Grangegorman Area – Mobility Management Plan

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Introduction

1 Introduction

1.1 Introduction

This Mobility Management Plan (MMP) has been produced in support of the proposed redevelopment of the Grangegorman area. In addition to the Transport Assessment produced, this MMP forms an integral part of the planning documentation prepared for the development. The development proposals involve the construction of a consolidated campus location for Dublin Institute of Technology (DIT) as well as modern replacement facilities for the Health Service Executive (HSE). These elements will be supplemented by facilities for the surrounding community, such as a public library and a primary school, as well as commercial and research uses. The MMP is to encompass the Grangegorman SDZ area as well as the Health Service Executive Replacement facilities which are currently under construction. This MMP has been developed with reference to the MMP previously prepared for the HSE replacement facilities under Planning Register Reference 3112/09. This report will form the preliminary MMP for the Grangegorman area and will provide the basis for future MMPs that will be produced for the various elements of the Grangegorman area as they are developed in the future.

A Mobility Management Plan provides an assessment of existing mobility issues, describes the process of development of the Mobility Management Plan Strategy, and examines the scope available to users of the site for use of alternative (non-car) means of travelling to/from the development.

The strategy has been developed with reference to the following documents:

Dublin City Council Development Plan 2011 – 2017;
Smarter Travel Initiative, A Sustainable Transport Future, Department of Transport, 2009;
Draft Greater Dublin Area Transport Strategy 2011 – 2030, National Transport Authority;
The Dublin Transportation Office publications 'Platform for Change 2000 – 2016', and 'The Route to Sustainable Commuting' and 'Advice Note on Mobility Management Plans' have been frequently referenced;
The Essential Guide to Travel Planning, Department of Transport UK;
Making Travel Plans Work: Lesson from UK case studies, Department of Transport UK.

1.2 Literature Review

Dublin City Council Development Plan 2011 – 2017, Dublin City Council, 2010.
Appendix 5 of the Dublin City Council Development Plan 2011 – 2017 provides guidance in relation to the production and implementation of Mobility Management Plans within the City Council jurisdiction. The document provides guidance on the form and content of two categories of MMP, Category 1 MMP applies where the occupants are unknown, Category 2 MMP applies where the future occupants and employees are known. The Development Plan also provides potential measures that are typically included in an MMP and also guidance in relation to adoption and review.

Smarter Travel Initiative, A Sustainable Transport Future, Department of Transport, 2009.
Smarter Travel is the transport policy for Ireland for the period of 2009-2020. The policy recognises the vital importance of continued investment in transport to ensure an efficient economy and continued social development, but it also sets out the necessary steps to ensure that people choose more sustainable transport modes such as walking, cycling and public transport. The policy is a response to the fact that continued growth in demand for road transport is not sustainable from a number of aspects; it will lead to further congestion, further local air pollution, contribute to global warming, and result in negative impacts to health through promoting increasingly sedentary lifestyles.

Draft Transport Strategy 2011 – 2030, National Transport Authority, 2011.
Chapter 11 of the Draft Transport Strategy 2011 – 2030, discusses travel demand management in great detail. The chapter discusses the impact of congestion in the Greater Dublin Area and the subsequent need to meet the Smarter Travel targets. The NTA also provides a discussion on numerous demand management measures that

could be implemented within the Greater Dublin Area, including a section on mobility management, car clubs, lift sharing and marketing.

'The Route to Sustainable Commuting – An employer's guide to mobility management plans' by NTA (formerly Dublin Transportation Office), March 2001.
This guidance document produced by the NTA is for use by organisations that are considering, or already implementing measures to reduce dependency on the car for staff commuting and other work related journeys. The paper discusses the principles of mobility management plans and why an organisation would consider implementing a mobility management plan, including the benefits of a plan to employers and employees. The paper outlines how to prepare, design and implement a mobility management plan. It discusses the measures that could be used for car use, public transport, walking and cycling in order to reduce singular car occupancy. It then outlines how to market a mobility management plan and how to measure the success of one.

'**DTO Advice Note – Mobility Management Plans'** by NTA (formerly Dublin Transportation Office), July 2002.
This Advice Note is intended as guidance for Local Authorities in the Greater Dublin Area. The Advice Notes set out what the DTO considers to be current best practice in relation to the development of mobility management plans. The advice note outlines the principals of mobility management, when a mobility management plan is required, the planning process in relation to mobility management, the motivations for implementing a plan and the staged approach to the preparation of mobility management plans.

'The Essential Guide to Travel Planning' by Department of Transport, UK, March 2008.
This document provides a guide on developing and implementing travel plans in the UK. A travel plan is the UK equivalent of a Mobility Management Plan in Ireland. The document draws together extensive experience from travel plans already in operation and offers an overview of what is required to prepare a travel plan and ensure it is successful. The guide provides the following:

- An explanation of the benefits of travel plans,
- The essential measures required to ensure the success of the travel plan,
- Identification of potential savings that could form the basis of a business case for the implementation of a travel plan,
- An indication of what data is required from travel surveys in order to measure the success of travel plans.

'Making travel plans work – Lessons of U.K. case studies' by Department of Transport (U.K.), 2002.
This report is based on the experience and findings of a number of large employers e.g., hospitals, councils, large companies and third level educational facilities in the U.K. The guide was published for employers who want to reduce congestion around their respective sites, improve travel options for their staff and reduce costs using a travel plan. The main findings of the report are as follows:

- It found that parking restrictions through a parking permit scheme can reduce staff car use.
- Financial incentives such as subsidies on public transport tickets have been found to work better in combination with parking restrictions.
- The initiatives would need the full support of the management of the company and also a staff member would need to be appointed to form a travel plan.
- Local recruitment is found to be useful when reducing travel distances.

1.3 Objectives

A Mobility Management Plan (MMP) is a set of measures and procedures tailored to suit the individual circumstances of different locations, but with the common aim of reducing the impacts of travel and transport activity. Institutions, companies and organisations adopt such a plan to manage the transport needs of users by

raising awareness, promoting alternatives, facilitating change, and implementing a programme of continuous management and review.

The objective of this Mobility Management Plan is to minimise the traffic impacts of the development through actions such as:

- Providing appropriate demand management through the car parking provision;
- Optimising links with the public transport system;
- Providing facilities for cyclists and pedestrians; and
- Encouraging modes of transport other than by private car

For the proposed development, the primary purpose of the plan is to minimise the potential reliance on the private car as the dominant mode for accessibility to the site.

1.4 Report Structure

We note that the Dublin City Development Plan 2011 - 2017, Appendix 5 categorises two types of MMP.

- Category 1 – Employers / Employees Unknown
- Category 2 – When the development is existing or when the occupier is known at the outset

In this case it is considered that the MMP matches the criteria for a Category 2 MMP as the occupier of the majority of the Grangegorman area is currently known. As a result the report is structured in a format that reflects the requirements of a Category 2 MMP as outlined in guidelines provided by Dublin City Council for the production of Mobility Management Plans

The structure of the report is as follows:

Section 2: The Receiving Environment: summarises the results of a detailed site audit to understand the transportation context in which the development is proposed;
Section 3: Accessibility Assessment: provides an assessment of accessibility of various modes of travel to the Grangegorman area in particular, walking, cycling, bus, light rail and also rail.
Section 4: Existing Travel Patterns: summarises the findings of the National Institution of Transport and Logistics (NITL) undertaken on behalf of Dublin Institute of Technology (DIT) and also journey to work surveys undertaken by AECOM at HSE facilities currently in the Grangegorman area.
Section 5: The Proposed Development: summarises the development proposals outlining the quantum of land use, vehicular access, pedestrian and cyclist access and the car parking provision;
Section 6: Mobility Management Plan Measures: outlines mobility management measures to be implemented and considered as part of the Mobility Management Plan;
Section 7: Anticipated Modal Splits: outlines the modal splits anticipated for the different land uses proposed within the Grangegorman area.
Section 8: Adoption and Review: outlines the procedure for review of the Mobility Management Plan. This section discusses the various tools which can be applied to ensure that the plan caters for the specific user needs, and that funding of the plan is being applied in a cost-effective manner;
Section 9: Summary: presents a summary of the preliminary Mobility Management Plan for the Grangegorman site.

Receiving Environment

2 Receiving Environment

2.1 Objectives

The area for which this Mobility Management Plan has been produced is located north of the River Liffey and south of the Royal Canal, approximately 1 kilometre from Dublin's City Centre. The vast majority of the existing site is occupied by St. Brendan's Hospital grounds. The site is split by Grangegorman Lower and Upper Road which runs in a north south direction through the site. The area is bounded by North Circular Road to the north, Prussia Street and Stoneybatter to the west, and Brunswick Street to the south. The Grangegorman area considered for this MMP is shown in Figure 2.1 below.

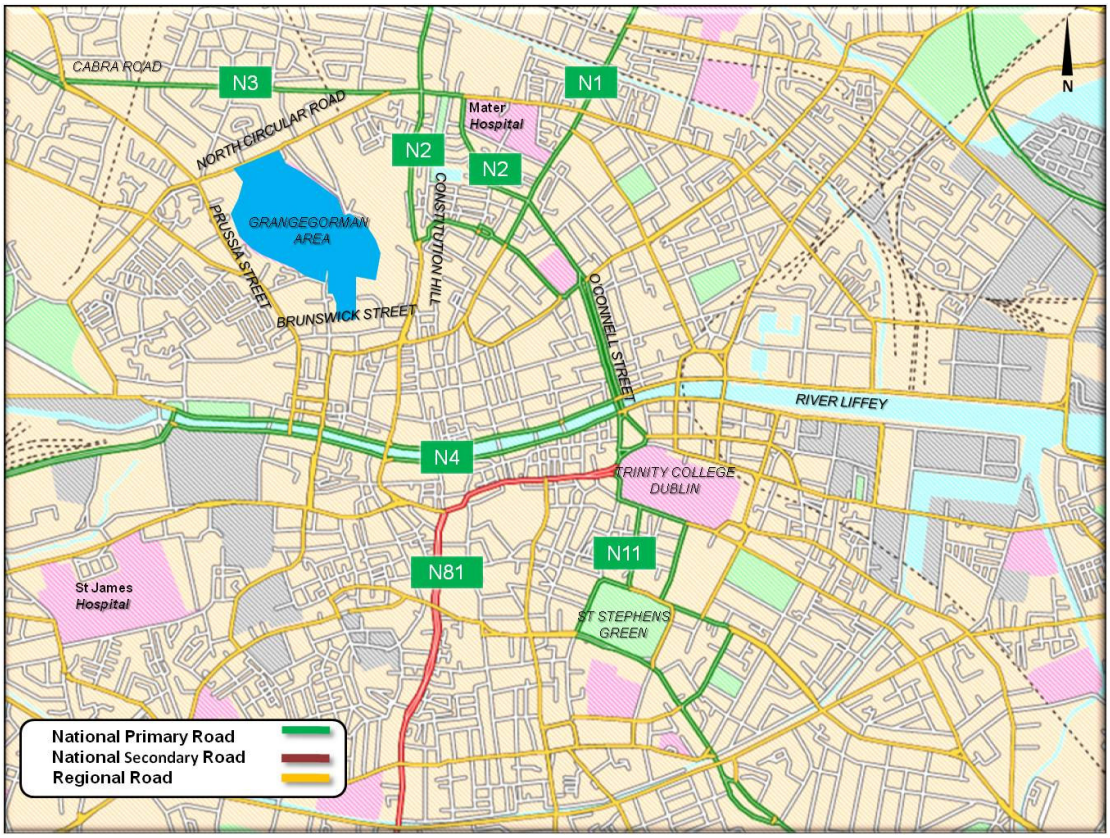

Figure 2.1 Grangegorman Location

The subject site is one of the largest undeveloped sites within Dublin City Centre. Its location, close to the city centre, provides excellent conditions for the provision of sustainable travel measures from the development proposals. The proximity of the public transport network in the city centre and the intensification of land use at Grangegorman support the principles of sustainable transportation.

2.2 Existing Pedestrian Provision

Existing pedestrian movement through the area tends to correspond with the more significant traffic corridors such as Prussia Street and Constitution Hill / Phibsborough Road. This is a function of the current land use within Grangegorman and its weak connectivity with the surrounding areas. The majority of the road junctions in the area are signalised and provide good pedestrian crossing facilities in the form of drop kerbs, tactile paving and pedestrian

refuge islands at the larger junctions. Some pedestrian facilities in certain areas would be in need of repair such as around Stoneybatter and the Grangegorman Lower/Brunswick Street junction.

2.3 Existing Cycle Provision

Cycle facilities are provided on the North Circular Road which connects with facilities on Old Cabra Road and Prussia Street linking to the City Centre. Cycle lanes are also provided on both sides of the Constitution Hill/Church Street. Sections of cycle lanes are also provided along Blackhall Place/Stoneybatter as well as King Street North and Queen Street.

Cycle lanes are also provided along the north and south quays of the River Liffey. Some of the residential streets in the wider Grangegorman area are lightly trafficked and provide suitable cycling environments. The existing cycle network in the city centre area is presented in Figure 2.2 below. It can be seen that Grangegorman is well positioned to avail of this existing network.

Figure 2.2: Cycle provision in Dublin City Centre (NTA, 2008)

2.4 Existing Public Transport

The Grangegorman site is currently well connected by bus services. The area is surrounded by a number of existing Quality Bus Corridors (QBC) as shown below in Figure 2.3. Blanchardstown Quality Bus Corridor (QBC), Lucan QBC, and Ballymun QBC are all in close proximity to Grangegorman while the North Circular Road and Cabra Road are well served by an increasing number of Dublin Bus services including the recent rerouting of the 46a.

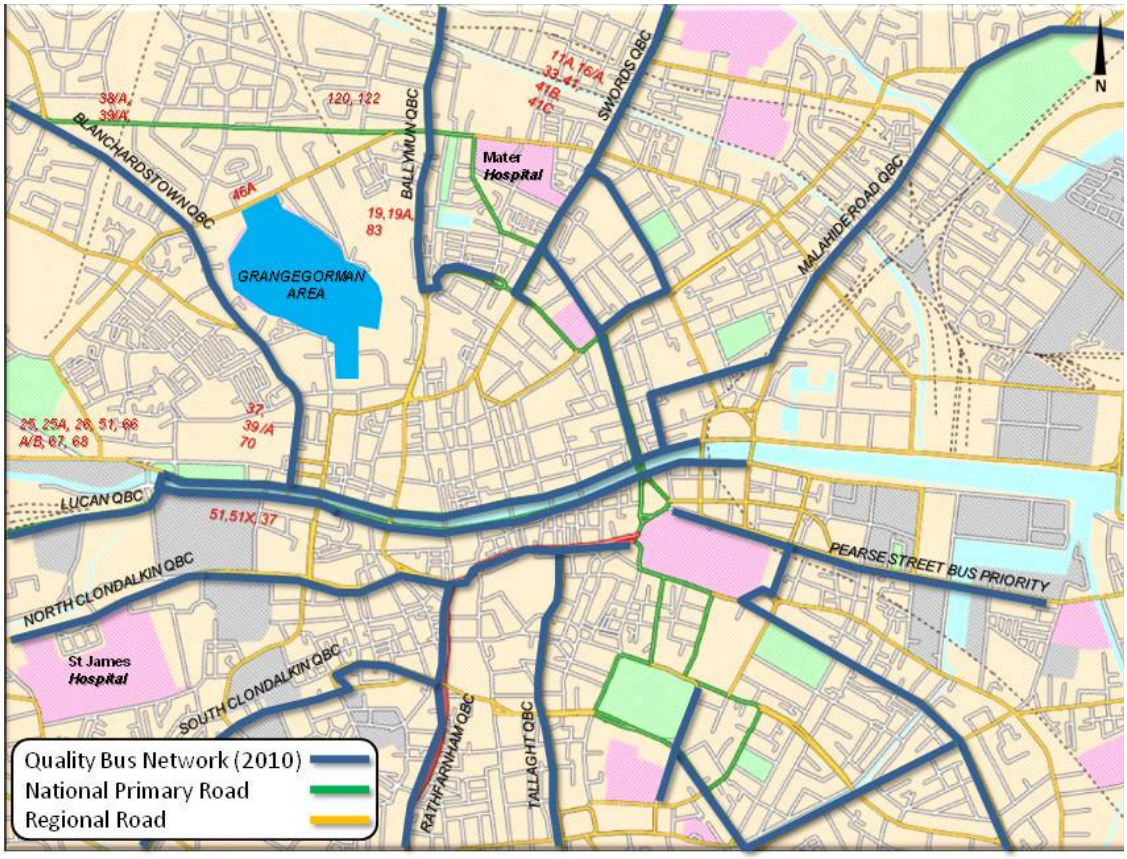

Figure 2.3 Quality Bus Network

The existing LUAS Red line running from Tallaght to Connolly has three stops (Four Courts, Smithfield and Museum) within 12 - 15 minutes walking distance from the Grangegorman site. The Luas lines connect the site to the mainline rail network at Heuston and Connolly Stations. The location of and walking distances to these stops are presented in Figure 3.1 below.

Grangegorman is within 30 minutes walking distance of the city centre where the majority of bus routes terminate, making the site accessible from transport hubs such as Bus Aras and Connolly Station. In addition, the site is also approximately 25 minutes walking distance from Heuston Station, another major public transport hub.

The site's proximity to existing public transport nodes as well as existing pedestrian and cyclist linkages mean that access to the site by private vehicle will not be as attractive or essential for the majority of possible visitors to the site from within the Greater Dublin Area. This will be discussed in greater detail in Chapter 3 below.

2.5 Existing Road Network

The road network surrounding the site provides a variety of movement functions. The N3 Cabra Road, N2, and N1 provide strategic movement functions by providing connectivity to the Greater Dublin Area and the North West. The North Circular Road provides an orbital function and plays an important role in cross city movement. These routes provide for pedestrians, cyclists and motorists alike and a general commentary on these facilities is presented below:

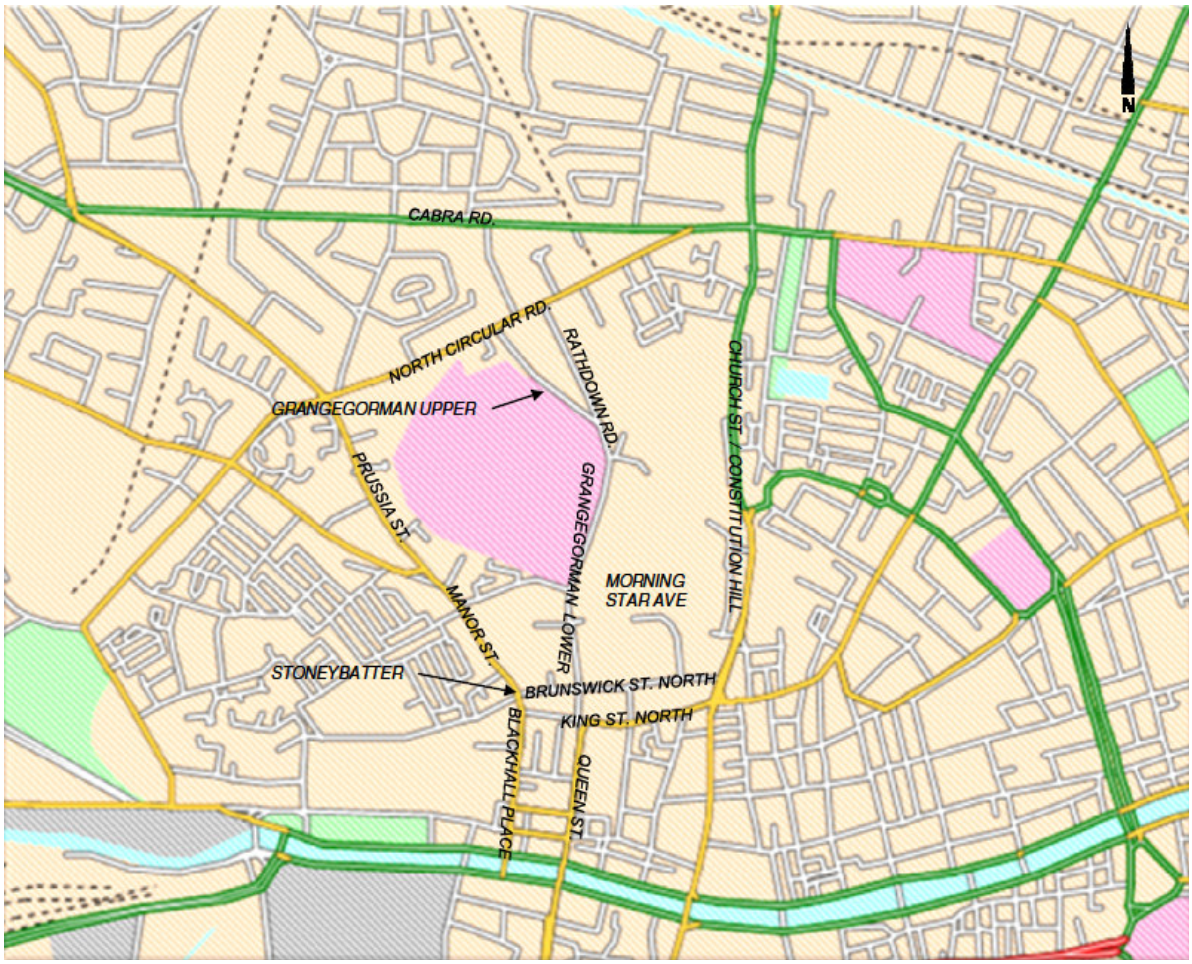

Figure 2.4 Map of Local Road Network

Cabra Road (N3)

Cabra Road is a high quality single carriageway road which runs in a general east to west direction in proximity to the site and forms part of the N3 National Primary Route. The N3 connects the northwest of Ireland to Dublin City. It

is an important strategic route and forms an arm of a signalised junction with the North Circular Road (commonly referred to as 'St. Peter's Church') approximately 900m from the northern boundary of the proposed site. There are good quality footpaths provided on both sides of the N3 for the majority of its length. An eastbound bus lane is provided in the vicinity of the junction with the North Circular Road.

North Circular Road (R101)
North Circular Road is a high quality single carriageway road approximately 7.5m wide with approximate 2m wide footpaths on both sides. It runs in a general southwest to northeast direction and forms part of regional route R101. It serves as a key access route to the proposed development and forms a signalised junction with the N3 Cabra Road in the northeast and another signalised junction at Old Cabra Road/Prussia Street in the southwest. This signalised cross-road to the southwest of the site is known locally as Hanlon's Corner. This road is currently assigned a 50km/h speed limit. There are good quality footpaths provided on both sides of the North Circular Road for the majority of its length. On road cycle lanes are provided in both directions between St Peter's church and the junction with Rathdown Road while a westbound on road cycle lane is provided for the majority of the remaining length.

Grangegorman Lower/Upper
Grangegorman Lower is a local road which runs between Brunswick Street in the south before diverging into Grangegorman Upper and Rathdown Road which both form junctions with North Circular Road in the north. Traffic travels in both directions along the road which is approximately 10.9m wide in the vicinity or the existing access to St Brendan's Hospital.

Good quality footpaths are provided on both sides of Grangegorman Lower/Upper with some sections of footpath closer to Brunswick Street in possible need of repair.

Rathdown Road
Rathdown Road runs between North Circular Road and Grangegorman Lower and provides access to existing houses which line both sides of the road. The total carriageway width is approximately 9.9m wide which comprises of 2 general traffic lanes as well as on street parallel parking on both sides of the road. Good quality footpaths of approximately 2.5m width are provided on both sides of the road.

Prussia Street/Manor Street/Stoneybatter/Blackhall Place
Prussia Street runs from North Circular Road and becomes Manor Street, Stoneybatter and then Blackhall Place before joining Ellis Quay to the south. The junction between Prussia Street and North Circular Road is locally known as Hanlon's Corner and the distance between this and Ellis Quay is approximately 1.25km. The total carriageway width varies between 7.9m and 16.9m while minimum footpath widths of approximately 1.9m are present on both sides along the route.

The southbound lane of Blackhall Place is for buses only between King Street North and the quays. General traffic must turn left onto King Street North before accessing the quays via Queen Street. A further section of southbound bus lane is provided between the Aughrim Street and Arbour Place junctions. A northbound bus lane is provided between the quays and the Blackhall Street junction while a northbound section of on road cycle lane is provided between Arbour Place and Hanlon's Corner.

Brunswick Street
Brunswick Street is a one way street for the majority of its length and runs in a west to east direction between Stoneybatter and Church Street. The street is two way for a limited section between its junction with Stoneybatter and Fountain Place to allow for local access. The road is approximately 9.0m wide and consists of 2 lanes of eastbound traffic between its junction with Grangegorman Lower and Church Street. Footpaths are provided on both sides of the road for its entire length. A limited section of on road cycle track is provided in a westbound direction between George's Lane and Stoneybatter.

King Street North
King Street North is also a two lane one way street which runs between Stoneybatter and Church Street. Traffic flows in an easterly direction from Stoneybatter before turning left onto George's Lane and right towards Queen Street. There is no through traffic allowed in an eastbound direction beyond this point. All southbound traffic wishing to access the quays from Stoneybatter must do so via King Street North because Blackhall Place caters for buses and taxis only between North King Street and Ellis Quay.

Traffic flows in a westbound direction only from Church Street with no through traffic allowed beyond the junction with Queen Street and George's Lane. Therefore, traffic either turns right onto George's Lane or left onto Queen Street.

King Street North is approximately 9.5m wide in the vicinity of the junction with Church Street and footpaths are provided on both sides of the road for its entire length. A westbound on road cycle lane is provided between Church Street and continues onto Queen Street.

Queen Street
Queen Street runs between King Street North and Ellis Quay and caters for southbound traffic only. The total carriageway width is approximately 10.5m and consists of 3 southbound lanes with minimum 2.5m wide footpaths on both sides. Southbound traffic from Stoneybatter must access the quays via Queen Street because of the southbound bus only movement allowed on Blackhall Place. A limited section of on road cycle lane is provided from the junction with King Street North.

Morning Star Avenue
Morning Star Avenue is a 6m wide road and runs between Brunswick Street and the south eastern corner of the Grangegorman site. It currently provides access to a number of existing HSE facilities, residences and hostels. Morning Star Avenue has one footpath on the eastern side of the pavement approximately 1.5m wide. On street parking is also provided on the eastern side of the road.

Church Street/Constitution Hill
The R108 commences as Bridge Street just south of the River Liffey and becomes Church Street as it crosses to the north side. The road becomes Constitution Hill in the vicinity of the CIE Broadstone depot before it becomes the N2 national route. The R108 varies between a two and three lane road on both sides north of the River Liffey. A northbound cycle lane is provided north of Broadstone while cycle lanes are also provided on both sides of the road for the majority of its length. The maximum carriageway width is approximately 15m which includes a solid central median in the vicinity of its junction with Brunswick Street.

2.6 Public Transport Upgrades

Transport 21 Proposals
There are significant proposals planned in Transport 21 that will improve access to the site. Within the local vicinity, Metro North and Luas Line BX and D will directly improve services providing high capacity public transport links. Metro North will connect Swords to Dublin City Centre (St Stephen's Green) via Dublin Airport. Two proposed stops at the Mater and Parnell Square are located within 15 minute walking time from Grangegorman.

Luas line BX will connect the two existing Luas lines, providing enhanced penetration to the City Centre. Luas line D will extend line BX towards Liffey Junction via Broadstone. The preferred route for Luas BX and D is illustrated in Figure 2.5 below. The proposed Broadstone D.I.T. stop has been designated to serve Grangegorman SDZ while an additional stop (Grangegorman) which could also serve the site may be constructed slightly further north.

Luas BX and D will provide the following benefits to the Grangegorman area:

- Cross city connectivity between the site and a number of key city centre public transport nodes.
- Connection to the Longford / Maynooth commuter rail line at Broombridge.
- Connection to the Luas Green and Red lines.

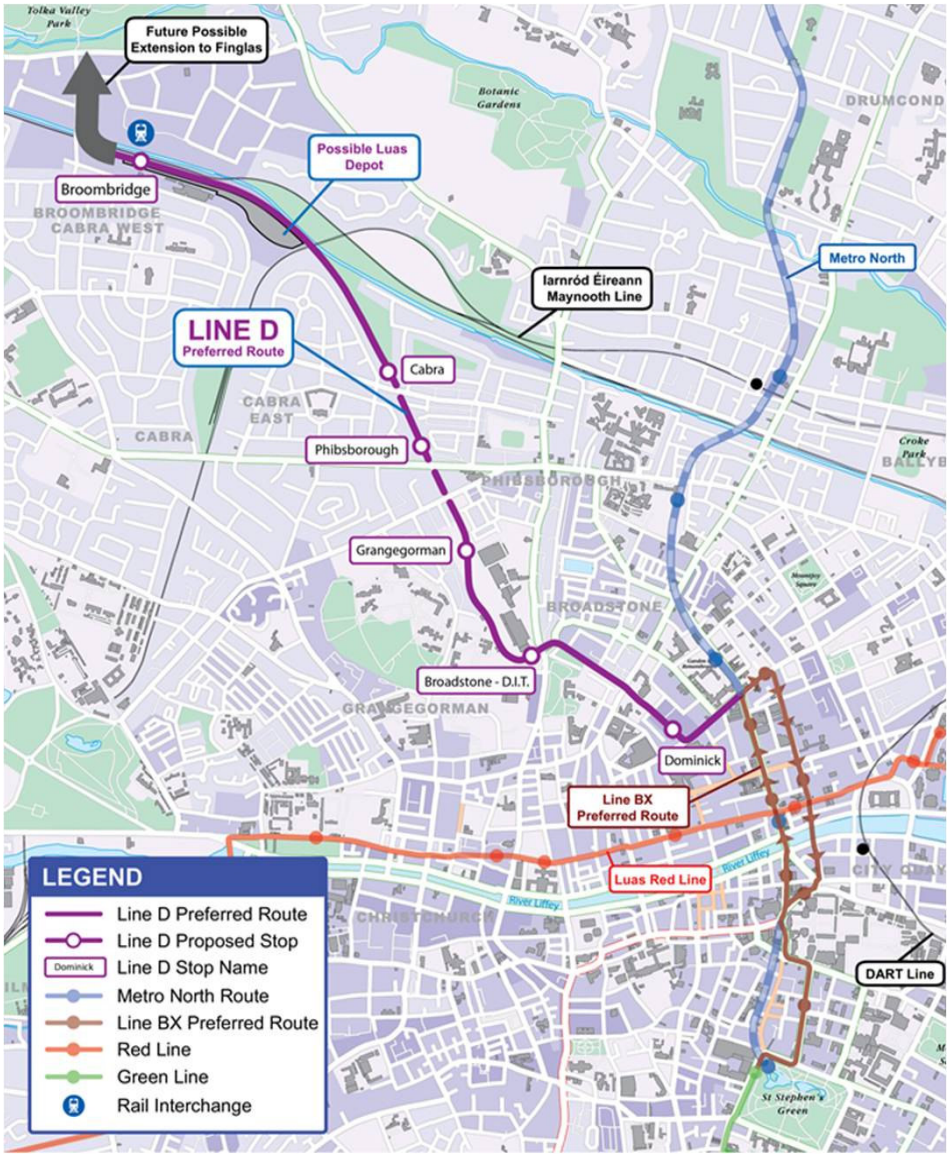

Figure 2.5 Preferred route for Luas Line BXD

A further initiative proposed within Transport 21 which will improve accessibility to Grangegorman is the rail interconnector. This planned link connecting the northern rail line to Heuston Station will remove the existing rail capacity restriction within the city centre at Butt Bridge.

The Grangegorman Development Agency supports the principals of the Transport 21 proposals based on the increased levels of accessibility offered by the initiatives.

Dublin City Council Strategic Green Routes

The Dublin City Council Development Plan (2011 – 2017) identifies a number of proposed Green Routes (which would provide for cyclist and pedestrians), strategic pedestrian routes and cycle routes across the city. Figure 2.6 below illustrates the city centre green route network proposed in the Development Plan while Figure 2.7 illustrates the strategic pedestrian routes proposed in the same document.

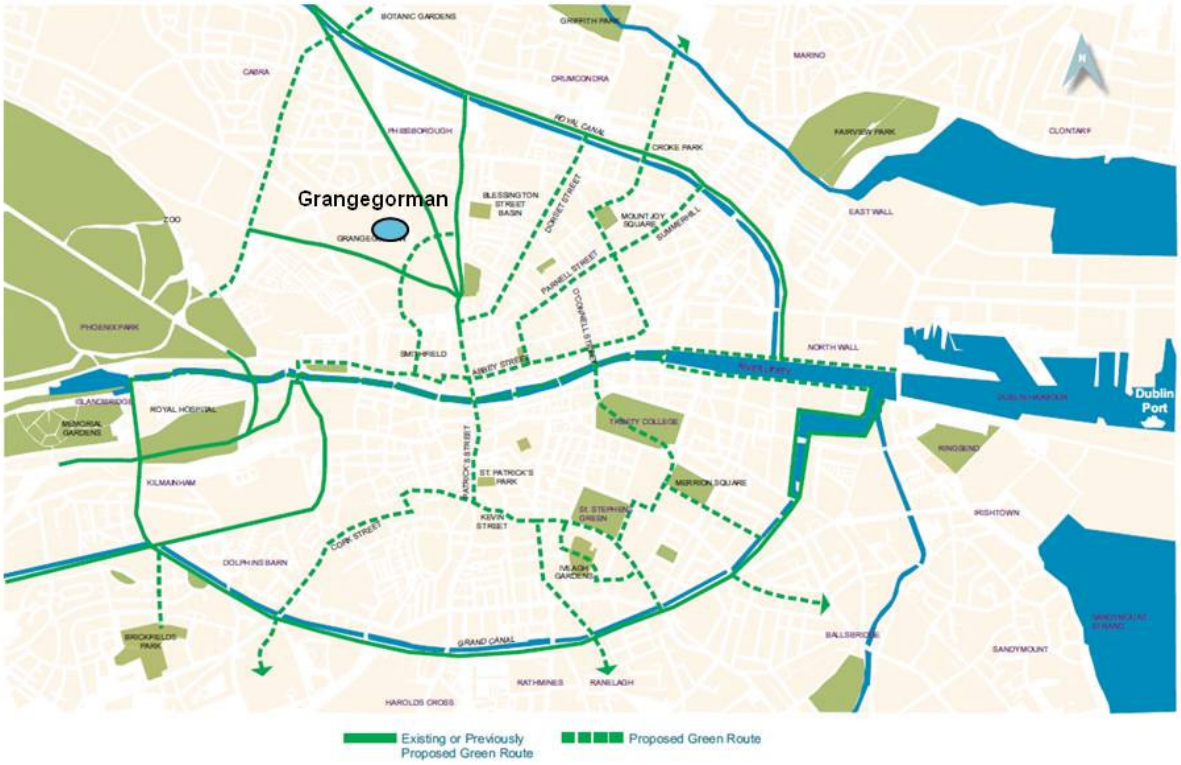

Figure 2.6 City Centre Green Routes (DCC Development Plan 2011 – 2017)

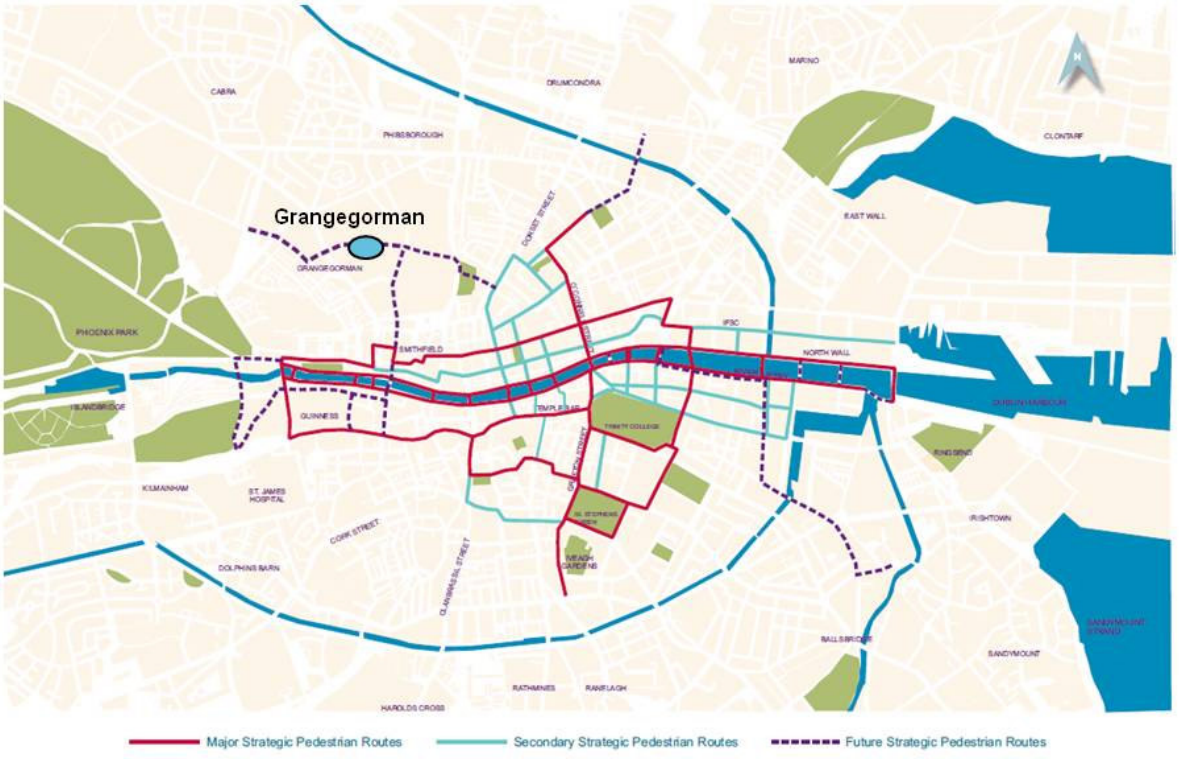

Figure 2.7 Strategic Pedestrian Routes (DCC Development Plan 2011 – 2017)

It can be seen from Figure 2.7 above that Grangegorman SDZ has been identified to form part of a future strategic pedestrian route that will extend westwards towards the Phoenix Park and the Royal Hospital via Heuston Station and the Liberties and eastwards towards the city centre commercial areas of Henry Street, Jervis Street etc. Similarly it can be seen from Figure 2.6 above that the development of Grangegorman will enhance connectivity within the city centre green route network.

Grangegorman in its current state restricts and represents a barrier to east-west connectivity. However, the proposed permeability and layout of Grangegorman SDZ will enhance DCC's access strategy for the city. In fact the site holds such a strategic location that it could be stated that its development will help integrate the western part of the city centre. The proposed site layout and access strategy will be described in further detail in Chapter 5 below.

The Dublin City Council Development Plan also outlines citywide proposals for the construction of new cycle tracks and upgrades to existing cycle tracks. The majority of these routes may form some part of journeys for visitors to Grangegorman however some routes which would be of particular significance to the site include:

- Rathdown Road, Grangegorman Upper and Lower, Brunswick Street
- Prussia Street, Manor Street, Stoneybatter, Blackhall Place
- Phibsborough Road, Connaught Street, St Peter's Road

- North Circular Road, Cabra Road, Old Cabra Road
- Parnell Square/Parnell Street
- Conyngham Road, Parkgate Street, North Quays
- Infirmary Road
- Capel Street
- Dorset Street
- Queen Street
- North King Street, Bolton Street

Therefore, cycle approaches to Grangegorman from north, south, east and west will be upgraded or introduced under the proposals of the Development Plan. This will further encourage the use of the bicycle as a means of accessing the site. The GDA is committed to working in conjunction with Dublin City Council to deliver the principles and proposals outlined in the current Development Plan.

Draft Transport Strategy 2011 – 2030, National Transport Authority
Within the Draft Transport Strategy 2011 – 2030, the NTA highlight the importance of bus priority measures in particular measures such as the dedicated provision of road space, priority for buses at signals and restriction to some or all vehicles along sections of road.

The NTA have identified a number of Quality Bus Corridors (QBCs) for proposed upgrades. The routes highlighted as Bus Priority 1 have been selected for improvement to journey times, service reliability and comfort levels on the basis of their significance. Routes highlighted as Bus Priority 2 have also been selected for improvements with regard to bus segregation and bus priority. Further to this, orbital routes outside the city centre have also been highlighted for improvement. The NTA will explore the possibility of introducing Bus Rapid Transit to a number of the QBCs. The NTA has stated in its document, that it anticipates that a number of the Bus Priority 1 routes will migrate to facilitate BRT type services. Figure 2.8 below presents the Bus Priority routes outlined by the NTA.

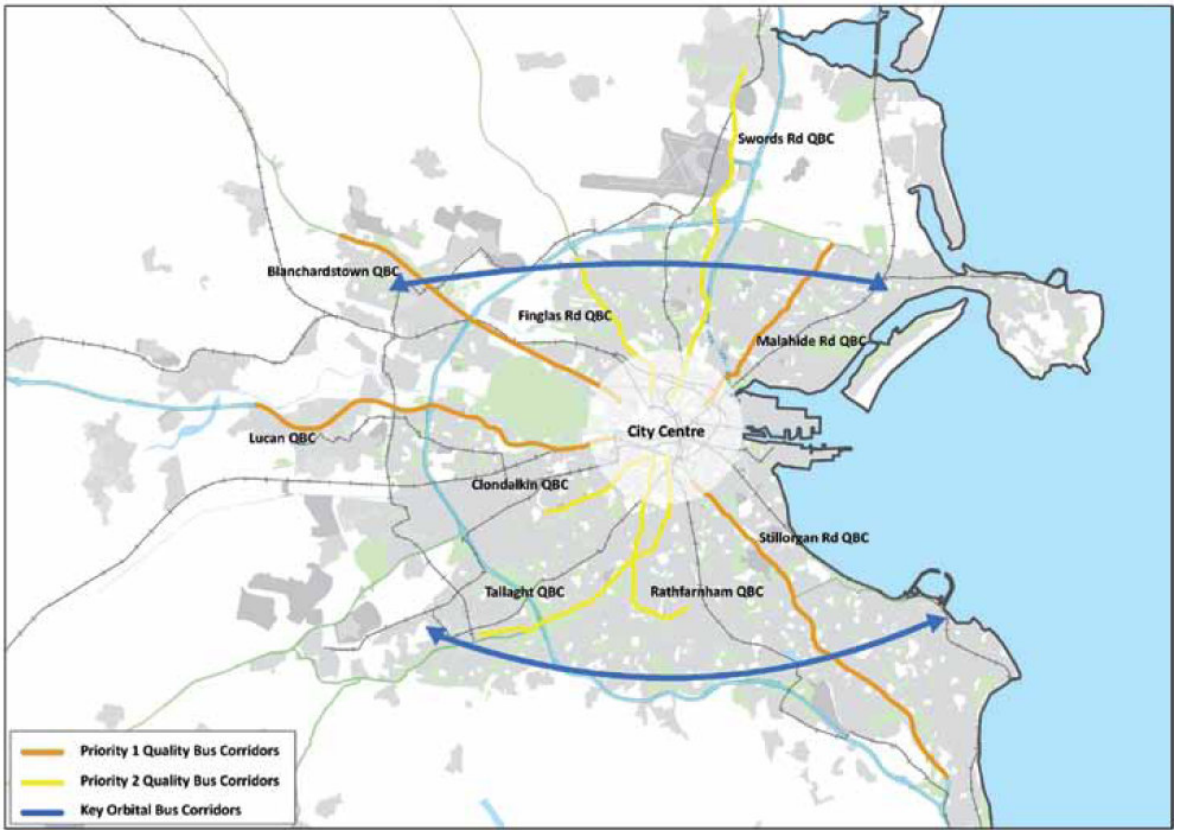

Figure 2.8 National Transport Authority Bus Priority routes.

Routes of particular relevance to the Grangegorman site shown in Figure 2.8 above include the Swords, Finglas Road, Blanchardstown and Lucan QBCs. The Stillorgan Road QBC is also important to the Grangegorman site as a result of the recent rerouting of the 46a bus service along the North Circular Road. In addition to bus priority measures, the NTA also have a number of objectives in relation to the Luas. These objectives area as follows:

- The upgrade of passenger capacity on the existing Luas Green Line as required to meet demand;
- Extension of the Luas Green Line from St. Stephen's Green to Broombridge via Grangegorman (Luas BX & D);
- Extension of Luas Green from Brides Glen to Bray area;
- Upgrade of Luas Green Line to cater for Metro services and extension of the proposed Metro North tunnel to meet the Green Line.

Accessibility Assessment

3 Accessibility Assessment

3.1 Overview

In this chapter of the Mobility Management Plan, an overview of accessibility by various modes to the subject site is provided. In providing this discussion, reference has been made to the following modes of travel: walking; cycling; and public transport.

Reference has been made throughout this Chapter on accessibility to modelling undertaken by the National Transport Authority using Accession software, an accessibility modelling programme which is discussed in greater detail in the paragraphs below.

3.2 Walking Accessibility

The National Transport Authority (NTA) carried out accessibility modelling on behalf of the Grangegorman Development Agency using the Accession modelling tool. The NTA's base model uses data from the 2006 Census to generate travel times to specific locations from a central information point, in this case the Grangegorman site. The NTA kindly produced a series of model runs based on travel to the Grangegorman site. Figure 3.1 below highlights the 30 minute walking catchment of the Grangegorman site based on existing infrastructure, established by the NTA.

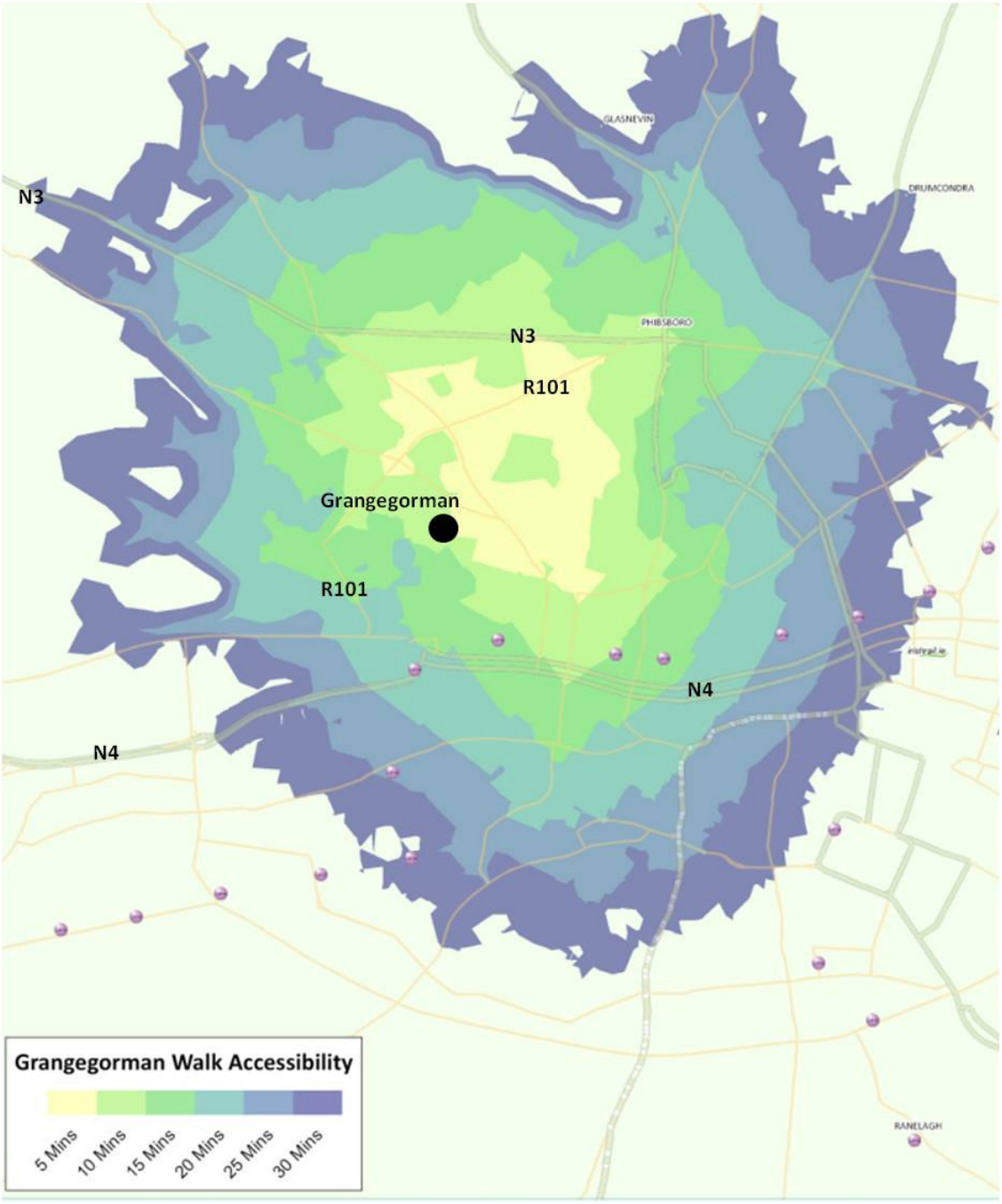

Figure 3.1: Grangegorman 30 minute walking catchment (source NTA).

The NTA found that 14% of the population Greater Dublin Area reside within a 30 minute walking catchment of the subject site shown in the Figure 3.1 above. This population in turn can be allocated within a number of time bands in terms of walking to the site and can be seen below in Figure 3.2.

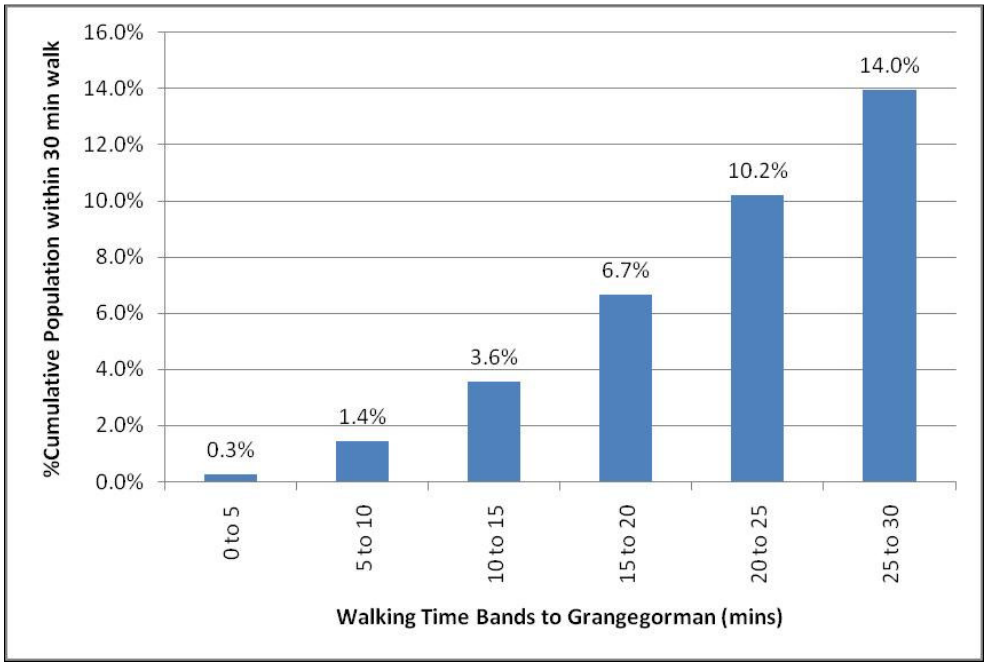

Figure 3.2: Proportion of general population within 30 minute walk of subject site (source NTA)

Figure 3.2 above, shows that the largest proportion of the population within the 30 walking minute catchment lie within the 15 to 30 minute time bands. As shown in Figure 3.1 above, the main residential areas within these time bands include the following: Glasnevin, Drumcondra, Cabra, Phoenix Park, Stoneybatter, Arbour Hill, The Coombe, Smithfield. Each of these areas contains high density residential catchments and would offer attractive accommodation for students attending the future DIT campus at the subject site.

It would therefore appear that the education and employment elements within the Grangegorman site are well positioned to benefit from the significant residential land uses and population within an acceptable walking catchment of the Grangegorman area.

3.3 Cycling Accessibility

A similar modelling exercise was also undertaken by the NTA based on travel to the site by bicycle only. This assessment showed that in the base year approximately 28% of the population of the Greater Dublin Area live within an acceptable 20 minute cycling time of Grangegorman. Figure 3.3 below illustrates the various cycle catchments from the Grangegorman site, which was established by the NTA using its Accession modelling programme.

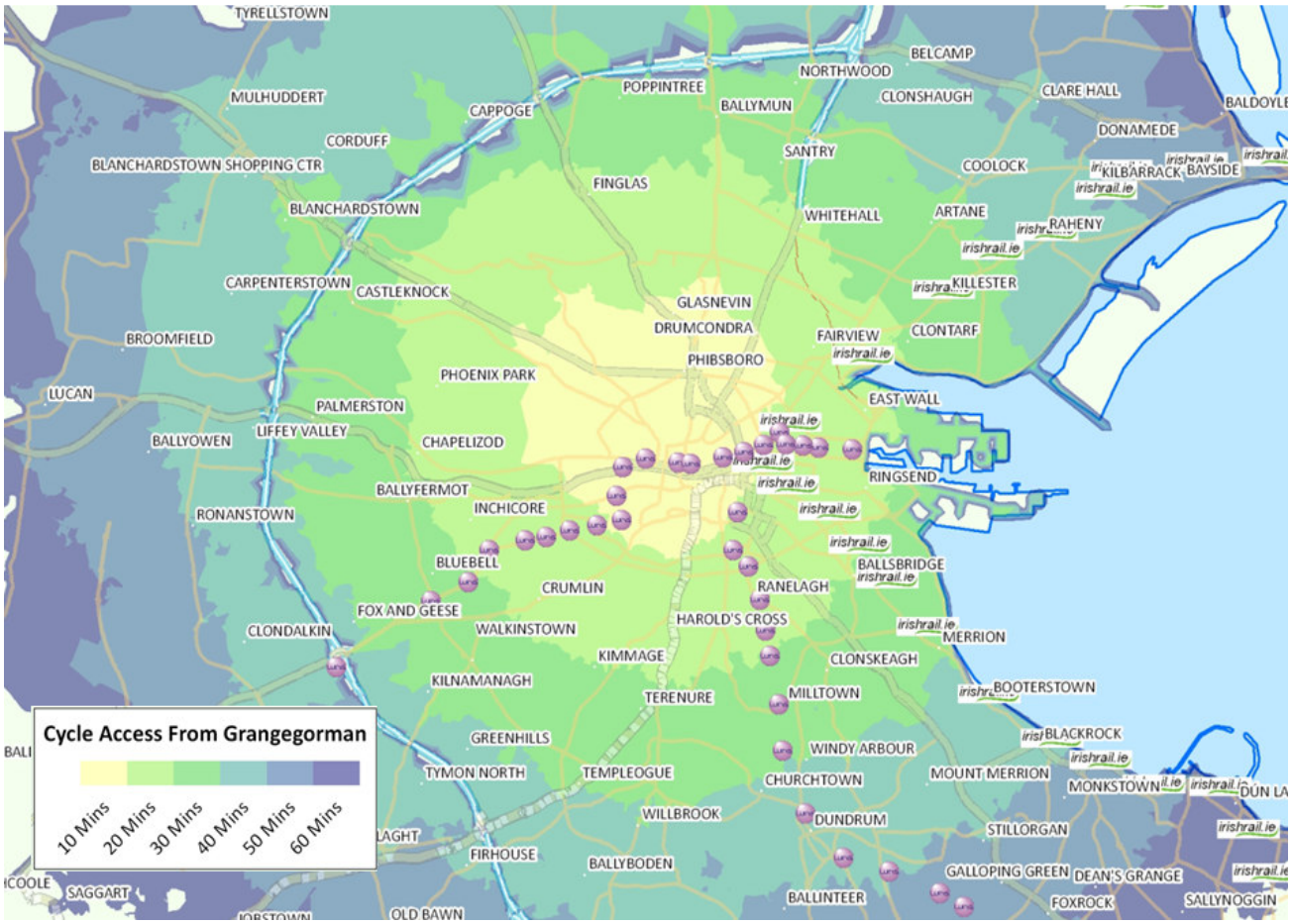

Figure 3.3: Grangegorman cycling catchment.

The Greater Dublin Area population within 20 minutes cycle of Grangegorman has also been broken down into specific ten minute time bands from the site and are presented in Figure 3.4 below.

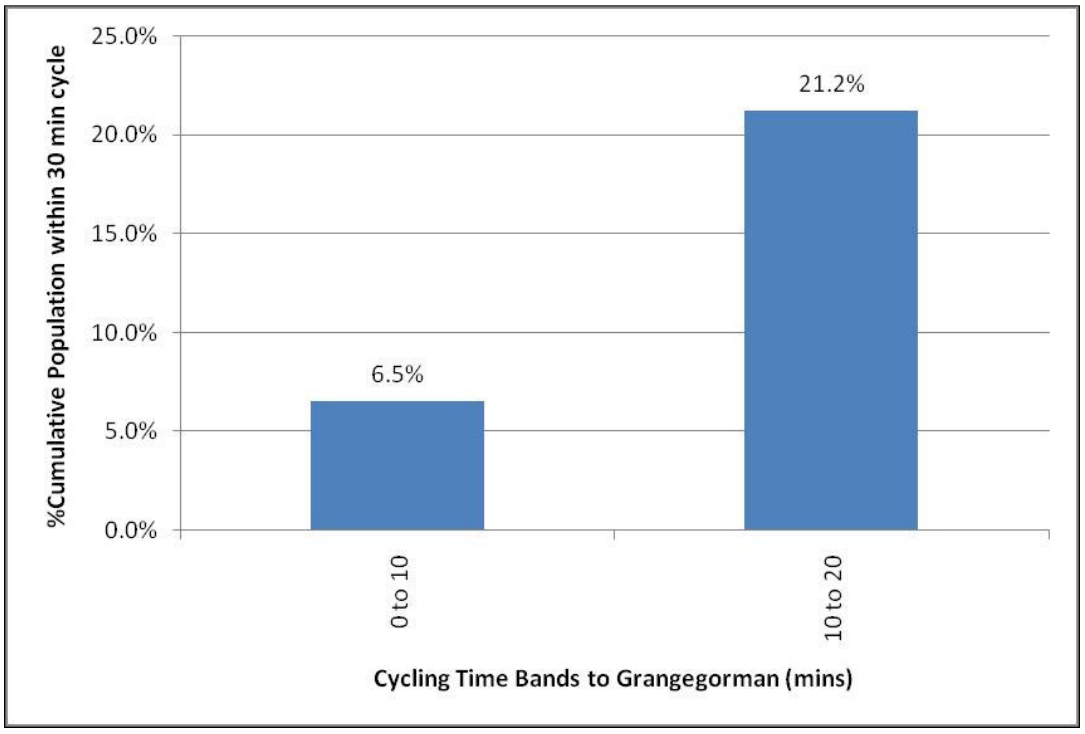

Figure 3.4: Proportion of general population within 20 minute cycle of Grangegorman.

Figure 3.3 above highlights the areas encompassed within the cycling time bands established by the NTA. The 20 minute time band encompasses the following areas: Fairview; Glasnevin; Finglas; Castleknock; Chapelizod; Ballyfermot; Inchicore; Crumlin; Harolds Cross; Ranelagh; and Ringsend. These areas are well served by the existing cycle network in Dublin City illustrated in Figure 2.2 above.

It is anticipated that the population within acceptable cycling distance will increase in the near future as a result of the expected improvement in cycle links such as the Green routes identified by Dublin City Council and discussed in Section 2.6 of this report.

Therefore, it can be concluded that Grangegorman is ideally located to offer excellent connectivity to adjacent existing pedestrian and cyclist links.

3.4 Public Transport Accessibility

Using the Accession modelling programme the NTA were also able to establish journey times to the Grangegorman area using a combination of the modes of walking and public transport. Figure 3.5 below highlights the journey times by walking and cycling in the base year. Bus, rail and light rail accessibility will be discussed in greater detail in the paragraphs below.

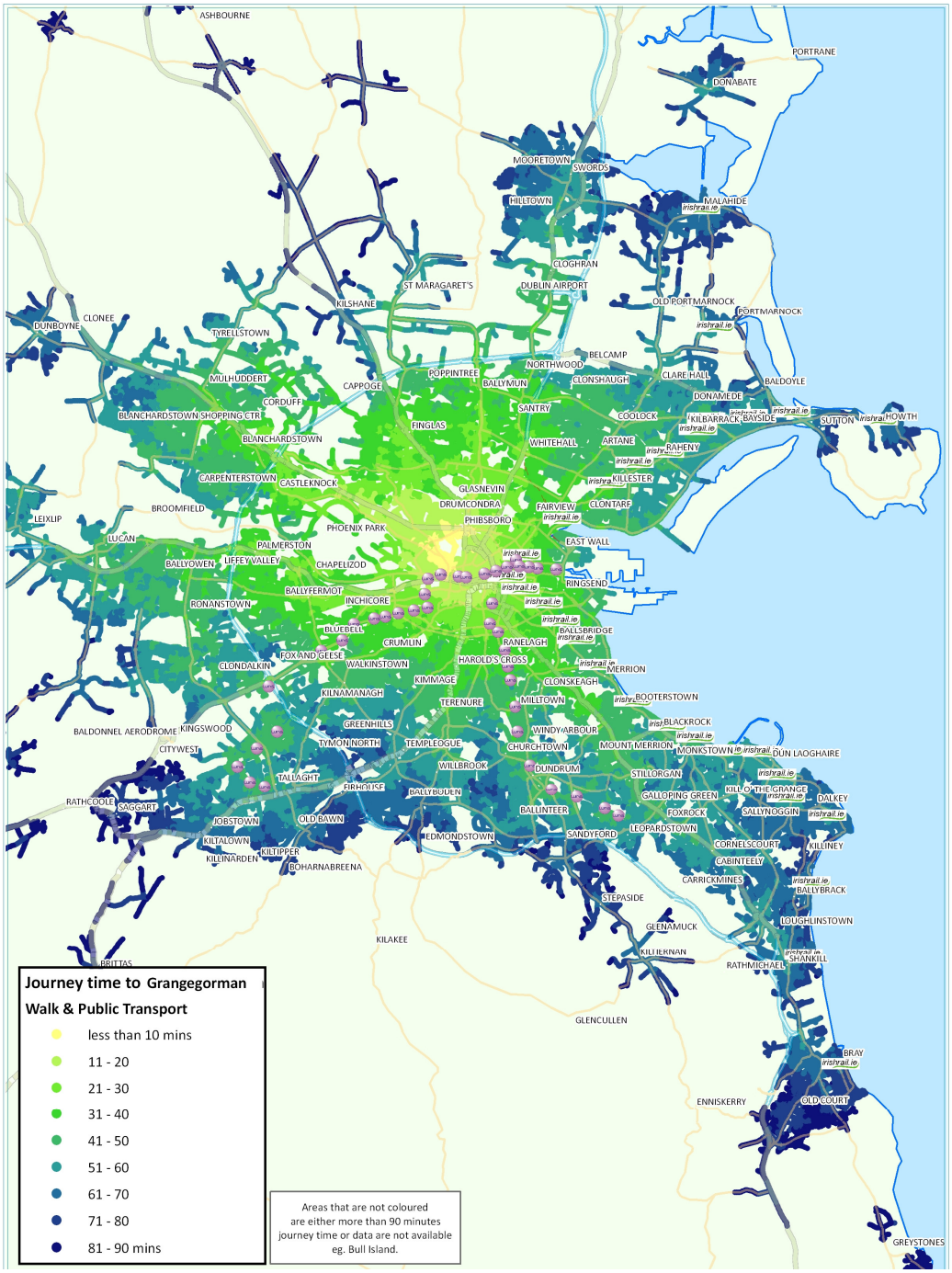

Figure 3.5: Journey time (2006) to Grangegorman by walking and public transport (source NTA).

The NTA have that 95% of the existing Greater Dublin Area catchment is within a 90 minute commute of Grangegorman via the combined modes of walking and public transport.

Bus Accessibility
Figure 2.3 in the preceding chapter illustrates the existing Quality Bus Corridors and also the numerous bus services with stops in the vicinity of the subject site. In addition to this a large number of additional bus services along O'Connell Street and at numerous bus stops along the quays of the River Liffey will be used by Grangegorman visitors. The location of the subject site in relation to O'Connell Street, an important public transport interchange will ensure that additional QBCs other than the Blanchardstown, Ballymun and Lucan QBCs will be utilised in gaining access and egress to the site. The key bus routes primarily serving the Grangegorman area includes the following: Bus Nos 46a; 39a; 11a; 16a; 33; 41 / b / c; 120; 122; 19; 19a; 83; 25; 25a; 26; 66; 67; 68; and 69.

Rail Accessibility
The subject site is located 2.1km from the Drumcondra Railway Station which also considered an acceptable walking distance. Drumcondra and Broombridge Railway Stations will provide patrons on the Longford / Maynooth commuter services with access to the subject site. Connolly Station is located 3km walk from the subject site. Connolly Station is a focal point in the national rail network serving: Inter City routes to and from both Belfast and Sligo; commuter services from Longford, Maynooth, Dundalk and Drogheda; and the north-south Dublin Area Rapid Transit (DART) services. In addition to walking to / from Connolly Station access can also be provided by the Luas Red Line via the Smithfield Luas stop.

The Grangegorman area is located within 25 minutes walk of Heuston Station which will provide patrons on the Kildare line and other Inter City services with access to the subject site.

Light Rail Accessibility
The Luas Red line operating between Tallaght and Connolly Station currently has three stops in close proximity to the subject site namely; Museum; Smithfield; and Four Courts. Each of these Luas stops are within walking distance of Grangegorman, the closest being the Smithfield stop located approximately 1.2km from the site, equating to 12 – 15 minute walk from the site. The Luas provides a fast and reliable service between Tallaght and the City Centre and will form an attractive mode of transport to potential occupants of the Grangegorman site. Figure 3.6 below highlights the walk time isochrones from the development site to the nearby existing Luas Red line stops.

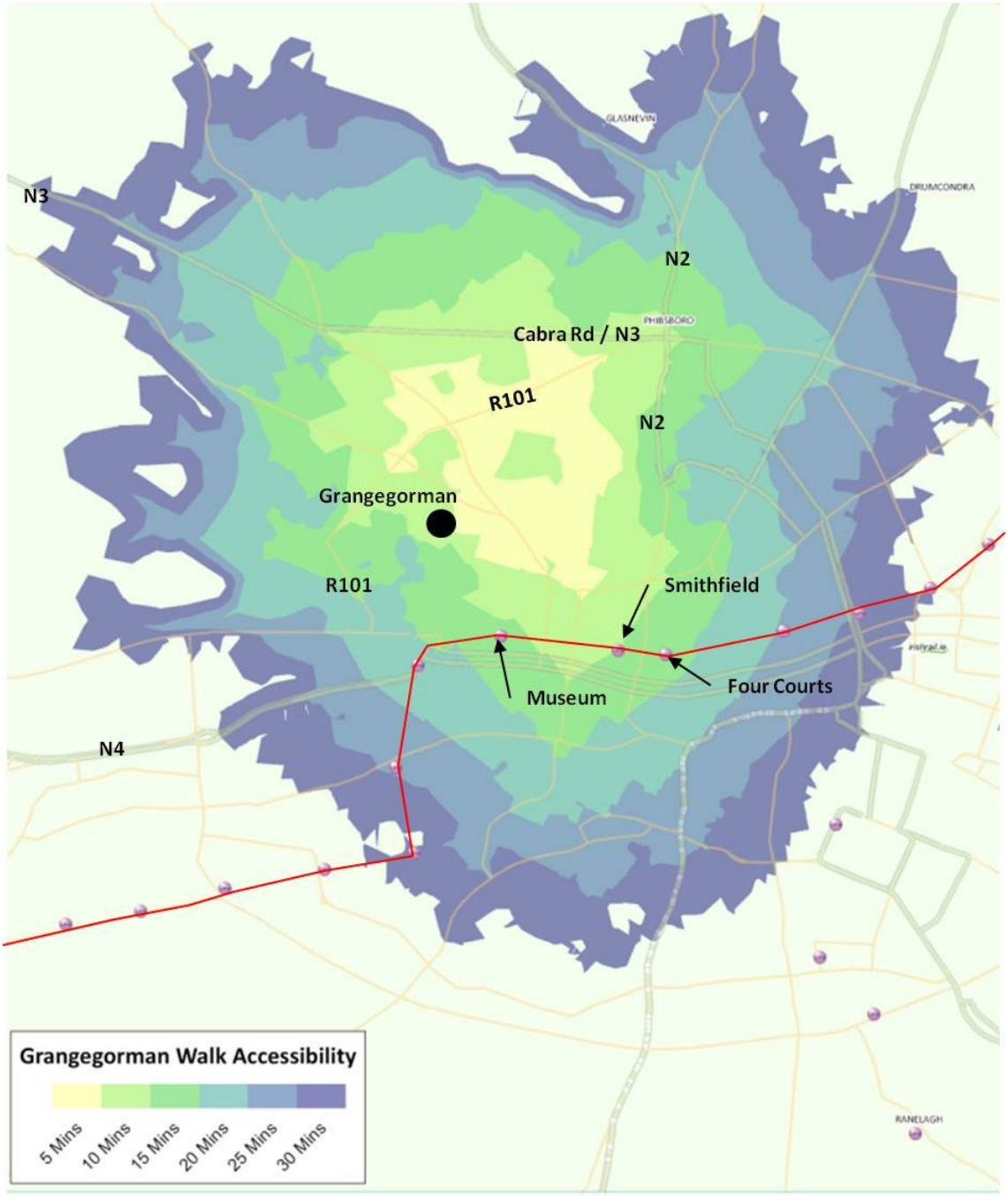

Figure 3.6 Walk time Isochrones to Luas Red line stops (Source NTA)

3.5 Summary of Existing Accessibility

It has therefore been demonstrated that the level of accessibility to the Grangegorman site by the modes of walking, cycling and Public Transport is good. The Grangegorman site is located in close proximity to a number of well served Quality Bus Corridors namely: the Blanchardstown QBC; the Ballymun QBC; and the Lucan QBC. In addition to this the site is also located with a short walking distance from the Smithfield Luas stop on the Luas Red line. Not only does this Luas stop provide access to the site from the south western environs of the city, the Red line also provides an interchange at Connolly Railway Station for rail users from the northern and south eastern environs of Dublin City.

3.6 Summary of Future Accessibility

The NTA have also used the Accession modelling programme to forecast future journey times to the Grangegorman site following the development of the 2030 strategy which includes Transport 21 proposals namely, Metro North and Luas Line BX and D and the Green routes proposed by DCC. Metro North and Luas BX and D will provide high capacity public transport links within the vicinity of the site. Metro North will connect Swords to Dublin City Centre (St Stephen's Green) via Dublin Airport. Figure 3.7 below highlights the future site accessibility which represents a significant improvement on Figure 3.5 above.

As shown in Figure 3.7 below, the 90 minute catchment within the Greater Dublin Area will have increased and will encompass 97% of the population, an increase of 2% on the catchment shown on Figure 3.5 above.

It is expected that an increasing modal shift towards sustainable transport modes, such as public transport, walking, and cycling will occur in the future. Grangegorman is ideally located to benefit from the increased levels of accessibility offered by proposed infrastructure upgrades.

Capabilities on project:
Transportation

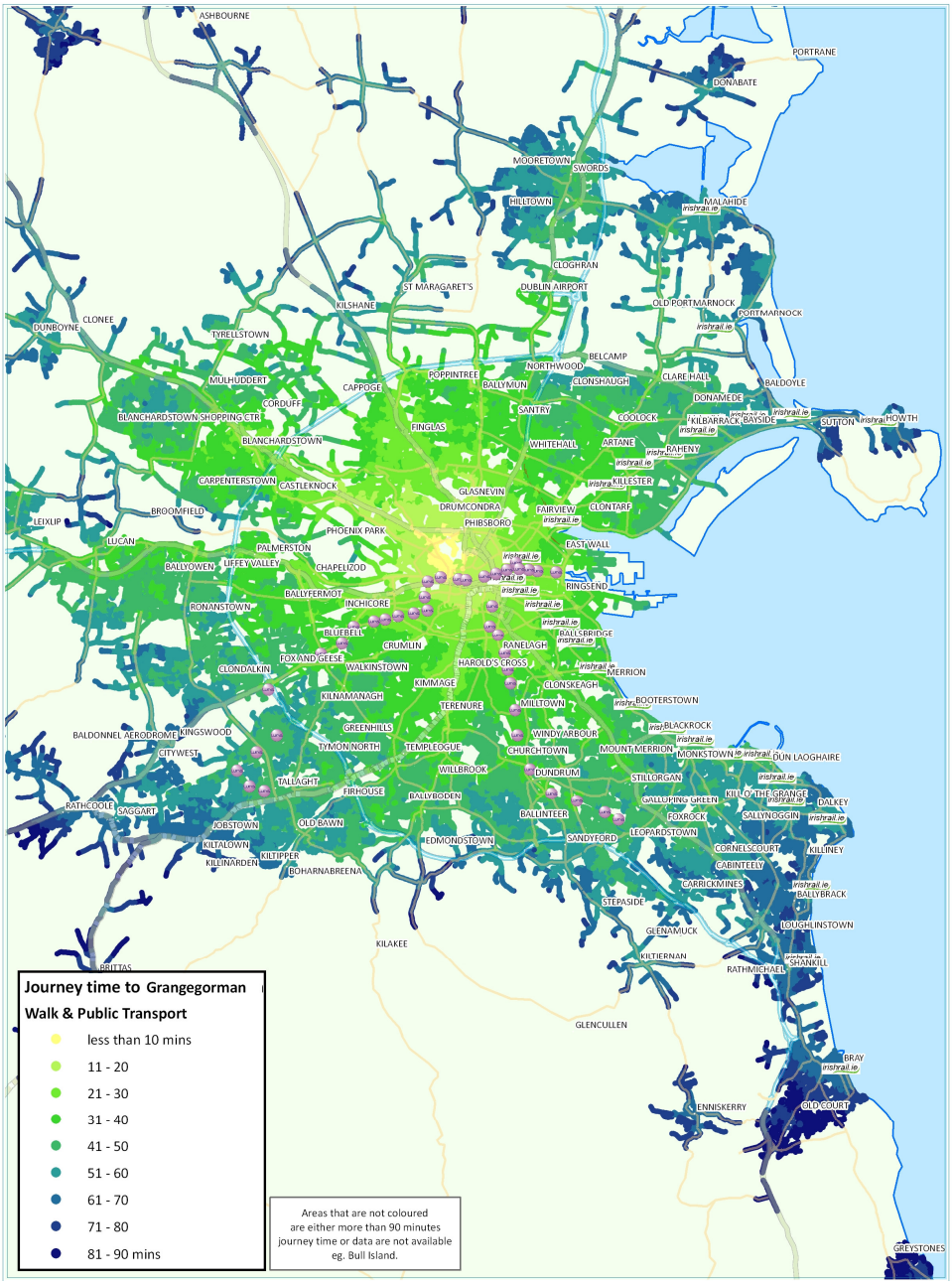

Figure 3.7 Future (2030) journey times to Grangegorman by walking and public transport (source NTA).

Existing Travel Patterns

4 Existing Travel Patterns

4.1 Overview

As mentioned earlier, the Dublin City Council Development Plan 2011 – 2017, categorises two distinct types of Mobility Management Plan. This plan has been prepared to comply with the requirements for a Category 2 MMP when the occupants of the site are known in advance. A Category 2 MMP requires a travel survey to be undertaken as soon as the development has been occupied. This plan however has been prepared to comply with the requirements for a Category 2 MMP, however, where possible a level of detail over and above the minimum requirements has been provided.

Detailed travel surveys were undertaken by AECOM on behalf of the GDA of the travel patterns of existing HSE employees at the Grangegorman site. In addition, reference will also be made to travel surveys of staff and students undertaken at each of the existing DIT campus locations in 2006 by the National Institute for Transport and Logistics, subsequently referred to within this MMP as the NITL report. Furthermore, the National Transport Authority undertook surveys of staff and students at each of the DIT campus locations and will also be referenced within the MMP. The outputs of these surveys will be reproduced in the paragraphs below. This data will provide a detailed picture of the existing travel patterns of the future occupants of the Grangegorman site.

4.2 HSE Employment Surveys (AECOM)

In February 2009, AECOM undertook travel surveys at the existing HSE facilities at Grangegorman. A response rate of 32% of those employed within the existing HSE facilities at Grangegorman was achieved.

The travel survey provides information on the resident location of existing staff, the time of arrival and departure from Grangegorman, the current modal split and the attitudes to potential changes to travel patterns.

4.2.1 HSE Employment Surveys - General Modal Split

The modal split determined from the HSE travel survey is illustrated below.

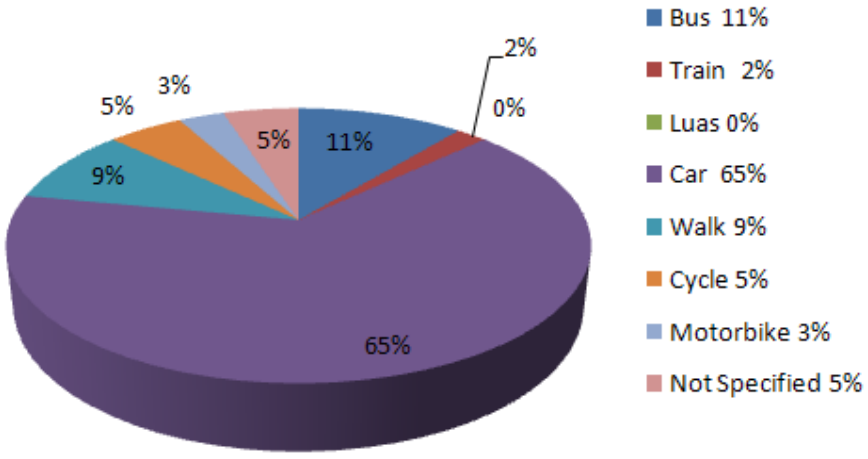

Figure 4.1 Modal Split for existing HSE population

It can be seen that there is a large proportion of staff using a private vehicle to access the site. This is primarily as a result of the existing provision of 382 parking spaces on site. There are no restrictions on these parking spaces and

as a result staff choose to drive despite the sustainable alternatives available. Another reason for the large modal split for the car is the working hours of many of the staff and nurses in particular. The nursing shifts in operation at present are 08:00 – 20:30 and 20:30 – 08:00. Public transport services would not be as frequent at the shift turnover times, particularly in the evening.

4.2.2 HSE Employment Surveys – Attitudinal Results

The travel survey undertaken at the HSE also included detail with regard attitude towards a possible modal shift. The survey found that 60% of the staff surveyed felt positively towards changing their mode of transport. Furthermore, staff were asked what incentives or facilities would encourage individuals to change to more sustainable modes of transport. The dominant measures suggested that may encourage modal shift to walking and cycling, use of public transport and car sharing are presented diagrammatically in Figures 4.2 – 4.4 below.

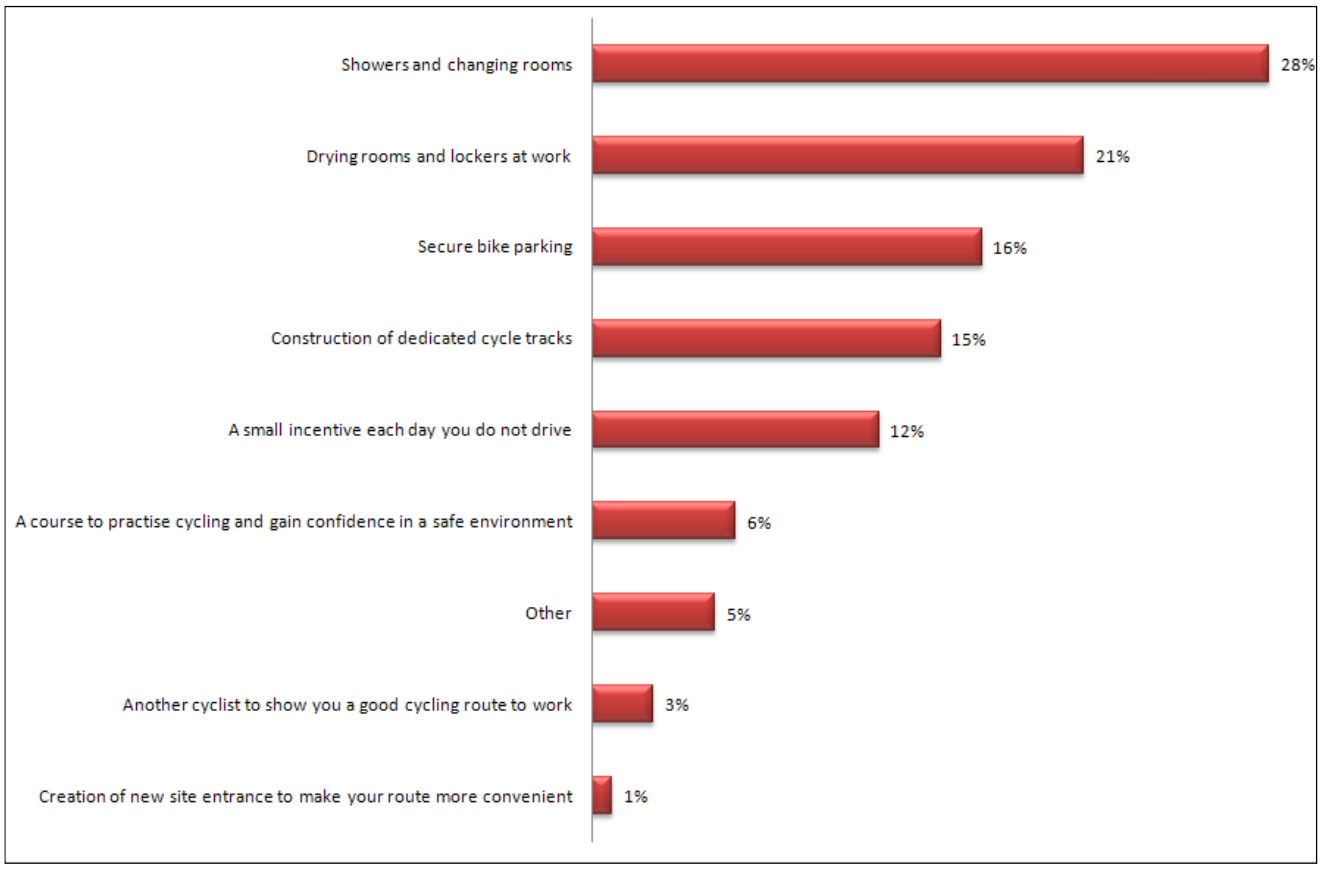

Figure 4.2 Measures that would encourage walking and cycling at HSE.

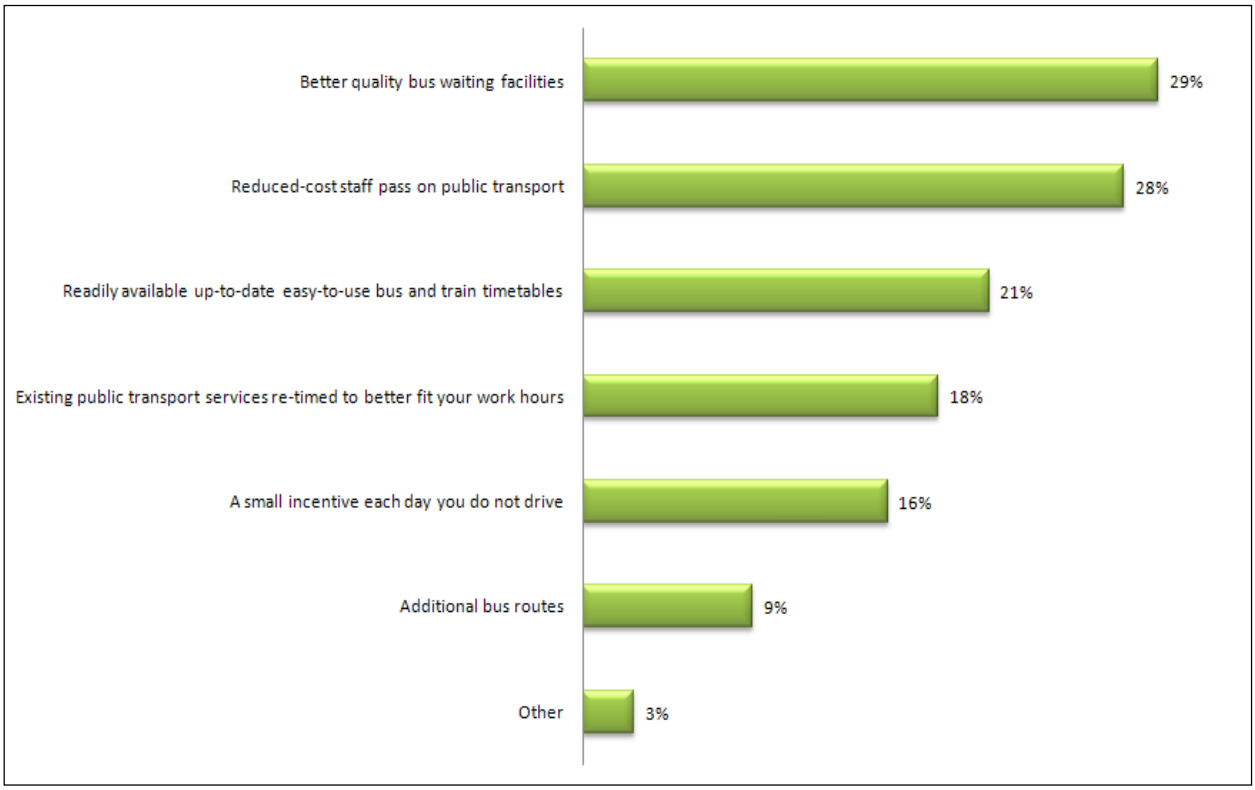

Figure 4.3 Measures that would encourage use of public transport at HSE.

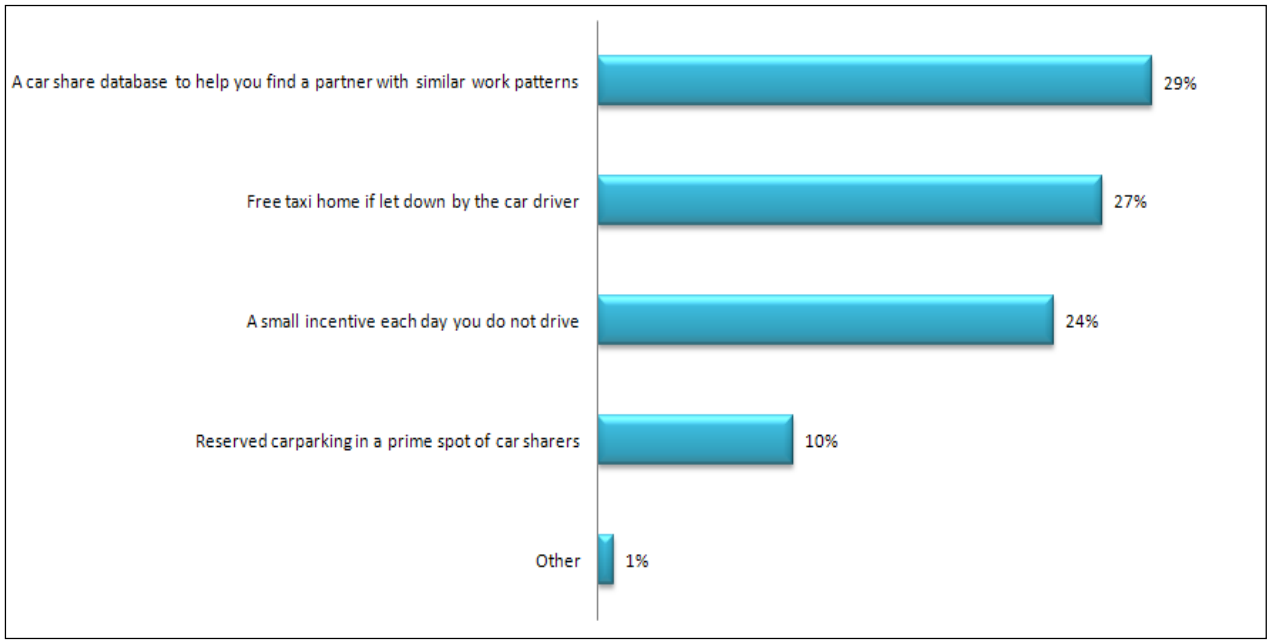

Figure 4.4 Measures that would encourage car sharing at HSE.

As shown in Figure 4.2 above, the most dominant suggestions that would encourage staff to walk / cycle to work include the provision of secure bicycle parking, provision of showers and changing rooms and also drying rooms and lockers.

Figure 4.3 highlights, measures that would encourage greater HSE staff use of public transport services. The suggestions include; a reduced cost HSE staff pass, provision of up to date bus and train time tables and better quality bus waiting facilities.

Measures that would encourage car sharing include the provision of a reserved car parking space for car sharers; a car share database to source compatible work patterns and substitute transportation should the car sharing fail occasionally.

4.3 Existing DIT Campus – NITL Report

In August 2006, the National Institution of Transportation & Logistics (NITL) produced a report, 'Towards a Transport Plan for DIT's Grangegorman Campus' on behalf of DIT with the development of Grangegorman in mind. As part of the report, extensive travel surveys were undertaken at each of the DIT campus buildings of both staff and students. A response of 2,184 surveys was received by NITL of which 1,330 were completed by students. The overall response rate to the survey was 10.1%.

The travel survey provides information on the resident location of existing staff, the time of arrival and departure from Grangegorman, the current modal split and the attitudes to potential changes to travel patterns.

4.3.1 NITL Report - General Modal Split

DIT currently occupies approximately 39 individual buildings around Dublin city centre with a total population of 21,624 comprising of full and part time staff, undergraduates, postgraduates, apprentices and junior musicians.

The existing diversification of DIT building locations generates significant travel demand across the city. The existing modal split established for DIT within the NITL report can be seen in Figure 4.5 below:

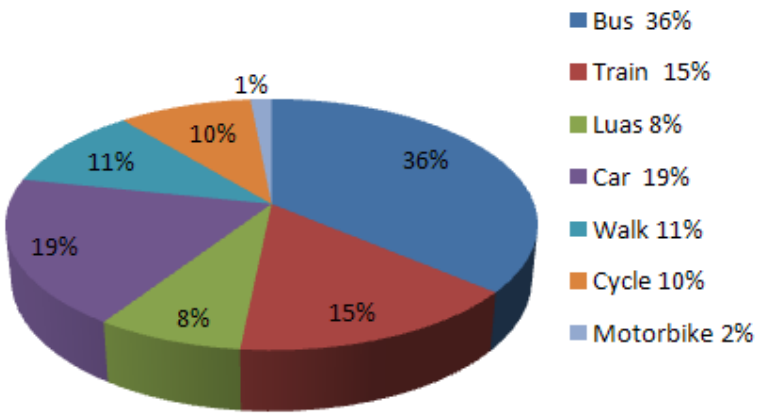

Figure 4.5 Modal Split for existing DIT Population (NITL Report)

Figure 4.5 above highlights the attractive existing modal split for DIT taken from the NITL report. It can be seen that bus is the primary mode of transport across DIT's existing campus locations as it would provide the best access to facilities at Bolton Street and Cathal Brugha Street. The Luas has also quite a high modal share as the green line runs in close proximity to Kevin Street and Aungier Street and terminates at St Stephen's Green nearby. The modal share for Luas may be curtailed by high rents along the route which discourage students from locating there. Walking and cycling are represented with reasonably high modal shares and this is reflective of the city centre locations of the existing campus with good pedestrian and cyclist linkages available. The existing DIT modal split is quite a desirable modal split with the modal split for the car only representing 19% of the total person trips. However, it is envisaged that the car modal share will decrease further when DIT relocates to Grangegorman as a result of a carefully managed car parking provision and access strategy. The consolidation of the numerous DIT buildings into one campus will also reduce travel demand by removing the need to travel between the various existing campus locations. The NITL survey found that 19% of both students and staff travel between the various DIT locations more than two times per week.

4.3.2 NITL Report – Attitudinal Results

The travel survey undertaken by NITL also included detail with regard attitude towards modal shift. The survey found that 60% of the staff surveyed felt positively towards changing their mode of transport. Furthermore, staff were asked what incentives or facilities would encourage individuals to change to more sustainable modes of transport. The dominant measures suggested that may encourage modal shift to walking and cycling, use of public transport and car sharing are presented diagrammatically in Figures 4.6 – 4.8 below.

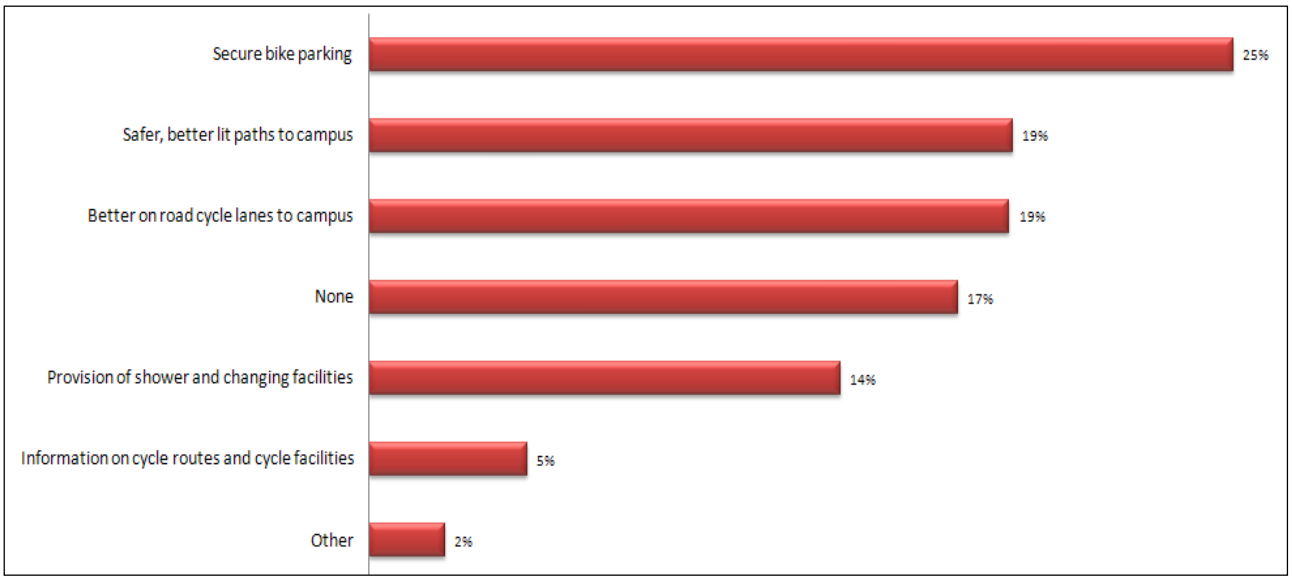

Figure 4.6 Measures that would encourage walking and cycling at DIT (NITL Report).

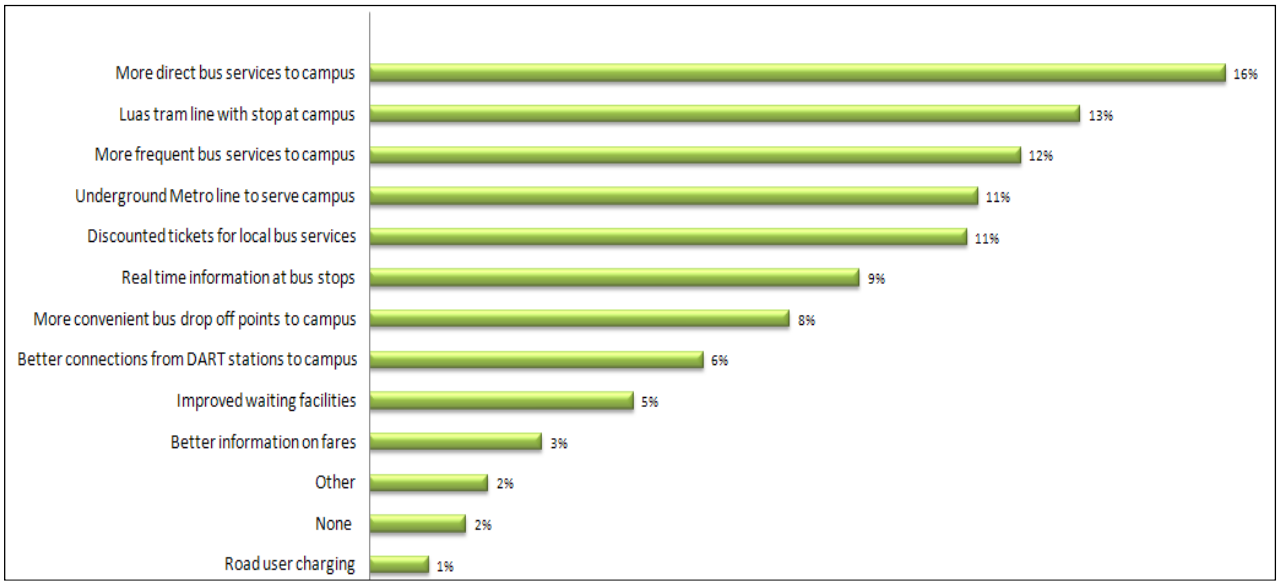

Figure 4.7 Measures that would encourage use of public transport at DIT (NITL Report).

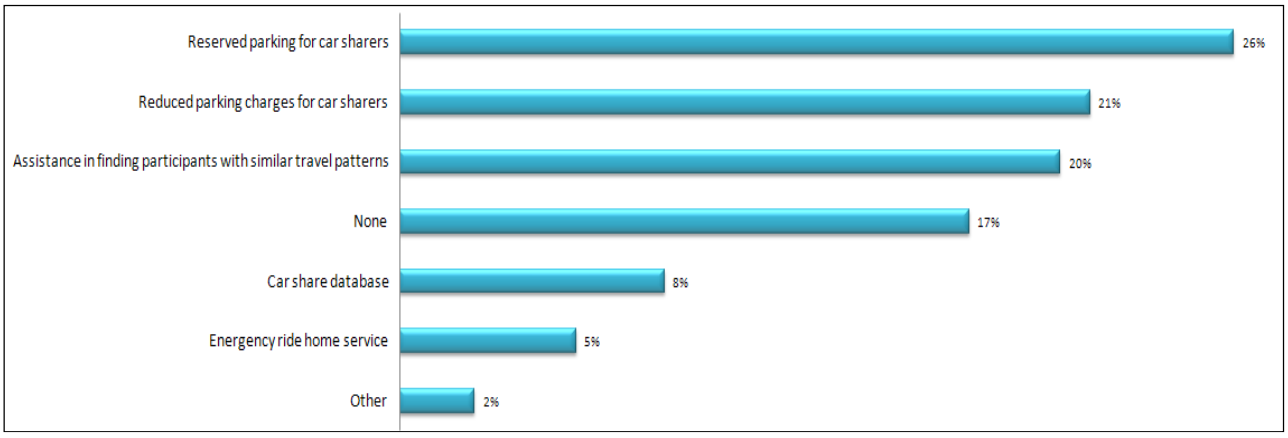

Figure 4.8 Measures that would encourage car sharing at DIT (NITL Report).

As can be seen in Figure 4.6 above, the most dominant suggestions that would encourage staff and students of DIT to walk / cycle to work include the provision of secure bicycle parking, provision of showers and changing rooms information on cycle routes and improved on road cycle lanes to the campus.

Figure 4.7 highlights, measures that would encourage greater use of public transport services to DIT. The suggestions include; deducted public transport tickets for students, real time information on public transport

services, development of the Metro rail line, provision of a Luas station in close proximity to the DIT campus and more frequent and direct bus services to the site.

Measures that would encourage car sharing include the provision of a reserved car parking space for car sharers; a car share database to source compatible work patterns, substitute transportation should the car sharing fail occasionally and reduced parking charges for car sharers.

It is also worth noting that the NITL survey has indicated that 28% of respondents would consider changing their place of residence closer to the Grangegorman site. 41% of student respondents indicated that they would relocate their residence whilst 19% of staff stated that would consider residential relocation which reflects the general transient nature of the student population.

4.4 Existing DIT Campus – NTA Report

In December 2009 and January 2010, the National Transport Authority (NTA) undertook a travel survey of the employees and students of Dublin Institute of Technology. A response of 989 surveys was received by NITL of which 252 were completed by students. The overall response rate to the survey was in the region of 4.5%.

The travel survey provides information on the time of arrival and departure from Grangegorman, the modal split and the attitudes to potential changes to travel patterns.

4.4.1 NTA Report - General Modal Split

The modal split established for DIT within the NTA report can be seen in Figure 4.9 below:

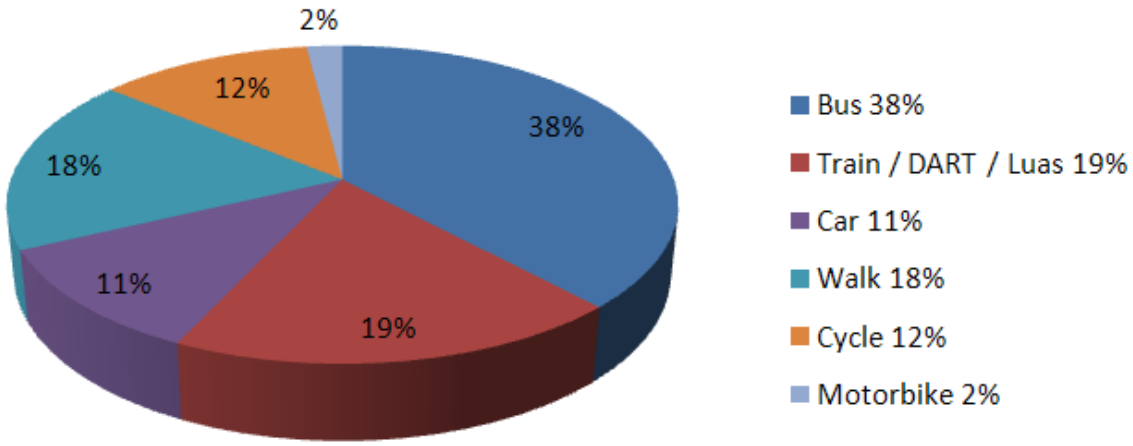

Figure 4.9 Modal Split for existing DIT Population (NTA Report)

Figure 4.9 above highlights the encouraging modal split for DIT taken from the NTA report. It can be seen that the NTA modal splits are somewhat similar to the NITL report with a decreased car modal share. Once again the bus is the primary mode of transport access to the DIT campus locations with a modal share of 38%. The train / DART / Luas also represent a modal share of 19%. As mentioned earlier the modal share for Luas may be curtailed by high rents along the route. Considerable walking and cycling are mirrored again with reasonably high modal shares of

18% and 12% respectively. The modal share for the private car was found to be 11% of the total person trips, a very desirable level of car use.

4.4.2 NTA Report – Attitudinal Results

The NTA also investigated the potential measures that would encourage modal shift from the private car to more sustainable transport modes. The measures that would encourage more cycling at the DIT campus are as follows:

- A DIT bike fleet for use by staff;
- Regular bicycle maintenance classes;
- Provision of cycle training / on road cycling skills;
- Provision of secure, covered bicycle parking; and
- Provision of shower and changing facilities within the campus.

With regard to car sharing, the NTA stated that the main barriers to the initiative are as follows:

- Not knowing individuals nearby to car share with;
- Potential difficulties in organising car sharing groups;
- Parking costs; and
- Insurance concerns in the event of an incident.

4.5 Summary on Existing Travel Patterns

With regard to the HSE staff, the private car is the dominant mode of transport with an existing modal share of 65%. It is an objective of this project to convert these motorists to more sustainable modes of transport, particularly cycling. The survey undertaken by AECOM of the HSE staff found that there are a number of measures that would encourage modal shift to more sustainable modes of transport.

Both the NITL and NTA surveys undertaken at each of the existing DIT locations highlighted positive travel patterns. Both reports found the modal share of the bus at DIT to be quite impressive. The sustainable modes of transport such as walking cycling, train and Luas were also found to have a reasonable existing modal share at DIT. However, there remains scope to reduce the car modal share at DIT and consequently increase the share of the more sustainable modes. While the existing modal share produced by the NTA and NITL reports are referenced, it is felt that the NITL modal split is more representative of DIT as a higher quantum of survey samples were collected. Therefore, the existing modal shift from the NITL survey was used as the base for future modal split projections.

Within each of the surveys undertaken for the Grangegorman area, a number of measures were identified that would encourage more sustainable modes of transport such as cycling, the use of public transport and car sharing. The key measures identified from each of the surveys are summarised in Table 4.1 below.

Table 4.1 Possible measures to encourage sustainable transport modes (determined from travel surveys).		
Cycling	Public Transport	Car Sharing
Secure, covered bicycle parking	Additional direct bus routes / services to campus	Reserved car parking for car sharers
Shower and changing facilities	Improved bus waiting facilities	Development of a car sharers database
Information on cycle routes	Incentives in terms of discounted fares	Emergency ride home service should the car share arrangement break down momentarily
Safer, lit paths to campus	Real time information at bus stops	Reduced parking charges for car sharers
Improved cycle lanes to campus	Metro line to serve campus	
Bicycle maintenance classes	Luas tram line with stop at campus	
Cycle training	More convenient drop off points to campus	
A DIT bike fleet		

Table 4.1 highlights the measures suggested by the future occupants of the Grangegorman area that would encourage sustainable travel to / from the site. A large proportion of these measures are considered reasonable, the provision of which could easily be accommodated within the various phases of development at the Grangegorman site. These measures will form part of the mobility management plan to be adopted within the Grangegorman area.

Proposed Development

5 Proposed Development

5.1 Description of Proposed Development

The development proposals involve the provision of 21st century facilities to accommodate the needs of the Health Service Executive (HSE), Dublin Institute of Technology (DIT), and the local community. The site is currently occupied by St Brendan's Hospital a psychiatric hospital owned and run by the Health Service Executive. Much of the rest of the site is undeveloped and can be considered brownfield. The buildings which are in use are no longer suitable for modern mental healthcare facilities.

DIT currently occupies a total of over 39 individual buildings around Dublin City Centre. This diversification of building locations generates significant travel demand across the city. Grangegorman will offer a consolidated campus environment which can play an important role in generating sustainable travel patterns.

To support the HSE and DIT facilities an appropriate level of mixed use (retail and commercial) development is required. The schedule of accommodation is set out below.

Table 5.1 Grangegorman Area Schedule of Accommodation

Development Type	Element	Building
Healthcare and Related	HSE Core (22,000 sqm*)	HealthCare /Training, Primary Care and High Support Hostel
	HSE Core Additional (20,600 sqm)	Community generated Rehab, Primary care, Dementia Unit, Community Nursing Unit, Respite/Intermediate Care Unit & Services for People with Disabilities.
	Healthcare Related (14,500 sqm)	Residential accommodation and HSE expansion
Educational and Related	DIT Core (108,100 sqm)	Academic Faculty Buildings, Research Centres, Library, Sports Centre, Student Union, Building Maintenance, Executive Learning Centre, Early Learning Centre, supporting academic and student facilities
	DIT Core Additional (32,500 sqm)	Additional Academic Faculty Buildings and support services
	DIT Ancillary Educational (38,000 sqm)	Sports facilities, Performance Space, Bookstore, Cafe
	Student Residential Housing (57,000 sqm)	Student Residential Building(1,500 – 2,000 bed spaces)
	DIT Expansion (34,000 sqm)	

Public Bodies	Primary School (2,800 sqm), Library (1,500 sqm) & Elderly Housing (3,400 sqm)	Primary school for approximately 400 pupils and Dublin City Council operated library
Mixed Use	Mixed Use Development (61,000 sqm)	Offices, Retail, Science, Industry uses & Residential

*15,060 sqm of 22,000 sqm HSE Core is not within the SDZ but will be constructed by the opening year of the SDZ (2016). This element of the HSE development is included within this MMP. The 15,060 sqm consists of 14,500 sqm replacement mental health facilities and a 560 sqm refurbishment of the Connolly Norman building which are subject to separate planning applications.

5.2 Access Strategy

The access strategy for Grangegorman SDZ has been developed with a multi modal approach in mind. Pedestrian and cyclist access points have been sited to maximise connectivity with public transport services and also the surrounding pedestrian and cyclist network. Vehicular access will be provided from North Circular Road, Morning Star Avenue and multiple access points from Grangegorman Lower/Upper. The access strategy has been developed with the NTA hierarchy of transport in mind and will be discussed in the paragraphs below in that manner

5.3 Pedestrian, Cyclist and Public Transport Accessibility

To achieve good integration with the external transport network and the best possible access to public transport, the development scheme has been designed with excellent permeability for all transport modes.

The pedestrian/cycle network will provide a dense network of internal streets, designed to modern standards which will encourage the sustainable movement of people. This will be supplemented by the provision of ancillary facilities such as the generous provision of cycle parking, in addition to showers and locker rooms. All facilities will be located in close proximity to their intended user's position on the site. The exact position of the facilities will be identified as part of the future applications for individual aspects of development on the site.

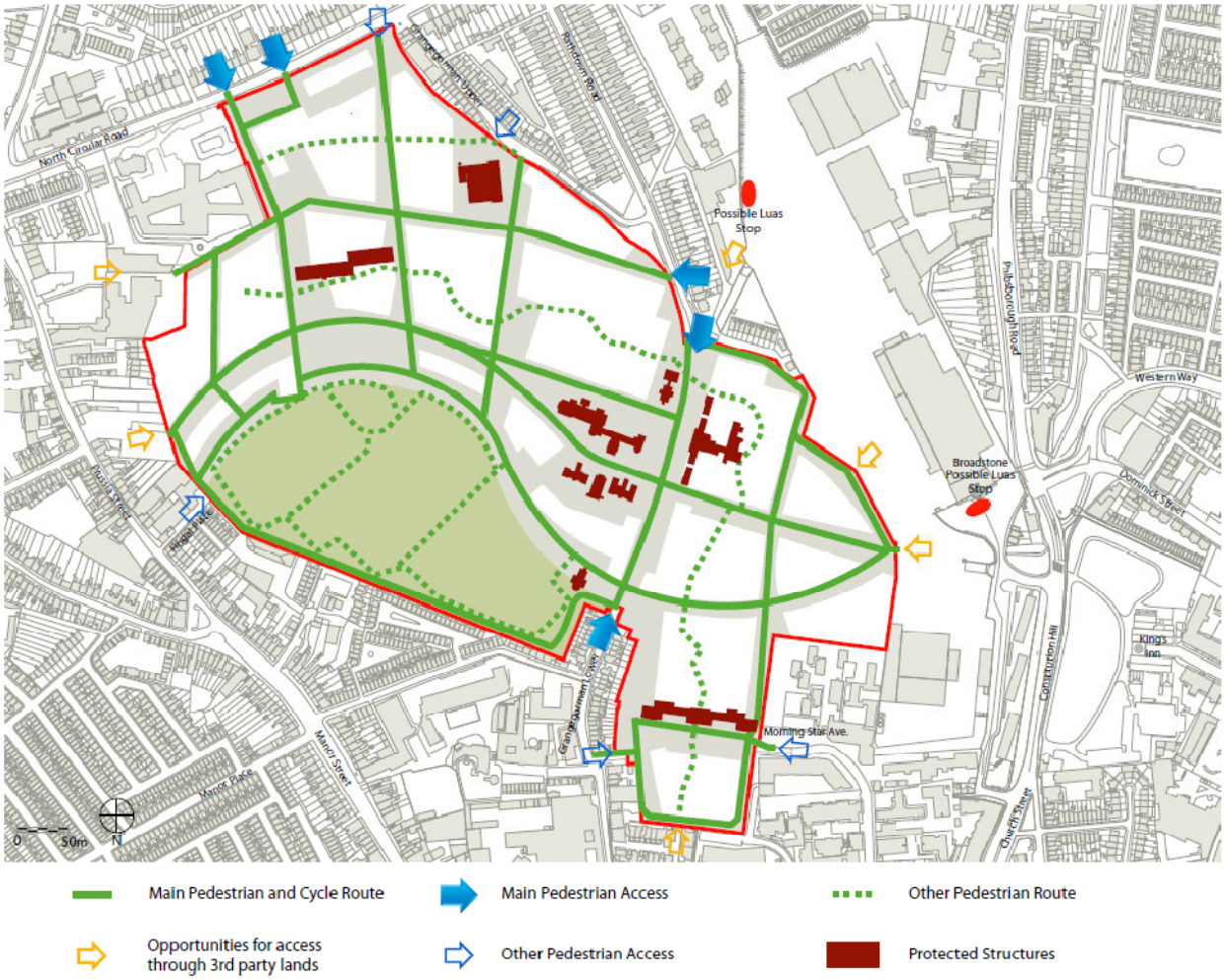

Figure 5.1 Proposed pedestrian access points

It can be seen from Figure 5.1 above that pedestrian linkages will be provided to key bus routes and services. A pedestrian access route will be provided to the Blanchardstown QBC, which runs along Stoneybatter/Prussia Street to the west from two main access points along the North Circular Road. A secondary access will be available from Fingal Place. Multiple access points will be provided from Grangegorman Lower while there is an opportunity for enhanced pedestrian connectivity to the east as part the planning and development of the future Luas BX-D line. An opportunity for access across third party lands to the south of the SDZ site will increase connectivity to Smithfield.

It is intended that existing pedestrian routes such as those at Fingal Place and the North Circular Road will be supplemented by possible routes via Park Shopping Centre and other lands to the west and via Broadstone to the east.

While the addition of these proposed linkages would enhance pedestrian connectivity to the site, it is considered that the key pedestrian routes provided via the North Circular Road (which will cater for northern connectivity to services running along the orbital road and along Prussia Street) and Grangegorman Road Lower (which will cater for connectivity to the existing Luas Red line and the quays).

It is envisaged that these proposed access points would cater for cyclists also and that they would provide key links with existing cycle routes on North Circular Road, Prussia Street & Church Street/Constitution Hill as well as future green/cycle routes identified in the Dublin City Council Development Plan.

5.4 Internal Road Hierarchy

The development will have an internal network of links serving different functions, with different character and typology. The existing Grangegorman Upper & Lower will provide the primary road link through the site. Secondary links will serve as access to car parks and set down areas as well as servicing and maintenance routes. Such links include Ivy Avenue and the possible access through Broadstone Gate. Vehicular access via tertiary links, such as St Brendan's Way, will be restricted to 'out of hours' as it will be a predominantly pedestrian shared space.

Consultation with Dublin City Council Traffic Department to agree specifications will be undertaken at the appropriate time following this Strategic Development Zone application. Emergency access will be provided in accordance with appropriate regulations. The majority of linear spaces, both streets and landscaped areas will be designed to accommodate occasional emergency movements.

5.5 Traffic Calming

A high level vehicular traffic calming scheme has been designed and is set out in the Grangegorman Masterplan document. The traffic calming proposals are designed in a manner which prioritises pedestrians over motorised traffic. Shared surfaces are envisaged to rebalance priority towards pedestrians along roads where appropriate.

The primary road link is the Grangegorman Road, which bisects the site. Grangegorman Road will be the only available through route for external traffic and it will be traffic calmed along its length using build outs or appropriate surface treatment to the requirements of Dublin City Council. Secondary links through the site include Ivy Avenue, the access to the car parks, as well as servicing and maintenance roads along the periphery of the site. These secondary links are intended to be used by limited traffic volumes mainly related to servicing, maintenance, and disabled access. Emergency access will be provided in accordance with appropriate regulations.

5.6 Servicing

Servicing will be undertaken predominately from the North Circular Road access junction and Grangegorman Lower/Upper. Within the site, the road network has been designed to accommodate servicing vehicular movements. However, vehicular access to these links will be restricted to off peak hours. Their character is predominantly pedestrian shared space with limited vehicular traffic and flush shared surfaces with minimal delineation of carriageway space.

The proposed service access routes are illustrated in Figure 5.2 below. It can be seen that the proposed routes will be restricted to peripheral routes

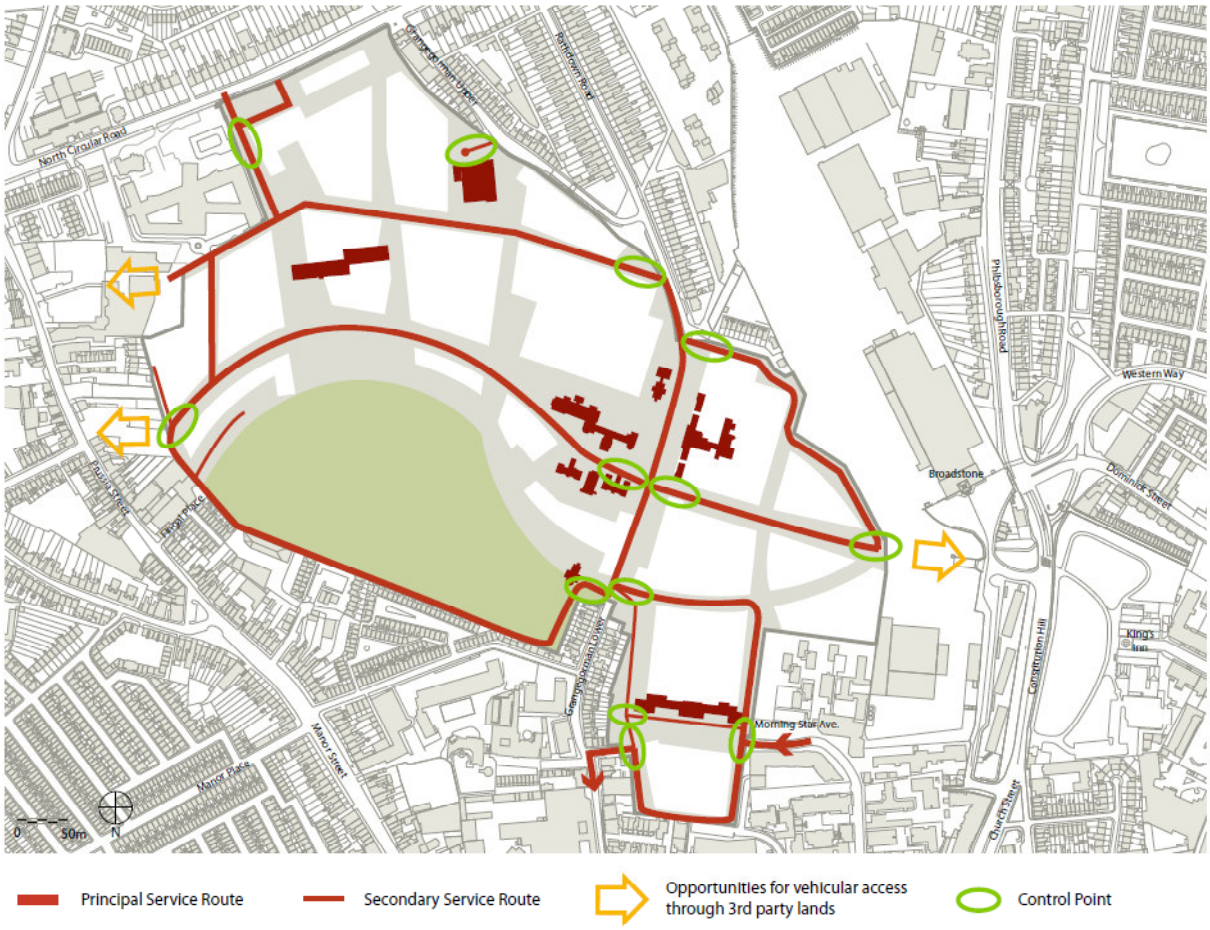

Figure 5.2 Proposed service access routes

5.7 Car Parking Provision

The provision of car parking facilities is a key element to the management of travel demand to the development site. An over - provision of car parking may lead to the inducement of vehicular trips while an under - provision may lead to an overspill to the surrounding on street car parking facilities. The provision of car parking on the site has been optimised to ensure that it satisfies the operational requirements of the various land uses while protecting the adjacent amenity.

The parking provision has been quantified and assigned with reference to the Dublin City Council Development Plan maximum standards.

Dublin City Development Plan 2011 - 2017 was referenced to establish the car parking requirement specified in this document. The table below outlines the car parking provision based on these standards. Car parking provision has

been quantified for the entire Grangegorman site i.e. the SDZ site and the adjoining site to the north west where planning permission has been granted for a replacement health facility. Thus the HSE floor space areas are included in Table 5.2 below to reflect development across the entire site.

Table 5.2 Development Plan Car Parking Calculation

Element	Floor Areas (sqm)	Rate per sqm	DCC Car Parking Requirement	Overall Parking Requirement
HSE	22,000	1 per 150	147	147
HSE Additional	20,600	1 per 150	137	137
HSE at North Circular Road	14,500 (6,500 sqm/65 units Residential, 8,000 HSE Facilities)	1 space per unit[4] 1 space per 150 sqm[4]	118	118
DIT Core & Core Additional	108,100 & 32,500	None[1]	-	-
DIT Ancillary	3,400 (900 seats) 8,000 800 5,000 3,000 17,800	1 space per 100 seats, Performance Space[3] 1 space per 400sqm, Sports Centre[3] None for Early Learning Centre None for Energy Centre[3] 1 space per 350 sqm retail space[3] 1 space per 400 sqm Industry/Research space	9 20 0 0 14 45	88
DIT Student Residential Accommodation	57,000 sqm 2,000 beds	1 per 10 beds*	200	200
DIT Expansion	34,000	None[1,2]	0	0
School	2,800	None[5]	0	0
DCC Library	1,500	No Standard	0	0
DCC Elderly Housing	3,400 sqm 34 units	1 per unit	34	34

Mixed Use Development	43,000 16,400 1,600	1 space per 400 sqm commercial labs/research space 1 space per 400 sqm office space 1 space per 350 sqm retail space	108 41 5	154
Total				878

*Student residential parking requirement agreed with Dublin City Council

The proposed parking provision for each land use is set out below:

Table 5.3 Proposed Car Parking

Element	Car Parking Allocation
HSE	385
HSE Additional	Included in 385 spaces above
HSE at North Circular Road	Included in 385 spaces above
DIT Core & DIT Core Additional	350
DIT Ancillary	43
DIT Student Residential Accommodation	200
DIT Expansion	Included in 350 spaces above
School	8
Library	0
DCC Elderly Housing	21
Mixed Use Development	143
Total	1,150

The proposed locations for on-site parking as well as the proposed vehicular access routes are presented in Figure 5.3 below. It should be noted that this Figure shows maximum parking numbers at each location which will be refined at a later date such that the on-site total of 1,150 car parking spaces will not be exceeded.

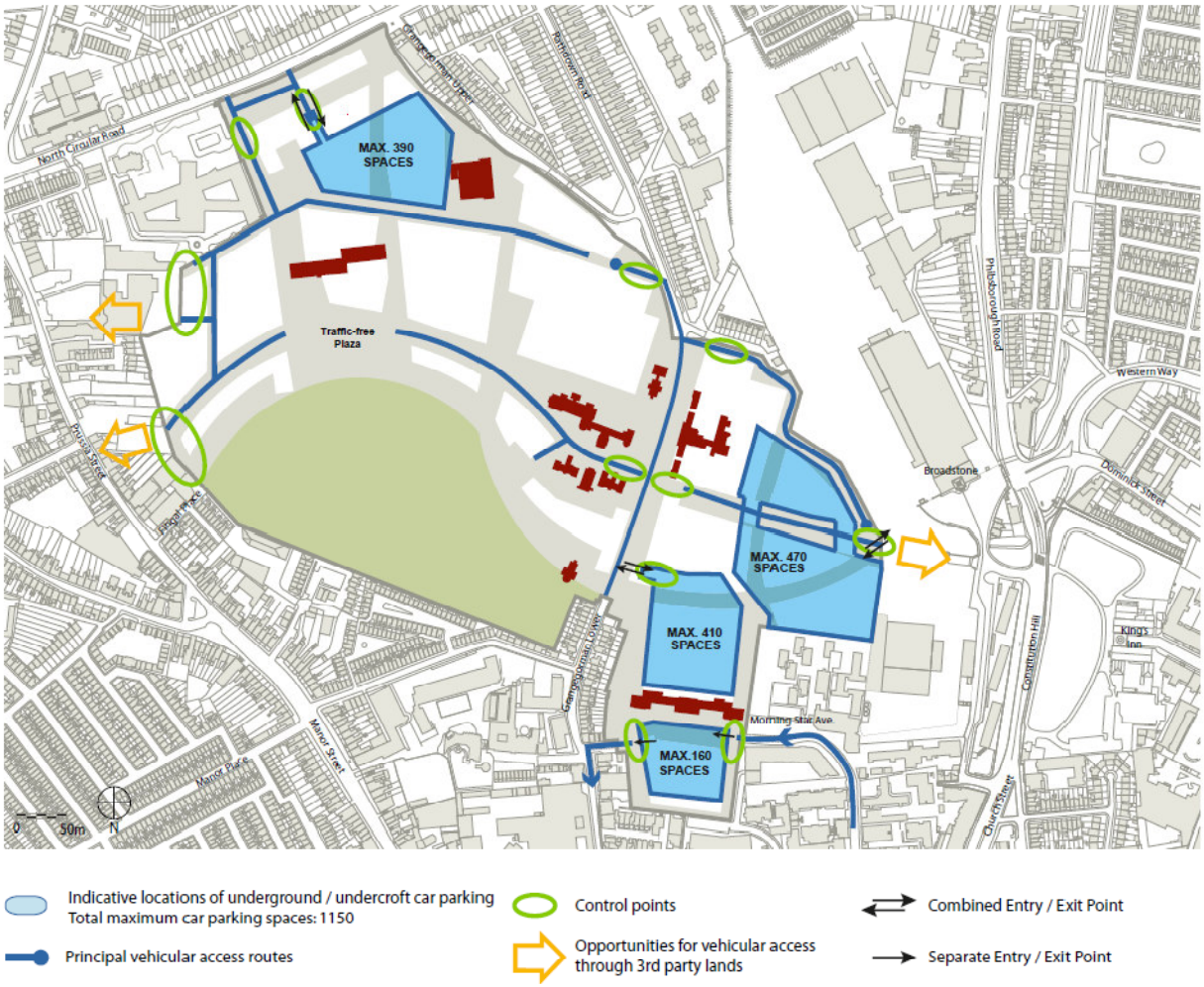

Figure 5.3 Proposed vehicular access points and possible car parking areas

It should also be noted that the parking provision for the HSE replacement mental health facilities are also included within the 1,150 total provision. HSE replacement facilities will be constructed within the Grangegorman site but not within the SDZ designation.

The principal reason for the parking provision in excess of the Development Plan standards is the allocation of 350 spaces for DIT's Core educational facilities. There is no specific requirement for third level educational facilities in the Development Plan.

DIT currently has 300 parking spaces across its existing campus locations, 100 of which are provided at Aungier Street. It is felt that the provision of 350 spaces for DIT at Grangegorman is a very small quantum when it is considered that DIT will eventually expand its facilities by 58% when compared to its existing facilities. It would not be advisable to apply the City Council Development Plan Standard of zero parking in this instance as this would lead to an increased demand for on-street parking in the vicinity of Grangegorman. The DIT parking provision will be carefully managed so as to discourage the unnecessary use of the private vehicle. Therefore, the proposed quantum of 350 spaces is deemed appropriate due to the nature of the development, the majority of which is a replacement facility.

Please refer to Chapter 4 of the Transport Assessment for more detail on the proposed parking provision.

Provision will be made within the Grangegorman site for battery operated vehicles with charging points provided within the parking area as well as an appropriate quantum of parking spaces for disabled motorists in accordance with National Policy. It is also proposed to provide motorcycle parking at the rate of 4% of the total car parking provision in line with the Dublin City Council Development Plan requirements.

On-site parking will be introduced on a pro rata basis in line with the proposed provision outlined in Table 5.4 and the quantum of development completed. The proposed car parking areas will be managed and designated for different aspects of the proposed uses so as to control and limit vehicular access to the site, thereby managing the traffic impact of the development.

Initially, a surface car park will be constructed in the area to the North of the site designated for later HSE facilities after it is no longer required as a site compound (see Figure 8.5). Similarly, an interim surface car park will be constructed adjacent to the existing Lower House building to the Southeast corner of the site. It is anticipated the surface car parks will be replaced with underground car parks in those general locations at such time as development comes on stream in those area.

It is proposed to implement a parking permit scheme in order to restrict the number of vehicles arriving at the site. In general, only vehicles with a parking permit or prior approval will be allowed the use of a parking space at the Grangegorman site. Each stakeholder will be assigned the quantum parking spaces as shown in Table 5.3 above. The stakeholder is then responsible for the allocation of these spaces to either staff or students. The method of parking permit allocation is at the stakeholder's discretion. However, the stakeholder will not be permitted to issue anymore permits than the outlined allocation. Clamping will also be employed at the Grangegorman site to deter inappropriate parking. The parking permit system will remove the possibility of motorists driving to the site speculatively for parking spaces. Dublin City Council will control and manage on street parking to discourage overspill parking on the surrounding streets.

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Mobility Management Measures

6 Mobility Management Measures

6.1 Overview

This chapter will outline the way forward in terms of improving the accessibility of the more sustainable modes of transport as part of the development of the Grangegorman area. A discussion of relevant measures is based primarily on the results of the site accessibility assessment and also an assessment of the existing travel patterns undertaken in Chapters 3 and 4 respectively of this report.

As part of this section, a reassessment of site accessibility by walking, cycling and Public Transport will be undertaken based on committed infrastructure, and on the Mobility Management measures which are outlined to supplement such works and improve overall access to the site.

6.2 Approach

The approach to the development of an appropriate Mobility Management Strategy is the employment of the well-documented 'Carrot and Stick' approach. Such an approach tackles the transport problem from both ends. It utilises the 'Carrot' which incorporates the improvements in alternative modes of travel, effectively opening up transport options for commuters, and the 'Stick' which discourages the use of the car for those who do not need it.

'Carrot' measures incorporate measures to facilitate Public Transport, car sharing, flexible travel times, and an improvement to the walking and cycling environment. 'Stick' measures include car parking restraint and other physical measures. Both elements of this approach are required to achieve a successful result.

This is echoed in the UK Department of Transport document 'Making Travel Plans Work' which was referenced in Chapter 1 of this report. The key elements that were found to be instrumental in the success of an MMP are as follows:

Promotional Strategy

Welcome packs, public transport discounts assist in introducing the concept of mobility management to future students and staff at the Grangegorman site.

Services and Facilities

Good public transport, the development of car sharing and the provision of high quality cyclist facilities can reduce the reliance on private vehicular access.

Mobility Management Coordinator

Successful mobility management plans require constant management and supervision. The coordinator generally plays a crucial role in developing the plan and works with future occupants to ensure the plan meets their needs for access and evolves over times

6.3 Mobility Management Plan Measures

The mobility management measures in this plan are addressed under the following headings taking into account the transport user hierarch discussed in the National Transport Authority's 'Draft Transport Strategy 2011 – 2030' for the Greater Dublin Area:

- Mobility Management Co-ordinator;
- Mobility Management Information Point;
- Walking;
- Cycling;
- Public Transport – Bus Use;
- Public Transport – Rail Use; and
- Car Use.

The measures were developed with a detailed knowledge of the travel attitude and preferences of future occupants of the Grangegorman site as discussed in Chapter 4 of this document.

6.4 Mobility Management Coordinator (MMC)

The Grangegorman Development Agency (GDA) will develop and co ordinate a mobility management strategy for the Grangegorman area to be adopted by all stakeholders prior to occupation of the site. It is intended that all stakeholders will appoint a Mobility Management Coordinator (MMC) who will promote all aspects of the Mobility Management Plan (MMP) within the Grangegorman site. The GDA will appoint an overall mobility management coordinator (OMMC) who will liaise with individual MMCs and ensure that MMPs for all stakeholders are being developed in an appropriate and coordinated manner which will benefit Grangegorman as a whole. The Overall Mobility Management Coordinator will be appointed in advance of the opening of Grangegorman and will liaise with the National Transport Authority and Dublin City Council on a regular basis. The proposed Mobility Management structure for Grangegorman area is presented in Figure 6.1 below.

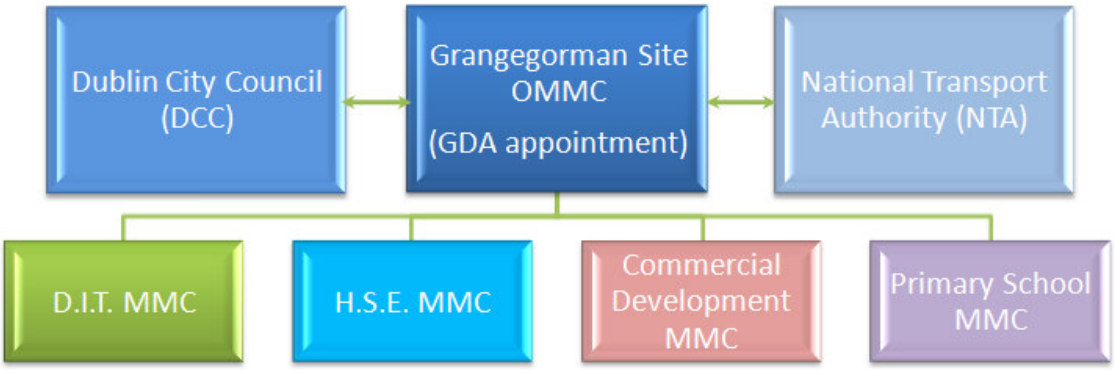

Figure 6.1 Proposed Mobility Management Structure

The role of the Mobility Management Coordinators for each of the stakeholders is as follows:

- Promote and implement the recommendations outlined in the MMP;
- Develop and manage a car sharing database, marketing of car sharing database through various media forms;
- Liaise with the other MMCs within the Grangegorman area and also the GDA appointed MMC;
- Establish and liaise with walking and cycling interest groups;
- Organise events to raise awareness of the Mobility Management schemes; and
- Liaise with other relevant bodies including public transport operators, Dublin City Council, National Transport Authority and Dublin Cycling Campaign;
- Conduct regular travel surveys to assess if modal split targets are being met.

In addition to the above roles, the OMMC will be designated as the direct point of contact for staff, students and visitors to the site and will be contactable by telephone and e mail and also in person.

While the above strategy will be implemented by the Grangegorman Development Agency a long term strategy and structure will be extended beyond the life of the Agency. Dublin City Council and the National Transport Authority will be notified of the OMMC appointment in advance of the initial occupation of Grangegorman when liaison with these bodies will commence immediately. MMCs for the different organisations within Grangegorman will be appointed within 3 months of the respective organisation's initial occupation.

D.I.T. has an existing 'smarter travel' group and staff travel plans are currently part of the human resources procedures for new staff members. However it is the aim of the organisation to have a full time Mobility Management Coordinator similar to Queens University, Belfast and University College Cork. These colleges have a similar population to that forecast for D.I.T. and it is intended to follow their example in making a full time appointment.

6.5 Mobility Management Information Point

In addition to the mobility management structure discussed above, it is also proposed to provide a travel / mobility management information point for the use of all of the future occupants of the Grangegorman area. The OMMC appointed by the GDA and associated staff will be accommodated at this facility and will coordinate the activities of the stakeholder MMCs from this point. This information point will dispense travel information to both staff and students at the site upon request in relation to walking, cycling and public transport. This facility will be located in the proposed student hub.

6.6 Green Schools / Green Campus

It is intended that the proposed Primary School will partake in the An Taisce Green Schools programme. The aim of Green-Schools is to increase students' and participant awareness of environmental issues through classroom studies and to transfer this knowledge into positive environmental action in the school and also in the wider community. Schools that have successfully completed all the elements of the programme are awarded the 'Green-Flag'. This award has now become a well-recognised Eco-Label. The award has to be renewed every two years. Travel represents one of the four themes of the programme and students and staff are encouraged to change their travel patterns to more sustainable modes.

The Green Campus programme is a new initiative for third level institutions and is based on the principles of the successful Green Schools programme. University College Cork is currently partaking in the programme and D.I.T. will enter into the programme following the move to Grangegorman.

6.7 Walking

Whilst the pedestrian environment surrounding the subject site has been shown to be reasonable, the proposed development will act as a catalyst for the area by acting as a significant pedestrian destination location. Currently, the Grangegorman site acts as a barrier to east west pedestrian movement between Prussia Street and Constitution Hill. As a result the development will act as a significant nodal point for pedestrian activity and create a stronger desire line for pedestrians from the Prussia Street / Stoneybatter and Constitution Hill areas to the subject site. Figure 5.1 illustrates the permeability which will be achieved as a result proposed pedestrian network within the Grangegorman site.

The following measures have been incorporated into the scheme:

- Dedicated multiple pedestrian accesses off North Circular Road, Grangegorman Road Upper and Prussia Street;
- Future opportunities for pedestrian access off Constitution Hill, Morning Star Avenue and Prussia Street;

- Pedestrian circulation and key desire lines have been considered and incorporated into the site layout design as illustrated in Figure 5.1;
- Pedestrian signage will be installed throughout the site and on approach routes;
- Information on walking distances, journey times and optimal routes as well as information provided at the Mobility Management Information Point upon request. It is intended that this will give employees and students at the Grangegorman site a better perception of walking as mode of travel
- Pedestrian crossing facilities will be provided at all junctions within the Grangegorman area in order to provide safe and designated routes for pedestrian traffic.
- The proposed primary school will partake in An Taisce's Green Schools programme.

6.8 Cycling

Figure 2.2 in Chapter 2 highlights the well developed existing network of cycle routes serving the area and connecting to the cycle network within Dublin City. This network will be improved based on the Green routes identified in the Dublin City Council Development Plan and discussed in Section 2.6 of this report. Cyclist signage will be installed throughout the Grangegorman site. Maps of cycle routes will be provided with typical journey time information will be distributed to the future staff and students at the Grangegorman site from the proposed Mobility Management Information Point. The existing cyclist modal share within DIT was found to be considerable at 10%. Further measures are to be implemented to further encourage a modal shift to cycling. These measures are as follows:

- High quality sheltered, secure parking are to be constructed with each phase of development within the Grangegorman area. The cyclist parking facilities are to be located in close proximity to building access and in a secure location.
- Shower and changing facilities are to be provided for cyclists, particularly for the employment population.
- Cycle time and route information should be provided to all employees and students upon commencement of attendance at Grangegorman.
- The OMMC appointed by the GDA will coordinate bicycle maintenance classes and On Road cycle training to employees / students at Grangegorman who wish to avail of this service. These classes shall be advertised throughout the campus and at the proposed travel information centre. This is particularly relevant for students of the primary school as it provides, where early emphasis on sustainable modes of transport may provide long term dividends.
- Following completion of development the OMMC will liaise with Dublin City Council in relation to the maintenance and upgrade of cycle lanes in the vicinity of the Grangegorman site.
- Sponsorship incentive days to be held for both employment and students to encourage cycling activity.
- Development of a bike rental scheme within the Grangegorman area in particular within the DIT aspect.
- Promotion of the 'Cycle to Work' scheme, a government initiative to encourage people to cycle to work. The scheme covers bicycles and accessories to the value of €1,000 to be purchased by the employer. The employer may bear the full cost or alternatively the employee can bear the cost via a salary sacrifice agreement in which it is paid for tax free over a fixed period. D.I.T currently partakes in the scheme and this will be extended to encompass the other organisations.
- The proposed primary school will partake in An Taisce's Green Schools programme while the possibility of constructing a cycle or scooter park within the school grounds will be explored.

6.9 Public Transport – Bus Use

Bus access to the Grangegorman site has been shown to be reasonably good while the bus holds the highest modal share amongst the existing DIT population. The following mobility management measures will encourage further use of the bus:

- Information on bus routes to / near the subject site is to be available at the Mobility Management Information Point to students / staff attending Grangegorman.
- It is proposed to provide signage to the nearest stops within the Grangegorman site.
- GDA will support the upgrade of bus shelters / stops within the vicinity of the subject site.
- GDA will support the provision of real time information within the upgrade of bus shelters.
- Occasional subsidised bus travel could be distributed amongst staff and students at Grangegorman to increase awareness of the merits of bus travel.
- The OMMC will liaise with NTA / Dublin Bus following the opening of the development with regard to the provision of more frequent services around the Grangegorman site and possibly more direct services.
- The GDA will actively pursue further pedestrian link opportunities surrounding the site to key bus services namely the Blanchardstown QBC, which runs along Stoneybatter/Prussia Street to the west, particularly in light of the identification of this route for a possible upgrade to Bus Rapid Transit.
- Subsidised bus travel could be provided for staff at the site. This is now possible through the Government's 'Tax Saver' incentive scheme.
- The proposed primary school will partake in An Taisce's Green Schools programme.

6.10 Public Transport – Rail Use / Light Rail Use

Existing access to the site by rail has been shown to be reasonably good in particular via the existing Luas Red line. The Luas Red line has a number of stops within short walking distance of the subject site. Further to this, the Drumcondra and Connolly Railway Stations are located to the east of the site in the City Centre. Broombridge Railway Station is located to the north of the site. Access to the Grangegorman site from Connolly Station is provided by the Luas Red line travelling westbound. It should also be noted that there are significant proposals planned in Transport 21 that will improve access to the site. Within the local vicinity, Metro North and Luas Line BX and D will directly improve services providing high capacity public transport links. Metro North will connect Swords to Dublin City Centre (St Stephen's Green) via Dublin Airport. Two proposed stops at the Mater and Parnell Square are located within reasonable walking distance from Grangegorman. Luas line BX will connect the two existing Luas lines, providing enhanced penetration to the City Centre. The proposed Broadstone D.I.T. stop has been designated to serve the Grangegorman area while an additional stop (Grangegorman) which could also serve the site may be constructed slightly further north. Luas BX - D will be of major benefit to the site as stops are proposed immediately to the west at Broadstone. It is anticipated that the modal share for rail and Luas will increase should these be developed.

It is proposed to maximise the potential of these services by implementing the following measures:

- Information on Luas / rail time tables and fares are to be made available at the Mobility Management Information Point to students / staff attending Grangegorman.
- Occasional subsidised Luas / rail travel could be distributed amongst staff and students at Grangegorman to increase awareness of the merits of these modes.
- The GDA will actively support the construction of Luas BX – D and Metro North.
- Signage will provided within the site providing direction to the nearby Luas / rail stops.

6.11 Car Use

6.11.1 Car Parking Provision

Table 5.3 above highlights the breakdown of the 1,150 car parking spaces to be provided within the proposed development. In recent years policy objectives at a strategic and local level have sought to reduce parking provision in new developments in order to reduce the number of vehicles travelling to/from the area by car. A reduced parking provision was also highlighted as being the most effective demand management measure in the "Greater Dublin Area Travel Demand Management Study", commissioned by the Dublin Transportation Office. The parking provision for the Grangegorman area and the employment of a parking permit system will also act as a powerful mobility management measure as it has been calculated specifically to ensure against an overprovision of parking and a resultant over reliance on the private vehicle. This will be supplemented by measures discussed above to encourage more sustainable modes of transport such as walking, cycling and the use of public transport.

In addition, it is also proposed to introduce a parking permit system within the site. A parking permit system will restrict unauthorised vehicular access at the site and also prevent speculative motorists travelling to Grangegorman looking for a parking space.

6.11.2 Car Pooling

The OMMC will establish a car pooling database possibly via an intranet site to coordinate both employees and students willing to share journeys and associated costs. The D.I.T. car pooling website for the existing campus, developed by the NTA, will actually go live in April 2011. The Mobility Management Information point will also form the central information point where an up to date list of participating employees / students will be kept. Should someone need to leave Grangegorman in case of emergency and are part of the car sharing scheme, measures are to be put in place to ensure that everyone can get home in the event that their designated car sharer is unavailable for example free or discounted taxis made available in case of emergency. The identification and exact quantity of allocated car parking spaces will need to be reviewed as the actual responses to such schemes are observed. However, following identification of the quantum of car sharers at Grangegorman, a number of car parking spaces will be allocated to car sharers. In addition, car parking charges for car sharers may be provided at a reduced rate to that of a standard car parking space.

Anticipated Modal Splits

7 Anticipated Modal Splits

7.1 Introduction

This section will detail the methodology used in determining the targeted modal split for each proposed aspect of the Grangegorman redevelopment. This section will include a commentary on the existing modal splits for DIT and the HSE as these were used as the basis of the future year projections. The factors which influenced the changing modal splits, such as proposed public transport proposals, will also be discussed and quantified

7.2 Dublin Institute of Technology (DIT)

The existing modal split for D.I.T was determined following extensive research carried out by the National Institute for Transport & Logistics (NITL) and published in a report: 'Towards a Transport Plan for DIT's Grangegorman Campus' (Aug 2006) which established travel patterns at each of DIT's current locations. The existing modal split for DIT is discussed and presented in Chapter 4 of this document.

The future modal split for the DIT campus was developed in conjunction with DIT using the following methodology. The general residential location of students within the Greater Dublin Area was provided by Dublin Institute of Technology. These locations were rated in relation to the relative accessibility to Grangegorman by public transport, car, walking, cycling. Low, medium and high ratings were allocated following consideration of the public transport provision and the spatial separation of trip origin and destination. Walking and cycling are proposed to be the dominant modes of transport for locations within 3km from the Grangegorman site. Further detail regarding the spatial distribution of the DIT population and resultant modal splits can be found in the Technical Appendix of the Transport Assessment report.

If a location has limited public transport options and is outside reasonable walking / cycling distances to the campus, then the car modal share would be considered most dominant. However, the modal share of the car is restricted as a result of the proposed parking provision for DIT of 350 spaces.

An overall modal share was then obtained for the DIT campus.

The overall future modal split for the DIT was compared to the existing modal split determined in NITL report undertaken in 2006 and allowed for an element of adjustment to account for relocation effects associated with the transient student population who may relocate closer to the Grangegorman campus to take advantage of shorter journey times. It is felt that the existing DIT modal split forms a robust basis for the future modal split as it is based on information gathered during a detailed survey (NITL) of the existing DIT population. Respondents were also questioned on the likely changes in travel patterns they would expect to occur as a result of DIT's move to Grangegorman including the possibility of relocation of residences. This information was used in conjunction with the existing modal split to determine a future modal split for DIT.

A future modal split has been developed for DIT based on the existing public transport infrastructure as it is expected that DIT will have relocated its existing population to Grangegorman in advance of the completion of Luas BX-D or Metro North. This future modal split can be seen in Figure 7.1 below.

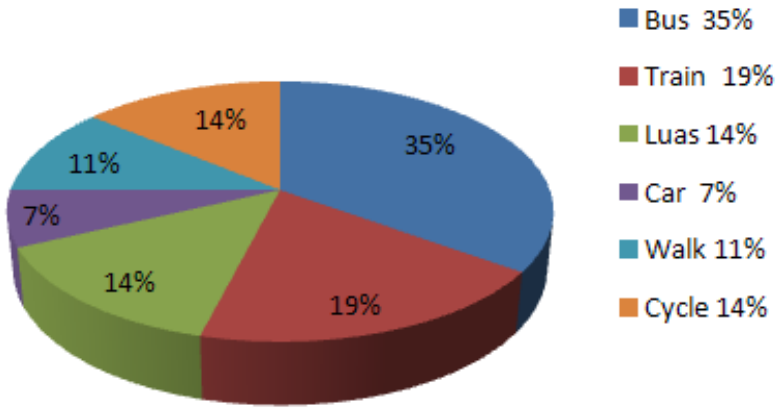

Figure 7.1 Future DIT Modal Split based on existing public transport

It can be seen that the Luas modal share has increased when compared to the existing modal split. This is due to the proximity of the existing Luas Red line at Smithfield. It is expected that a number of students would relocate along this line as rents tend to be cheaper when compared to those along the Green line. Total car use has decreased significantly and this is reflective of the proposed car parking management plan and limited availability of car parking. The cycling modal share has also increased as it will be more attractive to site users because of cyclist facilities being proposed within the Grangegorman area.

An additional future modal split was also developed to take account of the introduction of Luas BX-D and Metro North. This modal split can be seen in Figure 7.2 below. It has been assumed that this modal split will be applicable after 2019 which has been stated as the projected completion date for Luas BX-D. The proposed completion date for Metro North is 2016. However, in the interests of providing a conservative opening year assessment for the SDZ in 2016, Metro North has not been assumed to be operational at this time.

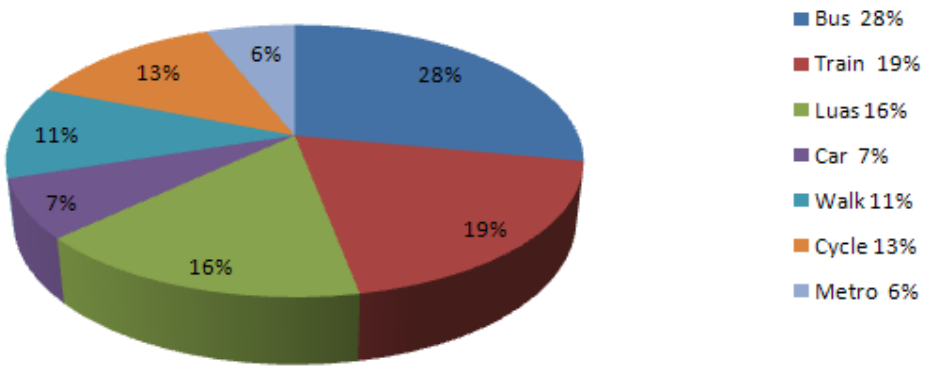

Figure 7.2 Future DIT Modal Split including Luas BX-D and Metro North

It can be seen that the Bus modal share decreases following the introduction of Luas BX-D and Metro North as students will move to these new modes instead. Car use remains almost exactly the same which is further evidence that the car parking provision is the primary driver of vehicular trips. The Luas modal share increases by 2% following the construction of Luas BX – D as the principal benefit derived from this proposal is the secondary connection it will provide between the site and other public transport links which are already used as primary modes such as the existing Luas lines.

It should be noted that the NTA's projected modal splits for the Grangegorman area predict a higher modal split for the soft modes of walking and cycling (31%) when compared to that illustrated in Figure 7.1 above (25%) with a lower public transport share (36%) when compared to the figures above. It is felt that the adoption of a lower soft mode modal share and an increased public transport modal share would be more suitable for the purposes of producing a robust and conservative transport impact assessment with regard to capacity of public transport services. However, it will be an objective of the Mobility Management Plan to attain an increased modal share for the soft modes.

7.3 Health Service Executive (HSE)

A travel survey of existing HSE staff was undertaken to determine the resident location of existing staff, the time of arrival and departure from Grangegorman, the current modal split and the attitudes to potential changes to travel patterns. The existing modal split determined from the travel survey is illustrated in Figure 4.1 above.

Similar to the DIT students, the locations of HSE staff were rated in relation to the relative accessibility of these areas to Grangegorman by public transport, car, walking & cycling. Low, medium and high ratings were allocated. The ratings were decided following consideration of the public transport provision and the spatial separation of trip origin and destination points. Walking and cycling are proposed to be the dominant modes of transport for locations within 3km from the Grangegorman site.

This facilitated the development of future modal split projections for the HSE element of the development proposals. Spatial distribution of the HSE population and resultant modal splits can be found in the Technical Appendix of the Transport Assessment report.

A modal split has been developed for the HSE based on the existing public transport infrastructure as it is expected that HSE will have constructed its replacement mental health facilities at Grangegorman in advance of the completion of Luas BX-D or Metro North. This proposed modal split can be seen in Figure 7.3 below:

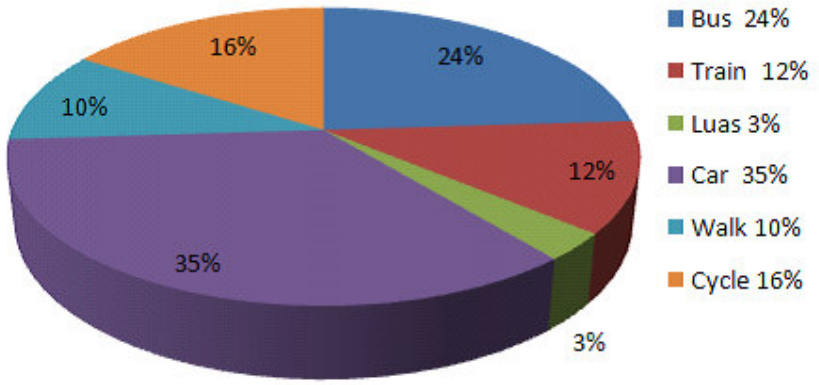

Figure 7.3 Future HSE Modal Split with Existing Public Transport

It can be seen that it is anticipated that the car modal share will decrease significantly when compared to the existing situation. This is as a direct result of a restriction on the number of car parking spaces proposed as part of the development. The HSE staff travel survey highlighted that a large proportion of staff live within an acceptable walking and cycling distance and as such it is envisaged that these modes will experience an increase in modal share as car use is restricted and incentives are implemented to improve their attractiveness.

An additional future modal split was also developed to take account of the introduction of Luas BX-D and Metro North. This modal split can be seen in Figure 7.4 below. It has been assumed that this modal split will be applicable after the completion of both infrastructural upgrades.

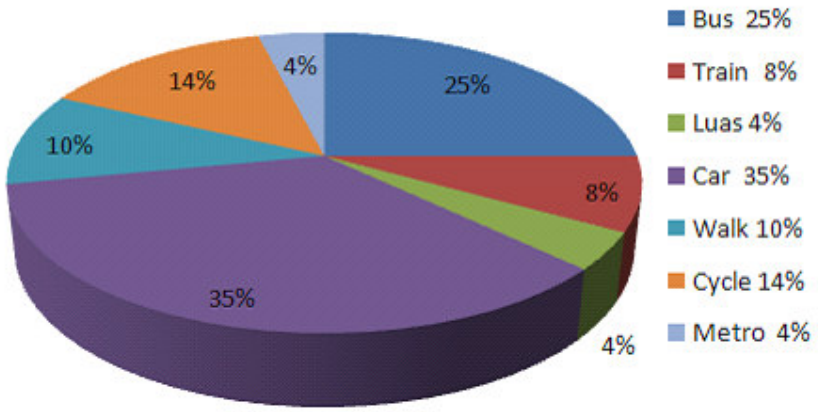

Figure 7.4 Future HSE Modal Split with Proposed Public Transport

As mentioned above the majority of the existing HSE staff lives in close proximity to Grangegorman. This trend is expected to continue and as a result the Metro and Luas BX-D will not have as major an effect on the modal split as that of DIT's. However it can be seen that a slight modal shift does occur from bus to Metro North which will affect employees living along the Metro North corridor such as Swords or Ballymun.

7.4 Mixed Use Development / Research Laboratories

The modal split for the mixed use and commercial aspect of the Grangegorman area as well as the commercial laboratories proposed as part of the non-core DIT aspect was generated using Central Statistics Office population distribution information. The expected commercial population was distributed among the various regions in Dublin proportionally to the population of those areas as outlined by the Central Statistics Office Census 2006. Each region was then analysed on a similar basis as that of the DIT campus and the HSE in relation to their overall connectivity to the Grangegorman campus. An overall modal share was ascertained for the commercial aspect of the development and can be seen below in Figure 7.5 below.

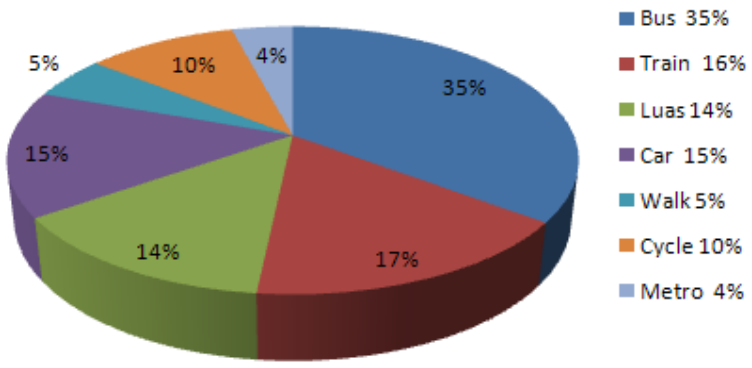

Figure 7.5 Modal Split for Proposed Commercial Development with Proposed Public Transport.

7.5 Primary School

The proposed modal split for the primary school to be developed at the Grangegorman site was developed based on modal split targets produced by Dublin City Council for schools in the Drimnagh area of Dublin. Dublin City Council collated information from 16 schools in the area including 10 primary schools, as such the modal split projections are appropriate. It is felt that the modal share for the proposed school at Grangegorman can be improved further on the basis of its greater level of public transport accessibility. The modal split for the primary school can be seen in Figure 7.6 below.

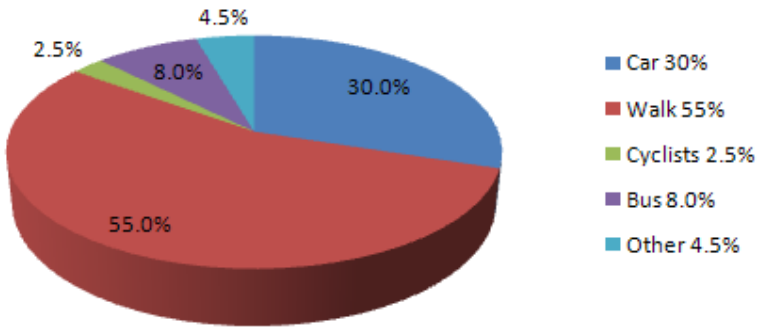

Figure 7.6 Modal Split for Proposed Primary School.

Adoption & Review

8 Adoption & Review

8.1 Overview

In order to optimise efficiency from the Mobility Management Plan following adoption and implementation of the measures proposed above, it is good practice that an assessment of travel behaviour is undertaken to determine the travel patterns exhibited by staff and students at Grangegorman. The subsequent results could in turn be compared existing modal splits to highlight the impact of mobility management.

This assessment would highlight any problems that patrons of Grangegorman are faced with on a day-to-day basis. It would also highlight any measures set out in the existing Mobility Management Plan which are not operating successfully, or those that are being under utilised by employees.

From the results of the assessment, innovative, educated, and well-founded solutions can be developed to ensure capital spent by the applicant on the Mobility Management Plan measures is being utilised to its optimum. This can be achieved by the redirection of funds from underutilised measures to measures which need more investment to cater for observed demand. This is not only of benefit to the Grangegorman population who will find commuting to work easier and more comfortable but it will also be of benefit to the GDA and Dublin City Council.

The assessment would be a comprehensive exercise, requiring a programme of data collection to establish existing transport provision, travel patterns, existing problems and assessment whether target modal splits set out in Chapter 7 will be met. This data would then be input to a Geographical Information System (GIS) for analysis. The individual elements of this process are outlined below.

8.2 Questionnaire

In order to develop a thorough understanding of the situation the best approach is generally to distribute a questionnaire to a sample of patrons of the Grangegorman site, from which a database of travel behaviour can be compiled.

This will enable the analysis to deal with the wide variation of typical working days and travel requirements of the patrons.

The following information would be ascertained from the questionnaire:

- Place of residence.
- Start/ finish time of at Grangegorman.
- Length of travel time to and from Grangegorman.
- Usual mode of travel.
- Frequency of travel by favoured mode.
- Quality of facilities provided by favoured mode.
- Information on any other mode of travel which is sometimes used.
- Reasons why other modes are not used.
- Information on parking for car drivers.
- Information relating to car sharing for car drivers and passengers.
- Information on trips made during working day
- Information on car reliance.
- Suggestions on how travel choices could be improved.
- Likely reaction to future Mobility Management Plan measures.

Based on this input, an analysis can be prepared representing the results of a number of queries to the data that has been collected. The results when plotted represent a ‘sample’ of data, which is representative of the full population and also specific to each proposed land use.

8.3 Mobility Management Workshops / Feedback Meetings

Workshops would be held with a selection of students / employees to establish more informally the main difficulties and issues in terms of transportation.

The purpose of the workshops would be to engage day-to-day site patrons in a general discussion regarding the type of measures they would like to see introduced to facilitate their travel needs. In this way, the workshops would tackle some of the thinking, which could not otherwise be gathered from a standard-format questionnaire.

To ensure in-depth analysis patrons from all levels would be encouraged to attend the workshops. The workshops would be very informal in nature as from past experiences the more relaxed individuals are the more forthcoming they are with their criticisms and ideas. The information gathered from these will be coupled with the data from the questionnaires and will provide insights into which initiatives are proving successful and which are not.

8.4 Conclusion

It is proposed that an assessment such as that described in this chapter will be undertaken after the full completion and occupation of each phase of development and on a regular basis at the discretion of the Mobility Management Plan Co-ordinators thereafter. A review at this early stage of the development will give an indication of the success of the various measures adoption and allow the strategy to be tailored or changed to suit the specific travel patterns in place. An independent monitoring consultancy could be appointed to monitor if modal split targets for the development are being met. This consultancy would report to all relevant stakeholders of the Grangegorman area.

Summary & Conclusions

9 Summary & Conclusions

This preliminary Mobility Management Plan (MMP) has been prepared to provide guidance as to how to create a positive atmosphere for employees and students at the Grangegorman site with regards to transportation and accessibility. The measures outlined in this plan have been devised to limit the adverse impact of development traffic within Dublin City Centre by promoting non car modes and soft modes such as walking and cycling wherever possible.

The findings of the MMP are based on information available at the time of writing including; the current road network, public transport provision and existing travel patterns. This preliminary MMP should inform future MMPs to be developed by each of the stakeholders within the Grangegorman site. Furthermore, this MMP should be subjected to constant review during the construction period of the various phases of development to suit the changing transport situation within the surrounding area.

In summary, the GDA is committed to the mobility management measures outlined in the chapters above to ensure that development within the Grangegorman area will form a sustainable and progressive development in terms of transportation. Furthermore, any further alternative proposals or modifications to any of the measures proposed by Dublin City Council which are within reason would be fully supported by the GDA in the interest of improving accessibility to the site.