

Appendices

Proposed College Green Project

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Appendix 1.1

EIA Planning Authority Determination

A1.1-1. Determination by Planning Authority as to whether the proposals are likely to have significant effects on the environment.

The project is the College Green Traffic Management Measures – which will be carried out at College Green and surrounding streets. This is the Masterplan for proposals to free up the road space which will allow for the creation of a civic plaza area in College Green from Church Lane to Lower Grafton Street with all through traffic except pedestrians and cyclists being removed.

CAAS Environmental Consultants have been engaged by Dublin City Council to review the College Green proposals in accordance with the EIA Guidance for Consent Authorities regarding sub-threshold development, 2003, DEHG to reach a conclusion on whether the proposal should be subject to EIA or not.

The review includes an assessment of the details of the proposal with reference to the relevant EIA legislation including the Planning & Development Regulations, the EIA Directive and relevant EU Guidance including Interpretation of definitions of project categories of annex I and II of the EIA Directive, 2015, EU and Guidance on EIA Screening, 2001, EC.

The Planning Authority has considered the CAAS report including an analysis of the type and extent of development involved which falls within an area of 2.5 Ha approx. It is noted that Part 10 of the Planning & Development Regulations 2001-10 (Schedule 5) identifies infrastructure projects involving an area over 2.0 Ha in a business district as requiring an EIS. It is further noted that even if the area of works is less than 2.5 Ha and is considered as ‘sub threshold’ development, an EIS is still required having regard to the characteristics and location of the proposals at the heart of the City, and the likely significant alteration in the intensity of activities (increase in pedestrian and decrease of vehicular movement). The report also considers that the proposals will give rise to significant off-site, secondary and cumulative effects, which will require detailed environmental analysis.

Planning Authority Determination

Having regard to the fact that the proposal comprises urban development over an extensive area of the core of the Central Business District, the project is of a class that requires an Environmental Impact Assessment. It is also concluded that the environmental sensitivity of the receiving environment – on account of its social, tourism, cultural and business significance means that there is a likelihood that significant environmental resources could be affected – which would warrant an Environmental Impact Assessment.

Having regard to the potential for significant environmental effects to arise relating to

- Human Beings (socio-economic, amenity, tourism and trade)
- Cultural Heritage (Context and Setting of Protected Structures)
- Air (Air Quality and Noise)
- Material Assets (Traffic and Parking)
- Health and Safety
- Interaction, Secondary and off-site effects,

it is concluded that an Environmental Impact Assessment should be carried out of the proposed College Green Traffic Management Measures.

Appendix 4.1

Outline Construction and Environmental Management Plan

Excavation will be typically carried out using large tracked excavators where cut and re-profiling works are carried out on site. Material to be taken off site will be transferred to trucks for onward transportation to the disposal recovery site as soon as possible following excavation in order to minimise the amount of excavated material being stored on-site. In addition, materials required for the works will be delivered on a 'just in time basis' so as to minimise storage of materials on site.

Archaeological monitoring of earthmoving works for site preparation will be undertaken to ensure that any features of an archaeological nature that may be revealed are identified, recorded and fully resolved. Hoardings, additional support and temporary weathering will be provided, if required for protected structures on site.

Chapter 12, '*Soils, Geology, Hydrogeology and Hydrology*' provides detailed information on excavation material and mineralogy. Chapter 13, '*Resource and Waste Management*' contains more detailed information on Resource and Waste Management associated with the project.

Provision of Services

Following on from completion of site clearance and excavation, construction activities will focus on the installation/diversions of underground utilities to provide the infrastructure required for drainage, electricity and telecommunications.

Detailed surveys of existing underground utilities have been carried out on behalf of DCC. This survey information, together with information provided by the individual utility providers will be used to highlight the scope of early enabling works where service isolation or diversions may be required.

Installation of underground services within the civic plaza will be carried out including a new public lighting regime, as well as new traffic communications and electricity ducting, and the provision of the underground control chamber for fountains. Localised diversion of services will also be required.

A specific works installation plan and sequence will be developed by the Contractor in advance of commencement of these works. This plan will ensure that particular consideration is given to the sequence of excavations, consultation with utility providers and the phased completion of works in each area to ensure a sequenced handover of the completed installation.

While the existing drainage regime at College Green is being retained, it is intended to complement the existing system with the installation of a Sustainable Urban Drainage System (SuDS), where possible. These SuDS features will consist of new attenuation/infiltration areas filled with crushed stone or soil. These will predominately be located beneath the proposed trees. New gullies will be arranged such that overflow from these attenuation/ infiltration areas will discharge to the piped surface water drainage system. Some new gully connections will be required, and these will connect to the existing surface water infrastructure, either directly, or via small collector pipes to a single discharge point.

A drainage channel will be installed around the proposed fountain installation to harvest rainwater and to return water from the fountains to the water pumps in the proposed underground control chamber.

This channel will consist of precast drainage units covered by a continuous steel grating. Small connector pipes (c. 150mm) will connect the low points in the drainage channel to the control chamber.

Construction of Civic Plaza

Construction of the civic plaza will involve the construction of the hard landscape throughout the site. Light and dark granite setts will be laid in the central area. The original setts located at Foster Place will be removed, stored (on/off-site) and reinstated. A turning circle will be constructed opposite Foster Place which will act as a bus/car turning point.

The construction of the soft landscape will be integrated with completion works on elements of hard landscape.

Replacement of Street Furniture and Statues, and Replanting

The final phase of the construction works will involve the replacement /placement of street furniture including seating, litter bins, bollards, cycle stands, lighting planters and tree grilles.

The monuments of Henry Grattan and Thomas Davis will be repositioned to the locations.

The final phase of the construction works will also involve the planting of 22 new plane trees.

Water Management

Site drainage will be provided to collect surface runoff prior to discharge to the local drainage network – all in accordance with the necessary Dublin City Council approval.

Employment and Accommodation

The construction workforce numbers will vary depending on the construction stage of the project. However, it is anticipated that at the peak of construction there will be an average construction workforce of approximately 50 people employed on site.

Hours of Working

Normal working hours during the construction phase will be as follows:

Start	Finish	
0700	1800	Monday to Friday
0800	1400	Saturday

However, it may be necessary to work outside of these hours at night and at weekends during certain activities and stages of the development.

Community Liaison During Construction

During the construction phase, site management measures including proactive communication with business and public regarding phasing, extent and duration of works will be carried out by the Contractor. Access to all properties will be maintained during the construction phase. Signage and hoarding will be provided as necessary.

A4.1.3 Construction Health and Safety

Health and Safety

The Contractor will be required to ensure all Health & Safety requirements are agreed with Dublin City Council. This is to protect the public who will be accessing College Green during the construction phase of the works and will include all suitable temporary signage, barriers and hoarding as necessary.

All construction staff and operatives will be inducted into the security, health and safety and logistic requirements on site prior to commencing work.

All contractors will be required to progress their works with reasonable skill, care and diligence and to proactively manage the works in a manner most likely to ensure the safety, health and welfare of those carrying out construction works, all other persons accessing College Green and interacting stakeholders.

Contractors will also have to ensure that, as a minimum, all aspects of their works and project facilities comply with legislation, good industry practice and all necessary consents.

Particular cognisance will be taken by the contractor to managing the use of machinery in a public environment.

The requirements of the Safety, Health and Welfare at Work Act 2005, the Safety, Health and Welfare at Work (Construction) Regulations, 2006 and other relevant Irish and EU safety legislation will be complied with at all times.

As required by the Regulations, a Health and Safety Plan will be formulated which will address health and safety issues from the design stages through to completion of the construction and maintenance phases. This plan will be reviewed and updated as required, as the development progresses.

In accordance with the Regulations, a “Project Supervisor Construction Stage” will be appointed as appropriate. The Project Supervisor Construction Stage will assemble the Safety File as the project progresses.

Emergency Response Provision

The Contractor will maintain an emergency response action plan which will cover all foreseeable risks, i.e. fire, spill, flood, etc. Appropriate site personnel will be trained as first aiders and fire marshals. In addition, appropriate staff will be trained in environmental issues and spill response procedures.

Equipment and vehicles will be locked, have keys removed and be stored securely in the works area.

Site Management and Security

A Construction Management team will be established for the duration of the construction phase. The team will manage the construction of the Works including monitoring the Contractor's performance to ensure that the proposed construction phase mitigation measures are implemented and that construction impacts and nuisance are minimised.

A Construction Management Plan for the works will be prepared and submitted to the planning authority in advance of any works commencing. This will be updated at each stage of the development as it progresses and will deal with health and safety, security, access to and within the site, entrance and fencing treatment and parking.

The primary function of site security will be to ensure that no unauthorised entry to site occurs. There will be hoarding around the construction sites to minimise the risk of vandalism and unauthorised access.

Environmental Management

Environmental impacts during construction will be mitigated or reduced where possible (refer to the individual chapters in this EIS for specific mitigation measures).

In this regard, Contractors will be required to produce an environmental management plan for DCC approval prior to commencing any works on site. The Contractor's CEMP will be a development of this outline CEMP.

This plan will deal with issues such as noise and dust mitigation measures, hours of operation, traffic management, waste management, environmental management (including debris from construction traffic, noise, dust, air quality and the like), demolition, protection of trees, works to protected structures, etc.

Construction and Demolition Waste Management Plan

Resource and waste generation during construction will be mitigated and managed where possible. In this regard, Contractors will be required to produce a Construction and Demolition Waste Management Plan (CDWMP) for DCC approval prior to commencing any works on site. The CDWMP will address waste generation and arrangements made for prevention, reuse, recycling disposal and collection of recyclables and wastes.

The outline CDWMP was prepared in line with the DoEHLG Best Practice Guidelines on the Preparation of Waste Management Plans for Construction & Demolition Projects.

The following is an indicative list on the content of a CDWMP:

- Description of the Project;
- Wastes Arising Including Proposals for Minimisation/Reuse/Recycling;
- Procedures for prevention, reuse and recycling of wastes

- Estimated Cost of Waste Management;
- Roles including Training and Responsibilities for C&D Waste;
- Procedures for education of workforce and plan dissemination programme
- Record Keeping Procedures;
- Waste Collectors, Recycling and Disposal Sites Including Copies of Relevant Permits or Licences; and
- Waste auditing protocols.

Using the information identified in this section the Contractor will be required to develop, implement and maintain a CDWMP for the construction phase of the Proposed Project.

A4.1.4 Proposed Mitigation Measures

Traffic and Transportation

General Construction Traffic Strategy

Construction traffic will be limited to certain routes and times of day, with the aim of keeping disruption to existing traffic and public transport to a minimum. To minimise disruption to the local areas, construction traffic volumes will be managed through the following measures which include:

- During peak hours, ancillary, maintenance and other site vehicles movements will be discouraged.
- Daily construction programmes will be planned to minimise the number of disruptions to surrounding streets by staggering HGV movements to avoid site queues.
- No car parking will be provided on site for staff.
- The Contractor will be required to promote travel by sustainable modes of transport. A framework mobility management plan is presented later in this section.

Hours of Working

Construction operations on site will generally be between the hours of 07:00 and 19:00, Monday to Friday, and 08:00 to 14:00 on Saturdays. Similarly, deliveries of materials to site will generally be between the hours of 07:00 and 19:00, Monday to Friday, and 07:00 to 14:00 on Saturdays. However, it is acknowledged that works outside of these hours will be required on occasion. Any works proposed outside the core site hours

The construction shift times will ensure any staff travelling to the site by car will have limited impact on the peak periods of 08:00-09:00 in the morning and 17:00-18:00 in the evening as it is envisaged most construction staff will arrive to work before 08:00 in the morning and leave after 18:00 in the evening.

Construction Traffic Management Plan

As part of the construction works the appointed Contractor shall prepare a Construction Traffic Management Plan (CTMP) which will outline their approach to the Proposed Project and detail potential impacts for the public road system. This will include provision of transport facilities and encouragement of car sharing for staff. It will also include measures to mitigate any potential noise and air quality impacts resulting from construction activities, namely from traffic movements in and out of the site.

The CTMP will provide details of intended construction practice for the development, including:

- Location of the site and materials compound(s) including area(s) identified for the storage of construction refuse.
- Location of areas for construction site offices and staff facilities.
- Details of site security fencing and hoardings.
- Details of pedestrian routes through College Green.
- Details of the timing and routing of construction traffic to and from the construction site and associated directional signage, to include proposals to facilitate the delivery of abnormal loads to the site.
- Measures to obviate queuing of construction traffic on the adjoining road network.
- Measures to prevent the spillage or deposit of clay, rubble or other debris on the public road network.
- Alternative arrangements to be put in place for pedestrians and vehicles in the case of the closure of any public road or footpath during the course of site development works.
- Details of appropriate mitigation measures for noise, dust and vibration, and monitoring of such levels.
- Containment of all construction-related fuel and oil within specially constructed bunds to ensure that fuel spillages are fully contained. Such bunds shall be roofed to exclude rainwater.
- Off-site disposal of construction/demolition waste and details of how it is proposed to manage excavated soil.
- Means to ensure that surface water run-off is controlled such that no silt or other pollutants enter local surface water sewers or drains.
- The CTMP will be agreed with both Dublin City Council and An Garda Síochána, prior to commencement of works.

Mobility Management

The Contractor will be required as part of the contract to introduce a Mobility Management Plan (MMP) for its workforce to encourage access to the site by means other than by private car. The following section identifies some of the

measures the Contractor will provide as part of the MMP. The Mobility Management Plan will form part of the Construction Traffic Management Plan and will be agreed with KCC prior to works beginning on site.

Cycling: Cycle parking spaces will be provided on the site for construction staff, in addition lockers will be provided to allow cyclists store their cycling clothes.

Car Sharing: Car sharing among the construction staff should be encouraged, especially from areas where construction staff may be clustered. The Contractor will aim to organise shifts in accordance to staff origins, hence enabling higher levels of car sharing. Such a measure offers a significant opportunity to reduce the proportion of construction staff driving to the off-site car parking facility, and will minimise the potential traffic impact on the road network surrounding this facility

Public Transport: The Contractor will issue an information leaflet to all staff as part of their induction on site highlighting the location of the numerous bus routes that operate in the vicinity of the site. The Contractor will also offer the “Travel to Work Scheme” to employees.

Air Quality and Climate

In order to ensure that no dust nuisance occurs, a series of measures will be implemented. In summary, the measures which will be implemented will include:

- Vehicles delivering material with dust potential (soil, aggregates) will be enclosed or covered with tarpaulin at all times to restrict the escape of dust.
- Public roads outside the site will be regularly inspected for cleanliness, and cleaned as necessary.
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
- During movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions.
- Hoarding will be provided around the construction site.

At all times, these procedures will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust would be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations.

Construction vehicles, generators etc., may give rise to some CO₂ and N₂O emissions. However, due to short-term and temporary nature of these works the impact on climate will not be significant.

Noise and Vibration

The following section describes typical measures to minimise the potential for noise and vibration disturbance to the surrounding area which will be employed by the Contractor to ensure the construction noise and vibration criteria outlined in **Tables A.4.1** and **Table A.4.2** are not exceeded.

The Contractor will take specific noise abatement measures and comply with the recommendations of BS 5228 and the European Communities (*Noise Emission by Equipment for Use Outdoors*) Regulations, 2001.

BS 5228 includes guidance on several aspects of construction site practices, including, but not limited to:

- Selection of quiet plant and the control of noise sources – the use of proprietary acoustic enclosures and the quietest plant, where possible;
- Selection of the method of excavation to ensure there is no likelihood of structural or cosmetic damage to neighbouring buildings;
- Screening – the effectiveness of screening is based on the location, height and length of the barrier;
- Liaison with the public – a designated liaison officer will be appointed to deal with any complaints relating to noise.

Table A.4.1.1 - BS5228 (Part 1) ABC Assessment Categories and Thresholds (BSI, 2014)

Assessment Category and Threshold Value Period L_{Aeq}	Threshold Value in Decibels (dB)		
	A ^{A)}	B ^{B)}	C ^{C)}
Night (23:00-07:00hrs)	45	50	55
Evening ^{D)}	55	60	65
Day (07:00-19:00hrs)	65	70	75

A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values

B) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values

C) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A

D) 19:00 – 23:00hrs weekdays, 13:00-23:00hrs Saturdays and 07:00-23:00hrs Sundays

Table A.4.1.2 - Noise Limits to be applied based on BS5228 Criteria

Assessment Category and Threshold Value Period L_{Aeq}	Threshold Value in Decibels (dB)
Night (23:00-07:00hrs) (L_{Aeq} , dB)	55
Evening (19:00-23:00hrs) (L_{Aeq} , dB)	65
Day (07:00-19:00hrs) (L_{Aeq} , dB)	75

Biodiversity

Construction management measures specifically related to the protection of surface water quality are listed below:

- Any stockpiles of construction material shall be stored on impermeable surfaces and covered using tarpaulin;

- Good housekeeping (daily site clean-ups, use of disposal bins, etc.) on the site during construction, and the proper use, storage and disposal of these substances and their containers will prevent groundwater contamination;
- For all activities involving the use of potential pollutants or hazardous materials, there will be a requirement to ensure that material such as concrete, fuels, lubricants and hydraulic fluids will be carefully handled and stored to avoid spillages. Potential pollutants shall also be adequately secured against vandalism and will be provided with proper containment according to codes of practice. Any spillages will be immediately contained and contaminated soil removed from the site and properly disposed of;
- The risk of water pollution will be minimised by the implementation of good construction practices. Such practices will include adequate bunding for silos, oil containers, wheel washers and dust suppression on site roads, and regular plant maintenance. The Construction Industry Research and Information Association (CIRIA) provides guidance on the control and management of water pollution from construction sites in their publication Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (Masters – Williams et al, 2001). A contingency plan for pollution emergencies will also be developed by the appointed Contractor prior to the commencement of the works and regularly updated, which will identify the actions to be taken in the event of a pollution incident;
- In accordance with recommendations in the CIRIA document, a contingency plan for pollution emergencies will be prepared which will address the following:
 - Containment measures;
 - Emergency discharge routes;
 - List of appropriate equipment and clean-up materials;
 - Maintenance schedule for equipment;
 - Details of trained staff, location and provision for 24-hour cover;
 - Details of staff responsibilities;
 - Notification procedures to inform the Environmental Protection Agency (EPA) or Environmental Department of the Dublin City Council;
 - Audit and review schedule;
 - Telephone numbers of statutory water consultees; and
 - List of specialist pollution clean-up companies and their telephone numbers.

Archaeology, Cultural Heritage and Architectural Heritage

Archaeology

All ground disturbances associated with the Proposed Project shall be subject to continuous archaeological monitoring. Monitoring will be carried out under licence to the DoAHRRGA in consultation with the National Museum and the Dublin City Archaeologist. Full provision will be made available for the resolution of any archaeological remains that may be discovered (i.e. preservation by record), should this be deemed an appropriate manner in which to proceed.

Furthermore, a suitably qualified archaeologist will be appointed as part of the detailed design team in order to advise on specific potential impacts as and when they may arise. This will result in continuous impact assessment of the detailed works, allowing mitigation measures to be agreed in advance, in full consultation with the statutory bodies.

Architecture

Historic footway to front of Bank of Ireland

During the works to extend the paving across to Grafton Street the adjacent granite paving of the footway to the front of the Bank of Ireland will be protected from damage.

Lamp standards in College Green

The lamp standards will be removed with care, in accordance with a conservation method statement, and put into storage for potential use elsewhere.

Henry Grattan statue

The statue will be moved by a heritage Contractor with experience in moving monuments of this type and in accordance with a conservation method statement.

Thomas Davis plaque

The Thomas Davis plaque will be lifted and reset in accordance with a conservation method statement and the work will be carried out by a heritage Contractor with experience in lifting stones of this type.

Thomas Davis sculpture

The Thomas Davis sculpture assemblage will be lifted and moved in accordance with a conservation method statement and the work will be carried out by a heritage Contractor with experience in working with monuments of this type.

Townscape and Visual

Given that the Proposed Project, once constructed, is considered to have a positive impact on the visual setting of College Green as well as its structure and function

within the context of the surrounding urban fabric, it is not warranted to provide any long term forms of mitigation.

Only during the construction phase is mitigation considered necessary in respect of townscape and visual issues. These relate to ensuring that College Green does not become a place that will be avoided by locals and visitors during the 12-18 month construction period. Effects that could give rise to this situation relate to perceived danger, congestion, way-finding confusion, scattering of dust and debris and overall visual clutter and disharmony. Mitigation to reduce these adverse construction related effects is principally the concern of the Construction and Environmental Management Plan. This will include the form of site hoarding, which in this instance should be solid and well constructed to reduce visibility of the on-going works and will also reduce the noise and dust emissions from the site. It is proposed that the solid hoardings will also include images of the future plaza as this can remind those affected of the long-term benefit of the temporary works. Pedestrian and cycle movement areas will be generous in dimension and clearly presented in terms of directional movement to avoid confusion. Areas outside of the site hoarding will also be kept clear of dust and debris.

Soils, Geology, Hydrogeology and Hydrology

A project-specific Construction Management Plan (CMP) will be prepared and submitted to the planning authority for approval. It will be maintained by the Contractor for the duration of the construction phase. The CMP will cover all potentially polluting activities and include an emergency response procedure. All personnel working on the site will be trained in the implementation of the procedures.

As a minimum, the CMP manual for the Proposed Project site will be formulated in consideration of the standard best practice. The CMP will include a range of site specific measures which will include:

- Earthworks operations shall be carried out such that surfaces shall be designed with adequate falls, profiling and drainage to promote safe run-off and prevent ponding and flooding.
- Run-off will be controlled to minimise the water effects in outfall areas.
- Good housekeeping (site clean-ups, use of disposal bins, etc.) on the site project.

In order to prevent the accidental release of hazardous materials (fuels, cleaning agents, etc.) during construction site activity, all hazardous materials will be stored within secondary containment designed to retain at least 110% of the storage contents. Temporary bunds for oil/diesel storage tanks will be used on the site during the construction phase of the Proposed Project. Safe materials handling of all potentially hazardous materials will be emphasised to all construction personnel employed during this phase of the Proposed Project.

Mitigation during the construction phase will include implementing best practice during excavation works to avoid sediment running into the drainage system which discharges to the River Liffey.

Resource and Waste Management

Construction and Demolition Waste Management Plan

An outline Construction and Demolition Waste Management Plan (CDWMP) is described in section 13.6.1.2. This outline CDWMP plan will be required to be developed into a detailed CDWMP by the Main Contractor(s) following appointment and prior to commencing works on site. The CDWMP addresses waste generation and arrangements made for prevention, reuse, recycling disposal and collection of recyclables and wastes.

The outline CDWMP was prepared in line with the *DoEHLG Best Practise Guidelines on the Preparation of Waste Management Plans for Construction & Demolition Projects*.

The following is an indicative list on the content of a CDWMP:

- Description of the project;
- Wastes arising including proposals for minimisation/reuse/recycling;
- Procedures for prevention, reuse and recycling of wastes
- Estimated cost of waste management;
- Roles including training and responsibilities for C&D Waste;
- Procedures for education of workforce and plan dissemination programme
- Record keeping procedures;
- Waste collectors, recycling and disposal sites including copies of relevant permits or licences; and
- Waste auditing protocols.

Using the information identified in this section and the outline Construction Environmental Management Plan in Appendix 4.1 as a basis the Contractor will be required to develop, implement and maintain a CDWMP for the construction phase of the Proposed Project.

Construction- General

In addition to the inherent design measures during the construction phase the following mitigation measures are proposed:

- The Contractor will minimise waste disposal so far as is reasonably practicable.
- Waste from the Proposed Project will be transported by authorised waste collectors in accordance with the Waste Management (Collection Permit) Regulations, 2007 as amended.
- Waste from the Proposed Project will be delivered to authorised waste facilities in accordance with the Waste Management Acts 1996 as amended.
- Source Segregation: Where possible metal, timber, glass and other recyclable material will be segregated during construction works and removed off site to

a permitted/licensed facility for recycling. Waste stream colour coding, and photographs of wastes to be placed in each container as required, will be used to facilitate segregation. Where waste generation cannot be avoided this will maximise the quantity and quality of waste delivered for recycling and facilitate its movement up the waste hierarchy away from landfill disposal and reduce its environmental impact:

- Material Management: ‘Just-in-time’ delivery will be used so far as is reasonably practicable to minimise material wastage; and
- Supply Chain Partners: The Contractor will engage with the supply chain to supply products and materials that use minimal packaging, and segregate packaging for reuse.
- Waste Auditing: The Main Contractor will record the quantity in tonnes and types of waste and materials leaving site during the construction phase.
- Material assets – utilities.

The Contractor will be obliged to put measures in place to ensure that there are no interruptions to existing services and all services and utilities are maintained unless this has been agreed in advance with the relevant service provider and local authority.

All works in the vicinity of utilities apparatus will be carried out in ongoing consultation with the relevant utility company and/or local authority and will be in compliance with any requirements or guidelines they may have.

Where new services are required, the Contractor will apply to the relevant utility company for a connection permit where appropriate, and will adhere to their requirements.

Material assets – land use and property

During the construction phase, site management measures including the provision of high quality hoarding and proactive communication with business and public regarding phasing, extent and duration of works will be carried out. Access to all properties will be maintained during the construction phase. Signage will be provided as necessary.

Socio-economics

This assessment, has determined that the negative impact on businesses during the construction will be of slight to moderate negative significance. A broad range of mitigation measures will be implemented for the construction of College Green Plaza and the Proposed Project.

Mitigation measures for traffic/pedestrians relate primarily to maintaining access to businesses, which will minimise disruption during the construction phase. Changes to traffic, public transportation and access to the city core will be clearly communicated to the resident and visiting public.

The capacity for business to be serviced on street, and receive deliveries in limited periods in the day would mitigate the socioeconomic impact of the proposal.

Alternative access arrangements for private cars and buses will mitigate the impact of direct access through College Green.

Luas works will be completed before construction commences on the site to ensure that north-south access by bus and taxis is available. Taxi ranks will be re-located on adjoining streets with no net loss in parking spaces. Changes to operation of services will be clearly communicated to customers and visitors, including on-street signage.

References

Department of Environment Community and Local Government (2006). Best Practice Guidelines on the Preparation of Waste management Plans for Construction and Demolition Projects. DoECLG, Dublin, Ireland.

BS 5228 and the European Communities (*Noise Emission by Equipment for Use Outdoors*) Regulations, 2001.

Masters – Williams et al (2000) Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors

Appendix 6.1

Traffic Modelling Data

Links with > 2.5% change in flow, 2018

	2018 Do Minimum		2018 Do Something		% Difference	
	AM Flow	PM Flow	AM Flow	PM Flow	AM Flow	PM Flow
Link	Vehicles	Vehicles	Vehicles	Vehicles	Vehicles	Vehicles
Anglesea Street between College Green and Fleet Street (1-Way)	1	73	9	88	1150%	20%
Aston Quay between Westmoreland Street and Price's Lane (1-Way)	377	460	427	504	13%	10%
Aston Quay between Price's Place and Aston Place (1-Way)	395	630	432	666	9%	6%
Aston Quay between Aston Place and Bedford Row (1-Way)	398	635	432	666	8%	5%
Bachelors Walk between Liffey Street Lower and O'Connell Street (1-Way)	1290	1076	1323	1053	3%	-2%
Bedford Row between Aston Quay and Fleet Street (1-Way)	296	350	172	368	-42%	5%
Bride Street between Peter Street and Bishop Street (2-Way)	703	602	761	517	8%	-14%
Bride Street between Bishop Street and Kevin Street Upper (2-Way)	501	317	612	314	22%	-1%
Bridgefoot Street between Oliver Bond Street and Usher's Quay (1-Way)	817	463	836	577	2%	25%
Burgh Quay between Corn Exchange Place and Rosie Hackett Bridge (1-Way)	449	518	471	537	5%	4%
Burgh Quay between Rosie Hackett Bridge and O'Connell Bridge (1-Way)	415	481	448	509	8%	6%
Burgh Quay between Burgh Quay and Aston Quay (1-Way)	369	427	398	457	8%	7%
Christchurch Place between Fishamble Street and Werburgh Street (2-Way)	806	773	865	552	7%	-29%
Christchurch Place between Werburgh Street and Nicholas Street (2-Way)	1017	733	1256	887	24%	21%
Church Lane between Suffolk Street and College Green (2-Way)	100	110	102	84	2%	-24%
College Street between College Green and College Street (2-Way)	286	207	276	213	-4%	3%
Dame Street between South Great George's Street and Parliament Street (2-Way)	709	524	906	555	28%	6%
Dawson Street between St. Stephen's Green and Joshua Lane (1-Way)	319	215	217	226	-32%	5%

Dawson Street between Joshua Lane and Molesworth Street (1-Way)	298	205	198	217	-34%	6%
Dawson Street between Molesworth Street and Duke Street (2-Way)	115	150	121	148	5%	-1%
Eden Quay between Bachelors' Walk and Eden Quay (1-Way)	899	831	909	821	1%	-1%
Eden Quay between O'Connell Street and Harbour Court (1-Way)	68	103	153	119	126%	16%
Eden Quay between Harbour Court and Rosie Hackett Bridge (1-Way)	113	157	184	162	62%	4%
Eden Quay between Rosie Hackett Bridge and Butt Bridge (1-Way)	218	243	256	232	17%	-4%
Eden Quay between Eden Quay and Butt Bridge (1-Way)	231	255	268	244	16%	-4%
Fishamble Street between Essex Quay and Exchange Street Lower (1-Way)	213	27	283	120	33%	345%
Fishamble Street between Exchange Street Lower and Lord Edward Street (2-Way)	11	0	227	142	1955%	∞
Foster Place (2-Way)	223	150	271	199	21%	32%
Grafton Street between College Green and Suffolk Street (2-Way)	170	109	276	213	62%	96%
High Street between Nicholas Street and Back Lane (2-Way)	1882	1201	1975	1417	5%	18%
High Street between Back Lane and Lamb Alley (2-Way)	2581	1863	2666	2077	3%	12%
Lord Edward Street between Fishamble Street and Exchange Street Upper (2-Way)	817	773	1079	629	32%	-19%
Lord Edward Street between Exchange Street Upper and Parliament Street (2-Way)	762	775	908	580	19%	-25%
Nassau Street between Grafton Street and Dawson Street (2-Way)	270	219	276	213	2%	-3%
Nassau Street between Dawson Street and South Frederick Street (1-Way)	168	109	174	113	4%	4%
Ormond Quay Lower between Swifts Row and Liffey Street Lower (1-Way)	1157	925	1203	910	4%	-2%
Saint Andrew Street between Trinity Street and Church Lane (1-Way)	0	0	102	84	∞	∞
Watling Street between Usher's Island and Island Street (1-Way)	268	155	265	169	-1%	9%
Watling Street between Island Street and Thomas Street (1-Way)	167	77	170	94	2%	23%

Wellington Quay between Bedford Row and Eustace Street (1-Way)	693	988	602	1036	-13%	5%
Wellington Quay between Eustace Street and Parliament Street (1-Way)	745	1041	656	1090	-12%	5%

	2035 Do Minimum		2035 Do Something		% Difference	
	AM Flow	PM Flow	AM Flow	PM Flow	AM Flow	PM Flow
Link	Vehicles	Vehicles	Vehicles	Vehicles	Vehicles	Vehicles
Anglesea Street between Fleet Street and College Green (1-Way)	33	13	28	17	-16%	31%
Aston Quay between Westmoreland Street and Price's Lane (1-Way)	928	1046	886	1106	-5%	6%
Aston Quay between Price's Place and Bedford Row (1-Way)	967	1276	905	1375	-6%	8%
Bachelors Walk between Liffey Street Lower and O'Connell Street (1-Way)	594	374	604	421	2%	13%
Bedford Row between Aston Quay and Fleet Street (1-Way)	33	13	28	17	-16%	31%
Bride Street between Bride Road and Bull Alley Street (2-Way)	704	442	718	454	2%	3%
Bride Street between Bull Alley Street and Peter Street (2-Way)	856	536	967	598	13%	12%
Bride Street between Peter Street and Bishop Street (2-Way)	1307	574	1392	494	6%	-14%
Bride Street between Bishop Street and Kevin Street Upper (2-Way)	1347	589	1441	509	7%	-14%
Bridgefoot Street between Oliver Bond Street and Usher's Quay (2-Way)	788	599	790	665	0%	11%
Burgh Quay between Corn Exchange Place and Rosie Hackett Bridge (1-Way)	507	532	514	549	1%	3%
Burgh Quay between Rosie Hackett Bridge and O'Connell Bridge (1-Way)	508	533	516	551	2%	3%
Burgh Quay between Burgh Quay and Aston Quay (1-Way)	375	478	400	498	6%	4%
Christchurch Place between Nicholas Street and Werburgh Street (2-Way)	1342	723	1507	985	12%	36%
Church Lane between Suffolk Street and College Green (1-Way)	84	68	244	80	190%	17%
Church Street between Arran Quay and Hammond Lane (2-Way)	1145	1293	1051	1387	-8%	7%
Church Street between Hammond Lane and Mary's Lane (2-Way)	1095	1157	1018	1256	-7%	9%

College Green between Trinity Street and Anglesea Street (2-Way)	370	230	475	153	28%	-33%
College Green between Anglesea Street and Church Lane (2-Way)	337	217	447	137	33%	-37%
Dame Street between South Great George's Street and Parliament Street (2-Way)	1012	762	1083	677	7%	-11%
Dame Street between Trinity Street and South Great George's Street (2-Way)	370	230	475	153	28%	-33%
Dawson Street between St. Stephen's Green and Joshua Lane (1-Way)	193	200	191	207	-1%	3%
Dawson Street between Joshua Lane and Molesworth Street (1-Way)	201	207	206	214	2%	4%
Dawson Street between Molesworth Street and Duke Street (2-Way)	116	136	122	142	5%	5%
Dawson Street between Duke Street and Nassau Street (1-Way)	103	106	108	111	5%	5%
D'Olier Street between Burgh Quay and D'Olier Street (1-Way)	940	724	919	779	-2%	8%
D'Olier Street between Fleet Street and Burgh Quay (1-Way)	963	853	971	915	1%	7%
Duke Street between Fleet Street and College Street (1-Way)	808	741	694	767	-14%	4%
Eden Quay between Bachelors' Walk and Eden Quay (1-Way)	243	156	225	173	-7%	11%
Eden Quay between O'Connell Street and Harbour Court (1-Way)	125	100	135	117	8%	17%
Eden Quay between Harbour Court and Rosie Hackett Bridge (1-Way)	143	131	152	133	6%	2%
Essex Quay between Fishamble Street and Parliament Street (1-Way)	1092	1398	1313	1799	20%	29%
Fishamble Street between Essex Quay and Exchange Street Lower (2-Way)	310	106	400	378	29%	257%
Fishamble Street between Exchange Street Lower and Lord Edward Street (2-Way)	310	106	334	377	8%	257%
Fleet Street between Aston Place and Westmoreland Street (1-Way)	40	22	65	19	64%	-13%
Foster Place (2-Way)	276	180	287	195	4%	8%
Grafton Street between College Green and Suffolk Street (2-Way)	271	211	280	219	3%	4%
High Street between Nicholas Street and Back Lane (2-Way)	1116	992	1371	1502	23%	51%

High Street between Back Lane and Lamb Alley (2-Way)	1790	1658	2052	2027	15%	22%
Inns Quay between Chancery Place and Charles Street West (1-Way)	728	463	656	558	-10%	20%
Leinster Street South between Clare Street and Kildare Street (1-Way)	521	555	508	638	-3%	15%
Lord Edward Street between Fishamble Street and Exchange Street Upper (2-Way)	1114	752	1255	767	13%	2%
Lord Edward Street between Exchange Street Upper and Parliament Street (2-Way)	943	717	1106	698	17%	-3%
Nassau Street between Grafton Street and Dawson Street (2-Way)	271	211	280	219	3%	4%
Nassau Street between Dawson Street and South Frederick Street (1-Way)	166	105	169	107	2%	2%
Nassau Street between South Frederick Street and Kildare Street (1-Way)	664	639	656	727	-1%	14%
Ormond Quay Upper between Charles Street West and Capel Street (1-Way)	728	463	656	558	-10%	20%
Ormond Quay Lower between Capel Street and Swifts Row (1-Way)	877	526	777	639	-11%	21%
Ormond Quay Lower between Swifts Row and Liffey Street Lower (1-Way)	440	248	457	292	4%	18%
Saint Andrew Street between Trinity Street and Church Lane (1-Way)	84	68	244	80	190%	17%
Saint Michaels Hill between Cross Lane and Christchurch Place (1-Way)	790	512	755	576	-4%	12%
Watling Street between Usher's Island and Island Street (1-Way)	360	291	375	287	4%	-2%
Watling Street between Island Street and Thomas Street (1-Way)	217	199	237	197	10%	-1%
Wellington Quay between Bedford Row and Eustace Street (1-Way)	1001	1292	933	1395	-7%	8%
Wellington Quay between Eustace Street and Parliament Street (1-Way)	1048	1343	981	1445	-6%	8%
Wintavern Street between Cross Lane and Cook Street (1-Way)	626	677	585	754	-7%	11%
Wintavern Street between Cook Street and Wood Quay (1-Way)	590	577	582	636	-1%	10%

Wood Quay between Fishamble Street and Winetavern Street (1-Way)	782	1330	913	1773	17%	33%
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Appendix 7.1

Detailed Meteorological Data

Dublin Airport 2011-2015 (numbers given as percentages)**Dublin Airport 2011**

Dir \ Spd	<= 1.54	<= 3.09	<= 5.14	<= 8.23	<= 10.80	> 10.80	Total
0.0	0.65	0.61	0.46	0.08	0.00	0.00	1.79
22.5	0.35	0.35	0.57	0.19	0.00	0.00	1.47
45.0	0.16	0.57	0.87	0.42	0.02	0.00	2.04
67.5	0.09	0.33	1.42	0.29	0.06	0.00	2.18
90.0	0.29	0.59	2.36	0.66	0.25	0.01	4.17
112.5	0.57	1.11	2.16	0.70	0.09	0.03	4.66
135.0	0.42	0.75	3.34	2.64	0.61	0.18	7.95
157.5	0.37	0.64	2.15	2.05	0.48	0.11	5.80
180.0	0.29	0.56	1.61	1.31	0.61	0.03	4.41
202.5	0.25	0.57	2.02	3.09	1.07	0.35	7.36
225.0	0.27	0.68	3.54	4.99	2.34	1.35	13.17
247.5	0.22	0.61	3.97	5.26	3.44	1.56	15.06
270.0	0.59	1.46	5.57	7.49	3.22	1.82	20.15
292.5	0.63	1.06	1.69	1.37	0.35	0.00	5.10
315.0	0.40	0.50	0.89	0.56	0.09	0.03	2.48
337.5	0.41	0.54	0.78	0.25	0.02	0.00	2.00
Total	5.96	10.94	33.39	31.36	12.65	5.49	99.78
Calms							0.22
Missing							0.00
Total							100.00

Dublin Airport 2012

Dir \ Spd	<= 1.54	<= 3.09	<= 5.14	<= 8.23	<= 10.80	> 10.80	Total
0.0	0.60	0.58	0.75	0.40	0.23	0.07	2.63
22.5	0.28	0.32	0.79	0.64	0.26	0.40	2.69
45.0	0.28	0.32	1.37	1.34	0.20	0.06	3.57
67.5	0.10	0.34	1.16	1.20	0.42	0.10	3.32
90.0	0.35	0.77	2.37	0.81	0.15	0.00	4.45
112.5	0.60	1.31	2.45	0.81	0.18	0.03	5.38
135.0	0.44	0.99	2.99	2.94	0.54	0.14	8.04
157.5	0.43	1.00	1.82	1.58	0.19	0.02	5.05
180.0	0.38	0.56	1.12	0.55	0.17	0.06	2.82
202.5	0.23	0.44	1.94	1.75	0.57	0.15	5.08
225.0	0.20	0.52	3.47	4.26	1.62	0.25	10.33
247.5	0.25	0.74	3.35	5.61	2.85	0.77	13.57
270.0	0.36	0.98	6.80	7.41	2.66	1.28	19.49
292.5	0.42	0.72	2.85	1.76	0.26	0.05	6.06
315.0	0.46	0.38	2.15	1.25	0.22	0.00	4.45
337.5	0.28	0.34	1.00	1.00	0.27	0.00	2.90
Total	5.69	10.31	36.36	33.31	10.79	3.37	99.84
Calms							0.16
Missing							0.00
Total							100.00

Dublin Airport 2013

Dir \ Spd	<= 1.54	<= 3.09	<= 5.14	<= 8.23	<= 10.80	> 10.80	Total
0.0	0.48	0.70	0.95	0.48	0.03	0.00	2.64
22.5	0.25	0.39	0.56	0.50	0.02	0.00	1.72
45.0	0.26	0.55	1.18	0.73	0.13	0.01	2.85
67.5	0.15	0.41	1.75	0.63	0.19	0.14	3.26
90.0	0.34	0.82	3.62	2.41	0.81	0.23	8.23
112.5	0.57	1.22	2.42	1.48	0.43	0.25	6.38
135.0	0.32	0.73	3.14	3.17	0.80	0.21	8.37
157.5	0.41	0.50	1.40	1.23	0.21	0.06	3.81
180.0	0.38	0.35	1.10	1.06	0.62	0.16	3.66
202.5	0.18	0.57	1.71	2.05	0.55	0.47	5.54
225.0	0.23	0.58	3.52	4.03	1.75	0.92	11.03
247.5	0.17	0.68	3.52	4.91	2.28	1.11	12.67
270.0	0.48	1.11	5.96	5.42	2.71	0.94	16.61
292.5	0.50	0.78	2.98	1.67	0.31	0.14	6.37
315.0	0.34	0.49	1.60	1.47	0.35	0.06	4.32
337.5	0.25	0.50	0.84	0.35	0.27	0.01	2.24
Total	5.32	10.39	36.23	31.61	11.46	4.69	99.70
Calms							0.30
Missing							0.00
Total							100.00

Dublin Airport 2014

Dir \ Spd	<= 1.54	<= 3.09	<= 5.14	<= 8.23	<= 10.80	> 10.80	Total
0.0	0.71	0.50	1.26	0.50	0.02	0.00	2.99
22.5	0.37	0.37	0.80	0.46	0.13	0.00	2.11
45.0	0.34	0.39	1.63	0.66	0.02	0.00	3.05
67.5	0.18	0.34	1.59	0.55	0.00	0.00	2.66
90.0	0.27	0.83	2.91	1.26	0.21	0.00	5.48
112.5	0.48	1.38	2.58	1.15	0.33	0.23	6.15
135.0	0.24	0.78	3.32	2.03	0.45	0.40	7.21
157.5	0.19	0.59	1.99	1.38	0.51	0.37	5.03
180.0	0.31	0.79	1.44	1.19	0.55	0.09	4.36
202.5	0.16	0.67	2.01	2.25	1.24	0.58	6.92
225.0	0.17	0.61	3.53	3.98	2.47	0.75	11.51
247.5	0.25	0.74	4.04	5.45	2.83	1.55	14.86
270.0	0.82	1.50	5.58	4.89	2.17	0.79	15.74
292.5	0.51	0.74	2.81	1.14	0.22	0.10	5.53
315.0	0.45	0.43	1.84	1.05	0.09	0.00	3.86
337.5	0.30	0.37	0.95	0.62	0.05	0.00	2.27
Total	5.75	11.03	38.26	28.55	11.28	4.86	99.74
Calms							0.26
Missing							0.00
Total							100.00

Dublin Airport 2015

Dir \ Spd	<= 1.54	<= 3.09	<= 5.14	<= 8.23	<= 10.80	> 10.80	Total
0.0	0.58	0.80	0.88	0.33	0.01	0.00	2.60
22.5	0.22	0.35	0.71	0.08	0.00	0.00	1.36
45.0	0.17	0.33	1.50	0.23	0.00	0.00	2.23
67.5	0.05	0.32	1.02	0.32	0.00	0.00	1.70
90.0	0.38	0.83	2.35	1.06	0.15	0.00	4.77
112.5	0.55	0.89	1.97	1.00	0.16	0.01	4.59
135.0	0.51	0.91	3.25	2.83	0.57	0.06	8.14
157.5	0.49	0.64	1.36	0.95	0.65	0.09	4.18
180.0	0.53	0.55	1.15	1.24	0.62	0.25	4.34
202.5	0.38	0.50	2.24	3.25	1.50	0.81	8.68
225.0	0.23	0.41	2.96	5.80	2.95	1.53	13.87
247.5	0.35	0.47	2.71	5.19	3.29	1.87	13.88
270.0	0.55	1.19	5.11	6.47	2.83	1.23	17.39
292.5	0.58	0.78	2.51	1.82	0.39	0.09	6.16
315.0	0.33	0.46	1.56	0.89	0.23	0.05	3.52
337.5	0.48	0.62	0.99	0.19	0.06	0.00	2.34
Total	6.37	10.05	32.27	31.67	13.39	5.99	99.74
Calms							0.26
Missing							0.00
Total							100.00

Appendix 9.1

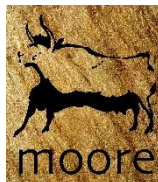
Report for the Purposes of Appropriate Assessment Screening

**Report for the purposes of
Appropriate Assessment Screening**

**as required under Article 6(3) of the Habitats Directive
(Council Directive 92/43/EEC)**

College Green Project

**Prepared by: Moore Group – Environmental Services
May 2017**



**On behalf of Dublin City Council
& An Bord Pleanála**

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Moore Archaeological and Environmental Services Limited				

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Appendix A – Finding Of No Significant Effect Report

1. Introduction

1.1. General Introduction

This report contains information required for the competent authority to undertake an Appropriate Assessment (AA) process on the effects of a project consisting of the development of Traffic Management Measures and a Civic Plaza at College Green in Dublin City.

Screening is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3):

- i) whether a plan or project is directly connected to or necessary for the management of the site, and
- ii) whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on a Natura 2000 site in view of its conservation objectives.

If the effects are deemed to be significant, potentially significant, or uncertain, or the screening process becomes overly complicated, then the process must proceed to Stage 2 (AA). Screening should be undertaken without the inclusion of mitigation, unless potential impacts clearly can be avoided through the modification or redesign of the plan or project, in which case the screening process is repeated on the altered plan or project.

When screening the project there are two possible outcomes:

- the project poses no risk of a significant effect and as such requires no further assessment; and
- the project has potential to have a significant effect (or this is uncertain) and AA of the project is necessary.

This report has been prepared by Moore Group - Environmental Services for An Bord Pleanála and assesses the potential for the proposed development to impact on sites of European-scale ecological importance in accordance with Articles 6(3) and 6(4) of the Habitats Directive. The report was compiled by Ger O'Donohoe (B.Sc. Applied Aquatic Sciences (GMIT, 1993) & M.Sc. Environmental Sciences (TCD, 1999)) who has over 20 years' experience in environmental impact assessment and has completed numerous Appropriate Assessment Screening Reports and Natura Impact Statements in terrestrial and aquatic habitats.

The report assesses the potential for the proposed development to impact on sites of European-scale ecological importance. It is necessary that the Project has regard to Article 6 of the Council Directive

92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) (referred to as the Habitats Directive). This is transposed into Irish Law by the European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. 477) (referred to as the Habitats Regulations).

1.2. Legislative Background - The Habitats and Birds Directives

The Habitats Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora) is the main legislative instrument for the protection and conservation of biodiversity in the EU. Under the Directive Member States are obliged to designate Special Areas of Conservation (SACs) which contain habitats or species considered important for protection and conservation in a European Union context.

The Birds Directive (Council Directive 79/409/EEC as codified by Directive 2009/147/EC), is concerned with the long-term protection and management of all wild bird species and their habitats in the EU. Among other things, the Directive requires that Special Protection Areas (SPAs) be established to protect migratory species and species which are rare, vulnerable, in danger of extinction, or otherwise require special attention.

Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas, designated under the Birds Directive, form a pan-European network of protected sites known as Natura 2000. The Habitats Directive sets out a unified system for the protection and management of SACs and SPAs.

Articles 6(3) and 6(4) of the Habitats Directive set out the requirement for an assessment of proposed plans and projects likely to affect Natura 2000 sites.

Article 6(3) establishes the requirement to screen all plans and projects and to carry out a further assessment if required (Appropriate Assessment (AA)):

Article 6(3): "Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to an appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only

after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.”

Article 6(4): “If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, Member States shall take all compensatory measures necessary to ensure that the overall coherence of the Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted. Where the site concerned hosts a priority natural habitat type and/or a priority species the only considerations which may be raised are those relating to human health or public safety, to the beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.”

This Report for Screening is a documentary record of the Appropriate Assessment process on the effects of a project consisting of the development of Traffic Management Measures and a Public Plaza at College Green in Dublin City, referred to in this case as the Project.

2. Methodology

The Commission’s methodological guidance (EC, 2002) promotes a four-stage process to complete the AA, and outlines the issues and tests at each stage. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required.

Stages 1-2 deal with the main requirements for assessment under Article 6(3). Stage 3 may be part of Article 6(3) or may be a necessary precursor to Stage 4. Stage 4 is the main derogation step of Article 6(4).

Stage 1 Screening: This stage examines the likely effects of a project either alone or in combination with other projects upon a Natura 2000 site and considers whether it can be objectively concluded that these effects will not be significant.

Stage 2 Appropriate Assessment: In this stage, there is a consideration of the impact of the project with a view to ascertain whether there will be any adverse effect on the integrity of the Natura 2000 site either

alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Additionally, where there are predicted impacts, an assessment of the potential mitigation of those impacts.

Stage 3 Assessment of Alternative Solutions: This stage examines alternative ways of implementing the project that, where possible, avoid any adverse impacts on the integrity of the Natura 2000 site.

Stage 4 Assessment where no alternative solutions exist and where adverse impacts remain: Where imperative reasons of overriding public interest (IROPI) exist, an assessment to consider whether compensatory measures will or will not effectively offset the damage to the sites will be necessary.

To ensure that the Project complies fully with the requirements of Article 6 of the Habitats Directive and all relevant Irish transposing legislation, Moore Group compiled this report for screening of the Project to determine if Stage 2 AA is required.

2.1. Guidance

The AA has been compiled in accordance with guidance contained in the following documents:

- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities. (Department of Environment, Heritage and Local Government, 2010 rev.).
- Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities. Circular NPWS 1/10 & PSSP 2/10.
- Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission Environment Directorate-General, 2001); hereafter referred to as the EC Article Guidance Document.
- Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC (EC Environment Directorate-General, 2000); hereafter referred to as MN2000.

2.2. Data Sources

Sources of information that were used to collect data on the Natura 2000 network of sites are listed below:

- Ordnance Survey of Ireland mapping and aerial photography available from www.osi.ie and Bing and Google Earth aerial photography (2017).

- Online data available on Natura 2000 sites as held by the National Parks and Wildlife Service (NPWS) from www.npws.ie including; the Natura 2000 network Data Form; Site Synopsis; Generic Conservation Objective data;
 - Online database of rare, threatened and protected species,
 - Publicly accessible biodiversity datasets.
- Status of EU Protected Habitats in Ireland. (National Parks & Wildlife Service, 2013),
- Relevant Development Plans and Local Area Plans in neighbouring areas.

3. Description of the Project

The project is the College Green Traffic Management Measures and Civic Plaza which will be carried out at College Green and surrounding streets. The proposal will allow for the creation of a civic plaza area in College Green from Church Lane to Lower Grafton Street with all through traffic except pedestrians and cyclists being removed., see Figure 1 for the site location in Dublin City.

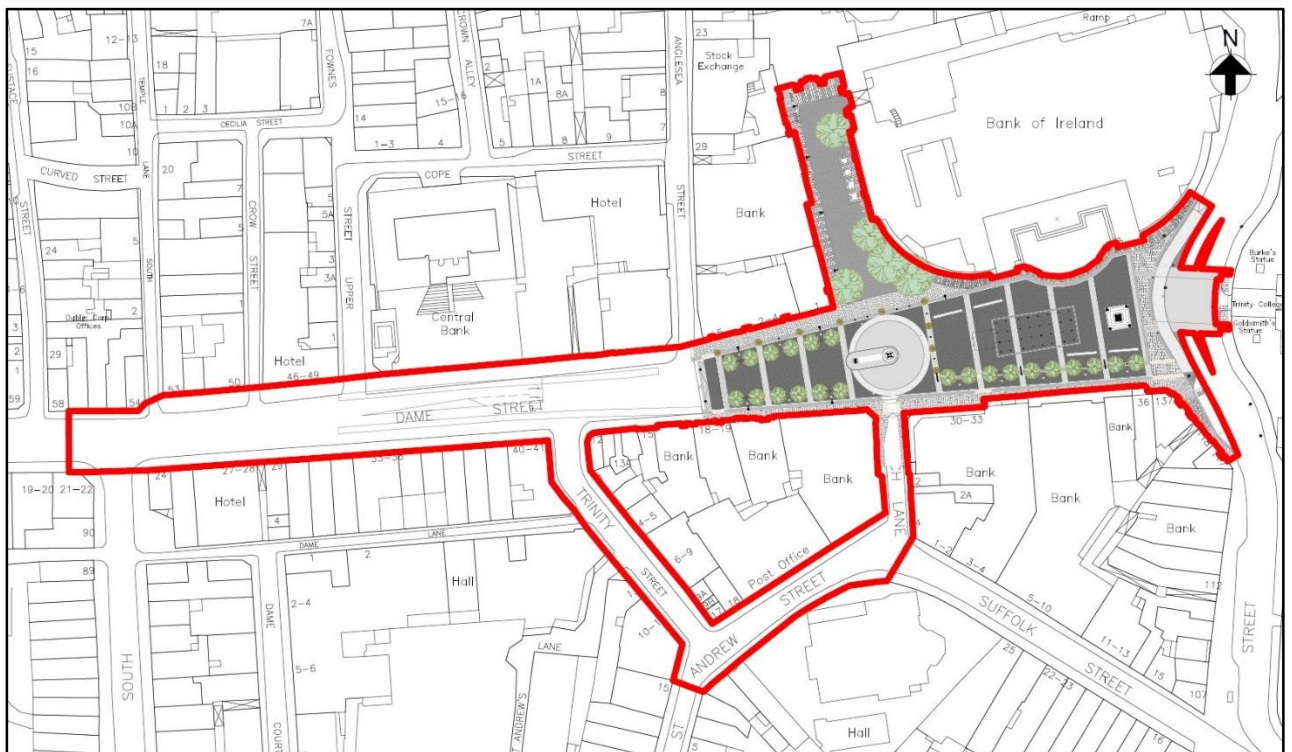


Figure 1. Scheme extents of the College Green Traffic Management Measures and Civic Plaza project in Dublin City.

The proposed development will consist of;

Traffic Management Proposals on College Green including:

- No through east-west traffic movements in the College Green area except for pedestrians and cyclists.
- Two-way segregated cycle track at the Bank of Ireland opposite Trinity College.
- Bus turn-around arrangement on Dame Street, west of the Plaza area.

The project involves the carrying out of works as well as the change of the character and intensity of use over an extensive area of the city centre business district. The proposed development, therefore, constitutes 'development' arising from;

- The carrying out of works over a large extent of a city centre [urban] location.
- The significant alteration of the nature and character of the use [alteration from vehicular to pedestrian use, alteration of appearance].
- The significant alteration of the intensity of the use [increase in pedestrian and reduction in vehicular movements].

The core area of works, involving the alteration of surface pavement, kerbs, street furniture, signage and utilities extends east-west from the Central Bank Plaza to the front of Trinity College. It extends north-south from the end of Grafton Street to Westmoreland Street. This core area falls within an area of approximately 1.3 hectares.

4. Identification of Natura 2000 Sites

4.1. Description of Natura Sites Potentially Affected

Departmental guidance suggests an assessment of Natura 2000 sites within a zone of influence of 15 km which can be revised down depending on the proposed development and location of Natura 2000 sites. There are 16 Natura 2000 sites located within a 15km radius of the project study area including the following:

- 000199 Baldoyle Bay SAC (10.5 km)
- 000202 Howth Head SAC (11.5 km)
- 000205 Malahide Estuary SAC (14 km)
- 000206 North Dublin Bay SAC (5.5 km)
- 000210 South Dublin Bay SAC (2.5 km)

- 001209 Glenasmole Valley SAC (13 km)
- 002193 Ireland's Eye SAC (14.5 km)
- 003000 Rockabill to Dalkey Island SAC (11.5 km)
- 004006 North Bull Island SPA (7 km)
- 004016 Baldoyle Bay SPA (10.5 km)
- 004024 South Dublin Bay and River Tolka Estuary SPA (3.5 km)
- 004025 Malahide Estuary SPA (14 km)
- 004040 Wicklow Mountains SPA (12 km)
- 004113 Howth Head Coast SPA (11.5 km)
- 004117 Ireland's Eye SPA (14.5 km)
- 004172 Dalkey Island SPA (13 km)

Of the 16 Natura 2000 sites identified, a number of these are not considered to have any direct ecological or hydrological connectivity to the proposed development site, by which a significant impact could arise.

These sites include:

- 000199 Baldoyle Bay SAC
- 000202 Howth Head SAC
- 000205 Malahide Estuary SAC
- 001209 Glenasmole Valley SAC
- 002193 Ireland's Eye SAC
- 003000 Rockabill to Dalkey Island SAC
- 004016 Baldoyle Bay SPA
- 004025 Malahide Estuary SPA
- 004040 Wicklow Mountains SPA
- 004113 Howth Head Coast SPA
- 004117 Ireland's Eye SPA
- 004172 Dalkey Island SPA

It is determined that there is no potential for significant effect on these sites and they are screened out at this preliminary stage for the following reasons:

- Distance from the development site,
- There is no direct connection between the site of the proposed development and these three sites,
- The potential for indirect impacts is unlikely due to distance and lack of connectivity.

The development location at College Green is then considered in terms of source-pathway-receptor relationship and proximity to the River Liffey with regards direct ecological and hydrological connectivity to Dublin Bay. There are four Natura 2000 sites located within a potential zone of influence of the development:

- 000206 North Dublin Bay SAC
- 000210 South Dublin Bay SAC
- 004006 North Bull Island SPA
- 004024 South Dublin Bay and River Tolka Estuary SPA

The location of the development site is presented in Figure 2 below in relation to the Natura 2000 sites considered within the potential zone of influence. These are listed in Tables 1 and 2 below and Site Synopses are available on the NPWS metadata site. Spatial boundary data on the Natura 2000 network was extracted from the NPWS website on 20th January 2017.

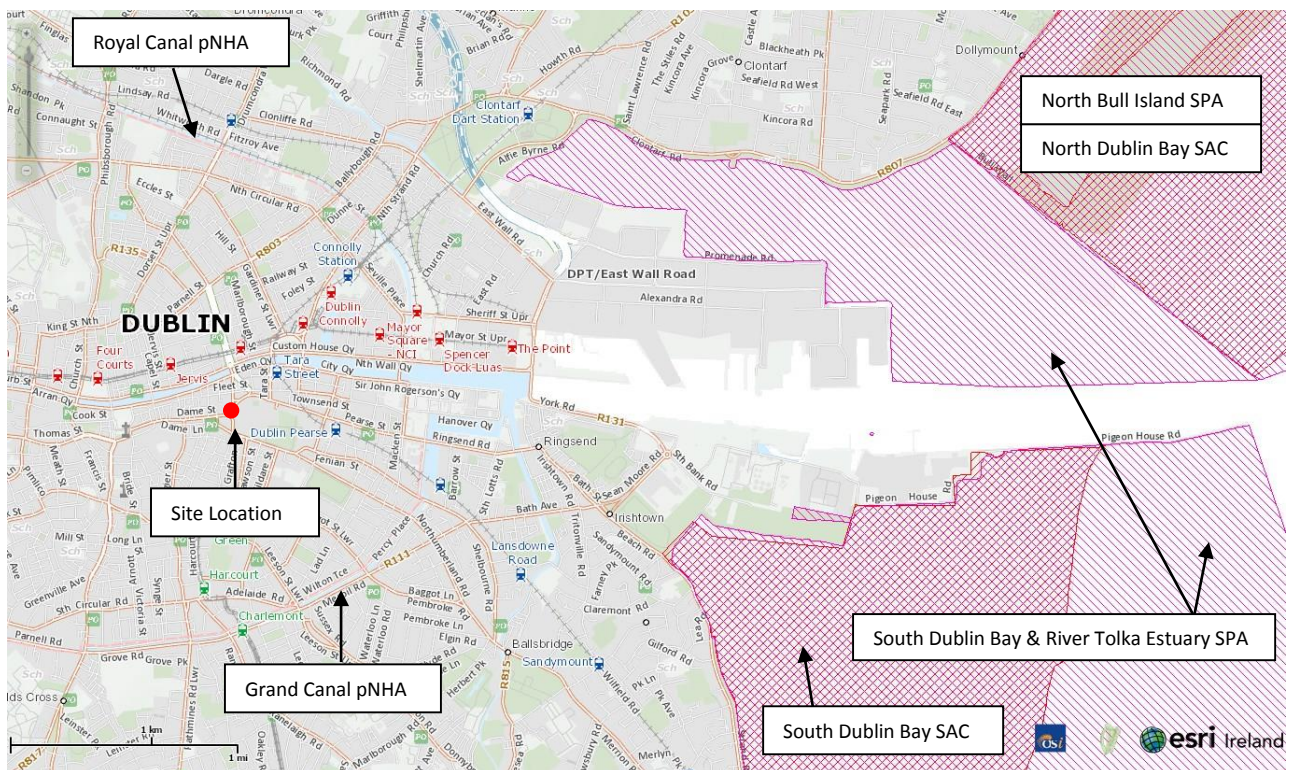


Figure 2. Site Location at College Green in relation to downstream Natura 2000 sites.

Table 1. SACs located within the zone of influence of the Project (*indicates priority habitat).

Site Code	Site Name	Qualifying Habitats	Qualifying Species
000206	North Dublin Bay SAC	[1140] Mudflats and sandflats not covered by seawater at low tide [1210] Annual vegetation of drift lines [1310] Salicornia and other annuals colonizing mud and sand [1330] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1410] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [2110] Embryonic shifting dunes [2120] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ("white dunes") [2130] * Fixed coastal dunes with herbaceous vegetation ("grey dunes") [2190] Humid dune slacks	[1395] <i>Petalophyllum ralfsii</i>
000210	South Dublin Bay SAC	[1140] Mudflats and sandflats not covered by seawater at low tide	

Table 2. SPAs located within the zone of influence of the Project.

Site Code	Site Name	Qualifying Habitats	Qualifying Species
004006	North Bull Island SPA	Wetlands [A999]	Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Shelduck (<i>Tadorna tadorna</i>) [A048] Teal (<i>Anas crecca</i>) [A052] Pintail (<i>Anas acuta</i>) [A054] Shoveler (<i>Anas clypeata</i>) [A056] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Knot (<i>Calidris canutus</i>) [A143] Sanderling (<i>Calidris alba</i>) [A144] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160] Redshank (<i>Tringa totanus</i>) [A162] Turnstone (<i>Arenaria interpres</i>) [A169] Black-headed Gull (<i>Larus ridibundus</i>) [A179]

004024	South Dublin Bay and River Tolka Estuary SPA	Wetlands [A999]	Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Ringed Plover (<i>Charadrius hiaticula</i>) [A137] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Knot (<i>Calidris canutus</i>) [A143] Sanderling (<i>Calidris alba</i>) [A144] Dunlin (<i>Calidris alpina</i>) [A149] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Redshank (<i>Tringa totanus</i>) [A162] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Roseate Tern (<i>Sterna dougallii</i>) [A192] Common Tern (<i>Sterna hirundo</i>) [A193] Arctic Tern (<i>Sterna paradisaea</i>) [A194]
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4.2. Conservation Objectives of the Natura 2000 Sites

The following Conservation Objectives, available from the NPWS, are set out for the SAC. Specific attributes, measures and targets are presented in the Conservation Objectives document and will be addressed in more detail if required after potential impacts have been determined.

North Dublin Bay SAC [000206]. Version 1. 6th November 2013;

1140 Mudflats and sandflats not covered by seawater at low tide

To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in North Dublin Bay SAC, which is defined by the following list of attributes and targets:

Habitat area: Hectares- The permanent habitat area is stable or increasing, subject to natural processes.

Community extent: Hectares- Maintain the extent of the *Mytilus edulis*-dominated community, subject to natural processes.

Community structure: *Mytilus edulis* density: Individuals/m²- Conserve the high quality of the *Mytilus edulis* dominated community, subject to natural processes.

Community distribution: Hectares- Conserve the following community types in a natural condition: Fine sand to sandy mud with *Pygospio elegans* and *Crangon crangon* community complex; Fine sand with *Spio martinensis* community complex.

1210 Annual vegetation of drift lines

To restore the favourable conservation condition of Annual vegetation of drift lines in North Dublin Bay SAC, which is defined by the following list of attributes and targets:

Habitat area: Hectares- Area increasing, subject to natural processes, including erosion and succession.
Total area mapped: South Bull - 0.11ha.

Habitat distribution: Occurrence- No decline, or change in habitat distribution, subject to natural processes.

Physical structure: functionality and sediment supply: Presence/ absence of physical barriers- Maintain the natural circulation of sediment and organic matter, without any physical obstructions.

Vegetation structure: zonation: Occurrence- Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.

Vegetation composition: typical species and sub-communities: Percentage cover- at a representative number of monitoring stops Maintain the presence of species-poor communities with typical species: sea rocket (*Cakile maritima*), sea sandwort (*Honckenya peploides*), prickly saltwort (*Salsola kali*) and oraches (*Atriplex* spp.).

Vegetation composition: negative indicator species: Percentage cover- Negative indicator species (including non-natives) to represent less than 5% cover

1310 *Salicornia* and other annuals colonising mud and sand

To restore the favourable conservation condition of *Salicornia* and other annuals colonizing mud and sand in North Dublin Bay SAC, which is defined by the following list of attributes and targets:

Habitat area: Hectares Area- stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: North Bull Island - 29.10ha.

Habitat distribution: Occurrence- No decline, or change in habitat distribution, subject to natural processes.

Physical structure: sediment supply: Presence/ absence of physical barriers- Maintain, or where necessary restore, natural circulation of sediments and organic matter, without any physical obstructions.

Physical structure: creeks and pans: Occurrence- Maintain creek and pan structure, subject to natural processes, including erosion and succession.

Physical structure: flooding regime: Hectares- flooded; frequency Maintain natural tidal regime.

Vegetation structure: zonation: Occurrence- Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.

Vegetation structure: vegetation height: Centimetres- Maintain structural variation within sward.

Vegetation structure: vegetation cover: Percentage cover at a representative number of monitoring stops- Maintain more than 90% of area outside creeks vegetated.

Vegetation composition: typical species and sub-communities: Percentage cover- Maintain the presence of species-poor communities listed in SMP (McCorry and Ryle, 2009).

Vegetation structure: negative indicator species - *Spartina anglica*: Hectares- No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%.

1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

To maintain the favourable conservation condition of Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) in North Dublin Bay SAC, which is defined by the following list of attributes and targets:

Habitat area: Hectares- Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: North Bull Island - 81.84ha.

Habitat distribution: Occurrence- No decline or change in habitat distribution, subject to natural processes.

Physical structure: creeks and pans: Occurrence- Maintain creek and pan structure, subject to natural processes, including erosion and succession.

Physical structure: flooding regime: Hectares- flooded; frequency Maintain natural tidal regime.

Vegetation structure: zonation: Occurrence- Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.

Vegetation structure: vegetation height: Centimetres- Maintain structural variation within sward.

Vegetation structure: vegetation cover: Percentage cover at a representative number of monitoring stops- Maintain more than 90% area outside creeks vegetated.

Vegetation composition: typical species and sub-communities: Percentage cover at a representative sample of monitoring stops- Maintain range of sub-communities with typical species listed in SMP (McCorry and Ryle, 2009).

Vegetation structure: negative indicator species - *Spartina anglica*: Hectares- No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%.

1410 Mediterranean salt meadows (*Juncetalia maritimi*)

To maintain the favourable conservation condition of Mediterranean salt meadows (*Juncetalia maritimi*) in North Dublin Bay SAC, which is defined by the following list of attributes and targets:

Habitat area: Hectares- Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: North Bull Island - 7.98ha.

Habitat distribution: Occurrence- No decline or change in habitat distribution, subject to natural processes.

Physical structure: sediment supply: Presence/absence of physical barriers- Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions.

Physical structure: creeks and pans: Occurrence- Maintain creek and pan structure, subject to natural processes, including erosion and succession.

Physical structure: flooding regime: Hectares- flooded; frequency Maintain natural tidal regime.

Vegetation structure: zonation: Occurrence- Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.

Vegetation structure: vegetation height: Centimetres- Maintain structural variation in the sward.

Vegetation structure: vegetation cover: Percentage cover at a representative sample of monitoring stops- Maintain more than 90% of area outside creeks vegetated.

Vegetation composition: typical species and sub-communities: Percentage cover at a representative number of monitoring stops- Maintain range of sub-communities with characteristic species listed in SMP (McCorry and Ryle, 2009).

Vegetation structure: negative indicator species - *Spartina anglica*: Hectares- No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%.

2110 Embryonic shifting dunes

To restore the favourable conservation condition of Embryonic shifting dunes in North Dublin Bay SAC, which is defined by the following list of attributes and targets:

Habitat area: Hectares- Area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: North Bull - 2.64ha; South Bull - 3.43ha.

Habitat distribution: Occurrence- No decline or change in habitat distribution, subject to natural processes.

Physical structure: functionality and sediment supply: Presence/absence of physical barriers- Maintain the natural circulation of sediment and organic matter, without any physical obstructions.

Vegetation structure: zonation: Occurrence- Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.

Vegetation composition: plant health of foredune grasses: Percentage cover- More than 95% of sand couch (*Elytrigia juncea*) and/or lyme-grass (*Leymus arenarius*) should be healthy (i.e. green plant parts above ground and flowering heads present).

Vegetation composition: typical species and sub-communities: Percentage cover at a representative number of monitoring stops- Maintain the presence of species-poor communities with typical species: sand couch (*Elytrigia juncea*) and/or lyme-grass (*Leymus arenarius*).

Vegetation composition: negative indicator species: Percentage cover- Negative indicator species (including non-native species) to represent less than 5% cover.

2120 Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)

To restore the favourable conservation condition of Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes') in North Dublin Bay SAC, which is defined by the following list of attributes and targets:

Habitat area: Hectares- Area stable or increasing, subject to natural processes including erosion and succession. North Bull - 2.20ha; South Bull - 0.97ha.

Habitat distribution: Occurrence- No decline, or change in habitat distribution, subject to natural processes.

Physical structure: functionality and sediment supply: Presence/ absence of physical barriers- Maintain the natural circulation of sediment and organic matter, without any physical obstructions.

Vegetation structure: zonation: Occurrence- Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.

Vegetation composition: plant health of dune grasses: Percentage cover- 95% of marram grass (*Ammophila arenaria*) and/or lyme-grass (*Leymus arenarius*) should be healthy (i.e. green plant parts above ground and flowering heads present).

Vegetation composition: typical species and sub-communities: Percentage cover at a representative number of monitoring stops- Maintain the presence of species-poor communities dominated by marram grass (*Ammophila arenaria*) and/or lyme grass (*Leymus arenarius*).

Vegetation composition: negative indicator species: Percentage cover- Negative indicator species (including non-natives) to represent less than 5% cover.

2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)

To restore the favourable conservation condition of Fixed coastal dunes with herbaceous vegetation ('grey dunes') in North Dublin Bay SAC, which is defined by the following list of attributes and targets:

Habitat area: Hectares- Area stable or increasing, subject to natural processes including erosion and succession. For subsites mapped: North Bull - 40.29ha; South Bull - 64.56ha.

Habitat distribution: Occurrence- No decline, or change in habitat distribution, subject to natural processes.

Physical structure: functionality and sediment supply: Presence/ absence of physical barriers- Maintain the natural circulation of sediment and organic matter, without any physical obstructions.

Vegetation structure: zonation: Occurrence- Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.

Vegetation structure: bare ground: Percentage cover- Bare ground should not exceed 10% of fixed dune habitat, subject to natural processes.

Vegetation structure: sward height: Centimetres- Maintain structural variation within sward.

Vegetation composition: typical species and sub-communities: Percentage cover at a representative number of monitoring stops- Maintain range of sub-communities with typical species listed in Delaney et al. (2013).

Vegetation composition: negative indicator species (including *Hippophae rhamnoides*): Percentage cover- Negative indicator species (including non-natives) to represent less than 5% cover.

Vegetation composition: scrub/trees: Percentage cover- No more than 5% cover or under control.

2190 Humid dune slacks

To restore the favourable conservation condition of Humid dune slacks in North Dublin Bay SAC, which is defined by the following list of attributes and targets:

Habitat area: Hectares- Area increasing, subject to natural processes including erosion and succession. For sub-sites mapped: North Bull - 2.96ha; South Bull - 9.15ha.

Habitat distribution: Occurrence- No decline or change in habitat distribution, subject to natural processes.

Physical structure: functionality and sediment supply: Presence/ absence of physical barriers- Maintain the natural circulation of sediment and organic matter, without any physical obstructions.

Physical structure: hydrological and flooding regime: Water table levels; groundwater fluctuations (metres)- Maintain natural hydrological regime.

Vegetation structure: zonation: Occurrence- Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.

Vegetation structure: bare ground: Percentage cover- Bare ground should not exceed 5% of dune slack habitat, with the exception of pioneer slacks which can have up to 20% bare ground.

Vegetation structure: vegetation height: Centimetres- Maintain structural variation within sward.

Vegetation composition: typical species and sub-communities: Percentage cover at a representative number of monitoring stops- Maintain range of sub-communities with typical species listed in Delaney et al. (2013).

Vegetation composition: cover of *Salix repens*: Percentage cover; centimetres- Maintain less than 40% cover of creeping willow (*Salix repens*).

Vegetation composition: negative indicator species: Percentage cover- Negative indicator species (including non-natives) to represent less than 5% cover.

Vegetation composition: scrub/trees: Percentage cover- No more than 5% cover or under control.

1395 Petalwort *Petalophyllum ralfsii*

To maintain the favourable conservation condition of Petalwort in North Dublin Bay SAC, which is defined by the following list of attributes and targets:

Distribution of populations: Number and geographical spread of populations- No decline.

Population size: Number of individuals- No decline. Population at Bull Island estimated at a maximum of 5,824 thalli. Actual population is more likely to be 5% of this, or c. 300 thalli.

Area of suitable habitat: Hectares- No decline. Area of suitable habitat at Bull Island is estimated at c. 0.04ha.

Hydrological conditions: soil moisture: Occurrence- Maintain hydrological conditions so that substrate is kept moist and damp throughout the year, but not subject to prolonged inundation by flooding in winter.

Vegetation structure: height and cover: Centimetres and percentage- Maintain open, low vegetation with a high percentage of bryophytes (small acocarps and liverwort turf) and bare ground.

South Dublin Bay SAC [000210]. Version 1. 22nd August 2013;

1140 Mudflats and sandflats not covered by seawater at low tide

To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in South Dublin Bay SAC, which is defined by the following list of attributes and targets:

Habitat area: Hectares- The permanent habitat area is stable or increasing, subject to natural processes.

Community extent: Hectares- Maintain the extent of the *Zostera*-dominated community, subject to natural processes.

Community structure: *Zostera* density: Shoots/m²- Conserve the high quality of the *Zostera*-dominated community, subject to natural processes.

Community distribution: Hectares- Conserve the following community type in a natural condition: Fine sands with *Angulus tenuis* community complex.

North Bull Island SPA [004006]. Version 1. 9th March 2015;

To maintain the favourable conservation condition of [Bird Species] in North Bull Island SPA, which is defined by the following list of attributes and targets:

Population trend: Percentage change- Long term population trend stable or increasing

Distribution: Range, timing and intensity of use of areas- No significant decrease in the range, timing or intensity of use of areas by [Bird Species], other than that occurring from natural patterns of variation.

A999 Wetlands

To maintain the favourable conservation condition of the wetland habitat in North Bull Island SPA as a resource for the regularly occurring migratory waterbirds that utilise it. This is defined by the following attribute and target:

Habitat area: Hectares- The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 1,713 hectares, other than that occurring from natural patterns of variation.

South Dublin Bay and River Tolka Estuary SPA [004024]. Version 1. 9th March 2015;

To maintain the favourable conservation condition of [Bird Species] in South Dublin Bay and River Tolka Estuary SPA, which is defined by the following list of attributes and targets:

Population trend: Percentage change- Long term population trend stable or increasing.

Distribution: Range, timing and intensity of use of areas- No significant decrease in the range, timing or intensity of use of areas by [Bird Species], other than that occurring from natural patterns of variation.

The following species have the same COs:

A192 Roseate Tern *Sterna dougallii*

A193 Common Tern *Sterna hirundo*

A194 Arctic Tern *Sterna paradisaea*

To maintain the favourable conservation condition of Roseate/ Common/Arctic Tern in South Dublin Bay and River Tolka Estuary SPA, which is defined by the following list of attributes and targets:

Passage population: Number of individuals- No significant decline.

Distribution: roosting areas: Number; location; area (hectares)- No significant decline.

Prey biomass available: Kilogrammes- No significant decline.

Barriers to connectivity: Number; location; shape; area (hectares)- No significant increase.

Disturbance at roosting site: Level of impact- Human activities should occur at levels that do not adversely affect the numbers of Arctic tern among the post-breeding aggregation of terns.

A999 Wetlands

To maintain the favourable conservation condition of the wetland habitat in South Dublin Bay and River Tolka Estuary SPA as a resource for the regularly occurring migratory waterbirds that utilise it. This is defined by the following attribute and target:

Habitat area: Hectares- The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 2,192 hectares, other than that occurring from natural patterns of variation.

4.3. Assessment Criteria**4.3.1. Examples of Direct, Indirect or Secondary Impacts**

To identify those sites that could be potentially affected, it is necessary to describe the Natura 2000 site in the context of why it has been designated i.e. in terms of its Qualifying Interests and the environmental and ecological conditions that maintain the condition of these features. The underpinning conditions that are required to maintain the 'health' of these features are listed in Table 3 below.

Table 3. Qualifying Interests and Key environmental conditions supporting site integrity.

Qualifying Interests	Key environmental conditions supporting site integrity	Current Threats to Qualifying Interests
Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	Marine and groundwater dependent. Medium sensitivity to hydrological change. Changes in salinity and tidal regime. Overgrazing, erosion and accretion.	Overgrazing; erosion; invasive species, particularly common cordgrass (<i>Spartina anglica</i>); infilling and reclamation.
Annual vegetation of drift lines	Marine and groundwater dependent. Sensitivity to hydrological change. Changes in salinity and tidal regime. Overgrazing, erosion and accretion.	Grazing, Sand and gravel extraction – removal of beach materials, Walking, horse riding and non-motorised vehicles, Outdoor sports and leisure activities – 21otorized vehicles, Other leisure and tourism impacts (beach cleaning), Trampling, overuse, Sea defence or coastal protection works
Embryonic shifting dunes	Marine and groundwater dependent. Substrate is highly unstable, availability of nutrients is low and there is an absence of organic soil and humus. The habitat is subject to salt spray and occasional tidal inundation. Exposure increases the risk of water loss.	Walking, horseriding and non-motorised vehicles, Motorised vehicles, Trampling, overuse, Sea defence or coastal protection works, Erosion, Other natural processes (depletion of sediment source)
* Fixed coastal dunes with herbaceous vegetation ("grey dunes")	Marine and groundwater dependent. Once a complete sward is established and sand mobility has effectively ceased, dunes are said to be stable or 'fixed' and are referred to as 'fixed dunes'. A combination of geomorphologic, edaphic, climatic and anthropogenic factors determine the composition of the fixed dune vegetation that develops at a particular site.	Mowing/cutting, Agricultural improvement, Fertilisation, Grazing, Abandonment of pastoral systems, Overgrazing by sheep, Overgrazing by cattle, Overgrazing by hares, rabbits, small mammals, Undergrazing, Restructuring agricultural holding, Stock feeding, Burning, Sand and gravel extraction, Urbanised areas, human habitation, urbanization, Dispersed habitation, Disposal of household waste, Other urbanisation, industrial or similar activities, Paths, tracks, cycling routes, Routes, autoroutes, course, Sports pitch, Camping and caravans, Walking, horseriding and non-motorised vehicles,

		Motorised vehicles, , Trampling, overuse, pollution or human activities, Sea defence or coastal protection works, Erosion, Invasion by a species, Competition
Humid dune slacks	Marine and groundwater dependent. Sensitivity to hydrological change. Changes in salinity and tidal regime.	Agricultural improvement, Fertilisation, Grazing, Overgrazing by sheep, Overgrazing by cattle, Overgrazing by hare, rabbits, small mammals, Undergrazing, Restructuring agricultural land holding, Forestry, Stock feeding, Golf course, Walking, horseriding and non-motorised vehicles, Motorised vehicles, Trampling, overuse, Drainage, human induced changes in hydraulic conditions, Drying out, Invasion by a species
Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	Marine and groundwater dependent. Sensitivity to hydrological change. Changes in salinity and tidal regime. Overgrazing, erosion and accretion	Overgrazing; erosion; invasive species, particularly common cordgrass (<i>Spartina anglica</i>); infilling and reclamation.
Mudflats and sandflats not covered by seawater at low tide	Surface and marine water dependent. Low sensitivity to hydrological changes. Aquaculture, fishing and pollution.	Aquaculture, fishing, dumping of wastes and water pollution.
<i>Petalophyllum ralfsii</i>	Lime-rich sandy habitat. Overgrazing. Water supply for damp conditions.	Grazing Imbalance, Physical Disturbance, Pollution, Desiccation, trampling from stock and recreation, changes in land use.
Salicornia and other annuals colonizing mud and sand	Marine and groundwater dependent. Medium sensitivity to hydrological change. Changes in salinity and tidal regime. Infilling, reclamation, invasive species.	Invasive Species; erosion and accretion.
Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ("white dunes")	Marine habitat subject to accretion (sand accumulation) and ablation (sand removal). Plants highly specialised and can cope with some degree of salinity (in the form of salt spray and occasional periods of inundation), an unstable substrate and limited levels of nutrients and moisture.	Grazing, Sand and gravel extraction, Removal of beach materials, Paths, tracks, cycling routes, Walking, horseriding and non-motorised vehicles, Motorised vehicles, Trampling, overuse, Sea defence or coastal protection works, Erosion, Other natural processes (depletion of sediment source)

Wetlands & Waterbirds	Highly sensitive to hydrological changes and loss of wetland habitat. Sensitive to disturbance.	A number of pressures have been identified by Crowe (2005). These pressures include: the modification of wetland sites, particularly for industry or housing and increased levels of disturbance, largely related to recreational activity. Eutrophication at a number of wetland sites as a result of nutrient inputs from a range of polluting activities were also identified as a potential pressure. However this latter pressure is now being alleviated through stricter control of activities associated with water discharge/runoff etc. Climate change was also noted as a significant factor underlying changes in trends of wintering waterbirds in Ireland.
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4.3.2. Ecological Network Supporting Natura 2000 Sites

An analysis of the proposed Natural Heritage Areas and designated Natural Heritage Areas in terms of their role in supporting the species using Natura 2000 sites was undertaken. It was assumed that these supporting roles mainly related to mobile fauna such as mammals and birds which may use pNHAs and NHAs as “stepping stones” between Natura 2000 sites.

Article 10 of the Habitats Directive and the Habitats Regulations 2011 place a high degree of importance on such non-Natura 2000 areas as features that connect the Natura 2000 network. Features such as ponds, woodlands and important hedgerows were considered during the rest of the AA process.

The ESB Dolphins in Dublin Docks are a pNHA and are included in the South Dublin Bay and River Tolka Estuary SPA. The Royal and Grand Canals pNHAs have no relevant connectivity with the project and will not be affected.

5. Identification of Potential Impacts & Assessment of Significance

The project is not directly connected with or necessary to the management of the sites considered in the assessment and therefore potential impacts must be identified and considered.

5.1. Potential Impacts

This section uses the information collected on the sensitivity of each Natura 2000 site and describes any likely significant effects of implementation of the Project. This assumes the absence of any controls, conditions or assumption mitigation measures.

The likely significant effects of the Project are presented in Table 4 below, both in isolation and potentially in combination with other plans and projects.

A worst-case scenario would occur whereby the project would result in a significant detrimental change in water quality in Dublin Bay either alone or in combination with other projects or plans. The effect would have to be considered in terms of changes in water quality which would affect the habitats or food sources for which the SACs and SPA species are designated.

The proposed development includes works, involving the alteration of surface pavement, kerbs, street furniture, signage and utilities extends east-west from the Central Bank Plaza to the front of Trinity College extending north-south from the end of Grafton Street to Westmoreland Street.

However, given the lack of source-pathway-receptor links to the River Liffey, a deterioration of water quality in Dublin Bay downstream as a result of surface water contamination is highly unlikely.

The works will be carried out under a Construction & Environmental Management Plan which includes design measures to avoid unforeseen discharges to surface water.

Table 4. Outlining the potential impacts in the absence of mitigation of the Project.

Site	Distance from Project	Potential Direct Impacts e.g. Habitat Loss	Potential Indirect Impacts e.g. alteration to hydrological regime	Surface or Groundwater Contamination	Disturbance to Protected Species (Habitats Directive Annex II & IV)	Stage 2 AA Required
000206 North Dublin Bay SAC	5.5 km	No	None	No	No	No
000210 South Dublin Bay SAC	2.5 km	No	None	No	No	No
004006 North Bull Island SPA	7 km	No	None	No	No	No
004024 South Dublin Bay and River Tolka Estuary SPA	3.5 km	No	None	No	No	No

5.2. Assessment of Potential Cumulative Effects

Cumulative impacts or effects are changes in the environment that result from numerous human-induced, small-scale alterations. Cumulative impacts can be thought of as occurring through two main pathways: first, through persistent additions or losses of the same materials or resource, and second, through the compounding effects as a result of the coming together of two or more effects.

As part of the Screening for an Appropriate Assessment, in addition to the proposed works, other relevant projects and plans in the region must also be considered at this stage. This step aims to identify at this early stage any possible significant in-combination or cumulative effects / impacts of the proposed development with other such plans and projects on the Natura 2000 sites.

Other schemes that are not integral to the College Green Traffic Management Measures but which would be relevant for consideration of cumulative effects include but are not limited to:

- South Quays (Aston Quay and Wellington Quay) –Additional bus lane and bus stops (i.e. double bus lane), Reduction of general traffic lanes from two lanes to one lane;

- O’Connell Bridge – Revised arrangements including no right turn from Bachelors Walk; single straight ahead and single public transport only right turn northbound on O’Connell Bridge; single straight ahead and single public transport only right turn southbound on O’Connell Bridge;
- North Quays (Eden Quay) – Public Transport only between O’Connell Bridge and Rosie Hackett Bridge;
- North Quays (Ormond Quay and Bachelors Walk) – Additional bus lane and bus stops (i.e. double bus lane), Reduction of general traffic lanes from two lanes to one lane from Millennium bridge;
- Burgh Quay - Additional bus priority measures;
- Grafton Street Lower - 2-way traffic buses, taxis and Luas only.
- Liffey cycle route
- Carpark signage scheme
- City wide Directional signage scheme

Any development in central Dublin City with potential surface water connectivity to the River Liffey is required to comply with Best Practice Construction Methodology to avoid surface water contamination/runoff. In this way, these developments would be unlikely to have in-combination effects.

The Dublin City Development Plan in complying with the requirements of the Habitats Directive requires that all Projects and Plans that could affect the Natura 2000 sites in the same zone of influence of the project site would be initially screened for Appropriate Assessment and if requiring Stage 2 AA, that appropriate employable mitigation measures would be put in place to avoid, reduce or ameliorate negative impacts. In this way, any in-combination impacts with Plans or Projects for the area in which the development is located, would be avoided.

Any new applications for the project area will be assessed on a case by case basis by Dublin City Council which will determine the requirement for AA Screening as per the requirements of Article 6(3) of the Habitats Directive.

6. Screening Statement

The conclusion of this Screening Report is that given the lack of biological and hydrological connectivity and the employment of best practice construction methods, there would be no significant impacts on the Qualifying interests or Conservation Objectives of the European sites considered in this assessment.

It has been objectively concluded by Moore Group Environmental Services that:

1. The project is not directly connected with, or necessary to the conservation management of the European sites considered in this assessment.
2. The implementation of the project will not have a direct impact on the European sites considered in this assessment.
3. The project has been designed to include appropriate treatment of wastewater and therefore avoids indirect impacts on the European sites considered in this assessment.
4. The project, alone or in combination with other projects or plans, is not likely to have a significant effect on the European sites considered in this assessment in view of their conservation objectives.

It is the view of Moore Group Environmental Services that it is not necessary to undertake any further stage of the Appropriate Assessment process.

A finding of no significant effects report is presented in Appendix A in accordance with the EU Commission's methodological guidance (European Commission, 2001).

7. References

Crowe, O. (2005) Ireland's Wetlands and their Waterbirds; Status and Distribution. Birdwatch Ireland.

Department of the Environment, Heritage and Local Government (2010) Guidance on Appropriate Assessment of Plans and Projects in Ireland (as amended February 2010).

European Commission (2000) Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.

European Commission Environment DG (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43EEC. European Commission, Brussels.

European Commission (2007) Guidance document on Article 6(4) of the 'Habitats Directive '92/43/EEC: Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interests, compensatory measures, overall coherence and opinion of the Commission. European Commission, Brussels.

NPWS (2013) The Status of EU Protected Habitats and Species in Ireland. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin.

NPWS (2013) Site Synopsis: North Dublin Bay SAC 000206. Version date: 12.08.2013_000206_Rev13.Doc. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2013) Conservation Objectives: North Dublin Bay SAC 000206. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2013) Conservation Objectives: South Dublin Bay SAC 000210. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2014) Site synopsis of the North Bull Island SPA 004006. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2015) Site Synopsis: South Dublin Bay SAC 000210. Version date: 10.12.2015_000210_Rev15.Docx. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2015) Conservation Objectives: North Bull Island SPA 004006. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht

NPWS (2015) Site synopsis of the South Dublin Bay and River Tolka Estuary SPA. Version date: 30.05.2015. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2015) Conservation Objectives: South Dublin Bay and River Tolka Estuary SPA 004024. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

Appendix A
FINDING OF NO SIGNIFICANT EFFECTS REPORT
 Finding no significant effects report matrix

Name of project or plan

College Green Traffic Management Measures and Public Plaza.

Name and location of the Natura 2000 site(s)

Departmental guidance suggests an assessment of Natura 2000 sites within a zone of influence of 15 km which can be revised down depending on the proposed development and location of Natura 2000 sites. There are 16 Natura 2000 sites located within a 15km radius of the project study area including the following:

- 000199 Baldoyle Bay SAC (10.5 km)
- 000202 Howth Head SAC (11.5 km)
- 000205 Malahide Estuary SAC (14 km)
- 000206 North Dublin Bay SAC (5.5 km)
- 000210 South Dublin Bay SAC (2.5 km)
- 001209 Glenasmole Valley SAC (13 km)
- 002193 Ireland's Eye SAC (14.5 km)
- 003000 Rockabill to Dalkey Island SAC (11.5 km)
- 004006 North Bull Island SPA (7 km)
- 004016 Baldoyle Bay SPA (10.5 km)
- 004024 South Dublin Bay and River Tolka Estuary SPA (3.5 km)
- 004025 Malahide Estuary SPA (14 km)
- 004040 Wicklow Mountains SPA (12 km)
- 004113 Howth Head Coast SPA (11.5 km)
- 004117 Ireland's Eye SPA (14.5 km)
- 004172 Dalkey Island SPA (13 km)

Of the 16 Natura 2000 sites identified, a number of these are not considered to have any direct ecological or hydrological connectivity to the proposed development site, by which a significant impact could arise. These sites include:

- 000199 Baldoyle Bay SAC
- 000202 Howth Head SAC
- 000205 Malahide Estuary SAC
- 001209 Glenasmole Valley SAC
- 002193 Ireland's Eye SAC
- 003000 Rockabill to Dalkey Island SAC
- 004016 Baldoyle Bay SPA
- 004025 Malahide Estuary SPA
- 004040 Wicklow Mountains SPA
- 004113 Howth Head Coast SPA
- 004117 Ireland's Eye SPA
- 004172 Dalkey Island SPA

It is determined that there is no potential for significant effect on these sites and they are screened out at this preliminary stage for the following reasons:

- Distance from the development site,

- There is no direct connection between the site of the proposed development and these three sites,
- The potential for indirect impacts is unlikely due to distance and lack of connectivity.

The project location at College Green is then considered in terms of source-pathway-receptor relationship and the proximity of the only water course in the vicinity, the River Liffey and hydrological connectivity to Dublin Bay. Thus, there are four Natura 2000 sites located within a potential zone of influence of the Project:

- 000206 North Dublin Bay SAC
- 000210 South Dublin Bay SAC
- 004006 North Bull Island SPA
- 004024 South Dublin Bay and River Tolka Estuary SPA

Description of the project or plan

The proposed development will consist of;

Traffic Management Proposals on College Green including:

- No through east-west traffic movements in the College Green area except for pedestrians and cyclists.
- Two-way segregated cycle track at the Bank of Ireland opposite Trinity College.
- Bus turn-around arrangement on Dame Street, west of the Plaza area.

The project involves the carrying out of works as well as the change of the character and intensity of use over an extensive area of the city centre business district. The proposed development, therefore, constitutes 'development' arising from;

- The carrying out of works over a large extent of a city centre [urban] location.
- The significant alteration of the nature and character of the use [alteration from vehicular to pedestrian use, alteration of appearance].
- The significant alteration of the intensity of the use [increase in pedestrian and reduction in vehicular movements].

Is the project or plan directly connected with or necessary to the management of the site(s)

No

Are there other projects or plans that together with the projects or plan being assessed could affect the site

Other schemes that are not integral to the College Green Traffic Management Measures but which would be relevant for consideration of cumulative effects include but are not limited to:

- South Quays (Aston Quay and Wellington Quay) – Additional bus lane and bus stops (i.e. double bus lane), Reduction of general traffic lanes from two lanes to one lane;
- O'Connell Bridge – Revised arrangements including no right turn from Bachelors Walk; single straight ahead and single public transport only right turn northbound on O'Connell Bridge; single straight ahead and single public transport only right turn southbound on O'Connell Bridge;
- North Quays (Eden Quay) – Public Transport only between O'Connell Bridge and Rosie Hackett Bridge;
- North Quays (Ormond Quay and Bachelors Walk) – Additional bus lane and bus stops (i.e. double bus lane), Reduction of general traffic lanes from two lanes to one lane from Millennium bridge;
- Burgh Quay - Additional bus priority measures;

- Grafton Street Lower - 2-way traffic buses, taxis and Luas only.
- Liffey cycle route
- Carpark signage scheme
- City wide Directional signage scheme

Any development in central Dublin City with potential surface water connectivity to the River Liffey is required to comply with Best Practice Construction Methodology to avoid surface water contamination/runoff. In this way, these developments would be unlikely to have in-combination effects.

The Dublin City Development Plan in complying with the requirements of the Habitats Directive requires that all Projects and Plans that could affect the Natura 2000 sites in the same zone of influence of the project site would be initially screened for Appropriate Assessment and if requiring Stage 2 AA, that appropriate employable mitigation measures would be put in place to avoid, reduce or ameliorate negative impacts. In this way, any in-combination impacts with Plans or Projects for the area in which the development is located, would be avoided.

Any new applications for the project area will be assessed on a case by case basis by Dublin City Council which will determine the requirement for AA Screening as per the requirements of Article 6(3) of the Habitats Directive.

The assessment of significance of effects

Describe how the project or plan (alone or in combination) is likely to affect the Natura 2000 site.

A worst-case scenario would occur whereby the project would result in a significant detrimental change in water quality in Dublin Bay either alone or in combination with other projects or plans. The effect would have to be considered in terms of changes in water quality which would affect the habitats or food sources for which the SACs and SPA species are designated.

The proposed development includes works, involving the alteration of surface pavement, kerbs, street furniture, signage and utilities extends east-west from the Central Bank Plaza to the front of Trinity College extending north-south from the end of Grafton Street to Westmoreland Street.

Explain why these effects are not considered significant

Given the lack of source-pathway-receptor links to the River Liffey, a deterioration of water quality in Dublin Bay downstream as a result of surface water contamination is highly unlikely.

The works will be carried out under a Construction & Environmental Management Plan which includes design measures to avoid unforeseen discharges to surface water.

List of agencies consulted: provide contact name and telephone or e-mail address

Dublin City Council.

Response to consultation

The need for Appropriate Assessment Screening was determined in pre-planning meetings with Dublin City Council.

Data collected to carry out the assessment

Who carried out the assessment

Moore Group Environmental Services.

Sources of data

NPWS database of designated sites at www.npws.ie
National Biodiversity Data Centre database <http://maps.biodiversityireland.ie>

Level of assessment completed

Desktop Assessment.

Where can the full results of the assessment be accessed and viewed

Dublin City Council Planning.

Overall Conclusions

The conclusion of this Screening Report is that given the lack of biological and hydrological connectivity and the employment of best practice construction methods, there would be no significant impacts on the Qualifying interests or Conservation Objectives of the European sites considered in this assessment.

It has been objectively concluded by Moore Group Environmental Services that:

1. The project is not directly connected with, or necessary to the conservation management of the European sites considered in this assessment.
2. The implementation of the project will not have a direct impact on the European sites considered in this assessment.
3. The project has been designed to include appropriate treatment of wastewater and therefore avoids indirect impacts on the European sites considered in this assessment.
4. The project, alone or in combination with other projects or plans, is not likely to have a significant effect on the European sites considered in this assessment in view of their conservation objectives.

It is the view of Moore Group Environmental Services that it is not necessary to undertake any further stage of the Appropriate Assessment process.

Appendix 12.1

IGI Guidelines and Impact Significance

IGI rating criteria uses the same significance terminology as the EPA, however it has intermediate steps to justify using that terminology:

- Step 1: Quantify the Importance of a feature for geology (**Table A12.1.1**) and hydrogeology (**Table A12.1.2**);
- Step 2: Estimate the Magnitude of the impact on the feature from the proposed development (**Table A12.1.3**: Geology, **Table A12.1.4**: Hydrogeology);
- Step 3: Determine the Significance of the impact on the feature from the matrix (Table 5) based on the Importance of the feature and the Magnitude of the impact.

Table A12.1.1 - Criteria for Rating Site Importance of Geological Features

Importance	Criteria	Typical Example
Very high	Attribute has a high quality, significance or value on a regional or national scale Degree or extent of soil contamination is significant on a national or regional scale Volume of peat and/or soft organic soil underlying route is significant on a national or regional scale	Geological feature rare on a regional or national scale (NHA) Large existing quarry or pit Proven economically extractable mineral resource
High	Attribute has a high quality, significance or value on a local scale Degree or extent of soil contamination is significant on a local scale Volume of peat and/or soft organic soil underlying route is significant on a local scale	Contaminated soil on site with previous heavy industrial usage Large recent landfill site for mixed wastes Geological feature of high value on a local scale (County Geological Site) Well drained and/or high fertility soils Moderately sized existing quarry or pit Marginally economic extractable mineral resource
Medium	Attribute has a medium quality, significance or value on a local scale Degree or extent of soil contamination is moderate on a local scale Volume of peat and/or soft organic soil underlying route is moderate on a local scale	Contaminated soil on site with previous light industrial usage Small recent landfill site for mixed wastes Moderately drained and/or moderate fertility soils Small existing quarry or pit Sub-economic extractable mineral resource
Low	Attribute has a low quality, significance or value on a local scale Degree or extent of soil contamination is minor on a local scale	Large historical and/or recent site for construction and demolition wastes Small historical and/or recent landfill site for construction and demolition wastes Poorly drained and/or low fertility soils

Importance	Criteria	Typical Example
	Volume of peat and/or soft organic soil underlying route is small on a local scale	Uneconomically extractable mineral resource

Table A12.1.2 - Criteria for Rating Site Importance of Hydrogeological Features

Importance	Criteria	Typical Example
Extremely high	Attribute has a high quality or value on an international scale	Groundwater supports river, wetland or surface water body ecosystem protected by EU legislation e.g. SAC or SPA status
Very high	Attribute has a high quality or value on a regional or national scale	Regionally Important Aquifer with multiple wellfields. Groundwater supports river, wetland or surface water body ecosystem protected by national legislation – e.g. NHA status. Regionally important potable water source supplying >2500 homes Inner source protection area for regionally important water source.
High	Attribute has a high quality or value on a local scale	Regionally Important Aquifer. Groundwater provides large proportion of baseflow to local rivers. Locally important potable water source supplying >1000 homes. Outer source protection area for regionally important water source. Inner source protection area for locally important water source.
Medium	Attribute has a medium quality or value on a local scale	Locally Important Aquifer Potable water source supplying >50 homes. Outer source protection area for locally important water source.
Low	Attribute has a low quality or value on a local scale	Poor Bedrock Aquifer. Potable water source supplying <50 homes.

Table A12.1.3 - Criteria for Rating Impact Significance at EIS Stage – Estimation of Magnitude of Impact on Geology Attribute

Importance	Criteria	Typical Example
Large adverse	Results in loss of attribute	Loss of high proportion of future quarry or pit reserves Irreversible loss of high proportion of local high fertility soils Removal of entirety of geological heritage feature Requirement to excavate / remediate entire waste site Requirement to excavate and replace high proportion of peat, organic soils and/or soft mineral soils beneath alignment
Moderate adverse	Results in impact on integrity of attribute or loss of part of attribute	Loss of moderate proportion of future quarry or pit reserves Removal of part of geological heritage feature Irreversible loss of moderate proportion of local high fertility soils Requirement to excavate / remediate significant proportion of waste site Requirement to excavate and replace moderate proportion of peat, organic soils and/or soft mineral soils beneath alignment
Small adverse	Results in minor impact on integrity of attribute or loss of small part of attribute	Loss of small proportion of future quarry or pit reserves Removal of small part of geological heritage feature Irreversible loss of small proportion of local high fertility soils and/or high proportion of local low fertility soils Requirement to excavate / remediate small proportion of waste site Requirement to excavate and replace small proportion of peat, organic soils and/or soft mineral soils beneath alignment
Negligible	Results in an impact on attribute but of insufficient magnitude to affect either use or integrity	No measurable changes in attributes
Minor beneficial	Results in minor improvement of attribute quality	Minor enhancement of geological heritage feature
Moderate beneficial	Results in moderate improvement of attribute quality	Moderate enhancement of geological heritage feature

Importance	Criteria	Typical Example
Major beneficial	Results in major improvement of attribute quality	Major enhancement of geological heritage feature

Table A12.1.4 - Criteria for Rating Impact Significance at EIS Stage – Estimation of Magnitude of Impact on Hydrogeology Attribute

Importance	Criteria	Typical Example
Large adverse	Results in loss of attribute and /or quality and integrity of attribute	Removal of large proportion of aquifer. Changes to aquifer or unsaturated zone resulting in extensive change to existing water supply springs and wells, river baseflow or ecosystems. Potential high risk of pollution to groundwater from routine run-off1. Calculated risk of serious pollution incident >2% annually.
Moderate adverse	Results in impact on integrity of attribute or loss of part of attribute	Removal of moderate proportion of aquifer. Changes to aquifer or unsaturated zone resulting in moderate change to existing water supply springs and wells, river baseflow or ecosystems. Potential medium risk of pollution to groundwater from routine run-off. Calculated risk of serious pollution incident >1% annually.
Small adverse	Results in minor impact on integrity of attribute or loss of small part of attribute	Removal of small proportion of aquifer. Changes to aquifer or unsaturated zone resulting in minor change to water supply springs and wells, river baseflow or ecosystems. Potential low risk of pollution to groundwater from routine run-off1. Calculated risk of serious pollution incident >0.5% annually.
Negligible	Results in an impact on attribute but of insufficient magnitude to affect either use or integrity	Calculated risk of serious pollution incident <0.5% annually

Table A12.1.5 - Rating of Significant Environmental Impacts at EIS Stage

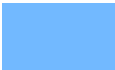
Importance of attribute	Magnitude of impact			
	Negligible	Small adverse	Moderate adverse	Large adverse
Extremely high	Imperceptible	Significant	Profound	Profound
Very high	Imperceptible	Significant/ Moderate	Profound/ Significant	Profound
High	Imperceptible	Moderate/ Slight	Significant/ Moderate	Profound/ Significant
Medium	Imperceptible	Slight	Moderate	Significant
Low	Imperceptible	Imperceptible	Slight	Slight/ Moderate

Appendix 12.2

Historical Maps



Legend



Proposed extent of main works

ARUP

50 Ringsend Road
 Dublin 4, D04 T6X0
 Tel +353 (0)1 233 4455 Fax +353 (0)1 668 3169
 www.arup.com

Client

Dublin City Council

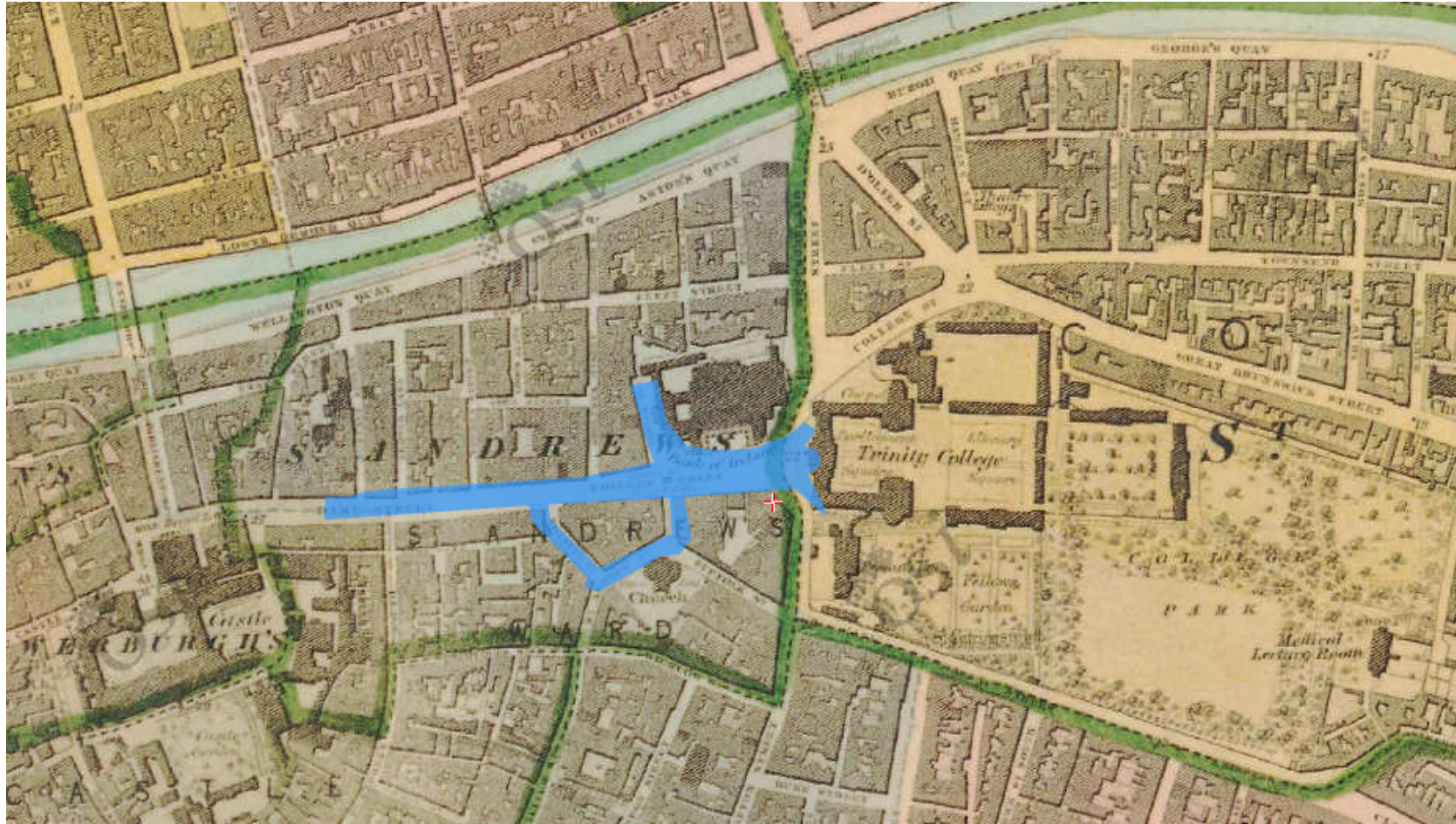
Job Title

**College Green Traffic Management
 Measures and Civic Plaza**

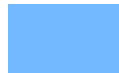
Historical Maps

Map by Henry Pratt (1708)
 Historic Dublin Maps,
 The National Library of Ireland,
 Historical Documents

P0	2017-01-20	JF	AO	CN
Issue	Date	By	Chkd	Appd



Legend

 Proposed extent of main works

ARUP

50 Ringsend Road
 Dublin 4, D04 T6X0
 Tel +353 (0)1 233 4455 Fax +353 (0)1 668 3169
 www.arup.com

Client

Dublin City Council

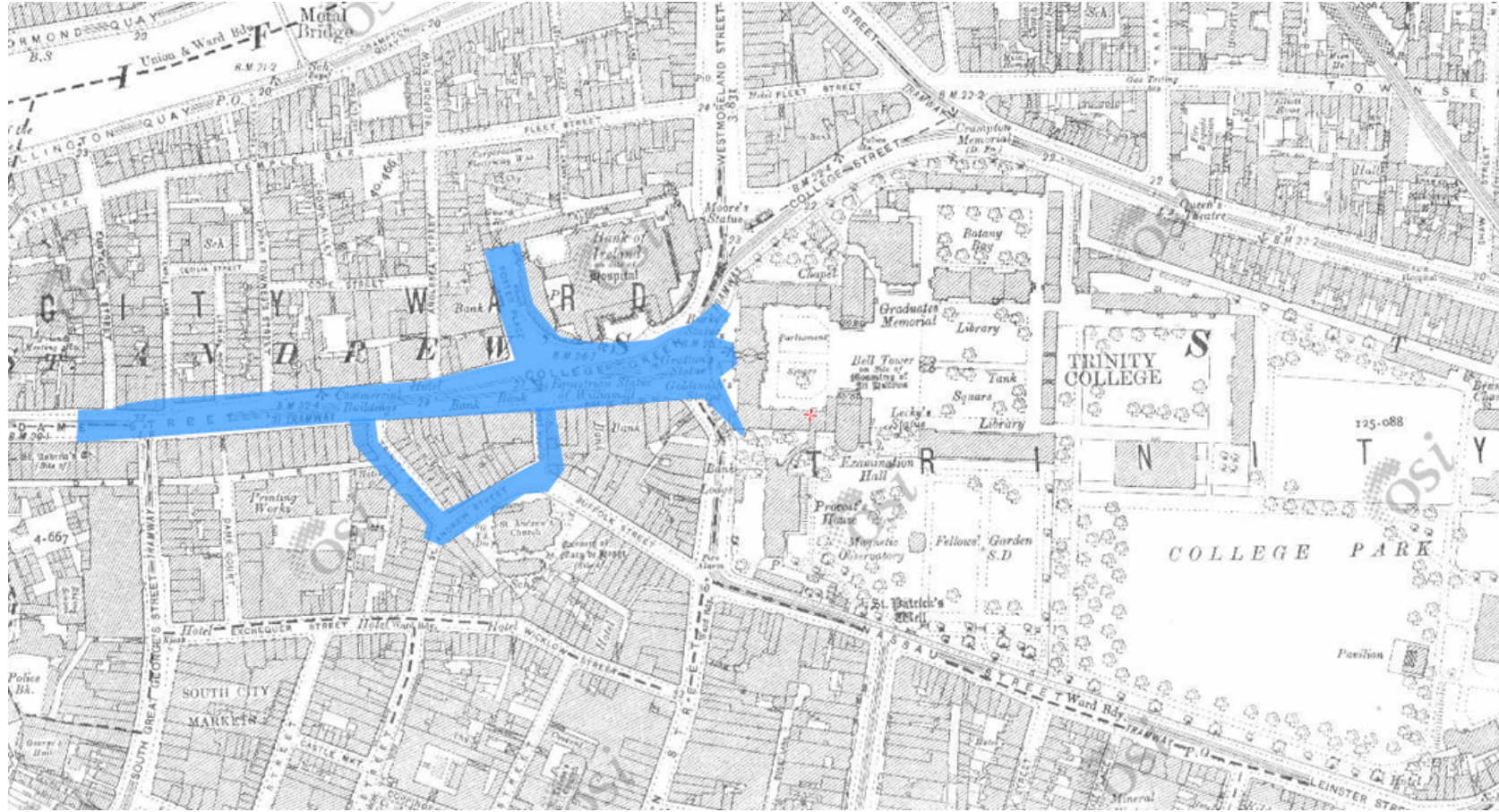
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**College Green Traffic Management
 Measures and Civic Plaza**

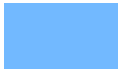
Historical Maps

Ordnance Survey Ireland 6" 1827-1841

P0	2017-01-20	JF	AO	CN
Issue	Date	By	Chkd	Appd



Legend



Proposed extent of main works

ARUP

50 Ringsend Road
 Dublin 4, D04 T6X0
 Tel +353 (0)1 233 4455 Fax +353 (0)1 668 3169
 www.arup.com

Client

Dublin City Council

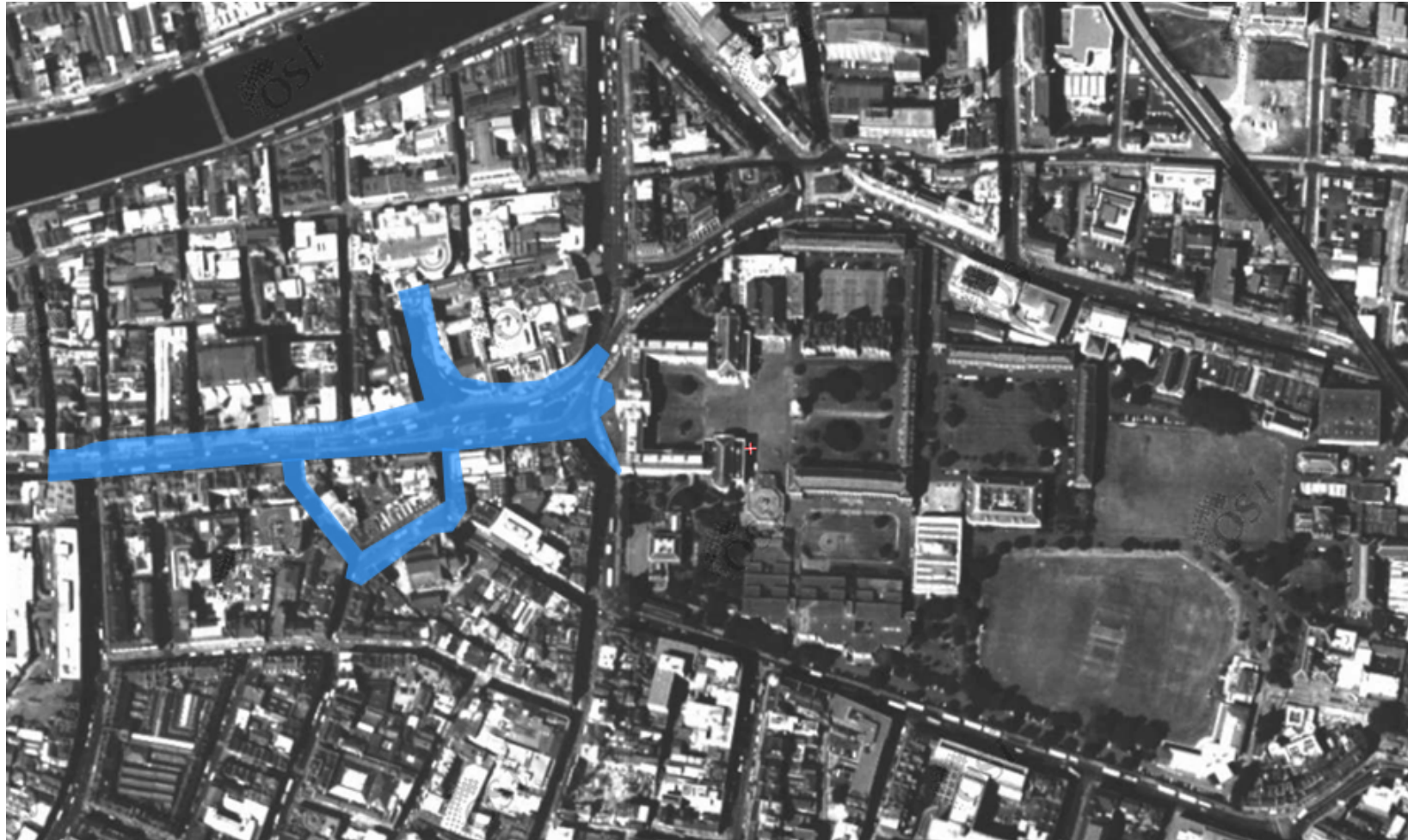
Job Title

**College Green Traffic Management
 Measures and Civic Plaza**


Historical Maps

Ordnance Survey Ireland 25" 1897-1931

P0	2017-01-20	JF	AO	CN
Issue	Date	By	Chkd	Appd



Legend

 Proposed extent of main works

ARUP

50 Ringsend Road
 Dublin 4, D04 T6X0
 Tel +353 (0)1 233 4455 Fax +353 (0)1 668 3169
 www.arup.com

Client

Dublin City Council

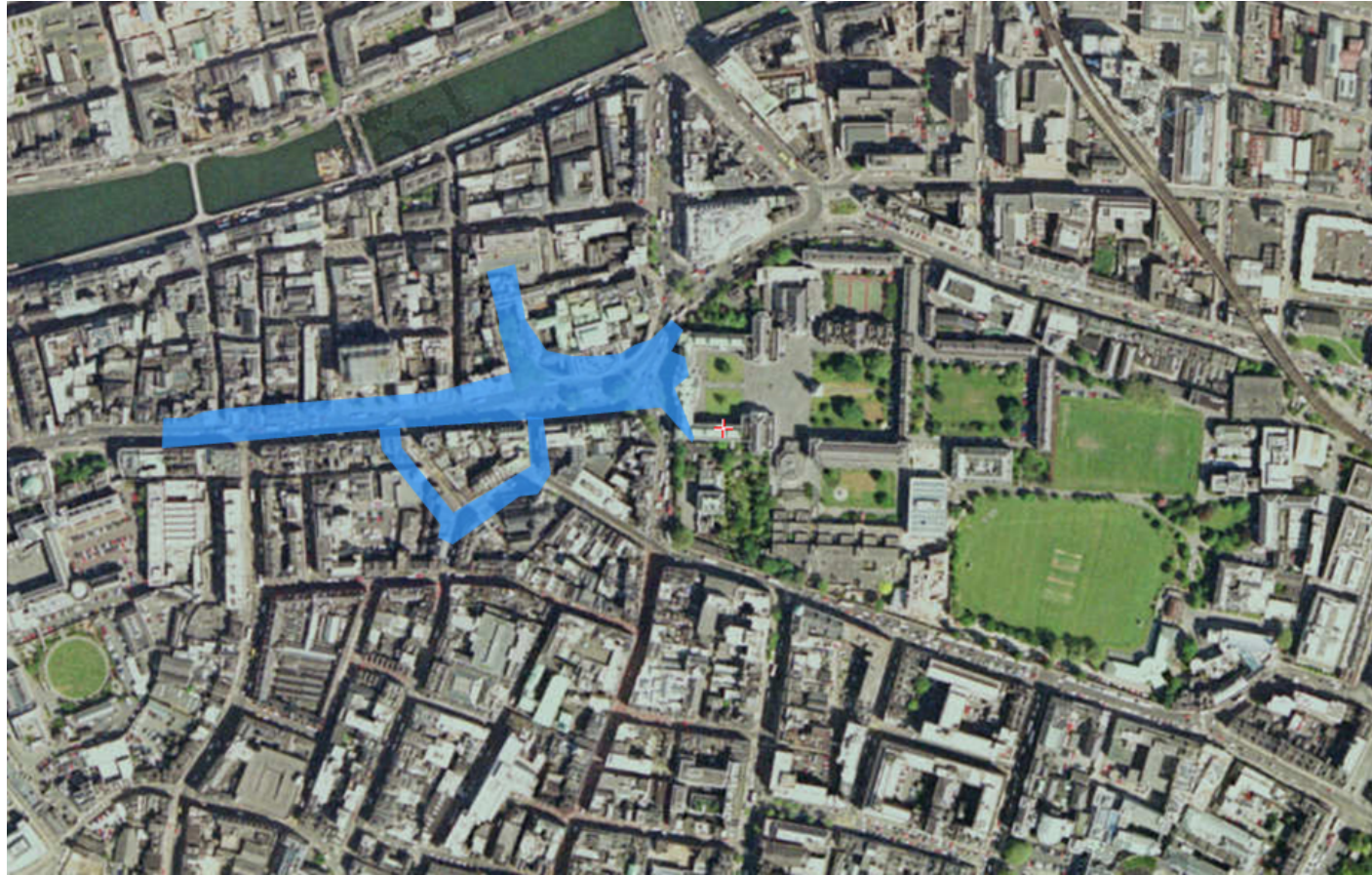
Job Title

**College Green Traffic Management
 Measures and Civic Plaza**

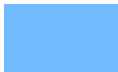
Historical Maps

Ordnance Survey Ireland
 Ortho 1995

P0	2017-01-20	JF	AO	CN
Issue	Date	By	Chkd	Appd



Legend



Proposed extent of main works

ARUP

50 Ringsend Road
 Dublin 4, D04 T6X0
 Tel +353 (0)1 233 4455 Fax +353 (0)1 668 3169
 www.arup.com

Client

Dublin City Council

Job Title

**College Green Traffic Management
 Measures and Civic Plaza**

Historical Maps

Ordnance Survey Ireland
 Ortho 2000

P0	2017-01-20	JF	AO	CN
Issue	Date	By	Chkd	Appd

A summary of the relevant information presented on historical maps from 1708-2000.

Map date	Land use at the site	Land use in the vicinity of the site
1708	Open space	The study area is located in an urban area surrounded by buildings and Trinity college to the east. Farmland is located to the south east of the study area and the River Liffey estuary is located to the north east.
1827-1841	College Green plaza, road, tramway and bank buildings.	The study area is located in an urban area surrounded by buildings, mainly banks, and Trinity college to the east. No farmland seen on map.
1897-1931	No change	No change
1995	No change	No change
2000	No change	No change

Appendix 12.3

Flood Risk Assessment

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A12.3-1 Introduction

This appendix details the Flood Risk Assessment carried out as part of the proposed development. It has been undertaken in accordance with the Guidelines for Planning Authorities on ‘The Planning system and Flood Risk Management’ published in November 2009, jointly by the Office of Public Works (OPW) and the then Department of Environment, Heritage and Local Government (DEHLG).

A12.3-1.1 Scope of Work

The scope of study includes the following:

Review of all relevant information and data from:

- The Office of Public Works (OPW) Preliminary Flood Risk Assessment Mapping (PFRA);
- Flood maps and reports from the Eastern Catchment Flood Risk Assessment (CFRAM) and Management Study;
- The Irish Coastal Protection Strategy Study (ICPSS);
- Historic flooding information for the area;

Review of the risk of coastal, fluvial, pluvial and groundwater flooding;

Preparation of a flood risk assessment report.

A12.3-1.2 Summary of Data Used

In preparing this report, the following data was collated and reviewed:

- Flood history of the site from the OPW National Flood Hazard Mapping website (www.floodmaps.ie);
- Catchment Flood Risk Assessment and Management (CFRAM) Mapping produced by the OPW (map.opw.ie/floodplans);
- Preliminary Flood Risk Assessment (PFRA) Mapping produced by the OPW (www.cfram.ie/pfra);
- Predicted extreme water levels and flood extent maps from the ICPSS;
- Pluvial flood maps of Dublin produced as part of the Flood Resilient City Project;
- Site Geological and hydrogeological data from the Geological Survey of Ireland website (www.gsi.ie);
- Guidelines for Planning Authorities on ‘The Planning System and Flood Risk Management’ published in November 2009, jointly by the Office of Public

Works (OPW) and the then Department of Environment, Heritage and Local Government (DEHLG);

- River of Dublin book;
- Aerial photography and mapping from Bing Maps and Google Maps.
- All Ordnance Datum (OD) levels referred to in this report are to Malin Head Ordnance Datum unless otherwise stated.

A12.3-1.3 Proposed Project

The proposal is to create a civic plaza area in College Green from Angelsea Street to Lower Grafton Street and to implement traffic management measures. This change of use of College Green presents an important opportunity for the city to redefine this area as a civic space of national importance in line with the City Council's long standing objective for College Green.

The proposal will remove all east-west vehicular through-traffic from College Green, reassigning the road space to ensure that pedestrians, cyclists and public transport can operate in a safer and more efficient manner and without potentially dangerous conflicting movements. The development will also result in the diversion of traffic including buses along alternative routes.

The Proposed Project will not significantly change the existing ground levels of the area.

A12.3-2 Planning Context

The following planning policy documents are relevant to the assessment of the proposed development:

- The national planning Guidelines published by the OPW and the Department of the Environment, Heritage and Local Government in November 2009 entitled 'The Planning System and Flood Risk Management Guidelines for Planning Authorities'
- The Dublin City Council Development Plan 2017–2022.

A12.3-2.1 The Planning System and Flood Risk Management Guidelines

Introduction

In November 2009, the Department of Environment, Heritage and Local Government and the Office of Public Works jointly published a Guidance Document for Planning Authorities entitled "the Planning System and Flood Risk Management".

The Guidelines are issued under Section 28 of the Planning and Development Act 2000. Planning Authorities and An Bord Pleanála are therefore required to implement these Guidelines in carrying out their functions under the Planning Acts.

The aim of the Guidelines is to ensure that flood risk is neither created nor increased by inappropriate development.

The Guidelines require the Planning system to avoid development in areas at risk of flooding, unless the development can be justified on wider sustainability grounds and the risk can be reduced or managed to an acceptable level.

The Guidelines require the adoption of a Sequential Approach (to Flood Risk Management) of Avoidance, Reduction, Justification and Mitigation and they require the incorporation of Flood Risk Assessment into the process of making decisions on Planning Applications and Planning Appeals.

Fundamental to the Guidelines is the introduction of flood risk zoning and the classifications of different types of development having regard to their vulnerability.

The management of flood risk is now a key element of any development proposal in an area of potential flood risk and should therefore be addressed as early as possible in the site master planning stage.

Definition of Flood Zones

Flood Zones are geographical areas within which the likelihood of flooding is in a particular range. There are three types of flood zones defined in the Guidelines as follows:

Flood Zone	Probability
Flood Zone A	Probability of flooding from rivers and the sea is highest (greater than 1% or 1 in 100 for river flooding or 0.5% or 1 in 200 for coastal flooding).
Flood Zone B	Probability of flooding from rivers and the sea is moderate (between 0.1% or 1 in 1000 year and 1% or 1 in 100 for river flooding and between 0.1% or 1 in 1000 year and 0.5% or 1 in 200 for coastal flooding); and
Flood Zone C	Probability of flooding from rivers and the sea is low (less than 0.1% or 1 in 1000 for both river and coastal flooding). Flood Zone C covers all areas of the plan which are not in zones A or B.

Definition of Vulnerability Classes

The following table summarises the Vulnerability Classes defined in the Guidelines and provides a sample of the most common type of development applicable to each.

Vulnerability	Type of Development
Highly Vulnerable Development	Includes Garda, ambulance and fire stations, hospitals, schools, residential dwellings, residential institutions, essential infrastructure, such as primary transport and utilities distribution and SEVESO and IPPC sites, etc.
Less Vulnerable Development	Includes retail, leisure, warehousing, commercial, industrial and non-residential institutions, etc.
Water Compatible Development	Includes Flood Control Infrastructure, docks, marinas, wharves, navigation facilities, water based recreation facilities, amenity open spaces and outdoor sport and recreation facilities

The proposed development is classed as a 'Highly Vulnerably Development' as per the above table.

Types of Vulnerability Classes Appropriate to Each Zone

The following table illustrates the different types of Vulnerability Class appropriate to each Zone and indicates where a Justification Test will be required.

	Flood Zone A	Flood Zone B	Flood Zone C
Highly Vulnerable	Justification Test	Justification Test	Appropriate
Less Vulnerable	Justification Test	Appropriate	Appropriate
Water Compatible	Appropriate	Appropriate	Appropriate

A12.3-2.2 The Dublin City Council Development Plan 2017-2022

The Dublin City Development Plan 2017-2022 sets out policies for the continuing sustainable development of the Count for the period 2017 – 2022. The following

paragraphs summarise the relevant provisions contained within the plan which deal with Flood Risk Management.

Section 9.3 of the plan presents the challenges faced by Dublin City Council in relation to flooding:

- To reduce the flood risk in Dublin city to the National Flood Standards to above 1% annual exceedance probability or AEP (roughly 100-year flood event) for fluvial flooding and above 0.5% AEP (roughly 200-year flood event) for tidal flooding, as far as is reasonably possible.
- To comply fully with the DECLG ‘The Planning System and Flood Risk Management’ Guidelines for Planning Authorities in the Dublin city area.
- To comply with Dublin City Council climate change adaptation policy 2015-2021 in all flood alleviation projects, planning applications and flood warning systems.
- To continue to work with the Office of Public Works on the development of Catchments Flood Risk and Management Plans (CFRAMP) for the City’s major rivers and coastline, as well as general policies and objectives.
- To develop and where possible implement strategies to reduce the effects of nontidal and non-fluvial flooding in Dublin city.
- To liaise with Fingal, South Dublin, Dún Laoghaire-Rathdown, Meath, Kildare and Wicklow County Councils as well as the Electricity Supply Board and Irish Water in the management of flood alleviation on the rivers coming into the Dublin city area and the coastline adjacent to it.

Section 9.5.3 of the plan deals with Flood Management and outlines the key policies and objectives of Dublin City Council in relation to flood risk. The plan presents a number of Dublin City Council ‘Strategic Infrastructure’ (SI) policies that state that it is their policy to:

- SI9: To assist the Office of Public Works in developing catchment-based Flood Risk Management Plans for rivers, coastlines and estuaries in the Dublin city area and have regard to their provisions/recommendations.
- SI10: To have regard to the Guidelines for Planning Authorities on the Planning System and Flood Risk Management, and Technical Appendices, November 2009, published by the Department of the Environment, Community, and Local Government as may be revised/updated when assessing planning applications and in the preparation of plans both statutory and non-statutory.
- SI11: To put in place adequate measures to protect the integrity of the existing Flood Defence Infrastructure in Dublin City Councils ownership and identified in the Strategic Flood Risk Assessment and to ensure that the new developments do not have the effect of reducing the effectiveness or integrity of any existing or new flood defence infrastructure and that flood defence

infrastructure has regard also to nature conservation, open space and amenity issues.

- SI12: To implement and comply fully with the recommendations of the Strategic Flood Risk Assessment prepared as part of the Dublin City Development Plan.
- SI13: That development of basements or any above-ground buildings for residential use below the estimated flood levels for Zone A or Zone B will not be permitted.
- SI14: To protect the Dublin City coastline from flooding as far as reasonably practicable, by implementing the recommendations of the Dublin Coastal Flood Protection Project and the Dublin Safer Project.
- SI15: To minimise the risk of pluvial (intense rainfall) flooding in the city as far as is reasonably practicable and not to allow any development which would increase this risk.
- SI16: To minimise the flood risk in Dublin City from all other sources of flooding, including fluvial, reservoirs and dams and the piped water system.
- SI17: To require an environmental assessment of all proposed flood protection or flood alleviation works.

Section 9.5.3 of the development plan also outlines the following objectives in relation to Flood Risk Management. The plan presents a number of Dublin City Council 'Strategic Infrastructure Objectives' (SIO) objectives that state that it is there objectives for:

- SIO8: All development proposals shall carry out, to an appropriate level of detail, a Site-Specific Flood Risk Assessment (SSFRA) that shall demonstrate compliance with:
 - The Planning System and Flood Risk Management, Guidelines for Planning Authorities, Department of the Environment, Community and Local Government, November 2009, as may be revised/updated and the Strategic Flood Risk Assessment (SFRA) as prepared by this Development Plan.
 - The site-specific flood risk assessment (SSFRA) shall pay particular emphasis to residual flood risks, site-specific mitigation measures, flood-resilient design and construction, and any necessary management measures (the SFRA and Appendix B4 of the above mentioned national guidelines refer). Attention shall be given in the site-specific flood risk assessment to building design and creating a successful interface with the public realm through good design that addresses flood concerns but also maintains appealing functional streetscapes. All potential sources of flood risk must be addressed in the SSFRA.
- SIO9: Proposals which may be classed as 'minor development', for example small-scale infill, small extensions to houses or the rebuilding of houses or paving of front gardens to existing houses, most changes of use and small-scale extensions to existing commercial and industrial enterprises in Flood

Zone A or B, should be assessed in accordance with the Guidelines for Planning Authorities on the Planning System and Flood Risk Management & Technical Appendices, November 2009 as may be revised/updated, with specific reference to Section 5.28 and in relation to the specific requirements of the Strategic Flood Risk Assessment. The policy shall be not to increase the risk of flooding and to ensure risk to the development is managed.

- SIO10: That recommendations and flood maps arising from the Fingal-East Meath CFRAM Study, the Dodder CFRAM Study and the Eastern CFRAM Study are taken into account in relation to the preparation of statutory plans and development proposals. This will include undertaking a review of the Strategic Flood Risk Assessment for Dublin city following the publication of the Final Eastern CFRAM Study, currently being produced by the OPW.
- SIO11: To work with neighbouring Local Authorities when developing cross-boundary flood management work programmes and when considering cross-boundary development.
- SIO12: To ensure each flood risk management activity is examined to determine actions required to embed and provide for effective climate change adaptation as set out in the Dublin City Council climate change adaptation policy and in the OPW Climate Change Sectorial Adaptation Plan Flood Risk Management applicable at the time.

A12.3-3 Overview of Flood Mechanisms and Historical Flooding at the Site

A12.3-3.1 Flood Mechanisms

In broad terms, the potential sources of flooding at the site can be categorised as:

- **Fluvial (River) Flooding:** The main risk of fluvial flooding is from the River Liffey, which is located circa 250m from the site of the development.
- **Tidal/Coastal Flooding:** The risk from coastal flooding is from surge events in the Irish Sea.
- **Pluvial Flooding:** Pluvial flooding occurs when the capacity of the local urban drainage network is exceeded during periods of intense rainfall. At these times, water can collect at low points in the topography and cause flooding.
- **Groundwater Flooding:** Groundwater Flooding can occur during lengthy periods of heavy rainfall, typically during late winter/early spring when the groundwater table is already high. If the groundwater level rises above ground level, it can pond at local low points and cause periods of flooding.

Each of these potential sources of flooding are considered in this FRA.

A12.3-3.2 Historic Flooding at the Site

Reports and maps from the OPW Flood Hazard Mapping website (www.floodmaps.ie) have been examined as part of this flood risk assessment. **Figure A12.3.1** presents a screenshot from floodmaps.ie which indicates that there are no recorded historic flood events in the vicinity of the site.

The absence of a historic record of flooding however does not mean that the site has not flooded in the past.

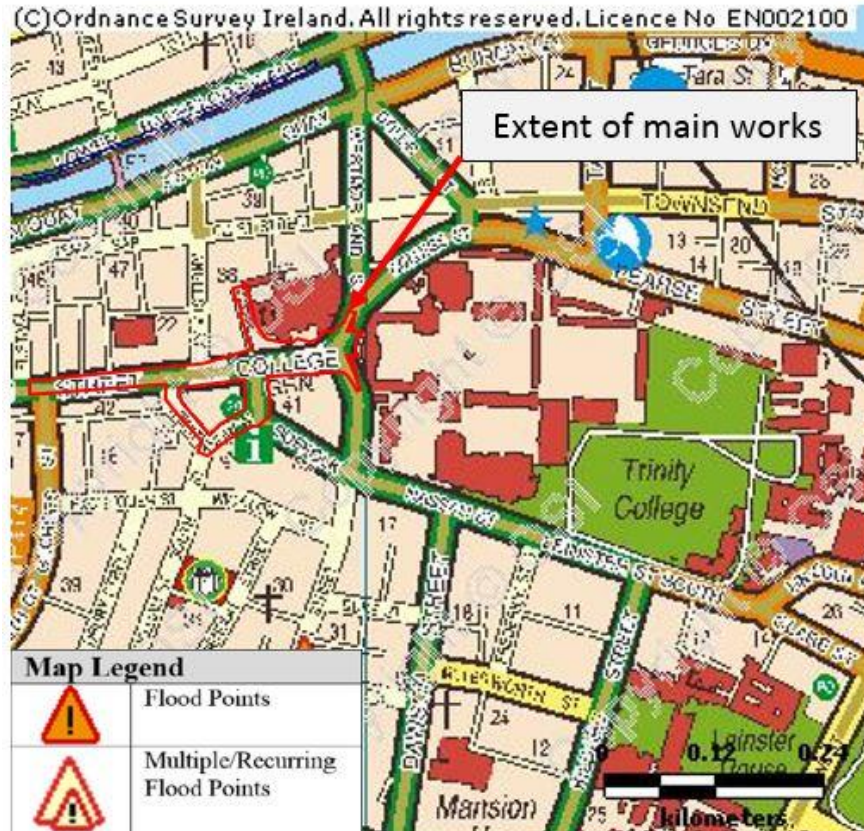


Figure A12.3.1 - Extract from floodmaps.ie showing flood history for site and surrounding area

A12.3-3.2 Fluvial Flood Risk

Figure A12.3.2 presents the fluvial flood extent as predicted by the Eastern CFRAM Study for the 10% 1% and 0.1% AEP events. It can be seen that the site is located outside the 0.1% fluvial extent.

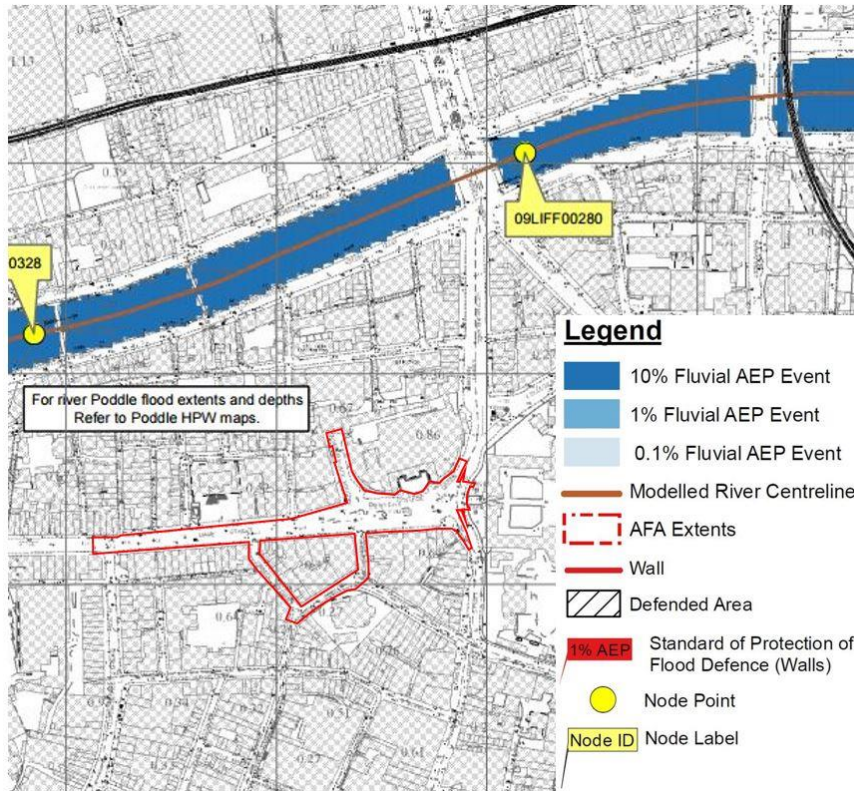


Figure A12.3.2 - Fluvial Flood Map – CFRAM

OPW’s PRFA flood extent maps have also been assessed as part of this FRA.

Figure A12.3.3 presents an extract from the PRFA mapping highlighting the 1% and 0.1% AEP fluvial flood extents. It can be seen that the site is located outside of the 0.1% AEP extent.

The risk of fluvial flooding to the site from the River Liffey is therefore very low.



Figure A12.3.3 - Fluvial Flood Map – PFRA

The subject site is located in the vicinity of the River Stein which is a minor tributary of the River Liffey that is culverted throughout its reach. **Figure A12.3.4** presents an approximate route of the culvert which is taken from the “Rivers of Dublin” book.

It can be seen from the figure that the origin of the river is close to Charlemont Bridge. From here it flows north and passes very close to the boundary of our subject site. The culvert discharges into the River Liffey downstream of Rosie Hackett Bridge close to Tara Street.

The book notes that the dimensions of the culvert are approximately 1m wide and 1.6m high in the vicinity of Mercer Street Lower. The book also notes that the culvert was rerouted as part of the construction of St Stephen’s Green Shopping Centre.

It is noted that the River Stein is not referred to in the Liffey-Dublin Bay

Inception Report of the Eastern CFRAM and it is our understanding that the watercourse has not been modelled as part of the same study.

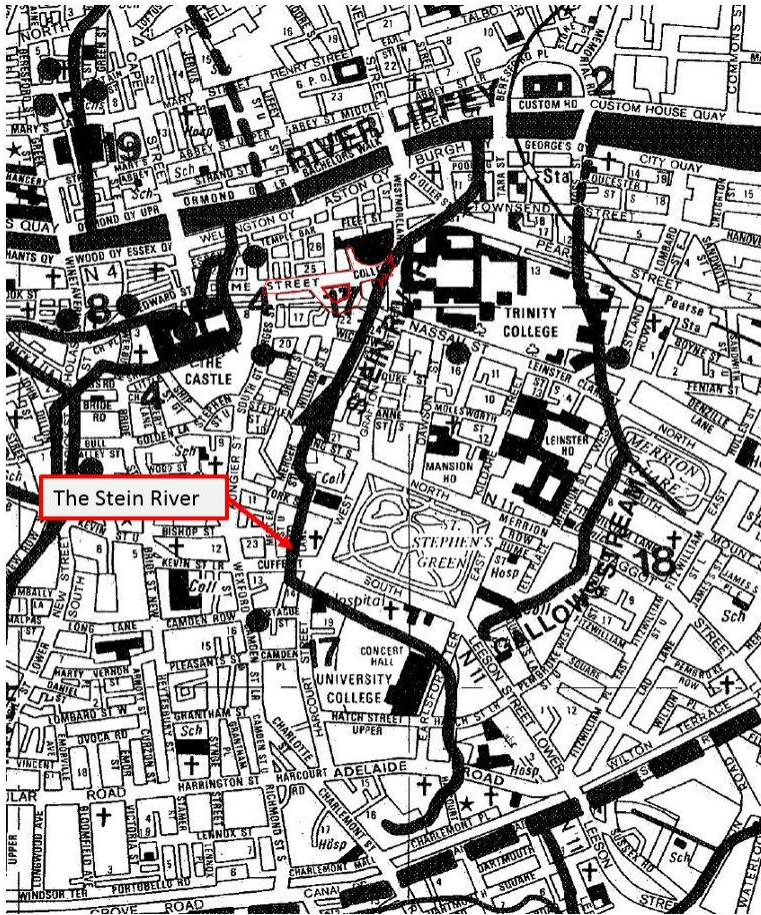


Figure A12.3.4 - Map of The River Stein - The Rivers of Dublin book

Based on an inspection of aerial imagery of the area, it can be concluded that the Stein is culverted throughout its reach. There are no open channel sections which offer a route for water to flood the surrounding area. The risk of fluvial flooding from the culvert is therefore limited to the potential for surcharging at the culvert entrance and pressurised flow within the culvert forcing water out through any connecting back pipes, manholes or connecting culverts.

It is not known however if the River Stein culvert is connected to other minor culverts. It is not within the scope of the study to undertake a detailed assessment of any such connections if they exist.

The catchment area upstream of the River Stein culvert is likely to be very small given the close proximity of the Dodder, Poddle and Gallows Stream catchments.

The risk of the culvert entrance being surcharged due to high flows is therefore likely to be very low. We can therefore conclude that surcharging of the culvert entrance is very unlikely to present any significant risk of flooding to our site.

In the absence of data on the culvert close to our subject site we are unable to accurately determine the risk of flooding arising from pressurised flow within the culvert. Given the absence of any record of historic flooding of the site, it is likely however that this risk flooding is very low.

A12.3-3.3 Coastal Flood Risk

Figure A12.3.5 presents the coastal flood extent map for the site from the Eastern CFRAM Study for the 10%, 0.5% and 0.1% AEP events. It can be seen that the site is outside of the predicted flood extents.

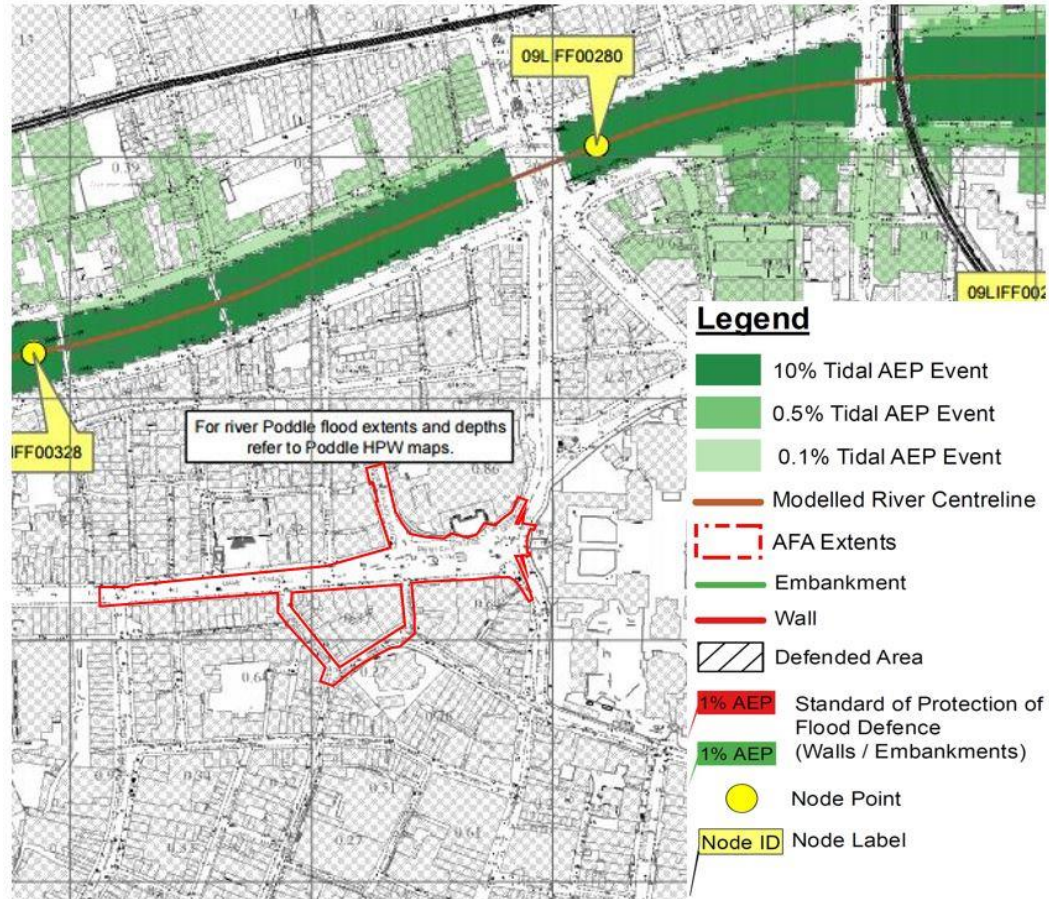


Figure A12.3.5 - Coastal Flood Map – CFRAM

As part of this FRA we have also assessed flood maps produced as part of the Irish Coastal Protection Strategy Study (ICPSS). **Figure A12.3.6** presents the 0.5% flood extent as predicted by the study. It can be seen that the site is located outside of the extent.

It can therefore be concluded that the risk of tidal/coastal flooding to the site is very low.

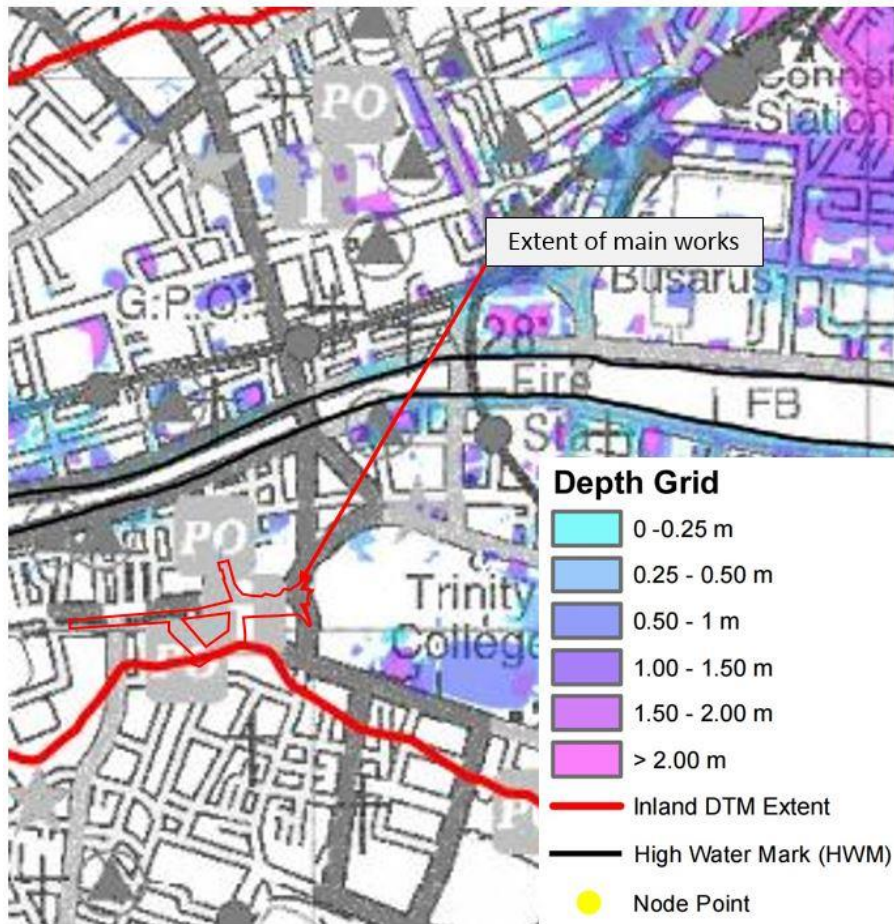


Figure A12.3.6 - Coastal Flood Map – ICPSS

A12.3-3.4 Pluvial Flood Risk

Pluvial flooding occurs when extreme rainfall overwhelms drainage systems or soil infiltration capacity, causing excess rainwater to pond above ground at low points in the topography.

Figure A12.3.7 presents the pluvial flood extent map for the site as predicted by the Flood Resilient City Project. It can be seen that the site is included within the predicted pluvial flood extent.

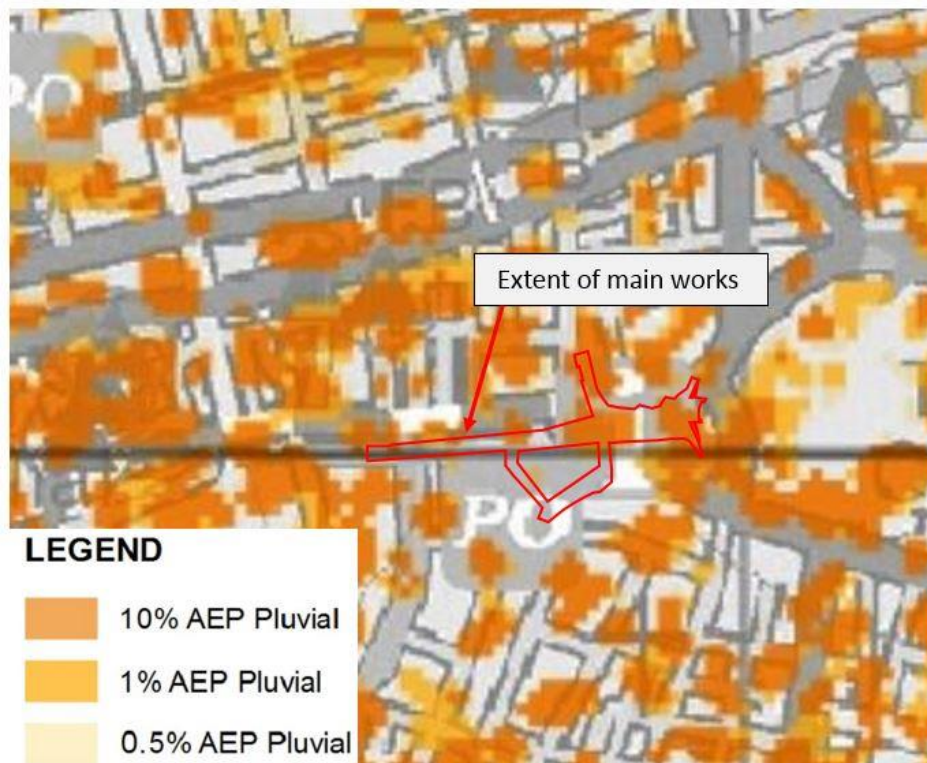


Figure A12.3.7 - Pluvial Flood Map of the area in the vicinity of the site as produced by the Flood Resilient City Project

Flood maps from OPW's PRFA programme have also been assessed as part of this FRA. **Figure A12.3.8** presents the 10%, 1% and 0.5% AEP pluvial flood extents. It can be seen from the figure that a small area of the site is indicated to be at risk from pluvial flooding.

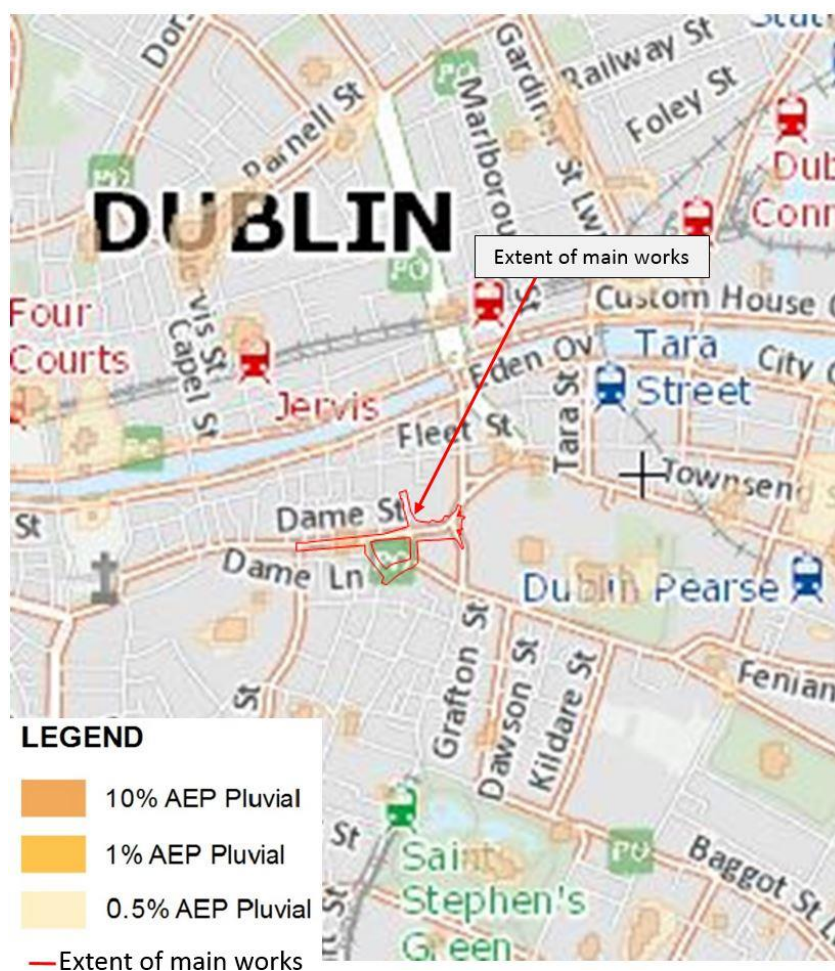


Figure A12.3.8 - Pluvial Flood Map of the area in the vicinity of the site as produced by the PFRA Study

It is noted that the pluvial flood extents produced by both studies are different with the Flood Resilient City Project predicting a greater pluvial flood extent than the PFRA extent.

Based on the finding of both of these studies it can be concluded that there is a minor risk of pluvial flooding to the site.

A12.3.3.5 Groundwater Flood Risk

Groundwater flooding can occur during lengthy periods of heavy rainfall, typically during later winter/early spring when the groundwater table is already high. If the groundwater level rises above surface level, it can pond at local points and cause periods of flooding.

Figure A12.3.9 presents mapping from the Geological Survey of Ireland (gsi.ie) and indicates the groundwater vulnerability of the site and the surrounding areas. The groundwater vulnerability is indicated as being moderate to high.

As stated in Section 14.3.3.4 there is no site investigation groundwater information available for the study area.

However, based on experience in the area the groundwater beneath the site is likely to be approximately 2-4mbgl, at the top of the boulder clay.

The risk of groundwater flooding is therefore considered to be low.

It is noted that anecdotal evidence suggests that during the recent Luas Cross City works a number of basements in the vicinity of the works may have experienced groundwater ingress.

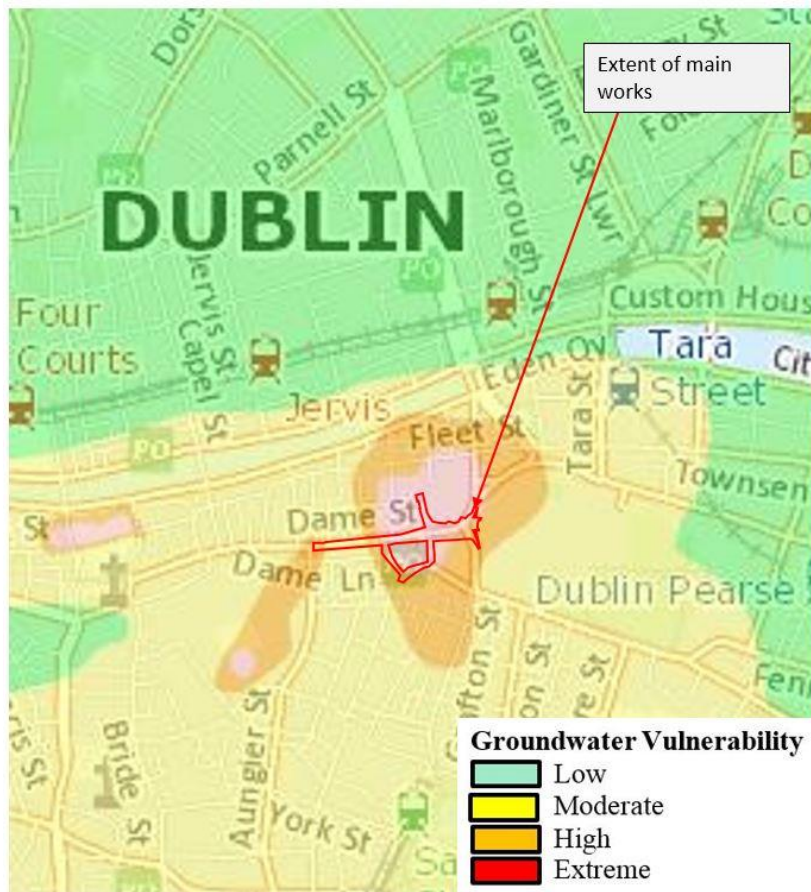


Figure A12.3.9 - Groundwater Flood Risk – GSI Groundwater Data Viewer

A12.3-4 Management of flood risk at the site

A12.3-4.1 Access and Egress Route

Given the very low risk of fluvial and coastal/tidal flooding to the site and its surrounding area, access and egress routes are highly unlikely to be compromised during flood events.

A12.3-4.2 Offsite impacts of the development

The proposed development will also not have any adverse impact on floodplain conveyance and will not increase the risk of flooding in the surrounding area.

A12.3-4.3 Surface Water Drainage Network

The existing drainage regime of the area of the site is being retained as part of the proposed development. Additional new SuDS features however will be incorporated into the development. These will consist of new attenuation/infiltration areas beneath proposed trees filled with crushed stone or soil.

New gullies will also be arranged so that overflow from these attenuation/infiltration areas will discharge to the piped surface water drainage system. All existing surface water collection points will be raised to suit proposed new ground levels.

It is proposed to construct a fountain as part of the development. A drainage channel will be installed around the proposed fountain to harvest rainwater and to return water from the fountains to the water pumps in the proposed underground control chamber of the fountain. This channel will consist of precast drainage units covered by a continuous steel grating. Small connector pipes (c. 150mm) will connect the low points in the drainage channel to the control chamber.

Any risk of pluvial flooding to the site will be mitigated by the design of the surface water drainage network and the incorporation of new SuDS features as mentioned above.

A12.3-5 Application of the ‘Flood Risk Management Guidelines’

A12.3-5.1 Vulnerability Classification

It is considered that the proposed development should be classed as a ‘water compatible development’ as per the vulnerability classification in **Figure A12.3.10**.

Vulnerability class	Land uses and types of development which include*:
Highly vulnerable development (including essential infrastructure)	<p>Garda, ambulance and fire stations and command centres required to be operational during flooding;</p> <p>Hospitals;</p> <p>Emergency access and egress points;</p> <p>Schools;</p> <p>Dwelling houses, student halls of residence and hostels;</p> <p>Residential institutions such as residential care homes, children’s homes and social services homes;</p> <p>Caravans and mobile home parks;</p> <p>Dwelling houses designed, constructed or adapted for the elderly or, other people with impaired mobility; and</p> <p>Essential infrastructure, such as primary transport and utilities distribution, including electricity generating power stations and sub-stations, water and sewage treatment, and potential significant sources of pollution (SEVESO sites, IPPC sites, etc.) in the event of flooding.</p>
Less vulnerable development	<p>Buildings used for: retail, leisure, warehousing, commercial, industrial and non-residential institutions;</p> <p>Land and buildings used for holiday or short-let caravans and camping, subject to specific warning and evacuation plans;</p> <p>Land and buildings used for agriculture and forestry;</p> <p>Waste treatment (except landfill and hazardous waste);</p> <p>Mineral working and processing; and</p> <p>Local transport infrastructure.</p>
Water-compatible development	<p>Flood control infrastructure;</p> <p>Docks, marinas and wharves;</p> <p>Navigation facilities;</p> <p>Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location;</p> <p>Water-based recreation and tourism (excluding sleeping accommodation);</p> <p>Lifeguard and coastguard stations;</p> <p>Amenity open space, outdoor sports and recreation and essential facilities such as changing rooms; and</p> <p>Essential ancillary sleeping or residential accommodation for staff required by uses in this category (subject to a specific warning and evacuation plan).</p>

*Uses not listed here should be considered on their own merits

Figure A12.3.10 - Vulnerability Classification as per OPW Planning guidelines

A12.3-5.2 Flood Zones

As illustrated earlier in this report, the subject site lies outside the predicted 1 in 1000 year fluvial and 1 in 200 year tidal flood extent. The site is therefore classified as lying within Flood Zone C.

A12.3-5.3 Sequential Approach

Figure A12.3.11 illustrates the sequential approach to be adopted under the ‘Planning System and Flood Risk Management’ Guidelines. It can be seen from the flow chart that as the proposed development is located within Flood Zone C, a Justification Test is not required.

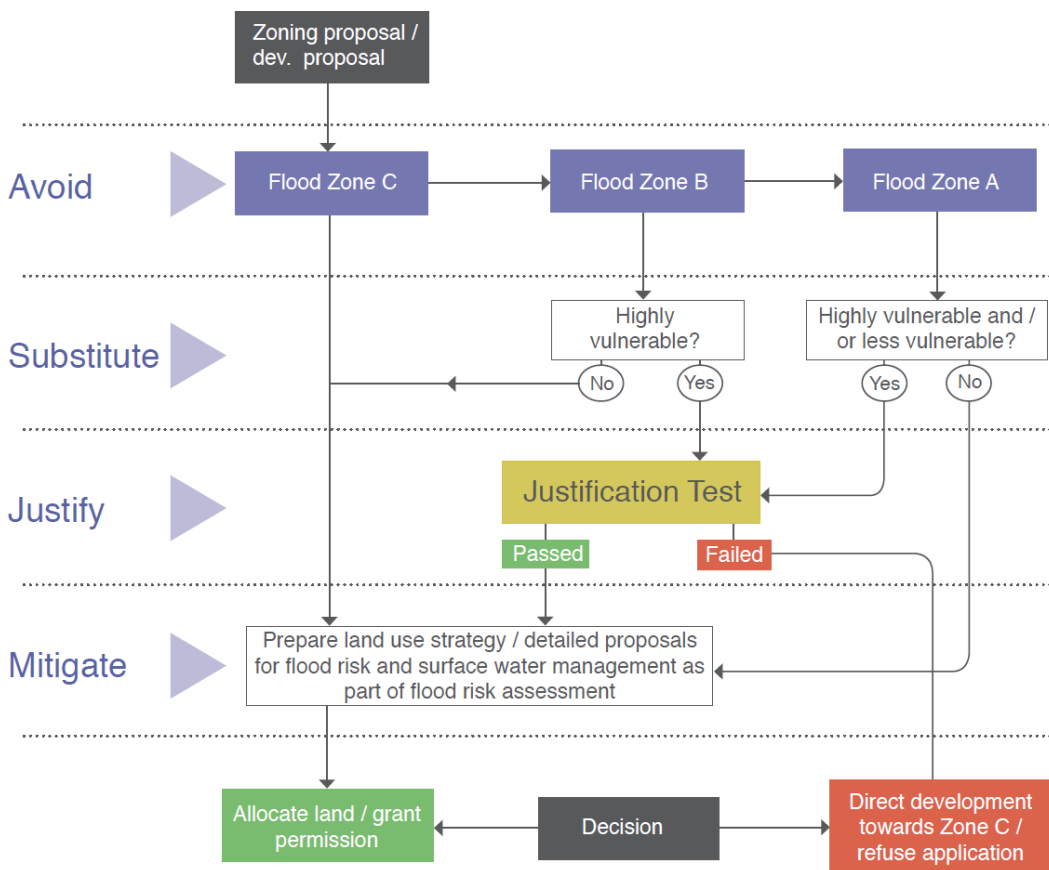


Figure A12.3.11 - Sequential approach mechanism in the planning process

A12.3-6 Conclusion

There is no historic record of flooding of the site.

The risk of both fluvial and tidal/coastal flooding to the site is remote. There is a minor risk of pluvial flooding to the site.

The risk of groundwater flooding is considered to be low. Anecdotal evidence however suggests that some basements in the vicinity of the works may have experienced groundwater ingress during the recent Luas Cross City works.

Access and egress routes to and from the site are highly unlikely to be compromised during flood events.

The proposed development will not have any adverse impact on floodplain conveyance and storage and will not increase the risk of flooding in the surrounding area.

The low risk of pluvial flooding to the site will be mitigated by the design of the surface water drainage network.

Based on the findings of this FRA and the application of the Flood Risk Management Guidelines, it is considered that the proposed development should be classed as a 'water less vulnerable development'. As the site lies within Flood Zone C, a Justification Test is not required.

Appendix 13.1

Resource and Waste Policy and Legislation Review

A12.3-1 Legislation

A12.3-1.1 European

Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (Text with EEA relevance)

Directive 2008/98/EC came into force on 12th December 2008, and Ireland has two years from this date to implement it into national law. The Directive lays down the five-step hierarchy of waste management options, with waste prevention as the preferred option, followed by re-use, recycling, recovery and safe disposal, in descending order.

In addition, the Directive also deals with the issue of ‘end of waste’ and clarifies the definitions of recovery, disposal and by-product. The directive states that, “The recovery of waste and the use of recovered material as raw materials should be encouraged in order to conserve natural resources.”

A12.3-1.2 National

Waste Management Acts, 1996 to 2008 and Regulations Made under the Acts

The Waste Management Act, 1996 was enacted in May, 1996 and sets out the responsibilities and functions of various persons in relation to waste. This was subsequently amended by a number of subsequent acts including the Waste Management (Amendment) Act 2001 and the Protection of the Environment Act 2003. The Act:

- Prohibits any person from holding, transporting, recovering or disposing of waste in a manner which causes or is likely to cause environmental pollution.
- Requires any person who carries on activities of an agricultural, commercial or industrial nature to take all such reasonable steps as are necessary to prevent or minimise the production of waste.
- Prohibits the transfer of waste to any person other than an authorised person (i.e. a holder of a waste collection permit or a local authority).
- Requires the Environmental Protection Agency (EPA) to make a national plan in relation to hazardous waste.
- Requires local authorities to make waste management plans in relation to non-hazardous waste.
- Imposes certain obligations on local authorities to ensure that a service is provided for collection of household waste and to provide facilities for the recovery and disposal of such waste.
- Enables the Minister for the Environment and Local Government to make Regulations for various purposes to promote better waste management.

- Provides for substantial penalties for offences including fines, imprisonment and/or liability for clean-up measures.

Litter Pollution Acts 1997-2009

The Litter Pollution Acts 1997-2009 puts a number of legal responsibilities on Businesses to control litter. The following are offences under the Act:

- Failure to keep footpaths, pavements and gutters adjacent to premises litter free (cigarette butts, receipts, wrappers etc.).
- Putting up posters or signs without authorisation or placing advertising flyers on cars.
- Placing commercial waste in a public litter bin.
- Dumping material in an area other than a waste receptacle or authorised waste facility.
- Mobile operators and organisers of major events have additional responsibilities.

Waste Management (Collection Permit) Regulations, 2007 as Amended

Waste from the proposed development may only be collected by the holder of a waste collection permit or a local authority. Waste collection permits are granted in accordance with the Waste Management (Collection Permit) Regulations, 2007 as amended. Waste storage and collection areas on site should be designed to prevent environmental pollution.

Waste Management (Shipments of Waste) Regulations 2007, S.I. No. 419

Where waste from the proposed development is exported outside of Ireland for recovery or disposal the National Transfrontier Shipment (TFS) Office within Dublin City Council must be notified. Certain financial guarantees must be in place and a certificate issued by the National TFS Office prior to the waste movement taking place.

SI 126 of 2011 - European Communities (Waste Directive) Regulations 2011

These regulations which were adopted in 2011 significantly changed the provisions of the Waste Management Acts, 1996 to 2011. The Regulations define “waste disposal” and “waste recovery” as well as setting out tests which must be complied with in order for material to be described as a “by-product” or achieve “end of waste” status.

The Regulations formally set out the following waste hierarchy which shall apply as a priority order in waste prevention and management legislation and policy:

- (a) prevention;
- (b) preparation for re-use;
- (c) recycling;
- (d) other recovery (including energy recovery); and

(e) disposal

The Regulations require that all waste management plans and hazardous waste management plans in existence at the commencement of the Regulations shall be evaluated by 31 December 2012 and where appropriate be revised to be brought into line with Directive 2006/12/EC on Waste.

The Regulations also require the Environment Agency to establish a waste prevention programme by December 2013.

A12.3-1.3 Policy

European Policy

Europe 2020 Strategy, European Commission (2010)

Europe 2020 is the European Union’s ten-year growth strategy published in 2010. A key focus of the strategy is to support the shift towards a resource-efficient, low-carbon economy by decoupling economic growth from resource use and reducing the resource intensity of what we use and consume.

Roadmap to a Resource Efficient Europe, European Commission (2011)

The Roadmap to a Resource Efficient Europe outlines a “roadmap” to transform Europe’s economy into a sustainable one by 2050.

It proposes ways to increase resource productivity and decouple economic growth from resource use and its environmental impact. The roadmap aims to address resource inefficiency in the sectors that are responsible for the greatest share of environmental impacts – namely food, buildings and mobility, whose combined effects account for 70-80 % of all environmental impacts.

Measures are set out aimed at transforming production and consumption, with incentives for investors to promote green innovation, and a greater role for eco-design, eco-labelling, and greener spending by public bodies. Governments are invited to shift taxation away from labour towards pollution and resources, and to provide fresh incentives to push consumers towards resource-efficient products. The roadmap also recommends adapting prices to reflect the real costs of resource use, especially on environment and health.

7th Environmental Action Programme, European Commission (2014)

The 7th Environmental Action Programme came into force in January 2014 and will guide European environment policy until 2020. A key objective of the programme is to turn the Union into a resource-efficient, green and competitive low carbon economy. There is a special focus on turning waste into a resource, with more prevention, re-use and recycling, and phasing out wasteful and damaging practices like landfilling. By 2020 the European Union and member states are to ensure that:

- The environment and human health are protected by preventing or reducing the adverse impacts of the generation and management of waste.

- Per capita waste generation and waste generation in absolute terms are reducing.
- Landfilling is phased out for recyclables and recoverable wastes and limiting energy recovery to non- recyclable materials.

European Commission Circular Economy Strategy (2015)

In December 2015 the European Commission adopted an ambitious Circular Economy Package, which includes revised legislative proposals on waste to stimulate Europe's transition towards a circular economy.

The Circular Economy Package consists of an EU Action Plan for the Circular Economy that establishes a programme of action, with measures covering the whole cycle: from production and consumption to waste management and the market for secondary raw materials. The annex to the action plan sets out the timeline when the actions will be completed.

The proposed actions will contribute to "closing the loop" of product lifecycles through greater recycling and re-use, and bring benefits for both the environment and the economy.

The revised legislative proposals on waste set clear targets for reduction of waste and establish an ambitious and credible long-term path for waste management and recycling. Key elements of the revised waste proposal include:

- An EU target for recycling 65% of municipal waste by 2030;
- An EU target for recycling 75% of packaging waste by 2030;
- A target to reduce landfill to maximum of 10% of all waste by 2030;
- A ban on landfilling of separately collected waste;
- Promotion of economic instruments to discourage landfilling;
- Simplified, improved definitions and harmonised calculation methods for recycling rates throughout the EU;
- Concrete measures to promote re-use and stimulate industrial symbiosis - turning one industry's by-product into another industry's raw material;
- Economic incentives for producers to put greener products on the market and support recovery and recycling schemes (e.g. for packaging, batteries, electric and electronic equipment, vehicles).

Legislative proposals on waste adopted include a Proposed Directives on Waste, Packaging Waste, Landfill and Electrical and Electronic Waste, on End-of-Life Vehicles, and Batteries and Accumulators.

National Policy

The first national waste policy statement was published by the Department of Environment and Local Government in 1998. A number of statements have been published since, each of which builds on the objectives of the previous plans to improve how waste is managed in Ireland, move waste away from landfill and towards a more sustainable option. The statements published to date include:

- Department of the Environment and Local Government (1998). 'Waste Management - Changing Our Ways' – A Policy Statement.
- Department of the Environment and Local Government (2002). Preventing and Recycling Waste – Delivering Change – A Policy Statement.
- Department of the Environment, Heritage and Local Government (2004). Waste Management - Taking Stock and Moving Forward.
- Department of the Environment, Heritage and Local Government (2006). National Strategy on Biodegradable Waste Management.
- Department of the Environment, Heritage and Local Government (2012). A Resource Opportunity- Waste Management Policy in Ireland.

From 2012 a number of policy documents and reports have been published which are summarised in the sections below.

Department of the Environment, Heritage and Local Government (2012). A Resource Opportunity- Waste Management Policy in Ireland

This policy document sets out measures through which Ireland will increase recycling rates and reduce delivery of waste to landfill following coming into force of the Waste Framework Directive. Key measures set out in the report are as follows:

- Significant reduction of Planning Regions from ten to three. A review of regional waste management plans will be undertaken to comply with the requirements of the Waste Framework Directive.
- Timing and nature of the application of landfill bans will be considered taking into account the level of diversion being achieved and the development of viable beneficial uses for waste in support of the virtual elimination of our dependence on landfill.
- Ireland requires an adequate network of quality waste treatment facilities. The EPA will undertake a review of recovery infrastructure to advise on national requirements for managing municipal waste in accordance with the principles of proximity and self-sufficiency.
- All householders will be obliged to demonstrate that they are availing of an authorised waste collection service or are otherwise managing their waste in an environmentally acceptable manner