	627+23	47.7 : 47.7%	-	-	-	3.1	36.5	8.0
3/2+3/1	Taylors Lane Ahead Left	U	C F		1	47	-	642	2055:1865	759+143	71.2 : 71.2%	-	-	-	5.9	33.1	16.2
5/1	Exit - Grange Road West	U	-		-	-	-	310	1915	1915	16.2%	-	-	-	0.1	1.1	0.1
6/1	Exit - Taylors Lane	U	-		-	-	-	382	1926	1926	19.8%	-	-	-	0.1	1.2	0.1
Ped Link: P1	Unnamed Ped Link	-	D		1	7	-	0	-	4383	0.0%	-	-	-	0.0	0.0	0.0
Ped Link: P2	Unnamed Ped Link	-	E		1	8	-	0	-	5009	0.0%	-	-	-	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 26.5 Total Delay for Signalled Lanes (pcuHr): 13.15 Cycle Time (s): 115
PRC Over All Lanes (%): 26.5 Total Delay Over All Lanes(pcuHr): 13.37

Basic Results Summary

Scenario 2: 'PM Peak' (FG2: 'PM Peak (17:00 - 18:00)', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Eden Avenue	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.9%**	**0**	**0**	**0**	**17.2**	**-**	**-**
Grange Road / Taylors Lane Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.9%**	**0**	**0**	**0**	**17.2**	**-**	**-**
1/1+1/2	Grange Road East Right Ahead	U	B G		1	78:33	-	882	1940:1940	767+323	80.9 : 80.9%	-	-	-	5.9	24.1	12.5
2/1+2/2	Grange Road West Left Right	U	A H		1	45:7	-	347	1915:2085	476+145	55.7 : 56.5%	-	-	-	3.6	37.1	6.5
3/2+3/1	Taylors Lane Ahead Left	U	C F		1	39	-	605	2055:1865	642+118	79.6 : 79.6%	-	-	-	7.3	43.7	17.5
5/1	Exit - Grange Road West	U	-		-	-	-	355	1915	1915	18.5%	-	-	-	0.1	1.2	0.1
6/1	Exit - Taylors Lane	U	-		-	-	-	703	1926	1926	36.5%	-	-	-	0.3	1.5	0.3
Ped Link: P1	Unnamed Ped Link	-	D		1	7	-	0	-	4383	0.0%	-	-	-	0.0	0.0	0.0
Ped Link: P2	Unnamed Ped Link	-	E		1	8	-	0	-	5009	0.0%	-	-	-	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 11.2 Total Delay for Signalled Lanes (pcuHr): 16.84 Cycle Time (s): 115

PRC Over All Lanes (%): 11.2 Total Delay Over All Lanes(pcuHr): 17.24

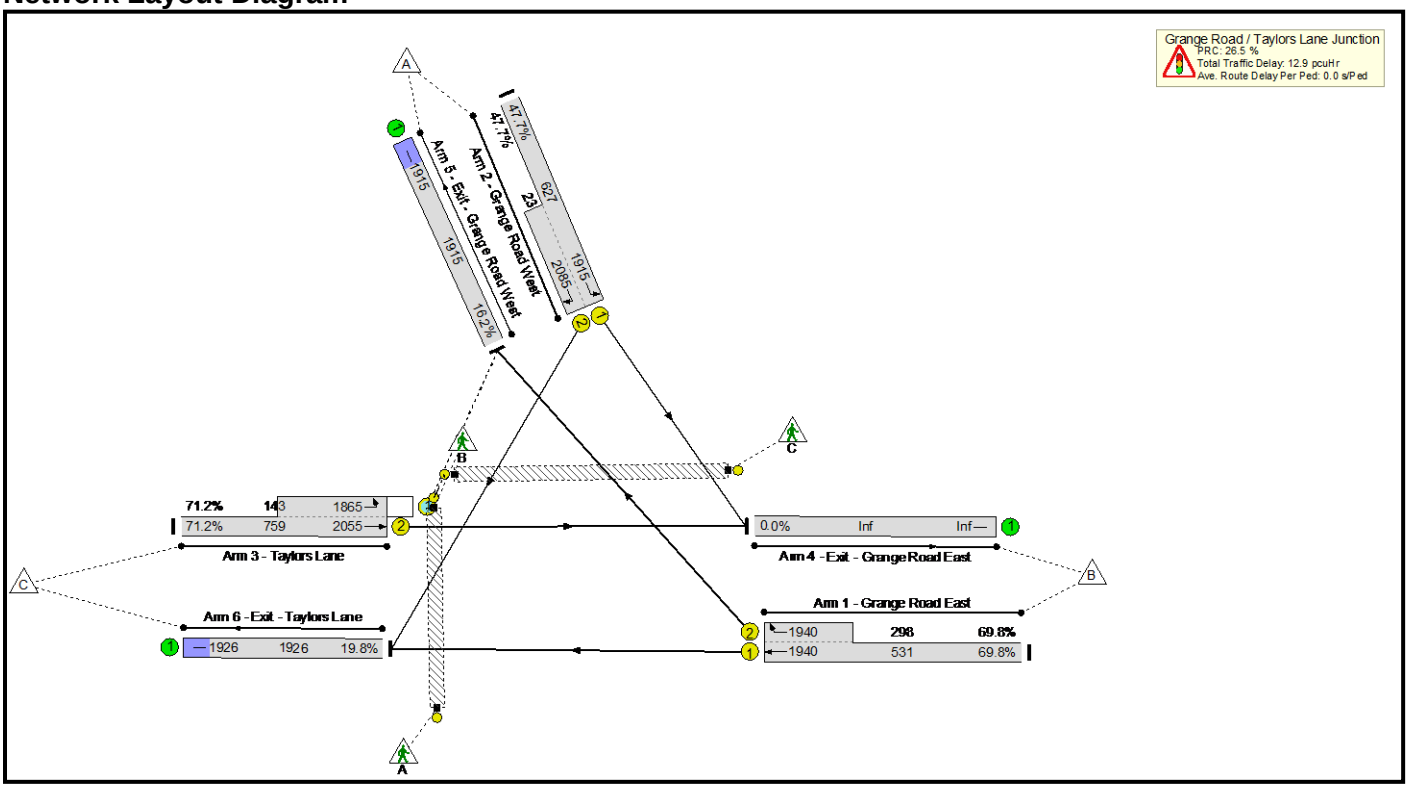
Basic Results Summary

User and Project Details

Project:	**Eden Avenue**
Title:	**Eden Avenue**
Location:	Eden Avenue/Grange Road Junction
File name:	Grange Road - Taylors Lane - Existing.lsg3x
Author:	Steven Wyer
Company:	AECOM
Address:	Ground Floor, Grand Canal House, Grand Canal Street Upper, Dublin 4
Notes:	

Scenario 1: 'AM Peak' (FG1: 'AM Peak (08:00 - 09:00)', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

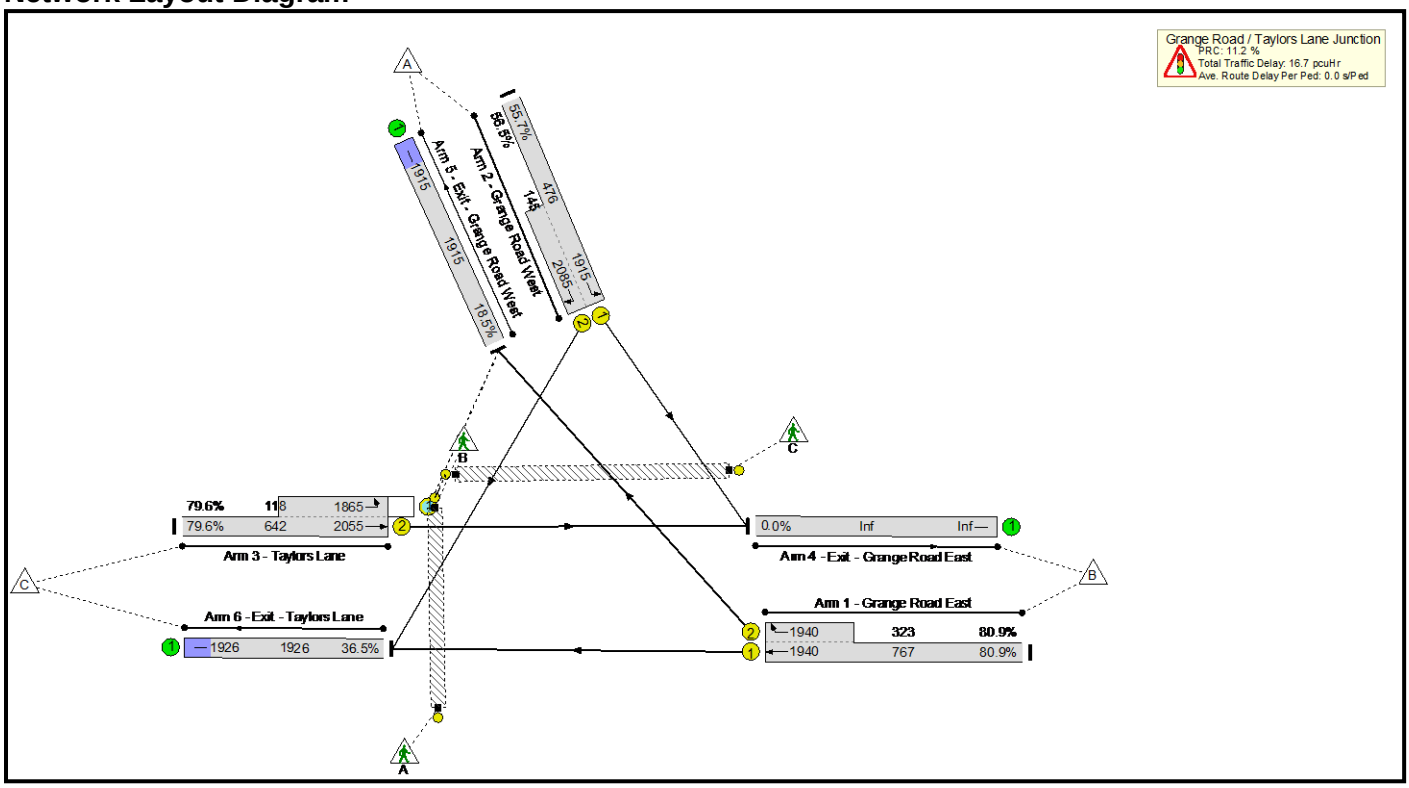
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Eden Avenue	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**71.2%**	**25**	**75**	**2**	**12.9**	**-**	**-**
Grange Road / Taylors Lane Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**71.2%**	**25**	**75**	**2**	**12.9**	**-**	**-**
1/1+1/2	Grange Road East Right Ahead	U	B G		1	78:25	-	579	1940:1940	531+298	69.8 : 69.8%	-	-	-	4.1	25.5	6.9
2/1+2/2	Grange Road West Left Right	U	A H		1	37:7	-	310	1915:2085	627+23	47.7 : 47.7%	-	-	-	3.1	36.5	8.0
3/2+3/1	Taylors Lane Ahead Left	U+O	C F		1	47:94	-	642	2055:1865	759+143	71.2 : 71.2%	25	75	2	5.4	30.4	16.2
5/1	Exit - Grange Road West	U	-		-	-	-	310	1915	1915	16.2%	-	-	-	0.1	1.1	0.1
6/1	Exit - Taylors Lane	U	-		-	-	-	382	1926	1926	19.8%	-	-	-	0.1	1.2	0.1
Ped Link: P1	Unnamed Ped Link	-	D		1	7	-	0	-	4383	0.0%	-	-	-	0.0	0.0	0.0
Ped Link: P2	Unnamed Ped Link	-	E		1	8	-	0	-	5009	0.0%	-	-	-	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 26.5 Total Delay for Signalled Lanes (pcuHr): 12.66 Cycle Time (s): 115
PRC Over All Lanes (%): 26.5 Total Delay Over All Lanes(pcuHr): 12.88

Basic Results Summary

Scenario 2: 'PM Peak' (FG2: 'PM Peak (17:00 - 18:00)', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Eden Avenue	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.9%**	**29**	**63**	**2**	**16.7**	**-**	**-**
Grange Road / Taylors Lane Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**80.9%**	**29**	**63**	**2**	**16.7**	**-**	**-**
1/1+1/2	Grange Road East Right Ahead	U	B G		1	78:33	-	882	1940:1940	767+323	80.9 : 80.9%	-	-	-	5.9	24.1	12.5
2/1+2/2	Grange Road West Left Right	U	A H		1	45:7	-	347	1915:2085	476+145	55.7 : 56.5%	-	-	-	3.6	37.1	6.5
3/2+3/1	Taylors Lane Ahead Left	U+O	C F		1	39:94	-	605	2055:1865	642+118	79.6 : 79.6%	29	63	2	6.8	40.3	17.5
5/1	Exit - Grange Road West	U	-		-	-	-	355	1915	1915	18.5%	-	-	-	0.1	1.2	0.1
6/1	Exit - Taylors Lane	U	-		-	-	-	703	1926	1926	36.5%	-	-	-	0.3	1.5	0.3
Ped Link: P1	Unnamed Ped Link	-	D		1	7	-	0	-	4383	0.0%	-	-	-	0.0	0.0	0.0
Ped Link: P2	Unnamed Ped Link	-	E		1	8	-	0	-	5009	0.0%	-	-	-	0.0	0.0	0.0

C1 PRC for Signalled Lanes (%): 11.2 Total Delay for Signalled Lanes (pcuHr): 16.26 Cycle Time (s): 115
PRC Over All Lanes (%): 11.2 Total Delay Over All Lanes(pcuHr): 16.67

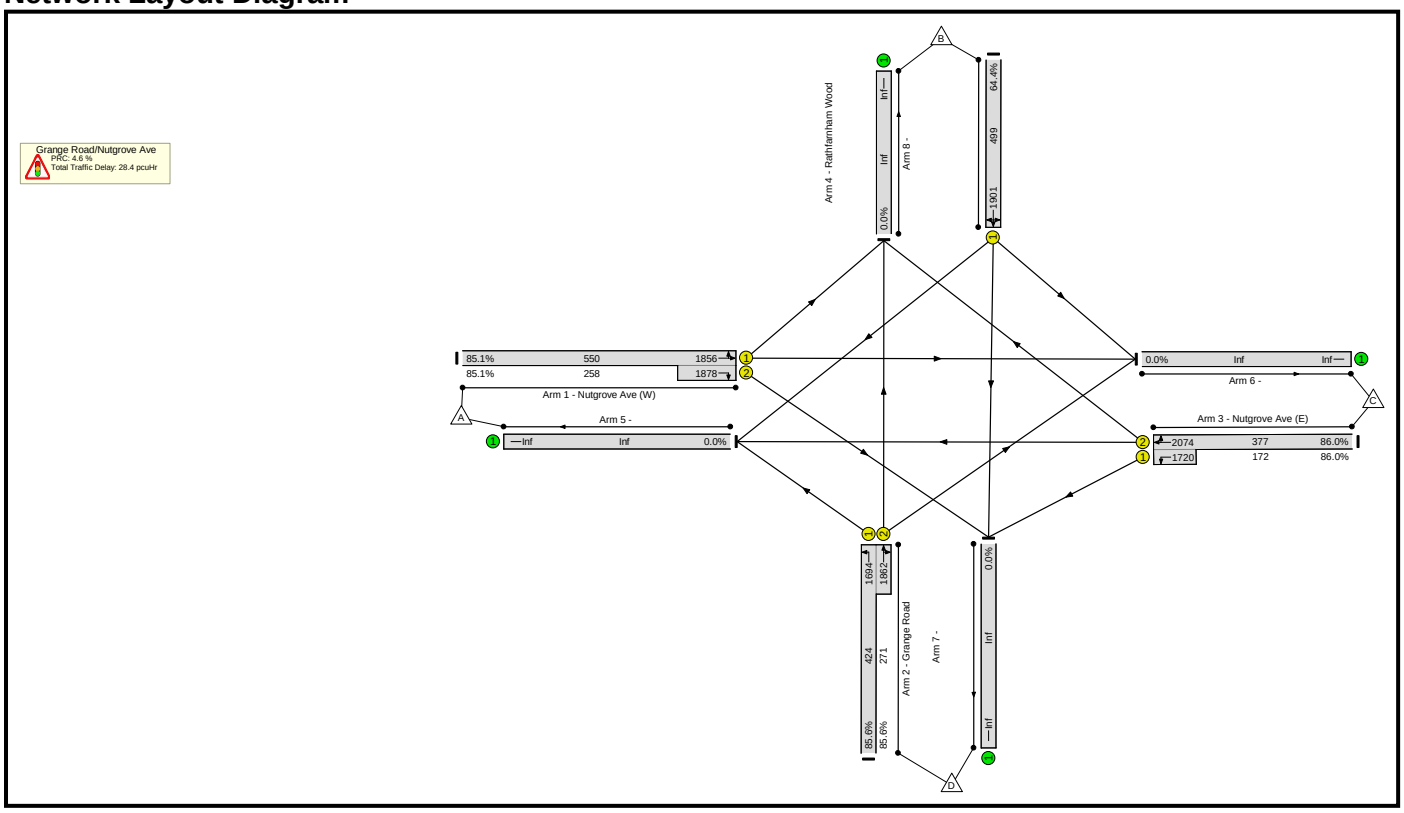
Basic Results Summary

User and Project Details

Project:	
Title:	
Location:	
File name:	Grange Road-Nutgrove Ave - Existing.lsg3x
Author:	
Company:	
Address:	
Notes:	

Scenario 1: 'AM Peak' (FG1: 'AM Peak Hour', Plan 1: 'Network Control Plan 1')

Network Layout Diagram



Basic Results Summary

Network Results

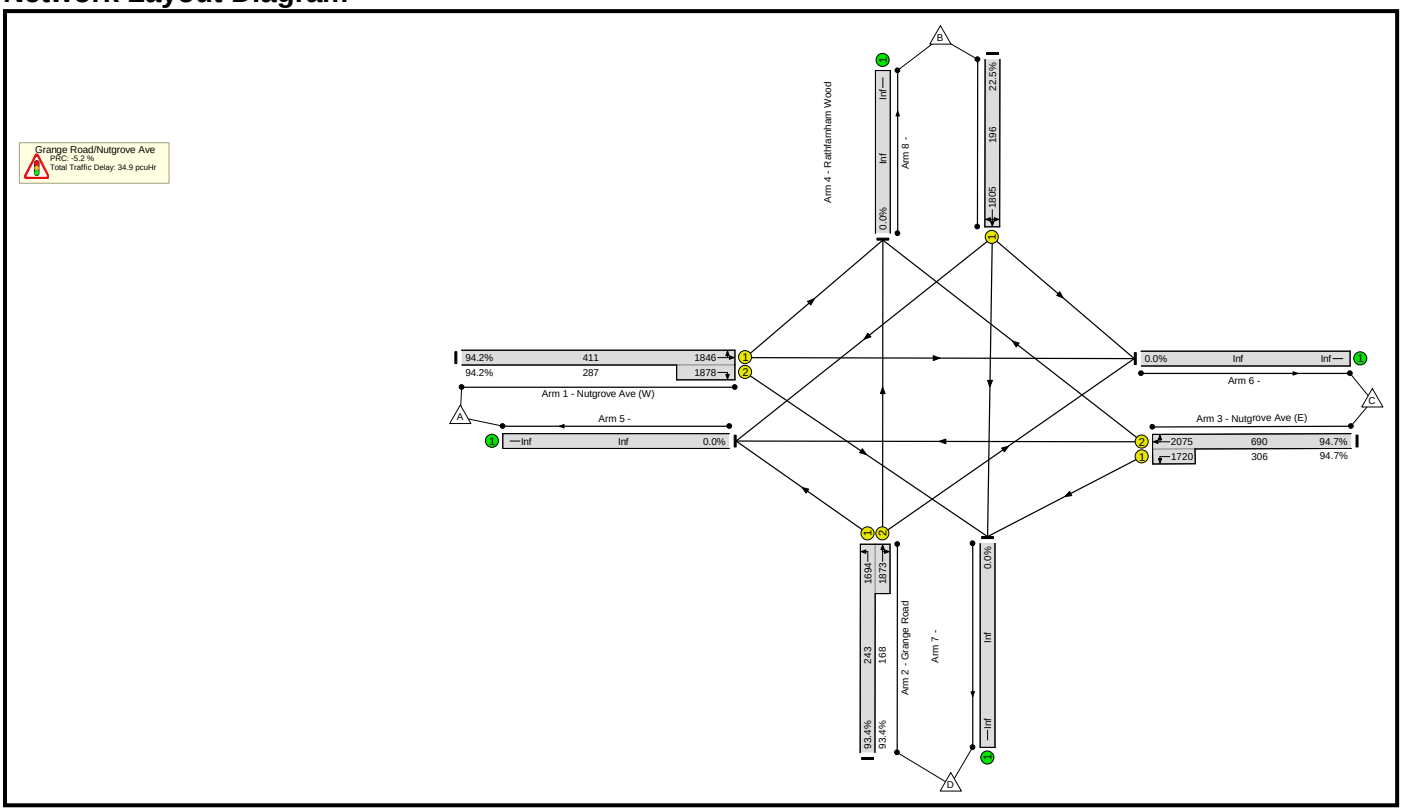
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**86.0%**	**0**	**0**	**0**	**28.4**	-	-
Grange Road/Nutgrove Ave	-	-	-		-	-	-	-	-	-	**86.0%**	**0**	**0**	**0**	**28.4**	-	-
1/1+1/2	Nutgrove Ave (W) Ahead Right Left	U	B C		1	61:27	-	688	1856:1878	550+258	85.1 : 85.1%	-	-	-	7.9	41.6	16.2
2/1+2/2	Grange Road Left Right Ahead	U	G D		1	61:31	-	595	1694:1862	424+271	85.6 : 85.6%	-	-	-	7.6	45.8	18.1
3/2+3/1	Nutgrove Ave (E) Ahead Left Right	U	A		1	29	-	472	2074:1720	377+172	86.0 : 86.0%	-	-	-	8.4	64.2	16.0
4/1	Rathfarnham Wood Right Left Ahead	U	E		1	31	-	321	1901	499	64.4%	-	-	-	4.5	50.0	10.5

C1 PRC for Signalled Lanes (%): 4.6 Total Delay for Signalled Lanes (pcuHr): 28.39 Cycle Time (s): 122
PRC Over All Lanes (%): 4.6 Total Delay Over All Lanes(pcuHr): 28.39

Basic Results Summary

Scenario 2: 'PM Peak' (FG2: 'PM Peak Hour', Plan 2: 'Network Control Plan 2')

Network Layout Diagram



Basic Results Summary

Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**94.7%**	**0**	**0**	**0**	**34.9**	-	-
Grange Road/Nutgrove Ave	-	-	-		-	-	-	-	-	-	**94.7%**	**0**	**0**	**0**	**34.9**	-	-
1/1+1/2	Nutgrove Ave (W) Ahead Right Left	U	B C		2	176:54	-	657	1846:1878	411+287	94.2 : 94.2%	-	-	-	10.4	56.7	19.8
2/1+2/2	Grange Road Left Right Ahead	U	G D		2	84:24	-	384	1694:1873	243+168	93.4 : 93.4%	-	-	-	9.3	87.2	12.1
3/2+3/1	Nutgrove Ave (E) Ahead Left Right	U	A		2	112	-	943	2075:1720	690+306	94.7 : 94.7%	-	-	-	14.5	55.3	35.8
4/1	Rathfarnham Wood Right Left Ahead	U	E		2	24	-	44	1805	196	22.5%	-	-	-	0.7	61.3	1.6

C1

PRC for Signalled Lanes (%): -5.2
PRC Over All Lanes (%): -5.2

Total Delay for Signalled Lanes (pcuHr): 34.89
Total Delay Over All Lanes(pcuHr): 34.89

Cycle Time (s): 240