

The new city Quarter will require a coherent operations strategy integrating key areas which are elaborated on in this chapter.

6.1 Research and Development Strategy

6.1.1 Introduction and Aims

R&D Aim 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..

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

R&D Aim 3: To generate high added-value economic activity in the north inner city.

The DIT campus component of Grangegorman has been designed to consciously promote and enhance research, development, innovation and technology transfer as well as to encourage new business development. The campus will draw students, staff and industry together in a supportive environment where key research themes identified by DIT can be clustered and explored with industry partners. This environment encourages sharing and partnership between all stakeholders with knowledge creation and transfer being the primary focus.

It is envisaged that key industry partners will co-locate some of their research activity on campus and at Broadstone Gate and in the process engage with the related research activity on campus and where possible share resources including specialised equipment and facilities. Collaboration between all stakeholders is a fundamental principle underpinning research and development activity on the campus. The campus will permit a major quantitative and qualitative growth in DIT research and development activity. Not only will the state-of-the-art academic environment significantly enhance DIT's ability to attract major research projects and permit a major growth in PhD output, but additionally, the availability of business and research space for industry will allow for the academia-industry synergies essential to national economic output in the knowledge age.

The Research and Development Strategy of both DIT and Ireland will be facilitated by some 4,800m² of post-graduate research rooms located across all college buildings and by four additional physical elements:

- Dedicated Research Centres adjacent to Faculty buildings
- Incubator Centre Hot House
- Science and Technology Park at Broadstone Gate.
- Commercial Laboratories.

The creation of a DIT Research and Development Hub will assist in developing a higher added-value economy in the north inner city.

6.1.2 Strategic Rationale

The target set amongst EU member states in Barcelona in 2002 for Gross Expenditure for Research and Development (GERD) was 3% of GDP by 2010. DIT currently estimates that GERD in Ireland will be approximately 2.5% of GDP by the end of the decade and DIT along with other third level institutes will therefore need to greatly increase R&D output. DIT will use the impetus provided by a move to a single campus to boost its research activity and the availability of research personnel will be a key issue. The supply of PhD graduates is of particular importance in a knowledge-based economy. Altering the balance between PhD graduates and non-PhD graduates improves the quality and creativity of industrial and professional output since these graduates have generic skills that make a valuable contribution to the economy irrespective of the nature of the employment they undertake. Nonetheless, a short-fall of 609 PhD graduates is predicted for the period 2004 to 2010 and demand for research graduates will continue to increase thereafter. DIT will be a significant contributor toward redressing this deficiency, due to the proposed state-of-the-art facilities at Grangegorman.

The increasing importance of research and post-graduate education is one of the single largest changes in third level education in the last 20 years and indeed has led to the emergence of the "fourth" level. DIT has substantially increased its levels of post-graduate and research activity, and has created a number of centres dedicated to supporting individual areas of enterprise and industry where the Institute can demonstrate research excellence. The thrust of government policy is to continue to grow these activities to underpin the move to a knowledge-based society, indicating the need to allow for significant expansion going forward. The Grangegorman campus will have the necessary physical infrastructure to underpin DIT's role in advancing Ireland's progress to a knowledge society. The scale and complexity of modern internationally competitive research is such that major research initiatives will be in collaboration with other institutions and bodies. An integrated campus in the heart of a European capital city can provide an ideal location for major national and international research facilities. Much of modern research is in the



arenas of healthcare and life sciences and the co-location of health and education activities on the one site offers a unique opportunity to build on these trends.

Along with the direct outputs of research is the realisation that high quality undergraduate courses can only be provided in an academic learning environment that is underpinned by a vibrant research culture. Research activity must have a high profile, allowing students to understand the important role that research is playing in their education. For practical and operational reasons most leading-edge research will be carried out in specialised centres and institutes that partner with colleges and form a bridge to industry, commerce and the whole of society. These dedicated facilities need to be co-located with their related disciplines/colleges, but in such a manner that they can expand in future. At the same time, it is vitally important that research and development (R&D) has a high profile in all undergraduate courses, so that the students benefit from a learning environment enriched by research.

The provision of incubation and business space within third level is seen by Enterprise Ireland as a vital component in the commercialisation of R&D in Ireland and the promotion of the Knowledge Economy. Strong links already exist between Enterprise Ireland and DIT and the Grangegorman project is seen by both organisations as an ideal opportunity to strengthen these links and thus boost this sector of the national economy.

While there will be a significant focus on attracting key industry partners to co-locate some of their research activities in the mixed-use development area at Broadstone Gate there will also be space allocated to smaller businesses not directly linked to the DIT research strategy but wanting to avail of science park space and environment in order to develop their business concept or research proposal. A key focus of this latter group will be start-up companies from the surrounding Grangegorman area and north inner city.

6.1.3 Dedicated Research Centres and Research Institutes

DIT's existing Focas (Facility for Optical Characterisation and Spectroscopy) Building (2,489m²) in Camden Row is currently a Dedicated Research Centre (DRC), but the recent independent external review, carried out by the world-renowned academic Professor Claes-Göran Granqvist, recommended that it should be formally designated a research institute and hence be the model for the expanded facilities of Grangegorman. Research in the Focas Building is focused at present on the physical sciences and this research, undertaken by some 120 researchers including postdoctoral students, postgraduates and principal investigators will transfer into the new centre. A second research project related to healthcare technologies is proposed and these two key initiatives will be accommodated in the centre of the campus adjacent to the Engineering building. The Dedicated Research Centres and institutes can be expanded in a subsequent phase of development within the Broadstone mixed-use cluster.

6.1.4 Incubator Centre (Hot House Innovation and Technology Transfer Centre)

As DIT identifies the commercial potential of research conducted in its colleges, research institutes and centres, the Hothouse incubator will pursue the commercialisation of intellectual property whenever possible. This will be done either by licensing it to indigenous small/medium sized enterprises (SME) or multi-nationals, or by creating campus start-ups or joint ventures in the proposed 5,000m² incubation space. The centre will also act as the gateway to companies looking for technology partners and for the wider community looking to start or grow a business. An exemplar for the Hothouse is the Bolton Trust operation at Docklands Innovation Park in East Wall, a DIT-supported initiative. The inclusion of space for specifically local rather than industrially linked company start up is intended as part of DIT's commitment to community links and ensuring economic spin-out from the campus into the local area.

The Hothouse Innovation and Technology Transfer Centre will attract many spin-in start-up companies that will have or hope to develop commercial relationships with the high-tech SMEs and multinational companies that DIT intends to attract to the Grangegorman Science Park.

Some preference will be given in Hothouse to start-ups which leverage ICT and Biotechnologies to create new products. It is intended that, as the Hothouse companies outgrow the innovation space, they may take up commercial residence elsewhere in the Broadstone mixed-use cluster.

The Hothouse will have its own reception area, showcasing products developed by current and former start-ups. It will provide 24/7 secure access, WLAN internet access, wet and dry lab facilities and will include flexible office units to house academic entrepreneurs; start-ups and early stage companies. It will also house the Hothouse staff (executives, technology transfer

specialists, enterprise development specialists, and marketing specialists etc) and entrepreneurs in residence and will include conference rooms and hot desk space for the out-reach arms of venture capital companies, patent firms, visitors etc

The Hothouse will accommodate up to 60 graduate enterprises. It is intended that the entrepreneurs will also participate in business development programmes operated by the School of Business on campus. Clients will also be linked to industry relevant mentors through the DIT network of associations.

6.1.5 Science and Technology Park

The availability of high-quality accommodation in the mixed-use development planned for the Broadstone Gate area will offer the opportunity to develop a Science and Technology Park co-located alongside the DIT campus. Key industry partners will be identified by DIT with a view to co-locating some of their research activity within the Science Park. The accommodation will be promoted on the basis that it will:

- Energise a major hub of intellectual capital on campus; a place where new knowledge is created and transferred to enterprise and where the latest developments in education, research and scholarly activity are taking place
- Be close to world class researchers who are an important part of the 1,400 academic staff and be close to a student population of 21,000
- Be in the heart of Dublin City
- Be easily accessible by public transport, close to major train stations and the airport
- Have outstanding professional, Library, catering and social facilities
- Be within an environment that supports networking amongst researchers and professionals in academia and industry

The value of having industry partners alongside the DIT Campus is that it creates a commercially dynamic environment on site. In particular:

- It encourages 'real' interaction between enterprise and DIT and so increases the possibilities for collaboration in research and scholarly activity
- Commercialisation and exploitation of research will be enhanced by individual companies on-site who are interested in licensing or buying out DIT technology, investing in a campus company, etc

- It provides a ready vehicle for full-time students who according to recent research work part-time 10 hours per week. On average they get the opportunity to work part-time in a company relevant to their discipline.
- It enables synergies to be achieved in terms of sharing specialised equipment and facilities.

6.1.6 Commercial Laboratories

One of the key elements of the Research and Development Strategy is the Commercial Laboratories. These will be available on commercial terms to key industry partners engaged in lab-based research. Close proximity to DIT laboratories will allow for considerable interaction and synergy between DIT research and the commercial research of the partner companies.

The R&D space and Commercial Laboratories that will be created on the DIT campus will enable DIT to deliver its research and technology transfer strategy at the highest international standard and it will be a major boost to the development of the science and technology sector of the economy which will have a lasting effect beyond the coming decades.

R&D Objective 1: GDA will seek to procure Dedicated Research Centre buildings and Research Institutes.

R&D Objective 2: GDA will seek to procure an Incubator and Innovation and Technology Transfer Centre.

R&D Objective 3: GDA will seek to procure a Science and Technology Park.

R&D Objective 4: GDA will seek to procure Commercial Laboratories for the Quarter.

R&D Objective 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.

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

6.1.7 Availing of Research, Consultancy or Development Work

A considerable body of data and analysis has been generated throughout the development of the project to date, much of it created in close association with the DIT and HSE. This generation of research data will continue as the project progresses. The GDA will maintain the central database and manage it to ensure that the data is recoverable and interpretable in so far as is considered relevant and practicable.

This type of data may support allied consultancy/research work in relation to the Grangegorman development and may also be useful to similar projects in the future. Furthermore, lessons learned during the course of the project may also be of assistance for informing public policy.



6.2 Public Amenity, Sports and Recreation

6.2.1 Introduction and Aims

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

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

Amenity Aim 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.

Amenity Aim 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.

The Grangegorman project offers considerable potential for the community in terms of access to the amenity of the new Quarter in general and to the sport and recreational facilities of DIT in particular.

6.2.2 Public Realm

It is intended that the Quarter will be a publicly accessible area properly integrating with the streets and routes in the neighbourhood. The proposed "Green Fingers Landscape Concept" offers a rich sequence of pedestrian paths for the community to access the development. St. Brendan's Way and the serpentine east-west green path traverse through the site to connect it with the Grand Canal north to Mountjoy, and west toward Phoenix Park. A network of north-south "landscaped



fingers” provide access from North Circular Road through the development to the large sports amenities at the Fields. Key public access points to the Grangegorman Urban Quarter are envisioned via North Circular Road, Rathdown Road, Grangegorman Lower and Upper. A controlled pedestrian access from Prussia St. via Fingal Place will particularly facilitate local access to the sports and amenity open spaces. Another important city access route is to the immediate south to Smithfield via Grangegorman Lower and through future residential developments.

New access routes from Prussia Street are allowed for within the Masterplan. There is also a great opportunity at the Broadstone Gate area of the site of linking through to Constitution Hill, Phibsborough Road, the King’s Inns and Henrietta Street, and south to the city centre. This access at Broadstone Gate will be reinforced by the proposed new LUAS station in front of Broadstone Terminal.

The major urban path through the site is provided via the east-west St. Brendan’s Way, which extends from Broadstone Gate, through the middle of the Grangegorman Quarter, to Library Square and the North Circular Road.

A series of lively social gathering spaces are planned throughout the site. Major public gathering spaces include the Meeting Square adjacent to the proposed new DCC library, DIT’s Upper Terrace (the Quarter’s “academic heart”), the proposed Art Centre (the “social heart” of the district), and The Fields. Secondary gathering spaces are attached to the main pedestrian path from the north east along the canal, through Broadstone Gate, and connecting to Prussia Street to the west. A strong public pedestrian circulation network weaves through the site, acting as major landscape fingers as well as secondary crossing paths through building atria and lobbies.

The Masterplan design seeks to ensure a high level of passive supervision over the public realm and appropriate area lighting will further add to a sense of personal security. The GDA will continue to develop its approach to public realm management in association with stakeholders and An Garda Síochána.

6.2.3 Children’s Play

It is proposed to establish a number of playgrounds for children within the Grangegorman Urban Quarter. Play spaces are provided in the “woodland” areas of the Fields, and an exercise trail/ jogging path around the Fields, as well as in pocket parks in the other areas of the district. Play equipment for children of different ages will vary in character from natural to more modern in character. In addition, other play spaces are planned near and adjacent to circulation paths, arrayed in various locations around the DIT and HSE areas. Sculpture, landscape furniture landscape design, play equipment and fountains will be creatively integrated in the playgrounds.

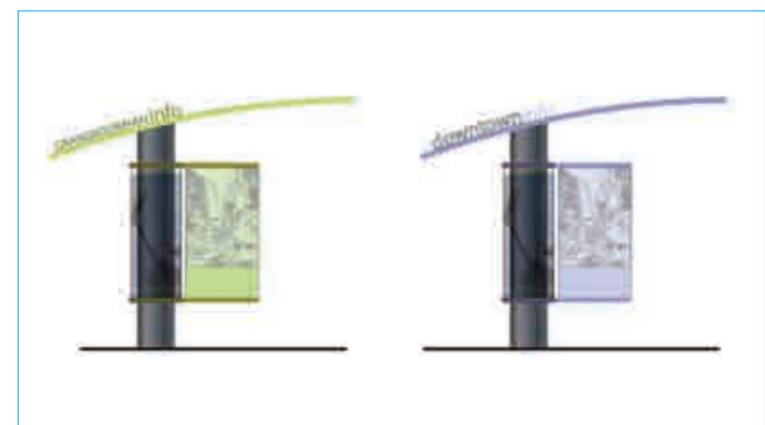


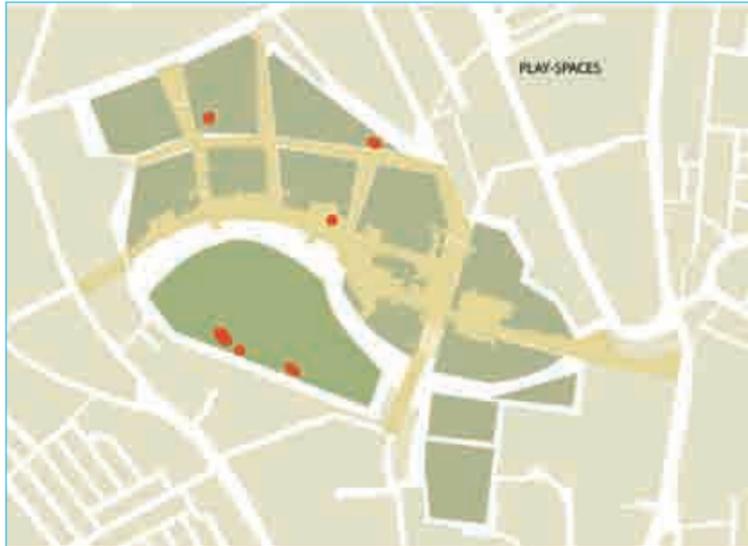
Social Gathering Spaces

6.2.4 Sports Amenity

The sports amenities will be developed to create a vibrant centre of focus for the students, staff and local community. The sports facilities will be positioned to the south west of the Quarter so that they are easily accessible from all parts of the campus and surrounding community.

The structures for the internal sports areas will form an arc around the primary pitch areas to provide a strong link back into the academic colleges on the campus. The playing surfaces for two large pitch spaces and surrounding areas will be developed to retain the open landscape character and aspect. These areas, which will be used for training and competition, can be subdivided as required depending on the time of the year and /or programme of activities developed for the space.





It is proposed that a multi-purpose all-weather synthetic surface will be installed in an area on the eastern side of the sports zone. This synthetic surface will be subdivided to provide a multi-purpose playing and training facility with space to accommodate on a rota basis four tennis courts, two basketball courts, two five-a-side play areas, hockey or soccer pitches.

The indoor sports hall will be a flexible space which can embrace change as the needs of the student body change. The space will be laid out in a way that allows for phased development independent of other buildings or services. The complex will support a wide range of activities and will ensure that many of the current off-site activities will in future be accommodated on-campus.

DIT has a policy to promote sport and recreation for all. The proposed broad range of activities will contribute to the development of campus community spirit and provide a pivotal focus for the social infrastructure of the Institute. DIT is committed to fully exploiting the proposed development to provide opportunities for students, staff and the local community to participate in both indoor and outdoor sports and leisure activities commensurate with individual abilities. The key objectives are participation, training and competition.

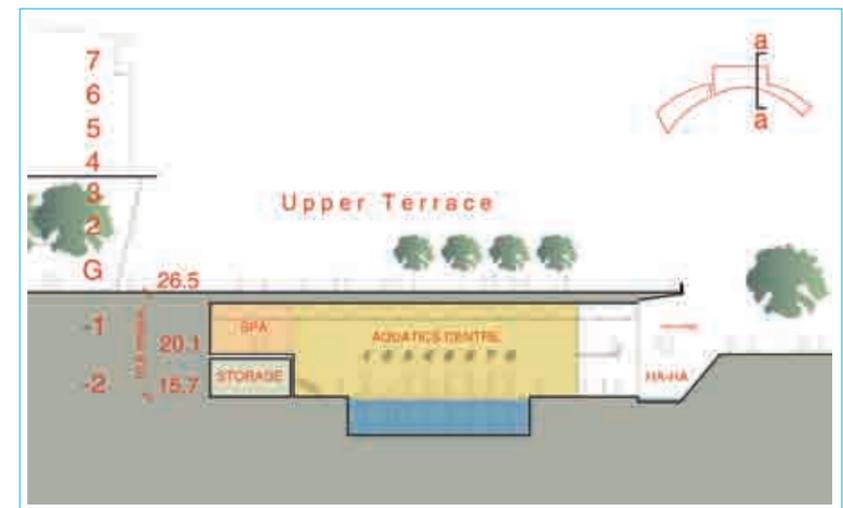
The move to a consolidated campus at Grangegorman will address key objectives of DIT including:

- Increased sports participation for all at DIT
- To enhance the 'student experience'
- To provide on-site specialisation/work experience for certain DIT academic programmes
- To integrate DIT with the local community
- To promote the students' and community's health
- To support student development through community interaction.
- Ensuring that existing sports clubs using Grangegorman playing fields will enjoy similar levels of access on the new campus.

The on-site facilities will address a mix of abilities from those interested in exercise as a means to develop their overall health, physical and mental well-being to the elite groupings of dedicated athletes. The quality and design of facilities will recognise the rights of persons with disabilities to take part on an equal basis with others in the sport, recreation and leisure activities provided on campus.

The facilities will provide a focal point for the existing sports clubs at DIT and make a major contribution to the development of an integrated programme of activities. There are many clubs providing a broad range of activity programmes. A number of these are particularly strong or have a large number of active participants. DIT acknowledges that while the preference is to provide all facilities on the site it will be necessary to identify additional off-site outdoor recreation, training and competitive facilities to address current demand and the anticipated growth in club membership and student numbers generally.

The new facilities will be much more accessible to the students and staff and will also encourage more participation from within the local community. The demand for access and use is likely to



increase as a result and a clear management policy will be required to address this issue. In particular the use of the playing fields will have to be allocated across a broad spectrum of clubs and codes.



It is inevitable that there will be peak periods of demand. Where this involves training it should be possible to have multiple use of the overall area thereby maximising the numbers having active involvement.

Excessive numbers of competitive games would sterilise large areas of the outdoor facilities. A policy will be developed which aims to manage access to playing fields. Competitions generally require multiple playing areas immediately adjacent to each other and this will be best addressed by identifying such facilities within the immediate extended community. DIT is actively sourcing such additional facilities which could be integrated into a policy of facility access of mutual benefit.

The increased usage of the playing areas will require extensive maintenance programmes and it will be inevitable that each pitch, including the all-weather synthetic surface will require down time. It may be necessary to relocate some activities for a period outside of the campus. Provision must also be made for depreciation and replacement of facilities. The life cycle of the playing surfaces will depend on the initial quality of the installation and the level of maintenance provided.

Local schools will be offered access to the outdoor pitches. The level of use will be determined on an annual basis and will be subject to licence. Groups/clubs with a proven record of use of outdoor facilities will be prioritised and allocations will be subject to an annual licence and booking procedures.

The management and operational strategy adopted for the indoor facility will determine the level of success that is achieved within the broad community it serves. The successful operation of the facility will have to address financial viability and practicality.

The provision of the facilities will result in significant capital expenditure and will generate the need to provide for operating costs, maintenance and depreciation. While pricing levels will be determined by the costs and level of service provided, the facility will operate on a non-profit based policy subject to covering the costs noted previously. This will ensure that maximum usage for the benefit of all users will be achieved.

The use of the facilities will be available to groups such as local clubs or to individuals, for example students or members of the local community, through a booking and reservations system. Individual students, staff or members of the community will be able to access the facilities on a membership basis and subject to availability. Students/staff and residents of Grangegorman neighbourhood will have priority where there is excess demand. Access to the sports hall and other facilities will be offered to schools at preferential rates.

DIT will retain control of quality standards both for the indoor and outdoor facilities. For example, for the external play areas DIT will be responsible for general pitch maintenance, pitch marking, post erection, floodlight control. The requirements of DIT to assign space for uses other than sport, albeit on a temporary basis, will also be accommodated. For example, use of the sports hall as examination space will reduce the need for students to sit examinations at off-campus facilities.

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

Amenity Objective 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.

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

Amenity Objective 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.

Amenity Objective 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, which are similar to existing levels of access.

6.3 Arts and Culture Strategy

6.3.1 Introduction and Aims

Arts & Culture Aim 1: To ensure that the Grangegorman Quarter enriches the cultural landscape of Dublin and in particular that the College of Arts & 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.

Arts & Culture Aim 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.

6.3.2 Introduction and Aims

One of the two “hearts” for the Urban Quarter is intended to accommodate arts and culture/performance spaces for the wider community to promote lively, evening uses. This zone is located toward the eastern edge, adjacent to Broadstone Gate to provide convenient access for people coming from Smithfield and King’s Inns/Henrietta Street. The proposed Performing Arts Centre could include a Concert Hall and Museum and as well as art galleries. This accommodation is intended to be established under the aegis of DIT and in particular the College of Arts and Tourism.

6.3.3 Per Cent for Art Scheme

The Government decision of August 1997 approves the inclusion in the budgets for all capital construction projects of up to 1% as funding for an art project, subject to financial limits. The Minister for Arts, Sports and Tourism issued guidelines on the scheme in 2004: Public Art – Per Cent for Art Scheme – General National Guidelines.

It is the intention of the GDA to implement the Per Cent for Arts scheme throughout the life of the project. This will be done in the most efficient way possible and will incorporate best practice from other major national capital programmes such as Ballymun. This will ensure maximum gain can be achieved from this scheme for all users of the new urban quarter.

The public realm will be designed and developed in an integrated manner in accordance with the Masterplan. The GDA has retained the master planning team of Moore Ruble Yudell/DMOD and its sub consultants as the designers of the public realm including landscaped areas, roads, paths, gardens and quadrangles. Integration of art into this design will ensure that the art installations have an appropriate setting and also that the art pieces are selected to enhance and expand on the impact of the public spaces.

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

Arts and Culture Objective 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.

Arts & Culture Objective 3: The GDA will recognise and have regard to the Irish language as an important cultural aspect of the project and the Grangegorman site.

Arts & Culture Objective 4: The GDA will recognise and have regard to the cultural and historic aspects of the site, including sports.

Arts & Culture Objective 5: The Agency will have regard to stakeholders who have made positive contributions to Grangegorman when developing a naming strategy at the appropriate time.

6.4 Sustainable Energy Strategy

6.4.1 Introduction and Aims

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

SES 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.

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

The Sustainable Energy Strategy aims to reduce the energy demand and to optimise the use of renewable energies so that the Quarter generates minimum carbon emissions and also has the potential to eventually become a Zero Carbon Development.

Section 4 sets out in great detail the land use and building design aspects of the project. Sustainability principles have fully underpinned the design work and are embodied through appropriate orientation, size and massing of building components.

This section addresses in particular detail the energy aspect of sustainability. To do so the GDA has undertaken an initial analysis of energy demand arising from heating, cooling and general power requirements of the project. Following a thorough options analysis the energy strategy proposes a sustainable mix of energy solutions. The scale of the mix uses lends itself to a centralized heat and power solution. It is intended that solar water heating for hot water could be the lead summertime heating element contributing approximately 16% of the annual heating energy. Combined heat and power (CHP) could provide hot water and energy outside of the summer period.



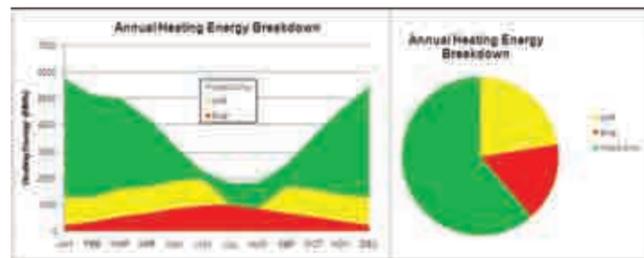


6.4.2 Heating

Heating will be provided on a centralised basis served from the Energy Centre. The heating energy strategy could involve utilising a combination of Combined Heat and Power (CHP), solar water heating and biomass boilers. The potential for utilising direct geothermal heating is also being reviewed. The entire Quarter has an estimated peak simultaneous heating load requirement of 25MW (building load, which would equate to 33MW total installed plant assuming overall system efficiency of 75%).

Solar water heating for hot water would be an important heating element, a large proportion of overall summertime heating requirements could be provided. This could contribute up to 16% of the annual heating energy.

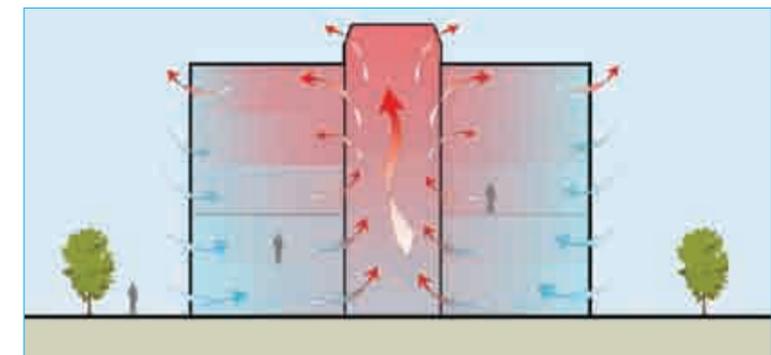
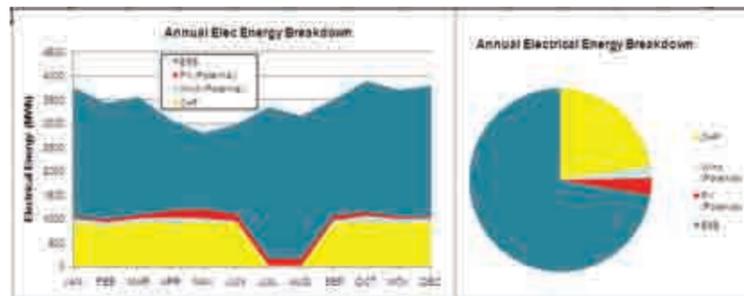
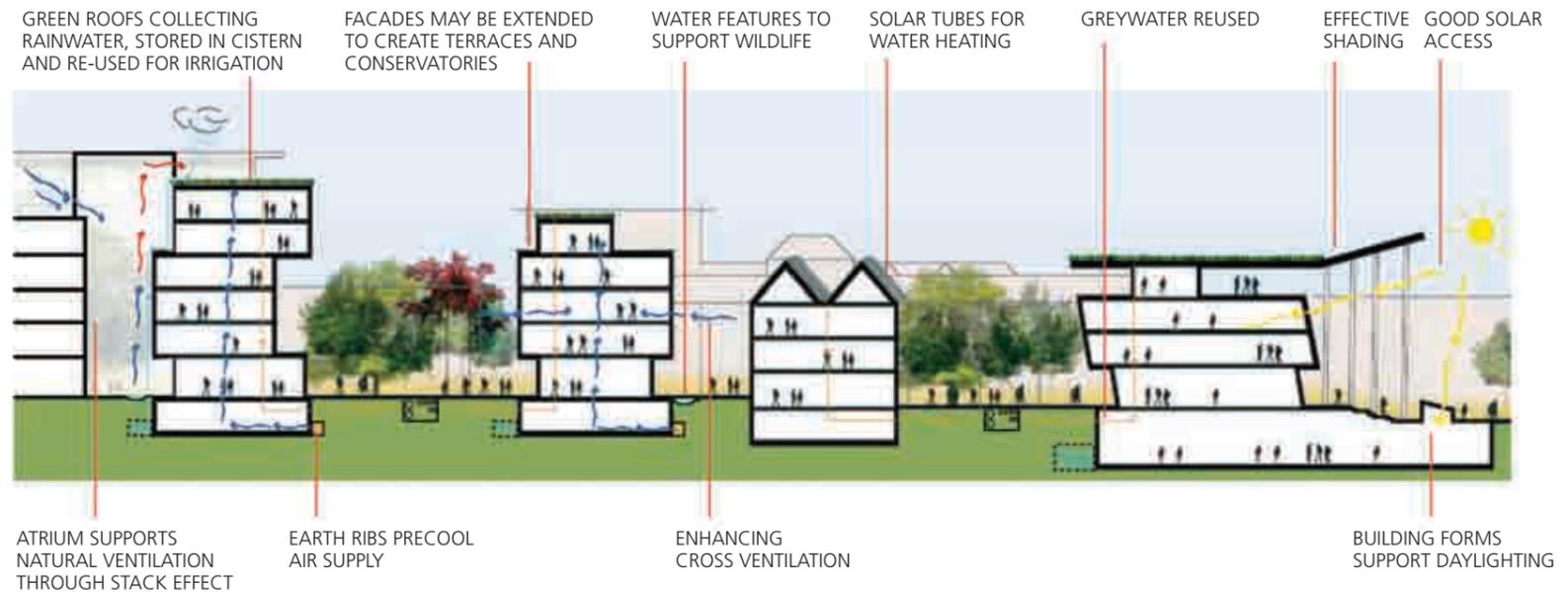
CHP would be inoperable in July and August (in order to avoid excessive heat rejection) but would provide heating energy throughout other months.



6.4.3 Electricity

A CHP system could operate to cater for the base electrical load. The potential for using photo-voltaic (PV) systems as a source of sustainable power generation will be assessed in the detail design stage of the Project. Similarly, further analysis will be made of the feasibility of wind generated power. The remaining electrical energy will be provided by ESB power supplied from the grid.

The CHP and Wind Turbines would, if developed, generate power at MV (Medium Voltage) site grid. The photovoltaic systems would be connected locally to each building's low voltage network, distributed throughout the Quarter and be roof mounted as required.



6.4.4 Gas

Gas will be distributed from the BGE Network to the Central Energy Centre and mains will be distributed through the site and smaller individual users such as laboratories and catering would be provided with individual metered connections.

A temporary packaged boiler plant would be installed local to the HSE phase 1 facility and would provide heating and hot water to the HSE, prior to delivery of the Energy Centre.

6.4.5 Cooling

GDA design objectives seek to have the buildings naturally ventilated where possible. The associated demand for cooling would therefore be minimised. DIT buildings such as laboratory and IT facilities will have some degree of cooling requirement and strategically located semi-basement applications such as lecture theatres and performance spaces would be mechanically ventilated and cooled where required. At present, the overall cooling load for the Campus is estimated at 3.3MW. It is the aim that this anticipated cooling load can be further reduced through low energy building design

6.4.6 Carbon Emissions

The implementation of renewable technologies for heating and power as described above would result in a significant reduction in annual carbon emissions associated with building energy requirements. It is estimated that annual carbon emissions could be substantially reduced depending upon the extent of use of both proposed and potential renewables (CHP/ biomass/ solar panels/ wind turbines and PV) as described above in comparison with conventional Bord Gáis and ESB gas/ power fuel supplies, as indicated in the table below.

Systems	Cost	Carbon Emmissions (Tonnes)
Total Base (Gas/ESB)	€7,630.000	41,200
Wood/Sol/CHP/Wind/PV/ESB	€5,710.000	25,100

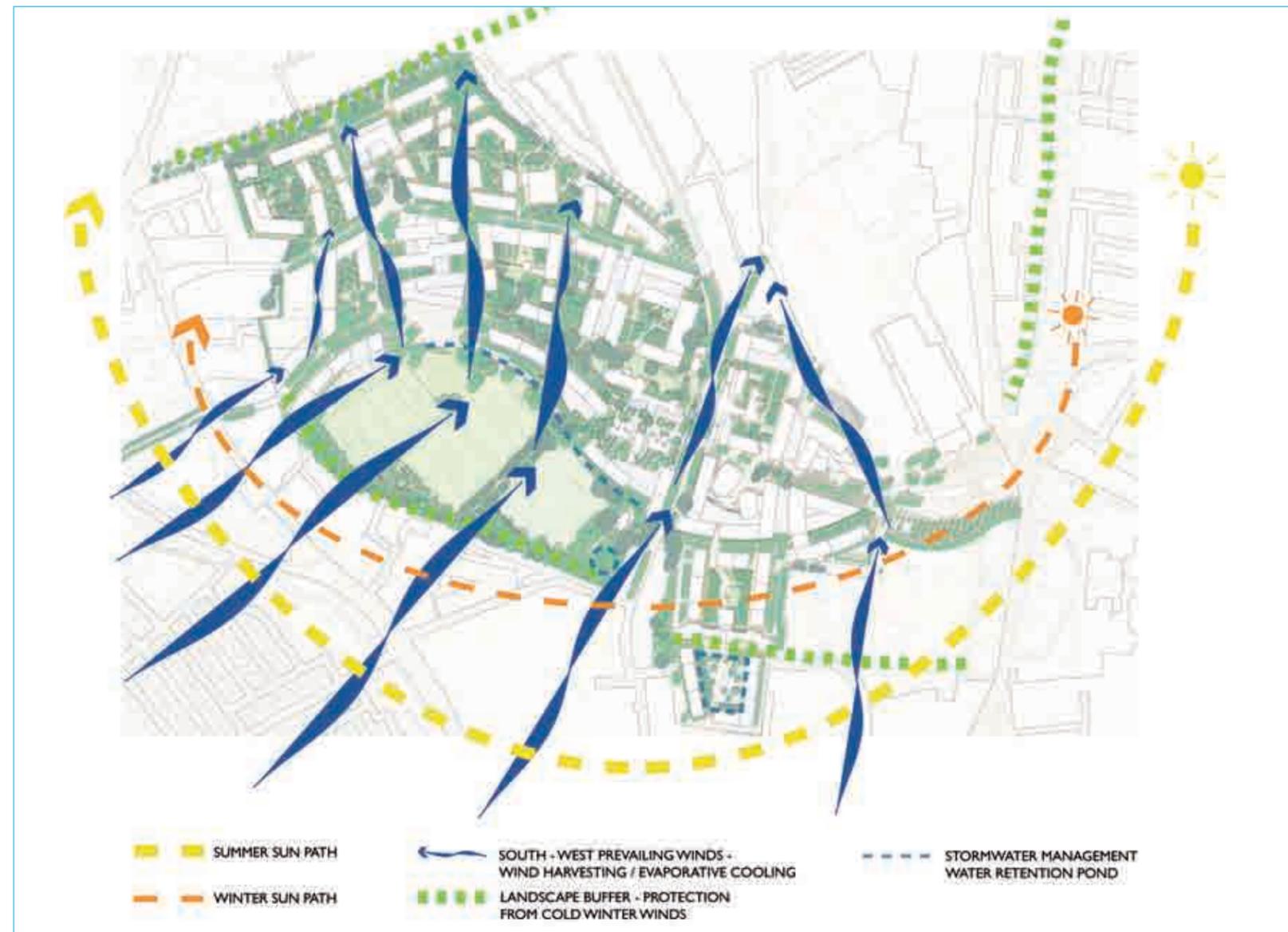
6.4.7 Energy Centre

A centralised energy centre will be established to accommodate CHP plant and other energy plant and equipment and stores. It is intended to locate the energy centre and to distribute energy services though the site from the centre via the utilidor spine and distributor network referred to in the Section 5.5.

6.4.8 Conclusion

The Strategic Plan designs in best practice in sustainable energy management. It achieves a highly practical and flexible cost-efficient approach to energy infrastructure and operations whilst leveraging the leading edge knowledge of DIT. The flexibility allows for alternative biomass fuels according to future circumstances affecting the sustainability characteristics of one versus another and it has the capacity to interconnect with new and emerging technologies which may significantly enhance the cost-benefits of photovoltaic systems, wind harvesting, geothermal etc. Taken in association with the building design guidelines referred to in Section 4, the Energy Strategy will allow the Quarter to achieve exemplar status in practical, cost-effective sustainability.

SES Objective 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.



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

SES Objective 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.

SES Objective 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.



6.5 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.

It is envisaged that the management of the developed Quarter will be tiered and would conform to a structure generally along the following lines.

The final site owners, DIT ,HSE, the Department of Education and Skills (primary school) and Dublin City Council (elderly housing), would share responsibility for the overall management of the common estate areas in proportion to their land holdings/facilities on the site. These common estate areas would be identified by agreement between the parties and the proportionality aspect would also be subject to each party's agreement. Due to their small footprint of occupation on the site Dublin City Council and Department of Education and Skills could choose, perhaps, to simplify their obligations by entering into an arrangement with either DIT or HSE to discharge responsibilities on their behalf. Essentially a wide template of possibilities is available for the parties to discuss and agree upon with the objective of arriving at

an efficient value for money regime for the appropriate upkeep of the common estate areas

Broadly it is envisaged that common estate areas would comprise the main estate roads, footpaths and adjacent landscaped areas. Common estate areas would not include, for example, courtyards, residential gardens, college quadrangles, or sports pitches. Grangegorman Lower which passes through the site is, and will remain, a public road under the control of Dublin City Council.

To service this common estate a range of services would be required. Common estate services would include, external lighting, the energy centre and the main sewers together with piped and wired services as far as the tap off points for individual buildings or groups of buildings and the element of security particularly associated with the common estate.

The various landholders would have direct responsibility for the upkeep of their own buildings and building services together with any external spaces ancillary to those buildings such as courtyards and plazas. DIT would have responsibility for the sports facilities.

In the instance of buildings let to or managed by third parties such as the student accommodation, it is envisaged that the upkeep of the common areas of those buildings would be the responsibility of the building owner or investor. The upkeep and management of internal areas let to commercial or retail tenants would be the responsibility of the occupiers of that space.

Management duties may be carried out by staff who are directly employed by the stakeholders or by the engagement of specialist facilities managers.

Estate Management Objective: 1: 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.

Estate Management Objective: 2: The GDA will assist DIT in creating a Campus Liaison committee. This committee will build on DIT's existing relationship with the community and will assist in the campus community interface. It will be made up of DIT staff, Student Union members, the HSE, local community representatives, local schools, community organisations, the Gardai and others as issues determine.

6.6 DIT Access Policy

6.6.1 Introduction and Aim

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.

The Mission of the Dublin Institute of Technology is to be:

'A comprehensive higher education institution, fulfilling a national and international role in providing full-time and part-time programmes across the whole spectrum of higher education, supported by research and scholarship in areas reflective of the Institute's mission. It aims to achieve this in an innovative, responsive, caring and flexible learning environment with state-of-the-art facilities and the most advanced technology available. It is committed to providing access to higher education for students of different ages and backgrounds and to achieving quality and excellence in all aspects of its work. This commitment extends to the provision of teaching, research, development and consultancy services for industry and society with due regard to the technological, commercial, social and cultural needs of the community it serves.'

This mission provides the context for providing access by residents and community groups in the Grangegorman area to DIT facilities on its campus.



6.6.2 Community Links

The new DIT campus has been designed with a view to creating a welcoming environment to all stakeholders and in particular to surrounding communities and the city. The Project opens up the campus to the surrounding areas and the city with a view to creating a new urban campus that becomes a destination in its own right. Access to the campus as a centre for academic activity as well as an amenity space and cultural space is emphasized with a focus on supporting industry and local business. The concept of a dynamic learning environment where students, staff, community residents and groups, industry partners and the wider city can interact is an underpinning philosophy in the design of the campus.

DIT currently has an extensive interaction with community groups in Dublin, including the north inner city. This interaction is centred on promoting access and participation in education and is coordinated through the Community Links Programme. The programme aims to assist in the alleviation of educational

disadvantage at local (inner-city), national and international levels. This is achieved through initiatives primarily directed at personal development including self-esteem, confidence, motivation and empowerment of individuals and communities. The initiatives are located in the Primary, Secondary, Third level and Community Sectors. Issues that are focused upon include alleviation of absenteeism, prevention of dropout, improving attainment in schools, encouraging return to education and access to education by all. The Community Links Programme has a number of strands including the following:

- 1 **Pathways through Education** targeting self-esteem enhancement for adolescents in Dublin inner city schools. It was established in 1997 and each year 300 students participate in the programme.
- 2 **DIT Access Service** promotes access to higher education by facilitating access and progression. It is linked to over 70 schools including all inner-city schools and each year supports over 350 students in DIT.
- 3 **The Digital Community** where DIT and a number of partners provide computer laboratories in 20 inner city flat complexes.
- 4 **Ballymun Music Programme** provides entry to instrumental music making for primary school children in Ballymun through two Junior Wind Bands, Junior String Orchestra and Choirs. It also extends to second level where the DIT Conservatory of Music and Drama supports talented students. This programme involves approximately 700 young people each year.
- 5 **Dublin Inner City Schools Computerisation Project** operates in 42 inner-city primary and secondary schools and involves the installation of computer resources in schools and supporting teachers with particular training programmes. To date more than 1,000 teachers have been trained in various aspects of IT.
- 6 **Mature Student Access Course** is a one year programme designed for mature students from areas and communities where there has not been a strong tradition of participation in higher education. This programme prepares mature students for entry in undergraduate programmes.
- 7 **Community Learning Programme** promotes and supports the introduction of community-based projects on subject modules throughout DIT. DIT students are encouraged to utilize their educational expertise to target real issues, challenges and problems in the community and in the process assist community groups and/or voluntary bodies.





6.6.3 Additional Provision

In addition to these Community Links initiatives DIT has, over many years, provided access to its classrooms, meeting rooms, library and sporting facilities by community-based groups. DIT is committed to maintaining and enhancing such access.

DIT seeks to provide a welcoming environment to residents and community groups from the Grangegorman neighbourhood and the wider Dublin city with particular emphasis on the following areas:

6.6.3.1 Promoting access to education & research

Learning, teaching and research are core DIT activities and the focus of facilities provided on campus. The new campus will enable DIT to bring all its activity to a single location for the benefit of everyone. DIT will be providing its full range of academic activity on the Grangegorman campus and this will include:

- 85 full time degree programmes
- 200 part-time programmes
- Postgraduate programmes
- Apprenticeship programmes
- Research activity
- Junior Music programmes
- Continued Professional Development programmes
- 17 dedicated research and development centres
- Community Links Programme
- Tailored programmes for industry and other parties
- Incubation space for industry start-ups and
- Industry support services.

All of these activities will be accessible by residents and community groups within the north-west inner city.

In particular, DIT is seeking to promote and enhance its Community Links Programme and overall access to its educational, research and industry support activities. DIT is seeking to encourage more residents and community groups from the Grangegorman neighbourhood to access its activities on a full-time or part-time basis, at apprenticeship, undergraduate or postgraduate level, on an extra-mural or special interest basis, and/or on a mature student basis.



6.6.3.2 Access to Cultural Facilities

DIT is seeking to encourage residents and community groups from the Grangegorman neighbourhood and the wider Dublin City to use significant cultural facilities on the campus extending from attending music and drama performances to exhibitions. It is also envisaged that these facilities could be available to host exhibitions and performances by residents and community groups from the Grangegorman neighbourhood.

6.6.3.3 Access to Library Services

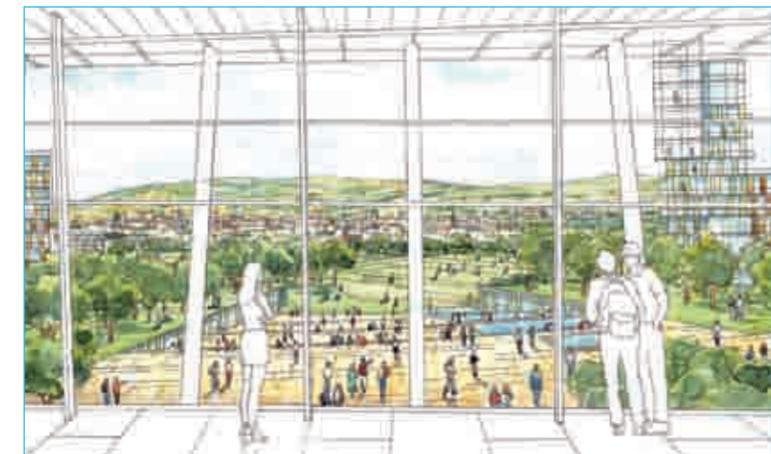
The DIT library on campus will complement the DCC Library provision on campus and will encourage greater usage and access to library resources, including access to IT facilities and technology enabled resources.

6.6.3.4 Access to Sporting & Recreational Facilities

DIT is committed to maintaining access to sporting facilities by local schools and existing user groups and to extend access to residents and community groups from the Grangegorman neighbourhood to expanded all-weather sporting facilities. These facilities will include gym and swimming pool.

6.6.3.5 Access to Learning Spaces & Meeting Rooms

It is envisaged that the new campus will complement facilities currently available within the north inner city. To date, DIT has provided access to lecture rooms and meeting rooms where possible and it is intended that this facility would be maintained.



6.6.3.6 Access to Industry Support Services

DIT already supports entrepreneurship in the wider Dublin city area, with business people able to access DIT industry support services. DIT wants to extend such support to the Grangegorman neighbourhood in particular.

6.6.3.7 Access to Campus Grounds

DIT is encouraging residents from the Grangegorman neighbourhood to visit and use the campus grounds as an amenity area where residents can walk, jog and use the play areas.

6.6.3.8 Access to Retail Facilities on Campus

DIT is encouraging residents and community groups to visit and use the many retail facilities that will be provided on campus from coffee shops to restaurants and book shops etc;

6.6.4 Guiding Principles

The overall campus grounds area is a resource for the City and DIT is encouraging residents and community groups to visit and use the campus as an amenity area. Where access is required to particular facilities this will be managed through the DIT Information Centre. This centre will co-ordinate requests for access with all relevant parties and provide a central point of contact.

While many activities do not incur an admission fee e.g lunchtime recitals, some concerts, exhibitions or other events may attract an admission fee payable by students, staff and the public. Access to other facilities such as meeting rooms and sporting facilities will be based upon the existing policy of pay for use by all user groups including DIT students and staff.

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



