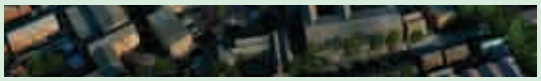
# Grangegorman

Grangegorman
Development Agency
Gníomhaireacht Forbartha
Ghráinseach Ghormáin



GDA Draft Strategic PLAN 2010

Strategic Environmental Assessment

# Environmental Report

Innovative Urban Quarter | Contemporary Healthcare Facilities | Modern Education Hub | Accessible Public Spaces

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# NON-TECHNICAL SUMMARY

## NON- TECHNCAL SUMMARY

This document provides a *Non-Technical Summary* of the *Environmental Report* of the *GDA Draft Strategic Plan.* The purpose of this report is to provide an accurate synopsis of the information contained within this *Environmental Report,* giving a clear understanding of the likely environmental consequences of decisions regarding the redevelopment of the Grangegorman Site to provide health, education and other facilities.

### Background

The *Grangegorman Development Agency (GDA) Strategic Plan* is subject to a strategic environmental assessment in accordance with the requirements under the SEA Directive (2001/42/EC) and the *European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004.* This means that the plan is undergoing a formal systematic evaluation of the likely significant environmental effects of implementation prior to adoption by the Grangegorman Development Agency. As such an *Environmental Report* has been published alongside the *GDA Draft Strategic Plan*. The *Environmental Report* details the methodology involved in carrying out this environmental assessment, reviews the Grangegorman Strategic Plan's relationship with other plans at international, national, regional and local level, establishes an environmental baseline identifying existing environmental problems and issues, evaluates alternatives to the Strategic Plan, and details the environmental assessment of the *GDA Draft Strategic Plan*. This is a Non-Technical Summary of the information contained within this Report.

### SEA METHODOLOGY

The methodology adopted for the SEA process was based upon the SEA Directive and experience gained since the introduction of the Directive in July 2004. Reference was also made to the DoEHLG Guidelines, EPA Guidelines, current literature in the subject area and various national and international published reports during the preparation of the Environmental Report. Regular meetings were held with the SEA Team, the Strategic Plan Team and the Master plan Team together with members of staff of the Grangegorman Development Agency. The following summarises the key stages in the overall process of environmental assessment of the *GDA Draft Strategic Plan* and the ultimate consequences for this draft strategic plan.

### SCOPING

The scope of environmental issues to be dealt with by the SEA together with the level of detail to be addressed was broadly decided on after preliminary data collection initially outlined in the *Scoping Issues Papers*. These Issues Papers were circulated to the identified Environmental Authorities and the issues extended to take account of submissions received in response. In particular the EPA and the NRA (National Roads Authority) provided detailed input and advice during this consultation. These submissions informed the preparation of the *SEA Scoping Report*.

As part of this Scoping process a study of the environmental baseline of the Grangegorman area of Dublin City was carried out. The baseline, together with the

Environmental Objectives, established in the Environmental Report, was used to identify, describe and evaluate the likely significant environmental effects of implementing the *Grangegorman Strategic Plan* as detailed in the *Draft Environmental Report* which accompanies this GDA *Draft Strategic Plan.*

## STUDY OF THE ENVIRONMENTAL BASELINE

The environmental baseline which formed part of the SEA study encompasses the components of biodiversity, flora and fauna, population, human health, soil, water, air and climatic factors, noise, material assets, cultural heritage and landscape together with the interrelation between these components. It establishes the current existing state of the environment and is the basis to assess and predict potential impacts.

### *Biodiversity, Flora and Fauna*

A baseline study of the biodiversity, flora and fauna of the Grangegorman site identified the main habitats on the site. The northern and eastern parts of St. Brendan's West comprise a mix of buildings and artificial surfaces, dry grassland and amenity grassland, which includes a variety of scattered trees and parkland and a mix of ornamental and non-native shrubs. There is an area of semi natural woodland present along the eastern boundary and around the disused Church of Ireland church in the south east of the site.

In the centre of the site, between the playing pitches to the south and the buildings to the north, is an area of broadleaved woodland consisting of holm oak (*Quercus ilex*). In this area there is almost no shrub layer or ground flora, other than ivy (*Hedera helix*), bramble (*Rubus fruticosus* Agg.) and elder (*Sambucus nigra*) due to the heavy canopy. In the north western part of St. Brendan's West is an area of disturbed ground extensively colonised by alien species, mainly giant hogweed (*Heracleum mantegazzium*), with Japanese Knotweed (*Reynoutria japonica*) also present. These plants are also to be found occasionally along the western boundary of the site and in St Dympna's gardens.

The southern and western parts of St. Brendan's West comprise large areas of amenity grassland. These include several playing pitches. Treelines, consisting mainly of horse chestnut (*Aesculus hippocastanum*) are present. In some areas larger groups of trees are found, with the understorey vegetation limited to bramble, ivy, and patches of nettles (*Urtica dioica*). Sycamore (*Acer pseudoplatanus*) saplings, as well as hawthorn (*Crataegus monogyna*) and elder form the shrub layer in this part of the site. While the northern part of St. Brendan's East comprises a mix of amenity grassland, buildings and hard surfaces.

The major part of the site consists of a mix of hard surfaces and derelict buildings, with large areas of Buddleia (*Buddleia davidii*) scrub and areas of spoil. Scattered trees (sycamore, ash (*Fraxinus excelsior*), rowan (*Sorbus aucuparia*), horse chestnut), treelines (primarily Lombardy poplar (*Populus nigra*)) and various shrubs are to be found along the perimeter of the site.

Mammals such as grey squirrel and fox are present on the Grangegorman site. Rodents, such as brown rat and field mouse are likely to be present and hedgehog may also occur. Several of the mature trees within the site have an extensive covering of ivy, and are potential bat roosts (PBRs). Many of the buildings on the site may also be potential bat roosts. The GDA have undertaken to carry out a full bat survey of the site to ascertain the

presence and location of bat species on the site. Consequently the bat survey will be available pre-construction to enable arrangements to be made to protect or preserve bat populations.

A good range of common bird species is present on the site. Species include magpie, rook, jackdaw, hooded crow, blackbird, song thrush, mistle thrush, wood pigeon, pied wagtail, robin, blue tit, great tit, house sparrow, starling and wren. These species are typical of urban open spaces, parks and gardens.

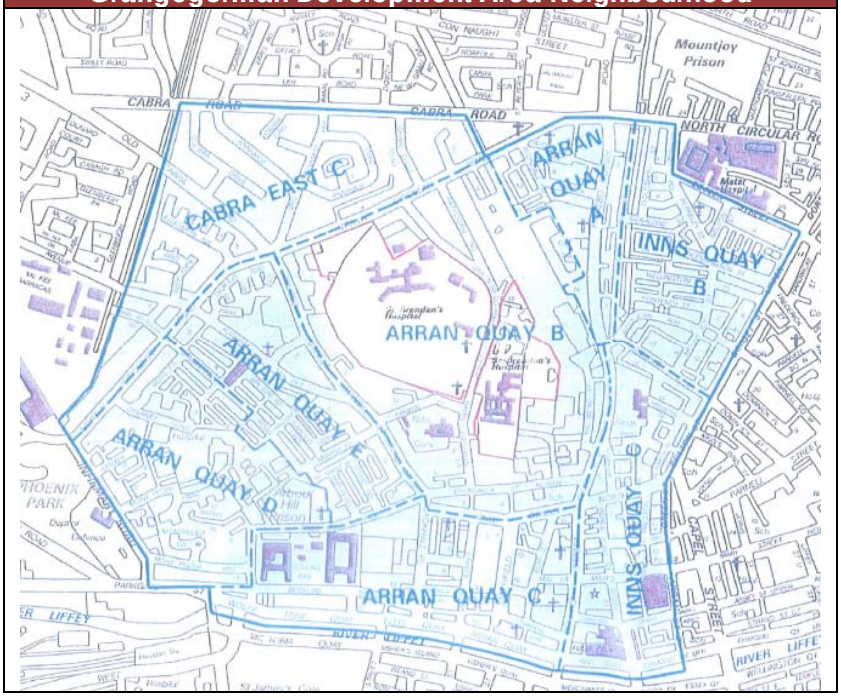
***Population and Human Health***

The SEA Baseline study included the development of a baseline socio-economic profile of the Grangegorman Neighbourhood. The study area has been allocated according to Electoral Division (ED) with the entirety of the 29.4 hectare Grangegorman Development Area (GDA) site located in the ED of Arran Quay B.

The wider Grangegorman Hinterland comprises the area of la*nd stretching from Cabra Road in the north to the River Liffey in the South and from McKee* Barracks in the west to Bolton Street/Dorset Street Upper in the East. For the purposes of this socio-economic study the Grangegorman Hinterland comprised the EDs of Cabra C East; Arran Quay A; Arran Quay B; Arran Quay C; Arran Quay D; Arran Quay E; Inns Quay B; and Inns Quay C.

The relationship between the GDA and its defined Neighbourhood is set out in Figure 1 below.

**Figure 1**
**Grangegorman Development Area Neighbourhood**




**Source: Dublin City Council (2004) and annotated by Tom Phillips + Associates (2008)**

**Socio-Economic Profile**

Based on the latest available data sources, including Small Area Population Statistics (SAPS) from the 2006 Census it was found that the population of the Grangegorman Hinterland Area rose by over one quarter, 27.1%, in the period 1996 – 2006. This compares to growth of 5.1% and 16.9% in Dublin City and the State respectively over the same period. The level of growth witnessed in the Hinterland Area moderated significantly in the 2002 – 2006 period (9.6%) compared to that experienced in the 1996 – 2002 period (15.9%).

**Table 1**
**Grangegorman Development Area, Hinterland and Comparators**
**Historic Population Trends 1996 – 2006**

| Area/ED | 1996 | Change '96 –'02 % | 2002 | 2006 | Change '02 –'06 % | Change '96 –'06 % |
|---|---|---|---|---|---|---|
| **GDA*** | **1,963** | **57.4** | **3,089** | **3,692** | **19.5** | **88.1** |
| | | | | | | |
| Cabra C East | 3,442 | 5.7 | 3,638 | 3,352 | -7.9 | -2.6 |
| Arran Quay A | 1,336 | 4.0 | 1,390 | 1,502 | 8.1 | 12.4 |
| Arran Quay B | 1,963 | 57.4 | 3,089 | 3,692 | 19.5 | 88.1 |
| Arran Quay C | 1,914 | 24.1 | 2,375 | 3,714 | 56.4 | 94.0 |
| Arran Quay D | 3,264 | 12.6 | 3,675 | 3,600 | -2.0 | 10.3 |
| Arran Quay E | 2,957 | -1.9 | 2,902 | 2,889 | -0.4 | -2.3 |
| Inns Quay B | 2,680 | 10.2 | 2,953 | 3,113 | 5.4 | 16.2 |
| Inns Quay C | 1,748 | 35.0 | 2,359 | 2,672 | 13.3 | 52.9 |
| **Total Hinterland** | **19,304** | **15.9** | **22,381** | **24,534** | **9.6** | **27.1** |
| | | | | | | |
| **Comparators** | | | | | | |
| Dublin City | 481,854 | 2.9 | 495,781 | 506,211 | 2.1 | 5.1 |
| State | 3.626m | 8.0 | 3.917m | 4.239m | 8.2 | 16.9 |

Note: * Grangegorman Development Area comprising Aran Quay B

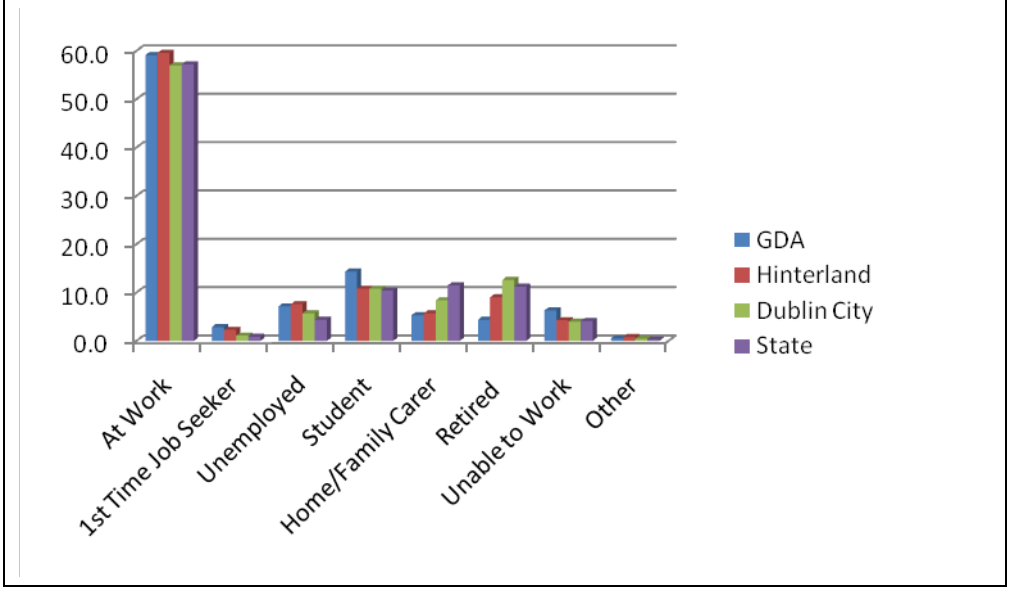
**Source: Tom Phillips + Associates (2008) and CSO (2006, 2002 & 1996)**

A study of the age profiles in the catchment area indicate that the GDA and Hinterland populations are *heavily concentrated in the 15 – 24 and 25 – 44 years age cohorts with no corresponding concentration in the 0 – 14 years cohort.* This indicates that these areas – due to a combination of location, accommodation supply and access factors – are characterised by higher than average levels of students and young workers (both Irish and Non Irish). It was found that the GDA has a high proportion of Non Irish residents. The data highlights that 18.5% of the GDA's usually resident population has a Non Irish European Union nationality compared with just 3.9% in the State as a whole. A further 22.2% of the GDA's population is classified as having a 'Rest of World' nationality compared to 14.5%, 7.1% and 3.5% respectively at Hinterland, City and State level.

In the context of Irish nationality, just over 55.9% of the usually resident population in the GDA were Irish national compared to 67% in the Hinterland, 82.8% in Dublin City as a whole and 88.8% in the State.

The Economic Status of all residents aged 15 years + in the GDA in 2006 was assessed and compared to that of Dublin City and the State. The data highlights that the GDA and Hinterland have the highest labour force participation rates (59.1% and 59.6% respectively) of any of the areas considered (persons 'At Work'). However it was also found that this area experienced higher levels of unemployment with the GDA (7.1%) and Hinterland Areas (7.6%) experiencing higher levels of unemployment compared to Dublin City (5.7%) and the State (4.4%).

**Figure 2**
**Persons Aged 15+ by Principal Economic Status (%)**
**Grangegorman Development Area, Hinterland and Comparators**




**Source: Tom Phillips + Associates (2008) and CSO SAPS (2006)**

An assessment of the mode of transport used to access work, school or college for all persons aged 5 years + found that as expected, the GDA and Hinterland Areas experience relatively higher levels of foot, bicycle and bus/luas traffic than Dublin City or the State as a whole. Correspondingly, the State and Dublin City also exhibit significantly higher levels of car based traffic relative to the GDA and Hinterland Area.

It should also be noted that the GDA and Hinterland Areas stand to benefit directly from 2 no. measures proposed in the National Transport Investment Programme to 2015 (*Transport 21*).

These measures are:

1. The extension of the DART from Connolly Station to Maynooth and the provision of a new interchange station at Liffey Junction; and

2. The proposed Luas Line BX which will link the existing Green Line terminus on St. Stephens Green with the new station at Liffey Junction. This line is likely to utilise the old

Broadstone rail alignment from Constitution Hill to Liffey Junction. As a result, it has the potential to directly serve the Subject Lands.

3. The construction of Metro North with stops at the Mater Hospital and Parnell Square.

The successful realisation of the above public transport projects will significantly improve the public transport accessibility of both the GDA and Hinterland Areas, particularly with regard to Dart and Luas.

The provision of higher education facilities on a state of the art campus at Grangegorman represents a significant investment in human capital for the wider national and international population. The significance of the project is reflected in its inclusion within such policy documents as the National Development Plan 2007-2013, The Dublin City Development Plan 2005-2011, Transport 21, and *The Review and Prioritisation of Capital Projects in the Higher Education Sector*. The growth rate of employment in knowledge intensive services in Ireland far outstripped the European average in the period 1997-2002 standing at 42.5% compared with the EU average of 16.2%[1]. Increasingly according to the National Workplace Strategy (2005) economic growth is dependent on ideas, information and technical skills. The Expert Group on Future Skills Needs (Tomorrow's Skills: Towards a National Skills Strategy (2007)) clearly identifies projected changes in the focus of the Irish economy with "*services based employment expected to increase significantly over the coming years to 2020 with the largest increase forecast for financial and business services sector.* This study underlines the importance of providing such a facility at the Grangegorman site to facilitate the future education needs of a broad spectrum of the local, national and international population.

***Soil***

The geology of the Grangegorman Area is generally glacial deposits over Carboniferous limestone bedrock, with the glacial deposits ranging from lodgement tills to glacial sands and gravels to clays formed during the ice age. Site investigations carried out at the Grangegorman site confirms that ground conditions within the site are typical of the Dublin area. The glacial deposits in the Dublin area are on the whole boulder clays, brown and black. Brown boulder clay is generally considered to be the result of the weathering of Black boulder clay (Farrell & Wall, 1970). It should be noted that isolated pockets of soft material can be found in boulder clay areas and these soft pockets often arise due to the presence or past presence of streams, ponds etc. In brown boulder clay where soft material is found, the strength and compressibility of the clay can vary, however the black boulder clay is generally consistent as a stiff material.

The Bradoge River once ran through the site of Grangegorman but has now been culverted for public drainage with a branch running down the Grangegorman Road and a second branch running through the hospital. Although it was not encountered in the course of the site investigation it is possible that soft deposits of an alluvial nature may be found in areas where the Bradoge River ran. These deposits if encountered are likely to be more permeable and water bearing.

[1] Source: National Competitiveness Council, *Annual Competitiveness Report 2006*

Some contaminants were found to be present at limited locations within the Grangegorman site at or above their respective action levels. The most frequently occurring contaminant was lead which exhibited an elevated level in a total of 7 no. Samples out of a total of 20. Elevated levels of PAH's were also detected along with significant concentrations of heavy metals such as Arsenic, Barium, Copper, Lead and Zinc. High levels of Chromium and sulphate were also detected.

In addition to the above noted contaminants the levels of Total Organic Carbon was found to exceed a level of 3% in the majority of samples with levels of up to 15% detected.

The assessment of the Grangegorman site found that 'made ground' is present in significant quantities and as a result it would not be unusual to detect localised 'hot spots' of elevated contamination within the soil which were not intercepted in the course of the site investigation works carried out no matter how extensive the works.

***Water***

As noted above, it is likely that the soil type at the Grangegorman site is likely to be brown boulder clay over black boulder clay over bedrock. Boulder clays generally have low permeability and therefore would represent a poor aquifer. The underlying bedrock however is a potential aquifer, and this is particularly significant if there is a highly weathered zone at the interface between the bedrock and overlying soils.

On the aquifer classification map for Ireland Dublin is shown to lie on a poor to minor aquifer which is locally productive. The GSI National draft bedrock aquifer map concurs with this and describes the bedrock aquifer in Dublin as a locally important aquifer which is generally moderately productive in local areas. An interim study of groundwater vulnerability for Dublin city centre found the vulnerability to range from high to low, with a number of small areas of extreme vulnerability to the south resulting from shallow rock to Karst features. As water is a precious resource it is important that the redevelopment of the site incorporates conservation and sustainability measures in relation to the treatment of water.

**Landscape**

The landscape of Grangegorman has been forged by its past, which has left a legacy of buildings and other features on site, many of which are protected structures which contribute to the unique character of the area. A high wall bounds the site for the most part, which is shared with boundary properties at sections along the wall. The wall has a historical significance within the area and adds to the character of the landscape. The high wall also restricts access into the site as a result. A low wall with railings fronts the Grangegorman Road Upper along the north-eastern boundary of the site and there is currently one operational entrance into the site and one closed entrance.

The overall site presents as a combination of sports pitches, amenity grassland, buildings and other hard surfaces, scattered trees and shrubs, tree lines and disturbed ground. The open space within the site mainly consists of areas of grassland or sports pitches to the

south-west. However the scale and nature of this open space is not utilised in terms of public accessibility and awareness.

The site is strategically located in close proximity to Dublin City and thus enjoys a high quality geographic position and orientation within its urban setting. The topography of the landscape at places forms a natural viewing platform giving rise to various views out of the site. There are occasional long distant views south to the buildings and cranes which make up the city skyline. Views into the site are generally restricted to views from neighbouring properties which overlook the site.

***Landscape Characterisation***

The landscape assets of Grangegorman, the mature trees on site, the open nature of the lands, the historical buildings and landscaped pathways together form an integral part of the existing landscape image and character of the area, which dates back to the establishment of the House of Industry for the poor in the 1770's. The Richmond Asylum, a separate institution to house the mentally ill, followed in 1810, which today is known as the Lower House, of which only the southern portion remains. The Richmond General Penitentiary, completed in 1816, was built nearby which over time became part of the Asylum, of which only the front range of the central spine remains today. Throughout the century the site evolved to become a large mental hospital facility on 30 hectares of land, with additional structures built to the west.

Today, the Upper House and Lower House are well known to locals and play a large part in shaping the landscape character of the site. The site was originally bounded by two ancient roadways into Dublin, which probably followed the line of Constitution Hill and Stoneybatter.

**Air Quality**

In terms of air monitoring and assessment, Ireland is divided into four zones, as defined in the *Air Quality Standards Regulations, 2002*. The region of Grangegorman is within Zone A. The EPA website details the range and scope of monitoring undertaken throughout Ireland and provides both monitoring data and the results of previous air quality assessments. The most recent annual report on air quality in Ireland is the "*Air Quality Monitoring Report 2006*". This report contains monitoring data for Dublin city centre locations close to Grangegorman, as detailed below.

Based on the Dublin City Council and Cork County Council data, it is expected that typical , , $_{.5}$, benzene and concentrations at the Grangegorman site are generally below the limit value. Road traffic is expected to be the dominant source of emissions (with the possible exception of ) in the region and resulting from the redevelopment of the Grangegorman site. Road traffic emissions do not contribute significantly to and lead concentrations, and therefore levels of these pollutants in Dublin city centre are currently well below the limit value.

***Traffic and Transportation***

The Grangegorman lands are located within approximately 2km of Dublin City Centre. The surrounding roads include the North Circular Road to the North, Prussia Street to the west, Phibsborough Road and Constitution Hill to the East. These roads provide local movement functions. The N2 and N3 are also located in close proximity to the site and provide more strategic movement functions. Vehicular access is currently provided from Grangegorman Road which bisects the site.

The existing public transport provision serving the development site is focused primarily on bus. The majority of these services are destined for the City Centre via the Quays or Parnell Square and O' Connell Street. Good frequency of service is provided on the western side of the site along Prussia Street and Stoneybatter. To the east of the site services are provided along Phibsborough Road and Constitution Hill. While adequate pedestrian facilities are generally provided within the surrounding road network, the development site currently suffers from a lack of permeability caused by limited access, boundary walls, and the Broadstone site to the east.

The sustainable development of the Grangegorman lands requires the provision of good public transport penetration and connectivity from the subject site to surrounding areas. In addition the consideration and provision for walking and cycling trips will contribute to the overall sustainability of the subject lands. Influencing the modal split that arises from the development lands will include such issues as the quantum of car parking provided, the access arrangements for all modes, the connectivity of footways and cycleways, and the quality of the public realm and the streetscape.

The redevelopment offers the opportunity to provide a complementary mix of land uses to capture the synergies which exist between trip generating origins and destinations. In this manner the spatial separation can be reduced to facilitate travel undertaken by walking, cycling and public transport. The facilitation of additional population within Dublin City Centre creates the potential for the development of critical mass to facilitate the provision of additional public transport services.

***Noise and Vibration***

An environmental noise survey was conducted in order to quantify the existing noise environment. The survey was conducted in general accordance with ISO 1996: 1982: *Acoustics – Description and Measurement of Environmental Noise* at the following locations:

**Location 1** is located within Kirwan Close, to the south of the site, on a small green space in the centre of the street.

During daytime monitoring periods, audible sources at this location included distant traffic on surrounding roads, occasional vehicle movements on Kirwan Street South, and occasional noise from refurbishment work within one of the Cottages. During the first measurement period, a lawnmower within the subject site was audible. Daytime noise levels were in the range 48 to 50dB and 42 to 44dB .

During night-time monitoring periods, distant traffic on surrounding roads was the dominant source of noise. Noise levels were of the order of 36dB and in the range 30 to 32dB .

No significant source of vibration was noted during the survey periods.

**Location 2** is located at Great Western Square, at a cul-de-sac at the north-western corner of the square.

During daytime monitoring periods, noise levels were dominated by distant traffic on surrounding roads, occasional local vehicle movements, wind generated noise in foliage and distant construction activity. Daytime noise levels were in the range 47 to 48dB and 39 to 40dB .

The night-time noise measurements at this location were dominated by traffic on surrounding roads, occasional local vehicle movements and during the third measurement, feint music from a house on the far side of the square. Noise levels were in the range 41 to 44dB and 31 to 33dB .

No significant source of vibration was noted during the survey periods.

**Location 3** is located in the car park of St Catherine's Court, 12m from the road edge, in line with the façades of residential properties nearby.

Noise levels at this location during the daytime period were dominated by traffic on North Circular Road. Noise levels were in the range 60 to 65dB and 43 to 47dB .

Similarly, night-time noise levels were governed on North Circular Road. Noise levels were in the range 53 to 58dB and 34 to 35dB .

No significant source of vibration was noted during the survey periods.

***Services Infrastructure***

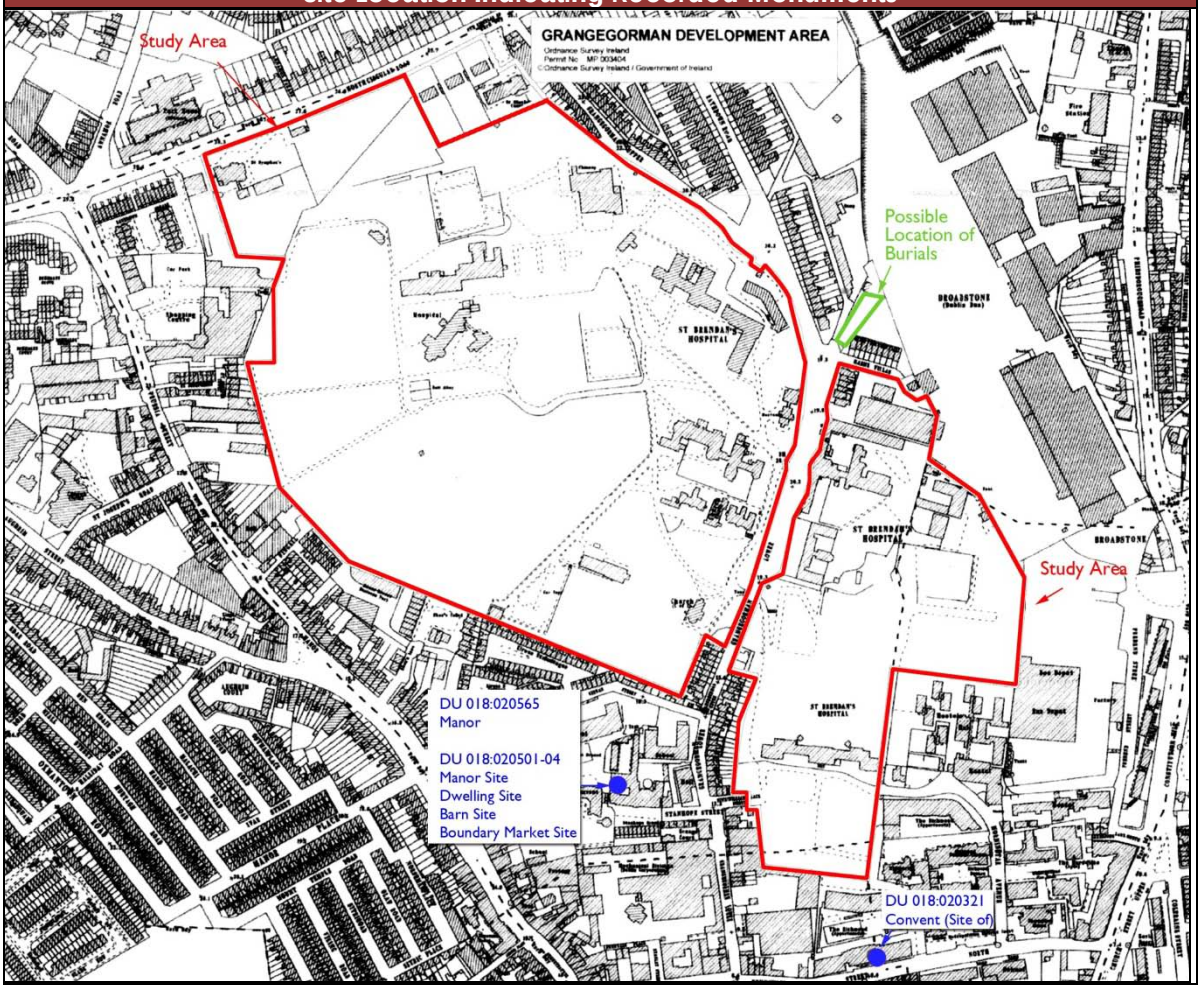
Existing foul drainage from St Brendan's, Grangegorman is divided into two areas. St Brendan's West discharges eastwards to the Dublin City Council combined sewers on Grangegorman Road Upper and St Brendan's East discharges both eastwards to the Dublin City Council foul sewer (Bradoge River Culvert) traversing the site to the eastern boundary with the Broadstone Depot and westwards to a brick sewer on Grangegorman Road Lower.

Currently there is a combined sewerage system in operation across the site but it is intended, as part of the redevelopment, to separate the foul and surface water lines and create two new separate systems that will connect independently into Dublin City Councils surrounding drainage system. The construction of a new surface water sewer is proposed between the closest existing line which is located in Smithfield Plaza up to Grangegorman Road Upper, and this new line will service the redevelopment proposed for the Grangegorman site.

***Archaeological Heritage***

*The National Monuments Acts 1930-2004* provide for the protection of the archaeological heritage. The Record of Monuments and Places (RMP) was established under Section 12 of the *National Monuments (Amendment) Act 1994* and structures, features, objects or sites listed in this Record are known as Recorded Monuments. Monuments protected under the Act include prehistoric monuments and any monuments and places associated with commercial, cultural, economic, industrial, military, religious or social history. The Grangegorman site is located outside the designated zone of archaeological potential for historic Dublin City (DU018:020). There are no stray finds from the topographical files of the National Museum of Ireland recorded from the locality and no recorded archaeological monuments are located within the study area. However, the site contains several listed buildings all belonging to institutional complexes designed by Francis Johnston and William G. Murray in the early century. These are described in detail in the architectural conservation section.

**Figure 3**
**Site Location Indicating Recorded Monuments**




**Source: Margaret Gowan & Co., May 2008**

While there are no Recorded Monuments within the Grangegorman site a number of archaeological concerns are being considered in the redevelopment of this site. It is noted that as this is a large proposed development site, there is considerable potential for revealing subsurface remains of archaeological material previously undiscovered. There is also the possibility of burials within the proposed development area. Consultation in 1998 with the then Eastern Health Board confirmed that according to their records from the 1820s onwards no patients were buried within the confines of the grounds (Courtney 1998). However it is commonly the case that within institutional grounds, burials were sometimes unrecorded and therefore it is possible that burials are located within the proposed development site. Through anecdotal evidence from Fr Pearse O'Dowell, Chaplain at St Brendan's Hospital, documentary evidence (Dr. O'Shea & Dr. Falvey) and research of sources relating to Bully's Acre in Kilmainham it has been established that there is a significant possibility of unmarked cholera graves from the 1830s outbreak in the vicinity of the Annex Building, east of Grangegorman Lower. This is probably within the walled lands to the north of the Annex, east of HJ Nolan Builders and west of Marne Villas (Figure 3 above) but outside the area of the Grangegorman Development.

As the playing fields located on the west site have undergone minimal disturbance generally, this area possesses potential for archaeological features to remain intact below the surface due to the aspect of the site, which is situated on the upper reaches of the first south-facing slope of the River Liffey Valley with the River Bradoge running along the north eastern boundary. The study area also commands a view of the city and is in the vicinity of the known settlement of Oxmantown.

A 1756 map by John Rocque depicts a lane from the present day Grangegorman Upper leading westward into the proposed development area where a structure is located amongst the fields. The exact location cannot be discerned due to the imprecise nature of the early map.

### *Architectural Heritage*

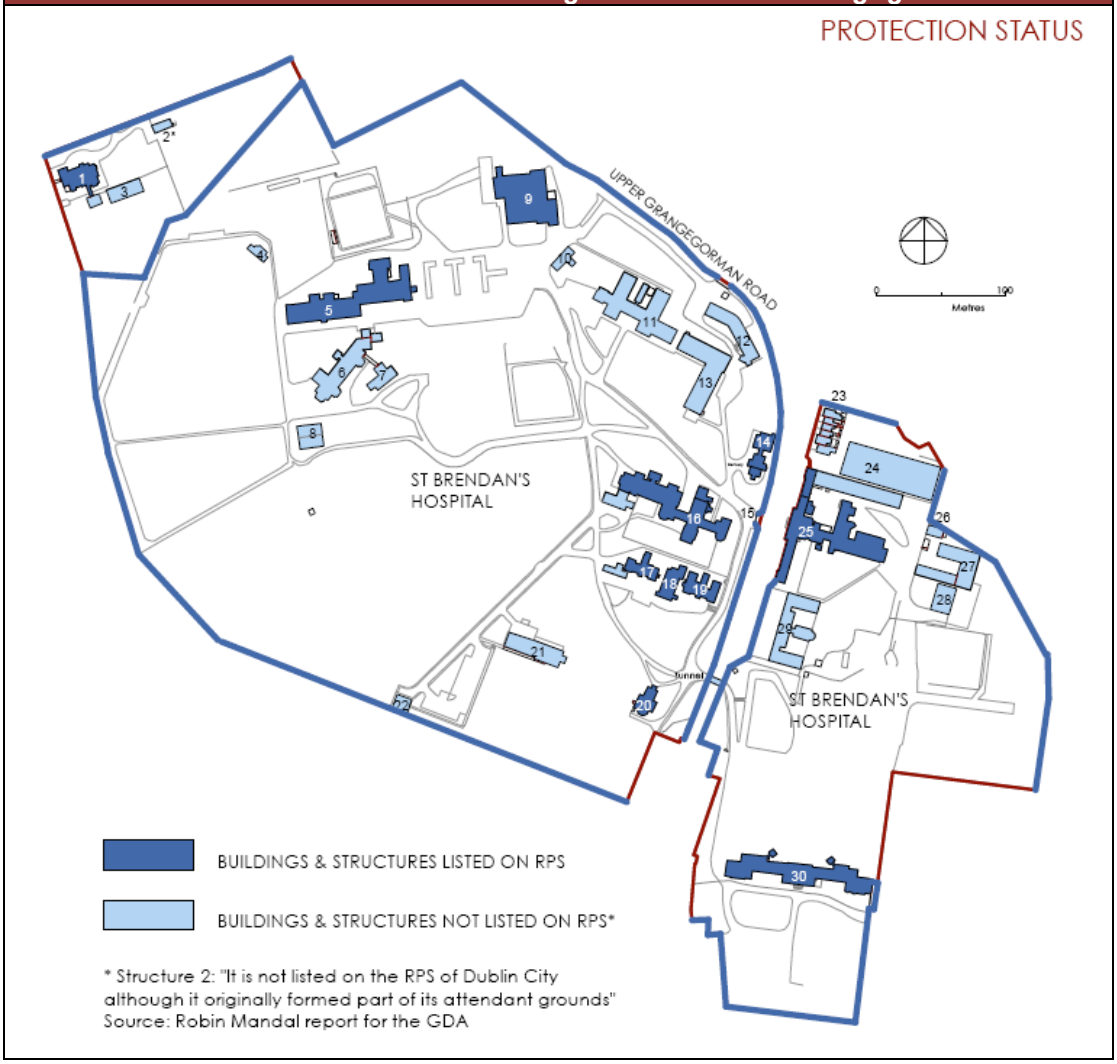
The lands are currently occupied by St. Brendan's Hospital, which represents the continuous use of the area for hospitals from 1773. The oldest existing buildings date from 1815, and the site was developed in several phases by recognised architects. Many of the structures are listed on the Record of Protected Structures. The site is characterised by imposing nineteenth-century and early twentieth-century institutional buildings, both grouped in clusters and in isolation with extensive landscaped surroundings, all enclosed within high masonry walls.

Francis Johnston (1761-1829) was the architect for two of the oldest surviving structures that form the most substantial cluster of buildings on the site. These include the former Richmond Penitentiary and the former Richmond Asylum, which are located as a cluster to the east side of Grangegorman Road. These structures, although not outstanding examples of this renowned architect's work, are particularly important from a social historical perspective as evidence of the early development of mental health care. Francis Johnston was a prolific architect, having built asylums in other locations around the country together with major public buildings such as the General Post Office and St. George's Church in Dublin. Both of the structures on this site have been substantially altered since their construction in the early part of the nineteenth century. However, the Penitentiary is in a more stable condition as it has remained in use. The Asylum is derelict with its east, west and north ranges demolished as recently as the late 1980's and a portion of the remaining south range is no longer roofed. This is the historic building most under threat on the site, and arguably among the most significant.

Aside from the buildings, other structures of interest include the main entrance gateway, the tunnel and the site boundary wall. The entrance gateway was moved from Santry Court in the 1940's, and is likely to be over 200 years old. The boundary wall dates from the middle of the nineteenth century, but is likely to have been built in several phases and has been much altered in a number of sections. This includes the lowering of the wall along Upper Grangegorman Road some time in the latter half of the twentieth century, when railings were introduced marking a change in approach to mental health care. It has also been altered along North Circular Road to the front of some houses.

Overall there are approximately thirty existing structures on the site, twelve of the buildings, the entrance gates and the boundary walls are protected structures listed on the *Record of Protected Structures* in the *Dublin City Development Plan 2005-2011*.

**Figure 4**
**Protection Status of Buildings & Structures in Grangegorman**




**Source: Howley Hayes Architects**

**Plate 1** **View along Upper Grangegorman Road towards Richmond Penitentiary**

**Plate 2** **View of Main Entrance Gates**

## KEY ENVIRONMENTAL ISSUES

The key strategic environmental issues identified with relevance to the Grangegorman site were as follows:

- Architectural Heritage and the existing structures, building clusters and landscape features which will be impacted by the implementation of the Strategic Plan;
- Possibility of protected species of flora and fauna located on site with particular emphasis on bats;
- Traffic generation and the implications for noise and air quality as a result of the implementation of the Strategic Plan;
- Impacts on the urban landscape including visual impacts, overshadowing, loss of character, impact on scenic amenity etc.;
- Foul Drainage and the combined foul and surface water sewer system currently in place in Grangegorman; and
- The significant size and scale of the site indicating potential for archaeology.

## ENVIRONMENTAL OBJECTIVES

The methodology involved in the environmental assessment of the Grangegorman Strategic Plan required the establishment of environmental protection objectives for each environmental receptor related to the key environmental issues identified in the Scoping process. Associated indicators and targets were identified for each environmental objective. These objectives were then used to evaluate the plan alternatives and therefore identify the preferred plan alternative and ultimately the *GDA Draft Strategic Plan*. The environmental objectives established for the Grangegorman Strategic Plan are as follows:

- Protect and enhance biodiversity, flora and fauna on the Grangegorman site;
- Enhance the overall socio economic profile and economic attractiveness of the Grangegorman Development Area;
- Improve the quality of life for the community based on the provision of accessible employment, recreational, educational, medical and other facilities;
- Provide, maintain and improve access to public open space;
- Preserve and enhance the natural and historic landscape features within the Grangegorman site;
- Retention of existing good quality trees;
- Limit adverse impacts on air quality and in particular traffic generated air emissions;
- Limit adverse impacts on climate through use of sustainable energy sources;
- Protect, conserve and enhance the architectural heritage on the Grangegorman site;
- Identify and protect the archaeological heritage on the Grangegorman site in accordance with Best Practice Principles;
- Provision for the reuse, recycling and conservation of water on site; and
- Provision of separate foul and surface water drainage to service the Grangegorman Area.

As part of this SEA *Indicators* have been identified to act as representative examples of environmental data. Environmental objectives specify a desired direction for change (e.g. 'reduce air pollution'), while Indicators establish variables that can be measured over time and thus indicate the direction of this change over time. For each of the Environmental Objectives detailed above appropriate Indicators have been provided and associated achievable Targets identified for each Indicator.

**ALTERNATIVES ASSESSED**

The Environmental Report is required to identify, describe and evaluate reasonable alternatives to the proposed plan taking into account the objectives and the geographical scope of the plan or programme. Three plan alternatives were examined in the course of the preparation of the Strategic Plan. These alternatives were developed by the Strategic and Masterplan teams and the details provided to the SEA Team for environmental assessment. The chosen preferred alternative was identified and later developed into the *Draft Grangegorman Strategic Plan*.

The three alternatives assessed during this process are as follows:

> ***Alternative 1:*** *Refurbishment and reuse of buildings on site, to facilitate the limited transfer of some of DIT's functions to the Grangegorman site.*
>
> ***Alternative 2:*** *Redevelopment of the Grangegorman site to provide a new city Quarter incorporating DIT and HSE accommodation in accordance with their briefs and in addition the provision of community facilities.*
>
> ***Alternative 3:*** *Intensive redevelopment of the site to include DIT and HSE accommodation in accordance with their current briefs and in addition the provision of residential accommodation for 3,000 people in high density, medium to high rise scheme.*

The table below illustrates the result of the environmental assessment of each of the Strategic Plan alternatives. These three alternatives are assessed against each of the Environmental Objectives.

This analysis found that Alternatives 1 and 3 would be likely to give rise to the highest frequency and magnitude of significant adverse environmental effects and in particular have the potential for very negative impacts in relation to the provision of access for the local population and the impact on the landscape character of the Grangegorman Area.

While it is acknowledged that Alternative 1 does have many positive features with respect to the environment, such as the impact on architectural heritage, archaeology, landscape character and retention of the existing trees, the positive impacts of new community services and DIT services and facilities would be lost if this alternative were to be implemented. It is clear that the loss of socio-economic and quality of life benefits in Alternative 1 could not be compensated for by the environmental gains.

This assessment found that Alternative 2 has an overall positive outcome in terms of the environmental assessment carried out as part of this SEA and in particular with respect to the positive impacts on the socio-economic profile and quality of life for local residents. As

such this option, when subjected to appropriate mitigation measures, has been identified as the preferred development scenario for Grangegorman.

**Table 2 Assessment of the Strategic Plan Alternatives**

| | **Alternative 1** Low Intensity Development | **Alternative 2** Medium Intensity Development plus Community Facilities | **Alternative 3** High Intensity Development with Commercial Gain |
|---|---|---|---|
| Protect and enhance biodiversity, flora and fauna on the Grangegorman Site | + | 0 | - |
| Enhance the overall socio-economic profile and economic attractiveness of the Grangegorman Development Area | 0 | ++ | ++ |
| Improve the quality of life for the community based on the provison of accessible employment, recreational, educational, medical and other facilities. | - | ++ | -- |
| Provide, maintain and improve access to public open space | -- | 0 | - |
| Preserve and enhance the natural and historic landscape features within the Grangegorman site | + | 0 | -- |
| Retain existing good quality trees | + | 0 | - |
| Limit adverse impacts on air quality and in particular traffic generated emissions | - | 0 | - |
| Limit adverse impacts on climate through use of sustainable energy sources | 0 | + | - |
| Protect, conserve and enhance the architectural heritage on the Grangegorman site. | + | 0 | - |
| Identify, protect and conserve or document the archaeological heritage on the Grangegorman site in accordance with Best Practice Principles. | + | 0 | - |
| Provision of separate foul and surface water drainage to service the Grangegorman Area. | - | + | + |
| Provision for the reuse, recycling and conservation of water. | 0 | + | 0 |

| KEY | Neutral | Very Positive | Positive | Negative | Very Negative | Uncertain |
|---|---|---|---|---|---|---|
| | 0 | ++ | + | - | -- | ? |

## ENVIRONMENTAL ASSESSMENT OF THE PREFERRED ALTERNATIVE

The *Environmental Report* details the likely significant impacts on the environment as a result of the implementation of the GDA *Draft Strategic Plan*. Each of the Project Visions, Aims and Objectives contained within the Draft Strategic Plan have been assessed against the Environmental Objectives established with regard to the Baseline Environmental Data. This methodology is then used to establish, firstly, the likely environmental effects of the implementation of the Strategic Plan and, secondly, the significance of these environmental effects having regard to the environmental baseline.

The GDA Draft Strategic Plan sets out seven overall *Project Visions* which encapsulates all the Aims and Objectives of the project. The environmental assessment of these Project Visions summarises the assessment of all aims and objectives within the Strategic Plan. Overall the environmental assessment has shown that there will be a net positive impact as a result of the implementation of this Strategic Plan. While the initial construction works may have a negative impact on the existing trees on the site and potential archaeology on site this impact will be temporary in nature and mitigated appropriately and should not result in significant negative impacts. The benefits of the overall project in terms of the positive impact on the socio economic factors and quality of life for the local community, the positive impacts on the architectural heritage, the infrastructure provision and the overall sustainable approach in the provision of public transport and the reduction in energy demands will ultimately significantly outweigh temporary negative impacts which may occur.

Figure 5 below summaries the environmental assessment of the *GDA Draft Strategic Plan*.

## Figure 5 Summary of Environmental Assessment of GDA Draft Strategic Plan

| *GDA Draft Strategic Plan* Visions, Aims and Objectives | Environmental Protection Objectives | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Protect and enhance biodiversity, flora and fauna on the Grangegorman Site | Enhance the overall socio-economic profile and economic attractiveness of the Grangegorman Development Area | Improve the quality of life for the community based on the provision of accessible employment, recreational, educational, medical and other facilities. | Provide, maintain and improve access to public open space | Preserve and enhance the natural and historic landscape features within the Grangegorman site | Retention of existing good quality trees | Limit adverse impacts on air quality and in particular traffic generated emissions | Limit adverse impacts on climate through use of sustainable energy sources | Protect, conserve and enhance the architectural heritage on the Grangegorman site. | Identify, protect and conserve or document the archaeological heritage on the Grangegorman site in accordance with Best Practice Principles. | Provision of separate foul and surface water drainage to service the Grangegorman Area. | Provision for the reuse, recycling and conservation of water. | SEA Team Comments |
| **Project Vision** | | | | | | | | | | | | | |
| **Vision 1:** To satisfy the requirements of the Grangegorman Development Agency Act 2005. | 0 | ++ | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Meeting the statutory requirements of the GDA. |
| **Vision 2:** To develop a world class integrated campus for DIT – a flagship in development within higher education in Ireland, incorporating leading edge design, educational innovation and technology. | 0 | ++ | + | 0 | 0 | 0 | 0 | ++ | 0 | 0 | 0 | 0 | Leading edge design to take account of Environmental Receptors identifed in SEA. |
| **Vision 3:** To redevelop St Brendan's Hospital and other local clinical services on a state-of-the-art integrated healthcare campus which enables a high class service model to be delivered by the HSE. | 0 | 0 | ++ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Support the provision of high quality health services with a particular focus on the local Grangegorman population. |
| **Vision 4:** To generate community benefit through enhanced physical environment, sport and recreational facilities, arts and cultural spaces, social and educational amenities, and economic opportunity. | + | 0 | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Community facilities should ensure access for all. |
| **Vision 5:** To achieve excellence in architecture, urban design and sustainability. | 0 | 0 | + | 0 | + | + | + | 0 | + | 0 | + | + | Design to be sensitive to architectural heritage on site. |
| **Vision 6:** To develop a new City Quarter which links with and adds value to its surrounding neighbourhoods and the city in general and articulates Dublin City Council's vision for the City as expressed in the City Development Plan. | 0 | ++ | + | 0 | 0 | - | 0 | 0 | 0 | - | + | 0 | While the development will negatively impact on issues such as some trees on site this will be mitigated by positive impacts such as on quality of life and protection of landscape and architectural features. |
| **Vision 7:** To maintain a communication strategy throughout the delivery of the project that facilitates appropriate consultation. | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Promote community participation in redevelopment process. |

| KEY | Neutral | Very Positive | Positive | Negative | Very Negative | Uncertain |
|---|---|---|---|---|---|---|
| | 0 | ++ | + | - | -- | ? |

## MITIGATION MEASURES

Where required, Mitigation Measures have been proposed to offset and reduce any of the negative environmental impacts as a result of the implementation of the Strategic Plan detailed as follows:

### Cultural Heritage – Architecture

The GDA have undertaken to establish strategies for repair, intervention, adaption and extension to the historic structures and this shall include a detailed conservation plan or strategy. This strategy will provide proposals for the retention, restoration and enhancement of features and buildings of architectural merit within the new quarter at Grangegorman.

The *GDA Draft Strategic Plan* now incorporates policies which will promote the conservation and restoration of the architectural heritage on the site. These policies will also include a requirement for the appropriate reuse of these structures. These policies are as follows:

> "**Conservation Aim 2:** *To integrate the historic structures of significance within the site in a manner which ensures that they contribute to the generation of spaces and places in terms of both physical layout and character and to protect and conserve these for future generations."*
>
> *"**Conservation Objective 3:** GDA will seek to identify uses for the retained historic buildings which are compatible with their spatial layout, which will ensure full and useful occupancy and which will allow this important heritage to make a dynamic contribution to the cultural and functional character of this evolving urban quarter".*

### Biodiversity, Flora and Fauna

Implementation of the *GDA Strategic Plan* will result in the removal of invasive plant species including Giant Hogweed and Japanese Knotweed. These highly invasive alien species are of no ecological value. The plant material removed will be disposed of in such a manner so as to ensure that these species are not spread to other locations.

The baseline study on Biodiversity, Flora and Fauna identified a clear deficiency in information on bats located in the Grangegorman Site. While it was presumed that there was a strong possibility that bats were located on site no information was available to confirm this presumption. A decision was taken by the Agency to carry out a comprehensive bat survey. However due to climatic conditions in the autumn period Natura Environmental Consultants advised that the most appropriate time to carry this out would be in April/May 2009. Consequently the bat survey will be available pre-construction to enable arrangements to be made to protect or preserve bat populations.

It is proposed that the GDA will cooperate with Dublin City Council in the implementation of their Biodiversity Action Plan 2008-2012.

The GDA will incorporate ecological areas into the landscaping plan which will provide planting with native plant species attracting a variety of native bird and animal species. In particular ecological planting will be focused in the *Green Fingers Park* and *Ivy Avenue* and also in designated areas in *The Fields*.

The GDA Draft Strategic Plan contains a policy for the retention of mature trees and requiring the planting of additional trees.

> "***Design Objective 10:*** *GDA will seek to retain a substantial majority of the existing mature trees of quality and will implement a comprehensive planting programme of native species to effect a high quality sylvan public realm*".

**Air Quality**

The main impact on air quality arising from the *GDA Draft Strategic Plan* relates to transport and the increased traffic generation as a result of the implementation of the plan. It is clear that the redevelopment of the site for an educational and health campus will generate significant trip generations. The GDA Draft Strategic Plan provides an extensive Transportation and Movement section with a strong emphasis on sustainable transport and the use of walking, cycling and public transport for trips to and from the site and internally within the Grangegorman site.

The *GDA Draft Strategic Plan* does make provision for a limited volume of car parking within the site. However it is proposed that the number of spaces would be limited in such a manner so as to provide only for traffic movements which are absolutely necessary. Parking capacity will be determined by the Mobility Management Plan as detailed in GDA's policy as follows:

> "***Movement Objective 4:*** *GDA will seek to secure within the development a limited provision of formal car-parking space for users and visitors to the Quarter generally underground and distributed to mitigate junction impacts. A limited regime of managed on-street parking will be further appraised with a view to facilitating events and sports in particular and providing surface animation and passive supervision in non-peak periods. Parking capacity will not exceed that determined by the Mobility Management Plan."*

In order to minimise any negative impacts as a result of an increase in traffic in the area the GDA has undertaken to promote the provision of and access to sustainable modes of transport including public transport. These policies include the following:

> "***Movement Aim 1:*** *To ensure the provision of the necessary infrastructure and services to facilitate the maximum usage of sustainable modes of transport, such as walking, cycling and public transport."*

> "***Movement Objective 2:*** *GDA will develop a Mobility Management Plan for the Quarter and a comprehensive review of local traffic impacts and mitigation measures. The Mobility Management Plan will seek to minimise private car dependency."*

**Climatic Factors**

Heat and energy demands are expected to be the primary sources of greenhouse gas emissions associated with the implementation of the *GDA Draft Strategic Plan* and the redevelopment of the Grangegorman Quarter. The GDA have introduced policies to the Strategic Plan with the objective of reducing these emissions. These policies include the following:

> "***Sustainability and Energy Strategy Aim 2:*** *To ensure an energy management system which minimises carbon emissions and which has the capacity, in association with other sustainability measures, to be developed to permit the Quarter achieve Zero Carbon status"*
>
> "***Design Objective 7:*** *GDA will seek to ensure that a minimum sustainable building design standard of BRE A is achieved throughout the Quarter".*

**Material Assets - Infrastructure**

The proposed redevelopment of the Grangegorman site will significantly improve the provision of infrastructure in the area and in particular the provision of storm water and sewerage infrastructure. Currently the area around Grangegorman is serviced by a combined sewerage system. The redevelopment proposes to separate the foul and surface water lines and create two new separate systems that will connect independently into Dublin City Council's surrounding drainage system. This will necessitate the provision of a storm water drain connecting the Grangegorman site to the Dublin City Council network at Smithfield.

The provision of this separate system will result in the removal of a substantial volume of surface water from DCC's waste water treatment system. This will exceed the volume of foul water introduced as a result of the redevelopment and as such mitigates the impact of the redevelopment on this treatment system. The GDA have included the following policies in order to reduce the negative impacts of the Strategic Plan on the storm water and wastewater infrastructure.

> "***Site Engineering and Infrastructure Objective 4:*** *GDA will ensure all site drainage systems are built to meet SUDS (Sustainable Urban Drainage Systems) standards and in all respects meet the requirements of Dublin City Council Drainage Divisions standards and 'Code of Practice'."*

In relation to the demand for drinking water as a result of the implementation of the Strategic Plan, the GDA have introduced the following policy to reduce this demand for water.

> "***Site Engineering and Infrastructure Objective 6:*** *GDA will ensure the implementation of sustainable water use strategies and measures for each building development."*

*"**Site Engineering and Infrastructure Objective 5:** GDA will ensure that the site water supply network is built to Dublin City Council Water Division Standard for New Watermains in Private Property."*

**Landscape**

The baseline study identified the threats to the landscape as those which would be typically associated with any new development within a historic landscape. The key concerns relate to the visual impact, overshadowing, loss of character, impact on scenic amenity, loss of existing structures and sections of the boundary wall. The *GDA Draft Strategic Plan* contains a number of policies providing for the conservation of the historical landscape of the Quarter including the following:

**"Conservation Aim 1:** *To establish and articulate the historical, social, urban and architectural values of Grangegorman and to ensure these are suitably incorporated within the overall development."*

"**Design Aim 3:** *To relate the design of the Quarter to the existing neighbourhood character and to the strategic objectives of Dublin City Council for local area development"*

"**Design Objective 3:** *GDA will establish a lighting strategy for the Quarter to ensure that the ambient light, sense of place and architectural impacts are optimised."*

*"**Design Objective 4:** GDA will establish a signage and way-finding strategy to facilitate legibility, internal navigation and sense of place."*

In most cases the impacts of development on the landscape can only be assessed when there is sufficient detail in relation to the architectural form and scale of any proposed structure. As such the visual impact of a proposal is generally more appropriately assessed at planning application or planning scheme stage. Consequently the GDA will undertake that planning applications that have the potential to impinge upon the integrity of significant landscape resources will be accompanied by a visual impact assessment demonstrating the mitigating measures implemented to reduce negative impacts on landscape.

**Population and Human Health**

The negative impacts on population and human health identified in the baseline study relates primarily to the rapid influx of a large number of students to a previously, almost vacant site. However there are a large number of positive impacts associated with the development of the education and health facilities on the Grangegorman Quarter which significantly improves both the socio-economic standing and the quality of life for the local population and for the wider national community. As such it is considered that these are sufficient to mitigate any negative impacts on the local population as a result of the increase in activity in the general Grangegorman Area.

The *GDA Draft Strategic Plan* contains a broad range of policies which will improve population and human health indicators in the area. These include policies to provide for a primary school, public library, open access to parks and public open spaces, access to DIT indoor and outdoor sports facilities, access to education and health services as well as opportunities for complementary commercial businesses and employment opportunities.

In order to mitigate any potential negative impacts on the local population GDA have conducted an extensive consultation process in the preparation of the Strategic Plan. This consultation process will continue throughout the lifetime of the redevelopment process which is confirmed in the consultation section within the Strategic Plan which contains the following policy:

> *"**Consultation Objective 2:** GDA will operate its Communication Principles throughout the Project to ensure a consistently high level of maintained public consultation."*
>
> *"**Consultation Objective 1:** GDA will utilise a many-stranded consultation framework for disseminating comprehensive current information on the project and for identifying and addressing the needs and concerns of all stakeholders. Key features of this framework will be regular meeting of the Consultative Group, communication with the many registered groups, meetings with groups and individuals, the availability of a dedicated Communications Officer within the GDA and close liaison with the appropriate public bodies.*

These policies seek to ensure the operation of an effective public consultation process which will result in the identification and mitigation of any negative impacts on the local population as issues arise.

**Material Assets - Archaeological Heritage**

The redevelopment may result in some negative impacts on the archaeological heritage – particularly if there are previously undiscovered archaeological remains found during the redevelopment. However, to mitigate this, archaeological monitoring during the excavation and construction stage of development on the Grangegorman site will be undertaken by an archaeologist licensed by the Department of Environment, Heritage and Local Government and any artefacts found will be dealt with in an appropriate manner. In addition exploratory excavations have taken place throughout the site and archaeological remains have not been found on the site in any investigations to date.

The GDA would propose that detailed mitigation strategies in relation to archaeology should be proposed at planning scheme or planning application stage when there is more information available with respect to the form and scale of development proposed at a particular location within the Grangegorman site. To ensure the appropriate strategy is followed the GDA will ensure that pre-development archaeological testing, surveying monitoring and recording is carried out as appropriate.

The environmental assessment highlights a concern in relation to the creation of new entrances into the Grangegorman site and its impacts on archaeological heritage. To mitigate any negative impacts the GDA have proposed the following policy:

*"**Conservation Objective 2:** The GDA will seek to minimise intervention in the boundary wall so far as is practicable and consistent with achieving the Vision of a new and open quarter."*

**MONITORING**

The SEA Directive requires that the significant environmental effects of the implementation of the *GDA Draft Strategic Plan* are monitored. SEA Monitoring allows the actual impacts of the strategic action to be tested against those that were predicted, major problems to be identified and dealt with, and environment/ sustainability baseline information to be gathered for future strategic actions. It helps to ensure that the proposed mitigation measures are carried out, and facilitates the identification of unforeseen adverse effects at early stage, permitting appropriate remedial action in a timely fashion.

The *Environmental Report* proposes a monitoring programme to be implemented by the GDA in conjunction with the implementation of the *GDA Strategic Plan.* The GDA will be responsible for collating the monitoring data and will be responsible for preparing a Monitoring Report and implementing any corrective measures where required.

# Chapter 1

**1.0 INTRODUCTION**

1.1 Strategic Environmental Assessment
1.2 Consultation on SEA
1.3 Strategic Environmental Assessment Study Team

## 1.0 INTRODUCTION

The Grangegorman Development Agency[2] (The GDA) is required to undertake a Strategic Environmental Assessment (SEA) of the *GDA Strategic Plan* in accordance with the SEA Directive (European Directive 2001/42/EC). This SEA is being conducted in tandem with the preparation of the *GDA Strategic Plan,* which is a statutory plan specified under Section 12 of the *Grangegorman Development Agency Act (2005)* and which sets the framework for the development of a new city quarter focused on health and education provision on the grounds of St. Brendan's Hospital, Grangegorman, Dublin 7.

Under this Strategic Plan the Grangegorman Site, extending to almost 30 hectares and located in Dublin's North Inner City, will be entirely redeveloped to create century facilities to meet the needs of the Health Service Executive (HSE), Dublin Institute of Technology (DIT) and surrounding communities. The Strategic Plan includes a comprehensive land use and architectural framework plan including a full delivery methodology for all construction on the site, the setting out of procurement mechanisms and allied funding, and a planning strategy which underpins efficient delivery.

This Environmental Report has been compiled as part of the SEA of the *GDA Strategic Plan* and details the processes involved in the Environmental Assessment of the GDA *Draft Strategic Plan.* The Environmental Report details the methodology involved in carrying out this environmental assessment, reviews the *GDA Strategic Plan's* relationship with other plans at international, national, regional and local level, establishes an environmental baseline identifying existing environmental problems and issues, evaluates alternatives to the Strategic Plan, and details the environmental assessment of the *GDA Draft Strategic Plan*.

### 1.1 Strategic Environmental Assessment

Strategic Environmental Assessment (SEA) is a process for evaluating, at the earliest appropriate stage, the environmental quality and consequences of policy, plan or programme initiatives by statutory bodies. The purpose is to ensure that the environmental consequences of plans and programmes are assessed both during their preparation and prior to their adoption. The SEA process also gives interested parties an opportunity to comment on the environmental impacts of the proposed plan or programme and to be kept informed during the decision making process.

The EU Strategic Environmental Assessment (SEA) Directive (2001/42/EC) has a stated objective

> *"to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development, by ensuring that, in accordance with this Directive, an environmental assessment is carried out of*

[2] The Grangegorman Development Agency, St. Brendan's Hospital, Grangegorman, Dublin 7

*certain plans and programmes which are likely to have significant effects on the environment".*

The Grangegorman Development Agency is in the process of preparing a Strategic Plan for the Grangegorman Development Area as required in terms of section 12 of the *Grangegorman Development Agency Act 2005.* A decision was taken by the GDA that Strategic Environmental Assessment of this plan is required following a Screening process in accordance with the statutory requirements under *Article 9 of the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations, 2004.* A scoping process was undertaken to establish the scope and level of detail to be assessed as part of this environmental assessment involving extensive consultation with a number of interested environmental authorities.

### 1.1.1 Aim & Purpose of this Environmental Report

The purpose of this Environmental Report is to identify, describe and evaluate the likely significant effects on the environment of implementing the *GDA Strategic Plan* and reasonable alternatives taking account of the geographical scope of the Strategic Plan in line with *Article 5* and *Annex 1* of the SEA Directive.

### 1.1.2 Legislative Context

This Strategic Environmental Assessment of the *GDA Strategic Plan* is being prepared in accordance with the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations, 2004. *Article 12* of these regulations sets out the content and format of the Environmental Report.

The SEA Directive provides for considerable flexibility concerning the scope and level of detail to be included in the environmental report. Only the information listed in Annex I of the Directive that is reasonably required should be included, taking into account:

- Current knowledge and methods of assessment;
- The contents and level of detail in the plan;
- The stage of the plan in the decision-making process; and
- The extent to which certain matters are more appropriately assessed at different levels in the decision making process in order to avoid duplication of environmental assessment.

The *GDA Strategic Plan* forms part of a hierarchy of land use plans and as such the level of detail to be contained in the environmental report will vary from that of other land use plans in consideration of its level in this hierarchy. Consequently and in order to avoid duplication of assessment, a decision was taken by the SEA Team, informed by consultation with the environmental authorities through the scoping exercise, to focus the assessment to the issues identified as appropriate to this level in the planning hierarchy.

This decision on the required level of detail was made during the scoping stage of the SEA which involved consultation with a number of environmental authorities and a wide range of other bodies, together with a workshop with the specialist SEA Team and the EPA. While the issuance of a Scoping Report is not a formal requirement under the *European Communities Regulations,* it was decided that this should be prepared as a matter of good practice in SEA. A Scoping Report can inform relevant parties about the key environmental issues and the key elements of the Plan. In addition, the Scoping Report can be used as a tool to generate comments from relevant parties in identifying the scope and level of detail of the Environmental Report.

### 1.1.3 SEA and Financial Plans

*Article 3(1)* details certain plans and programmes which are excluded from a requirement to carry out SEA. This includes financial or budget plans and programmes. As such it was considered that it was not necessary to address the financial element of the *GDA Strategic Plan* within the SEA. Chapter 8 of the *Draft Strategic Plan* outlines the Project Funding and the aims and objectives within this Chapter have not been formally assessed against the environmental objectives. Notwithstanding this exclusion the GDA have undertaken to provide for the project funding in a manner which would avoid any negative impacts on the environment.

## 1.2 Consultation on SEA

As part of this process the GDA engaged in statutorily and additional non-statutorily required consultation. *Article 9* of the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 required that the GDA give notice to prescribed Environmental Authorities as specified in *Article 9(5)* prior to making a decision in relation to the requirements for Strategic Environmental Assessment of the *GDA Strategic Plan.* Further consultation was required as part of the Scoping Stage of this SEA in accordance with *Article 11.* In addition to these prescribed Environmental Authorities a number of other non-statutory agencies have been included in the consultation process for the SEA of the *GDA Strategic Plan.*

### 1.2.1 Statutory Environmental Authorities

The following Environmental Authorities were circulated with these Scoping Issues Papers and submissions invited in respect of the scope and extent of the environmental report:

**Department of the Environment, Heritage and Local Government**

- John Gormley, T.D., Minister for the Environment, Heritage and Local Government; and

- The Manager, Development Applications Unit, Department of the Environment, Heritage and Local Government

**Environmental Protection Agency (EPA)**

- Mary Kelly, Director General, Environmental Protection Agency
- Tadhg O'Mahony, Regional Inspectorate, Environmental Protection Agency

While Dublin City Council are not listed as a statutory Environmental Authority it was considered appropriate that they should be consulted as such, in light of the location of Grangegorman within the jurisdiction of Dublin City Council and the implications for the *Dublin City Council Development Plan 2005 - 2011*. As a result a copy of the consultation documents were circulated to the following.

**Dublin City Council**

- John Tierney, Dublin City Manager, Dublin City Council
- John O'Hara / Clair Caffrey, Dublin City Council, Planning Department

### 1.2.2 Non-Statutory Consultees

Input to the SEA process was requested from the following Non-Statutory Consultees as part of the Screening and Scoping Stage:

- An Bord Pleanála
- Dublin Regional Authority
- Forfás
- Mary Hanafin, T.D., Minister for Education and Science
- Eamon Ryan, T.D., Minister for Communications, Energy and Natural Resources
- Noel Dempsey, T.D., Minister for Transport
- Éamon Ó Cuív, T.D., Minister of Community, Rural and Gaeltacht Affairs
- The Heritage Council
- An Taisce
- An Chomhairle Ealaíon, (The Arts Council)
- Fáilte Ireland
- Health and Safety Authority
- Central Fisheries Board
- Eastern Regional Fisheries Board
- Údarás na Gaeltachta
- Railway Safety Commission
- Railway Procurement Agency
- Dublin Transportation Office
- ESB Head Office
- Health Service Executive
- The National Roads Authority
- Dublin Institute of Technology

### 1.2.3 Public Consultation

This Draft SEA Environmental Report will be put on public display in conjunction with the *Draft GDA Strategic Plan*. The public are being notified by means of advertisement in local and national newspapers and submissions sought with respect to this Strategic Environmental Assessment together with the content of the *GDA Draft Strategic Plan*.

Written submissions should be addressed to Ms. Nora Rahill, GDA and sent to the following address:

***The Grangegorman Development Agency***
St. Brendan's Hospital
Grangegorman
Dublin 7

Or alternatively, submissions may be e-mailed to @ggda. .

The closing date for receipt of comments or submissions in respect of either document is as advertised in the local and national newspapers.

### *1.* 1.2.4 Strategic Environmental Assessment Study Team

The Grangegorman Development Agency retained Tom Phillips + Associates to carry out the Strategic Environmental Assessment of the *GDA Strategic Plan*. Specialist consultants were retained to provide specialist inputs within key specific environmental areas identified as required during the SEA Scoping. The full SEA Team is outlined in table 1.1 below.

**Table 1.1 SEA Team**

| Company | Specialist Input |
|---|---|
| Tom Phillips + Associates | SEA Project Manager; Principal Drafting and Editing; Population & Human Health Assessment |
| Natura Environmental Consultants | Biodiversity, Flora & Fauna Assessment |
| AWN Consulting | Air Quality Baseline Assessment |
| Margaret Gowan & Co. Ltd. | Archaeological Assessment |
| Howley Hayes Architects | Architectural Heritage Assessment |
| Horganlynch Consulting Engineers | Soils; Water (Hydrology & Hydrogeology); Material Assets |
| Faber Maunsell Consulting Engineers | Traffic and Transportation |
| Mitchell & Associates | Landscape Assessment |

# Chapter 2

## 2.0 SEA METHODOLOGY

2.1 Screening
2.2 Scoping
2.3 Preparation of Environmental Report
2.4 SEA Statement

## 2.0 SEA METHODOLOGY

The methodology adopted for this SEA process is based upon the SEA Directive, experience gained and best practice scenarios since the introduction of the SEA Directive (2001/42/EC) in July 2004. Reference was also made to the DoEHLG Guidelines, EPA Guidelines, current literature in the subject area and various national and international published reports during the preparation of the *Environmental Report*. Regular interaction meetings were held with the SEA Team, the Strategic Plan Team and the Masterplan Team together with members of staff of the Grangegorman Development Agency. The following summarises the key stages in the overall process of the environmental assessment of the *GDA Draft Strategic Plan* and the preparation of this *Environmental Report*.

### 2.1 Screening

The Grangegorman Development Agency initially reviewed current European and Irish legislation in respect of the Environmental Assessment of certain plans and programmes and found that the *GDA Strategic Plan*, may qualify as a mandatory 'Plan' requiring a Strategic Environmental Assessment. The Agency subsequently reviewed the available environmental information in respect of the Grangegorman Development Area and the implications, as currently understood, of the preparation of the *GDA Strategic Plan*. As a result of these considerations it was the opinion of the Agency that the *GDA Strategic Plan*, as outlined below, is likely to have significant effects on the environment.

Further to this initial decision a four week consultation period was undertaken with a SEA Screening Consultation Document circulated on the March 2008 with the Environmental Authorities outlined in Section 1.2 above. In response to this consultation, submissions were received from 13 no. consultees, none of which disagreed with the Agency's initial decision that a Strategic Environmental Assessment of the *GDA Strategic Plan* was required.

Subsequent to this consultation period a meeting of the Board of the Grangegorman Development Agency was held on Friday April 2008 and the following was agreed:

> *"Taking into consideration the potential environmental impacts of the Strategic Plan and the possibility that it may qualify as a Plan or Programme mandatorily requiring SEA it is the decision of the Grangegorman Development Agency that a Strategic Environmental Assessment of the Grangegorman Strategic Plan will be required in accordance with the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations, 2004."*

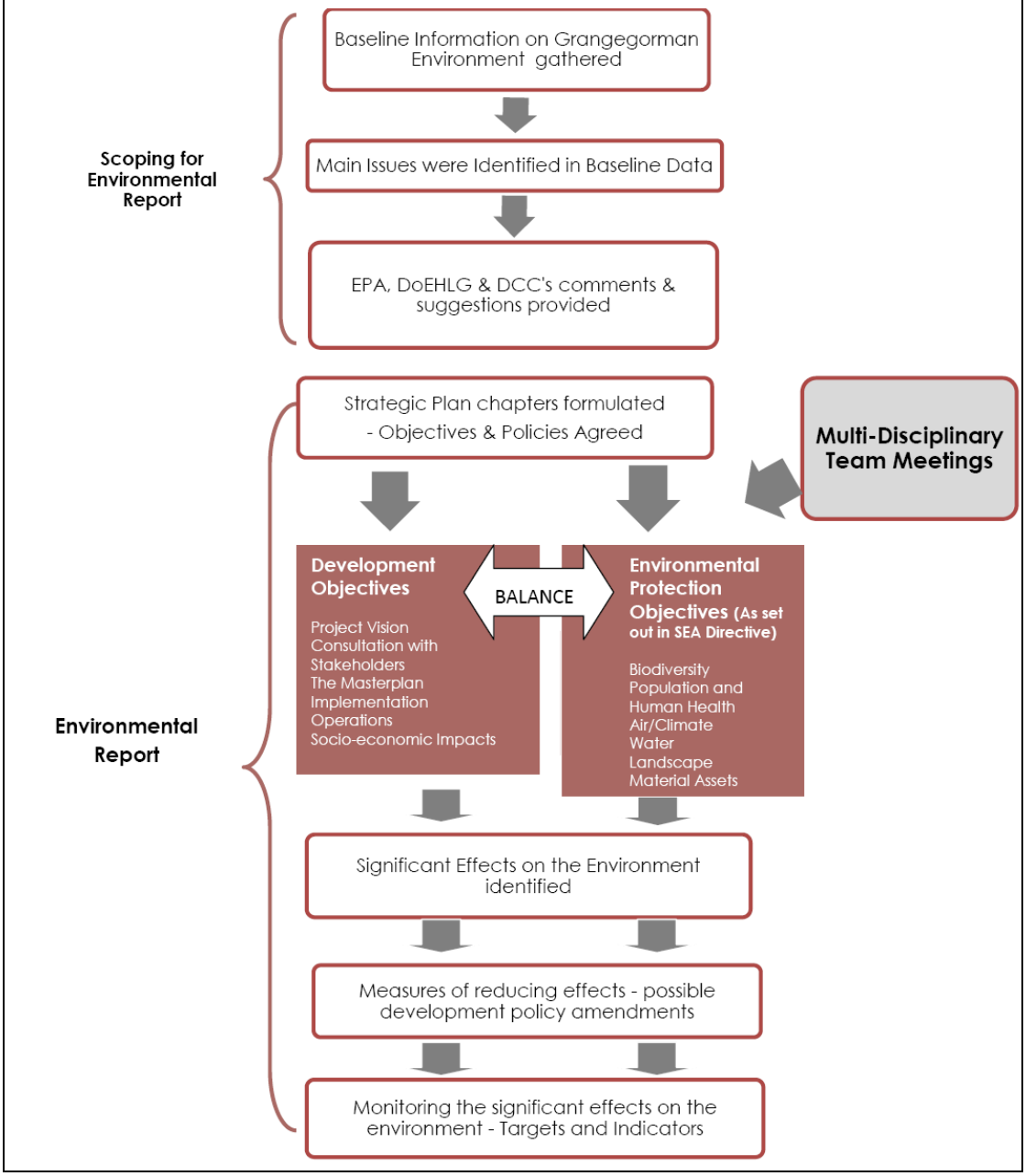
### 2.2 Scoping

The scope of environmental issues to be dealt with by the SEA together with the level of detail to be addressed was broadly decided on after preliminary data collection initially outlined in the Scoping Issues Papers. An initial SEA workshop was

held involving the entire SEA Team including a comprehensive review of the material to be included in this data collection.

The Issues Papers, subsequently prepared, were circulated to the identified Environmental Authorities and the issues extended to take account of submissions received from these Authorities. In particular the EPA and the NRA (National Roads Authority) provided detailed input and advice in response to this consultation. These submissions were taken in to account in the final SEA Scoping Report. Further to this a Scoping Workshop was held with the SEA Specialist Team, members of staff of the GDA and Mr. Michael Owens of the EPA.

**Figure 2.1**
**Summary of Scoping and Environmental Report Stage of SEA of *GDA Draft Strategic Plan***



### 2.2.1 Environmental Baseline Data

Baseline Data was collated and assessed in order to provide an accurate description of the current state of the environment in Grangegorman. The environmental receptors identified during the Scoping process were biodiversity, flora and fauna; population and human health; soil; water; landscape; air quality and climatic factors; noise and vibration; material assets (which includes traffic and transportation and services infrastructure); and heritage (archaeological and architectural). This includes the entire list of issues contained in *Annex 1(f)* of the Directive and fulfils the information requirements referred to in *Article 5* of the European Communities (SEA) Directive 2004.

In general, the data provided was current, available and relevant environmental information compiled by the various appropriate specialists within the SEA Team although some additional data was collected. Information gaps were identified and while not required under the relevant SEA legislation additional data was gathered to further inform the SEA. This specifically included information on air and noise on the Grangegorman site and surveys of existing conditions were commissioned by the GDA for each of these. In addition a shortage of information with respect to bat species on site was identified and a full bat survey commissioned. However as the survey was commissioned towards the end of the optimum survey period it was decided to defer the survey at this stage but rather this will be carried out in April 2009.

Following the review of the baseline information the following key strategic environmental issues were identified with relevance to the Grangegorman site:

- Architectural Heritage and the existing structures, building clusters and landscape features which will be impacted by the implementation of the Strategic Plan;
- Possibility of protected species of flora and fauna located on site with particular emphasis on bats;
- Traffic generation and the implications for noise and air quality as a result of the implementation of the Strategic Plan;
- Impacts on the urban landscape including visual impacts, overshadowing, loss of character, impact on scenic amenity etc.;
- Foul Drainage and the combined foul and surface water sewer system currently in place in Grangegorman; and
- The size and scale of the site indicating potential for archaeology.

## 2.3 Preparation of Environmental Report

This *Environmental Report* was prepared in tandem with the *GDA Draft Strategic Plan* and details the likely environmental effects of the implementation of the Strategic Plan having regard to the environmental baseline identified during the Scoping stage of the SEA. This assessment involves the identification of appropriate environmental objectives with associated targets and indicators, the assessment of alternatives to the draft plan and the detailed assessment of the objectives of the Draft Plan assessed against the established environmental objectives.

**Figure 2.2**
**Step-by-step Methodology in the Assessment of Environmental Effects**

### 2.3.1 The Environmental Objectives, Targets and Indicators

The methodology involved in the environmental assessment of the *GDA Draft Strategic Plan* required the establishment of environmental protection objectives for each environmental receptor identified as a key environmental issue at the Scoping Stage. Associated indicators and targets were identified for each of these environmental objectives. These objectives were then used to evaluate the plan alternatives, identify the preferred plan, and ultimately the *GDA Draft Strategic Plan*. The environmental objectives established for assessment of the *GDA Draft Strategic Plan* are as follows:

- Protect and enhance biodiversity, flora and fauna on the Grangegorman Site;
- Enhance the overall socio economic profile and economic attractiveness of the Grangegorman Development Area;
- Improve the quality of life for the community based on the provision of accessible employment, recreational, educational, medical and other facilities.
- Provide, maintain and improve access to public open space;
- Preserve and enhance the natural and historic landscape features within the Grangegorman site;
- Retain existing good quality trees;
- Limit adverse impacts on air quality and in particular traffic generated air emissions;
- Limit adverse impacts on climate through use of sustainable energy sources;
- Protect, conserve and enhance the architectural heritage on the Grangegorman site;
- Identify and protect the archaeological heritage on the Grangegorman site in accordance with Best Practice Principles;
- Provision for the reuse, recycling and conservation of water on site; and
- Provision of separate foul and surface water drainage to service the Grangegorman Area.

As part of this SEA, *Indicators* have been identified to act as representative examples of environmental data. Environmental objectives specify a desired direction for change (e.g. 'reduce air pollution'), while Indicators establish variables that can be measured over time and thus indicate the direction of this change over time. For each of the Environmental Objectives detailed above, appropriate Indicators have been provided and associated achievable Targets identified for each Indicator.

### 2.3.2 Consideration of Alternatives to the Strategic Plan

The Environmental Report is required to identify, describe and evaluate reasonable alternatives to the proposed plan taking into account the objectives and the geographical scope of the plan or programme. Three plan alternatives were examined in the course of the preparation of the Strategic Plan. These alternatives were developed by the Strategic and Masterplan teams and the details provided to the SEA Team for environmental assessment. The chosen preferred alternative was identified and later developed into the GDA *Draft Strategic Plan*.

### 2.3.3 Environmental Assessment of the GDA Draft Strategic Plan

The *Environmental Report* details the likely significant impacts on the environment as a result of the implementation of the GDA *Draft Strategic Plan*. Each of the Project Visions, Aims and Objectives contained within the *GDA Draft Strategic Plan* have been assessed against the Environmental Objectives established with regard to the Baseline Environmental Data. This methodology is then used to establish, firstly, the likely environmental effects of the implementation of the Strategic Plan and, secondly, the significance of these environmental effects having regard to the environmental baseline.

### 2.3.4 Mitigation

Where identified as required through the environmental assessment process, mitigation measures have been proposed to offset and reduce any of the negative environmental impacts as a result of the implementation of the Strategic Plan. These mitigations were included as amendments to the Strategic Plan including the addition of objectives, the amendment of proposed objectives and in some cases the omission of objectives found to have a significant negative impact on the environment.

### 2.3.5 Monitoring

A Monitoring programme has been devised as part of this SEA based on the *Indicators* applied to each environmental *Receptor*. A target has been set for each of these Receptors and the Grangegorman Development Agency will monitor and establish how close the Agency has come in achieving these targets at various stages during and after the lifetime of the *GDA Strategic Plan.*

## 2.4 SEA Statement

When the *GDA Strategic Plan* is adopted by the Grangegorman Development Agency an SEA Statement will be attached to the final document detailing how environmental considerations have been integrated into the Strategic Plan. This will highlight the main changes to the Plan which resulted from the SEA process. It will also detail how the preferred alternative was chosen and introduces environmental accountability, credibility and transparency into the strategic decision making process.

# Chapter 3

## 3.0 GDA DRAFT STRATEGIC PLAN AND SUMMARY OF KEY OBJECTIVES


3.1 Purpose of the *GDA Draft Strategic Plan*
3.2 The Grangegorman Development Agency
3.3 Description of Grangegorman Development Area
3.4 Grangegorman: A Brief History
3.5 GDA Draft Strategic Plan – Project Vision
3.6 GDA Draft Strategic Plan – Summary of Aims and Objectives

## 3.0 GDA DRAFT STRATEGIC PLAN AND SUMMARY OF KEY OBJECTIVES

A *GDA Draft Strategic Plan* has been prepared by the Grangegorman Development Agency as required under Section 12 of the Grangegorman Development Agency Act (2005). The Draft Strategic Plan includes a comprehensive land use and architectural framework plan, a full delivery methodology for all construction into the future, the setting out of procurement mechanisms and allied funding, and a planning strategy which underpins efficient delivery of the redevelopment of the Grangegorman site.

### 3.1 Purpose of the *GDA Draft Strategic Plan*

The *Grangegorman Development Agency Act, 2005* (the Act) provides the statutory framework for the preparation of the *GDA Draft Strategic Plan*. The general aim of the Act is to facilitate the redevelopment of the 29.4 hectares St. Brendan's Hospital site in Grangegorman, Dublin as a modern campus for the Dublin Institute of Technology (DIT), to provide the Health Service Executive (HSE) with upgraded primary health and social care facilities and to provide other facilities. The Act also provides for the establishment of the *Grangegorman Development Agency* and defines the functions of this Agency.

### 3.2 The Grangegorman Development Agency

The Grangegorman Development Agency is a statutory agency established in terms of the *Grangegorman Development Agency Act, 2005* to redevelop the former St. Brendan's Hospital grounds in Dublin City Centre as a new centre for the Dublin Institute of Technology (DIT), to provide community health facilities on behalf of the Health Services Executive (HSE) and other facilities including recreational and community facilities. This Strategic Plan is to be prepared by the Agency in consultation with a wide range of bodies and with the local community. The Grangegorman Development Agency's website provides further information on its operation, duties and activities and can be accessed at www.gda.ie.

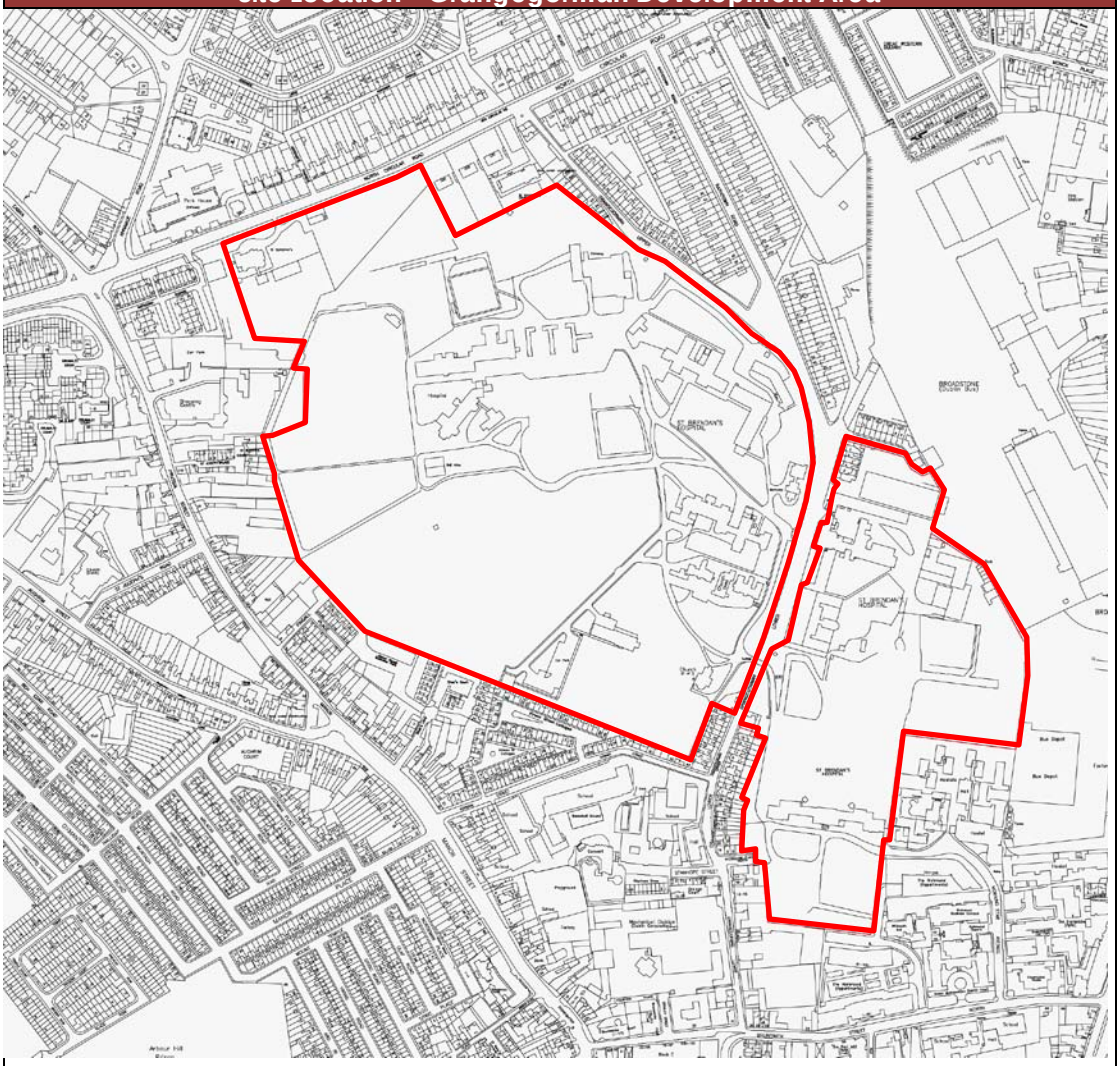
### 3.3 Description of Grangegorman Development Area

The extent of lands at Grangegorman, to which this Strategic Plan relates is as described in *Schedule 1* of the *Grangegorman Development Agency Act, 2005* and indicated in Figure 3.1.

Grangegorman is an area of approximately 29.4 hectares located in the Arran Quay Ward of Dublin in the district of Grangegorman, north of the River Liffey and south of the Grand Canal, approximately 1 kilometre from Dublin's City Centre. It comprises the site of St. Brendan's Hospital, a Psychiatric Hospital owned and run by the Health Services Executive. The site is split by the roadway known as Grangegorman Lower and Upper thus forming distinct plots of land approx. 21.3 hectares to the west and 8.1 hectares to the east. The Grangegorman site is

bounded by North Circular Road to the north, Prussia Street and Stoneybatter to the west, and Brunswick Street to the south.

**Figure 3.1**
**Site Location - Grangegorman Development Area**



**Source: Grangegorman Development Agency**

The site is divided into two precincts known as St. Brendan's West (21.66 hectares) and St. Brendan's East (7.77 Hectares) on either side of Grangegorman Upper. The northern perimeter of the site adjoins the North Circular Road. The eastern edge of the site is beside the Broadstone and Phibsboro bus depots, property used by Dublin Bus and Bus Éireann under the auspice of Córas Iompair Éireann (CIE).

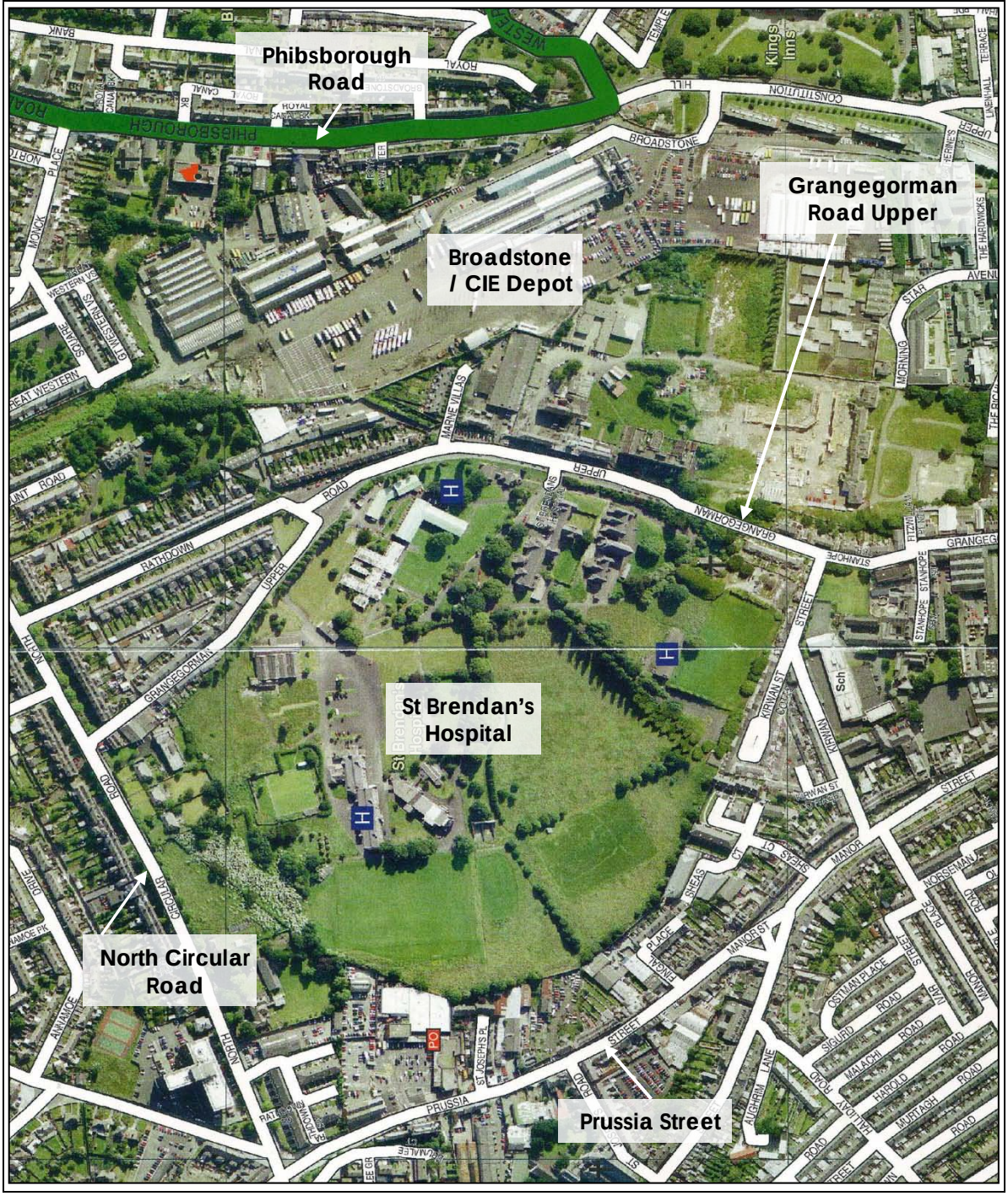
Much of the site is undeveloped and can be considered brownfield with approximately one third of St. Brendan's West currently used as active recreational playing fields. These lands contain many mature trees together with fourteen protected buildings under the current *Dublin City Development Plan, 2005-2011*, all of which date from the nineteenth century, or before. There is a high boundary wall which surrounds most of the site which means access to the lands is restricted. The development site currently has one operational entrance and one closed entrance. The lands are elevated on the north eastern part sloping gently down towards the south west.

The Grangegorman site has a diverse architectural, historical, and land use character, however the area is fragmented and cut off from surrounding residential neighbourhoods. These factors have served to limit expansion and to discourage the coherent development of the area. The site is located in the north Dublin inner-city in close proximity to the City Centre.

### 3.3.1 Historical Context and Relationship to the City

The Grangegorman site lies just north of the Smithfield Market and across the River Liffey from the historic medieval core and the expanding Digital HUB in the Liberties section of Dublin. Dublin City Council, the city's statutory planning authority, envisions building on the rich historic identity of Grangegorman by creating a high quality character area/urban district with strong physical linkage to surrounding areas. The site is located within 5 minutes walk of Stoneybatter and Kings Inns, within 10 minutes walk of Smithfield and Phibsborough, and within 20 minutes walk of Phoenix Park and the City Centre.

**Plate 3.1**
**Arial Photograph of Grangegorman Development Area**




Source: Grangegorman Development Agency

## 3.4 Grangegorman: A Brief History

The Grangegorman site has a long history in serving the people of Dublin since the establishment of the Houses of Industry for the poor in the 1770's. In 1810, the Governors of the House decided to build a separate institution to house mentally ill patients. The Richmond Asylum was opened to patients in 1814 and was designed by Francis Johnston, the foremost architect of the day. This building, now known as the Lower House, was built as a large quadrangle but only its southern section remains standing today.

Throughout the 19th century the Grangegorman site evolved and grew to become a large regional mental hospital occupying over 30 hectares of land. Additional buildings were constructed stretching to the west of the original establishment. At its peak, the hospital served over 2000 patients. In the 20th century changes in care of the mentally ill have moved away from large institutions, to the current situation where there are less than 100 patients on-site.

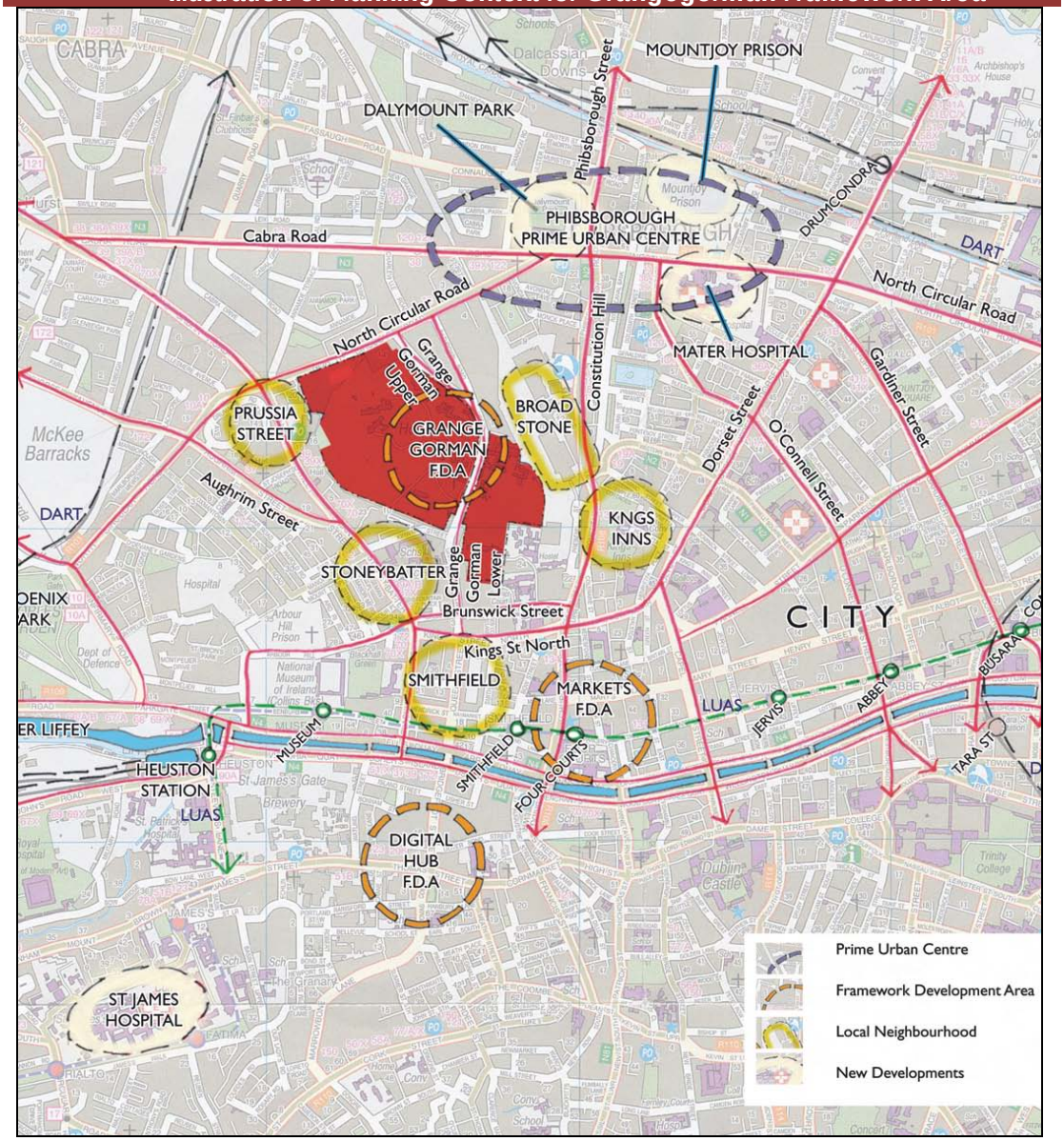
The main type of services currently offered at the hospital are long term and continuing care needs for people with high levels of psychiatric and social disability, specialised services for the homeless and mentally ill, as well as specialised rehabilitation services for those with high level of psychiatric need.

### 3.4.1 Planning Context – *Dublin City Development Plan 2005-2011*

Section 12 of the Grangegorman Development Agency Act (2005) provides for the preparation of a Strategic Plan which will include a written statement and a plan. The Act stipulates that the Strategic Plan will indicate objectives for the "*development of the Grangegorman site in the context of land usage in the vicinity and in a manner that is sympathetic with its urban setting" (Section 12(2)(k)).* Furthermore the Act requires that in preparing a draft of the Strategic Plan the Agency shall *"have regard to the development plan made by Dublin City Council".*

In its current Development Plan, Dublin City Council has designated the Grangegorman site, as well as the Broadstone site as a Framework Development Area 8 (FDA8). The plans for the development of the Grangegorman site must take account of, and be integrated with, other such plans for the social, economic, and physical renewal of the North West Inner City. It is intended that the development would provide a major stimulus to the regeneration of the Grangegorman area and create strong linkages to Smithfield, Stoneybatter, Broadstone, and King's Inn.

**Figure 3.2**
**Illustration of Planning Context for Grangegorman Framework Area**




**Source: Grangegorman Development Agency**

The Framework Development Area of Grangegorman (FDA8) identified in the *Dublin City Development Plan 2005-2011* sets out the following objectives[3]:

- to ensure that the development framework for Grangegorman/Broadstone provides for a high quality character area/urban district with strong physical linkage to the H.A.R.P. Area/Smithfield, Phibsborough, Manor Street and to the City Centre through Henrietta Street;

[3] Dublin City Development Plan 2005-2011, Chapter 14 - Land Use Zoning, page 115-116.

- to create a highly sustainable urban campus at Grangegorman as a new home for DIT with the capacity to develop strong links with other knowledge sector engines located elsewhere in the inner city;
- to develop a legible, attractive spatial and urban character which marries the provision of new urban space with high quality contemporary architecture and with the integration and re-use of protected historic structures and other buildings of architectural/artistic merit;
- to ensure that the existing open space is developed both for the benefit of the new campus and for adjacent existing communities;
- to co-operate with existing stakeholders in Broadstone to promote the development of a new range of higher value economic uses that would be complementary to the uses at the Grangegorman site;
- to provide for the physical integration of Grangegorman and Broadstone with each other and the city centre through the development of a series of physical connections, including pedestrian and cycle linkages and new transport infrastructure;
- to ensure that the requirements of the North Area Health Board (Health Services Executive) in the provision of healthcare facilities shall be accommodated in any future development of Grangegorman;
- to examine in conjunction with the relevant educational agencies including Educate Together the primary and secondary education uses to support this third level campus.

### 3.4.2 Land Use Zoning

The Grangegorman Development Area has been zoned Z12 Institutional Land the objective of which is *"To ensure the existing environmental amenities are protected in any future use of these lands"* under the current *Dublin City Development Plan 2005-2011.*

The land use zoning policies and objectives, relating to the Z12 zoning of the site, are set out in section 14.4.12 of the Development Plan Written Statement and identify these lands as follows: "*These are lands the majority of which are in institutional use, which could possibly be developed for other uses such as residential".*

With specific regard to the future development of objective Z12 lands the Development Plan states *"in considering any proposal for development on lands subject to zoning Objective Z12, other than development directly related to the existing community and institutional uses, Dublin City Council will require the preparation and submission of a master plan setting out a clear vision for the future for the development of the entire land holding. In particular, the master plan will need to identify the strategy for the provision of the 20% public open space requirements associated with any residential development, to ensure a coordinated approach to the creation of high quality new public open space facilities on these lands."*

## 3.5 *GDA Draft Strategic Plan* – Project Vision

The Project Vision detailed in the *GDA Draft Strategic Plan* establishes the overall project aims for Grangegorman. This has been summarised into the following key Visions:

**Project Vision**

- To satisfy the requirements of the Grangegorman Development Agency Act 2005.
- To develop a world class integrated campus for Dublin Institute of Technology – a flagship in development within higher education in Ireland, incorporating leading edge design, educational innovation and technology.
- To redevelop St. Brendan's Hospital and other local clinical services on a state-of-the-art integrated healthcare campus which enables a high class service model to be delivered by the HSE.
- To generate community benefit through enhanced physical environment, sport and recreational facilities, arts and cultural spaces, social and educational amenities, and economic opportunity.
- To achieve excellence in architecture, urban design and sustainability and protect the architectural heritage of the site.
- To develop a new City Quarter which links with and adds value to its surrounding neighbourhoods and the city in general and articulates Dublin City Council's vision for the City.
- To maintain a communication strategy throughout the delivery of the project that facilitates meaningful consultation.

### 3.6 *GDA Draft Strategic Plan* – Summary of Aims and Objectives

The various sections of the *GDA Draft Strategic Plan* include a set of aims and a set of objectives relating to these aims. The following details each of these aims and objectives.

#### 3.6.1 Consultation

**Consultation Aim** - To maintain an effective communication strategy throughout the delivery of the project enabling appropriate consultation.

**Consultation Objectives**

1. GDA will utilise a multi-stranded consultation framework for disseminating comprehensive current information on the project and for identifying and addressing the needs and concerns of all stakeholders. Key features of this framework will be regular meetings of the Consultative Group, communication with the many registered groups, meetings with groups and individuals, the availability of a dedicated Communications Officer within the GDA and close liaison with the appropriate public bodies.

2. GDA will operate its Communication Principles throughout the Project to ensure a consistently high level of public consultation.

3. GDA will operate its website as a comprehensive communication medium providing easy public access to all important news and information concerning the Project. GDA will utilise newsletters, public advertisements, social media outlets, and any other media it sees as appropriate as supplementary resources.

4. GDA will maintain close liaison with HSE, Department of Education and Skills, and DIT throughout the planning, design and delivery phases of the Project.

### 3.6.2 Design

**Design Aims**

***1.*** To realise the physical dynamic of the Grangegorman Project Vision.

***2.*** To achieve a continuity in urban design whilst permitting architectural diversity.

***3.*** To relate the design of the Quarter to the existing neighbourhood character and to the strategic objectives of Dublin City Council for local area development.

***4.*** To provide the HSE with excellence in healthcare design, ensure accessibility of health services accommodation to the local area, appropriate levels and combinations of privacy, security, openness and legibility within a generally low density – high amenity environment.

***5.*** To effect a fully integrated campus for DIT with optimal College inter-relationship and future-proof flexibility (and expansion capacity), appropriate levels and combinations of privacy, security, openness and legibility within a generally mid-density – high amenity environment.

***6.*** To organise the Quarter to provide cohesiveness, collegiality and connectivity and to establish nodes of activity with strong, legible and animated routes connecting them.

**Design Objectives**

***1.*** GDA will develop Architectural Design Guidelines to mandate the building design in the progressive development of the Quarter as per the Procurement Strategy.

***2.*** GDA will position the Primary School and its private play ground close to existing housing, (and the proposed elderly housing) and in a location convenient for child and parent access.

***3.*** GDA will establish a lighting strategy for the Quarter to ensure that the ambient light, sense of place and architectural impacts are optimised.

***4.*** GDA will establish a signage and way-finding strategy to facilitate legibility, internal navigation and sense of place.

***5.*** GDA will position the higher density mixed-use development at Broadstone Gate to reflect use and scale characteristics compatible

to future possible development of Broadstone, market requirements, likely phasing of development and the ambition of a Science and Technology Park.

***6.*** GDA will orient buildings to optimise sustainability, utility, urban design continuity, public space and route quality and building aesthetics.

**7.** GDA will seek to ensure that a minimum sustainable building design standard of BRE A is achieved throughout the Quarter.

***8.*** GDA will distribute student housing through the campus to encourage evening and weekend residential animation throughout, assist with passive supervision of the main arterial routes and the fields and to encourage vibrant use of public spaces.

***9.*** GDA will landscape the Quarter to incorporate key environmental characteristics in support of sustainable design including wind harvesting/cooling and storm water retention.

***10.*** GDA will seek to retain a substantial majority of the existing mature trees of quality and will implement a comprehensive planting programme of native species to effect a high quality sylvan public realm.

### 3.6.3 Conservation

**Conservation Aims**

1. To establish and articulate the historical social, urban and architectural values of Grangegorman and to ensure these are suitably incorporated within the overall development.

2. To integrate the historic structures of significance within the site in a manner which ensures that they contribute to the generation of spaces and places in terms of both physical layout and character and to protect and conserve these for future generations.

**Conservation Objectives**

1. GDA will retain, restore and re-use all of the Protected Structures with the exception of Connolly Norman Mews.

2. GDA will seek to minimise interventions to the boundary wall so far as is practicable and consistent with achieving the Vision of a new and open Quarter.

3. GDA will seek to identify uses for the retained historic buildings which are compatible with their spatial layout, which will ensure full and useful occupancy and which will allow this important heritage to make a dynamic contribution to the cultural and functional character of this evolving urban quarter.

4. GDA will establish strategies for repair, intervention, adaptation and extension to the historic structures. These will include general and specific strategies and will also include approaches and objectives for upgrading of historic structures for increased thermal efficiency and other initiatives to achieve the Plan Brief objectives for greater energy efficiency and sustainable development.

### 3.6.4 Movement and Transportation

**Transportation and Movement Aims**

1. To ensure the provision of the necessary infrastructure and services to facilitate the maximum usage of sustainable modes of transport, such as walking, cycling and public transport.
2. To ensure that the development facilitates internal routes and external connectivities to the advantage of the users of the Quarter, the local area in particular and the city of Dublin in general.

**Movement Objectives**

1. GDA will work with Dublin Bus, Bus Éireann, Irish Rail, RPA, Dublin City Council and other key transportation bodies to secure the optimum provision of public transportation connectivity and service for the Quarter and surrounding community and in particular to achieve an inter-modal transport hub at Broadstone Gate.
2. GDA will develop a Mobility Management Plan for the Quarter and a comprehensive review of local traffic impacts and mitigation measures. The Mobility Management Plan will seek to minimise private car dependency.
3. GDA will seek to ensure that the Quarter secures the necessary connections to perimeter public transportation services and walking/cycling routes.
4. GDA will seek to procure within the development a limited provision of formal car-parking space for users and visitors to the Quarter generally underground and distributed to mitigate junction impacts. A limited regime of managed on-street parking will be further appraised with a view to facilitating events and sports in particular and providing surface animation and passive supervision in non-peak periods. Parking capacity will not exceed that determined by the Mobility Management Plan.
5. GDA will ensure that the Quarter is pedestrian prioritised with excellent amenity for both cyclists (including secure parking) and pedestrians.
6. GDA will organise the street and walking route hierarchy to facilitate public pedestrian and cycle routes through the Quarter and to encourage links with other strategic routes throughout north Dublin.
7. GDA will ensure that the design of all routes, access points and building entrances are fully accessible and also will ensure a good distribution of accessibility parking throughout the Quarter.

### 3.6.5 Planning Strategy

**Planning Aims**

1. To secure planning permission to facilitate implementation of the Project and provide the future flexibility to allow for institutional development over time.

2. To achieve a high degree of confidence in planning outcomes and timeframe in order to:
   - Facilitate procurement processes
   - Allow predictable timeframe for disposal of DIT properties and phased occupation of the Quarter and
   - Create a best match with available finance and professional resources
3. To allow for early applications in respect of HSE facilities and schools.

**Planning Objective**

1. GDA will seek to secure SDZ status for the Grangegorman site and then develop the Masterplan into a Draft Planning Scheme.

### 3.6.6 Development Delivery Plan

**Delivery Aims**

1. To organise the sequence of development works to permit an orderly roll-out of the Project.

2. To achieve the earliest possible completion of the replacement health facilities for the HSE.

3. To progress the Project as quickly as possible consistent with economic efficiency, and appropriate mitigation of construction environmental impacts and subject to the constraints of planning and finance.

4. To move a minimum of 50% of the DIT student body into the new campus in a single first relocation from existing DIT accommodations and ensure concurrent provision of essential support services and amenities.

5. To enable the expeditious delivery of the permanent primary school.

6. To enable the delivery of DIT and HSE facilities that follow at later stages in an orderly manner without impairing occupied uses of the site.

**Delivery Objectives**

1. GDA will develop the HSE replacement accommodation as the first phase in order to meet the critical needs of local healthcare services and to allow the site to be vacated for the further development of the Quarter.

2. GDA will work with HSE to complete design briefs for the first phase accommodation and to develop a decanting strategy for current HSE and associated occupation of the site.

3. GDA will work with DIT to detail comprehensively their first relocation, to develop an aligned decanting strategy, and to refine arrangements for College movements to ensure alignment of academic and construction programmes.

4. GDA will develop a Construction Management Plan to ensure an integrated approach to construction logistics as well as to manage local impacts and ensure effective application of GDA consultation principles.

5. GDA will plan the location of construction compounds and the boundaries of DIT construction sites to enable the expeditious delivery of the primary school

### 3.6.7 DIT Property Disposal Strategy

**DIT Disposal Aims**

1. To maximise the disposal value of the DIT property portfolio to fund the project.

2. To effect disposals in a manner that supports the project phasing strategy and enables unimpeded functioning of DIT.

**DIT Disposal Objectives**

1. GDA will co-ordinate disposals and development to achieve an efficient and cost effective transfer from existing properties to the new buildings.

2. GDA to select a sale strategy for individual properties in terms of timing and form which will best exploit the then current market possibilities.

3. GDA to maximise the value of the DIT's portfolio and achieve the best possible prices and sale terms for individual properties.

### 3.6.8 Site Engineering and Infrastructure – Sustainable Solutions

**Site Engineering and Infrastructure Aims**

1. To ensure the provision of a sustainable supply of services - water, drainage, energy, telecommunications, security and waste disposal to meet the needs of the project generally and the Sustainable Energy Strategy in particular.

2. To provide a sustainable waste management system for the development of the Quarter to serve the end users requirements as detailed in the briefs with suitable expansion capacity.

**Site Engineering and Infrastructure Objectives**

1. GDA will mandate compliance with Department of the Environment 'Best Practice Guidelines' for Construction and Demolition Waste Management in the procurement of all construction works.

2. GDA will put in place a waste management strategy to ensure that best practice in this area is integrated across the site.

3. GDA will develop a centralised energy centre and utilities spine to convey essential services across the site such as will permit all building elements to connect.

4. GDA will ensure all site drainage systems are built to meet SUDS (Sustainable Urban Drainage Systems) standards and in all respects meet the requirements of Dublin City Council Drainage Division's standards and "Code of Practice".

5. GDA will ensure that the site water supply network is built to Dublin City Council Water Division *Standard for New Water Mains in Private Property*.

6. GDA will ensure the implementation of sustainable water use strategies and measures for each building development.

### 3.6.9 Complementary Mixed-Use Activities

**Complementary Mixed-Use Activities Aims**

1. To procure the development of commercial activities that will complement and support the core activities of DIT & HSE.
2. To procure the necessary accommodation to facilitate the Research and Development Strategy.
3. To maximise the leverage of employment opportunities from the complementary commercial activities.

**Complementary Commercial Activities Objectives**

1. GDA will seek to meet the needs of DIT in relation to accommodation for its student population by procuring circa 1,500-2,000 student accommodation units on campus
2. GDA will seek to procure an Incubator and Innovation and Technology Transfer Centre of circa 5,000m2.
3. GDA will seek to procure a range of mixed-use development at Broadstone Gate.
4. GDA will seek to procure Commercial Laboratories to commercialise DIT research.
5. GDA will seek to ensure the provision of retail and food outlets of a standard and range expected by the occupants of a modern higher education and medical quarter and in a fashion complimentary to existing local retail provision.

### 3.6.10 Development of Social Infrastructure Projects

**Development of Social Infrastructure Projects Aim**

To seek to secure, in addition to the general public amenity of the Project, social infrastructure through specific inclusion in the Project works of a public library, primary school and social housing for the mid-dependency elderly.

**Development of Social Infrastructure Projects Objectives**

**1.** GDA will work with Dublin City Council and DIT to secure the development of a local public library as an integral element of the DIT library complex.

**2.** GDA will work closely with the Department of Education and Skills and Educate Together to secure the development of a primary school (and related play-grounds) with capacity for approximately 400 pupils.

**3.** GDA will work with Dublin City Council, Department of Environment, Heritage and Local Government and the HSE to secure the development of approximately 25 units of social housing for independent living of the disabled and frail elderly.

### 3.6.11 Access to the Quarter

**Access Aim**

To allow the site to be opened up to adjoining areas to ensure permeability so that it can evolve as a new city quarter both for the stakeholders who are going to be located in the Quarter and for the people of Dublin.

**Access Objectives**

1. GDA to secure a major public point of entry to the Quarter through the CIE and DCC lands at Broadstone.

2. GDA to liaise with the HSE, regarding adjacent lands at N. Circular Rd., and with the developer Albion Properties regarding lands adjacent to the Lower House quadrangle, in relation to integrated pedestrian access to the Quarter.

3. GDA To explore opportunities for further entry points to the Quarter from Prussia St.

### 3.6.12 Research and Development Strategy

**Research and Development Strategy Aims**

1. To promote and enhance research, development, innovation and technology transfer and encourage new science and technology related business development and underpin the DIT institutional mission and national economic strategy and policy.

2. To significantly enhance the capacity of DIT to attract major research projects and permit a major growth in PhD output.

3. To generate high added-value economic activity in the north inner city.

**Research and Development Strategy Objectives**

1. GDA will seek to procure Dedicated Research Centre buildings and Research Institutes.

2. GDA will seek to procure an Incubator and Innovation and Technology Transfer Centre.

3. GDA will seek to procure a Science and Technology Park.

4. GDA will seek to procure Commercial Laboratories for the Quarter.

5. GDA will work with Enterprise Ireland and DIT to seek to secure start-up business space in the Science and Technology Park that would support local economic development.

6. GDA will maintain a database of Grangegorman Project related data as a medium for learning and public policy development

### 3.6.13 Public Amenity, Sports and Recreation

**Amenity Aims**

1. To ensure that the new Grangegorman Quarter is a publicly accessible environment.

2. To ensure that DIT achieves an excellent facility for student sports and recreation

3. To ensure that the public realm is designed to offer real and meaningful social amenity to the local area as well as those living, studying and working on the site.

4. To ensure that the campus sports facilities are designed and operated to provide both recreational amenity to the local community (particularly the schools) and field sports utility to existing user organisations.

**Amenity Objectives**

1. GDA will ensure the establishment of a management regime which provides open access to the Quarter.

2. GDA will ensure availability of high quality children's play areas at key points of community accessibility. These play areas will be maintained in a good clean and safe condition at all times.

3. GDA will seek to procure substantial provision for field sports.

4. GDA will seek to procure indoor sports facilities to include a swimming pool and provide a flexible multi-sport environment to meet the needs of DIT and provide capacity for HSE residential clients and community use.

5. GDA will work with DIT and consult with community groups to develop an appropriate operational regime to facilitate access by the community (particularly schools), existing user organisations, and HSE residential clients to indoor and outdoor sports and recreation amenities.

### 3.6.14 Arts and Culture Strategy

**Arts & Culture Aims**

1. To ensure that the Grangegorman Quarter enriches the cultural landscape of Dublin and in particular that the College of Arts and Tourism of DIT acts as an accessible medium for arts and cultural interaction with the local community and as an educational and development resource to the community.

2. To consolidate the establishment of the Grangegorman Quarter as a destination in its own right and linking this new city area with the Museum Quarter at Collins Barracks, Kilmainham and to the Digital Hub/NCAD/Thomas Street area.

**Arts and Culture Objectives**

1. GDA will seek to procure, in association with the College of Arts and Tourism, a significant arts venue which will have a very significant public purpose as well as an academic purpose.

2. GDA will operate the Per Cent for Art Scheme and seek to ensure an art dynamic to both the architecture and public realm throughout the Quarter. GDA will work with Dublin City Council and DIT College of Arts and Tourism to establish an arts strategy to address both static and event based art activities related to the Project.

### 3.6.15 Sustainable Energy Strategy

**Sustainable Energy Strategy Aims**

1. To achieve optimal sustainability and cost-efficiency in meeting the energy needs of the Quarter.

2. To ensure an energy management system which minimises carbon emissions and which has the capacity, in association with other sustainability measures, to be developed to permit the Quarter achieve Zero Carbon status.

3. To establish an energy management regime consistent with the Project Vision in general and the Estate Management Strategy in particular.

**Sustainable Energy Strategy Objectives**

1. GDA will establish a flexible mixed medium energy generation and management system with capacity to incorporate renewable fuel boilers, solar water heater panels, gas powered CHP and ESB power supply as the principal media with possible supplementation from geothermal heat, wind turbines and photovoltaic systems. The energy generation and management plan will be refined to reflect emergent technologies and opportunities up to the point of procurement.

2. GDA will develop a central energy centre to accommodate CHP and other energy plant.

3. GDA will, so far as is reasonably practicable, design in sufficient flexibility to the central plant and infrastructure that future technologies and external energy uses may be readily incorporated.

4. GDA will ensure that whilst HSE phase 1 may be operational before construction of the Energy Centre and plant, it may readily and without significant redundancy be connected into the central system subsequently.

### 3.6.16 Estate Management

**Estate Management Aim**

To ensure a sustainable maintenance management regime for the Quarter which upholds the Project Vision and is equitable amongst facilities occupiers in terms of authority and accountability.

**Estate Management Objective**

GDA will evolve the estate infrastructure, landscape and utility services systems in association with DIT and HSE and in close consultation with Dublin City Council and establish a maintenance management regime and related corporate structures as appropriate.

### 3.6.17 DIT Access Policy

**DIT Access Policy Aim**

GDA will work closely with DIT in planning, designing and delivering the Project so that the completed academic campus can support the delivery of DIT access policies.

**DIT Access Policy Objective**

GDA will deliver appropriate facilities for DIT including sporting and cultural facilities to support the delivery of DIT access policies.

### 3.6.18 Socio-Economic Impacts

**Socio-economic Aims**

1. To promote sustainable development, to maximise the potential of Grangegorman and to improve the quality of life of its residents.

2. To facilitate opportunities for the creation of employment in the Grangegorman area**.**

3. To protect, conserve and enhance the character, appearance and amenity of Grangegorman, especially as regards its landscape quality, the built and natural environment.

4. To enhance the provision of effective leisure, recreational, community and other facilities and services.

**Socio-economic Objectives**

**1.** GDA will work with DIT to seek to ensure the provision of its required educational facilities so as to create opportunities to sections of the community that have been unable to access third level education opportunities.

**2.** GDA will work with HSE to seek to ensure the improvement of primary healthcare services available to the population of the Grangegorman area.

**3.** GDA will work with transportation bodies to promote the Quarter through stronger communication links with road and rail networks to encourage and facilitate economic growth and contribute to wealth creation.

**4.** GDA will explore the means to create local employment opportunity in the construction of the Quarter.

**5.** GDA will seek to ensure the creation of employment in the Grangegorman area through the creation of jobs in the services sector.

**6.** GDA will seek to create an area attractive to new economic development to assist in achieving the socio-economic aims of the development.

**7.** GDA will work particularly with DIT and Enterprise Ireland to seek to help attract inward investment thus assisting in the economic regeneration of the area in achieving the socio-economic aims of the development.

**8.** GDA will seek to ensure the provision of leisure, recreational, community and other facilities and services in line with the socio-economic objectives to improve the quality of life for local residents, DIT students and staff, HSE staff and service users.

**9.** GDA will seek to ensure improvement in the provision of local facilities and services.

### 3.6.19 Funding Sources

**Funding Aim**

To secure the funding necessary to deliver the Project taking account of the Government Decision in 2002 and to align with Project Vision and in line with Delivery Strategy.

**Funding Objectives**

1. GDA will seek to realise the maximum contribution to project funding from judicious implementation of the DIT Property Disposals Strategy.

2. GDA will work closely with the appropriate authorities to determine the quantum of funds available under the Government Grant, the timing of the availability of capital funding and the extent of the translation into PPP Government Credits.

3. GDA will work closely with DIT and HSE to seek to ensure the maximum funding leverage from commercial funding sources including PPPs and commercial joint ventures towards the delivery of all facilities of the Project Vision.

4. GDA will work closely with Government Departments and the NDFA to examine supporting funding tools such as GDA borrowings, refundable grants and a student accommodation tax incentive scheme.

### 3.6.20 Procurement Strategy

**Procurement Aim**

To procure the various elements of the Project in a coherent and integrated process which delivers the quality of built environment and the operational and maintenance management regime appropriate to the Project Vision, supports the project phasing strategy, fits the project funding strategy and, subject to the foregoing, provides the best overall value for money.

**Procurement Objectives**

1. GDA will bundle elements in line with the Phasing Strategy and with reference to optimal procurement methodologies as determined by funding and cross funding aspects of the building elements.

2. GDA will ensure that procurement arrangements and contracts are designed to ensure delivery of a quality built environment and an operational and maintenance management regime appropriate to the Project Vision.

3. GDA will work closely with HSE, DIT, Government Departments, HEA and NDFA and other relevant parties to ensure the optimal procurement methodology that provides value for money for the State

# Chapter 4

## 4.0 RELATIONSHIP OF GRANGEGORMAN STRATEGIC PLAN WITH OTHER RELEVANT PLANS & PROGRAMMES

4.1 International Plans and Programmes
4.2 National and Regional Level Plans and Programmes
4.3 Local Level Plans and Programmes

## 4.0 RELATIONSHIP OF *GDA DRAFT STRATEGIC PLAN* WITH OTHER RELEVANT PLANS AND PROGRAMMES

The *GDA Draft Strategic Plan* has been prepared in the context of a wide range of other relevant plans and programmes and environmental objectives. The SEA Team has reviewed the relevant plans and programmes that will be given due consideration as part of the Strategic Environmental Assessment. These plans are detailed in the tables below.

### 4.1 International Plans and Programmes

**Table 4.1**
**International Plans and Programmes**

| Document Name | Main Policy direction for the Plan |
|---|---|
| **Agenda 21** | Local Agenda 21 is a process which facilitates sustainable development at community level. It is an approach, based on participation which respects the social, cultural, economic and environmental needs of the present and future citizens of a community in all its diversity and which relates that community and its future to the regional, national and international community of which it is a part. |
| **COMAH (Seveso II) Directive – European Communities (Control of Major Accident Hazards involving Dangerous Substances) Regulations (2000)** | The Seveso II Directive, sometimes referred to as COMAH, stipulates certain requirements for storage of relatively large quantities of substances classified as dangerous which is relevant to some of the laboratory uses which DIT are proposing on the Grangegorman site. |
| **Directive 2001/42/EC of the European Parliament and Council of June 2001 on the assessment of the effects of certain plans and programmes on the environment** | This Directive requires plan-makers to carry out an assessment of the likely significant environmental effects of implementing a plan or programme before the plan or programme is adopted. There are two statutory instruments which transposed the SEA Directive into Irish Law with the one relevant to the GDA Draft Strategic Plan being the *European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004, S.I. No. 435 of 2004* |
| **EU Environmental Action Programme (1998)** | The Environment Action Programme takes a broad look at the challenges of environmental policy and provides a strategic framework for the Commission's environmental policy up to 2012. It identifies four environmental areas for priority actions:<br>▪ Climate Change<br>▪ Nature and Biodiversity<br>▪ Environment and Health and Quality of Life<br>▪ Natural Resources and Waste |
| **European Biodiversity Strategy (1998)** | This strategy aims to anticipate, prevent and attack the causes of significant reduction or loss of biodiversity at the source. This will help both to reverse present trends in biodiversity decline and to place species and ecosystems, including agro-ecosystems, at a satisfactory conservation status, both within and beyond the territory of the European Union (EU) and will inform the national and local biodiversity plan of relevance to Grangegorman. |
| **European Spatial Development Perspective (1999)** | The main aim of the ESDP is to maintain the individual characteristics of the various countries within the EU while simultaneously increasing integration between the member states, socially and economically with the protection of the environment as a core element. |

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| | The ESDP has three underlying objectives:<br>1. Economic and Social Cohesion across the Community.<br>2. Conservation of natural resources and cultural heritage<br>3. Balanced competitiveness across the EU |
| **E.U. Water Framework Directive** | The Directive rationalises and updates existing water legislations and provides for water management on the basis of River Basin Districts (RBD's). |
| **Urban Waste Water Treatment Directive** | The objective of the Directive is to protect the environment from the adverse effects of discharges of urban waste water and of waste water from industrial sectors of agro-food industry. |

Other International Directives/ Conventions and Papers which were considered within this SEA are as follows:

- EU Urban Waste Water Treatment Directive;
- EU Major Accidents Directive;
- Energy Performance in Buildings Directive, 2005;
- Groundwater Directive;
- Surface Water Directive;
- Dangerous Substances Directive;
- Environmental Impact Assessment Directive;
- Bathing Water Directive;
- Habitats Directive;
- Birds Directive;
- EU White Paper on Renewable Energy (1997);
- Integrated Pollution Prevention Control Licensing;
- UN Convention of Biological Diversity;
- European Landscape Convention 2000;
- European Convention on the Protection of the Archaeological Heritage (Valletta Convention);
- Granada Convention for the Protection of the Architectural Heritage of Europe 1985 ;
- European Communities (Natural Habitats) Regulations, 1997;
- European Union Birds Directive (1979). *Council Directive 79/209/EEC of 2 April 1979 on the conservation of wild birds*;
- European Union Habitats Directive (1992). *Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora;*
- Flora (Protection) Order (1999). Statutory Instrument, S. I. No. 94 of 1999. Published by the Stationary Office, Dublin;
- Wildlife Act (1976). Wildlife Act, Ireland, 22 December 1976, No. 39 of 1976; and
- Wildlife Amendment Act (2000). Wildlife Amendment Act, Ireland, 18 December 2000, No. 38 of 2000.

Many of these documents listed above are referred to in *Chapter 6 Baseline Data and Environmental Issues for Grangegorman* in this *Environmental Report,* along with additional reference documents detailed in the *Reference and Contact Section* at the end of this report.

## 4.2 National and Regional Level Plans and Programmes

**Table 4.2**
**National and Regional Level Plans and Programmes**

| Document Name | Main Policy direction for the Plan |
|---|---|
| **National Spatial Strategy (2002)** | The National Spatial Strategy published in November 2002 is a twenty year planning framework designed to achieve a better balance of social, economic, physical development and population growth between regions. Its focus is on people, on places and on building communities. (The NSS is based upon the European Spatial Development Perspective). |
| **National Development Plan 2007-2013** | The National Development Plan (NDP) involves an investment of public, EU and private funds over the period 2000 - 2006. The funding is to provide for economic and social infrastructure, employment and human resources, productive sector as well as the Peace Programme. The Plan will involve significant investment in health services, social housing, education, roads, public transport, rural development, industry, and water and waste services. |
| **Sustainable Development – A Strategy for Ireland (1997)** | "Sustainable Development - A Strategy for Ireland" was published in 1997 by the Department of the Environment. The Strategy recognises the need for good spatial planning and the inclusion of sustainability concerns in urban and built environment policies. The Strategy recognises that the pattern and density of urban development has a major influence on travel patterns. The Strategy encourages high movement activities to locate in areas of maximum accessibility to public transport so as to reduce growth in transport demand. As a general principle, the minimisation of potential growth in transport demand will be incorporated as a leading consideration in land use planning. The Strategy also aims to ensure a clear demarcation between urban and rural land use, to help prevent urban sprawl and to encourage more sustainable development patterns in settlements. |
| **National Anti-Poverty Strategy (NAPS)** | The National Anti-Poverty Strategy (NAPS) is the government strategic initiative to place the needs of the poor and the socially excluded at the top of the national policy agenda. The NAPS recognises the unacceptable scale of poverty and its impact on those directly affected and on the wider society and it particularly notes the distinct spatial aspects of poverty in urban and rural areas. The strategy emphasises the importance of a cross-departmental policy response in dealing with the problem. |
| **Transport 21** | *Transport 21* is a strategy which will see €34.4 billion invested over the next 10 years in Irish transport. Connecting communities and promoting prosperity is the core aim of this strategy. The programme seeks to meet the transport needs of the country's citizens and also underpin our competitiveness into the future. A comprehensive and efficient transport network is essential if we are to continue to improve our living standards while remaining competitive in the global market place. Transport 21 recognises that quality, integrated transport is critical for competitiveness, return on investment and regional development. |
| **Regional Planning Guidelines for the Greater Dublin Area (2004 - 2016)** | Part B of the Regional Planning Guidelines provides a robust sustainable planning framework for the Greater Dublin Area within the context of the Planning and Development Act, 2000 and the National Spatial Strategy 2002-2020. It provides a long-term strategic planning framework for the development of Greater Dublin Area in the 12 year period up to 2016 within the NSS vision for 2020. The Regional Planning Guidelines have been devised and prepared having regard not only to the recommendations of the NSS for the Dublin and Mid-East Regions (the Greater Dublin Area), but also, and importantly, for the regions surrounding the GDA |

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|---|---|
| **National Biodiversity Plan (2002)** | This Plan was published in 2002. It aims to secure the conservation, including where possible the enhancement and sustainable use, of biological diversity in Ireland and to contribute to conservation and sustainable use of biodiversity globally. |
| **National Climate Change Strategy (2007)** | The strategy was published in 2007. Under Kyoto Protocol, Ireland agreed to a target of limiting its greenhouse gas emissions to 13% above 1990 levels by the first commitment period 2008 – 2012 as part of its contribution to the overall EU target. Ireland ratified the Kyoto Protocol on the May, 2002, along with the EU and all other Member States, and is internationally legally bound to meet the challenging greenhouse gas emissions reduction target. To ensure Ireland reaches its target under the Kyoto Protocol and, building on measures put in place following the publication of the first National Climate Change Strategy in 2000, the Government has published the new National Climate Change Strategy 2007 – 2012. |
| **Making Ireland's Development Sustainable (2002)** | This document identifies focuses mainly on the link between economic activity and pressures on the environment. Sustainable development emerged as an idea in the late 1980s and led to the Earth Summit in Rio de Janeiro in 1992. At the Summit, world leaders agreed to implement an action programme for sustainable development called, *Agenda 21*. The Irish Government published *Sustainable Development: A Strategy for Ireland* in 1997 which applies *Agenda 21* in Irish circumstances. *Making Ireland's Development Sustainable* reviews progress with sustainable development in Ireland since Rio, assesses the challenge we now face and sets out policies and actions to meet that challenge. |
| **Waste Management Plan for the Dublin Region 2005-2010** | The Waste Management Plan for the Dublin Region has been developed jointly by Dublin City Council, Fingal County Council and Dún Laoghaire Rathdown County Council. The plan establishes objectives and policies for waste management in the region, of which the Grangegorman Area forms part. The aim is to achieve a regional co-ordinated approach to waste management. Policies are aimed at prevention and minimisation of waste, reuse, repair and recycling. Objectives for household and commercial and industrial recycling are established. The aim is that the Dublin region will become self reliant in terms of waste management infrastructure. Policies for the management of construction and demolition waste and hazardous and priority wastes are included in the plan. |

| **Table 4.3<br>Other Relevant National Guidance** | |
|---|---|
| **Retail Planning Guidelines (2005)** | The Retail Planning Guidelines provide a comprehensive framework to guide Planning Authorities in preparing development plans, assessing applications for planning permission, and guide retailers and developers in formulating development proposals. Retail functions reflect four broad tiers of urban development. |
| **Architectural Heritage Protection Guidelines (2005)** | The guidelines include the criteria to be applied when selecting proposed protected structures for inclusion in the Record of Protected Structures (RPS), guidance to Planning Authorities on declarations and determining planning applications in relation to a protected structure, a proposed protected structure or the exterior of a building within an Architectural Conservation Area (ACA). It also contains supplementary detailed guidance to support Planning Authorities in their role to protect the architectural heritage when a protected structure, a proposed protected structure or the exterior of a building within an ACA is the subject of development proposals and when a declaration is sought in relation to a protected structure. |
| **OPW Guidelines on Flood Risk (2005)** | The OPW provide guidance on Planning Policy in relation to flooding. The policy which the Planning Authority should adopt is 'Development should not |

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|---|---|
| | itself be subject to an inappropriate risk of flooding nor should it cause or exacerbate such a risk at other locations'. This provides for run-off areas and the provision of appropriate drains. There should be set-back zones from the edge of watercourses. Minimum design standards should be applied, flood impact assessments to be required in certain developments and certification from a competent person that a development will not contribute to flooding within the relevant catchment. |
| **Landscape and Landscape Assessment Guidelines (2000)** | These Guidelines recommend the assessment method known as Landscape Character Assessment which favours a method of characterisation i.e. the discernment of the character of the landscape based initially on landcover – trees, vegetation, settlements, water etc. and landform which results from geological and geomorphological history. Added to this first level of assessment is a second layer described in the Guidelines as values, takes historical, cultural, religious and other understandings of the landscape into account. This method of assessment allows for a proactive approach to landscape so that it is viewed for its ability to accommodate developments, gives indicators as to which developments might be most suited, under what conditions and using what design criteria. |
| **National Inventory of Architectural Heritage (NIAH)** | The National Inventory of Architectural Heritage (NIAH) is a state initiative under the administration of the Department of the Environment, Heritage and Local Government. The purpose of the NIAH is to identify, record, and evaluate the post-1700 architectural heritage of Ireland, uniformly and consistently as an aid in the protection and conservation of the built heritage. NIAH surveys provide the basis for the recommendations of the Minister for the Environment, Heritage and Local Government to the planning authorities for the inclusion of particular structures in their Record of Protected Structures (RPS). |
| **Delivering A Sustainable Energy Future For Ireland - The Energy Policy Framework 2007 – 2020 (White Paper)** | This White Paper sets out the Government's Energy Policy Framework 2007-2020 to deliver a sustainable energy future for Ireland. It is set firmly in the global and European context which has put energy security and climate change among the most urgent international challenges. The White Paper sets out the actions to be taken in response to the energy challenges facing Ireland. The objective is to deliver a sustainable energy future, starting now, with a time horizon of 2020 but also looking beyond that. |
| **National Parks and Wildlife Service (NPWS)** | The role of National Parks and Wildlife Service (NPWS) is:<br>▪ To secure the conservation of a representative range of ecosystems and maintain and enhance populations of flora and fauna in Ireland,<br>▪ To implement the Act, 1976, the (Amendment) Act, 2000 and the Habitats and Birds Directives,<br>▪ To designate and advise on the protection of Areas of Conservation (SACs), Protection Areas (SPAs) and Heritage Areas (NHAs) having particular regard to the need to consult with interested parties,<br>▪ To make the necessary arrangements for the implementation of National and EU legislation and policies and for the ratification and implementation of the range of international Conventions and Agreements relating to the natural heritage,<br>▪ To manage, maintain and develop -owned National Parks and Reserves. |

## 4.3 Local Level Plans and Programmes

| Table 4.4<br>Local Level Plans and Programmes | |
|---|---|
| **Document Name** | **Main Policy direction for the Plan** |
| **Dublin City Development Plan 2005-2011** | The Dublin City Development Plan 2005-2011 sets out a planning strategy and framework to steer future growth in the city. The Development Plan sets out the spatial framework for the city which promotes the consolidation of the city, maximising efficient use of land and integrating land use and transport. The vision is to create a sustainable framework that allows for a co-ordinated development approach. The Grangegorman site is zoned Z12 Institutional Land (Future Development Potential) within the Plan and the objective of which is "*to ensure the existing environmental amenities are protected in any future use of these lands*". Paragraph 14.4.12 of the Development Plan identifies such zoned lands as lands which are in institutional use and which '*could possibly be developed for other uses...*' |
| **Dublin City Council Biodiversity Action Plan, 2008** | The Dublin City Biodiversity Action Plan 2008 recommends a programme of actions to protect and enhance the city's natural heritage. The Plan also selects a number of habitats and species for priority action and includes a summary of the range of priority habitats and species of international, national and local importance in the city. Designated sites include South Dublin Bay, North Dublin Bay, the Royal Canal, the Grand Canal, the River Liffey and the River Dodder. |
| **Dublin City Council Maximising the City's Potential: Draft Strategy for Intensification and Height, 2007** | A primary objective of Dublin City Council is to consolidate the city in order to achieve a compact urban form at the heart of the region. It is also acknowledged that a compact city must provide for an enhanced quality of life for both existing and future residents, whilst the same time marketing the city as the creative and economic engine of the state. Grangegorman is identified as a site for a *high intensity cluster* within this Draft Strategy. |

# Chapter 5

## 5.0 STRATEGIC ENVIRONMENTAL PROTECTION OBJECTIVES

5.1 Cultural Heritage – Architectural Heritage
5.2 Biodiversity, Flora & Fauna
5.3 Air Quality and Climatic Factors
5.4 Material Assets - Infrastructure
5.5 Landscape
5.6 Cultural Heritage – Archaeological Heritage
5.7 Population and Human Health

## 5.0 STRATEGIC ENVIRONMENTAL PROTECTION OBJECTIVES

The Strategic Environmental Protection Objectives are the environmental objectives developed by the SEA Team which provide for a methodical means of testing the environmental impacts of the proposed *GDA Draft Strategic Plan.* If complied with in full, environmental objectives would result in an environmentally neutral impact from implementation of the Strategic Plan.

These SEO's have been devised with reference to international, European Union, national and local level strategies and documents, and follow from the analysis of the Baseline assessment carried out in Chapter 6 of this *Environmental Report*. The objectives focus on the key environmental issues identified during the Scoping stage of the SEA. The various specialists which make up the SEA team have inputted to each of the objectives within their respective specialist fields. These environmental objectives were further improved during a workshop with the SEA Team which included input from the EPA.

As outlined the study of the Baseline Data identified the following key strategic environmental issues with relevance to the Grangegorman site:

- Architectural Heritage and the existing structures, building clusters and landscape features which will be impacted by the implementation of the Strategic Plan;
- Possibility of protected species of flora and fauna located on site with particular emphasis on bats;
- Traffic generation and the implications for noise and air quality as a result of the implementation of the Strategic Plan;
- Impacts on the urban landscape including visual impacts, overshadowing, loss of character, impact on scenic amenity etc.;
- Foul Drainage and the combined foul and surface water sewer system currently in place in Grangegorman; and
- The undisturbed nature of the site indicating potential for archaeology.

Taking the above, critical environmental receptors were identified as follows:

- Architectural Heritage;
- Biodiversity, Flora and Fauna;
- Air Quality and Climatic Factors;
- Infrastructure;
- Landscape;
- Population and Human Health; and
- Archaeological Heritage

*Indicator*s for each of the Environmental Objectives listed have also been developed through collaboration between the members of the SEA Team. These *'Indicators'* act as representative examples of environmental data and will facilitate the monitoring of the impacts of the *GDA Draft Strategic Plan.* Targets have been established for each of the objectives which set thresholds and limits for each environmental receptor. The *Environmental Objectives*, *Targets* and

*Indicators* for each identified environmental receptor have been provided as follows:

## 5.1 Cultural Heritage - Architectural Heritage

| | Environmental Objectives | Indicators | Targets |
|---|---|---|---|
| **Architectural Heritage** | Protect, conserve and enhance the architectural heritage on the Grangegorman site. | Numbers of protected structures retained on site | No adverse impact on all protected structures on site |
| | | Conservation Plan prepared for each protected structure and their curtilage. | Preparation of a comprehensive Conservation Plan for the entire site with a detailed fabric survey that will set out strategies for each of the protected structures and their curtilages. |
| | | Number of historic structures with appropriate new uses reflecting the historic nature of these buildings | The provision of appropriate and sustainable uses for each historic structure. |

## 5.2 Biodiversity, Flora & Fauna

| | Environmental Objectives | Indicators | Targets |
|---|---|---|---|
| **Biodiversity, Flora & Fauna** | Protect and enhance biodiversity, flora and fauna on the Grangegorman Site | Areas of new ecological linked green areas within the Grangegorman site. | The management of an area of green space in a manner which promotes a diversity of interdependent habitats and species. |
| | | Eradication of invasive alien species (i.e. giant hogweed and Japanese knotweed) currently on site and avoidance of the introduction of other invasive species to the Grangegorman Site. | Reduction or removal of all alien species from the site. |
| | | Identification of habitats of protected species and in particular bats and minimise interference with these habitats | Bat surveys carried out prior to development on site and where roosting sites are impacted alternative roosting sites such as bat boxes to be provided. |

## 5.3 Air Quality and Climatic Factors

| | Environmental Objectives | Indicators | Targets |
|---|---|---|---|
| **Air Quality and Climatic Factors** | Limit adverse impacts on air quality and in particular traffic generated emissions | Provision of cycling/walking infrastructure. | Air quality should not exceed the limit values provided in the Air Quality Standards Regulations 2002 (S.I. No. 271 of 2002). |
| | | Ready pedestrian access to public transport network. | |
| | | Development of a Mobility Management Plan to restrict car use. | Minimise car dependency. |
| | | No. of car parking spaces provided | Provision of a supply of car parking spaces below demand limiting number of cars brought on site. |
| | Limit adverse impacts on climate through use of sustainable energy sources | Preparation of an Energy management regime for the site which will incorporate renewable energies. Central energy centre for the site (including a CHP plant) to be developed. | Optimum building energy ratings to be achieved for residential and non-residential units. |

## 5.4 Material Assets - Infrastructure

| | Environmental Objectives | Indicators | Targets |
|---|---|---|---|
| **Infrastructure** | Provision of separate foul and surface water drainage to service the Grangegorman Area. | Construction of new surface water sewer connecting with the closest existing surface water line at Smithfield Plaza | Establishment of appropriate surface water drainage system for separate foul and surface water drainage. |
| | Provision for the reuse, recycling and conservation of water | Provision of grey water recycling, infiltration and filtration systems, retention ponds and swales within the site. | Implementation of SUDS (sustainable urban drainage systems. |

## 5.5 Landscape

| | Environmental Objectives | Indicators | Targets |
|---|---|---|---|
| **Landscape** | Provide, maintain and improve access to public open space | Area of public open space provided in the redevelopment of Grangegorman. Provision of areas of public open space accessible to all. | The provision of adequate open space which is accessible to all. |
| | Preserve and enhance the natural and historic landscape features within the Grangegorman site | Number or percentage of natural and historic landscape features preserved. | The preservation of as many natural and historic landscape features as possible, where appropriate, and their integration into the landscape proposal for the site. |
| | Retention of existing good quality trees | Percentage of existing good quality trees retained. | Retention of as many existing good quality trees on site as possible and where appropriate, including the transplanting of existing good quality trees to other locations around the site. |

## 5.6 Cultural Heritage - Archaeological Heritage

| | Environmental Objectives | Indicators | Targets |
|---|---|---|---|
| **Archaeological Heritage** | Identify, protect and conserve or document the archaeological heritage on the Grangegorman site in accordance with Best Practice Principles. | Number of archaeological features identified;<br><br>Numbers of archaeological features preserved.<br><br>Numbers of archaeological features recorded. | All archaeological features identified to be preserved or recorded. |

## 5.7 Population and Human Health

| | Environmental Objectives | Indicators | Targets |
|---|---|---|---|
| **Population & Human Health** | Enhance the overall socio economic profile and economic attractiveness of the Grangegorman Development Area. | Principal economic status;<br>Levels of educational attainment at local and national level; and<br>Unemployment levels. | Provide improved employment opportunities, during both the construction and operational phases.<br><br>Increase economic activity within the general Grangegorman Area.<br><br>Increase undergraduate and postgraduate numbers at DIT. |
| | Improve the quality of life for the community based on the provision of accessible employment, recreational, educational, medical and other facilities. | Levels of employment creation; access to medical, educational and recreational facilities; and improvements in educational standards at a national level. | Provide access to educational and health facilities for communities. |

# Chapter 6

**6.0 BASELINE DATA AND ENVIRONMENTAL ISSUES FOR GRANGEGORMAN**


6.1 SEA Study Area
6.2 Biodiversity, Flora & Fauna
6.3 Population and Human Health
6.4 Soil
6.5 Water
6.6 Landscape
6.7 Air Quality and Climatic Factors
6.8 Noise and Vibration
6.9 Material Assets
6.10 Cultural Heritage (Architectural and Archaeological)

## 6.0 ENVIRONMENTAL RECEPTORS AND KEY ENVIRONMENTAL ISSUES RELATING TO THE GRANGEGORMAN AREA – BASELINE ENVIRONMENTAL DATA

### 6.1 SEA Study Area

The environmental baseline of the Grangegorman area of Dublin City is described in this section. The baseline, together with the Environmental Objectives, detailed in Section 5.0 of this *Environmental Report*, is used to identify, describe and evaluate the likely significant environmental effects of implementing the *GDA Draft Strategic Plan.*

The environmental baseline encompasses the components of biodiversity, flora and fauna, population, human health, soil, water, air and climatic factors, material assets, cultural heritage and landscape together with the interrelationship between these components.

The study area for the SEA of the *GDA Draft Strategic Plan* is that depicted in Figure 6.2 below and as located within the red-dashed line in Figure 6.1.

**Figure 6.1**
**General Location of Grangegorman Site within Context of Dublin City**

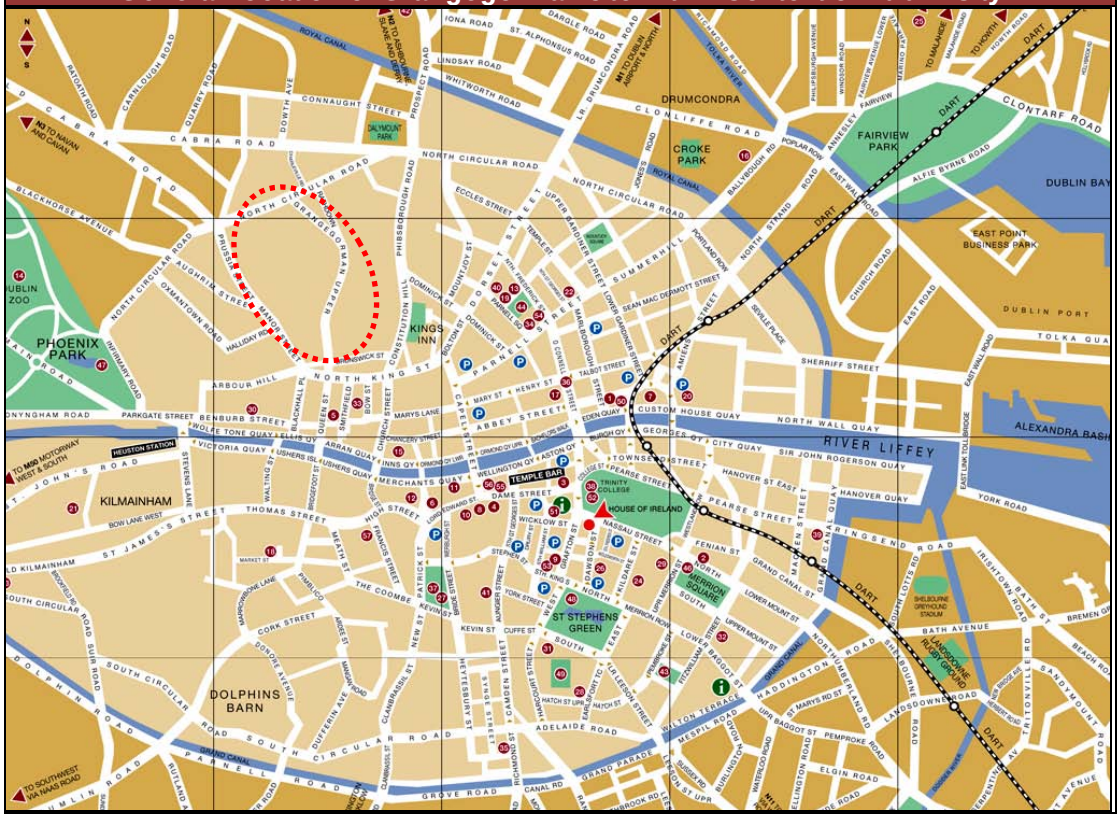


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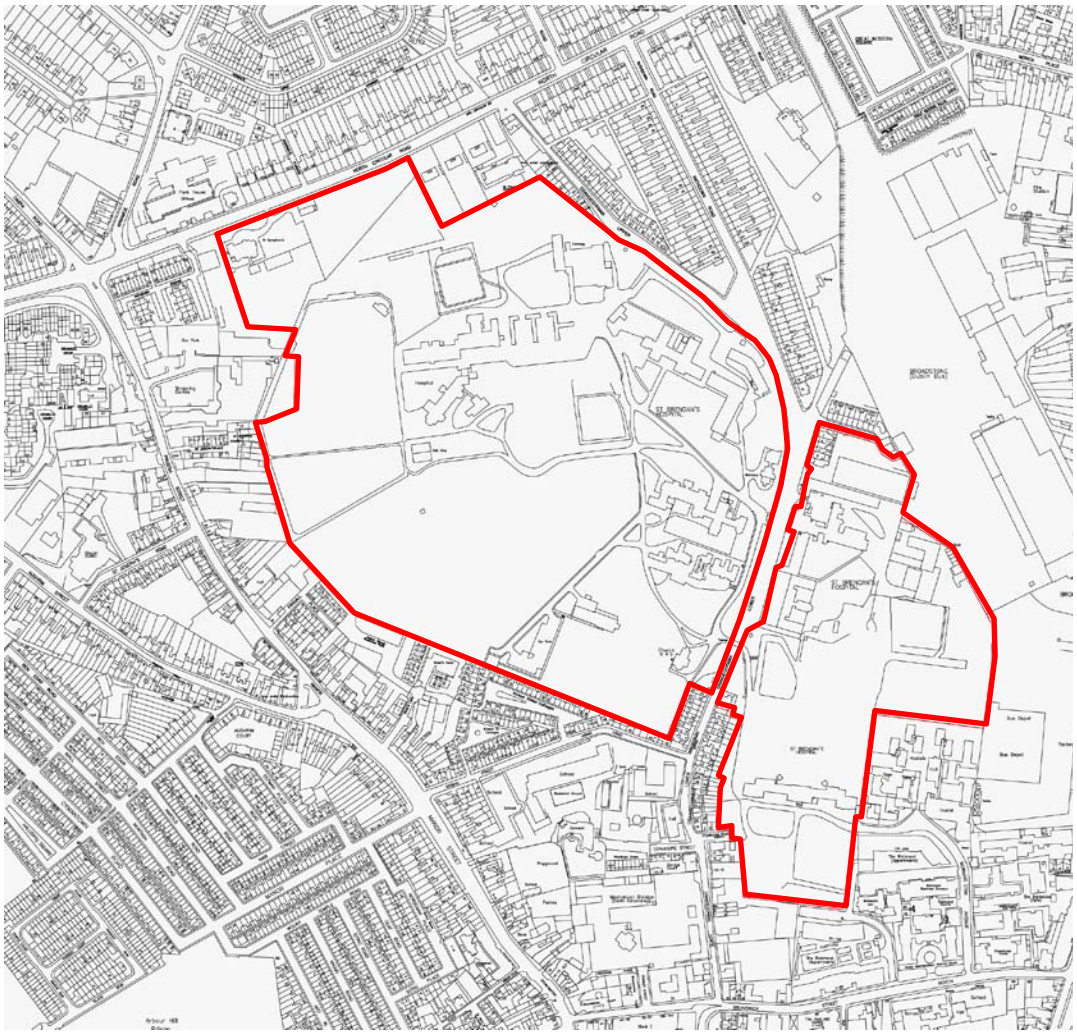
**Figure 6.2**
**Administrative Boundary of *GDA Draft Strategic Plan***



**Source: Grangegorman Development Agency, 2008 - Annotated and Reproduced under Tom Phillips + Associates Ordnance Survey Licence No. AR0099508**

In accordance with '*Implementation of SEA Directive (2001/42/EC): Assessment of the Effects of Certain Plans and Programmes on the Environment - Guidelines for Regional Authorities and Planning Authorities'* (DoEHLG, November 2004) an 'Environmental Assessment' of a Land Use Plan must examine the significant effects of the proposed plan on the environment including short, medium and long-term effects; permanent and temporary effects; positive and negative effects; and secondary, cumulative and synergistic effects on issues mentioned above. The baseline data establishes the current existing state of the environment and is the basis to assess and predict potential impacts.

## 6.2 Biodiversity, Flora and Fauna

This element of the *Environmental Report* was prepared by Natura Environmental Consultants, on behalf of Grangegorman Development Agency and seeks to inform the ecology element of the Strategic Environmental Assessment of the *GDA Draft Strategic Plan*.

### 6.2.1 Current Situation

Biodiversity, or biological diversity, is the term used to describe the wide variety of natural life on Earth. It encompasses all flora and fauna, as well as the very many habitats in which all the species exist. Within the context of the grounds of St. Brendan's Hospital, Grangegorman, biodiversity refers to both semi-natural habitats and habitats created or extensively modified by human influence, as well as the wide range of plant and animal species that can be found there.

St. Brendan's Hospital is located in Grangegorman, Dublin 7, approximately 1km north of the River Liffey. It is divided into two lots – St. Brendan's West and St. Brendan's East. These sites are separated by Rathdown Road. St. Brendan's West is the larger of the two lots, at approximately 21.66ha, while St. Brendan's East is approximately 7.77ha in size. Overall the site consists of a mix of sports pitches and amenity grassland, buildings and other hard surfaces, scattered trees and shrubs, treelines, and disturbed ground. No watercourses are present within the site.

### 6.2.2 Habitats in Grangegorman

The main habitats on the site are described as follows:

*St. Brendan's West*

The northern and eastern parts of St. Brendan's West comprise a mix of buildings and artificial surfaces, dry grassland and amenity grassland, which includes a variety of scattered trees and parkland and a mix of ornamental and non-native shrubs.

Occasional flower beds and borders are present. For the most part the shrubs are dense and mature, with very little herbaceous vegetation underneath, due to heavy shading. There is an area of semi natural woodland present along the eastern boundary and around the disused Church of Ireland church in the south east of the site.

In the centre of the site, between the playing pitches to the south and the buildings to the north, is an area of broadleaved woodland consisting of holm oak (*Quercus ilex*). In this area there is almost no shrub layer or ground flora, other than ivy (*Hedera helix*), bramble (*Rubus fruticosus* Agg.) and elder (*Sambucus nigra*) due to the heavy canopy.

In the north western part of St. Brendan's West is an area of disturbed ground that has been used to dump spoil in the past. This area has been very extensively colonised by alien species, mainly giant hogweed (*Heracleum mantegazzium*), with

Japanese knotweed (*Reynoutria japonica*) also present. These plants are also to be found occasionally along the western boundary of the site. A small abandoned garden/nursery is to be found in the south eastern corner of St. Brendan's West.

Immediately adjacent to the north western part of the site is an area known as St. Dympna's. This is separated from the main study area by a 3m high stone wall. St. Dympna's includes buildings and a garden with scattered trees. The area of disturbed ground colonized by Japanese knotweed and giant hogweed is also present to the north of the wall.

The southern and western parts of St. Brendan's West comprise large areas of amenity grassland. These include several playing pitches. Treelines, consisting mainly of horse chestnut (*Aesculus hippocastanum*) are present. In some areas larger groups of trees are found, with the understorey vegetation limited to bramble, ivy, and patches of nettles (*Urtica dioica*). Sycamore (*Acer pseudoplatanus*) saplings, as well as hawthorn (*Crataegus monogyna*) and elder form the shrub layer in this part of the site.

*St. Brendan's East*

The northern part of St. Brendan's East comprises a mix of amenity grassland, buildings and hard surfaces.

The major part of the site, in the centre, consists of a mix of hard surfaces and derelict buildings, with large areas of Buddleia (*Buddleia davidii*) scrub and areas of spoil. Scattered trees (sycamore, ash (*Fraxinus excelsior*), rowan (*Sorbus aucuparia*), horse chestnut), treelines (primarily Lombardy poplar (*Populus nigra*)) and various shrubs are to be found along the perimeter of the site.

To the south of the remaining wing of the St. Brendan's Hospital building is a small area of amenity grassland and dry meadow grassland as well as some disturbed ground.

No watercourses flow through the site. The nearest watercourses of note are the River Liffey, approximately 1km to the south and the Royal Canal, approximately 1km to the north.

Rare and Protected Flora in Grangegorman

There are no records of rare or protected flora in St. Brendan's. Due to the types of habitats present it is unlikely that any rare species listed on the Irish Red Data Book: Volume 1 – Vascular Plants (Curtis & McGough 1988) or species protected under the Flora Protection Order (1999) are present within the site.

Fauna in Grangegorman

*Mammals*
Grey squirrel and fox are present on the site. Rodents, such as brown rat and field mouse are likely to be present and hedgehog may also occur. Hedgehogs are protected under the Wildlife Act, 1976 and the Wildlife (Amendment) Act, 2000.

Several of the mature trees within the site have an extensive covering of ivy, and are potential bat roosts (PBRs). Many of the buildings on the site may also be potential bat roosts. All Irish bats are listed under Annex IV of the Habitats Directive and Appendix II of the Bern convention as species requiring strict protection.

*Birds*
A good range of common bird species is present on the site. Species include magpie, rook, jackdaw, hooded crow, blackbird, song thrush, mistle thrush, wood pigeon, pied wagtail, robin, blue tit, great tit, house sparrow, starling and wren. These species are typical of urban open spaces, parks and gardens.

Conservation Sites in the General Area

The site is not covered by any nature conservation designations. Two sites proposed as Natural Heritage Areas (pNHAs) are situated within a 3km radius of St. Brendan's. The term Natural Heritage Area is a statutory designation under the Wildlife (Amendment) Act 2000. The nearest European designated site is Dublin Bay (approximately 5km east of the site), which is subject to a range of nature conservation designations, namely pNHA, candidate Special Area of Conservation (cSAC) and Special Protection Area (SPA).

Sites that are designated as either SPA or SAC form part of a Europe-wide network of sites designated for nature conservation known as the 'Natura 2000' network. This is a network of a wide range of habitats that is important for the conservation of nature at a European level. SPAs are designated under the EU Birds Directive (79/409/EEC) and SACs are designated under the EU Habitats Directive (92/43/EEC), as transposed into Irish law in the European Union (Natural Habitats) Regulations of 1997.

These sites, identified and designated by the National Parks and Wildlife Service, are considered to be of national or international importance for nature conservation (Table 6.1).

**Table 6.1 Designated Conservation Areas within 3km of the site**

| Site Code | Site Name | Designation | Distance from site |
|---|---|---|---|
| 002103 | Royal Canal | pNHA | 1 km north |
| 002104 | Grand Canal | pNHA | 2.5 km south |
| 000210 | South Dublin Bay | CSAC/pNHA | 5km East |
| 000206 | North Dublin Bay | CSAC/pNHA | 5km East |
| 004024 | Sandymount Strand/Tolka Estuary | SPA | 5km East |
| 004006 | North Bull Island | SPA | 5km East |

### 6.2.3 Opportunities Identified

Although there are no nationally or internationally designated areas for nature conservation located on or within the vicinity of St. Brendan's, there are some habitats of local ecological significance, including areas of dry grassland, trees and shrubs. As part of any redevelopment of the lands at Grangegorman there is the opportunity to create a new and varied ecological environment. This could include, for example, wildflower gardens and wetland habitats as well as green roofs and green walls. These features, combined with strategies including Sustainable Urban Drainage Systems (SUDS) can enhance not only the ecology of St. Brendan's, but can also enhance the sustainability of the whole development. The Dublin City Council Biodiversity Action Plan (2008) should be referred to when planning the redevelopment of the site.

The buildings on site, particularly older, stone buildings have the potential to hold roosting bats. Although buildings may be demolished or renovated as part of the development, bat boxes can be incorporated into new buildings. The need for bat boxes will need to be assessed following an appropriately targeted bat survey.

Apart from the opportunities to retain or recreate habitats, an additional benefit of any redevelopment of Grangegorman will be the removal of an extensive area of invasive alien species including giant hogweed and Japanese knotweed, in the northwestern part of the site.

Summary of Key Opportunities

- There is an opportunity to enhance and augment the existing habitats through the use of SuDS and by setting aside areas within the site for the specific purpose of creating suitable new ecological habitats;
- There is an opportunity to eradicate invasive alien plant species from the site;
- There are potential roosting sites for bats (in trees and buildings) throughout the site. These can be enhanced as part of the proposed redevelopment.

### 6.2.4 Information Gaps and Limitations Identified

A baseline survey of habitats, flora and fauna was conducted in March 2007. A resurvey will be undertaken in order to ensure that an up to date record of the ecological environment is maintained.

The baseline study on Biodiversity, Flora and Fauna identified the need for information on bats located in the Grangegorman Site. While it was presumed that there was a strong possibility that bats were located on site no information was available to confirm this presumption. Following a SEA Scoping Workshop held on August 2008 a decision was taken to carry out a comprehensive bat survey. However due to climatic conditions in the autumn period Natura Environmental Consultants advised that the most appropriate time to carry this out would be in April/May 2009. Consequently the results of the bat survey will be

available preconstruction to enable arrangements to be made to protect or preserve bat populations.

### 6.2.5 Key Significant Environmental Issues Identified

**Key Significant Environmental Issues Identified – Biodiversity, Flora and Fauna**

The playing pitches, buildings and areas of artificial surfaces and *Buddleia* scrub are of low ecological importance. The dry grassland, hedgerows, treelines, trees, shrubs and broadleaved woodland present on the site are of moderate local ecological value.

The north western part of the site has been colonised by giant hogweed and Japanese knotweed. These highly invasive alien species are of no ecological value and will have to be removed as part of any redevelopment of the site.

Overall the site is of low to moderate local ecological value. However, it is an important site for urban wildlife, particularly birds. Given the close proximity of the site to the centre of Dublin City, the local value of remaining semi-natural habitats is greater than would otherwise be the case. The site is not covered by any nature conservation designation.

The buildings and mature trees have high potential as bat roosts and foraging areas. This will be confirmed in a pre-construction bat survey

## 6.3 Population and Human Health

### 6.3.1 Introduction and Methodology

This section of the Strategic Environmental Assessment (SEA) provides an assessment of the potential Population and Human Health impacts associated with the development of educational, health and other facilities in the lands covered under the scope of the Grangegorman Development Act, 2005 (The Act). In order to provide for the coherent identification and consideration of the relevant issues the following methodology is employed:

- Identification of the relevant Study Area and comparators;
- Construction of a baseline socio-economic profile utilising the latest available information;
- Identification of how the proposed development of the subject lands will principally impact upon the human health of existing and potential residents and users;
- Identification of greater national and international level impacts on the provision of a new campus for DIT; and
- In the context of the socio-economic and human health issues identified, to set out relevant environmental objectives.

### 6.3.2 Study Area and Comparators

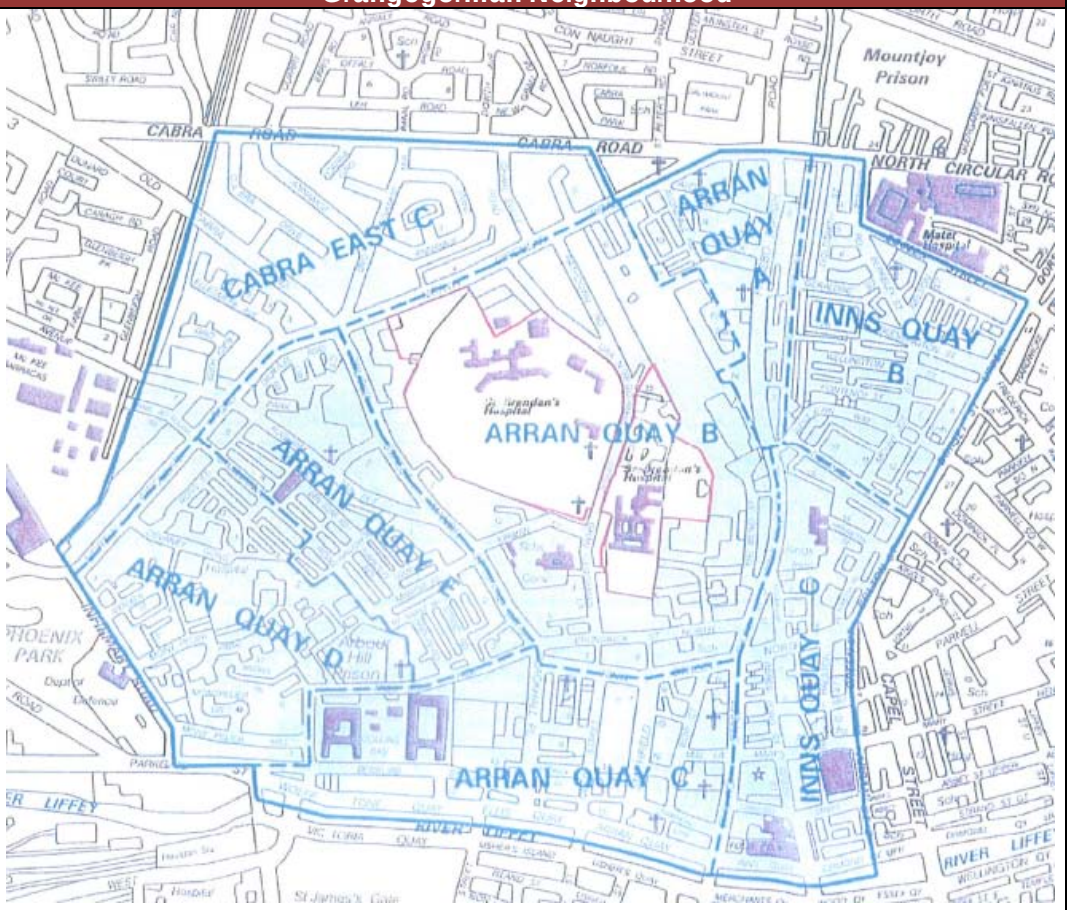
The identification of a Study Area underpins the development of a baseline socio-economic profile. In larger urban centres, Study Area's are generally allocated according to Electoral Division (ED) level. It should be noted that the entirety of the 29.4 no. hectare Grangegorman Development Area (GDA) is located in the ED of Arran Quay B.

The wider Grangegorman Hinterland comprises the area of land stretching from Cabra Road in the north to the River Liffey in the South and from McKee Barracks in the west to Bolton Street/Dorset Street Upper in the East. This Grangegorman Hinterland comprises the following EDs:

- *Cabra C East;*
- *Arran Quay A;*
- *Arran Quay B;*
- *Arran Quay C;*
- *Arran Quay D;*
- *Arran Quay E;*
- *Inns Quay B; and*
- *Inns Quay C.*

*The relationship between the GDA and its defined Hinterland Area is set out in Figure 6.3 below.*

***Figure 6.3***
**Grangegorman Neighbourhood**




***Source: Dublin City Council (2004) and Tom Phillips + Associates (2008)***

In order to provide a wider level context for our analysis the comparators of Dublin City and the State are utilised. This enables the trends exhibited in the GDA and Hinterland Areas to be compared with broader level trends at City and State level. It is important to recognise that the redevelopment of the Grangegorman site for the provision of a new campus for DIT and additional health services will impact on not only the local population but also the regional and national population.

### 6.3.3 Socio-Economic Baseline

**Key Indicators**

Based on the latest available data sources, including Small Area Population Statistics (SAPS) from the 2006 Census the following key indicators are employed:

- Population Trends 1996 - 2006;
- Age Profiles 1996 - 2006;
- Usually Resident Population by Nationality 2006
- Highest Level of Educational Attainment 2006
- Economic Status 2006
- Mode of Transport to Work/School/College 2006.

### 6.3.4 Population Trends

Table 6.2 identifies that the population of the Hinterland Area rose by over one quarter, 27.1%, in the period 1996 – 2006. This compares to growth of 5.1% and 16.9% in Dublin City and the State respectively over the same period. The level of growth witnessed in the Hinterland Area moderated significantly in the 2002 – 2006 period (9.6%) compared to that experienced in the 1996 – 2002 period (15.9%). However, although the Hinterland Area is an area experiencing significant demographic expansion there are a number of key variations in the level of population growth experienced in the period under consideration:

i. The ED comprising the Grangegorman Development Area (Aran Quay B) witnessed growth of 88.1% in the decade to 2006. However, growth moderated from 57.4% evident in the 1996 – 2002 period to 19.5% in the period 2002 – 2006;

ii. The EDs of Cabra C East, Arran Quay D and Arran Quay E all experienced population declines in the 2002 – 2006 period with Cabra C East and Arran Quay E witnessing overall population declines of 2.6% and 2.3% respectively in the 1996 – 2006 period;

iii. Arran Quay A (12.4%), Arran Quay D (10.3%) and Inns Quay B (16.2%) all experienced levels of population growth less than that witnessed at State level (16.9%) in the decade to 2006; and

iv. Population expansion in the Hinterland Area in the overall period under consideration was underpinned by growth in the Grangegorman Development Area (88.1%), Arran Quay C (94.0%) and Inns Quay C (52.9%).

| Table 6.2<br>Grangegorman Development Area, Hinterland and Comparators<br>Historic Population Trends 1996 – 2006 | | | | | | |
|---|---|---|---|---|---|---|
| **Area/ED** | **1996** | **Change '96 –'02 %** | **2002** | **2006** | **Change '02 –'06 %** | **Change '96 –'06 %** |
| **GDA*** | **1,963** | **57.4** | **3,089** | **3,692** | **19.5** | **88.1** |
| | | | | | | |
| Cabra C East | 3,442 | 5.7 | 3,638 | 3,352 | -7.9 | -2.6 |
| Arran Quay A | 1,336 | 4.0 | 1,390 | 1,502 | 8.1 | 12.4 |
| Arran Quay B | 1,963 | 57.4 | 3,089 | 3,692 | 19.5 | 88.1 |
| Arran Quay C | 1,914 | 24.1 | 2,375 | 3,714 | 56.4 | 94.0 |
| Arran Quay D | 3,264 | 12.6 | 3,675 | 3,600 | -2.0 | 10.3 |
| Arran Quay E | 2,957 | -1.9 | 2,902 | 2,889 | -0.4 | -2.3 |
| Inns Quay B | 2,680 | 10.2 | 2,953 | 3,113 | 5.4 | 16.2 |
| Inns Quay C | 1,748 | 35.0 | 2,359 | 2,672 | 13.3 | 52.9 |
| **Total Hinterland** | **19,304** | **15.9** | **22,381** | **24,534** | **9.6** | **27.1** |
| | | | | | | |
| **Comparators** | | | | | | |
| Dublin City | 481,854 | 2.9 | 495,781 | 506,211 | 2.1 | 5.1 |
| State | 3.626m | 8.0 | 3.917m | 4.239m | 8.2 | 16.9 |
| Note: * Grangegorman Development Area comprising Aran Quay B | | | | | | |

**Source: Tom Phillips + Associates (2008) and CSO (2006, 2002 & 1996)**

### 6.3.5 Age Profile

Table 6.3 sets out the Age Profile for the Grangegorman Development Area (GDA) and its Hinterland and compares them to Dublin City and the State utilising data from the 1996, 2002 and 2006 CSO Census periods.

Regarding 2006 the data highlights that the GDA and its Hinterland are characterised by ***very significant variations*** in their age profiles when compared to Dublin City and the State. The following key points are headlined:

i. The proportion of the GDA's and the Hinterland's population in the 0 – 14 years age cohort at 10.5% and 11.4% respectively in 2006 is significantly below that witnessed at Dublin City (15.0%) and State level (20.4%);

ii. 24.2% and 19.6% of the GDA's and its Hinterland population are classified in the 15 – 24 years age cohort in 2006. This compares to 16.9% for Dublin City as a whole and just 14.9% for the State;

iii. The majority of the population in the GDA (46.5%) and Hinterland Areas (44.1%) are classified in the 25 – 44 years age cohort in 2006. Interestingly, the level of concentration in this age grouping is significantly greater than that evident at Dublin City (35.7%) and State (31.8%) level;

iv. The level of increase in the proportion of the GDA and Hinterland Areas

population in the 25 – 44 age grouping in the period 1996 – 2006 is also significantly greater than that evident at Dublin City and State level; and

v. In 2006, just 18.9% of the GDA population and 24.8% of the Hinterland population is aged in excess of 45 years. This compares to 32.4% at Dublin City level and 32.9% at State level.

**Table 6.3**
**Grangegorman Development Area, Hinterland and Comparators**
**Population by Age Group 1996 – 2006**
**(% of Population)**

| Area | 0-14 Yrs (%) | 15-24 Yrs (%) | 25-44 Yrs (%) | 45-64 Yrs (%) | 65+ Yrs (%) |
|---|---|---|---|---|---|
| **GDA*** | | | | | |
| 1996 | 14.3 | 15.4 | 33.3 | 22.5 | 14.6 |
| 2002 | 9.5 | 23.5 | 45.5 | 15.1 | 6.4 |
| 2006 | 10.5 | 24.2 | 46.5 | 14.1 | 4.8 |
| | | | | | |
| **Hinterland** | | | | | |
| 1996 | 14.3 | 20.1 | 32.8 | 18.3 | 14.5 |
| 2002 | 12.4 | 20.3 | 40.5 | 15.8 | 11.0 |
| 2006 | 11.4 | 19.6 | 44.1 | 15.7 | 9.1 |
| | | | | | |
| **Dublin City** | | | | | |
| 1996 | 18.3 | 19.1 | 30.3 | 19.2 | 13.1 |
| 2002 | 16.2 | 18.0 | 33.9 | 19.2 | 12.8 |
| 2006 | 15.0 | 16.9 | 35.7 | 19.7 | 12.7 |
| | | | | | |
| **State** | | | | | |
| 1996 | 23.7 | 17.5 | 28.0 | 19.4 | 11.4 |
| 2002 | 21.1 | 16.4 | 30.1 | 21.2 | 11.1 |
| 2006 | 20.4 | 14.9 | 31.8 | 21.9 | 11.0 |
| Note: * Grangegorman Development Area comprises Aran Quay B | | | | | |

**Source:** **Tom Phillips and Associates (2008) and CSO (2006, 2002 & 1996)**

The overall variations in age profiles highlighted above indicate that the GDA and Hinterland populations are ***heavily concentrated in the 15 – 24 and 25 – 44 years age cohorts with no corresponding concentration in the 0 – 14 years cohort.*** This indicates that these areas – due to a combination of location, accommodation supply and access factors – are characterised by higher than average levels of students and young workers (both Irish and Non Irish). This distribution of the population is analysed in the following sections.

### 6.3.6 Usually Resident Population by Nationality

Table 6.4 highlights that the GDA has, by a significant margin, the highest proportion of Non Irish residents when compared to all of the other areas considered. The data highlights that 18.5% of the GDA's usually resident population

has a Non Irish European Union nationality compared with just 3.9% in the State as a whole. A further 22.2% of the GDA's population is classified as having a 'Rest of World' nationality compared to 14.5%, 7.1% and 3.5% respectively at Hinterland, City and State level.

In the context of Irish nationality, just over 55.9% of the usually resident population in the GDA was an Irish national compared to 67% in the Hinterland, 82.8% in Dublin City as a whole and 88.8% in the State. This data is consistent with the distribution of age profiles evident in Table 6.3 and further highlights that the ***population of the GDA and Hinterland Areas is more heavily concentrated on Non Irish nationals aged between 15 and 44 years compared to the other areas considered***.

**Table 6.4**
**Grangegorman Development Area, Hinterland and Comparators**
**Usually Resident Population by Nationality 2006**
**(% of Population)**

| Area | Irish | UK | Polish | Lithuanian | Other EU | Rest of World | Not Stated |
|---|---|---|---|---|---|---|---|
| **GDA*** | | | | | | | |
| 2006 | 55.9 | 1.3 | 6.9 | 1.3 | 10.3 | 22.2 | 2.1 |
| | | | | | | | |
| **Hinterland** | | | | | | | |
| 2006 | 67.0 | 2.0 | 4.8 | 1.2 | 7.9 | 14.5 | 2.7 |
| | | | | | | | |
| **Dublin City** | | | | | | | |
| 2006 | 82.8 | 1.7 | 2.2 | 0.5 | 3.6 | 7.1 | 2.2 |
| | | | | | | | |
| **State** | | | | | | | |
| 2006 | 88.8 | 2.7 | 1.5 | 0.6 | 1.8 | 3.5 | 1.1 |
| | | | | | | | |
| Note: * Grangegorman Development Area comprises Aran Quay B | | | | | | | |

**Source:** **Tom Phillips and Associates (2008) and CSO (2006)**

### 6.3.7 Highest Level of Educational Attainment

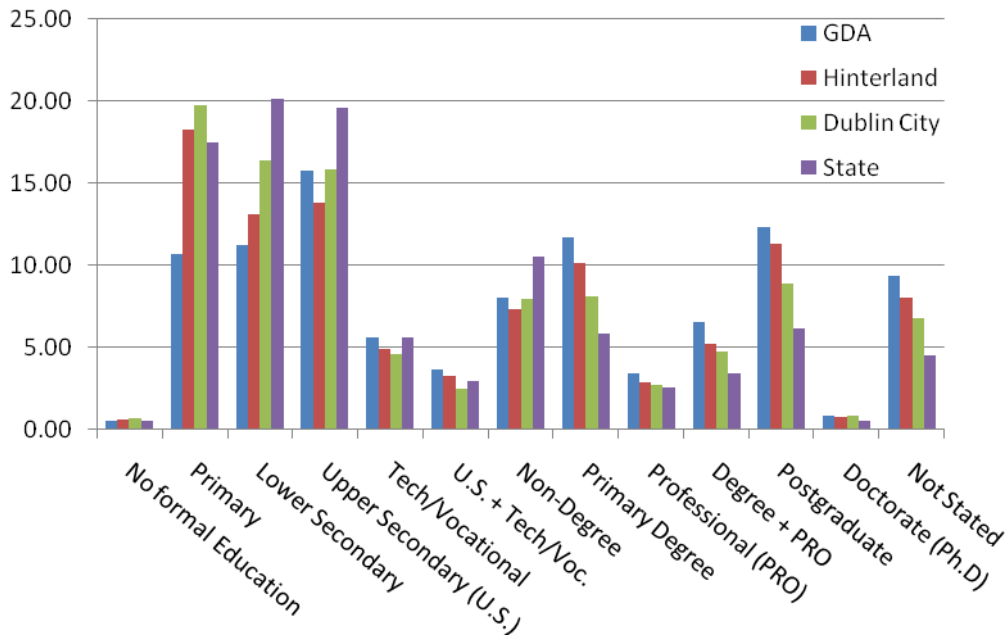
The highest levels of educational attainment achieved in the GDA, Hinterland and Comparator areas are illustrated in Figure 6.4. Overall, the data highlights that the GDA has a higher level of educational attainment than the Hinterland, Dublin City and the State. Key points, include, but are not limited to:

1. The GDA has a significantly lower proportion of its population classifying 'Primary' or 'Lower Secondary' (22%) as their highest level of education attainment when compared to the Hinterland (31%), Dublin City (36%) and the State (38%);

2. The GDA has a very high proportion of its population classifying 'Primary Degree' (12%) as their highest level of educational attainment compared to the Hinterland (10%), Dublin City (8%) and the State (6%); and

3. 13% of the population of the GDA classify 'Postgraduate' or 'Doctorate' as their standard of education attainment. This is greater than the levels evidenced at Hinterland (12%), Dublin City (10%) and the State (7%).

**Figure 6.4**
**Persons Aged 15+ by Highest Level of Educational Attainment (%)**
**Grangegorman Development Area, Hinterland and Comparators**




***Source:*** ***Tom Phillips + Associates (2008) and CSO SAPS (2006)***

The data further highlights that – notwithstanding the rapid population growth in the GDA in the period 1996 – 2006 and the high level of non Irish nationals ***– the GDA exhibits a level of educational attainment in excess of City and State comparators.*** This may be partially attributable to the relatively high levels of educational attainment of non Irish migrants and the popularity of this location as a residential location.

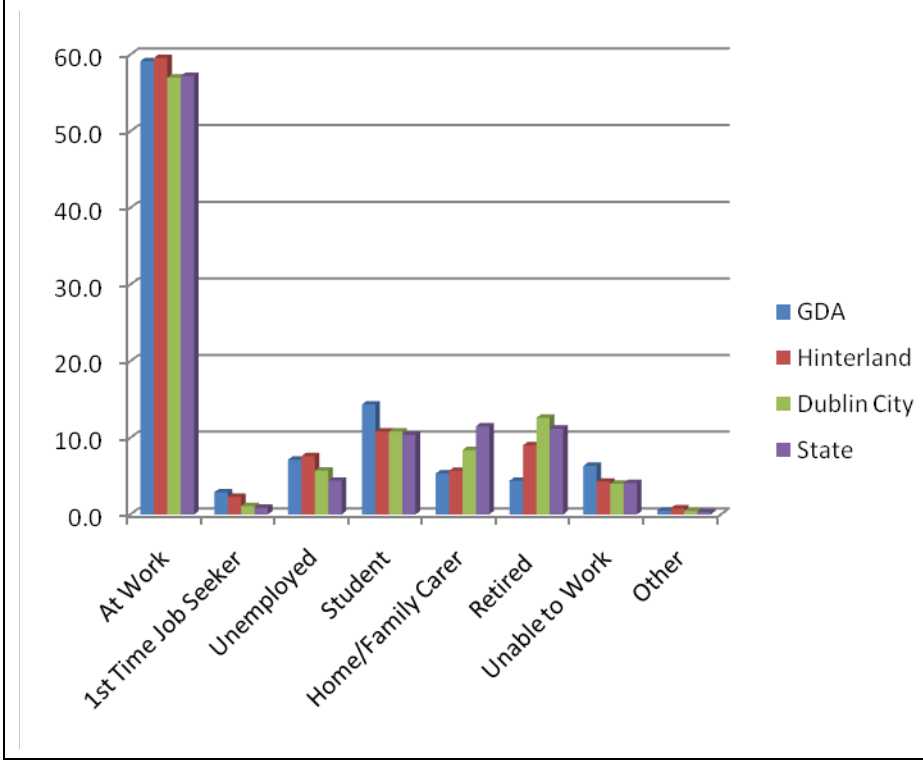
### 6.3.8 Economic Status

Figure 6.5 identifies the Economic Status of all residents aged 15 years + in the GDA in 2006 and compares it against that of Dublin City and the State. The data highlights that the GDA and Hinterland have the highest labour force participation rates (59.1% and 59.6% respectively) of any of the areas considered (persons 'At Work').

Figure 6.5 also highlights the following key indictors:

- Notwithstanding the higher levels of labour force participation, the GDA (7.1%) and Hinterland Areas (7.6%) experience higher levels of unemployment compared to Dublin City (5.7%) and the State (4.4%);
- The GDA and Hinterland Areas also witness higher levels of ' Time Job Seekers' relative to Dublin City and the State; and
- The GDA has, by a significant margin, the highest proportion of its 15 + population classified as 'Students' and the lowest proportion of its population classified as 'Retired' compared to all of the other areas under consideration.

**Figure 6.5**
**Persons Aged 15+ by Principal Economic Status (%)**
**Grangegorman Development Area, Hinterland and Comparators**



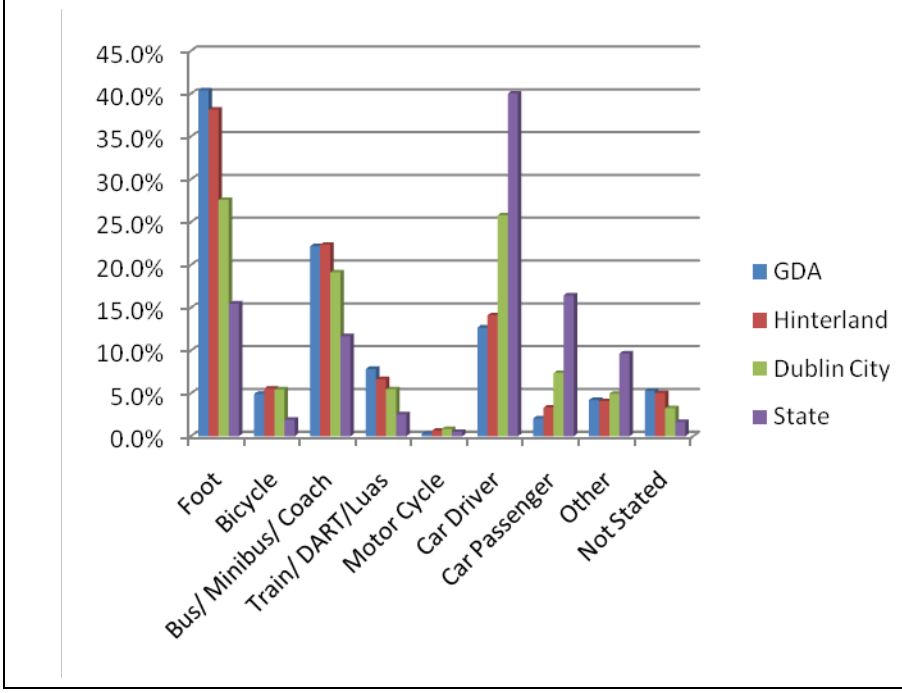

***Source:*** ***Tom Phillips + Associates (2008) and CSO SAPS (2006)***

The Economic Status Profile of the GDA highlighted in Figure 6.5 above ***is consistent with the identified concentration in the 15 – 24 and 25 – 44 year age cohorts***.

### 6.3.9 Mode of Transport to Work/School/College

Figure 6.6 sets out the mode of transport used to access work, school or college for all persons aged 5 years +. As expected, the GDA and Hinterland Areas experience relatively higher levels of foot, bicycle and bus/luas traffic than Dublin City or the State as a whole. Correspondingly, the State and Dublin City also exhibit significantly higher levels of car based traffic relative to the GDA and Hinterland Areas.

**Figure 6.6**
**Persons Aged 5 + by Means of Travel to Work, School or College (%)**
**Grangegorman Development Area, Hinterland and Comparators**




***Source: Tom Phillips + Associates (2008) and CSO SAPS (2006)***

It should also be noted that the GDA and Hinterland Areas stand to benefit directly from 3 no. measures proposed in the National Transport Investment Programme to 2015 (*Transport 21*). These measures are:

4. The extension of the DART from Connolly Station to Maynooth and the provision of a new interchange station at Liffey Junction;

5. The proposed Luas Line BX which will link the existing Green Line terminus on St. Stephens Green with the new station at Liffey Junction. This line is likely to utilise the old Broadstone rail alignment from Constitution Hill to Liffey Junction. As a result, it has the potential to directly serve the Subject Lands;

and

6. The construction of Metro North with stops at the Mater Hospital and Parnell Square.

***The successful realisation of the above public transport projects will significantly improve the public transport accessibility of both the GDA and Hinterland Areas, particularly with regard to Dart and Luas.*** They will significantly improve the accessibility of the Grangegorman Site to the wider population at a regional or city level and nationally, as well as internationally.

### 6.3.10 Higher Education Facilities and Impact for National and International Population

This redevelopment of Grangegorman to provide a new campus for DIT represents one of the largest capital projects to be undertaken within the higher education sector in Ireland. After 120 years in operation and with a current student population of 20,500 students and 2,000 staff, DIT is seeking to relocate to a single campus at Grangegorman in Dublin's north inner city. The significance of the project is reflected in its inclusion within such policy documents as the National Development Plan 2007-2013, The Dublin City Development Plan 2005-2011, Transport 21, the Review and Prioritisation of Capital Projects in the Higher Education Sector.

The central role for higher education in Irish society is well captured within the vision for higher education that is articulated in the *Strategic Plan for Higher Education 2008-2010* published by the Higher Education Authority (HEA) as follows:

> *"Higher education is central to Ireland's development and the student is the central focus of all higher education activities. Quality teaching and learning at both undergraduate and postgraduate levels are at the core of the mission of the higher education institutions, which form a sector which should be internationally recognised for:*
>
> - *a vibrant research and innovation culture that is quality driven, addresses a broad spectrum of disciplines and is closely connected to teaching and learning:*
> - *its contribution to social inclusion by providing the opportunity for all to participate to their full potential;*
> - *the provision of the innovative and creative graduates equipped with the skills needed to perform successfully in a competitive environment and contribute to fostering an enterprise culture and the nurturing of entrepreneurs;*
> - *flexibility in provision, offering multiple opportunities for educational progress through mechanisms such as modularisation, part-time study, distance learning and elearning thereby bringing reality to the concept of lifelong learning; and*

- *a spirit of enquiry and as a source of independent insight into matters that impact on society."*

This evolving and changing role of higher education in society is echoed in The National Development Plan 2007-2013 which clearly identifies the complex role that higher education plays within Irish society as follows:

> *"While the primary purpose of education is to enable people to reach their full potential as individuals and as active citizens, the critical role that higher education plays in fostering economic prosperity and a dynamic cohesive society is widely acknowledged. The higher education third level sector and also the increasingly important fourth level sector) has assisted Ireland to position itself to meet the challenges of a rapidly changing global economic environment" (page 200).*

### 6.3.10.1National Economic Trends in Education

As evidenced from the National Competitiveness Council; Annual Competitiveness Report 2006 Ireland's economy has experienced "*phenomenal growth in recent years*" with growth in GDP of 5.5% in 2005 twice the estimated OECD average of 2.4%. More recently this rate of growth has tailed off after a decade of consistent growth and performance. The growth rate of employment in knowledge intensive services in Ireland *"far outstripped the European average in the period 1997-2002 standing at 42.5% compared with the EU average of 16.2%"*. Increasingly according to the National Workplace Strategy (2005) economic growth is dependent on ideas, information and technical skills. The Expert Group on Future Skills Needs ( Tomorrow's Skills: Towards a National Skills Strategy (2007) clearly identifies projected changes in the focus of the Irish economy with "*services based employment expected to increase significantly over the coming years to 2020 with the largest increase forecast for financial and business services sector. While Ireland's loss of market share in manufacturing has been pronounced there have been significant employment gains in the internationally traded services.* The Expert Group estimate that by 2015, 45% of all jobs in Ireland will be for third level graduates. It is estimated that 60% of those currently in the workforce (1.45m) will still be in the workforce in 2020 and that without major changes there will remain a shortage of graduates entering employment. This Group defined key characteristics of the knowledge economy as follows:

- New industries and organizational structures that are heavily dependent on knowledge;
- Changing occupations and skill structures which privilege particular kinds of knowledge production;
- Highly intensive workplaces requiring new types of knowledge, generic skills and competencies; and
- An increased importance on innovation in order to sustain the competitive advantage of individuals, firms, regions and economies.

More recently the Economic Social and Research Institute (ESRI) in its Medium Term Review 2008/15 confirmed the shift from dependence on growth in the

manufacturing sector to growth in business and financial services as the driver of the economy, with important implications for industrial policy and for policies relating to human capital. The Report emphasised that in the future most of additional jobs created will be in the business and services sector and that access to a supply of appropriate skills will be essential to future growth in the economy.

The HEA; Higher Education Facts and Figures Report (2004/05) indicate that a significant shift in the number of students progressing to postgraduate education is already evident. Between 1998/99 and 2004/05 the HEA have calculated that postgraduate enrolment increased by 46%. This trend needs to continue in the decades ahead in order for the Irish higher education sector to meet the demands being placed upon it to provide graduates at third and fourth level. The vision for research in Ireland as outlined in the National Development Plan 2007-2013 is that "*Ireland by 2013 will be internationally renowned for the excellence of its research and will be to the forefront in generating new knowledge for economic and social progress within an innovation driven culture"* The Strategy for Science, Technology and Innovation published by the Department of Enterprise Trade and employment (2006) projects an investment in research of €2.7bn over the coming 5 years. The Strategy for Science identifies a number of areas that need to be further developed in the coming decade in order to move Ireland to the forefront of knowledge based economies. A number of critical success factors are identified:

- Increased participation in the sciences;
- Increased numbers of people with advanced qualifications;
- Enhanced contribution by research to economic and social development;
- Transformational change in the quality and quantity of research;
- Increased output of economically relevant knowledge;
- Increased trans-national research activity;
- An international profile for Ireland; and
- Greater coherence and exploitation of synergies nationally and internationally.

The aim of the strategy is to deliver highly educated people and the resources necessary to position Ireland as a worldwide leader in the knowledge based sector. It is anticipated that higher education will lead research initiatives and the application of research through partnership with industry.

In a broader European context the European Commission published a report *Mobilising the Brainpower of Europe (2005)* which emphasized the central role of higher education in preparing for Europe's continued movement away from manufacturing to knowledge-intensive industries and the underpinning role of Europe's higher education sector in driving this new knowledge-based paradigm. This report clearly identifies the need for Europe to "*strengthen the three poles of its knowledge triangle: education, research and innovation*" and that the higher education sector is essential in all three. The Report of the European Council; Lisbon, March 2000, identifies a new strategic goal for Europe "to become the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion." In addition the European Council set a target to increase expenditure on research to an average of 3% of GDP within Europe.

Participation rates in Ireland have increased consistently and currently rest at 55%. The National Skills Strategy proposes that this figure should rise to 70% by 2020. Despite high levels of participation in education nationally, a number of groups are under-represented. According to the HEA publication; Towards the Best Education for All (2006) 9.4% of all fulltime students are classified as mature (over 23 years) with a figure of 6% for those over 25. This is significantly behind OECD countries where a country such as Finland has a mature student participation rate of 25%. A similar level of participation to that of Finland has been targeted for Ireland to be achieved by 2015. The White Paper on Adult Education published in 2000 led to the adoption of lifelong learning and continuing education as a principle of Irish education policy and again this objective finds full expression within the NDP 2007-13. CSO Labour Market Statistics estimate that the Irish workforce will increase from 2million to nearly 2.5million by 2020 with the prediction that up to 500,000 persons who are currently employed will require up-skilling and retraining before 2020. More recently, the HEA Report: National Plan for Equity of Access to higher Education 2008-2013 clearly establishes a targets '*that all socio-economic groups will have entry rates of a least 54% by 2020 and that mature students will comprise of at least 20% of the total full time entrants by 2013'.*

AHEAD (Association for Higher Education Access and Disability) in its publication; a *Survey of Association for Higher Education Access and Disability (2005),* calculate that in 2004 approximately 394,000 persons or 9% of the Irish population have a long term health problem or disability yet in the same year only 2.4% of undergraduate students are recorded as such.

In tandem with growing investment in higher education there is a growing emphasis on accountability and value for money within the Irish higher education sector. Efficiency, unit costs and performance measures long established within the international higher education landscape are increasingly becoming a requirement within the Irish higher education sector. The HEA Strategic Plan 2008-2010 identifies funding and accountability within the higher education *sector* as a strategic priority with particular emphasis on areas such as: the strategic allocation of funding; accountability through performance funding; and strengthening of overall accountability measures. In 2007 the HEA confirmed that '*accountability of the third-level sector needs to be enhanced because of the investment made in the National Development Plan (NDP). Under the NDP a further 13 billion will be spent supporting the sector to 2013. The higher education sector are expected to demonstrate progress in key areas including: widening participation; increasing student and graduate numbers; improving the quality of learning & teaching; advancing institutional and structural reform and meeting specific skills needs'.* The OECD report on the higher education sector recommended a range of areas that should be addressed by the sector in coming years. In 2006 the Minister for Education and Science established a potential fund of €300m Strategic Innovation Fund (SIF) to address these recommendations. Key objectives of SIF include: the enhancement of delivery of core educational and research activities; expansion and development of postgraduate education; promotion of access, retention and progression routes; and improved organizational agility and efficiency.

### 6.3.11 Potential Impacts on Human Health

#### 6.3.11.1Recognising the Absence of Baseline Information

In addition to the impact of the development of educational, health and other facilities on the subject lands it is the purpose of this Section to highlight the potential impacts of such development on existing and potential residents and users. The nature of these potential impacts are inherently interlinked with the baseline socio economic profile identified in Section 1.3.

However, based on current available data sources it is ***not possible*** to construct a Human Health Baseline for the areas under consideration. This is due to the fact that there is currently no system for monitoring key health variables in Ireland.

In particular, the absence of a Health Poverty Index (HPI) in Ireland makes it impossible to quantitatively assess the current level (if any) of health inequality in the areas under consideration. Health inequality is defined as:

> *'A difference in which disadvantaged social groups systematically experience worse health or greater health risks than more advantaged social groups'. (Paula Braveman, 2006)*

A HPI is a representation of a large number of relevant human health statistics that reflect the complex set of health, social, economic, environmental and resourcing factors that generate health and ill-health. HPI's provide valuable local, regional and national comparison across a range of relevant indicators[4]. Current work in this area in Ireland is being undertaken by the Ireland and Northern Ireland Population Health Observatory (INIsPHO) in association with the Department of Health and Children, National University of Ireland, Galway, Combat Poverty Agency, Health Service Executive and the Institute of Public Health in Ireland.

#### 6.3.11.2 Constructing a Typology for Potential Human Health Impacts

In the absence of the required baseline human health information for the Study Areas it is required that potential human health impacts are considered in a predominantly qualitative context. In order to provide a framework it is necessary to establish a typology which will enable a realistic consideration of potential impacts.

In this regard, detailed analysis has been undertaken of the baseline indicators and data sources expressed in the English Health Poverty Index (Ephi). These indicators and data sources have been amended and adjusted to reflect specific Irish conditions and to focus specifically on the GDA, Hinterland and Dublin City Areas.

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[4] For an example of a Health Poverty Index see www.hpi.org.uk which was developed by the University of St. Andrews and the University of Oxford. It provides quantitative data on 71 no. components grouped into 26 no. indicators across 9 no. health poverty domains.

### 6.3.11.3 Qualitative Framework for Assessing Human Health Impacts

Table 6.5 sets out a qualitative Framework for Assessing Human Health Impacts resulting from the development of educational, health and other facilities on the Subject Lands. The framework provides for a consideration of 3 no. principal indicator groups. These are:

1. ***Root Causes*** – the current baseline position of the areas under consideration in a general economic and socio economic context. This indicator highlights the inherent linkages between any consideration of human health impacts and socio economic data;

2. ***Intervening Factors*** – sets out how the proposed suite of uses proposed will impact upon human health across a range of sub-indicators including educational facilities and environmental behaviour; and

3. ***Situation of Health*** – identifies how the proposed uses will impact upon the provision of and access to effective social and healthcare facilities.

**Table 6.5**
**Framework for Assessing Human Health Impacts**
**(Indicators, Sub Indicators and Potential Impacts)**

| Indicators | Sub-Indicators | Baseline/Potential Human Health Impacts |
|---|---|---|
| **Root Causes** | City Prospects | Dublin City offers the widest range of educational, medical, employment opportunities available in Ireland |
| | GDA*/Hinterland Conditions | Rapidly growing population, high level of people of working age, high proportion of non-Irish nationals, higher than average unemployment and high proportion of students in the GDA. Transport 21 provides for significantly increased public transport accessibility. |
| | | |
| **Intervening Factors** | Resourcing to Support Health | The proposed development represents significant expenditure by central government on localised health facilities including, but not limited to, mental health care, primary community, continuing care and facilities for older persons (including respite and dementia facilities). Overall localised impacts will be based on an increase in nurse led care and an increase in the number of doctors per head of population. |
| | Educational Facilities | The provision of a unified campus for Dublin Institute of Technology will stimulate the awareness of level education in the Hinterland area, provide a greater student profile in the Hinterland Area and ultimately increase level educational attainment in |

| | | |
|---|---|---|
| | | the GDA and Hinterland Areas |
| | Healthy Areas | Key impacts here relate to access to recreational areas and access to preventative healthcare. Given that the mix of uses proposed include significant recreational and healthcare uses it is clear that such developments will increase the overall 'health' of these areas. |
| | Behaviours and Level of Activity | Key impacts here relate to smoking prevalence, levels of fresh fruit intake, levels of drug/alcohol abuse and amount of physical exercise per week. The range of uses proposed will have real positive impacts in terms of altering current behaviour patterns and encouraging greater sports participation and healthier lifestyles**. |
| | | |
| **Situation of Health** | Resourcing | The proposed development will impact positively on key issues in this area including spend on medical specialities and spend on personal social services |
| | Appropriate Care | The proposed range of uses proposed also have the potential to provide significant positive impacts on the level of appropriate care provided. This includes the potential for improvements in avoidable mortality***, social services staff per capita and the number of residential nursing care spaces for those ages over 65 years. |
| Note: * Grangegorman Development Area.<br>** See for example Lunn and Layte (2008) *Sporting Lives: An Analysis of a Lifetime of Irish Sport* (Economic and Social Research Institute) and Fahy, Layte and Gannon (2004) *Sports Participation and Health Among Adults in Ireland* (Economic and Social Research Institute).<br>*** Defined as number of deaths of people under 75 years old. | | |

**Source: Tom Phillips + Associates (2008) derived from English Health Poverty Index.**

### 6.3.11.4 Summary

Table 6.5 highlights that, potentially, there are ***substantial and consistent*** human health impacts arising from the suite of uses proposed on the Grangegorman Development Area lands. Table 6.5 further illustrates the inherent inter-linkages in assessing potential human health and population impacts.

## 6.4 Soil

This element of the *Environmental Report* was prepared by Horgan Lynch, Consulting Engineers on behalf of Grangegorman Development Agency and seeks to inform the Soils element of the Strategic Environmental Assessment of the *GDA Draft Strategic Plan*.

### 6.4.1 Current Situation

The site of Grangegorman is located just over 1km from the city centre on the north side of the river Liffey broadly lying between Phibsboro and the Phoenix Park. The site extends over some 30 hectares with the topography on the site ranging between 16.8mOD and 27.3mOD. The site is surrounded predominantly residential dwellings and some light industrial units, but there is also a large bus depot, convent and schools in the immediate environs of the site. It has frontage to the North Circular Road to the north west of the site, and frontage onto Constitution Hill to the east of the site. The Grangegorman Road bounds the site to the north and then runs through the site from north to south splitting the site into two distinct areas. Prussia Street lies to the west of the site with Manor Street and Brunswick Street lying to the south. The site is largely a green-field site but also houses a number of protected structures some of which are still in use as a secure hospital facility for the mental health sector.

There is evidence of the presence of a river, the Bradoge, on the site from old maps and books on the area (Duncan 1821; Sweeney - Rivers of Dublin). The river has now been culverted up for public drainage with a branch running down the Grangegorman Road and a second branch running through the hospital.

Geology

The geology of the area is generally glacial deposits over Carboniferous limestone bedrock, with the glacial deposits ranging from lodgement tills to glacial sands and gravels to clays formed during the ice age.

*Overburden Geology*
The glacial period strongly influences the overburden geology of Dublin and results in a significantly deep layer of glacial tills overlying the bedrock. These glacial tills formed at the bottom of the ice sheet generally consist of intermittent layers of stiff brown black silty sandy gravely clay (boulder clay) and dense sandy sometimes silty gravels.

In 'Soils of Dublin' by Farrell & Wall (1970) it is noted that the boulder clays are generally found close to the surface and are underlain by glacial and post glacial gravels. However it must be noted that there are locations where the clay layers occur within the gravels and similarly there are locations where gravels occur within boulder clay. The glacial deposits in the Dublin area are on the whole boulder clays, brown and black, with the brown boulder clay generally being firm or stiff,

sometimes soft and the black boulder clay generally being very stiff, sometimes stiff. Brown boulder clay is generally considered to be the result of the weathering of Black boulder clay (Farrell & Wall, 1970).

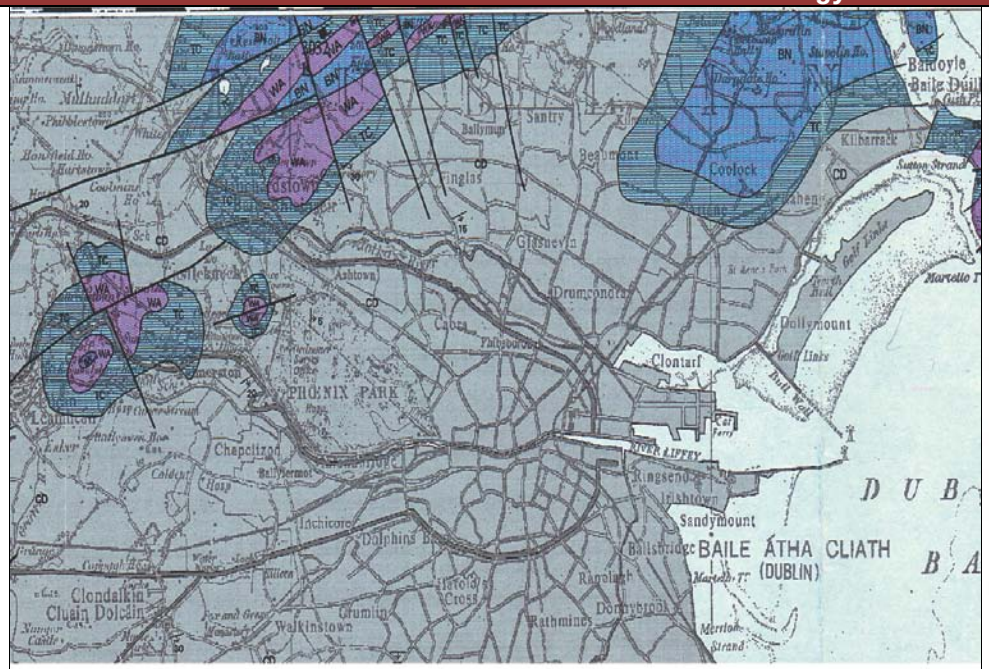
It should be noted that isolated pockets of soft material can be found in boulder clay areas and these soft pockets often arise due to the presence or past presence of streams, ponds etc. In brown boulder clay where soft material is found, the strength and compressibility of the clay can vary, however the black boulder clay is generally consistent as a stiff material.

*Bedrock Geology*

Dublin overlies the Calp formation, which ranges in age from Chadian to Brigantian. It is a formation of dark grey to black limestone and shale, with the thickness of the limestone bed, grain size, colour and proportion of shale varying considerably across the extent of the formation. From the GSI national generalised bedrock map Dublin is shown to lie on Dinantian upper impure limestones.

For the site at Grangegorman the indication from information available from the GSI is that bedrock dips from – 15mOD to -30mOD from the west section of the site going eastwards and then rises steeply from -30m to approximately -20mOD. In their publication Farrell & Wall (1970) indicate bedrock at approximately 20m below ground level (BGL) for the Grangegorman site.

## Figure 6.7
## Bedrock Geology




| | |
|---|---|
| NAM | **Namurian (undifferentiated)** Black shale |
| CD | **Calp** Dark-grey to black limestone & shale |
| TC | **Tober Colleen Formation** Calcareous shale, limestone conglomerate |
| CL | **Clogrenan Formation** Cherty, muddy, calcarenitic limestone |
| BM | **Ballyadams Formation** Crinoidal wackestone/packstone limestone |
| MI | **Milford Formation** Peloidal calcarenitic limestone |
| BA | **Ballysteen Formation** Fossiliferous dark-grey muddy limestone |
| QU | **Quinagh Formation** Lenticular mudstone & coarse siltstone |
| RK | **Rickardstown Formation** Cherty often dolomitised limestone |
| AW | **Allenwood Formation** Thick-bedded limestone, locally peloidal |
| ed | **Edenderry Oolite Member** Oolitic limestone |
| WA | **Waulsortian Limestones** Massive unbedded fine-grained limestone |
| BN | **Boston Hill Formation** Nodular & muddy limestone & shale |
| FE | **Feighcullen Formation** Skeletal, oolitic & micritic limestone |
| CO | **Cloghan Sandstone Formation** Thick-bedded grey sandstone with shale |
| FB | **Ferbane Mudstone Formation** Laminated & burrowed shale & sandstone |
| ORS | **Old Red Sandstone (undifferentiated)** Red conglomerate, sandstone & mudstone |

**Source: Horgan Lynch Consultant Engineers, July 2008**

Ground Conditions

Based on previous and recent site investigations carried out at the Grangegorman site it can be confirmed that ground conditions there are typical of the Dublin area in that brown and black boulder clays can be found underlaying the site.

The brown and black boulder clays are generally impermeable and consequently it would generally be assumed that extensive pumping of groundwater would not be required from any excavations on the site. However the recent site investigation works showed equilibrium levels of groundwater in standpipes installed in the Geobor rotary core drillholes at levels of 1.05m to 3.04m bgl, and in light of these groundwater levels it would be advisable for provisions to be made for sump pumping in excavations. It is expected that ground water pumping will be required in utility trenches and at foundation areas.

The recent site investigations highlighted a prominent layer of made ground that would appear to extend across the site varying in depths from approximately 1-2m typically to depths of up to 3.9m in some areas. The made ground material comprises a reworked sand y gravely clay with brick, glass, ceramic/pottery, steel and concrete constituents throughout. It is considered that the made ground has the appearance of demolition waste.

The boulder clay soils on site represent heavily over-consolidated lodgement till, the brown being the weathered surface of the grey/black boulder clay. The SPT N-values in the brown boulder clay show the clay to be principally firm and firm/stiff in consistency. On the basis of the accepted correlation between N-value and Cu for glacial soils, the brown boulder clay is deemed to have a characteristic strength of the order of 75-100KN/m2.

The site investigation assessment of the grey black boulder clay at Grangegorman concludes that the clay is deemed to have the engineering properties and behaviour of an extremely weak mudstone. Recommended allowable bearing capacity is in the order of 600KN/m2.

Subordinate layers or horizons of sandy (medium to coarse) gravel with cobbles were also uncovered during the course of the geotechnical investigations. The subordinate course or granular dominant materials are typical of fluvio-glacial deposits.

Rock was encountered at depths ranging from 16.70m bgl to in excess of 31.3m bgl therefore it would not be anticipated that rock be encountered in the course of the redevelopment of the site. The rock underlying the site was found to be a grey black fine grained calcisiltite limestone and earthy argillaceous limestone. The clacisiltite limestone is generally slightly weathered to fresh, while the argillaceous unit is slightly to locally moderately weathered.

In the previous site investigations a limited scope of environmental testing was carried out and this returned evidence of some contamination with high concentrations of PAH's and elevated levels of Barium and lead.

Further investigation work was deemed necessary in this area and the extent of environmental testing was increased in the next phase of the site investigation work. Environmental testing was carried out on a selection of samples from the 20No. trial pits and 22No. slit trenches across the site, with the purpose being to investigate for the presence of contaminated material particularly in the made ground deposits.

Several contaminants were found at limited locations to be present at or above their respective action levels as set out in the New Dutch list used in the Netherlands. The most frequently occurring contaminant was lead which exhibited an elevated level in a total of 7 no. samples. Elevated levels of PAH's were also detected along with significant concentrations of heavy metals such as Arsenic, Barium, Copper, Lead and Zinc. High levels of Chromium and sulphate were also detected.

In addition to the above noted contaminants the levels of Total Organic Carbon was found to exceed a level of 3% in the majority of samples with levels of up to 15% detected.

Landfill acceptability testing was also carried out, to determine whether the material on the Grangegorman site could be accepted as 'inert' material by an Irish landfill. Samples were analysed in accordance with the Murphy Suite which is a programme of analysis adopted by Murphy Landfills when specifying the waste acceptance criteria of their inert landfills. The results of the disposal suite indicate that the majority of excavated fill material should be acceptable as inert soil by Murphy Landfills in accordance with their current waste acceptance criteria. However clarification will be required in relation to the elevated levels of Total Organic Carbon. The level of PAH at limited locations also exceeds the landfill limit and will need further consideration.

As a result of the environmental testing it would be advisable to carry out further testing particularly in areas already identified as 'hot spots' in an attempt to delineate the extent of the contamination. It should also be recognised that any material to be removed from site will require additional testing prior to its disposal to a landfill. This is particularly relevant to the Grangegorman site where made ground is present in significant quantities as it would not be unusual to detect localised 'hot spots' of elevated contamination which were not intercepted in the course of the site investigation works carried out no matter how extensive the works.

A geophysical survey that was carried out on the site identified some anomalies that may represent backfilled pits and as such should be subject to further investigations. On review of historic maps and information it is possible that mass cholera graves are located on the site and these may correspond to the anomalies in the ground identified in the geophysical survey.

**Key Significant Environmental Issues and Objectives Identified – Soil**

Some contaminants were found to be present at limited locations within the Grangegorman site at or above their respective action levels. The most frequently occurring contaminant was lead which exhibited an elevated level in a total of 7 no. samples. Elevated levels of PAH's were also detected along with significant concentrations of heavy metals such as Arsenic, Barium, Copper, Lead and Zinc. High levels of Chromium and sulphate were also detected.

In addition to the above noted contaminants the levels of Total Organic Carbon was found to exceed a level of 3% in the majority of samples with levels of up to 15% detected.

The assessment of the Grangegorman site found that 'made ground' is present in significant quantities and as a result it would not be unusual to detect localised 'hot spots' of elevated contamination within the soil which were not intercepted in the course of the site investigation works carried out no matter how extensive the works.

## 6.5 Water

This element of the *Environmental Report* was prepared by Horganlynch, Consulting Engineers on behalf of Grangegorman Development Agency and seeks to inform the Soils element of the Strategic Environmental Assessment of the *GDA Draft Strategic Plan*.

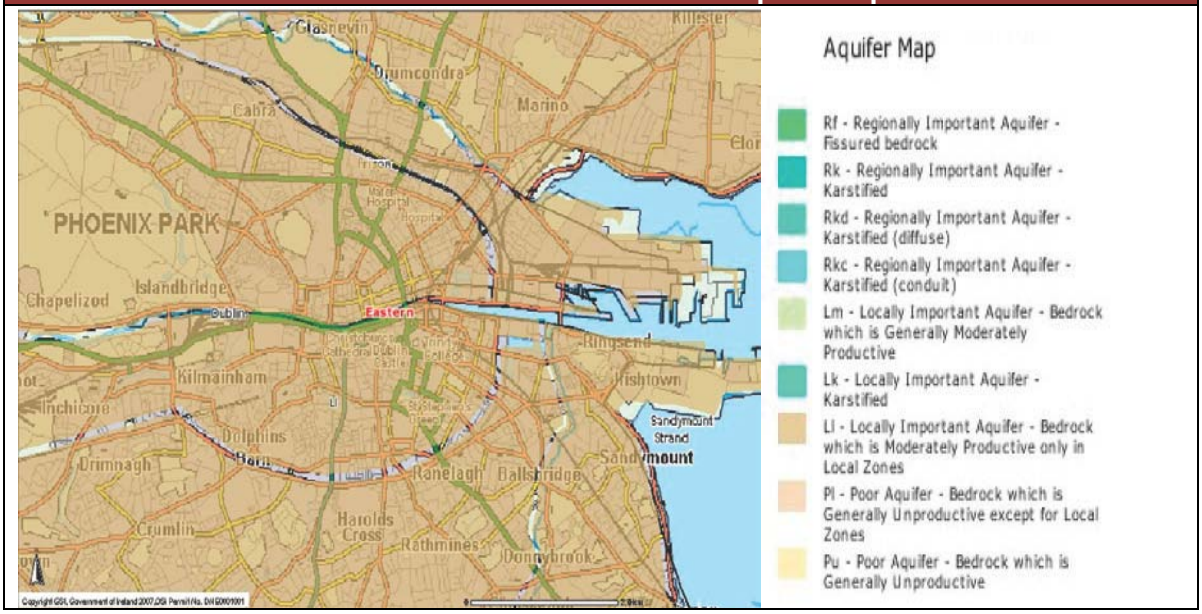
### 6.5.1 Current Situation

As noted in Section 4.2.3 above, it is likely that the soil type at the Grangegorman site is likely to be brown boulder clay over black boulder clay over bedrock. Boulder clays generally have low permeability and therefore would represent a poor aquifer. The underlying bedrock however is a potential aquifer, and this is particularly significant if there is a highly weathered zone at the interface between the bedrock and overlying soils.

Groundwater

On the aquifer classification map for Ireland Dublin is shown to lie on a poor to minor aquifer which is locally productive. The GSI National draft bedrock aquifer map concurs with this and describes the bedrock aquifer in Dublin as a locally important aquifer which is generally moderately productive in local areas (Figure 6.8). ***An interim study of groundwater vulnerability for Dublin city centre found the vulnerability to range from high to low, with a number of small areas of extreme vulnerability to the south resulting from shallow rock to Karst features***.

**Figure 6.8**
**GSI National Draft Bedrock Aquifer Map**




**Source: Horganlynch, Consultant Engineers, July 2008**

**Key Significant Environmental Issues and Objectives Identified – Water**

As water is a precious resource it is important that the redevelopment of the site incorporates conservation and sustainability measures in relation to the treatment of water.

The implementation of SUDS (sustainable urban drainage systems), grey water recycling, infiltration and filtration systems, retention ponds and swales (which can be incorporated into the landscaping of the development) should be considered for implementation in the development for the management strategy for surface water runoff element which will be increased by the development of the site.

## 6.6 Landscape

This element of the *Environmental Report* was prepared by Mitchell & Associates, Landscape Architects, on behalf of Grangegorman Development Agency and seeks to inform the Landscape element of the Strategic Environmental Assessment of the *GDA Draft Strategic Plan*.

Landscape can be described as all the visible features of an area of land and the character is the distinctive nature of these elements. Landscape therefore includes a broad range of natural resources and includes areas, sites, vistas and features of significant scenic, archaeological, historical, ecological or scientific interest. The landscape of Grangegorman has been forged by its past, which has left a legacy of buildings and other features on site, many of which are protected structures which contribute to the unique character of the area.

### 6.6.1 Current Situation

Site Context

The site is located in the Arran Quay Ward of Dublin in the district of Grangegorman, approximately 1km north of the River Liffey and the city centre, and south of the Grand Canal. The site comprises 29.4 hectares encompassing St. Brendan's Hospital and its grounds. The site is divided into two precincts, St. Brendan's East (7.77 hectares) and St. Brendan's West (21.66 hectares). St. Brendan's is the oldest psychiatric hospital in Ireland, given that St. Patrick's is the oldest private hospital.

Various prime urban centres are located in the vicinity of Grangegorman, including Smithfield to the south and Phibsborough to the north, as well as Phoenix Park which is located the west of the site. The site is bounded along its north-western edge by the North-Circular Road, to the north-east by the Grangegorman Road Upper, to the east by the Broadstone site and Bus Depot (CIE), to the south by Manor Street and along its western edge by residential and commercial properties along Prussia Street.

The site is considered a brownfield site due to the current nature of the landscape, the disused buildings on site and the location of the site in proximity to the city centre. However the site can also be described as one of the few remaining large green open spaces between the canals in Dublin City. Other than the Phoenix Park, it's the largest open space on the north side of the inner city, making it an important site for wildlife in an urban area and acting as a green lung for the city. Approximately one third of St. Brendan's West is currently used as active recreational playing fields. There are currently no watercourses present within the site and no designated areas of conservation, i.e. no Special Protection Areas (SPA's) or Special Areas of Conservation (SAC's). There are two proposed NHA's nearby within a 3km radius. The site contains many mature trees, particularly on the more elevated ground towards the north-eastern portion of the site. The lands slope gently down towards the south-west. Until now, the grounds have been subject to a low-intensity management regime.

Site Description

The landscape of Grangegorman is consistent throughout the site, associated with the historic buildings and landscape elements which date back to the century or before. There are currently fourteen protected structures scattered throughout the site. A high wall bounds the site for the most part, which is shared with boundary properties at sections along the wall. The wall has a historical significance within the area and adds to the character of the landscape. The high wall also restricts access into the site as a result. A low wall with railing fronts the Grangegorman Road Upper along the north-eastern boundary of the site. There is currently one operational entrance into the site and one closed entrance.

The overall site presents as a combination of sports pitches, amenity grassland, buildings and other hard surfaces, scattered trees and shrubs, tree lines and disturbed ground. The open space within the site mainly consists of areas of grassland / sports pitches to the south-west. However the scale and nature of this open space is not fully utilised in terms of public accessibility and awareness. Much of the existing open space and sports pitches are contained within the precinct of St. Brendan's West, and are proposed to be allocated to the Dublin Institute of technology (DIT). Therefore the enhancement and utilisation of this open space could benefit the proposed student population of Grangegorman as well as the surrounding community and city-wide users. The link to existing green spaces, including Phoenix Park, will further enhance this open space asset.

Views

The site is strategically located in close proximity to Dublin City and thus enjoys a high quality geographic position and orientation within its urban setting. The topography of the landscape at places forms a natural viewing platform giving rise to various views out of the site which are enhanced and utilised within the Masterplan. There are views towards neighbouring properties sharing a boundary with the site, separated by the boundary stone wall. There are occasional long distant views south to the buildings and cranes which make up the city skyline. Views into the site are generally restricted to views from neighbouring properties which overlook the site. Views into the site, particularly in relation to the eastern precinct, are also visible from the Broadstone area. The plan enhances this larger sense of place and takes advantage of the topographic character of the site to frame southerly views to the city skyline and Dublin Mountains.

Landscape Character:

The landscape assets of Grangegorman, the mature trees on site, the open nature of the lands, the historical buildings and landscaped pathways together form an integral part of the existing landscape image and character of the area, which dates back to the establishment of the House of Industry for the poor in the 1770's. The Richmond Asylum, a separate institution to house the mentally ill, followed in 1810, which today is known as the Lower House, of which only the southern portion remains. The Richmond General Penitentiary, completed in 1816, was built nearby which over time became part of the Asylum, of which only the front range of the

central spine remains today. Throughout the century the site evolved to become a large mental hospital facility on 30 hectares of land, with additional structures built to the west.

Today, the Upper House and Lower House are well known to locals and play a large part in shaping the landscape character of the site. The site was originally bounded by two ancient roadways into Dublin, which probably followed the line of Constitution Hill and Stoneybatter.

The history and heritage of the area is highly valued by the local community. The current streetscape is rich and varied, with new and modern buildings set alongside historic architecture, complemented by street tree plantings.

Dublin City Development Plan:

The City Development plan sets out a vision and planning context for the future development of the city. To guide strategic development the city identified a small number of key areas, known as Framework Development Areas (FDA), that were earmarked for redevelopment in the near future and established clear objectives for each area. Grangegorman, along with the neighbouring lands of the former Broadstone train depot are designated as area 8.

The following are some of the objectives for the development of the FDA 8, with specific relevance to those related to the landscape aspect of the site:

- To ensure that the development framework for Grangegorman / Broadstone provides for a high quality character area / urban district with strong physical linkage to the H.A.R.P. Area / Smithfield, Phibsborough, Manor Street and to the City Centre through Henrietta Street.
- To develop a legible, attractive spatial and urban character which marries the provision of new urban space with high quality contemporary architecture and with the integration and re-use of protected historic structures and other buildings of architectural/artistic merit.
- To ensure that the existing open space is developed both for the benefit of the new campus and for adjacent existing communities.
- To provide for the physical integration of Grangegorman and Broadstone with each other and the City Centre through the development of a series of physical connections including pedestrian and cycle linkages and new transport infrastructure.

The site is zoned under the current City Development Plan 2005-2011 as Z12 “Institutional Land (Future Development Potential)” in order “to ensure the existing environment amenities are protected in any future use of these lands”. This zoning requires that a minimum of 20% of the site be retained as accessible public open space incorporating landscape features and retaining the essential open character of the site.

### 6.6.2 Opportunities Identified

The following opportunities exist for the development of the Grangegorman site in relation to the landscape:

- Incorporate existing protected structures into the design;
- Protect the visual amenity of the site;
- Exploit key vistas, landscape features and protected structures along main routes;
- Exploit southerly views out to the City skyline and Dublin mountains;
- Develop strong physical linkages to the surrounding areas and communities;
- Develop pedestrian and cycle linkages;
- Increase overall permeability through the site;
- Create new entrances into the site;
- Removal of highly invasive giant hogweed and Japanese knotweed and failing trees;
- Retain existing trees and landscape features of value which contribute to the unique character of the site;
- Maximise potential and existing landscape features to extend and create quality open spaces;
- Implement a high quality coherent landscaping scheme to act as a unifying feature throughout the site;
- Exploit key views to and from the site;
- Ensure a high quality public realm is developed in tandem with the buildings;
- Minimise overshadowing; relevant height restrictions;
- Develop the site as an urban character area;

The Strategic Plan for the site outlines some of the key opportunities available in terms of the landscape of Grangegorman, these include the development of:

- Green linkages
- Health gardens
- Playgrounds
- Courtyards
- Squares / terraces
- Public gardens
- Pedestrian precinct
- Lawn / sports pitches
- Roof gardens
- Playgrounds / play stations / exercise trails, etc.
- Woodland
- Attenuation basin
- Water features
- Habitats

**Key Significant Environmental Issues Identified – Landscape**

Threats to the landscape include those associated with any development, such as the visual impact, overshadowing, loss of character, impact on scenic amenity value of the site, etc. Loss of existing structures on site and loss of large portions of the boundary wall could pose a threat to the landscape character of the site if not dealt with appropriately. The loss of mature trees on site also poses a large threat to the landscape. The trees to be retained should be earmarked for retention and appropriately protected during construction.

This Environmental Report attached to the GDA Draft Strategic Plan highlights some of the areas likely to be affected by this strategic plan including the natural characteristics of the site such as the mature urban trees as well as the cultural heritage in light of the protected structures on site. Also the intensity of the uses proposed for the Grangegorman site is likely to have significant environmental effects which have been considered as part of this assessment.

## 6.7 Air Quality and Climatic Factors

AWN Consulting have been commissioned by Grangegorman Development Agency to provide inputs in relation to air quality and climate for the Strategic Environmental Assessment (SEA) of the Grangegorman Strategic Plan. This section details the critical issues with regard to air quality and climate that were reviewed as part of this SEA, and includes the current air quality standards and climate agreements applicable to Ireland, and the available baseline air monitoring data for the region in addition to the results of an Air Quality Study carried out specifically for the Grangegorman Development Agency.

### 6.7.1 Current Situation

National Standards and Limits

***Air Quality Standards***

In order to reduce the risk to health from poor air quality, national and European statutory bodies have set limit values in ambient air for a range of air pollutants. The applicable limit values or "Air Quality Standards" in Ireland include the Air Quality Standards Regulations 2002, which incorporate EU Directives 1999/30/EC and 2000/69/EC (see Table 6.6). Although the EU Air Quality Limit Values are the basis of legislation, other thresholds outlined by the EU Directives are used which are triggers for particular actions.

Proposed Directive COM(2005) 447 on Ambient Air Quality and Cleaner Air for Europe (21/09/2005) has outlined proposals to revise and combine several existing Ambient Air Quality Standards including Council Directives 96/62/EC, 1999/30/EC and 2000/69/EC. Common Position COM(2007) 320 final (29/06/07) has been adopted by the EU Council with a view to adoption of this Directive which will be published in May 2008. In regards to existing ambient air quality standards, it is not proposed to modify the standards but to strengthen existing provisions to ensure that non-compliances are removed. In addition, new ambient standards for $_{.5}$ are included in the new Directive.

***Climate Agreements***

Ireland ratified the United Nations Framework Convention on Climate Change (UNFCCC) in April 1994 and the Kyoto Protocol in principle in 1997 and formally in May 2002. For the purposes of the EU burden sharing agreement under Article 4 of the Kyoto Protocol, in June 1998, Ireland agreed to limit the net growth of the six GHGs under the Kyoto Protocol to 13% above the 1990 level over the period 2008 to 2012. The UNFCCC is continuing detailed negotiations in relation to GHGs reductions and in relation to technical issues such as Emissions Trading and burden sharing. The most recent Conference of the Parties (COP13) to the agreement was convened in Bali, Indonesia in December 2007.

Baseline Data

***Air Quality***

In terms of air monitoring and assessment, Ireland is divided into four zones, as defined in the Air Quality Standards Regulations 2002. The region of Grangegorman

is within Zone A. The EPA website details the range and scope of monitoring undertaken throughout Ireland and provides both monitoring data and the results of previous air quality assessments. The most recent annual report on air quality in Ireland is the "*Air Quality Monitoring Report 2006*". This report contains monitoring data for Dublin city centre locations close to Grangegorman, as detailed below.

With regard to , continuous monitoring data from Dublin City Council at city centre locations in Wood Quay (Winetavern Street) and Coleraine Street show that current levels of are below both the annual and 1-hour limit values (see Table 6.7), with average levels at each monitoring location of 35 and 31 µg/ respectively in 2006. Sufficient data is available to observe long-term trends over the period 2000 - 2006 (see Table 6.7), with average concentrations at Coleraine Street showing an overall downward trend over the 7-year period.

Continuous monitoring carried out at Wood Quay and Coleraine Street showed average levels of 20 and 21 µg/ respectively in 2006, with 10 and 17 exceedences respectively of the 24-hour limit value of 50 µg/ (36 exceedences are permitted per year) (see Table 6.8). In addition, the average level at the urban background monitoring location in the Phoenix Park in 2006 was 14 µg/, with only two exceedences of 50 µg/. .5 monitoring is not carried out by Dublin City Council but data is available for Cork City. The annual average level measured at Old Station Road in 2006 was 9 µg/.

In terms of benzene, Table 6.9 outlines measurements carried out in Wood Quay (Winetavern Street) over the period 2002 - 2005. The average concentration levels measured over the period 2003 – 2005 range from 1.3 µg/ to 3.8 µg/, which is below the limit value of 5 µg/.

In terms of CO, results at the city centre locations of Wood Quay and Coleraine Street are low, peaking at 62% of the maximum 8-hour limit value (10 mg/) in 2006 (see Table 6.10). Similarly low levels were measured in 2003 - 2005, with average concentrations at the Wood Quay / Winetavern site remaining consistent, while a more variable trend emerges from examination of average values at the Coleraine Street site.

Based on the Dublin City Council and Cork County Council data, it is expected that typical , , .5, benzene and CO concentrations at the Grangegorman site are generally below the limit value.

It was considered that site specific baseline air quality monitoring was required in order to provide more information on the current pollutant levels at the Grangegorman site. The results of this are detailed in Section 6.7.2 below.

***Climate***

The effects of greenhouse gas emissions are experienced on a regional scale, and thus site specific baseline data is not applicable at a local level. Current greenhouse gas emissions in a national context were reviewed in this strategic assessment.

**Key Significant Environmental Issues Identified – Air Quality and Climate**

**Air Quality**

Road traffic is expected to be the dominant source of emissions (with the possible exception of $PM_{10}$) in the region resulting from the Grangegorman redevelopment.

Road traffic emissions do not contribute significantly to $SO_2$ and lead concentrations, and therefore levels of these pollutants in Dublin city centre are currently well below the limit value. Since the proposed Grangegorman development will not contribute significantly to $SO_2$ and lead concentrations in the region, impacts on these pollutants have been scoped out of the strategic assessment.

The strategic assessment in terms of local air quality has therefore focused on the traffic derived pollutants $NO_2$, benzene, $PM_{10}$, $PM_{2.5}$ and CO.

**Climate**

Vehicle emissions associated with the proposed development will give rise to $CO_2$ and $N_2O$ emissions in the region.

Furthermore, emissions from energy generation and space heating in commercial and residential units will also contribute to national emissions of greenhouse gases.

The strategic assessment in terms of climate has therefore focused on greenhouse gas emissions derived from road traffic and also space heating and energy generation.

The use of renewable energy sources has been investigated and compared to emissions resulting from natural gas. The Building Energy Rating of the proposed residential units has been considered as part of the assessment.

### 6.7.2 Results of Air Quality Study at Grangegorman

A short-term monitoring study was carried out for , benzene, and $_{.5}$. The survey was indicative only and cannot be used to gauge compliance with either the short-term or annual limit values for the reasons outlined above. The survey does however allow an indicative assessment of the influence of local road sources relative to the prevailing background level of these pollutants in the area.

was monitored, using nitrogen dioxide passive diffusion tubes, over a one-month period at four locations near the proposed development (see Figure 6.9, M1-M4). The locations were chosen in order to assess roadside exposure to . The results also allow an assessment of the spatial variation of away from the main road sources in the area. The spatial variation away from roadside is particularly important for , as a complex relationship exists between NO, and leading to a non-linear variation of concentrations with distance from the road. Passive sampling of involves the molecular diffusion of molecules through a polycarbonate tube and their subsequent adsorption onto a stainless steel disc coated with triethanolamine. Following sampling, the tubes were analysed using UV spectrophotometry, at a UKAS accredited laboratory (Bureau Veritas, Glasgow).

Studies in the UK have shown that diffusion tube monitoring results generally have a positive or negative bias when compared to continuous analysers. This bias is laboratory specific and is dependent on the specific analysis procedures at each laboratory. The diffusion tube bias for the Bureau Veritas laboratory of 0.90 was obtained from the UK Air Quality Review and Assessment website (.uwe.ac.uk/aqm/ ) and applied to the diffusion tube monitoring results.

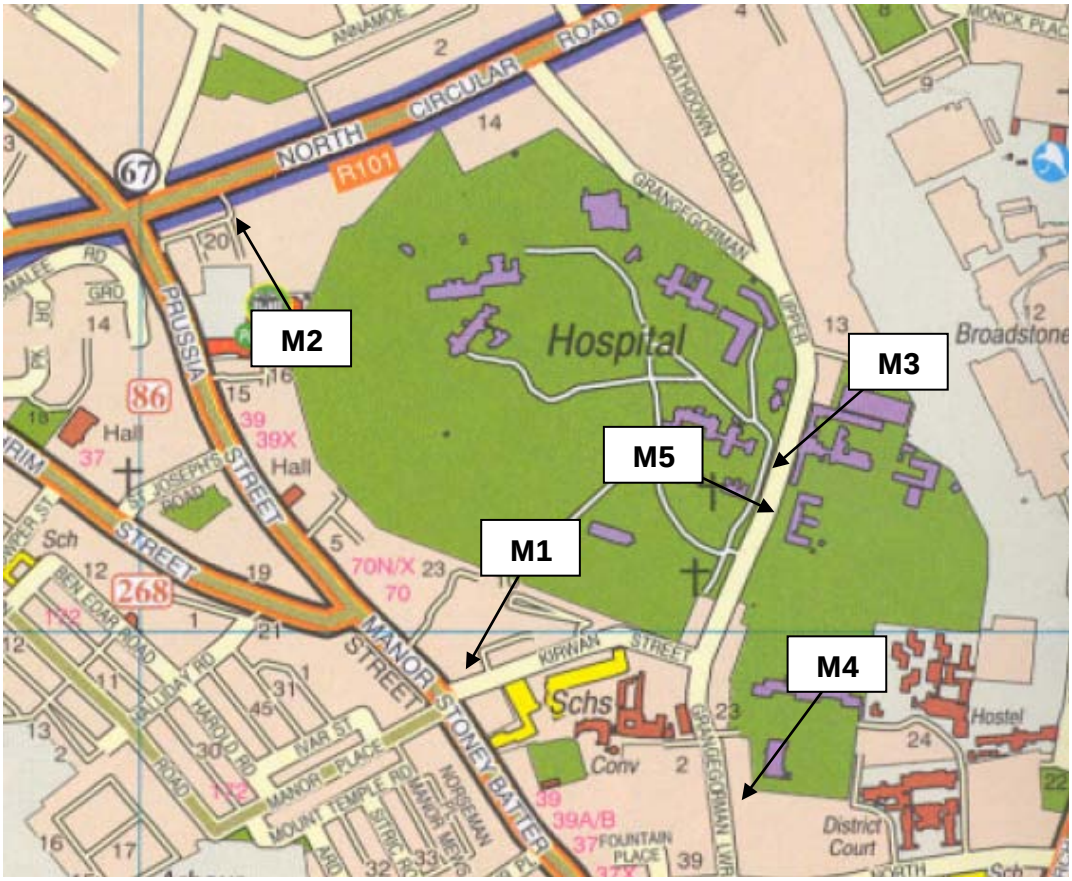
Benzene

Benzene was monitored, using passive diffusion tubes over a one-month period at two locations near the proposed development (see Figure 6.9, M2 and M3). Passive sampling of benzene involves the molecular diffusion of benzene molecules through a stainless steel tube and their subsequent adsorption onto a stainless steel gauze coated with Chromasorb 106. Following sampling, the tubes were analysed using Gas Chromatography, at a UKAS accredited laboratory. The locations were positioned to allow an assessment of roadside exposure to benzene.

/ .5

was monitored, using an Osiris Environmental Dust Monitor, over two 24-hour periods at one location near the proposed development (see Figure 6.9, M5). The location was positioned to allow an assessment of urban background concentration levels of .

**Figure 6.9**
**Baseline Air Monitoring Locations at Grangegorman**




**Source: AWN Consulting, September 2008**

Assessment of Compliance

Nitrogen dioxide ( ) results are presented in Table 6.11. Average concentrations of nitrogen dioxide were below the ambient limit value of 40 µg/. The highest levels measured reached 50% of the limit value.

Benzene results are presented in Table 6.12. Average concentrations of benzene were well below the EU annual limit value of 5 µg/.

The results of the baseline and $_{.5}$ monitoring are presented in Table 6.13. The 24-hour concentrations of do not exceed the national and EU 24-hour limit value of 50 µg/, although 35 exceedances are allowable in any one year. The 2-day average for is below the annual limit value of 40 µg/ while $_{.5}$ concentrations are below the

proposed annual concentration cap for $_{.5}$. The results of the 2-day $/_{.5}$ can only provide indicative comparisons to their respective limit values. Hence the results of long-term and $_{.5}$ monitoring carried out by the EPA in Dublin have been used to provide further information on background and $_{.5}$ levels at the Grangegorman site (see Section 6.7.1).

In summary, ambient air quality in the vicinity of the proposed development, based on an analysis of the baseline monitoring survey and existing EPA data, is at present below the ambient air quality standards for , , $_{.5}$ and benzene.

| Table 6.6<br>European Union Ambient Air Quality Standard (Based on Directive 2008/50/EC) | | | | |
|---|---|---|---|---|
| **Pollutant** | **Regulation** Note 1 | **Limit Type** | **Margin of Tolerance** | **Value** |
| Nitrogen Dioxide | 2008/50/EC | Hourly limit for protection of human health - not to be exceeded more than 18 times/year | 40% until 2003 reducing linearly to 0% by 2010 | 200 µg/ |
| | | Annual limit for protection of human health | 40% until 2003 reducing linearly to 0% by 2010 | 40 µg/ |
| | | Annual limit for protection of vegetation | None | 30 µg/ NO + |
| Lead | 2008/50/EC | Annual limit for protection of human health | 100% Note 2 | 0.5 µg/ |
| Sulphur dioxide | 2008/50/EC | Hourly limit for protection of human health - not to be exceeded more than 24 times/year | 150 µg/ | 350 µg/ |
| | | Daily limit for protection of human health - not to be exceeded more than 3 times/year | None | 125 µg/ |
| | | Annual & Winter limit for the protection of ecosystems | None | 20 µg/ |
| Particulate Matter (as ) | 2008/50/EC | 24-hour limit for protection of human health - not to be exceeded more than 35 times/year | 50% | 50 µg/ |
| | | Annual limit for protection of human health | 20% | 40 µg/ |
| .5 (Stage 1) | 2008/50/EC | Annual limit for protection of human health | 20% from June 2008. Decreasing linearly to 0% by 2015 | 25 µg/ .5 |
| .5 (Stage 2) Note 3 | - | Annual limit for protection of human health | None | 20 µg/ .5 |
| Benzene | 2008/50/EC | Annual limit for protection of human health | 100% until 2006 reducing linearly to 0% by 2010 | 5 µg/ |
| Carbon Monoxide | 2008/50/EC | 8-hour limit (on a rolling basis) for protection of human health | 60% | 10 mg/ (8.6 ppm) |

Note 1 EU 2008/50/EC – Clean Air For Europe (CAFÉ) Directive replaces the previous Air Framework Directive (1996/30/EC) and daughter directives 1999/30/EC and 2000/69/EC

Note 2 EU 2008/50/EC states - '*Limit value to be met only by 1 January 2010 in the immediate vicinity of the specific industrial sources situated on sites contaminated by decades of industrial activities. In such cases the limit value will be 1.0 µg/. The area in which higher limit values apply must not extend further than 1000 m from such specific sources'*

Note 3 EU 2008/50/EC states - '*Stage 2 — indicative limit value to be reviewed by the Commission in 2013 in the light of further information on health and environmental effects, technical feasibility and experience of the target value in Member States*

| Table 6.7<br>Trends in Dublin City Air Quality - Nitrogen Dioxide (µg/) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Station** | **Station Classification** | **Averaging Period** | **Year** | | | | | | |
| | | | **2000** | **2001** | **2002** | **2003** | **2004** | **2005** | **2006** |
| Coleraine Street | Urban Traffic | Annual average | 41 | 39 | 38 | 37 | 32 | 28 | 31 |
| | Distance From Road = 3 m | Maximum 1-hr | 208 (101) | 193 (92) | - | [117] | [110] | [135] | [126] |
| Wood Quay / Winetavern Street | Urban Traffic | Annual average | ≈32 | 33 | 35 | 38 | 30 | 33 | 35 |
| | Distance From Road = 7 m | Maximum 1-hr | ≈155- | 1235 (214) | - | [150] | [100] | [120] | [134] |

( ): represent the %ile of maximum 1-hour concentrations.
[ ]: represents the 99.%ile of maximum 1-hour concentrations
≈: Indicates approximate value from a graph reproduced in the EPA report "Preliminary Assessment Under Article 5 of Council Directive 96/62/EC – Ireland".

| Table 6.8<br>Trends in Dublin City Air Quality - (µg/) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Station** | **Station Classification** | **Averaging Period** | **Year** | | | | | | |
| | | | **2000** | **2001** | **2002** | **2003** | **2004** | **2005** | **2006** |
| Wood Quay / Winetavern St | Urban Traffic | Annual average | N.A. | 28 | 23 | 26 | 20 | 19 | 20 |
| | Distance From Road = 7 m | 24-hr > 50 µg/ | N.A. | 28 | 14 | 24 | 14 | 8 | 10 |
| Phoenix Park | Suburban Background | Annual average | 16 | 18 | 15 | 14 | 12 | 12 | 14 |
| | Distance From Road = 250 m | 24-hr > 50 µg/ | 4 | 12 | 8 | 5 | 2 | 2 | 2 |
| Coleraine Street | Urban Traffic | Annual average | 19 | 27 | 21 | 28 | 20 | 20 | 21 |
| | Distance From Road = 3 m | 24-hr > 50 µg/ | 5 | 26 | 10 | 33 | 16 | 10 | 17 |

N.A. Not Available

| Table 6.9<br>Trends in Dublin City Air Quality - Benzene (µg/) | | | | | | |
|---|---|---|---|---|---|---|
| **Station** | **Station Classification** | **Averaging Period** | **Year 2002** | **Year 2003** | **Year 2004** | **Year 2005** |
| Wood Quay / Winetavern Street | Zone A Urban Traffic Distance From Road = 7 m | Annual | 3.8 | 1.6 | 1.3 | 1.4 |

| Table 6.10<br>Trends In Dublin City Air Quality - Carbon Monoxide (mg/) | | | | | | |
|---|---|---|---|---|---|---|
| **Station** | **Station Classification** | **Averaging Period** | **Year 2003** | **Year 2004** | **Year 2005** | **Year 2006** |
| Wood Quay / Winetavern Street | Zone A Urban Traffic Distance From Road = 7 m | 8-Hour Maximum | 2.5 | 4.1 | 3.0 | 5.2 |
| | | Annual Average | 0.2 | 0.3 | 0.2 | 0.3 |
| Coleraine Street | Zone A Urban Traffic Distance From Road = 3 m | 8-Hour Maximum | 4.7 | 6.0 | 4.3 | 6.2 |
| | | Annual Average | 0.6 | 0.9 | 1.1 | 0.7 |

| Table 6.11<br>Results Of Diffusion Tube Monitoring Carried Out At Grangegorman. | |
|---|---|
| **Location** | **Concentration (µg/)[Note 1]** |
| | **22/05/08 - 23/06/08** |
| M1 – O' Shea Lane | 19 |
| M2 – 191 NCR, Park House | 22 |
| M3 – Hospital Entrance | 19 |
| M4 – Grange Inn Pub | 15 |
| *Limit Value* | *3* |

Note 1 Diffusion tube bias factor of 0.90 applied to laboratory results.
Note 3 EU Council Directive 2008/50/EC (as an annual average).

| Table 6.12<br>Results Of Benzene Diffusion Tube Monitoring Carried out at Grangegorman. | |
|---|---|
| **Location** | **Benzene Concentration (µg/)** |
| | **22/05/08 - 23/06/08** |
| M2 - 191 NCR, Park House | 1.0 |
| M3 - Hospital Entrance | 0.4 |
| *Limit Value* | *1* |

Note 1 EU Council Directive 2008/50/EC (as an annual average).

| Table 6.13<br>Results of Monitoring Carried Out At Grangegorman | | | |
|---|---|---|---|
| **Location** | **Sampling Period** | **Conc. (µg/)** | **.5 Conc. (µg/)** |
| M5 | 18/07/08 – 19/07/08 | 10.4 | 2.0 |
| | 19/07/08 – 20/07/08 | 20.6 | 5.0 |
| | *2-Day Average* | 15.2 | 3.4 |
| *Limit Value* | | *24-Hour = 1*<br>*Annual = 1* | *Annual = 1* |

Note 1 EU Council Directive 2008/50/EC

## 6.8 Noise and Vibration

AWN Consulting were commissioned by Grangegorman Development Agency to provide inputs in relation to noise and vibration for the Strategic Environmental Assessment (SEA) of the GDA Draft Strategic Plan. This section of the *Environmental Report* details issues regarding noise and vibration that was assessed as part of this SEA.

The site is bounded to the north by North Circular Road, including the residences at St Elizabeth's Court, to the east by Great Western Square, Monck Place and Phibsborough Road, to the south by District Court lands and by Kirwan Street Cottages and to the west by residential areas of Prussia Street. Grangegorman Road runs between the two parcels of land which make up the site. The site has therefore a significant number of noise-sensitive locations in the vicinity.

**Key Significant Environmental Issues Identified – Noise and Vibration**

The proximity of the noise-sensitive locations in the vicinity of the site means that there is potential for disturbance to neighbours during the construction and operational phases of the development.

The construction phase is the more significant in this regard. Depending on the nature of the buildings to be constructed and the ground conditions of the site, construction methods may include significant noise-generating processes such as piling or rock-breaking. Wherever such a process is required in the vicinity of a noise-sensitive location, alternative construction methods could be considered in order keep noise and vibration impact upon residents within acceptable limits.

Operational noise can be managed on a more straightforward manner. The main sources of noise are building services and delivery operations within the site. It is likely that these noise sources will have a greater effect on noise-sensitive locations within the site than on those outside the site. Thus, the design of the site itself should also take these considerations into account when locating plant areas and delivery yards.

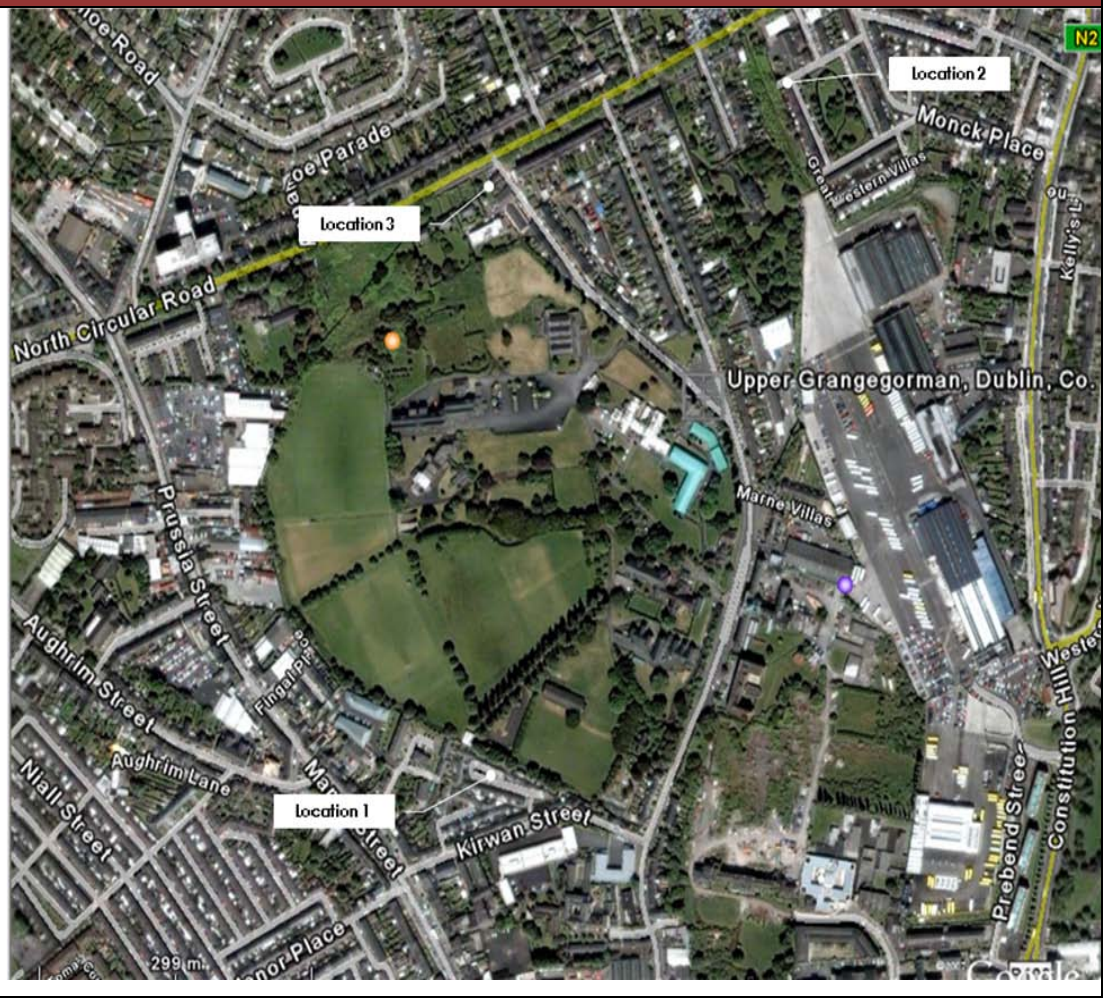
### 6.8.1 Current Situation

An environmental noise survey was conducted in order to quantify the existing noise environment. The survey was conducted in general accordance with ISO 1996: 1982: *Acoustics – Description and Measurement of Environmental Noise*. Specific details are set out below.

**Choice of Measurement Locations**

Three measurement locations were selected, each is described in turn below and shown in Figure 6.10.

**Figure 6.10**
**Noise Measurement Locations**




**Source: AWN Consulting, September 2008**

**Location 1** is located within Kirwan Close, to the south of the site, on a small green space in the centre of the street.

**Location 2** is located at Great Western Square, at a cul-de-sac at the north-western corner of the square.

**Location 3** is located in the car park of St Catherine's Court, 12m from the road edge, in line with the façades of residential properties nearby.

**Survey Periods**

Noise measurements were conducted at Locations 1 to 3 over the course of two survey periods as follows:

- Daytime 10:33hrs to 14:04hrs on 19 September 2008, and
- Night-time 23:00hrs on 19 September to 01:56hrs on 19 September 2008.

The daytime measurements cover a period that was selected in order to provide a typical snapshot of the existing noise climate, with the primary purpose being to ensure that the proposed noise criteria associated with the development are commensurate with the prevailing environment.

The night-time period provides a measure of the existing background noise levels. The weather during the day was warm and dry. Weather during the night-time survey was mild and dry.

**Personnel and Instrumentation**

Mike Simms (AWN) performed the measurements during both survey periods. The noise measurements were performed using a Brüel & Kjær Type 2250 Precision Sound Level Analyser. Before and after the survey the measurement apparatus was check calibrated using a Brüel & Kjær Type 4231 Sound Level Calibrator.

**Procedure**

Measurements were conducted at Locations 1 to 3 on a cyclical basis. Sample periods for the noise measurements were 15 minutes during both daytime and night-time periods. The results were noted onto a Survey Record Sheet immediately following each sample, and were also saved to the instrument memory for later analysis where appropriate. Survey personnel noted all primary noise sources contributing to noise build-up.

**Measurement Parameters**

The noise survey results are presented in terms of the following three parameters:

is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period.

is the sound level that is exceeded for 10% of the sample period. It is typically used as a descriptor for traffic noise.

is the sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise.

The "A" suffix denotes the fact that the sound levels have been "A-weighted" in order to account for the non-linear nature of human hearing. All sound levels in this report are expressed in terms of decibels (dB) relative to $2x10^{-5}$ Pa.

**Results and Discussion**

Location 1
The survey results for Location 1 are summarised in Table 6.14.

| Table 6.14<br>Summary of Noise Measurements at Location 1 | | | | |
|---|---|---|---|---|
| Time | | Measured Noise Levels (dB re. $2x10^{-5}$ Pa) | | |
| Daytime | 10:33-10:48 | 50 | 66 | 44 |
| | 11:59-12:14 | 50 | 66 | 43 |
| | 13:08-13:23 | 48 | 64 | 42 |
| Night-time | 23:00-23:15 | 36 | 49 | 32 |
| | 00:00-00:15 | 36 | 59 | 30 |
| | 00:59-01:14 | 36 | 53 | 31 |

During daytime monitoring periods, audible sources at this location included distant traffic on surrounding roads, occasional vehicle movements on Kirwan Street South, and occasional noise from refurbishment work within one of the Cottages. During the first measurement period, a lawnmower within the subject site was audible. Daytime noise levels were in the range 48 to 50dB and 42 to 44dB .

During night-time monitoring periods, distant traffic on surrounding roads was the dominant source of noise. Noise levels were of the order of 36dB and in the range 30 to 32dB .

No significant source of vibration was noted during the survey periods.

Location 2
The survey results for Location 2 are summarised in Table 6.15 below.

| Table 6.15<br>Summary of Noise Measurements at Location 2 | | | | |
|---|---|---|---|---|
| Time | | Measured Noise Levels (dB re. $2x10^{-5}$ Pa) | | |
| Daytime | 10:58-11:13 | 47 | 61 | 39 |
| | 12:49-13:04 | 47 | 56 | 40 |
| | 13:35-13:50 | 48 | 67 | 39 |
| Night-time | 23:24-23:39 | 44 | 60 | 33 |
| | 00:21-00:36 | 44 | 58 | 32 |
| | 01:22-01:37 | 41 | 59 | 31 |

During daytime monitoring periods, noise levels were dominated by distant traffic on surrounding roads, occasional local vehicle movements, wind generated noise in foliage and distant construction activity. Daytime noise levels were in the range 47 to 48dB and 39 to 40dB .

The night-time noise measurements at this location were dominated by traffic on surrounding roads, occasional local vehicle movements and during the third

measurement, feint music from a house on the far side of the square. Noise levels were in the range 41 to 44dB and 31 to 33dB .

No significant source of vibration was noted during the survey periods.

Location 3
The survey results for Location 3 are summarised in Table 6.16 below.

**Table 6.16**
**Summary of Noise Measurements at Location 3**

| Time | | Measured Noise Levels (dB re. $2x10^{-5}$ Pa) | | |
|---|---|---|---|---|
| Daytime | 11:28-11:43 | 65 | 78 | 47 |
| | 12:24-12:39 | 60 | 75 | 43 |
| | 13:54-14:04 | 61 | 77 | 43 |
| Night-time | 23:41-23:56 | 58 | 74 | 35 |
| | 00:39-00:54 | 57 | 69 | 35 |
| | 01:41-01:56 | 53 | 70 | 34 |

Noise levels at this location during the daytime period were dominated by traffic on North Circular Road. Noise levels were in the range 60 to 65dB and 43 to 47dB .

Similarly, night-time noise levels were governed on North Circular Road. Noise levels were in the range 53 to 58dB and 34 to 35dB .

No significant source of vibration was noted during the survey periods.

### 6.8.2 Proposed Noise Criteria

**Construction Phase**

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. Local authorities normally control construction activities by imposing limits on the hours of operation and consider noise limits at their discretion.

In the absence of specific noise limits, appropriate criteria relating to permissible construction noise levels for a development of this scale may be found in the National Roads Authority (NRA) publication *Guidelines for the Treatment of Noise and Vibration in National Road Schemes*[5] which indicates the following criteria and hours of operation. The majority of the construction activity in relation to the proposed development is expected to occur during normal working hours. These limits are outlined in Table 6.17.

**Table 6.17**
**Maximum permissible noise levels at the facade of dwellings during construction (ref. NRA)**

| Days and Times | Noise Levels (dB re. $2x10^{-5}$ Pa) |
|---|---|

[5] *Guidelines for the Treatment of Noise and Vibration in National Road Schemes, Revision 1, 25 October 2004,* National Roads Authority.

| | (1hr) | |
|---|---|---|
| Monday to Friday 07:00hrs to 19:00hrs | 70 | 80 |
| Monday to Friday 19:00hrs to 22:00hrs | 60* | 65* |
| Saturdays 08:00hrs to 16:30hrs | 65 | 75 |
| Sundays & Bank Holidays 08:00hrs to 16:30hrs | 60* | 65* |

* Construction activity at these times, other than that required for emergency works, will normally require the explicit permission of the relevant local authority.

In certain unique instances it may be necessary to exceed the limits for a short duration. A protocol shall be developed to cover exceedence including consideration of all reasonable alternatives and minimising of such exceedance and its duration.

It is considered that, given the nature of the proposed construction activities, these target noise limits are appropriate in this instance.

**Operational Phase**

The redevelopment of the Grangegorman Site will be operated in a manner which minimises the impact of noise on sensitive receptors in the locality. The provision of a high quality public transport system together with the encouragement of pedestrian and cycle within and to the site will ensure that traffic noise impacts are minimised. Building design and noise and noise generation guidelines shall be applied to ensure noise emissions standards are adhered to within the development.

### 6.8.3 Vibration Guidelines

Vibration standards come in two varieties: those dealing with human comfort and those dealing with cosmetic or structural damage to buildings. In both instances, it is appropriate to consider the magnitude of vibration in terms of Peak Particle Velocity (PPV).

It is acknowledged that humans are particularly sensitive to vibration stimuli and that any perception of vibration may lead to concern. In the case of road traffic, vibration is perceptible at around 0.5mm/s and may become disturbing or annoying at higher magnitudes. However, higher levels of vibration are typically tolerated for single events or events of short duration. For example, piling is one of primary sources of vibration during construction, and is typically tolerated at vibration levels up to 5mm/s. This guidance is applicable to the daytime only; it is unreasonable to expect people to be tolerant of such activities during the night.

Guidance relevant to acceptable vibration within buildings is contained in the following documents:

- British Standard BS 7385 (1993): *Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration*, and;

- British Standard BS 5228 (1992): *Noise control on construction and open sites* Part 4 *Code of practice for noise and vibration control during piling*.

BS 7385 states that there should typically be no cosmetic damage if transient vibration does not exceed 15mm/s at low frequencies rising to 20mm/s at 15Hz and 50mm/s at 40Hz and above. These guidelines relate to relatively modern buildings and should be reduced to 50% or less for more critical buildings.

BS 5228 recommends that, for soundly constructed residential property and similar structures that are generally in good repair, a threshold for minor or cosmetic (i.e. non-structural) damage should be taken as a peak particle velocity of 11mm/s for intermittent vibration and 5mm/s for continuous vibration. Below these vibration magnitudes minor damage is unlikely, although where there is existing damage these limits may be reduced by up to 50%. For light and flexible industrial and commercial structures threshold limits of 20mm/s for intermittent and 11mm/s for continuous are recommended, whilst for heavy and stiff buildings higher thresholds of 30mm/s for intermittent and 15mm/s for continuous are recommended.

Vibrations shall be controlled in accordance with the above British Standards. Any exceedances should only be considered following consideration of all reasonable alternatives, duration of exceedance and anticipated impact.

The NRA document Guidelines for the Treatment of Noise and Vibration in National Road Schemes also contains information on the permissible construction vibration levels during the construction phase as follows:

**Table 6.18**
**Allowable Vibration during Construction Phase**

| **Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of** | | |
|---|---|---|
| Less than 11Hz | 11 to 50Hz | 50 to 110Hz (and above) |
| 3 mm/s | 3 to 8 mm/s | 8 to 11 mm/s |

## 6.9 Material Assets

The site of Grangegorman has a variety of material assets typical of city centre brownfield sites of this scale. The Material Assets identified by the SEA Team include the following:

- Traffic and Transportation;
- Drainage;
- Water Supply;
- Surface Water;
- Gas;
- Electrical Services;
- Lighting;
- Fire Hydrants; and
- Ventilation.

It was the consideration of the SEA Team that the significant material assets that merit detailed investigation as part of the Strategic Environmental Assessment are Traffic and Transportation and the Services Infrastructure for the Grangegorman Site. Services Infrastructure for the purposes of this SEA includes foul sewerage, surface water sewerage and the watermains. The main considerations in respect of these issues have been detailed in the remainder of this section of the *Environmental Report*.

The Traffic and Transportation section provided below has been prepared by Faber Maunsell, Consultant Traffic Engineers, on behalf of Grangegorman Development Agency and seeks to inform the Material Assets element of the Strategic Environmental Assessment of the *GDA Draft Strategic Plan*. The Services Infrastructure section also provided below has been prepared by Horgan Lynch, Consultant Engineers, on behalf of Grangegorman Development Agency and seeks to inform the Material Assets element of the Strategic Environmental Assessment of the *GDA Draft Strategic Plan*.

### 6.9.1 Traffic and Transportation

#### 6.9.1.1 Current Situation

The Grangegorman lands are located within approximately 2km of Dublin City Centre. The surrounding roads include the North Circular Road to the North, Prussia Street to the west, Phibsborough Road and Constitution Hill to the East. These roads provide local movement functions. The N2 and N3 are also located in close proximity to the site and provide more strategic movement functions. Vehicular access is currently provided from Grangegorman Road which bisects the site. The figure below identifies the development lands in the context of the surrounding area and road network.

**Figure 6.11**
**Principal Road and Street Network**


**Source:** **Faber Maunsell, Consultant Traffic Engineers, May 2008**

The Grangegorman development lands are surrounded by a road network which is congested during peak periods. This congestion suppresses the demand for travel by all modes and particularly vehicular traffic during peak periods. The vehicular trips undertaken on the surrounding network are caused by such factors as the spatial separation between trip ends including land use issues, public transport availability and the changing demographics which have evolved both in Dublin City Centre and the surrounding suburbs.

The existing public transport provision serving the development site is focused primarily on bus. The majority of these services are destined for the City Centre via the Quays or Parnell Square and O' Connell Street. Good frequency of service is provided on the western side of the site along North Circular Road, Prussia Street and Stoneybatter. To the east of the site services are provided along Phibsborough Road and Constitution Hill.

While adequate pedestrian facilities are generally provided within the surrounding road network, the development site currently suffers from a lack of permeability caused by limited access, boundary walls, and the Broadstone site to the east.

### 6.9.1.2 Opportunities

The sustainable development of the Grangegorman lands requires the provision of good public transport penetration and connectivity from the subject site to surrounding areas. In addition the consideration and provision for walking and cycling trips will contribute to the overall sustainability of the subject lands. Influencing the modal split that arises from the development lands will include such issues as the quantum of car parking provided, the access arrangements for all modes, the connectivity of footways and cycleways, and the quality of the public realm and the streetscape.

The development offers the opportunity to provide a complementing mix of land uses to capture the synergies which exist between trip generating origins and destinations. In this manner the spatial separation between trip ends can be reduced to facilitate the demand for travel to be undertaken by walking, cycling and public transport. The facilitation of additional population within Dublin City Centre creates the potential for the development of critical mass to facilitate the provision of additional public transport services.

The focus of the Transportation provision associated with the Grangegorman lands should therefore be one of sustainability and environmental sensitivity. The development should take the opportunity to develop a network of cycle and pedestrian routes to re-establish connectivity with the surrounding areas. This will not only facilitate access by foot or bicycle but will support the overall variety of services provided in the area. Access to the site should be built on the provision of strong public transport links to surrounding areas. The provision of residential accommodation on site will mitigate a significant amount of the transport demand.

**Key Significant Environmental Issues Identified – Traffic and Transportation**

From a transportation perspective the primary significant environmental impact of the development of the Grangegorman site involves the number of vehicular trips which will be generated. The design elements which can influence the number of vehicular trips generated by the development include the following;

- Land Use Mix;
- Quality of public realm and streetscape;
- Quantum of car parking;
- Access, availability, reliability, comfort and quality of Public transport;
- Pedestrian connectivity with surrounding areas;
- Cyclist connectivity including permeability through the development site; and
- Provision of on-site residential accommodation.

Transport and traffic issues will also have impacts on environmental factors such as air, noise, mirco-climate, socio-economic socio-economic issues, population, visual impact and others.

### 6.9.2 Services Infrastructure

Horgan Lynch, Consultant Engineers have provided the following study of the Services Infrastructure associated with the *GDA Draft Strategic Plan*. A desktop study was previously undertaken by Arup Consulting as part of a previously prepared *Opportunities and Constraints Study* carried out in May 2007 to identify the foul and surface water sewerage systems in the area of the site and surrounding areas including the watermain system. Engineering constraints were previously identified in the course of this study in relation to the proposed redevelopment of the site. The key points of this relevant to the Strategic Environmental Assessment have been highlighted below.

#### 6.9.2.1 Current Situation

Existing Foul Sewerage

The following Dublin City Council combined sewers are in the vicinity of the Grangegorman site.

- A 450mm sewer runs eastwards along the North Circular Road into a 1010 x 610mm sewer at the junction of Annamoe Parade. This sewers turns southwards down Grangegorman Road Upper.

- A 1010 x 810mm sewer on Grangegorman Road Upper is part of the Bradoge River Culvert system. This sewer splits in two at Marne Villas with a 600mm pipe discharging through the eastern section of St Brendan's Hospital before connecting to the 1500mm sewer on Brunswick Street North.

- A 375mm sewer splits from the 1010 x 810mm sewer at Grangegorman Road Upper and discharges southwards down Grangegorman Road Lower before connecting into a 1010 x 600mm sewer at the Stanhope Street junction.

- A 300mm sewer on Kirwin Street which drains both westwards to the 1350mm sewer on Manor Street and eastwards to the 300mm sewer on Grangegorman Road Lower.

- A 1030 x 610mm sewer on Prussia Street which drains southwards to the 1350mm sewer on Manor Street.

Drainage from St Brendan's, Grangegorman is divided into two areas. St Brendan's West discharges eastwards to the Dublin City Council combined sewers on Grangegorman Road Upper and St Brendan's East discharges both eastwards to the 600mm diameter Dublin City Council foul sewer (Bradoge River Culvert) traversing the site to the eastern boundary with the Broadstone Depot and westwards to a 1010 x 600mm brick sewer on Grangegorman Road Lower.

Drainage from St Brendan's West is drained on a combined system with 5 outfall points to the Dublin City Council sewer on Grangegorman Road Upper. Four of these outfalls discharge to a 1150 x 770mm brick sewer and the fifth to the 375mm diameter sewer on Grangegorman Road Lower.

The 1150 x 770mm sewer divides at Marne Villas into a 600mm diameter sewer (Bradoge River Culvert) draining through St Brendan's East and a 375mm diameter sewer draining southwards down Grangegorman Road Lower.

Drainage from St Brendan's East is drained on a combined system with 6 outfall points to the City Council sewers. Four of these outfalls discharge to the 600mm diameter sewer (Bradoge River Culvert) traversing the site while the remaining two discharge to the 375mm diameter sewer on Grangegorman Road Lower.

Drainage on the site is mainly constructed of glazed earthenware with brickwork manholes.

Existing Surface Water Sewerage

There are no Dublin City Council surface water sewers in the vicinity of the Grangegorman site.

However the Bradoge River runs southwards to the River Liffey through Grangegorman. According to the "Rivers of Dublin" by Clare Sweeney the Bradoge River originates in Cabra, where it took a course eastwards through Cabra West and East, south easterly through Grangegorman to the ford at Broadstone. At this point the watercourse appears to split in two. The main course turns eastwards at the railway terminus and crosses under Constitution Hill/Broadstone Road into Kings Inn and down into Bolton Street where it now travels in a 2400 x 900mm brick sewer past Chapel Street into Kings Street, Halston Street, Cuckoo Lane and Chancery Street before discharge into the River Liffey.

The smaller course at the rear of Broadstone branches off due south through St Brendan's before separating into two at the west end of the old Richmond Hospital on Brunswick Street North and rejoins again to run southwards on Red Cow Lane and across Kings Street North. It then flows south down Aaron Street North and entering the River Liffey on Aaron Quay downstream of Queens Street Bridge.

The Bradoge river system has been incorporated into the Dublin City Council sewerage system. The total length of the main lines of the network is 5½ kilometres.

Existing Watermains

The following Dublin City Council Watermains are in the vicinity of the Grangegorman site.

- A 450mm and 175mm main on the North Circular Road.
- A 125mm main on Grangegorman Road Upper which changes to a 150mm main on Grangegorman Road Lower. The 125mm main connects into both the 175mm and 450mm mains on the North Circular Road.
- A 100mm and 225mm main on Prussia Street continuing down into Manor Street.

- A 150mm main on Kirwin Street connecting to the 150mm main on Grangegorman Road and the 225mm on Manor Street with a connection to a larger 300mm also on Manor Street.

- A 250mm and 800mm main on Brunswick Street North.

- A 225mm main on Phibsborough Street running into Constitution Hill.

- A 800mm on Constitution Hill which is a continuation of the main on Burnswick Street North.

- A 300mm main on Constitution Hill.

Both St Brendan's East and West are served off the existing Dublin City Council 150mm watermain on Grangegorman Road Upper. There are 2 existing metered connections to St Brendan's West and 2 metered connections to St Brendan's East, with the Nurses Residences connection the only one in use on the east side.

Pressure and flow tests were carried out on the existing 150mm main on Grangegorman Road Upper back in June 1998 with a pressure of 37 PSI and a flow of 160 gallons/minute being achieved. A test was also carried out in St Brendan's West and the results achieved were 31 PSI and a flow of 130 gallons/minute.

There are no ring main systems in St Brendan's East with fire hydrants fed from the existing 150mm main on Grangegorman Road Upper.

There are 2 ring main systems in operation in St Brendan's West and vary from 100mm to 150mm diameter mains.

### 6.9.2.2 Opportunities

The following provides detailed recommendations and opportunities for the management of the Services Infrastructure currently on site which may facilitate the development of the Grangegorman Site and will maximise the potential of the existing infrastructure.

Recommended Foul Drainage

Currently there is a combined sewerage system in operation across the site but it is intended, as part of the redevelopment, to separate the foul and surface water lines and create two new separate systems that will connect independently into Dublin City Councils surrounding drainage system.

Therefore the proposed development of the Grangegorman site will require a new drainage system for both foul and surface water, and due to the proposed design for the site it is unlikely that any of the existing drainage lines across the site will be retained.

However in the event that sections of existing drains could be utilised, their structural integrity and capacity shall be verified, and these drains shall be utilised as foul drains only.

Existing drains being utilised will require the following:

- Condition survey including CCTV survey and report to WRC Standards.
- Capacity check.
- Agreement with Dublin City Council Drainage Division regarding the items noted above.

It is expected that the existing 375mm diameter combined outfall sewer on Grangegorman Road Lower will be utilised as the proposed foul sewerage outfall from the redevelopment to the 1500mm foul sewer on Brunswick Street North.

It is proposed that foul drains will be provided along the main circulation routes throughout the development, and it is considered that all drainage within the Grangegorman site will remain private and will not be taken in charge by Dublin City Council. This will facilitate the future occupiers of the site in allowing them to make future connections into the drainage lines on the site without having to seek permission from Dublin City Council. However it has been agreed with Dublin City Council's Drainage Department that all drainage lines running along the main circulation routes within the Grangegorman site will be constructed to DCC standards, as set out below:

- Proposed foul and surface water sewers shall be a minimum of 225mm diameter.
- Sewers shall comply with Dublin City Council Drainage Divisions "Code of Practice".
- Sewers and manholes shall be constructed to the details and specification of the Drainage Division.

Dublin City Council Drainage Division have confirmed that due to the removal of surface water run-off from the existing Grangegorman development from the combined sewers in Grangegorman Road, there will be spare capacity for the increased foul discharge coming from the redevelopment to this sewer.

A disconnecting manhole shall be provided at each site boundary with a channel interceptor (broads trap) and fresh air inlet, constructed in the manhole, to prevent noxious smells and gases entering into the redevelopment from the public sewers.

All disconnecting manholes shall be constructed to Dublin City Council Drainage Divisions requirements.

All private foul drains shall be constructed to Part H of the Building Regulations 1997.

<u>Recommended Surface Water Drainage</u>
Currently there is a combined sewerage system in operation across the site but it is intended, as part of the redevelopment, to separate the foul and surface water

lines and create two new separate systems that will connect independently into Dublin City Councils surrounding drainage system.

It is proposed that surface water drains will be provided on the main circulation routes throughout the redevelopment, and it has been agreed with Dublin City Council's Drainage Department that all drainage lines running along the main circulation routes within the Grangegorman site will be constructed to DCC standards, as set out below:

- Proposed surface water sewers shall be a minimum of 225mm diameter.
- Sewers shall comply with Dublin City Council Drainage Divisions "Code of Practice".
- Sewers and manholes shall be constructed to the details and specification of the Drainage Division.

Currently there is no separate DCC surface water sewer in the vicinity of the Grangegorman site. However the construction of a new 600mm diameter surface water sewer is proposed between the closest existing line which is located in Smithfield Plaza up to Grangegorman Road Upper, and this new line will service the redevelopment proposed for the Grangegorman site.

Surface water drainage from the proposed development of the Grangegorman site to either side of the Grangegorman Road, shall be collected separately in a private drainage system before a restricted discharge by gravity to the new 600mm diameter public surface water sewerage line proposed for Grangegorman Road Lower.

In addition to controlled discharge of surface water run off from the proposed development every effort will be taken in the design of the surface water drainage system to incorporate Sustainable Urban Drainage Systems (SUDS) into the scheme. This is in line with the Greater Dublin Strategic Drainage Study published in March 2005.

The drainage design strategy will combine various techniques of storm water management and treatment to ensure that both runoff quantity and quality are addressed. It is proposed to incorporate as many of the following SUDS measures into the redevelopment as possible:

- Infiltration systems including infiltration trenches, infiltration basins, permeable paving, soakways and green roofs (roof gardens).
- Filtration systems including swales, bioretention systems and filter strips.
- Constructed wetlands including large ponds and stormwater wetlands.
- Retention systems including retention ponds.

- Detention systems including underground tanks, underground attenuation, detention basins and filter drains.

- In addition extreme storm events can be accommodated by designing landscaped areas or playing pitches to temporarily flood and thus control the rate of outflow from the site.

Surface water attenuation will be dealt with as locally as practicable with surface water attenuation facilities being sized for a 1 in 30 year storm event with an overflow for a 1 in 100 year event in line with the Greater Dublin Strategic Drainage Study.

Recommended Management of Watermains

In relation to water supply for the proposed redevelopment of the Grangegorman site, Dublin City Council Water Division (DCCWD) have suggested linking the existing 450 mm high pressure main on the North Circular Road with the 800mm high pressure main on Brunswick Street North which runs up to Constitution Hill to improve the potential for water supply to any future proposed development on the Grangegorman site.

However DCCWD have confirmed that capacity checks on their network on linking the two mains would be required to ensure sufficiency of any future supply to meet the increased demand of the new redevelopment.

With water being a precious natural resource, the redevelopment of the Grangegorman site will look to incorporate any possible sustainable measures for reducing water consumption across the development.

From the public water mains new 150mm diameter connections will be made to supply the new development, with new 150mm diameter water-mains running along the primary circulation routes within the development. New building blocks will be served by 100mm diameter ring mains with sluice valves and fire hydrants located to the requirements of Part B of the Building Regulations 1997.

The water-mains will be constructed with MOPVC (blue) pipework and shall comply with the "Specification for the Laying of New Watermains in Private Property" issued by Dublin City Council's Water Division.

In addition pressure and flow tests shall be carried out to confirm the suitability of the existing mains system to meet Dublin City Council's Fire Officer's requirements for the area and to assess whether boosting will be required to serve high level storage tanks.

**Key Significant Environmental Issues and Objectives Identified – Services Infrastructure**

Foul drainage will be collected in a separate system for the development before being discharged into the existing public drainage system. Assessment of the existing public system is required to confirm adequate capacity is available in the existing system to cater for the increased foul discharge that will be generated from the proposed development.

## 6.10 Cultural Heritage (Architectural and Archaeological)

The Cultural Heritage element of this Strategic Environmental Assessment will focus on two key areas, Archaeological Heritage and Architectural Heritage. Other aspects of heritage will be investigated within other sections of this assessment, for example Natural Heritage will be explored within the Biodiversity, Flora and Fauna section. The archaeological heritage element of this Environmental Report was prepared by Margaret Gowan & Co., Archaeological Consultants, on behalf of Grangegorman Development Agency and seeks to inform the Archaeological Heritage element of the Strategic Environmental Assessment of the *GDA Draft Strategic Plan*. The architectural heritage element of this *Environmental Report* was prepared by Howley Hayes Conservation Architects, on behalf of Grangegorman Development Agency and seeks to inform the Architectural Heritage element of the Strategic Environmental Assessment of the *GDA Draft Strategic Plan*.

### 6.10.1 Archaeological Heritage

#### 6.10.1.1 Current Situation

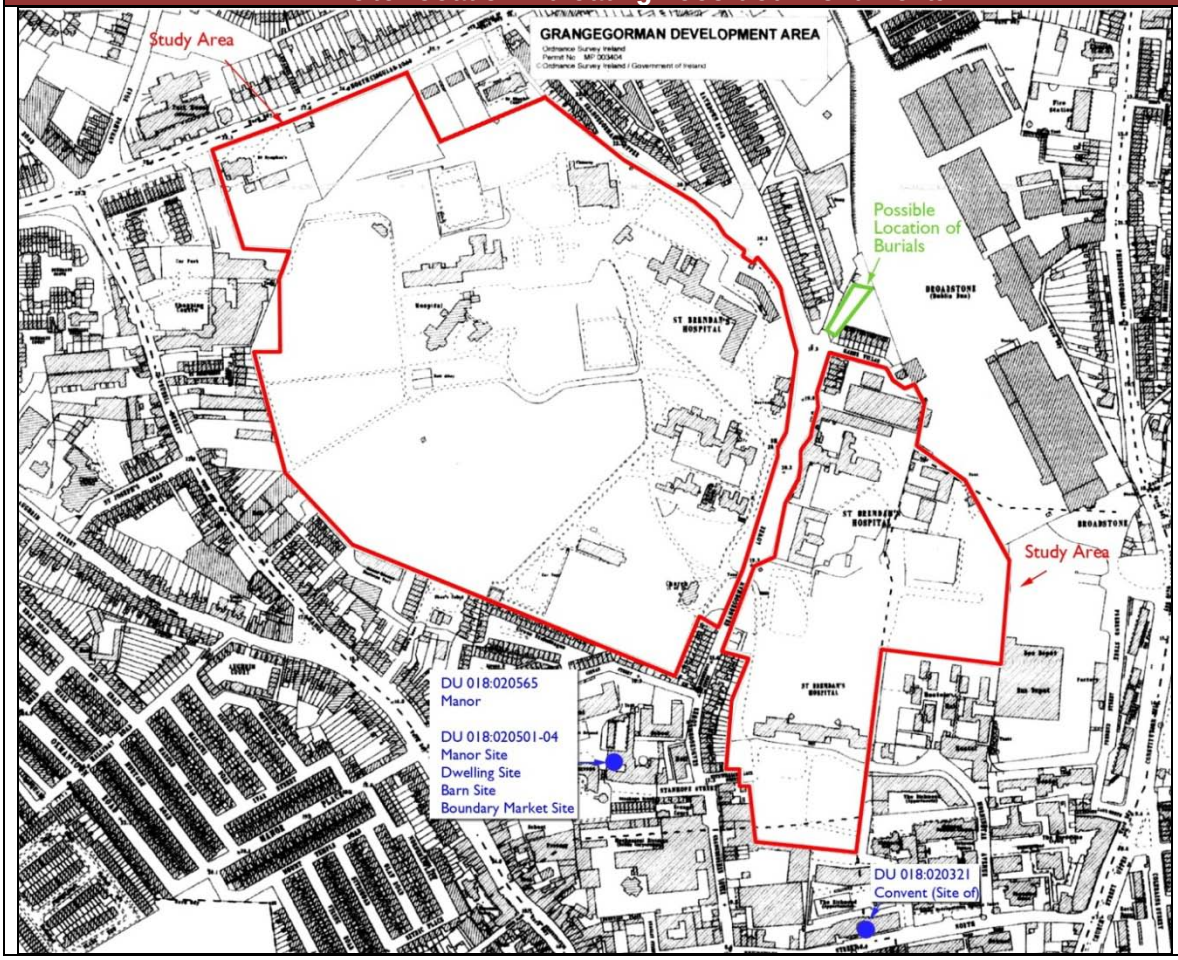
The National Monuments Acts 1930-2004 provide for the protection of the archaeological heritage. The Record of Monuments and Places (RMP) was established under Section 12 of the National Monuments (Amendment) Act 1994 and structures, features, objects or sites listed in this Record are known as Recorded Monuments. Monuments protected under the Act include prehistoric monuments and any monuments and places associated with commercial, cultural, economic, industrial, military, religious or social history.

The Grangegorman facility and its associated structures which are the subject of this study occupy an area of 29.5 hectares in Dublin 7 (Figure 6.11 below).

The subject lands are located within the district of Grangegorman in St Brendan's Hospital on the upper reaches of the first south-facing slope on the north side of the River Liffey in the inner city (Arran Quay Ward). The northern boundary is defined by the North Circular Road and Grangegorman Upper, while property plots, belonging to Prussia Street and Manor Street, form the boundary to the west. Kirwan Street Cottages are located to the south of the study area and Grangegorman Lower bisects the site; the lands to the east of this thoroughfare are bound by Broadstone bus depot while the study area extends as far south towards Brunswick Street North (Figure 6.11). The site is located outside the designated zone of archaeological potential for historic Dublin City (DU018:020).

There are no stray finds from the topographical files of the National Museum of Ireland recorded from the locality and no recorded archaeological monuments are located within the study area.

**Figure 6.12**
**Site Location Indicating Recorded Monuments**




**Source: Margaret Gowan & Co., May 2008**

The Historical Development of the Site

The site contains several listed buildings all belonging to institutional complexes designed by Francis Johnston and William G. Murray in the early century. These are described in detail in the architectural conservation section of the report.

The historical development of the lands at Grangegorman has been responsible for its continued existence as a cultivated landscape. The extent of actual building within the site is small, the development of the landscape being related to the mid century building. An analysis of historical mapping (de Gomme 1673 and Rocque 1756) shows that the area was free from any development and bounded by two of the ancient roadways into Dublin. The area was probably used as agricultural land associated with the Grange Manor (RMP DU018:02501). Archaeological soils, features and/or deposits are often revealed with developments of this size and nature and ground investigation works carried out by Horgan Lynch has indicated that there are significant quantities of 'made' land within the Grangegorman site. Notwithstanding this, there are likely to be further areas of relatively undisturbed land within the site

which may present the potential for archaeology on site or potential for archaeological remains found below introduced soils.

Main Issues in Relation to Archaeology Element of Cultural Heritage

Grangegorman is located immediately north of the known limits of the historic town of Dublin (DU 018:020). There is evidence for Viking and later Hiberno-Norse settlement north of the Liffey in this general area. Two sites are located along the southern boundary. The site (DU018:020565) was probably the Manor House (it gives its name to Manor Street) and the Grange belonging to the Priory of the Holy Trinity (Christ Church) (which gives its name to Grangegorman Upper). It is possible that the lands surrounding this particular site could have been used for agricultural purposes. The site (DU018:020321), which is located on Brunswick Street, to the southeast of the study area, was the site of the Benedictine convent. In 1811 the building was incorporated into the Richmond Surgical Hospital and in the 1990s it was demolished. The study area was bounded by two of the ancient roadways of Dublin which probably follow the line of Constitutional Hill and Stoneybatter Road.

**Key Significant Environmental Issues Identified – Archaeology**

*The main archaeological concerns regarding the proposed development are as follows:*

- *General*
  As this is a large proposed development site there is considerable potential for revealing subsurface remains of archaeological material. In areas where soil has been introduced for landscaping or other purposes archaeological remains may exist below these introduced soils.

- *The possibility of burials within the proposed development area*
  Consultation in 1998 with the then Eastern Health Board confirmed that according to their records from the 1820s onwards no patients were buried within the confines of the grounds (Courtney 1998). However it is our experience that within institutional grounds, burials were sometimes unrecorded and therefore it is possible that burials are located within the proposed development site. Through anecdotal evidence from Fr Pearse O'Dowell, Chaplain at St Brendan's Hospital, documentary evidence (Dr. O'Shea & Dr. Falvey) and research of sources relating to Bully's Acre in Kilmainham it has been established that there is a significant possibility of unmarked cholera graves from the 1830s outbreak in the vicinity of the Annex Building, east of Grangegorman Lower. This is probably within the walled lands to the north of the Annex, east of HJ Nolan Builders and west of Marne Villas (Figure 1) i.e. outside the area of the Grangegorman Development.

- *The playing fields located on the west site*
  These fields have been landscaped possibly by the introduction of soils from elsewhere, and therefore the land is minimally disturbed. There is potential for archaeological features to remain intact below the surface or below introduced soils, bearing in mind the aspect of the site, which is situated on the upper reaches of the south-facing slope of the River Liffey Valley with the River Bradoge running along the north eastern boundary. The study area also commands a view of the city and is in the vicinity of the known settlement of Oxmantown.

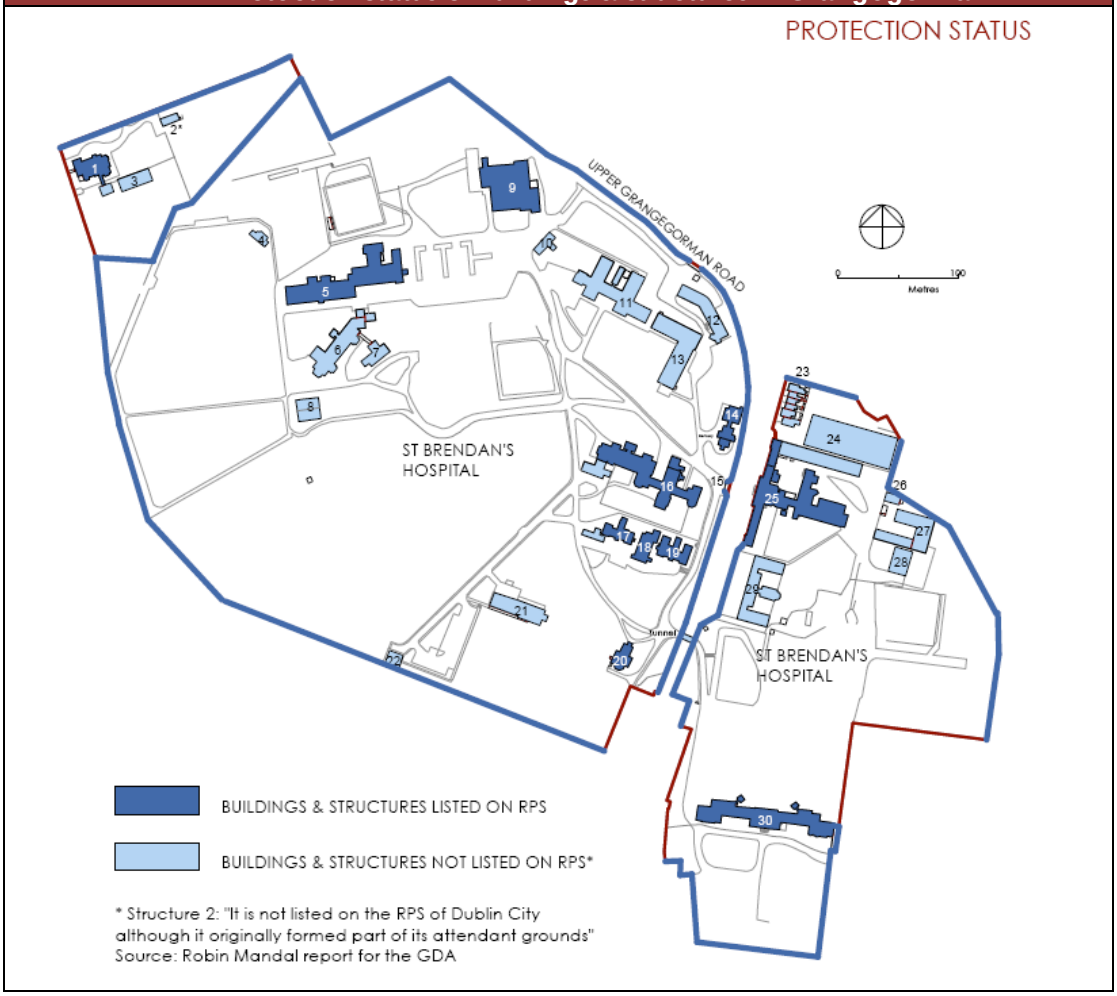
- *Early building illustrated on Rocque's map*
  In 1756 John Rocque's map depicts a lane from the present day Grangegorman Upper leading westward into the proposed development area where a structure is located amongst the fields. The exact location cannot be discerned due to the imprecise nature of the early map.

### 6.10.2 Architectural Heritage

#### 6.10.2.1 Current Situation

The lands are currently occupied by St. Brendan's Hospital, which represents the continous use of the area for hospitals from 1773. The oldest existing buildings date from 1815, and the site was developed in several phases by recognised architects. Many of the structures are listed on the Record of Protected Structures. The site is characterised by imposing nineteenth-century and early twentieth-century institutional buildings, both grouped in clusters and in isolation with extensive landscaped surroundings, all enclosed within high masonry walls.

**Figure 6.13**
**Protection Status of Buildings & Structures in Grangegorman**

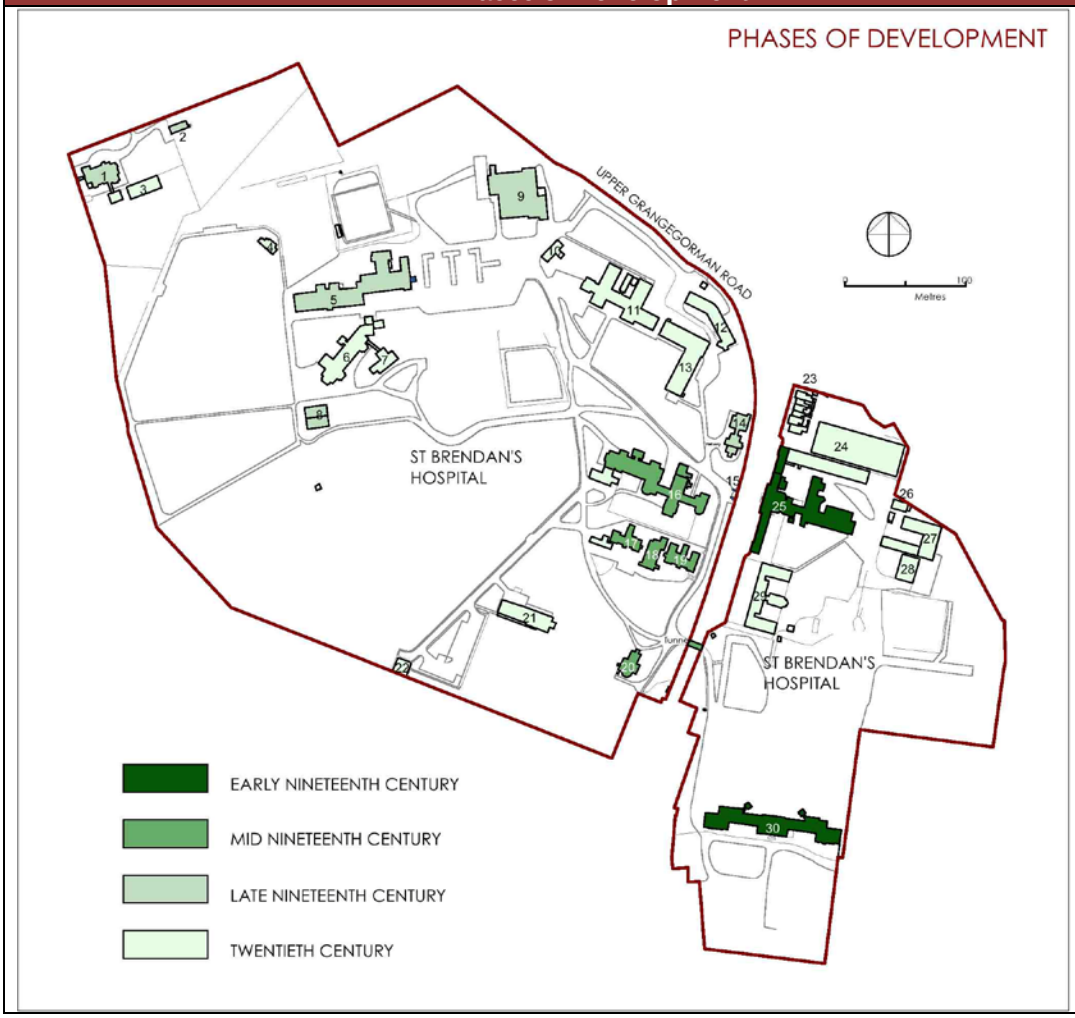



**Source: Howley Hayes Architects**

## Significance of Protected Structures & Clusters

Francis Johnston (1761-1829) was the architect for two of the oldest surviving structures that form the most substantial cluster of buildings on the site. These include the former Richmond Penitentiary (Structure 25) and the former Richmond Asylum (Structure 30), which are located as a cluster to the east side of Grangegorman Road. These structures, although not outstanding examples of this reknowned architect's work, are particularly important from a social historical perspective as evidence of the early development of mental health care. Francis Johnston was a prolific architect, having built asylums in other locations around the country together with major public buildings such as the General Post Office and St. George's Church in Dublin. Both of the structures on this site have been substantially altered since their construction in the early part of the nineteenth century. However, the Penitentiary is in a more stable condition as it has remained in use. The Asylum is derelict with its east, west and north ranges demolished as recently as the late 1980's and a portion of the remaining south range is no longer roofed. This is the historic building most under threat on the site, and arguably among the most significant.

**Figure 6.13**
**Phases of Development**




**Source: Howley Hayes Architects**

A second group of buildings is located to the west of Grangegorman Road and date from the middle decades of the nineteenth century and mark a significant change in approach to the care of the mentally infirm. These include the Female House (Structure 16), two chapels (Structure 18 & 20) and a male and a female infirmary (Structures 17 & 19). With the exception of the Church of Ireland chapel, all were built to the designs of the firm Murray & Denny. The Chuch of Ireland chapel (Structure 20) was designed by George Wilkinson. Murray & Denny was established by William Murray, who worked in partnership with Johnston on the asylums. Instead of the severe classical style of the earlier structures, these buildings are in a neo-Elizabethan style and are generally in a reasonable condition and most remain intact and in use. The original Male House was located some distance away from the cluster of the Female House, chapels and infirmaries, which are located closest to the main entrance, and was removed after 1936. There are two substantial existing structures on the Male House site that were built as extensions to it. The building known as the Top House (Structure 5) dates from the 1870's and was an extension to the north-west of the Male House. This is a protected structure and was

in use until relatively recently. The second surviving wing now contains the Grangegorman Development Agency offices (Structure 6). It dates from the early twentieth century and was an extension for residential use to the western flank of the Male House. This structure is not protected and its replacement might be considered, as part of an overall conservation gain. Its interest derives mainly from it being an extension to the now demolished nineteenth century building. Its original pitched roof has been replaced with a flat roof.

A third group of buildings date from the late nineteenth century and were built to the design's of W.H. Byrne, a prolific and well regarded architect of the late nineteenth and early twentieth centuries. They consist of the Mortuary (Structure 14), the former Laundry (Structure 9) and the Conolly Norman House and its mews house (Structures 1 & 2). The rest of these structures are listed on the Record of Protected Structures and are still in use. They were purpose-built for their respective functions but have been adapted for reuse without being significantly altered.

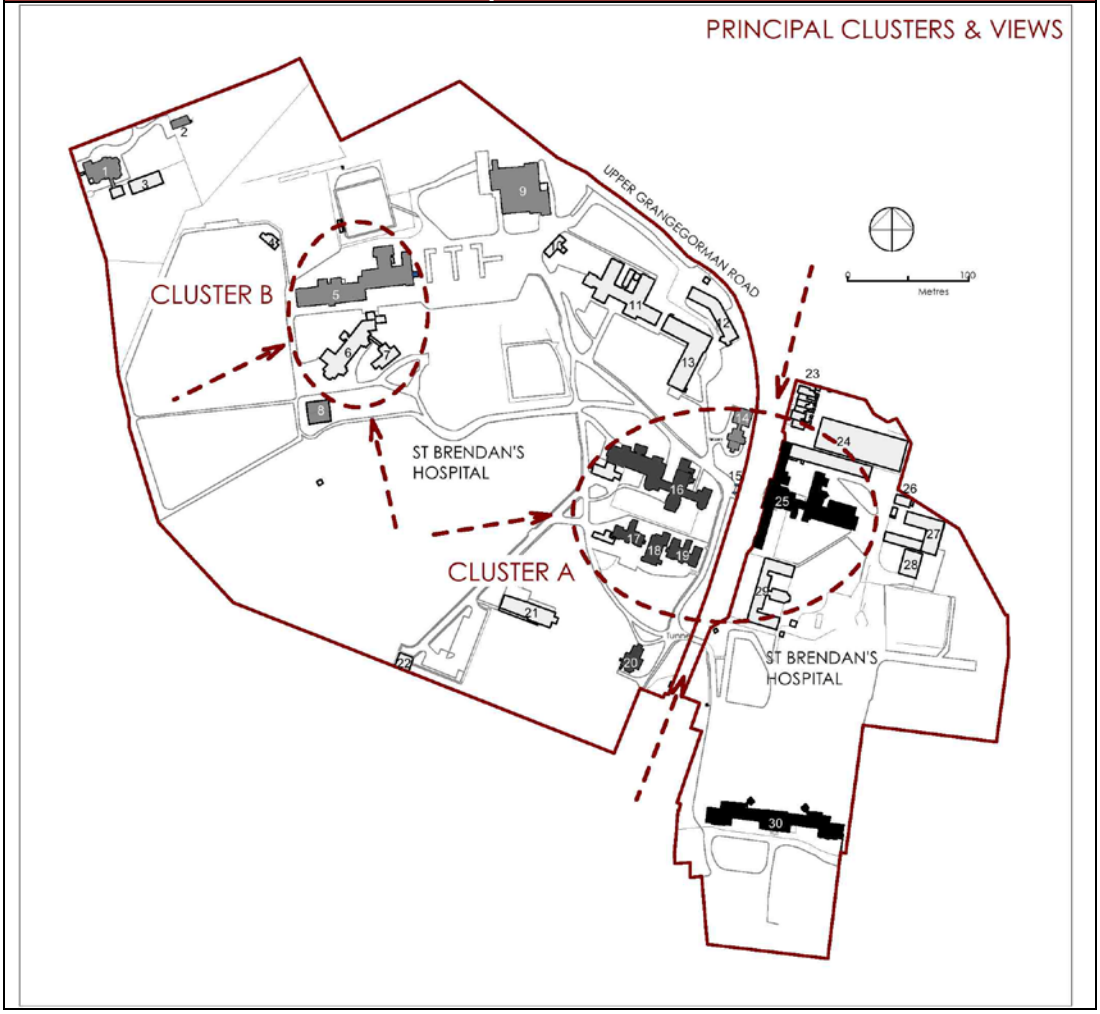
The former Nurse's Home (Structure 29), dating from 1938, is not a protected structure, and its replacement might be considered. The Robin Mandal report prepared for the GDA states "This structure is a detached, seventeen bay, five storey structure, c.1938, designed by Vincent Kelly, in red brick, with a stone base and a stone string course at third floor level."

Two handball alleys, dating from the turn of the century and constructed from concrete, are not on the Record of Protected Structures of Dublin City Council. Their replacement might be considered.

The remaing buildings on the site date from the latter half of the twentieth century and are of little architectural merit or historical interest.

Aside from the buildings, other structures of interest include the main entrance gateway (Structure 15), the tunnel and the site boundary wall. The entrance gateway was moved from Santry Court in the 1940's, and is likely to be over 200 years old. It is a protected structure. The tunnel predates the development of the major buildings on the west side of the site and enabled the secure passage of patients across Upper Grangegorman Road. This does not seem to be a protected structure and is of local importance. The boundary wall dates from the middle of the nineteenth century, but is likely to have been built in several phases and has been much altered in a number of sections. This includes the lowering of the wall along Upper Grangegorman Road some time in the latter half of the twentieth century, when railings were introduced marking a change in approach to mental health care. It has also been altered along North Circular Road to the front of some houses. This wall is also a protected structure.

**Figure 6.15**
**Principal Clusters and Views**




**Source: Howley Hayes Architects**

## Status of Existing Structures

There are approximately thirty existing structures on the site. Twelve of the buildings, the entrance gates and the boundary walls are protected structures listed on the Record of Protected Structures in the Dublin City Development Plan 2005-2011.

**Key Significant Environmental Issues Identified – Architecture**

The existing structures, building clusters and landscape will be profoundly affected by the development. The impact of the proposed structures, urban form and landscaping on the existing historic fabric will need to be examined and assessed carefully.

The significance of each structure needs to be considered in relation to the other buildings on the site and to the complex as a whole.

There are proposals for both the re-use and removal of protected structures. For each individual structure, the appropriateness of the proposed alterations and removals will need to be demonstrated. The spaces around and between the historic buildings are also significant and should be included in the detailed appraisal of the site.

### 6.10.2.2 Information Gaps and Limitations

A conservation plan for the entire site area should be prepared that will set out strategies for the retention, repair and re-use of each of the protected structures and their curtilages.

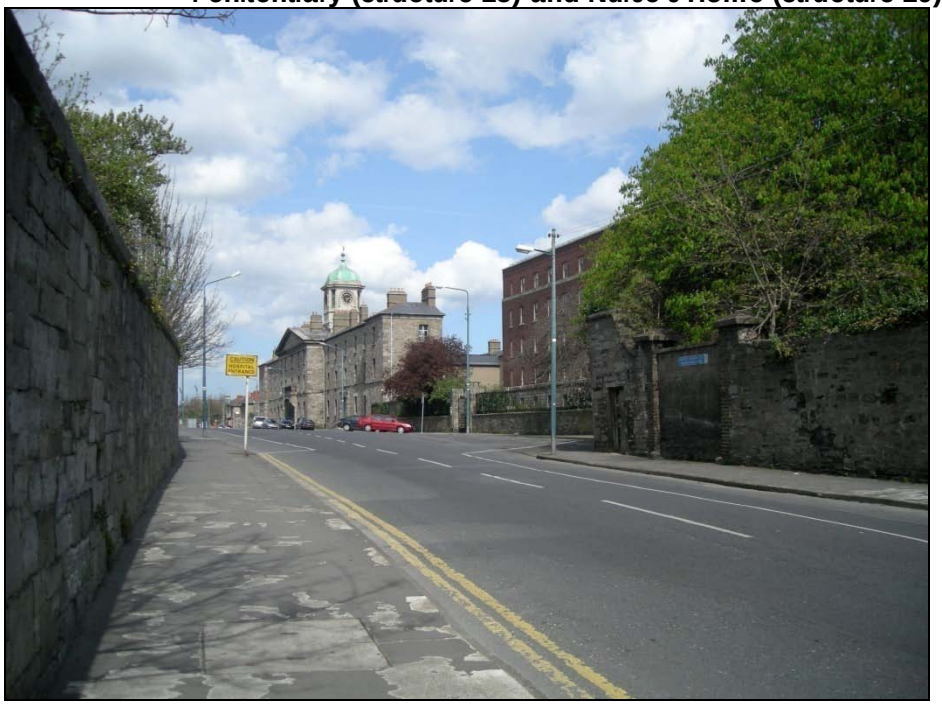
A detailed condition survey has yet to be undertaken for each of the structures on the site. This is necessary to establish conservation strategies for the conservation, alteration, re-use or removal of each structure, including the protected boundary wall.

Some of the buildings on the site are currently unsafe to access, and temporary measures will be necessary to enable surveys to be carried out in safety.

**Plate 6.1: View towards part of the Richmond Asylum (Structure 30) from Morning Star Avenue**

**Source: Howley Hayes Architects, 2008**

**Plate 6.2 View along Upper Grangegorman Road towards Richmond Penitentiary (Structure 25) and Nurse's Home (Structure 29)**



**Source: Howley Hayes Architects, 2008**

**Plate 6.3 View of main entrance gates (Structure 15)**


**Source: Howley Hayes Architects, 2008**

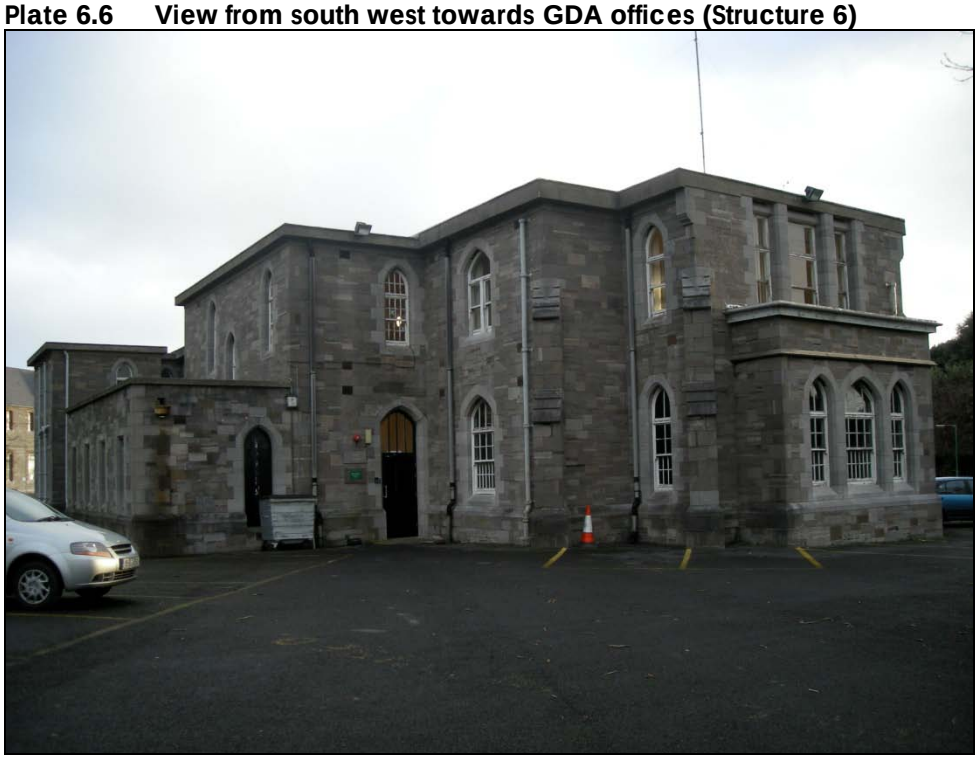
**Plate 6.4 View from south towards catholic chapel (Structure 18) and female infirmary (Structure 19)**

**Source: Howley Hayes Architects, 2008**

**Plate 6.5 View from east towards Top House (Structure 5) with later additions**

**Source: Howley Hayes Architects, 2008**

**Plate 6.6 View from south west towards GDA offices (Structure 6)**

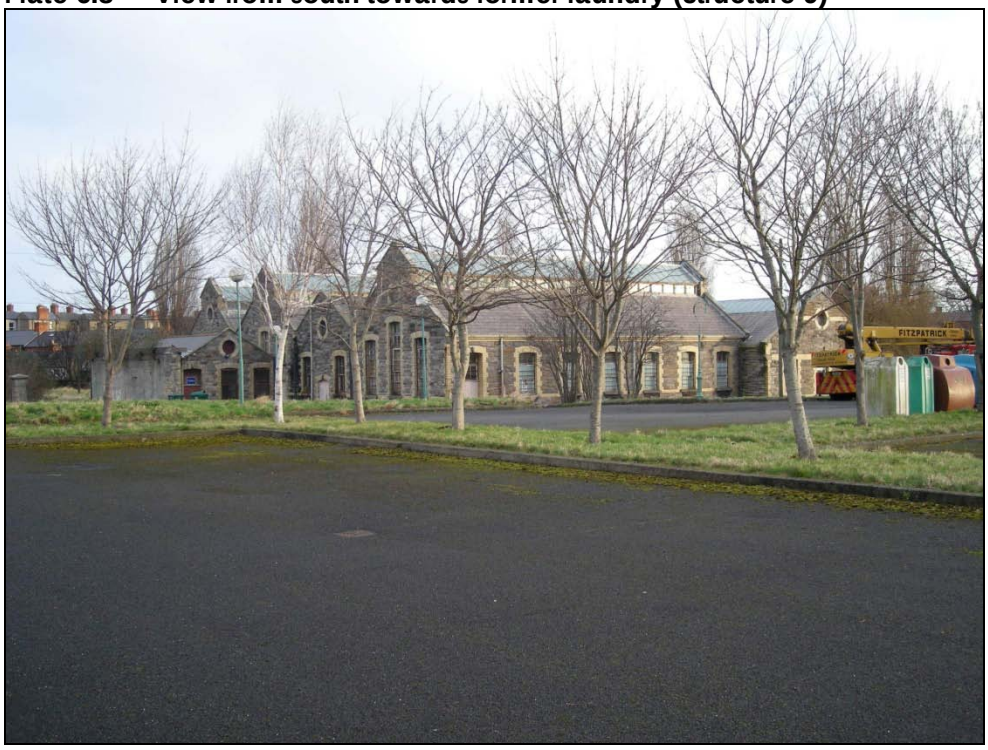


**Source: Howley Hayes Architects, 2008**

**Plate 6.7 View from east towards Nurse's Home (Structure 29) and Penitentiary (Structure 25)**

**Source: Howley Hayes Architects, 2008**

**Plate 6.8 View from south towards former laundry (Structure 9)**



**Source: Howley Hayes Architects, 2008**

# Chapter 7

## 7.0 ASSESSMENT OF ALTERNATIVES AND SELECTION OF PREFERRED SCENARIO

7.1 Alternative 1:
7.2 Alternative 2:
7.3 Alternative 3:
7.4 Assessment of Strategic Plan Alternatives
7.5 Preferred Strategic Plan Alternative

## 7.0 ASSESSMENT OF ALTERNATIVES AND SELECTION OF PREFERRED SECENARIO

This section of the *Environmental Report* details the alternative scenarios from the *GDA Draft Strategic Plan* assessed as part of the SEA. *Article 5* of the SEA Directive requires the *Environmental Report* to consider "*reasonable alternatives taking into account the objectives and geographical scope of the alternatives selected".* Alternatives must be realistic and capable of implementation, and should represent a range of different approaches within the statutory and operational requirements of the GDA Draft Strategic Plan

The *Grangegorman Development Agency Act, 2005* requires the preparation of a Strategic Plan for the Grangegorman site. This is provided to facilitate the development of a health and education campus to service the needs of DIT and HSE. As such there is a statutory obligation on the GDA to prepare this Strategic Plan. Consequently the alternatives reviewed must fulfil the requirements of this Act.

A total of three alternative scenarios were developed through consideration of GDA's statutory requirements under the Act. As there is a requirement to prepare a Strategic Plan it was decided that the alternatives assessed would generally relate to variations to the Masterplan element of this Plan. These alternatives were then assessed against the environmental protection objectives identified and described in previous chapters in this *Environmental Report*.

The three alternatives described are as follows:

1. Refurbishment and reuse of buildings currently on site, to facilitate the limited transfer of some of DITs functions to the Grangegorman Site;

2. Redevelopment of the Grangegorman Site to provide a new city Quarter incorporating DIT and HSE accommodation in accordance with their briefs and in addition the provision of community and recreational facilities open to the local population; and

3. Intensive redevelopment of the site to include DIT accommodation and HSE accommodation in accordance with their current briefs and in addition the provision of residential accommodation for 3,000 people in a high density, medium to high rise scheme.

### 7.1 Alternative 1: Refurbishment and reuse of buildings on site, to facilitate the limited transfer of some of DITs functions to the Grangegorman Site

This initial scenario would provide for the refurbishment of, and minor amendments and extensions to the existing buildings located on the Grangegorman site to incorporate limited educational and health facilities on the campus. This would involve the upgrading of the existing buildings, both protected structures and buildings with no protection status, and retrofitting these buildings to meet some of the needs of DIT and HSE.

It would allow the HSE to continue the current level of service provision on the site with a limited potential to expand its services to the wider Grangegorman community. The remaining accommodation would be made available to DIT for educational facilities and may facilitate the transfer of a small amount of DIT's existing educational facilities to the site. In addition there would be limited potential for the development of the playing pitches currently on site to provide sports facilities for the students of DIT.

Access to the site would continue to be provided by the existing single site entrance with no new accesses created. As a result there will be limited permeability of the site for the surrounding population and Grangegorman will continue to operate as a closed quarter of Dublin City.

Due to the low intensity of development on the site there would be limited potential for the development of public transport facilities and the retention of the extensive areas of surface car parking on the site will facilitate the use of the private car as the primary form of transport.

As this scenario would only facilitate the transfer of a limited number of DIT's existing facilities to the Grangegorman site it would not satisfy DIT's educational plan and would result in a continued fractured campus. Funding for the scenario would be difficult to source. DIT's funding relies heavily on the ability of the college to dispose of existing premises within their ownership and dispersed throughout the city. Under this scenario DIT would only be in a position to dispose of a small amount of their property and as such the investment available for the redevelopment of Grangegorman would be limited to the proceeds of these disposals.

In relation to the HSE facilities, this alternative proposes to undertake all essential refurbishment works together with bringing the accommodation facilities currently in use up to fire, health and safety standards as well as developing and improving the facilities to enable a healthcare model to be implemented in line with best practices. Renovation of the existing mental healthcare facilities would be on a ward by ward basis, allowing for continuing operation of the facility while the administrative staff would be relocated to nearby office spaces while works are being carried out.

This option will allow the HSE to achieve some of their objectives in their brief for the development. However there are also a number of disadvantages for the HSE in terms of this alternative approach. It is unclear whether there is sufficient scope to renovate and redevelop the current accommodation to allow it to meet the strategic objectives of the project.

It is unlikely that an existing building could be refurbished to the standards required to bring the existing accommodation in line with standards of best practice in terms of maintenance, clinical services, and energy consumption and sustainability. The additional capital costs of renovating the current accommodation to allow it to meet fire, health and safety standards would be higher than that of the new development option. In addition, the ongoing energy costs of a refurbished building would continue to be higher than that of a new building. Utility services to and from the buildings, such as water, power and drainage, would also require a

complete overhaul to meet standards required for efficiency and effectiveness.

The capital costs of renovating and redeveloping the current accommodation to allow it to achieve the same revenue cost savings as a new development would be restrictive given the current condition of the accommodation. The costs of decanting and temporary accommodation for HSE administrative staff during the development would also be high.

The refurbished accommodation may not provide the optimum facilities for mental healthcare patients. Some of the buildings that are currently in use are unsuitable for renovation. However, even if they were to be renovated they are not of sufficient size for the development of first class facilities for mental healthcare patients. In addition, the ward by ward refurbishment and redevelopment would result in prolonged disturbance to mental health patients and HSE administrative employees.

Retrofitting a new facility into an existing building which has been refurbished does not automatically create efficient space usage. It is likely that the floor area of a refurbished facility would be larger than that of a new facility if assessed on need and spatial requirements.

Furthermore the heritage listing of some of the occupied buildings places additional limitations and cost on the refurbishment proposal.

## 7.2 Alternative 2: Redevelopment of the Grangegorman Site to provide a new city Quarter incorporating DIT and HSE accommodation in accordance with their briefs and in addition the provision of community facilities.

Alternative 2 is to provide for the creation of a new urban quarter within Dublin's north inner city which integrates a state of the art higher education campus for DIT with equally well designed health facilities for the HSE to meet the needs of a large urban population. This alternative will include the creation of a new campus for DIT with the necessary infrastructure and environment to deliver its mainstream undergraduate and postgraduate education as well as its comprehensive part-time programmes, apprenticeships and junior music areas and in particular, to expand its research and development capacity in science and technology. The HSE will achieve a model of health care service including provision for mental health care; provision for primary, community and continuing care; provision for older persons; and provision for people with disabilities.

Alternative 2 is the only option that allows DIT to fully implement its Mission Plan and achieve its objectives with respect to:

- Creating a consistent quality environment for all its students and staff;
- Enable DIT to grow its activity across learning and teaching, research and technology transfer to the level that it requires;
- Broadening the student base of DIT to increase student numbers and greater representation from areas such as mature students, second chance education, and students from economically disadvantaged backgrounds;

- Providing opportunities to develop DIT's international student population in particular by being able to provide campus accommodation;
- Capitalising on the significant time and resources expended to date in creating a modular pedagogy which underpins a student-centered ethos by promoting access and participation, e-learning, distance learning, part-time education and CPD. This will lead to enhanced curriculum reform;
- Bring together its research activity and through cross disciplinary interaction develop this activity;
- Facilitating the clustering of activity currently spread across DIT such as a single science provision in terms of laboratories, a single ICT provision, co-location of related areas that are currently separated printing and digital media; food science and nutrition etc
- Bringing resources together to cluster and share around such areas as student services and administration and in the process improving service with similar levels of resources;
- Promoting operational efficiency through removing duplication in areas such as libraries, administration and modular provision;
- Enhance technology transfer by bringing all industry- facing activities together and co-locating these with academic, research and science park activities;
- Creating a better experience for students by enhancing the learning environment but also by providing spaces where interaction and dialogue can be promoted while creating sporting and recreational facilities and student accommodation on campus;
- Enabling DIT to put in place facilities that will assist in creating 3rd stream income that will encourage greater levels of self funding in the future;
- Drawing from across the DIT facilities and resources in the arts and cultural areas in order to create a real cultural centre to underpin its educational activities while supporting the wider community; and
- Creating a real resource to support the Dublin region and the north inner city in particular and in the process contributing to very significant urban regeneration

Alternative 2 would provide DIT with sufficient capacity to develop all of the non-core facilities, such as student accommodation, science park and sports facilities that are necessary to allow DIT to fulfill its full potential.

This proposal embraces the city around the site through the creation of new entrances and links to the surrounding area opening up a previously walled in space to provide permeability and access to all. The new quarter will contain a network of green spaces and paths together with state of the art indoor and outdoor sports facilities.

In addition to the HSE and DIT facilities, the development will accommodate a new primary school and together with Dublin City Council, will provide for the co-location of a city branch library with the DIT campus library. Retailing facilities such as coffee shops, bookshops, retail outlets and student accommodation are interwoven throughout the site to create an animated quarter and living campus. A major '*Cultural Hub' will* also be created to build on DIT's activities in the visual and performing arts, and in the process create a destination in its own right.

## 7.3 Alternative 3: Intensive redevelopment of the site to include DIT accommodation and HSE accommodation in accordance with their current briefs and in addition the provision of residential accommodation for 3,000 people in a high density, medium to high rise scheme.

Alternative 3 will involve the preparation of a Strategic Plan which will provide accommodation for all the facilities outlined as required for DIT and HSE in their briefs to the GDA and provided for in Alternative 2. However, in addition to this, it is proposed to intensify development on the site and incorporate a significant residential element making provision for a population of 3,000 people together with the student and social accommodation provided for in Alternative 2.

### 7.3.1 Optimising the Developmental Potential of the Grangegorman Site

The provision of DIT and HSE services as outlined in Alternative 2 represents a low to medium density approach to the redevelopment of the inner city site at Grangegorman. Commercial sites of this scale and at this location could easily achieve a significantly higher density of development and in so doing maximise the financial returns from the redevelopment.

While the prospect of an increased financial return from the site is encouraging, the team identified significant social and environmental costs which must be balanced against the financial gain in such a proposal. It would be expected that the community, sports and recreational facilities provided to the local community in Grangegorman in Alternative 2 would have to be sacrificed to achieve this scale of development. The sports fields and parklands provided would be significantly reduced and the scale, bulk and height of buildings significantly increased. Some of the protected structures would be demolished or negatively impacted by the increasing height and scale of adjoining new buildings. Much of the boundary wall would be removed to provide sufficient access and permeability to service the new inhabitants of the site.

### 7.3.2 Building Height

The building proposed in Alternative 2 provides for buildings ranging in height from 2 to 8 storeys generally. Due to the intensity of development required under this alternative there would be a requirement to significantly increase the height of buildings on the Grangegorman Site.

Any significant increase in height in HSE buildings would conflict with their healthcare requirements, particularly in the HSE residential complexes, and would result in unsuitable buildings. Similarly, the academic buildings would have to be increased in height which would conflict with DIT's requirements and also international recommendations in relation to effective learning environments.

Providing for such intensive development adjacent to protected structures is likely to have a negative impact on these buildings. Furthermore increases in height

would result in higher buildings adjacent to existing residential communities, impacting adversely on their current amenity standards.

### 7.3.3 Environmental Sustainability Issues

Due to the intensity of the development the proposals under Alternative 2, which are to provide for a sustainable approach in building design including optimum layout and orientation of buildings to maximise solar gain, will have to be sacrificed. The greater demand for building space will mean that it will not be possible to orientate and design buildings to achieve the optimum form and layout for energy conservation. As such the intensification in development is likely to result in an exponential increase in the demand for energy.

## 7.4 Assessment of Strategic Plan Alternatives

Table 7.1 below details the result of the Environmental Assessment of each of the Strategic Plan alternatives. The three alternatives are assessed against each of the Environmental Objectives.

**Table 7.1 Assessment of the Strategic Plan Alternatives**

| | **Alternative 1** Low Intensity Development | **Alternative 2** Medium Intensity Development plus Community Facilities | **Alternative 3** High Intensity Development with Commercial Gain |
|---|---|---|---|
| Protect and enhance biodiversity, flora and fauna on the Grangegorman Site | + | 0 | - |
| Enhance the overall socio-economic profile and economic attractiveness of the Grangegorman Development Area | 0 | ++ | ++ |
| Improve the quality of life for the community based on the provison of accessible employment, recreational, educational, medical and other facilities. | - | ++ | -- |
| Provide, maintain and improve access to public open space | -- | 0 | - |
| Preserve and enhance the natural and historic landscape features within the Grangegorman site | + | 0 | -- |
| Retain existing good quality trees | + | 0 | - |
| Limit adverse impacts on air quality and in particular traffic generated emissions | - | 0 | - |
| Limit adverse impacts on climate through use of sustainable energy sources | 0 | + | - |
| Protect, conserve and enhance the architectural heritage on the Grangegorman site. | + | 0 | - |
| Identify, protect and conserve or document the archaeological heritage on the Grangegorman site in accordance with Best Practice Principles. | + | 0 | - |
| Provision of separate foul and surface water drainage to service the Grangegorman Area. | - | + | + |
| Provision for the reuse, recycling and conservation of water. | 0 | + | 0 |

| KEY | Neutral | Very Positive | Positive | Negative | Very Negative | Uncertain |
|---|---|---|---|---|---|---|
| | 0 | ++ | + | - | -- | ? |

### 7.4.1 Cultural Heritage – Architecture

Alternative 1 is the most favourable option as it is likely to have an overall positive impact on the architectural heritage within the Grangegorman site as all existing structures and buildings on site will be retained in their current form. Few new buildings will be developed as part of this proposal and provided that all restoration and retrofitting of buildings is carried out in accordance with architectural conservation guidelines this work will have a positive impact on the architectural heritage. In contrast, Alternative 3 will have a significant negative impact on the architectural heritage of Grangegorman. This option proposes the construction of a residential scheme, for commercial purposes, which will provide accommodation for up to 3,000 people in addition to the accommodation requirements of the HSE and DIT. This scale of development will require a high density high rise approach with little potential to offset negative impacts on the architectural heritage.

Alternative 2, with the implementation of appropriate mitigation measures will have very few negative impacts on the architectural heritage. In fact many of the proposals within this Alternative will have a net positive impact.

### 7.4.2 Biodiversity, Flora and Fauna

Alternative 1 will result in the preservation of much of the existing flora and fauna on the Grangegorman site. Unfortunately it is likely that many of the invasive plant species on the Grangegorman site will also be retained on site and may spread to other areas. Notwithstanding this, it is acknowledged that much of the existing plant and animal species will be preserved including all sound trees. However there may still be implications for any bat species located on site as it is proposed to refurbish and restore all the existing buildings, which are considered potential roosting sites for bats. As a result appropriate surveying and mitigation measures will be required to avoid any impact on protected bat species.

Alternative 2 will result in a similarly neutral impact on flora and fauna, however the redevelopment of the green areas will provide an opportunity to improve the ecology and biodiversity on site including the removal of the invasive plant species.

Alternative 3 will have an overall negative impact on the biodiversity, flora and fauna within the Grangegorman site, as it will result in the removal of most of the green space and many of the mature trees.

### 7.4.3 Air Quality

Alternatives 1 and 3 will have an overall negative impact on the air quality within the Grangegorman site. Alternative 1 will result in an increase in traffic movements to and from the Grangegorman site. The numbers of students and staff using the HSE and DIT facilities will not justify the introduction of new public transport facilities and as such the majority of users will use their private car for accessing the site. Alternative 3 proposes a significant residential element which will demand additional car parking facilities. While it would be expected that most users of the site would use public transport there would be such a large demand for transport

that even relying on public transport, this will have a significant negative impact on air quality.
Alternative 2 will also result in an increased demand for public transport, however there will be sufficient demand to justify the provision of a good quality public transport system which will result in the local population moving from travelling by private car to public transport. As a result Alternative 2 will have a neutral impact on air quality

### 7.4.4 Climatic Factors

Alternative 1 will in general have a neutral impact on climate with no significant new energy demands as DIT and HSE users will be moving from other areas of the city. However the refurbishment of the existing buildings will make it hard to achieve modern energy conservation standards and as such it will not be possible to achieve high standards of energy efficiency. Alternative 3 will have an overall negative impact on climatic factors as it is expected that there will be a heavier demand on energy while at the same time, due to the demand for space on site, it will not be possible to orientate and design buildings for maximum energy efficiency. As such it would not be possible to achieve the same standards as that proposed in Alternative 2. With this in mind it is apparent that Alternative 2 will have an overall positive impact on climatic factors as the proposal will involve a sustainable approach to energy use and in so doing reduce the level of greenhouse gas emissions.

### 7.4.5 Material Assets - Infrastructure

The impacts of Alternative 2 and 3 on material assets will be positive as both proposals will facilitate the introduction of a separate foul and surface water sewerage system. This will remove a substantial volume of clean surface water, which is currently entering the combined system, from the city wastewater treatment system and will result in a significant reduction in demand for water treatment. As a result any increase in demand, due to the implementation of the Strategic Plan, will be mitigated by clean water removed from the treatment plant.

Notwithstanding the introduction of the separate surface water sewer network it is apparent that Alternative 3 will result in the generation of significantly higher volumes of waste water attributed to the additional residential element.

Alternative 1 will have an overall negative impact in infrastructure provision, as this scale of development will not justify the cost of providing a separate foul and surface water sewerage system and consequently there will be an overall net increase in the volume of waste water entering the treatment system.

### 7.4.6 Landscape

Alternative 3 will have a significant negative impact on the landscape character of Grangegorman with the introduction of higher rise, and high density development and a loss of the open space currently on site. Alternative 1 would

have an overall positive impact with all structures on site being retained, while Alternative 2 will have a neutral to positive impact with the creation of a new urban landscape while preserving a substantial area of quality landscaped open space.

### 7.4.7 Population and Human Health

Alternative 1 will have an overall neutral impact on the local population of Grangegorman with no changes in their overall economic standing or quality of life. There will be few if any changes as a result of this option with no new community services or facilities provided and the Grangegorman site will remain generally inaccessible to the local population.

Alternative 3 will see a substantial increase in the economic profile of the local population with substantial opportunity for local employment and complementary economic activities. However there will be a significant reduction in the quality of life as the growth in residential and office accommodation would not be matched with an appropriate compensating public space/amenity provision.

Alternative 2 will result in improvements in both the socio-economic profile and the quality of life of the local population. The introduction of the new student population will involve a period of adaption for the local population but any negative impacts will be mitigated by the introduction of substantial community services such as a primary school, library, and open space and so on.

The HSE and DIT's objectives cannot be met by Alternative 1 and would be significantly compromised in the case of Alternative 3 and as a result the net positive impacts for population and human health cannot be achieved by the implementation of these options.

### 7.4.8 Cultural Heritage - Archaeological Heritage

Alternative 1 will have an overall positive impact on archaeology as there is significant scope to conserve and retain all archaeological material on site. In addition there is likely to be little disturbance of previously undiscovered archaeological remains. Alternative 3 will have a negative impact with a requirement for additional excavation of the site. The increase in demand for parking as a result of the residential development will result in the excavation of additional basement car parking and it is likely that the majority of the site footprint would be developed. Alterative 2 will have an overall neutral impact on archaeology provided appropriate mitigation measures are imposed in accordance with best practice in this area.

## 7.5 Preferred Strategic Plan Alternative

On the basis of the above analysis Alternative 3 would be likely to give rise to the highest frequency and magnitude of significant adverse environmental effects and in particular have the potential for very negative impacts in relation to the

preservation of the landscape character of the Grangegorman Area. In addition, this Alternative will fail to achieve the HSE's health objectives along with the DIT's national education objectives as set out in each of their respective briefs resulting in a net loss to both the local and national community.

Alternative 1 will also have significant negative impacts including a failure to provide access for the local population and an overall net negative impact on the quality of life for local residents. While it is acknowledged that Alternative 1 does have many positive features with respect to the environment, such as the impact on architectural heritage, archaeology, landscape character and retention of the existing trees, the positive impacts of new community services and DIT services and facilities would be lost if this alternative were to be implemented. It is clear that the loss of socio-economic and quality of life benefits in Alternative 1 could not be compensated for by the environmental gains. Furthermore this objective would compromise the achievement of the HSE's health objectives and DIT's national education objectives with a resultant impact on local and national population.

It is apparent from this assessment that Alternative 2 has an overall positive outcome in terms of the environmental assessment carried out as part of this SEA and in particular with respect to the positive impacts on the socio-economic profile and quality of life for local residents and the national community. As such this option, when subjected to appropriate mitigation measures, has been identified as the preferred development scenario for Grangegorman.

# Chapter 8

## 8.0 EVALUATION OF SIGNIFICANT ENVIRONMENTAL EFFECTS OF THE GRANGEGORMAN STRATEGIC PLAN


8.1 Methodology
8.2 Impact of *GDA Draft Strategic Plan* on Environmental Receptors
8.3 Summary of Impacts of *GDA Draft Strategic Plan*

## 8.0 EVALUATION OF SIGNIFICANT ENVIRONMENTAL EFFECTS OF THE GRANGEGORMAN STRATEGIC PLAN

The objective of this section of the Environmental Report is to provide a summary of the environmental assessment of the *Draft GDA Strategic Plan* which has been carried out as part of this SEA process. This environmental assessment is provided in full in matrix form in Appendix A, attached to this Environmental Report.

### 8.1 Methodology

The environmental objectives detailed in Chapter 5, were used to evaluate the Draft Strategic Plan's Project Vision and each of the developmental aims and objectives once the preferred Plan alternative had been identified. The Environmental Baseline was assessed as part of this process and the impacts of each of the developmental aims and objectives on the baseline environment were assessed by the SEA Team.

Matrices have been used in order to represent the results of this assessment in a graphical manner including the SEA Team's commentary on each of the proposed aims and objectives. The policies listed in this assessment follow the order in which they appear in the Draft Strategic Plan where policies are detailed under the following headings:

- Project Vision
- Consultation
- Design
- Conservation
- Movement and Transportation
- Planning Strategy
- Development Delivery Plan
- DIT property disposal strategy
- Site engineering and infrastructure
- Complementary mixed-use activities
- Social infrastructure
- Access to the Quarter
- Research and development strategy
- Public amenity, sports and recreation
- Arts and culture
- Sustainability and energy strategy
- Estate management
- DIT access policy
- Socio economic impacts

### 8.2 Impact of GDA Draft Strategic Plan on Environmental Receptors

Chapter 5 of this environmental assessment identified the critical environmental receptors of particular importance for the redevelopment of the Grangegorman site as follows: cultural heritage -architecture; biodiversity, flora and fauna; air quality; climatic factors; material assets - infrastructure; landscape; population and human health; and cultural Heritage – archaeology.

Strategic Environmental Objectives were identified for each of these environmental receptors. The aims and objectives contained in the Draft Strategic Plan listed under the above headings were assessed against these Strategic Environmental Objectives. A summary of how each of the environmental receptors will be impacted by the policies contained in the *GDA Draft Strategic Plan* is provided below.

### 8.2.1 Cultural Heritage – Architecture

It is expected that the project will have an overall positive impact on the architectural heritage of Grangegorman. While there will be a requirement to demolish some structures on site to facilitate the development, this, with the exception of the Connolly Norman Mews, will be limited to structures which have not been designated for protection. GDA have included a policy within the Conservation section confirming this. The Connolly Norman Mews is not a protected structure in itself, but rather forms part of the curtilage of an adjoining protected structure. Many of the important structures on site have fallen into a poor state of repair and would deteriorate further should the current situation continue. The *GDA Strategic Plan* will result in the preservation and reuse of these buildings and the restoration of many of the architecturally important features. The GDA have undertaken to identify uses for the historic buildings which are compatible with their spatial layout, which will ensure full and useful occupancy allowing them to play a key role in the cultural and functional character of the new Quarter.

While the overall impact is likely to be positive there exists an element of uncertainty with respect to the impact of buildings which have yet to be designed, on the architectural heritage of protected structures. For example the Strategic Plan contains a policy to position a higher density science and technology park at Broadstone Gate. The impacts of this proposal can only be assessed when there is full information available on the proposal and as such the full impact of this can only be assessed at planning scheme or planning application stage.

A breakdown summary of the impacts of each section of the *GDA Draft Strategic Plan* on the architectural heritage is provided below:

| ***GDA Draft Strategic Plan* Aims & Objectives** | **Summary of Impact on Architectural Heritage** |
|---|---|
| Project Vision | Positive/neutral impact |
| Consultation | Neutral impact |
| Design | Positive impact |
| Conservation | Very positive/positive impact |
| Movement and Transportation | Neutral impact |
| Planning Strategy | Neutral impact |
| Development Delivery Plan | Neutral impact |
| DIT property disposal strategy | Neutral impact |
| Site engineering and infrastructure | Neutral impact |
| Complementary mixed-use activities | Neutral impact |
| Social infrastructure | Neutral impact |
| Access to the Quarter | Neutral impact |
| Research and development strategy | Neutral impact |
| Public amenity, sports and recreation | Neutral impact |
| Arts and culture | Positive/neutral impact |
| Sustainability and energy strategy | Neutral impact |
| Estate management | Positive/neutral impact |
| DIT access policy | Neutral impact |
| Socio economic impacts | Positive/neutral impact |

### 8.2.2 Biodiversity, Flora and Fauna

The *GDA Strategic Plan* will have an overall positive impact on biodiversity, flora and fauna in the Grangegorman site. In particular the removal of the invasive plant species identified on site, the appropriate disposal of the removed plant material and the high quality added landscape features will have a positive impact. The Quarter will incorporate a variety of landscaped gardens with an emphasis on the use of native species which will also have positive impacts on the biodiversity, flora and fauna on site.

The SEA Team did identify a shortfall in information related to bat species which Natura identified may potentially be located on site. As all bat species in Ireland are protected under both national legislation – (Wildlife Act, 1976, as amended in 2000) and European legislation – (Habitats Directive (92/43/EEC)) and the GDA consider it important that information be collected with respect to this prior to any works taking place on site. As a result of this shortfall in information there is an element of uncertainty on the impact of the conservation and demolition works on potential bat species. A detailed bat survey has been commissioned by the GDA and will inform planning scheme or future planning applications on the Grangegorman site.

A breakdown summary of the impacts of each section of the *GDA Draft Strategic Plan* on biodiversity, flora and fauna is provided below:

| ***GDA Draft Strategic Plan*** **Aims & Objectives** | **Summary of Impact on Biodiversity, Flora and Fauna** |
|---|---|
| Project Vision | Positive/neutral impact |
| Consultation | Neutral impact |
| Design | Positive/neutral impact |
| Conservation | Positive/neutral /uncertain impact – need to assess impact of conservation works on bats if found to be present in existing buildings. To be ascertained as part of planning scheme or planning application process. |
| Movement and Transportation | Positive/neutral impact |
| Planning Strategy | Neutral impact |
| Development Delivery Plan | Positive/neutral impact |
| DIT property disposal strategy | Neutral impact |
| Site engineering and infrastructure | Positive/neutral impact |
| Complementary mixed-use activities | Neutral impact |
| Social infrastructure | Neutral impact |
| Access to the Quarter | Neutral impact |
| Research and development strategy | Neutral impact |
| Public amenity, sports and recreation | Neutral impact |
| Arts and culture | Neutral impact |
| Sustainability and energy strategy | Neutral impact |
| Estate management | Neutral impact |
| DIT access policy | Neutral impact |
| Socio economic impacts | Positive/neutral impact |

### 8.2.3 Air Quality

The main impact on air quality as a result of the implementation of the *GDA Strategic Plan* relates to transport. The Strategic Plan has placed significant emphasis on the achievement of a sustainable transport system. The implementation of the plan will inevitably result in emissions to air in the local area as a result of developing a medium density scheme at a location which is currently occupied at an extremely low density. However the Strategic Plan contains policies which support the use of public transport, together with walking and cycling. In addition the opening of new entrances in the perimeter wall will facilitate pedestrian movements traversing the site which would previously have required the use of a motor vehicle to travel around the site. Potential uncertainty remains in relation to the level of car parking to be provided on site. Careful consideration will be given to this at the planning scheme or planning application stage to ensure that the number of spaces provided is limited to ensure that it does not encourage a reliance on the private car by certain individuals using the site.

A breakdown summary of the impacts of each section of the *GDA Draft Strategic Plan* on Air Quality is provided below:

| ***GDA Draft Strategic Plan* Aims & Objectives** | **Summary of Impact on Air Quality** |
|---|---|
| Project Vision | Positive/neutral impact |
| Consultation | Neutral impact |
| Design | Positive/neutral impact |
| Conservation | Neutral impact |
| Movement and Transportation | Very positive/neutral impact |
| Planning Strategy | Neutral impact |
| Development Delivery Plan | Neutral impact |
| DIT property disposal strategy | Neutral impact |
| Site engineering and infrastructure | Neutral impact |
| Complementary mixed-use activities | Neutral impact/potential uncertain impacts |
| Social infrastructure | Positive/neutral impact |
| Access to the Quarter | Positive impact |
| Research and development strategy | Neutral impact |
| Public amenity, sports and recreation | Positive/neutral impact |
| Arts and culture | Neutral impact |
| Sustainability and energy strategy | Neutral impact |
| Estate management | Neutral impact |
| DIT access policy | Neutral impact |
| Socio economic impacts | Positive/neutral impact |

### 8.2.4 Climatic Factors

The *GDA Strategic Plan* places a strong emphasis on sustainability and in particular sustainable energy production within the Grangegorman quarter. This will have an overall positive or neutral impact on climatic factors as much of the energy to be required is currently being consumed in a less efficient manner on the current DIT and HSE sites spread across the city. The provision of public transport should also result in positive impacts with respect to climatic factors however there is a level uncertainty with respect to the actual impact that the global warming phenomenon will have on the Grangegorman site.

A breakdown summary of the impacts of each section of the *GDA Draft Strategic Plan* on Climatic Factors is provided below:

| ***GDA Draft Strategic Plan* Aims & Objectives** | **Summary of Impact on Climatic Factors** |
|---|---|
| Project Vision | Very Positive/Positive impact |
| Consultation | Neutral impact |
| Design | Very positive impact |
| Conservation | Positive/Very positive impact |
| Movement and Transportation | Positive impact |
| Planning Strategy | Neutral impact |
| Development Delivery Plan | Neutral impact |
| DIT property disposal strategy | Neutral impact |
| Site engineering and infrastructure | Positive/neutral impact |
| Complementary mixed-use activities | Neutral impact |
| Social infrastructure | Neutral impact |
| Access to the Quarter | Neutral impact |
| Research and development strategy | Neutral/negative impact |
| Public amenity, sports and recreation | Neutral impact |
| Arts and culture | Neutral impact |
| Sustainability and energy strategy | Very positive impact |
| Estate management | Positive/neutral impact |
| DIT access policy | Neutral impact |
| Socio economic impacts | Neutral impact |

### 8.2.5 Material Assets - Infrastructure

The *Strategic Plan* supports the provision of infrastructure which will support development in this area of the city. The provision of a separate storm water sewer as proposed in the Strategic Plan will be of particular significance as it will result in the removal of a substantial volume of surface water from the sewer network reducing pressure on wastewater treatment facilities for the city area. Conservation of water is a strong theme through the plan with a number of policies encouraging the reuse, recycling and conservation of water.

A breakdown summary of the impacts of each section of the *GDA Draft Strategic Plan* on Infrastructure is provided below:

| ***GDA Draft Strategic Plan* Aims & Objectives** | **Summary of Impact on Infrastructure** |
|---|---|
| Project Vision | Neutral/Positive impact |
| Consultation | Neutral impact |
| Design | Positive/neutral impact |
| Conservation | Positive/neutral impact |
| Movement and Transportation | Neutral impact |
| Planning Strategy | Neutral impact |
| Development Delivery Plan | Positive/Neutral impact |
| DIT property disposal strategy | Neutral impact |
| Site engineering and infrastructure | Very positive impact |
| Complementary mixed-use activities | Neutral impact |
| Social infrastructure | Neutral impact |
| Access to the Quarter | Neutral impact |
| Research and development strategy | Neutral impact |
| Public amenity, sports and recreation | Neutral impact |
| Arts and culture | Neutral impact |
| Sustainability and energy strategy | Neutral impact |
| Estate management | Very Positive impact |
| DIT access policy | Neutral impact |
| Socio economic impacts | Neutral/positive impact |

### 8.2.5 Landscape

The *GDA Draft Strategic Plan* will have an overall positive impact on the natural and historic landscape features within Grangegorman. It will result in the transformation of Grangegorman's closed compound into a new urban quarter which will form an integral part of the City. The project provides an opportunity to maximise the existing natural and architectural landscape features into a new urban landscape and this has been utilised within the Strategic Plan with policies to provide the highest standards in urban design and landscaping. Included in this is a policy to articulate the historical, social, urban and architectural values of Grangegorman and to ensure that they are suitably incorporated into the overall development. There will be a transitory negative impact during the construction and initial operation phase which will be short lived as the urban quarter emerges.

A breakdown summary of the impacts of each section of the *GDA Draft Strategic Plan* on Landscape is provided below:

| ***GDA Draft Strategic Plan* Aims & Objectives** | **Summary of Impact on Landscape** |
|---|---|
| Project Vision | Neutral/Positive impact |
| Consultation | Neutral impact |
| Design | Positive/neutral impact |
| Conservation | Positive/very positive impact |
| Movement and Transportation | Neutral/positive impact |
| Planning Strategy | Neutral impact |
| Development Delivery Plan | Neutral/negative impact |
| DIT property disposal strategy | Neutral impact |
| Site engineering and infrastructure | Neutral impact |
| Complementary mixed-use activities | Neutral impact |
| Social infrastructure | Neutral impact |
| Access to the Quarter | Neutral impact |
| Research and development strategy | Neutral impact |
| Public amenity, sports and recreation | Neutral/positive impact |
| Arts and culture | Neutral/positive impact |
| Sustainability and energy strategy | Neutral impact |
| Estate management | Neutral/Positive impact |
| DIT access policy | Neutral impact |
| Socio economic impacts | Neutral/positive impact |

### 8.2.6 Population and Human Health

The *GDA Strategic Plan* provides for the redevelopment and opening up of the Grangegorman site. It will also result in a significant regeneration of the surrounding area which will provide a substantial boost to the socio-economic status and quality of life for the local residents. The regeneration provides for an unprecedented volume of health and educational facilities to service a local, regional, national and international population. There will also be significant community facilities, sports facilities, public open space, a library and a school which will significantly improve the overall quality of life for the local residents as well as the future student population. As a result the Strategic Plan will have an overall positive impact on population and human health.

A breakdown summary of the impacts of each section of the *GDA Draft Strategic Plan* on Population and Human Health is provided below:

| ***GDA Draft Strategic Plan*** **Aims & Objectives** | **Summary of Impact on Population and Human Health** |
|---|---|
| Project Vision | Very positive impact |
| Consultation | Very positive impact |
| Design | Very positive/positive impact |
| Conservation | Neutral impact |
| Movement and Transportation | Positive impact |
| Planning Strategy | Positive impact |
| Development Delivery Plan | Mainly positive impact – short term negative impact during period of adjustment. |
| DIT property disposal strategy | Neutral impact |
| Site engineering and infrastructure | Neutral impact |
| Complementary mixed-use activities | Positive/neutral impact |
| Social infrastructure | Very positive impact |
| Access to the Quarter | Positive impact |
| Research and development strategy | Positive impact |
| Public amenity, sports and recreation | Positive impact |
| Arts and culture | Positive impact |
| Sustainability and energy strategy | Positive impact |
| Estate management | Neutral impact |
| DIT access policy | Very positive/positive impact |
| Socio economic impacts | Very positive impact |

### 8.2.7 Cultural Heritage - Archaeological Heritage

The redevelopment of a historical site such as Grangegorman, which has been relatively undisturbed in recent times, is likely to result in some impacts on any previously undiscovered archaeological remains that may be on site. However the *GDA Strategic Plan* contains policy to establish and articulate the historical, social, urban and architectural values of Grangegorman and this will require that all archaeological remains found on the site during the redevelopment will be appropriately dealt with.

The overall impact of the development on any potential archaeology on site will be generally neutral although there is an element of uncertainty as the GDA are not in a position to know exactly what archaeology is on site until works commence notwithstanding the carrying out of exploratory investigations.

A breakdown summary of the impacts of each section of the *GDA Draft Strategic Plan* on Air Quality is provided below:

| ***GDA Draft Strategic Plan* Aims & Objectives** | **Summary of Impact on Archaeological Heritage** |
|---|---|
| Project Vision | Neutral/Negative impact |
| Consultation | Neutral impact |
| Design | Neutral/negative impact |
| Conservation | Positive impact |
| Movement and Transportation | Neutral impact |
| Planning Strategy | Neutral impact |
| Development Delivery Plan | Neutral impact |
| DIT property disposal strategy | Neutral impact |
| Site engineering and infrastructure | Neutral impact |
| Complementary mixed-use activities | Neutral impact |
| Social infrastructure | Neutral impact |
| Access to the Quarter | Neutral/negative impact |
| Research and development strategy | Neutral impact |
| Public amenity, sports and recreation | Neutral impact |
| Arts and culture | Neutral impact |
| Sustainability and energy strategy | Neutral impact |
| Estate management | Neutral impact |
| DIT access policy | Neutral impact |
| Socio economic impacts | Neutral impact |

## 8.3 Summary of Impacts of *GDA Draft Strategic Plan*

The GDA Draft Strategic Plan sets out seven overall *Project Visions* which encapsulates all the aims and objectives of the project. The environmental assessment of these Project Visions summarises the assessment of all aims and objectives within the Strategic Plan. Overall the environmental assessment has shown that there will be a net positive impact as a result of the implementation of this Strategic Plan. While the initial construction works may have a negative impact on the existing trees on the site and potential archaeology on site this impact will be temporary in nature and mitigated appropriately and should not result in significant negative impacts. The benefits of the overall project in terms of the positive impact on the socio economic factors and quality of life for the local and national community, the positive impacts on the architectural heritage, the infrastructure provision and the overall sustainable approach in the provision of public transport and the reduction in energy demands will ultimately significantly outweigh temporary negative impacts which may occur.

Figure 8.1 below summaries the environmental assessment of the *GDA Draft Strategic Plan*.

| KEY | Neutral | Very Positive | Positive | Negative | Very Negative | Uncertain |
|---|---|---|---|---|---|---|
| | 0 | ++ | + | - | -- | ? |

| *GDA Draft Strategic Plan*<br>**Visions, Aims and Objectives** | Environmental Protection Objectives | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Protect and enhance biodiversity, flora and fauna on the Grangegorman Site | Enhance the overall socio-economic profile and economic attractiveness of the Grangegorman Development Area | Improve the quality of life for the community based on the provision of accessible employment, recreational, educational, medical and other facilities. | Provide, maintain and improve access to public open space | Preserve and enhance the natural and historic landscape features within the Grangegorman site | Retention of existing good quality trees | Limit adverse impacts on air quality and in particular traffic generated emissions | Limit adverse impacts on climate through use of sustainable energy sources | Protect, conserve and enhance the architectural heritage on the Grangegorman site. | Identify, protect and conserve or document the archaeological heritage on the Grangegorman site in accordance with Best Practice Principles. | Provision of separate foul and surface water drainage to service the Grangegorman Area. | Provision for the reuse, recycling and conservation of water. | SEA Team Comments |
| **Project Vision** | | | | | | | | | | | | | |
| **Vision 1:** To satisfy the requirements of the Grangegorman Development Agency Act 2005. | 0 | ++ | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Meeting the statutory requirements of the GDA. |
| **Vision 2:** To develop a world class integrated campus for DIT – a flagship in development within higher education in Ireland, incorporating leading edge design, educational innovation and technology. | 0 | ++ | + | 0 | 0 | 0 | 0 | ++ | 0 | 0 | 0 | 0 | Leading edge design to take account of Environmental Receptors identifed in SEA. |
| **Vision 3:** To redevelop St Brendan's Hospital and other local clinical services on a state-of-the-art integrated healthcare campus which enables a high class service model to be delivered by the HSE. | 0 | 0 | ++ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Support the provision of high quality health services with a particular focus on the local Grangegorman population. |
| **Vision 4:** To generate community benefit through enhanced physical environment, sport and recreational facilities, arts and cultural spaces, social and educational amenities, and economic opportunity. | + | 0 | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Community facilities should ensure access for all. |
| **Vision 5:** To achieve excellence in architecture, urban design and sustainability. | 0 | 0 | + | 0 | + | + | + | 0 | + | 0 | + | + | Design to be sensitive to architectural heritage on site. |
| **Vision 6:** To develop a new City Quarter which links with and adds value to its surrounding neighbourhoods and the city in general and articulates Dublin City Council's vision for the City as expressed in the City Development Plan. | 0 | ++ | + | 0 | 0 | - | 0 | 0 | 0 | - | + | 0 | While the development will negatively impact on issues such as some trees on site this will be mitigated by positive impacts such as on quality of life and protection of landscape and architectural features. |
| **Vision 7:** To maintain a communication strategy throughout the delivery of the project that facilitates appropriate consultation. | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Promote community participation in redevelopment process. |

# Chapter 9

**9.0 MITIGATION MEASURES AND INCORPORATION OF MITIGATION MEASURES AND ASSESSMENT RESULTS IN THE PLAN**


9.1 Cultural Heritage – Architecture
9.2 Biodiversity, Flora and Fauna
9.3 Air Quality
9.4 Climatic Factors
9.5 Material Assets – Infrastructure
9.6 Landscape
9.7 Population and Human Health
9.8 Cultural Heritage – Archaeological Heritage

## 9.0 MITIGATION MEASURES AND INCORPORATION OF MITIGATION MEASURES AND ASSESSMENT RESULTS IN THE PLAN

Mitigation measures have been identified as part of the SEA process to prevent, reduce and as fully as possible, offset any significant adverse impacts on the environment of implementing the *GDA Draft Strategic Plan.* This section of the *Environmental Report* details the mitigation measures that have been developed in order to address any significant environmental impacts expected as a result of the implementation of the Strategic Plan.

Mitigation involves ameliorating significant negative effects. Where there are significant negative effects, consideration is given in the first instance to preventing such effects, or where this is not possible for stated reasons, mitigation measures are devised to lessen or offset these effects. Mitigation measures can be described as those that; avoid effects; reduce the magnitude or extent, probability and/or severity of effects; repair effects after they have occurred; and compensate for potential negative impacts by providing environmental benefits elsewhere.

While the assessment of the *GDA Draft Strategic Plan* against the environmental objectives is on the whole positive, the SEA process did identify that certain actions are necessary to mitigate anticipated or potential negative environmental impacts. These have been devised in relation to the following environmental receptors: cultural heritage – architecture; biodiversity, flora and fauna, air quality; climatic factors; material assets – Infrastructure; landscape; population and human health; and cultural heritage – archaeology.

## 9.1 Cultural Heritage – Architecture

The GDA have undertaken to establish strategies for repair, intervention, adaption and extension to the historic structures and this shall include a detailed conservation plan or strategy. This strategy will provide proposals for the retention, restoration and enhancement of features and buildings of architectural merit within the new quarter at Grangegorman.

The GDA Draft Strategic Plan will require the demolition of some structures within the Grangegorman site, this will, however, be limited to structures which have not been designated for protection within the Dublin City Council Development Plan. The Strategic Plan has identified one exception to this, being Connolly Norman Mews which does form an ancillary part of a protected structure as identified in Chapter 6 of this *Environmental Report.* While demolition of protected structures is undesirable, it will be limited to this building. The negative impact on the architectural heritage will be compensated for by the positive impacts on the remaining structures.

In cases where proposals to demolish structures on the site are put forward a full assessment of the architectural significance of these buildings will be provided. This will include an extensive photographic and mapping survey. Alterations and interventions to Protected Structures will be executed to the highest conservation

standards (Venice Charter and subsequent ICOMOS Charters) and should not detract from their significance or value.

The *GDA Draft Strategic Plan* now incorporates policies which will promote the conservation and restoration of the architectural heritage on the site. These policies will also include a requirement for the appropriate reuse of these structures. These policies are as follows:

> "**Conservation Aim 2:** *To integrate the historic structures of significance within the site in a manner which ensures that they contribute to the generation of spaces and places in terms of both physical layout and character and to protect and conserve these for future generations."*
>
> *"**Conservation Objective 3:** GDA will seek to identify uses for the retained historic buildings which are compatible with their spatial layout, which will ensure full and useful occupancy and which will allow this important heritage to make a dynamic contribution to the cultural and functional character of this evolving urban quarter".*

## 9.2 Biodiversity, Flora and Fauna

The baseline data outlined in Chapter 6 contained a survey of habitats, flora and fauna which was conducted in March 2007. A resurvey shall be undertaken prior to redevelopment works, possibly at the planning application stage, in order to ensure that an up to date record of the ecological environment is maintained.

Implementation of the *GDA Strategic Plan* will result in the removal of invasive plant species including Giant Hogweed and Japanese Knotweed. These highly invasive alien species are of no ecological value. The plant material removed will be disposed of in such a manner so as to ensure that these species are not spread to other locations.

The baseline study on Biodiversity, Flora and Fauna identified the need for information on bats located in the Grangegorman site. While it was presumed that there was a strong possibility that bats were located on site no information was available to confirm this presumption. Following a SEA Scoping Workshop held on August 2008 a decision was taken to carry out a comprehensive bat survey. However due to climatic conditions in the autumn period Natura Environmental Consultants advised that the most appropriate time to carry this out would be in April/May 2009. Consequently the results of the bat survey will be available preconstruction to enable arrangements to be made to protect or preserve bat populations.

However due to climatic conditions this autumn Natura Environmental Consultants advised that the most appropriate time to carry this out would be in April/May 2009. Consequently the results of this survey will not be made available prior to the adoption of the *GDA Draft Strategic Plan.* Notwithstanding this it is proposed to proceed with this survey in spring 2009 and any amendments considered necessary to the Masterplan to protect or preserve bat populations will be made following completion of this survey.

It is proposed that the GDA will cooperate with Dublin City Council in the implementation of their Biodiversity Action Plan 2008-2012.

The GDA will incorporate ecological areas into the landscaping plan which will provide planting with native plant species attracting a variety of native bird and animal species. In particular ecological planting will be focused in the *Green Fingers Park* and *Ivy Avenue* and also in designated areas in *The Fields*.

The GDA Draft Strategic Plan contains a policy for the retention of mature trees and requiring the planting of additional trees.

> "***Design Objective 10:*** *GDA will seek to retain a substantial majority of the existing mature trees of quality and will implement a comprehensive planting programme of native species to effect a high quality sylvan public realm*".

## 9.3 Air Quality

The main impact on air quality arising from the *GDA Draft Strategic Plan* relates to transport and the increased traffic generation as a result of the implementation of the plan. It is clear that the redevelopment of the site for an educational and health campus will generate significant trip generation. The GDA Draft Strategic Plan provides an extensive Transportation and Movement section with a strong emphasis on sustainable transport and the use of walking, cycling and public transport for trips to and from the site and internally within the Grangegorman site.

The *GDA Draft Strategic Plan* does make provision for a limited volume of car parking within the site. However it is proposed that the number of spaces would be limited in such a manner so as to provide only for traffic movements which are absolutely necessary. Parking capacity will be determined by the Mobility Management Plan as detailed in GDA's policy as follows:

> "***Movement Objective 4:*** *GDA will seek to procure within the development a limited provision of formal car-parking space for users and visitors to the Quarter generally underground and distributed to mitigate junction impacts. A limited regime of managed on-street parking will be further appraised with a view to facilitating events and sports in particular and providing surface animation and passive supervision in non-peak periods. Parking capacity will not exceed that determined by the Mobility Management Plan."*

In order to minimise any negative impacts as a result of an increase in traffic in the area the GDA has undertaken to promote the provision of and access to sustainable modes of transport including public transport. These policies include the following:

*"**Movement Aim 1:** To ensure the provision of the necessary infrastructure and services to facilitate the maximum usage of sustainable modes of transport, such as walking, cycling and public transport."*

*"**Movement Objective 2:** GDA will develop a Mobility Management Plan for the Quarter and a comprehensive review of local traffic impacts and mitigation measures. The Mobility Management Plan will seek to minimise private car dependency."*

## 9.4 Climatic Factors

Heat and energy demands are expected to be the primary sources of greenhouse gas emissions associated with the implementation of the *GDA Draft Strategic Plan* and the redevelopment of the Grangegorman Quarter. The GDA have introduced policies to the Strategic Plan with the objective of reducing these emissions. These policies include the following:

*"**Sustainability and Energy Strategy Aim 2:** To ensure an energy management system which minimises carbon emissions and which has the capacity, in association with other sustainability measures, to be developed to permit the Quarter achieve Zero Carbon status"*

*"**Design Objective 7:** GDA will seek to ensure that a minimum sustainable building design standard of BRE A is achieved throughout the Quarter".*

## 9.5 Material Assets - Infrastructure

The proposed redevelopment of the Grangegorman site will significantly improve the provision of infrastructure in the area and in particular the provision of storm water and sewerage infrastructure. Currently the area around Grangegorman is serviced by a combined sewerage system. The redevelopment proposes to separate the foul and surface water lines and create two new separate systems that will connect independently into Dublin City Council's surrounding drainage system. This will necessitate the provision of a storm water drain connecting the Grangegorman site to the Dublin City Council network at Smithfield.

The provision of this separate system will result in the removal of a substantial volume of surface water from DCC's waste water treatment system. This will exceed the volume of foul water introduced as a result of the redevelopment and as such mitigates the impact of the redevelopment on this treatment system. The GDA have included the following policies in order to reduce the negative impacts of the Strategic Plan on the storm water and wastewater infrastructure.

*"**Site Engineering and Infrastructure Objective 4:** GDA will ensure all site drainage systems are built to meet SUDS (Sustainable Urban Drainage Systems) standards and in all respects meet the requirements of Dublin City Council Drainage Divisions standards and 'Code of Practice'."*

In relation to the demand for drinking water as a result of the implementation of the Strategic Plan, the GDA have introduced the following policy to reduce this demand for water.

> *"**Site Engineering and Infrastructure Objective 6:** GDA will ensure the implementation of sustainable water use strategies and measures for each building development."*
>
> *"**Site Engineering and Infrastructure Objective 5:** GDA will ensure that the site water supply network is built to Dublin City Council Water Division Standard for New Watermains in Private Property."*

## 9.6 Landscape

The baseline study identified the threats to the landscape as those which would be typically associated with any new development within a historic landscape. The key concerns relate to the visual impact, overshadowing, loss of character, impact on scenic amenity, loss of existing structures and sections of the boundary wall. The *GDA Draft Strategic Plan* contains a number of policies providing for the conservation of the historical landscape of the Quarter including the following:

> **"Conservation Aim 1:** *To establish and articulate the historical, social, urban and architectural values of Grangegorman and to ensure these are suitably incorporated within the overall development."*
>
> "**Design Aim 3:** *To relate the design of the Quarter to the existing neighbourhood character and to the strategic objectives of Dublin City Council for local area development"*
>
> "**Design Objective 3:** *GDA will establish a lighting strategy for the Quarter to ensure that the ambient light, sense of place and architectural impacts are optimised."*
>
> *"**Design Objective 4:** GDA will establish a signage and way-finding strategy to facilitate legibility, internal navigation and sense of place."*

In most cases the impacts of development on the landscape can only be assessed when there is sufficient detail in relation to the architectural form and scale of any proposed structure. As such the visual impact of a proposal is generally more appropriately assessed at planning application or planning scheme stage. Consequently the GDA will undertake that planning applications that have the potential to impinge upon the integrity of significant landscape resources will be accompanied by a visual impact assessment demonstrating the mitigating measures implemented to reduce negative impacts on landscape.

## 9.7 Population and Human Health

The negative impacts on population and human health identified in the baseline study relates primarily to the rapid influx of a large number of students to a

previously, almost vacant site. However there are a large number of positive impacts associated with the development of the education and health facilities on the Grangegorman Quarter which significantly improves both the socio-economic standing and the quality of life for the local population and for the wider national community. As such it is considered that these are sufficient to mitigate any negative impacts on the local population as a result of the increase in activity in the general Grangegorman Area.

The *GDA Draft Strategic Plan* contains a broad range of policies which will improve population and human health indicators in the area. These include policies to provide for a primary school, public library, open access to parks and public open spaces, access to DIT indoor and outdoor sports facilities, access to education and health services as well as opportunities for complementary commercial businesses and employment opportunities.

In order to mitigate any potential negative impacts on the local population GDA have conducted an extensive consultation process in the preparation of the Strategic Plan. This consultation process will continue throughout the lifetime of the redevelopment process which is confirmed in the consultation section within the Strategic Plan which contains the following policy:

> *"**Consultation Objective 2:** GDA will operate its Consultation Principles throughout the Project to ensure a consistently high level of maintained public consultation."*
>
> *"**Consultation Objective 1:** GDA will utilise a many-stranded consultation framework for disseminating comprehensive current information on the project and for identifying and addressing the needs and concerns of all stakeholders. Key features of this framework will be regular meetings of the Consultative Group, communication with the many registered groups, meetings with groups and individuals, the availability of a dedicated Communications Officer within the GDA and close liaison with the appropriate public bodies."*

These policies seek to ensure the operation of an effective public consultation process which will result in the identification and mitigation of any negative impacts on the local population as issues arise.

## 9.8 Cultural Heritage - Archaeological Heritage

The redevelopment may result in some negative impacts on the archaeological heritage – particularly if there are previously undiscovered archaeological remains found during the redevelopment. However, to mitigate this, archaeological monitoring during the excavation and construction stage of development on the Grangegorman site will be undertaken by an archaeologist licensed by the Department of Environment, Heritage and Local Government and any artefacts found will be dealt with in an appropriate manner. In addition, exploratory archaeological investigations have been already carried out throughout the site.

Archaeological remains have not been found on the site in any investigations to date.

The GDA would propose that detailed mitigation strategies in relation to archaeology should be proposed at planning scheme or planning application stage when there is more information available with respect to the form and scale of development proposed at a particular location within the Grangegorman site. To ensure the appropriate strategy is followed the GDA will ensure that pre-development archaeological testing, surveying monitoring and recording is carried out as appropriate.

The environmental assessment highlights a concern in relation to the creation of new entrances into the Grangegorman site and its impacts on archaeological heritage. To mitigate any negative impacts the GDA have proposed the following policy:

> "***Conservation Objective 2:*** *The GDA will seek to minimise intervention in the boundary wall so far as is practicable and consistent with achieving the Vision of a new and open quarter."*

# Chapter 10

## 10.0 MONITORING

## 10.0 MONITORING

The SEA Directive requires that the significant environmental effects of the implementation of the *GDA Draft Strategic Plan* are monitored. SEA Monitoring allows the actual impacts of the strategic action to be tested against those that were predicted, major problems to be identified and dealt with, and environment/ sustainability baseline information to be gathered for future strategic actions. It helps to ensure that the proposed mitigation measures are carried out, and facilitates the identification of unforeseen adverse effects at early stage, permitting appropriate remedial action in a timely fashion.

This section of the Environmental Report proposes a monitoring programme to be implemented by the GDA in conjunction with the implementation of the *GDA Strategic Plan.* The GDA will be responsible for collating the monitoring data and will be responsible for preparing a Monitoring Report and implementing any corrective measures where required.

The Monitoring Programme shall highlight instances where environmental indicators have become redundant and are no longer required or where gaps in information arise and additional Indicators are required. All data proposed in the Indicators are readily available and will be collected as part of the process of implementing the *GDA Strategic Plan* in any case. As such it is not proposed to impose excessive data collection which is unnecessary to achieve an environmentally sound Strategic Plan.

Table 9.1 below details the monitoring programme for each of the Environmental objectives within this SEA. This includes the Indicators and Targets outlined in Chapter 5.

**Table 10.1 Summary of Proposed Monitoring Programme for *GDA Strategic Plan***

| Environmental Objective | What to Monitor (Indicator) | Source of Data | Frequency of Monitoring | Targets |
|---|---|---|---|---|
| **Protect, conserve and enhance the architectural heritage on the Grangegorman site.** | Numbers of protected structures retained on site | GDA/ DCC | On-going | No adverse impact on all protected structures on site. |
| | Conservation Plan prepared for each protected structure and their curtilage. | GDA | On-going | Inclusion of a *Conservation Plan* with planning applications where relevant, including a detailed fabric survey that will set out strategies for each of the protected structures and their curtilages. |
| | Number of historic structures with appropriate new uses reflecting the historic nature of these buildings | GDA | Annual | The provision of appropriate and sustainable uses for each historic structure. |
| | Areas of new ecological linked green areas within the Grangegorman site. | GDA | Annual | The management of an area of green space in a manner which promotes a diversity of interdependent habitats and species. |
| **Protect and enhance biodiversity, flora and fauna on the Grangegorman Site** | Eradication of invasive alien species (i.e. giant hogweed and Japanese knotweed) currently on site and avoidance of the introduction of other invasive species to the Grangegorman Site. | GDA | Every two years | Reduction or removal of all alien species from the site. |
| | Identification of habitats of protected species and in particular bats and minimise interference with these habitats | GDA | Annual | Bat surveys carried out prior to development on site and where roosting sites are impacted alternative roosting sites such as bat boxes to be provided. |

| Environmental Objective | What to Monitor (Indicator) | Source of Data | Frequency of Monitoring | Targets |
|---|---|---|---|---|
| **Limit adverse impacts on air quality and in particular traffic generated emissions.** | Length of cycle routes and numbers of cycle parking spaces provided. | GDA | On-going | Air quality should not exceed the limit values provided in the Air Quality Standards Regulations 2002 (S.I. No. 271 of 2002). |
| | An accessible public transport network. | GDA | Annual | Provision of a supply of car parking spaces below the amount demanded in order to reduce the numbers of private cars brought on to site. |
| | No. of car parking spaces provided | GDA | On-going | A Mobility Management Plan developed for the site which will seek to minimise private car dependency. |
| **Limit adverse impacts on climate through use of sustainable energy sources** | Preparation of an Energy management regime for the site which will incorporate renewable energies. Central energy centre for the site (including a CHP plant) to be developed. | GDA | Annual | Optimum building energy ratings to be achieved for residential and non-residential units. |

| Environmental Objective | What to Monitor (Indicator) | Source of Data | Frequency of Monitoring | Targets |
|---|---|---|---|---|
| **Provision of separate foul and surface water drainage to service the Grangegorman Area.** | Construction of new surface water sewer connecting with the closest existing surface water line at Smithfield Plaza. | GDA / DCC | On-going | Establishment of appropriate surface water drainage system for separate foul and surface water drainage. |
| **Provision for the reuse, recycling and conservation of water.** | Provision of grey water recycling, infiltration and filtration systems, retention ponds and swales within the site. | GDA | Annual | Implementation of SUDS (sustainable urban drainage systems. |
| **Provide, maintain and improve access to public open space.** | Area of public open space provided in the redevelopment of GrangegormanProvision of areas of public open space accessible to all. | GDA | On-going | The provision of adequate open space which is accessible to all. |
| **Preserve and enhance the natural and historic landscape features within the Grangegorman site.** | Number or percentage of natural and historic landscape features preserved. | GDA | On-going | The preservation of as many natural and historic landscape features as possible, where appropriate, and their integration into the landscape proposal for the site. |
| **Retention of existing good quality trees** | Percentage of existing good quality trees retained. | GDA | Annual | Retention of as many good quality existing trees on site as possible and where appropriate, including the transplanting of existing good quality trees to other locations around the site. |

| Environmental Objective | What to Monitor (Indicator) | Source of Data | Frequency of Monitoring | Targets |
|---|---|---|---|---|
| **Identify, protect and conserve or document the archaeological heritage on the Grangegorman site in accordance with Best Practice Principles.** | Number of archaeological features identified;<br><br>Numbers of archaeological features preserved.<br><br>Numbers of archaeological features recorded. | GDA / DCC | Annual | Archaeological features identified on site to be preserved where possible or appropriately documented where removal is required in accordance with best practice. |
| **Enhance the overall socio economic profile and economic attractiveness of the Grangegorman Development Area** | Principal economic status; levels of educational attainment at local and national level; and unemployment levels. | Central Statistics Office / GDA | Annual | Provide improved employment opportunities, during both the construction and operational phases.<br><br>Increase economic activity within the general Grangegorman Area. |
| **Improve the quality of life for the community based on the provision of accessible employment, recreational, educational, medical and other facilities** | Levels of employment creation; access to medical, educational and recreational facilities; and improvements in educational standards at a national level. | Central Statistics Office / GDA | Annual | Increase undergraduate and post graduate student numbers at DIT.<br><br>Provide access to educational and health facilities for communities. |

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# Appendix A

Matrices of the evaluation of the *GDA Draft Strategic plan* policies with environmental protection objectives.

**GDA Draft Strategic Plan**
**Visions, Aims and Objectives**

| Project Vision | Protect and enhance biodiversity, flora and fauna on the Grangegorman Site | Enhance the overall socio-economic profile and economic attractiveness of the Grangegorman Development Area | Improve the quality of life for the community based on the provison of accessible employment, recreational, educational, medical and other facilities. | Provide, maintain and improve access to public open space | Preserve and enhance the natural and historic landscape features within the Grangegorman site | Retention of existing good quality trees | Limit adverse impacts on air quality and in particular traffic generated emissions | Limit adverse impacts on climate through use of sustainable energy sources | Protect, conserve and enhance the architectural heritage on the Grangegorman site. | Identify, protect and conserve or document the archaeological heritage on the Grangegorman site in accordance with Best Practice Principles. | Provision of separate foul and surface water drainage to service the Grangegorman Area. | Provision for the reuse, recycling and conservation of water. | SEA Team Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Vision 1:** To satisfy the requirements of the Grangegorman Development Agency Act 2005. | 0 | ++ | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Meeting the statutory requirements of the GDA. |
| **Vision 2:** To develop a world class integrated campus for DIT – a flagship in development within higher education in Ireland, incorporating leading edge design, educational innovation and technology. | 0 | ++ | + | 0 | 0 | 0 | 0 | ++ | 0 | 0 | 0 | 0 | Leading edge design to take account of Environmental Receptors identifed in SEA. |
| **Vision 3:** To redevelop St Brendan's Hospital and other local clinical services on a state-of-the-art integrated healthcare campus which enables a high class service model to be delivered by the HSE. | 0 | 0 | ++ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Support the provision of high quality health services with a particular focus on the local Grangegorman population. |
| **Vision 4:** To generate community benefit through enhanced physical environment, sport and recreational facilities, arts and cultural spaces, social and educational amenities, and economic opportunity. | + | 0 | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Community facilities should ensure access for all. |
| **Vision 5:** To achieve excellence in architecture, urban design and sustainability. | 0 | 0 | + | 0 | + | + | + | 0 | + | 0 | + | + | Design to be sensitive to architectural heritage on site. |
| **Vision 6:** To develop a new City Quarter which links with and adds value to its surrounding neighbourhoods and the city in general and articulates Dublin City Council's vision for the City as expressed in the City Development Plan. | 0 | ++ | + | 0 | 0 | - | 0 | 0 | 0 | - | + | 0 | While the development will negatively impact on issues such as some trees on site this will be mitigated by positive impacts such as on quality of life and protection of landscape and architectural features. |
| **Vision 7:** To maintain a communication strategy throughout the delivery of the project that facilitates appropriate consultation. | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Promote community participation in redevelopment process. |

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| **Consultation** | | | | | | | | | | | | | |
| CA1 : To maintain an effective communication strategy throughout the delivery of the project enabling appropriate consultation. | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Efficacy of communication strategy critical. |
| CO1 : GDA will utilise a many-stranded consultation framework for disseminating comprehensive current information on the project and for identifying and addressing the needs and concerns of all stakeholders. Key features of this framework will be regular meetings of the Consultative Group, communication with the many registered groups, meetings with groups and individuals, the availability of a dedicated Communications Officer within the GDA and close liaison with the appropriate public bodies. | 0 | 0 | ++ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Accessibility of information is important. The GDA website provides an important medium for the disemination of information. |
| CO2: GDA will operate its Consultation Principles throughout the Project to ensure a high level of maintained public consultation. | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Consistancy in consultation will instill confidence in local people that they will be consulted on all major decisions. |
| CO3: GDA will operate its website as a comprehensive communication medium providing easy public access to all important news and information concerning the Project GDA will utilise newsletters and public advertisements as supplementary resources. | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Website should be maintained and updated on a regualar basis. |
| CO4: GDA will maintain close liaison with HSE and DIT throughout the planning, design and delivery phases of the Project. | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Maintain close liaison with HSE and DIT |

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| **Design** | | | | | | | | | | | | | |
| DA1 : To realise the physical expression of the Project Vision | + | ++ | 0 | 0 | 0 | - | 0 | 0 | + | - | + | 0 | While the development will negatively impact on issues such as trees and possible archaeology on site this will be mitigated by positive impacts such as on architectural heritage and the provision of services. |
| DA2 : To achieve a continuity in urban design whilst permitting architectural diversity. | 0 | 0 | + | 0 | + | 0 | 0 | 0 | + | 0 | 0 | 0 | Seeks continuity of urban design with surrounding area. |
| DA3 : To relate the design of the Quarter to the existing neighbourhood character and to the strategic objectives of Dublin City Council for local area development. | 0 | + | 0 | + | + | 0 | 0 | + | + | 0 | + | 0 | Neighbouring character to be retained. |
| DA4: To provide the HSE with excellence in healthcare design, ensure accessibility of health services accommodation to the local area, appropriate levels and combinations of privacy, security, openness and legibility within a generally low density – high amenity environment. | 0 | 0 | ++ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Promotes excellance in health care provision |
| DA5: To effect a fully integrated campus for DIT with optimal faculty inter-relationship and future-proof flexibility (and expansion capacity), appropriate levels and combinations of privacy, security, openness and legibility within a generally mid-density – high amenity environment | 0 | + | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Promotes excellance in educational provision |
| DA6: To organise the Quarter to provide cohesiveness, collegiality and connectivity and to establish nodes of activity with strong, legible and animated routes connecting them. | 0 | 0 | + | ++ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Promotes the creation of a high quality, active, urban landscape |
| DO1: GDA will develop Architectural Design Guidelines to ensure building design quality in the progressive development of the Quarter as per the Procurement Strategy. | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | + | 0 | 0 | 0 | Requires the preparation of Architectural Design Guidelines for the Quarter |
| DO2: GDA will position the Primary School and its private play ground close to existing housing, (and the proposed elderly housing) and in a location convenient for child and parent access. | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Will ensure access to the primary school for local residents |
| DO3: GDA will establish a lighting strategy for the Quarter to ensure that the ambient light, sense of place and architectural impacts are optimised. | 0 | 0 | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 | 0 | Will help in maintaining a high quality urban landscape. |
| DO4; GDA will establish a signage and way-finding strategy to facilitate legibility, internal navigation and sense of place. | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Will help in maintaining a high quality urban landscape. |

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| DO5: GDA will position the higher density mixed-use development at Broadstone Gate to reflect use and scale characteristics compatible to future possible development of Broadstone, market requirements, likely phasing of development and the ambition of a Science and Technology Park. | 0 | + | 0 | + | 0 | 0 | 0 | 0 | ? | 0 | 0 | 0 | Uses on the site should be compatible with potential uses on adjoining lands. Impacts of proposal on protected structures to be assessed at planning scheme or planning application stage. |
| DO6: GDA will orient buildings to optimise sustainability, utility, urban design continuity, public space and route quality, and building aesthetics. | 0 | 0 | + | + | 0 | 0 | 0 | + | 0 | 0 | 0 | + | Facilitate a high standard of design and sustainable approach to the redevelopment of Grangegorman. |
| DO7: GDA will seek to ensure that a minimum sustainable building design standard of BRE A is achieved throughout the Quarter. | 0 | 0 | 0 | 0 | 0 | 0 | + | ++ | 0 | 0 | 0 | 0 | Facilitate a sustainable approach to the redevelopment of Grangegorman. |
| DO8: GDA will distribute student housing thoughout the campus to encourage evening and weekend residential animation throughout, assist with passive supervision of the main arterial routes and the fields and to encourage vibrant use of public spaces. | 0 | 0 | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate a high standard of design and sustainable approach to the redevelopment of Grangegorman. |
| DO9: GDA will landscape the Quarter to incorporate key environmental characteristics in support of sustainable design including wind harvesting/cooling and storm water retention. | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | + | + | Facilitate a high standard of design and sustainable approach to the redevelopment of Grangegorman. |
| DO10: GDA will seek to retain a substantial majority of the existing mature trees of quality and will implement a comprehensive planting programme of native species to effect a high quality sylvan public realm. | + | 0 | + | + | + | + | 0 | 0 | 0 | 0 | 0 | 0 | Maximise the retention of trees on site. |

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| **Conservation** | | | | | | | | | | | | | |
| CSA1: To establish and articulate the historical social, urban and architectural values of Grangegorman and to ensure these are suitably incorporated within the overall development. | 0 | 0 | + | 0 | ++ | 0 | 0 | 0 | + | + | 0 | 0 | Facilitate the preservation and incorporation of the historical social, urban and architectural values of Grangegorman within the redevelopment. |
| CSA2: To integrate the historic structures of significance within the site in a manner which ensures that they contribute to the generation of spaces and places in terms of both physical layout and character and to protect and conserve these for future generations. | 0 | 0 | + | + | + | 0 | 0 | 0 | + | + | 0 | 0 | Facilitate the appropriate preservation of historic structures of significance. |
| CSO1: GDA will retain, restore and re-use all of the Protected Structures with the exception of Connolly Norman Mews. | ? | 0 | 0 | 0 | + | 0 | 0 | 0 | + | + | 0 | 0 | Facilitate the preservation of protected structures. A bat survey of all protected buildings is required and all proposals should have no negative impacts on bat species found. |
| CSO2: GDA will seek to minimise interventions to the boundary wall so far as is practicable and consistent with achieving the Vision of a new and open quarter. | + | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | ++ | 0 | 0 | Facilitate the preservation of the boundary wall. |
| CSO3: GDA will seek to identify uses for the retained historic buildings which are compatible with their spatial layout, which will ensure full and useful occupancy and which will allow this important heritage to make a dynamic contribution to the cultural and functional character of this evolving urban quarter | ? | 0 | 0 | 0 | + | 0 | 0 | 0 | + | 0 | 0 | 0 | Facilitate the preservation of protected structures. A bat survey of all protected buildings is required and all proposals should have no negative impacts on bat species found. |
| CSO4: GDA will establish strategies for repair, intervention, adaptation and extension to the historic structures. These will include general and specific strategies and will also include approaches and objectives for upgrading of historic structures for increased thermal efficiency and other initiatives to achieve the Plan Brief objectives for greater energy efficiency and sustainable development. | ? | 0 | 0 | 0 | + | 0 | 0 | + | + | 0 | 0 | 0 | Facilitate appropriate conservation principles in the preservation of historic buildings. A bat survey of all buildings is required and all proposals should have no negative impacts on bat species found. |

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| **Movement and Transportation** | | | | | | | | | | | | | |
| MA1: To ensure the provision of the necessary infrastructure and services to facilitate the maximum useage of sustainable modes of transport, such as walking, cycling and public transport. | 0 | + | + | 0 | + | 0 | ++ | + | + | 0 | 0 | 0 | Faciltiate the provision of infrastructure and services required to maiximise use of sustainable modes of transport. |
| MA2: To ensure that the development facilitates internal routes and external connectivities to the advantage of the users of the Quarter, the local area in particular and the city of Dublin in general. | 0 | 0 | + | + | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | Encourage internal and external connectivity. |
| MO1: GDA will work with CIE, Dublin Bus, Bus Éireann, Irish Rail, RPA, DCC and other key transportation bodies to secure the optimum provision of public transportation connectivity and service for the Quarter and surrounding community and in particular to achieve an inter-modal transport hub at Broadstone Gate. | 0 | 0 | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | Consult with public transport providers and other transport bodies to optimise provision of public transport. |
| MO2: GDA will develop a Mobility Management Plan for the Quarter and a comprehensive review of local traffic impacts and mitigation measures. The Mobility Management Plan will seek to minimise private car dependency. | 0 | 0 | 0 | 0 | 0 | 0 | + | + | 0 | 0 | 0 | 0 | Faciltitate the preparation of a Mobility Management Plan for the Quarter. |
| MO3: GDA will seek to ensure that the Quarter secures the necessary connections to perimeter public transportation services and walking/cycling routes. | 0 | 0 | + | 0 | 0 | 0 | ++ | + | 0 | 0 | 0 | 0 | Connectivity crucial to encourage sustainable modes of transport. |
| MO4: GDA will seek to procure within the development a limited provision of formal car-parking space for users and visitors to the Quarter generally underground and distributed to mitigate junction impacts. A limited regime of managed on-street parking will be further appraised with a view to facilitating events and sports in particular and providing surface animation and passive supervision in non-peak periods. Parking capacity will not exceed that determined by the Mobility Management Plan. | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | Limiting the volume of car parking speaces for visitors to the site will reduce the reliance on the private car. However it must be designed so that it does not encourage the unnecessary use of the private car. |
| MO5: GDA will ensure that the Quarter is pedestrian prioritised with excellent amenity for both cyclists (including secure parking) and pedestrians. | + | 0 | 0 | + | + | 0 | + | + | 0 | 0 | 0 | 0 | Walking, followed by cycling are the primary modes of transport to be encouraged. |
| MO6: GDA will organise the street and walking route hierarchy to facilitate public pedestrian and cycle routes through the Quarter and to encourage links with other strategic routes throughout north Dublin. | + | 0 | 0 | 0 | 0 | 0 | + | + | + | 0 | 0 | 0 | Design and layout should primarily facilitate pedestrian and cycle movements. |
| MO7: GDA will ensure that the design of all routes, access points and building entrances are fully accessible and also will ensure a good distribution of accessibility parking throughout the Quarter. | 0 | 0 | ++ | 0 | 0 | 0 | 0 | 0 | ? | 0 | 0 | 0 | Facilitates the provision of facilities for the disabled. Accessibility provisions should minimise the impact on the architectural heritage and in particular on protected structures. |

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| **Planning Strategy** | | | | | | | | | | | | | |
| PA1: To facilitate implementation of the project and provide the future flexibility to allow for institutional development over time. | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | To facilitate a supporting and predictable planning process. |
| PA2: To achieve a high degree of confidence in planning outcomes and timeframe in order to:<br>• Facilitate development procurement processes;<br>• Allow a predictable timeframe for disposal of DIT properties and phased occupation of campus; and<br>• Create a best match with available finance and professional resources. | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | To facilitate a supporting and predictable planning process. |
| PA3: To allow for early planning applications in respect of HSE facilities and schools. | 0 | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | To facilitate a supporting and predictable planning process. |
| PO1: GDA will seek to secure Strategic Development Zone (SDZ status) for the site and develop the Strategic Plan into a Draft Planning Scheme. | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | To facilitate a supporting and predictable planning process. |

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| **Development Delivery Plan** | | | | | | | | | | | | | |
| DDPA1: To organise the sequence of development works to permit an orderly roll-out of the Project. | 0 | + | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | + | 0 | To facilitate the appropriate phasing of development. |
| DDP2: To achieve the earliest possible completion of the replacement health facilities for the HSE. | 0 | 0 | ++ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | To facilitate the appropriate phasing of development. |
| DDPA3: To progress the Project as quickly as possible consistent with economic efficiency, and appropriate mitigation of construction environmental impacts and subject to the constraints of planning and finance. | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | + | 0 | To facilitate the economic efficency with which the redevelopment is implemented while providing appropriate mitigation to construction environmental impacts. |
| DDPA4: To move a minimum of 50% of the DIT student body into the new campus in a single first relocation from existing DIT accommodations and ensure concurrent provision of essential amenity including field and indoor sports. | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | To facilitate the appropriate phasing of development. This will inevitably impact on the local residents and the overall character of the area while they go through a period of adjustment. However, to compensate, a wide range of educational facilities will become availible. |
| DDPA5: To enable the expeditious delivery of the permanent primary school. | 0 | + | ++ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | To facilitate the provision of the primary school. |
| DDPA6: To enable the delivery of DIT and HSE facilities that follow at later stages in an orderly manner without impairing occupied uses of the site. | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | To facilitate the appropriate phasing of development. |
| DDPO1: GDA will develop the HSE replacement accommodation as the first phase in order to meet the critical needs of local healthcare services and to allow the site to be vacated for the further development of the Quarter. | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | To facilitate the appropriate phasing of development. |
| DDPO2: GDA will work with HSE to complete design briefs for the first phase accommodation and to develop a decanting strategy for current HSE and associated occupation of the site. | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | To facilitate the appropriate phasing of development. |
| DDPO3: GDA will work with DIT to detail comprehensively their first relocation, to develop an aligned decanting strategy, and to refine arrangements for faculty movements to ensure alignment of academic and construction programmes. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | To facilitate the appropriate phasing of development |
| DDPO4: GDA will develop a Construction Management Plan to ensure an integrated approach to construction logistics as well as to manage local impacts and ensure effective application of GDA consultation principles. | + | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | To minimise the impacts of construction related logistics on site on local residents. |
| DDPO5: GDA will plan the location of construction compounds and the boundaries of DIT construction sites to enable the expeditious delivery of the primary school. | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | To minimise the impacts of construction related environmental impacts on local residents. |

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| **DIT Property Disposal Strategy** | | | | | | | | | | | | | |
| DSA1: To maximise the disposal value of the DIT property portfolio to fund the project. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | To achieve the most financially favourable outcome on the disposal of DIT's property portfolio. |
| DSA2: To effect disposals in a manner which supports the project phasing strategy and enables unimpeded functioning of DIT. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | To facilitate appropriate phasing of the DIT element of the redevelopment. |
| DSO1: GDA will co-ordinate disposals and development to achieve an efficient and cost effective transfer from existing properties to the new buildings. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | To facilitate appropriate phasing of the DIT element of the redevelopment. |
| DSO2: GDA to select a sale strategy for individual properties in terms of timing and form which will best exploit the then current market possibilities. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | To achieve the most financially favourable outcome on the disposal of DIT's property portfolio. |
| DSO3: GDA to maximise the value of the DIT's portfolio and achieve the best possible prices and sale terms for individual properties. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | To achieve the most financially favourable outcome on the disposal of DIT's property portfolio. |

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| **Site Engineering and Infrastructure** | | | | | | | | | | | | | |
| SEIA1: To ensure the provision of a sustainable supply of services - water, drainage, energy, telecommunications, security and waste disposal to meet the needs of the project generally and the Sustainable Energy Strategy in particular. | 0 | + | + | 0 | 0 | 0 | 0 | + | 0 | 0 | ++ | ++ | To provide for the sustainable supply of services to facilitate the redevelopment. |
| SEIA2: To provide a sustainable waste management system for the development of the Quarter to serve the end users requirements as detailed in the briefs with suitable expansion capacity. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | + | 0 | To facilitate a sustainable waste management system. |
| SEIO1: GDA will mandate compliance with Department of the Environment 'Best Practice Guidelines' for Construction and Demolition Waste Management in the procurement of all construction works. | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Minimise the environmental impacts of construction and demolition waste generated by the redevelopment. Appropriate disposal of invasive plant species required |
| SEIO2: GDA will put in place a waste management strategy to ensure that best practice in this area is integrated across the site. | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Ensure best practice in waste management. Appropriate disposal of invasive plant species required. |
| SEIO3: GDA will develop a centralised energy centre and "utilidor" spine to convey essential services across the site such as will permit all building elements to connect. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ++ | 0 | 0 | + | 0 | Facilitate the provision of a central utilidor spine to provide essential services. |
| SEIO4: GDA will ensure all site drainage systems are built to meet SUDS (Sustainable Urban Drainage Systems) standards and in all respects meet the requirements of Dublin City Council Drainage Divisions standards and "Code of Practice". | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | + | ++ | Facilitate Sustainable Urban Drainage System (SUDS) to service the site. Water features may be used to provide a natural habitat for native species. |
| SEIO5: GDA will ensure that the site water supply network is built to Dublin City Council Water Division Standard for New Water Mains in Private Property. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ++ | 0 | Provision of appropriate water supply services. |
| SEIO6: GDA will ensure the implementation of sustainable water use strategies and measures for each building development. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ++ | Provide for sustainable water use within individual buildings. |

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| **Complementary Mixed Use Activities** | | | | | | | | | | | | | |
| CMAA1: To procure the development of commercial activities which will complement and support the core activities of DIT & HSE. | 0 | ++ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate the provision of ancillary commercial facilites and services. |
| CMAA2: To procure the necessary accommodation to facilitate the Research and Development Strategy. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate the Research and Development Strategy. |
| CMAA3: To maximise the leverage of employment opportunities from the complementary commercial activities. | 0 | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Maximise employment in ancillary services. |
| CMAO1: GDA will seek to meet the needs of DIT in relation to accommodation for its student population by procuring circa 1,500-2,000 student accommodation units on campus. | 0 | 0 | - | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | Provision of student accomodation. Integration of the student population may have temporary negative impact on local population. |
| CMAO2: GDA will seek to procure an Incubator and Innovation and Technology Transfer Centre of circa 5,000m2. | 0 | + | 0 | 0 | 0 | 0 | ? | 0 | 0 | 0 | 0 | 0 | Facilitation of required DIT facilities. These should aim to minise the generation of traffic. |
| CMAO3: GDA will seek to procure a range of mixed-use development at Broadstone Gate. | 0 | + | 0 | 0 | 0 | 0 | ? | 0 | 0 | 0 | 0 | 0 | Facilitation of required DIT facilities. These should aim to minise the generation of traffic. |
| CMAO4: GDA will seek to procure Commercial Laboratories to commercialise DIT research. | 0 | + | 0 | 0 | 0 | 0 | ? | 0 | 0 | 0 | 0 | 0 | Facilitation of required DIT facilities. These should aim to minise the generation of traffic. |
| CMAO5: GDA will seek to ensure the provision of retail and food outlets of a standard and range expected by the occupants of a modern higher education and medical quarter and in a fashion complimentary to existing local retail provision. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate the provision of ancillary services to support the redevelopment. |

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| **Social Infrastructure** | | | | | | | | | | | | | |
| SIA1: To seek to secure, in addition to the general public amenity of the Project, social infrastructure through specific inclusion in the Project works of a public library, primary school and social housing for the mid-dependency elderly. | 0 | 0 | ++ | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate the provision of social infrastructure which will improve the quality of life for the local population. |
| SIO1: GDA will work with DCC and DIT to secure the development of a local public library as an integral element of the DIT library complex. | 0 | 0 | ++ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate the provision of social infrastructure which will improve the quality of life for the local population. |
| SIO2: GDA will work closely with the Department of Education and Science and Educate Together to secure the development of a primary school (and related play-grounds) with capacity for approximately 400 pupils. | 0 | 0 | ++ | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | Facilitate the provision of social infrastructure which will improve the quality of life for the local population. Provision of a local school should reduce the demand for travel. |
| SIO3: GDA will work with DCC, Department of Environment and Local Authority and the HSE to secure the development of approximately 70 units of social housing for independent living of the frail elderly. | 0 | 0 | ++ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate the provision of social infrastructure which will improve the quality of life for the local population. |

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| **Access to the Quarter** | | | | | | | | | | | | | |
| AA1: To allow the site to be opened up to adjoining areas to ensure permeability so that it can evolve as a new city quarter both for the stakeholders who are going to be located in the Quarter and for the people of Dublin. | 0 | 0 | ++ | + | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | Facilitate connectivity with surrounding neighbourhoods and links through the Grangegorman site. |
| AO1: To secure a major public point of entry to the Quarter through the CIE and DCC lands at Broadstone. | 0 | 0 | + | 0 | 0 | 0 | + | 0 | 0 | - | 0 | 0 | Facilitate connectivity with surrounding neighbourhoods and links through the Grangegorman site. |
| AO2: To liaise with the HSE and the developer Albion Properties in relation to integrated pedestrian access to the Quarter. | 0 | 0 | + | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | Facilitate connectivity with surrounding neighbourhoods and links through the Grangegorman site. Minimise negative impacts on archaeology as a result of the creation of new entrances to the site. |
| AO3: To explore opportunities for further entry points to the Quarter from Prussia St. | 0 | 0 | + | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | Facilitate connectivity with surrounding neighbourhoods and links through the Grangegorman site. Minimise negative impacts on archaeology as a result of the creation of new entrances to the site. |

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| **Research & Development Strategy** | | | | | | | | | | | | | |
| RDA1: To promote and enhance research, development, innovation and technology transfer and encourage new science and technology related business development and underpin the DIT institutional mission and national economic strategy and policy. | 0 | ++ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate the development of a knowledge based economy and society reflective of DIT's educational role. |
| RDA2: To significantly enhance the capacity of DIT to attract major research projects and permit a major growth in PhD output. | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate the development of a knowledge based economy and society reflective of DIT's educational role. |
| RDA3: To generate high added-value economic activity in the north inner city. | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate the development of a knowledge based economy and society reflective of DIT's educational role. |
| RDO1: GDA will seek to procure Dedicated Research Centre buildings and Research Institutes. | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate the development of a knowledge based economy and society reflective of DIT's educational role. |
| RDO2: GDA will seek to procure an Incubator and Innovation and Technology Transfer Centre. | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate the development of a knowledge based economy and society reflective of DIT's educational role. |
| RDO3: GDA will seek to procure a Science and Technology Park. | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate the development of a knowledge based economy and society reflective of DIT's educational role. |
| RDO4: GDA will seek to procure commercial laboratories for the Quarter. | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate the development of a knowledge based economy and society reflective of DIT's educational role. There will be increased demand on energy as a result of the proposal but this should be sourced from sustainable generation methods. |
| RDO5: GDA will work with Enterprise Ireland and DIT to seek to secure start-up business space in the Science and Technology Park that would support local economic development. | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate the development of a knowledge based economy and society reflective of DIT's educational role. There will be increased demand on energy as a result of the proposal but this should be sourced from sustainable generation methods. |
| RDO6: GDA will maintain a database of Grangegorman Project related data as a medium for learning and public policy development. | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate the development of a knowledge based economy and society reflective of DIT's educational role. |

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| **Public Amenity, Sports & Recreation** | | | | | | | | | | | | | |
| AM1: To ensure that the new Grangegorman Quarter is a publicly accessible environment. | 0 | 0 | + | ++ | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | Facilitate access to redeveloped Quarter. |
| AM2: To ensure that DIT achieves an excellent facility for student sports and recreation. | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate the achievement of excellance in the provision of student sports and recreation. |
| AM3: To ensure that the public realm is designed to offer real and meaningful social amenity to the local area as well as those living, studying and working on the site. | 0 | 0 | + | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Maximise the public realm within the Quarter. |
| AM4: To ensure that the campus sports facilities are designed and operated to provide both recreational amenity to the local community (particularly the schools) and field sports utility to existing user organisations. | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Provide sporting facilites to local community and existing user organisations. |
| AO1: GDA will ensure the establishment of a management regime which provides open access to the Quarter. | 0 | 0 | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Management regime to provide for access to the Quarter. |
| AO2: GDA will ensure availability of high quality children's play areas at key points of community accessibility. These play areas will be maintained in a good clean and safe condition at all times. | 0 | 0 | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate provision of play areas. |
| AO3: GDA will seek to procure substantial provision for field sports. | 0 | 0 | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate the provision of sports fields. |
| AO4: GDA will seek to procure indoor sports facilities to include a swimming pool and provide a flexible multi-sport environment to meet the needs of DIT and provide capacity for HSE residential clients and community use. | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate the provision of indoor sports facilities. |
| AO5: GDA will work with DIT and consult with community groups to develop an appropriate operational regime to facilitate access by the community (particularly schools), existing user organisations, and HSE residential clients to indoor and outdoor sports and recreation amenities. | 0 | 0 | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate local access to sports facilities. |

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| **Arts and Culture** | | | | | | | | | | | | | |
| ACA1: To ensure that the Grangegorman Quarter enriches the cultural landscape of Dublin and in particular that the Applied Arts Faculty of DIT acts as an accessible medium for arts and cultural interaction with the local community and as an educational and development resource to the community. | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | Facilitate an enriched cultural landscape and access to the arts for the local community. |
| ACA2: To consolidate the establishment of the Grangegorman Quarter as a destination in its own right and linking this new city area with the Museum Quarter at Collins Barracks, Kilmainham and to the Digital Hub/NCAD/Thomas Street area. | 0 | + | ++ | 0 | + | 0 | 0 | 0 | + | 0 | 0 | 0 | Facilitate the development of Grangegorman as a destination for the Arts. |
| ACO1: GDA will seek to procure, in association with the Applied Arts Faculty of DIT a significant arts venue which will have a very significant public purpose as well as an academic purpose. | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate the provision of an arts venue. |
| ACO2: GDA will operate the Per Cent for Art Scheme and seek to ensure an arts dynamic to both the architecture and public realm throughout the Quarter. GDA will work with DCCI and DIT Applied Arts Faculty to establish an arts strategy to address both static and event based art activities related to the Project. | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate the development of an Arts Strategy. |

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| **Sustainability and Energy Strategy** | | | | | | | | | | | | | |
| SESA1: To achieve optimal sustainability and cost-efficiency in meeting the energy needs of the Quarter. | 0 | + | 0 | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | Facilitate a sustainable approach to the provision of energy requirements to the redeveloped Quarter. |
| SESA2: To ensure an energy management system which minimises carbon emissions and which has the capacity, in association with other sustainability measures, to be developed to permit the Quarter achieve Zero Carbon status. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ++ | 0 | 0 | 0 | 0 | Facilitate a sustainable approach to the provision of energy requirements to the redeveloped Quarter. |
| SESA3: To establish an energy management regime consistent with the Project Vision in general and the Estate Management Strategy in particular. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | Facilitate a sustainable approach to the provision of energy requirements to the redeveloped Quarter. |
| SESO1: GDA will establish a flexible mixed medium energy generation and management system with capacity to incorporate renewable fuel boilers, solar water heater panels, gas powered CHP and ESB power supply as the principal media with possible supplementation from wind turbines and photovoltaic systems. The energy generation and management plan will be refined to reflect emergent technologies and opportunities up to the point of procurement. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ++ | 0 | 0 | 0 | 0 | Facilitate a sustainable approach to the provision of energy requirements to the redeveloped Quarter. |
| SESO2: GDA will develop a central energy centre to accommodate CHP and other energy plant. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | Facilitate a sustainable approach to the provision of energy requirements to the redeveloped Quarter. |
| SESO3: GDA will, so far as is reasonably practicable, design in sufficient flexibility to the central plant and infrastructure that future technologies and external energy uses may be readily incorporated. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | Facilitate a sustainable approach to the provision of energy requirements to the redeveloped Quarter. |
| SESO4: GDA will ensure that whilst HSE phase 1 may be operational before construction of the Energy Centre and plant, it may readily and without significant redundancy be connected into the central system subsequently. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | Facilitate a sustainable approach to the provision of energy requirements to the redeveloped Quarter. |

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| **Estate Management** | | | | | | | | | | | | | |
| ESA1: To ensure a sustainable maintenance management regime for the Quarter which upholds the Project Vision and is equitable amongst facilities occupiers in terms of authority and accountability. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ++ | Facilitate the appropriate future management of the redeveloped Quarter. |
| ESO1: GDA will evolve the estate infrastructure, landscape and utility services systems in association with DIT and HSE and in close consultation with Dublin City Council and establish a maintenance management regime and related corporate structures as appropriate. | 0 | 0 | 0 | + | + | + | 0 | + | + | 0 | 0 | 0 | Facilitate the appropriate future management of the redeveloped Quarter. |

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| **DIT Access Policy** | | | | | | | | | | | | | |
| DAPA1: To work closely with DIT in planning, designing and delivering the Project so that the completed academic campus can support the delivery of DIT access policies. | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate access to DIT facilities. |
| DAPO1: GDA will deliver appropriate facilities for DIT including sporting and cultural facilities to support the delivery of DIT access policies. | 0 | 0 | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate access to DIT facilities. |

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| *GDA Draft Strategic Plan*<br>**Visions, Aims and Objectives** | Environmental Protection Objectives | | | | | | | | | | | | |
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| | Protect and enhance biodiversity, flora and fauna on the Grangegorman Site | Enhance the overall socio-economic profile and economic attractiveness of the Grangegorman Development Area | Improve the quality of life for the community based on the provison of accessible employment, recreational, educational, medical and other facilities. | Provide, maintain and improve access to public open space | Preserve and enhance the natural and historic landscape features within the Grangegorman site | Retention of existing good quality trees | Limit adverse impacts on air quality and in particular traffic generated emissions | Limit adverse impacts on climate through use of sustainable energy sources | Protect, conserve and enhance the architectural heritage on the Grangegorman site. | Identify, protect and conserve or document the archaeological heritage on the Grangegorman site in accordance with Best Practice Principles. | Provision of separate foul and surface water drainage to service the Grangegorman Area. | Provision for the reuse, recycling and conservation of water. | SEA Team Comments |
| **Socio Economic Impacts** | | | | | | | | | | | | | |
| SEA1: To promote sustainable development, to maximise the potential of Grangegorman and to improve the quality of life of its residents. | 0 | + | ++ | 0 | + | + | + | + | 0 | 0 | 0 | 0 | To improve the quality of life for Grangegorman Residents. |
| SEA2: To facilitate opportunities for the creation of employment in the Grangegorman area | 0 | ++ | + | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | Facilitate the creation of employment. |
| SEA3: To protect, conserve and enhance the character, appearance and amenity of Grangegorman, especially as regards its landscape quality, the built and natural environment. | + | 0 | + | + | ++ | 0 | 0 | 0 | + | 0 | 0 | 0 | Facilitate the preservation of the landscape character of Grangegorman. |
| SEA4: To enhance the provision of effective leisure, recreational, community and other facilities and services | 0 | 0 | ++ | + | 0 | 0 | 0 | 0 | 0 | 0 | + | 0 | Facilitate the provision of effective community services. |
| SEO1: GDA will work with DIT to seek to ensure the provision of its required educational facilities so as to create opportunities to sections of the community that have been unable to access third level education opportunities. | 0 | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate access to third level education. |
| SEO2: GDA will work with HSE to seek to ensure the improvement of primary healthcare services available to the population of the Grangegorman area. | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Provide for the improvement in primary health care services. |
| SEO3: GDA will work with transportation bodies to promote the Quarter through stronger communication links with road and rail networks to encourage and facilitate economic growth and contribute to wealth creation. | 0 | + | + | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | Provide for stronger communication links with the area. |
| SEO4: GDA will explore the means to create local employment opportunity in the construction of the Quarter | 0 | ++ | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Support the creation of local employment. |
| SEO5: GDA will seek to ensure the creation of employment in the Grangegorman area through the creation of jobs in the services sector. | 0 | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Support the creation of local employment. |
| SEO6: GDA will seek to create an area attractive to new economic development to assist in achieving the socio-economic aims of the development. | 0 | ++ | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Support the creation of local employment and the economic regeneration of the area. |
| SEO7: GDA will work particularly with DIT and Enterprise Ireland to seek to help attract inward investment thus assisting in the economic regeneration of the area in achieving the socio-economic aims of the development. | 0 | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Support the creation of local employment and the economic regeneration of the area. |
| SEO8: GDA will seek to ensure the provision of leisure, recreational, community and other facilities and services in line with the socio-economic objectives to improve the quality of life for local residents, DIT students and staff, HSE staff and service users. | 0 | 0 | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Facilitate the provision of services. |
| SEO9: GDA will seek to ensure improvement in the provision of local facilities and services. | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | + | 0 | Facilitate the provision of services. |

| KEY | Neutral | Very Positive | Positive | Negative | Very Negative | Uncertain |
|---|---|---|---|---|---|---|
| | 0 | ++ | + | - | -- | ? |

# Grangegorman

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