
**With reference to update on College Green including Environmental
Impact Assessment Screening report and Appropriate Assessment
Screening report**

Dublin City Council in conjunction with the National Transport Authority published proposals to implement Traffic Management Measures at College Green and surrounding Streets. The proposals will improve the safety for pedestrians and cyclists in the College Green area assisting in the efficient operation of the LUAS Cross City and provide a high quality bus and tram north-south transport corridor. This proposal removes all east-west vehicular traffic from College Green, re-assigning the road space to ensure that the pedestrians, cyclists and public transport can operate in a safer and more efficient manner and without potentially dangerous conflicting movements.

A period of non statutory public consultation was conducted from 12th April 2016 to 24th May 2016 with the intention of obtaining the views of the public and interested parties on the scheme and a preliminary report on this public consultation proposal was presented to the Transportation SPC on the 29th of June 2016.

A critical aspect which emerged during the non statutory public consultation was the issue of the undertaking of a screening report in relation to Environmental Impact Assessment (EIA) and the appropriate statutory procedure for this project.

Update on project

Screening for an Environmental Impact Assessment

Caas Ltd environmental consultants were appointed by DCC to undertake this screening to determine if an EIA was required.

Their report was based on the project area, which is mainly College Green as shown within the red line in the diagram below. However the impact of removing East West traffic from this area will have potential effects on a much greater area as shown below and this wider area formed a part of their assessment.

The conclusion of the environmental screening report (copy attached) was that the proposal for College Green comprises urban development over an extensive area of the core of the business district and is of a class that requires an Environmental Impact Statement (EIS) to be prepared.

It further concludes that this Environmental Impact Statement should be an assessment of the detailed traffic management measures and the Civic Space Design.

Having assessed the report Dublin City Council and the National Transport Authority fully accept its recommendations and will begin the process of preparing an EIS with the intention of lodging it with An Bord Pleanála early in the new year.

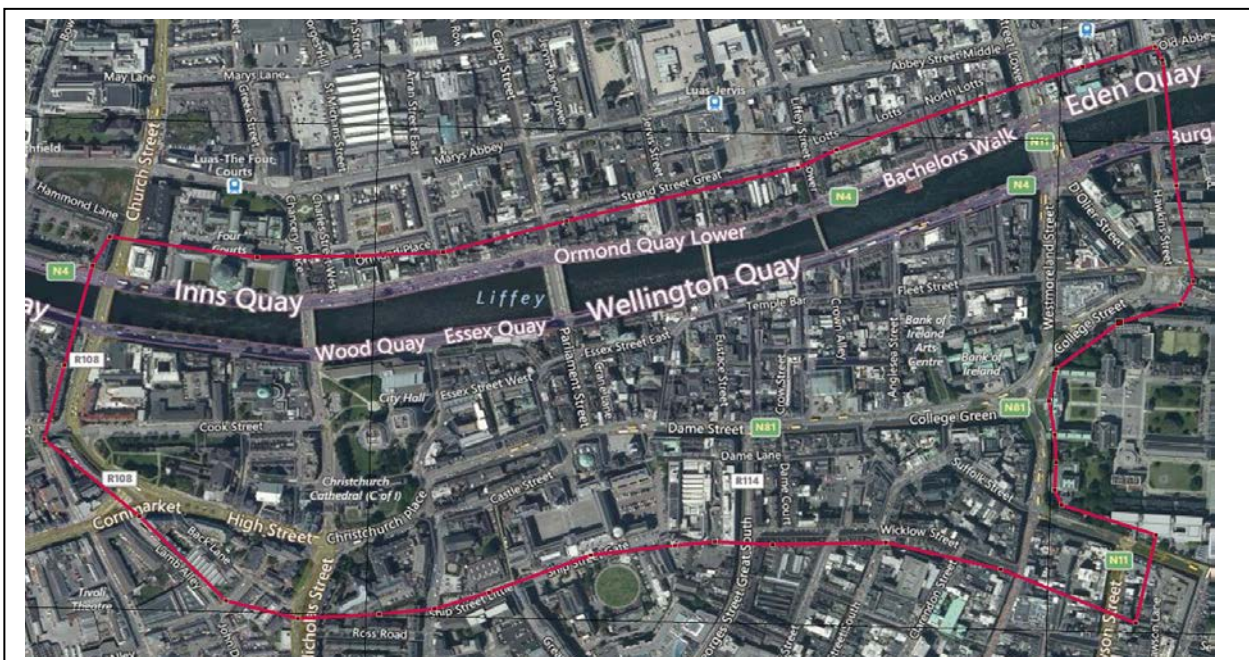
Appropriate Assessment screening report for College Green

Caas Ltd were also engaged to undertake an Appropriate Assessment of the project, copy attached. Their recommendation is that for this proposal it is unnecessary to proceed to the next step of preparing a Natura Impact Statement / Appropriate Assessment in this instance.

Environmental modelling of the proposal

Concerns were raised during the public consultation on the likely environmental impact of the re-routing of traffic and particularly buses as envisaged by the College Green Traffic management changes. While Dublin City Council has the capability to assess the air quality impacts of the proposed project, using a basic air quality dispersion 'screening model', it was determined that a more refined model should be used in order to elicit more detail especially in relation to impacts in 'canyon streets'.

Accordingly AWN Consulting were appointed to undertake environmental modelling of the likely air quality impacts of the proposed traffic management changes.



form part of the EIS submission.

The area of this model is shown in the diagram above, this work is still ongoing and the final report has not yet been received; this work will now form part of the EIS submission.

Traffic Modelling

The National Transport Authority have coded into the Dublin Area Saturn Transport Model all of the proposed traffic management changes, including the LUAS LCC and the city centre study proposals, alongside the College Green changes.

The outputs from this model have been used as an input for the air quality environmental model and also for detailed traffic signal modelling on the diversion routes; this work will also form part of the EIS submission.

Next Steps

Dublin City Council intends to now undertake procurement of specialist consultants to work with the Environment and Transportation Department and the City Architects in the preparation of the required EIS. It is hoped that that this consultant will be appointed in November 2016

The EIS will make use as inputs, the air quality environmental modelling and traffic modelling, which is currently being undertaken on this project. A formal period of statutory consultation on the project will commence once the EIS has been lodged with An Bord Pleanála, this is likely to be February/March 2017, which will allow all stakeholders and interested parties to make their views known to An Bord Pleanála.

All parties who contributed already to the non statutory public consultation, will, it is hoped, also make their submissions as part of the formal statutory process.

City Architects Department will be running a workshop/information session on the use and design of the College Green area towards the end of October/start of November to begin the process of engagement with the public to act as inputs to their multi disciplinary design team. It is expected that this team will be appointed by December 2016.

It is proposed that this report, if approved by the Transportation SPC, will go to the full City Council meeting in November 2016 along with the two screening reports for the EIA and the appropriate assessment.

Recommendation

Following consideration of the above report, the Transportation Strategic Policy Committee at its meeting of 5th October, 2016, recommended submission of the reports to the City Council.

Councillor Ciarán Cuffe
Chairperson,

5th October, 2016

Environmental Impact Assessment Screening Report
for proposed
College Green Traffic Management Measures

by
CAAS Ltd



Comhairle Cathrach
Bhaile Átha Cliath
Dublin City Council

August 2016

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1. Introduction

This is an EIS screening report for the proposed Traffic Management Measures at College Green. Its purpose is to form an opinion as to whether or not the proposed development should be subject to Environmental Impact Assessment (EIA) and if so, whether an Environmental Impact Statement (EIS) should be prepared in respect of it.

2. Terms of Reference

CAAS have been engaged by Dublin City Council to review the proposal 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.

This includes the following considerations:

- (i) Characteristics of the proposal
- (ii) Location of the proposal
- (iii) Characteristics of potential impacts

The consideration of potential impacts include direct, indirect and secondary impacts as relevant and with reference to the guidance and in compliance with the legislation.

3. The Proposed Development

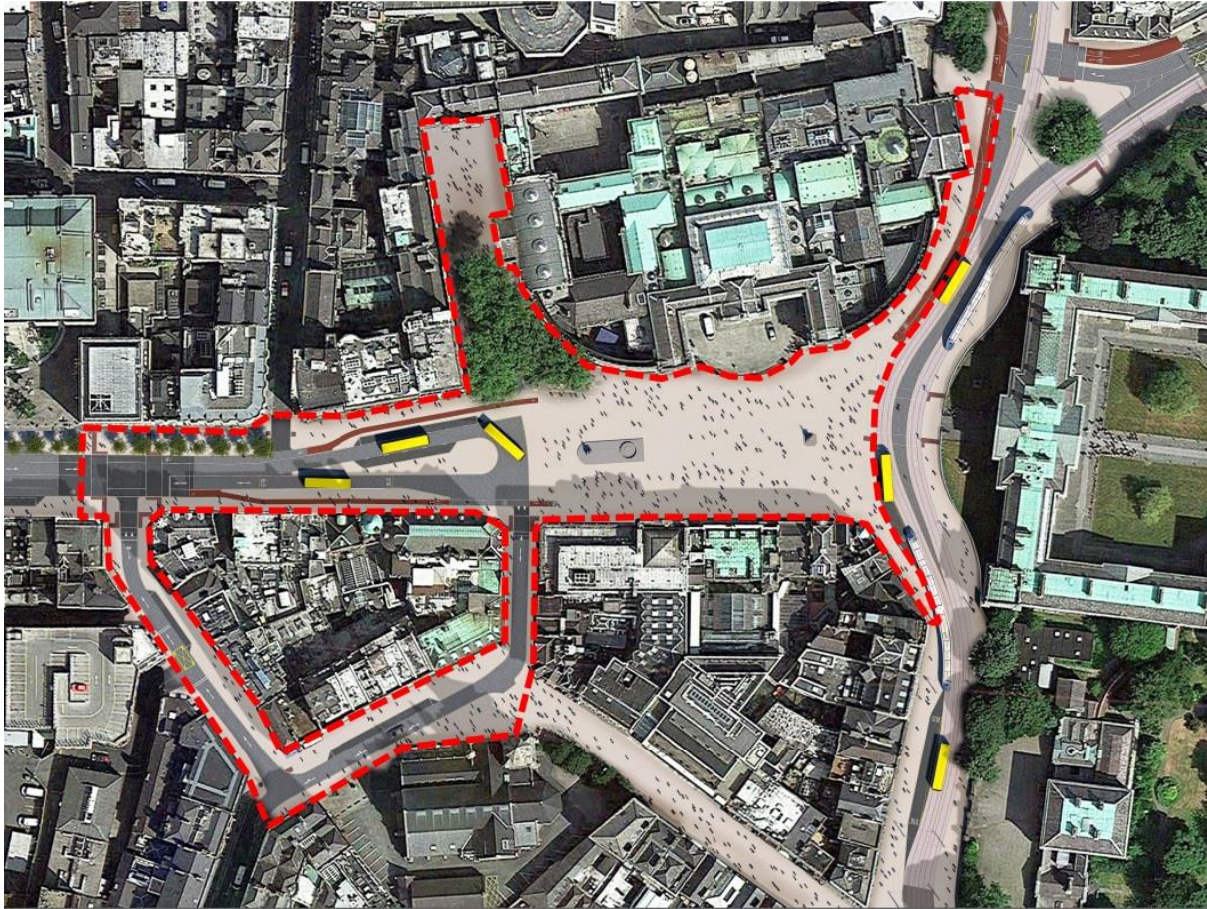


Figure 1 Core of College Green Traffic Management Measures

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.

A separate architectural led process will examine the use of the plaza area, the type of materials to be used and street lighting. The City Council intends to procure through international tender an architectural design team to develop the detailed proposals for the space, consistent with this traffic management proposal if and when adopted. The design team will be required, as part of their brief, to hold a design workshop open to the public, which will in turn inform their proposals for the design and use of the space. It is anticipated that a public consultation process for a public realm design for a civic space of international quality at College Green will be held by the end of 2016.

The proposed development will consist of;

Traffic Management Proposals on College Green [see above] , including:

- No through east-west traffic movements in the College Green area except for pedestrians and cyclists.

- Reversal of Church Lane and Trinity Street to allow for traffic to access this area for deliveries, car parks etc. and to use this route to turn around and leave the area.
- Two-way bus and tram movements on Lower Grafton Street and Nassau Street.
- 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.

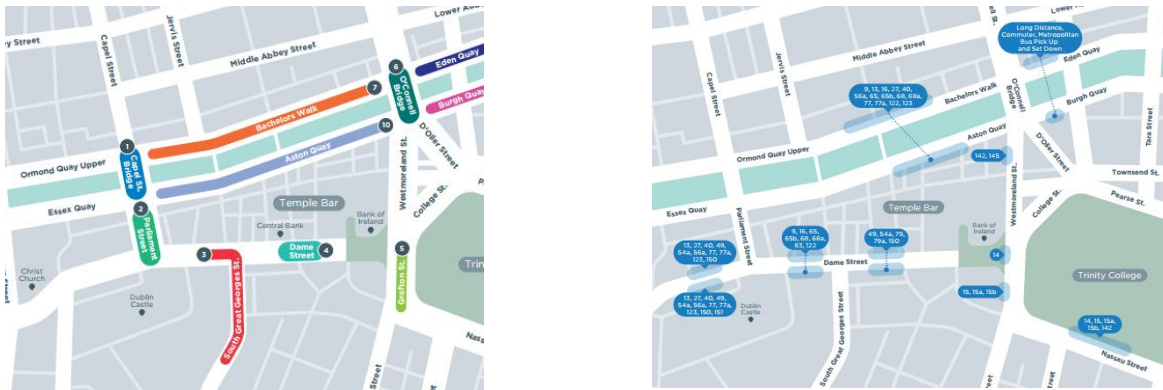


Figure 2 Bus re-routing [left] and bus stop amendments [right]

Bus re-rerouting elsewhere [see map on left above] as well as amended principal bus stops [see map on right above] to include:

- A right turn from O’Connell Bridge to the South Quays for south-bound buses;
- A right turn from Eden Quay to the Rosie Hackett Bridge
- A left turn from the South Quays to Parliament Street;
- Introduction of a bus only lane on Parliament Street;
- Introduction of a contra-flow bus lane on Parliament Street;
- A right turn from Dame Street to South Great Georges Street;
- A right turn from Dame Street to Parliament Street for northbound buses;
- Introduction of a contra-flow bus lane on Capel Street Bridge;
- A bus-only right turn from Capel Street Bridge to the North Quays.
- Introduction of a left turn from Lord Edward Street to Parliament Street;
- Provision of a turnaround arrangement to the west of College Green to allow a number of routes to move their terminuses to Dame Street.

Bus routes will also be amended, as per the diagrams below.



Figure 3 Bus route amendments

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:

- Luas Cross City works;
- 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

4. Type of Development

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].

5. Extent of Development

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 2.5 hectares - though the extent of actual works is considerably less.

On the other hand, the extent of the area affected, directly and indirectly, by the amendment of the movements, routes and stops for buses is very large – as shown by figures 2 and 3. The extent of this area, including both the works and potential effects is over 50 hectares [see figure 4].

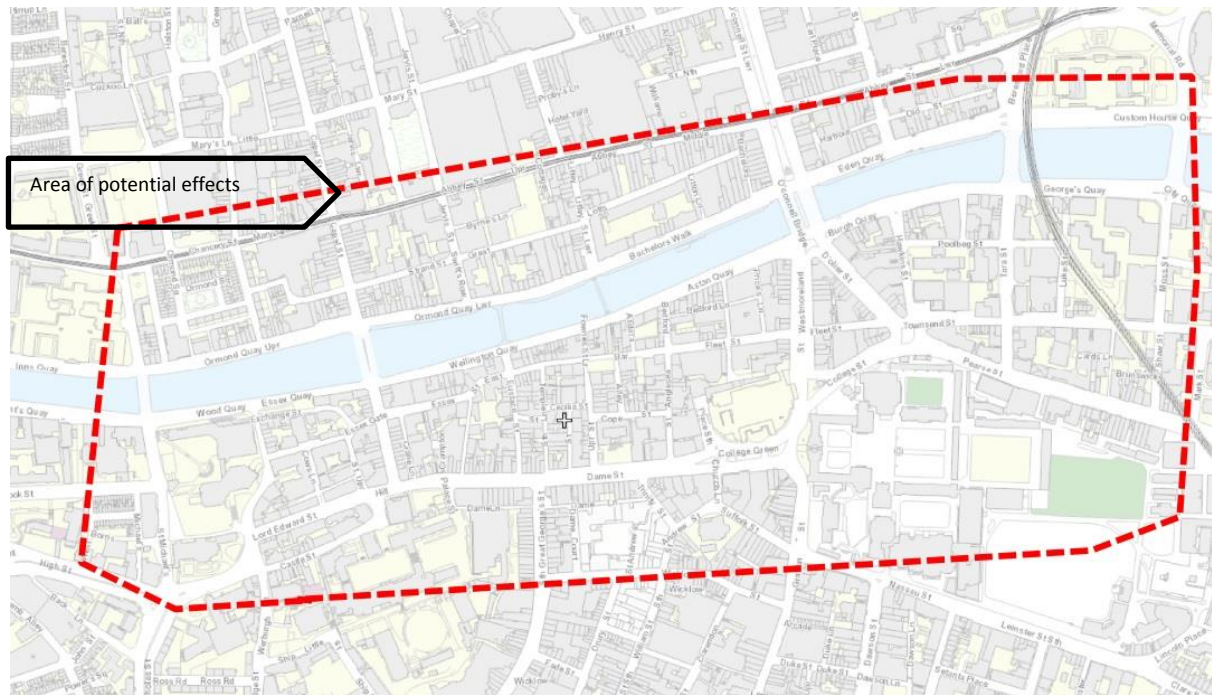


Figure 4 Area of potential effects

6. Legislative Basis for EIA

EIA requirements derive from EU Directive 85/337/EEC (as amended by Directive 97/11/EC) on the assessment of the effects of certain public and private projects on the environment.

The Directive was fully transposed into Irish law and EIA legislation as it relates to the planning process and has now been largely brought together in Part X of the Planning and Development Acts 2000-2010 and Part 10 and Schedules 5, 6 and 7 of the Planning and Development Regulations 2001-2010. Part 1 of Schedule 5 to the Planning and Development Regulations lists projects included in Annex I of the Directive which automatically require EIA. Part 2 of the same Schedule outlines thresholds for other projects which also require EIA, per Annex II of the Directive.

7. Screening Considerations

Class of Development

In the first instance it is necessary to determine whether the project is of a type [or 'class'] that requires an EIS.

Part 10 of the Planning and Development Regulations 2001-2010 - in Schedule 5 Development For The Purposes Of Part 10, Part 2, identifies

Class 10. Infrastructure projects

(b) (iv) Urban development which would involve an area greater than 2 hectares in the case of a business district, 10 hectares in the case of other parts of a built-up area and 20 hectares elsewhere. (In this paragraph, "business district" means a district within a city or town in which the predominant land use is retail or commercial use.)

Size of Development

The core area falls within an area of approximately 2.5 hectares - though the extent of actual works is considerably less. The threshold stipulates 'development which would involve an area greater than 2 hectares in the case of a business district' [our emphasis]

On the other hand, the extent of the area affected, directly and indirectly, by the amendment of the movements, routes and stops for buses covers a very large area – as shown by figures 2, 3 and 4 – of over 50 hectares.

A case could be made that this is a 'subthreshold' development. There is specific guidance on this matter. This includes reference to the need for an EIS being determined by three considerations;

1. Characteristics of Proposed Development
2. Location of Proposed Development
3. Characteristics of Potential Impacts

In deciding whether an EIS is required, it is also necessary to determine the likelihood of whether significant effects on the environment could arise. The following section [9] examines each aspect of the environment that is normally examined in an EIS, to determine whether significant effects could arise.

These matters are further assessed in section 10. *Screening For Sub-Threshold EIA*. This assessment finds that there is a potential for likely significant effects to arise on account of the following headings;

1. Characteristics of Proposed Development, in particular:

- the size of the proposed development, because the proposed development will directly and indirectly affect a significant portion of the centre of the national capital.
- the cumulation with other proposed development, because the proposed project will interact with businesses such as retail, transportation, parking, tourism and institutions.

2. Location of Proposed Development The environmental sensitivity of geographical areas likely to be affected by the proposed development, having regard in particular to;

- the existing land use, because the existing land-uses of city-centre area – comprising institutions, retail, commercial, tourism, recreational and entertainment uses are highly sensitive to changes to the layout, timing and regulation of access, mobility, and transport management.
- densely populated areas, because the core and periphery of the project area contain some of the areas of greatest pedestrian concentration in Ireland.
- landscapes of historical, cultural archaeological significance, because the core and periphery of the project area contain some of the areas of greatest concentration of protected structures in Ireland.

3. Characteristics of Potential Impacts

The potential significant effects of the proposed development in relation to criteria set out under paragraphs 1 and 2 above and having particular regard to;

- the extent of the impact (geographical area and size of the affected population), because the proposed development will directly and indirectly affect a significant portion of the centre of the national capital and because the core and periphery of the project area contain some of the areas of greatest concentration of protected structures in Ireland.
- the magnitude and complexity of the impact, because the project will affect a significant number of the principal bus routes towards and through the centre of the national capital. This will give rise to complex and very large magnitude of interactions with LUAS and private transport
- the probability of the impact, because the extent and magnitude of the effects are very likely to occur.

8. Preliminary Determination of Likely Effects

Article 103(3) of the P&D Regulations requires that “a planning authority shall, in determining under this article whether a proposed development would or would not be likely to have significant effects on the environment, have regard to the criteria set out in Schedule 7 and the determination of the planning authority, including the main reasons and considerations on which the determination is based, shall be placed and kept with the documents relating to the planning application.”

Foreword

This is a preliminary assessment of whether the proposed development would or would not be likely to have significant effects on the environment

This is necessary because the potential for significant effects to arise is a material consideration when determining the need for an EIS during the ‘Screening’ process – particularly for sub-threshold projects.

General

The proposed development 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 activity [alteration from vehicular to pedestrian **use**, alteration of **appearance**].
- The significant alteration of the **intensity** of the activities [increase in pedestrian and reduction on vehicular movements].

The proposed development will give rise to alterations to the setting and context of significant protected structures and areas of national iconic status.

The proposed development will give rise to significant off-site induced, secondary and cumulative effects.

All of these matters will require rigorous, objective and independent analysis.

9. Preliminary Screening and Scoping

A Preliminary Scoping [Table 1 below] indicates that the proposed development is likely to give rise to significant effects [adverse and beneficial], that include, but are not limited 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

Many of these effects are likely to be very significant in terms of intensity, spatial extent, numbers affects and the consequences arising.

Table 1 Preliminary Determination of likely effects of Proposed Development			
Topic	Likelihood of Significant Effects Note that these effects could be positive, adverse or neutral.	Assessments Required?	Comment
Human Beings	The area is one of the three most significant gathering areas in the national capital. It is much used for events of national significance. It is an important and much-used area for tourism. The proposed development will alter access to many retail areas of national significance.	A socio-economic assessment of the impacts on city centre businesses will be required. An assessment of the impacts on tourism and events will be required.	tbc
Flora	A small number of mature trees will be affected	tbc	tbc
Fauna	There are unlikely to be any significant impacts on fauna	tbc	tbc
Soil	There are unlikely to be any significant impacts on soil	tbc	tbc
Water	There are unlikely to be any significant impacts on water	tbc	tbc
Air	There are likely to be significant [positive] impacts on air quality [this is Ireland's most heavily polluted air] and noise.	An assessment on the impacts on air quality will be required. An assessment on the impacts on noise will be required.	tbc
Landscape	The proposed development will significantly alter the setting and context for protected structures of national significance.	A assessment of the landscape and visual effects will be required – this will interact with the assessment of effects on protected structures and effects on tourism.	tbc
Material Assets	The proposed development will significantly alter patterns of public and private transportation at the heart of the national capital.	A traffic impact assessment will be required. This will require a detailed mobility management plan for areas affected by displaced traffic. This assessment will need to include effects on parking. This assessment will need to significantly overlap with assessments	tbc

		<p>on health and safety and economic activity.</p> <p>This assessment will need to consider interactions with other existing and emerging transport and land-use plans.</p> <p>The effects on health and safety will need to be assessed – both during construction and in operation. Effects on site and induced effects elsewhere (e.g. due to displaced traffic) will need to be assessed.</p>	
Cultural Heritage	The area is bounded by a dense concentration of buildings that are iconic symbols of the national capital which are also protected structures that are of national significance.	An assessment of the effects on the context and setting of protected structures will be required.	
Interactions of Effects	The proposed development will give rise to significant off-site effects due to the displacement of traffic to other areas and due to the associated effects and interactions on amenities and businesses.	An assessment of the impacts of displaced traffic will be required – along with associated emissions of air – as well as health and safety. An assessment of the construction management plan will be required – to examine the effects on amenities, business, traffic, tourism during construction.	
Secondary and induced effects			

10. Screening for Sub-threshold EIA

CRITERIA		Relevance	Commentary
1. Characteristics of Proposed Development The characteristics of proposed development, in particular:	the size of the proposed development,	YES	The proposed development will directly and indirectly affect a significant portion of the centre of the national capital.
	the cumulation with other proposed development,	YES	The proposed project will interact with businesses such as retail, transportation, parking, tourism and institutions.
	the use of natural resources,	NO	
	the production of waste,	NO	
	pollution and nuisances,	POTENTIAL	The proposed project may give rise to significant reduction on air pollution, noise and other traffic related nuisance within the core area. There may be some increase in pollution and nuisance in other areas.
	the risk of accidents, having regard to substances or technologies used.	POTENTIAL	The proposed development may give rise to significant reductions in the risks of accidents within the core area. There may be some increase in risk of traffic accidents in other areas – depending on the effectiveness of the traffic management technologies employed.

CRITERIA		Relevance	Commentary
<p>2. Location of Proposed Development</p> <p>The environmental sensitivity of geographical areas likely to be affected by the proposed development, having regard in particular to:</p>	the existing land use	YES	The existing land-uses of city-centre area – comprising institutions, retail, commercial, tourism, recreational and entertainment uses are highly sensitive to changes to the; layout, timing and regulation of access, mobility, and transport management.
	the relative abundance, quality and regenerative capacity of natural resources in the area	NO	
	the absorption capacity of the natural environment, paying particular attention to the following areas	-	-
	wetlands	NO	
	coastal zones	NO	
	mountain and forest areas	NO	
	nature reserves and parks	NO	
	areas classified or protected under legislation, including special protection areas designated pursuant to Directives 79/409/EEC and 92/43/EEC	NO	
	areas in which the environmental quality standards laid down in legislation of the EU have already been exceeded	POTENTIAL	The proposed project may give rise to significant reduction on air pollution, noise and other traffic related nuisance within the core area. There may be some increase in pollution and nuisance in other areas.
	densely populated areas	YES	The core and periphery of the project area contain some of the areas of greatest pedestrian concentration in Ireland.
(h) landscapes of historical, cultural archaeological significance	YES	The core and periphery of the project area contain some of the areas of greatest concentration of protected structures in Ireland.	

CRITERIA	Relevance	Commentary	
3. Characteristics of Potential Impacts The potential significant effects of proposed development in relation to criteria set out under paragraphs 1 and 2 above and having particular regard to:	the extent of the impact (geographical area and size of the affected population),	YES The proposed development will directly and indirectly affect a significant portion of the centre of the national capital. The core and periphery of the project area contain some of the areas of greatest concentration of protected structures in Ireland.	
	the transfrontier nature of the impact,	NO	
	the magnitude and complexity of the impact,	YES	The project will affect a significant number of the principle principal bus routes towards and through the centre of the national capital. This will give rise to complex and very large magnitude of interactions with LUAS and private transport in
	the probability of the impact,	YES	The extent and magnitude of the effects are very likely to occur.
the duration, frequency and reversibility of the impact.	YES	The impacts are likely to be long-term and permanent	

11. Screening Determination

Having regard to 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 EIS.

Having regard to the environmental sensitivity of the receiving environment – on account of its social, tourism, cultural and business significance 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

Having regard to Irish Case law¹ that agrees with the European Court of Justice that the wording of the EIA Directive ‘has a wide scope and a broad purpose’ and accordingly that a project which is likely to have significant effects on the is required to have an EIS to be prepared in accordance with the Directive and the Regulations.

It is concluded that an Environmental Impact Assessment should be carried out of the proposed College Green Traffic Management Measures. For the avoidance of doubt, and to avoid any potential for ‘project splitting’ the assessment should evaluate the entirety of the proposals –As a combination of detailed traffic engineering measures combined with the Civic Space Design Intent.

¹ [O’Nuallan v. Dublin Corporation [1999] IEHC 11: [1999] 4 IR 137 (2nd July, 1999) ‘notes that the Directive has a wide scope and a broad purpose so that if a particular project is likely to have significant effects on the environment by virtue of its nature, size or location, notwithstanding that this particular project falls below the threshold established in the 1989 Regulations (First Schedule Part II class 10). In this instant case the proposal of the Respondents is an urban development project and will be part of the infrastructure of Dublin City and is well below the area thresholds as set out in the 1989 Regulations. However, it is a project which is likely to have, and is intended to have, significant effects on the environment and in those circumstances the Respondent, in my judgement, is required to cause an EIS to be prepared in accordance with the Directive and the Regulations.

Appendix A Figures

Figure 2 Bus re-routing [left] and bus stop amendments [right]

Figure 3 Bus route amendments

Figure 2 Bus re-routing [left] and bus stop amendments [right]

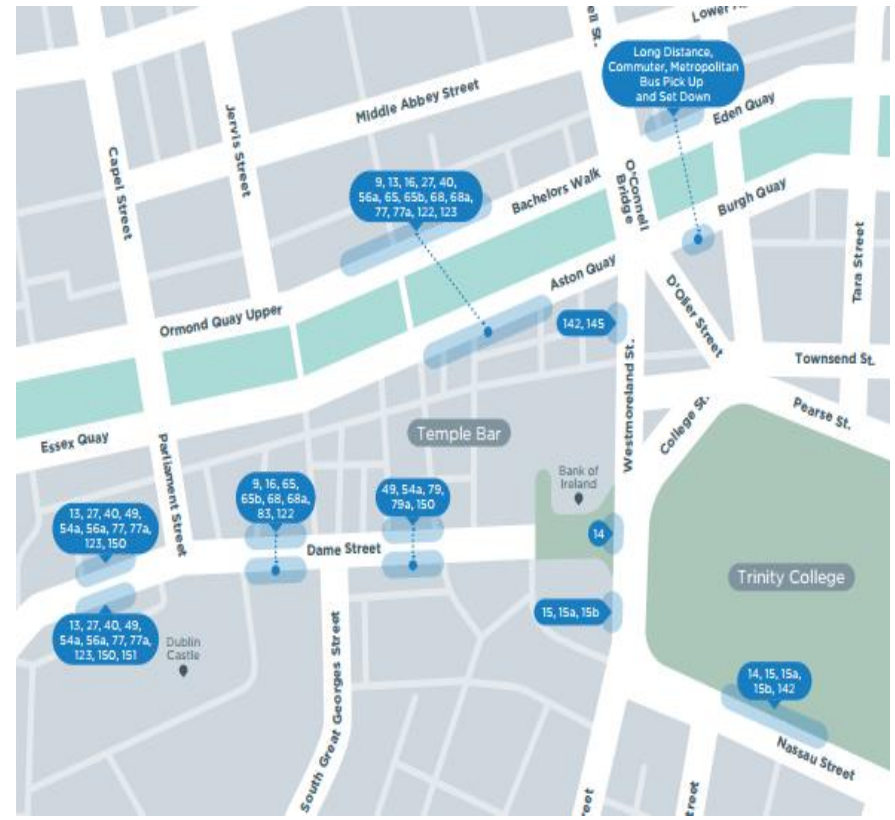


Figure 3 Bus route amendments



**Appropriate Assessment Screening Report
for proposed
College Green Traffic Management Measures**

**by
CAAS Ltd**



Comhairle Cathrach
Bhaile Átha Cliath
Dublin City Council

August 2016

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1 INTRODUCTION

1.1 BACKGROUND

This Screening Report has been prepared by CAAS Ltd in order to determine the potential for any negative impacts on the Natura 2000 network¹ of sites arising from the proposed Traffic Management Measures at College Green. This report contains a record of the Stage 1 Screening that has been carried out for the development.

1.2 LEGISLATIVE CONTEXT

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, better known as "The Habitats Directive", provides legal protection for habitats and species of European importance. Articles 3 to 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as Natura 2000. These are Special Areas of Conservation (cSACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Conservation of Wild Birds Directive (79/409/ECC).

Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to affect Natura 2000 sites (ref. Article 1). Article 6(3) establishes the requirement for Appropriate Assessment (AA):

"Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected 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."

If, in spite of a negative assessment of the implications for the [Natura 2000] 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 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 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 legislation is implemented in the Republic of Ireland by the European Communities (Birds and Natural Habitats) Regulations 2011. These Regulations consolidate the European

¹ The Natura 2000 network is an EU wide network of nature protection areas established under the 1992 Habitats Directive. In Ireland it comprises candidate Special Areas of Conservation (cSACs) and Special Protection Areas (SPAs). Paragraphs l and k of Article 1 of Directive 92/43/EEC define Natura 2000 sites.

Communities (Natural Habitats) Regulations 1997 to 2005 and the European Communities (Birds and Natural Habitats) (Control of Recreational Activities) Regulations 2010, as well as addressing transposition failures identified in the CJEU judgements. The Habitats Directive is also implemented through Part XAB of the Planning and Development (Amendment) Act 2010.

1.3 STAGES OF APPROPRIATE ASSESSMENT

This Screening Statement has been prepared in accordance with the following guidance:

- *Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities.* Department of the Environment, Heritage and Local Government, 2009.
- *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 DG, 2000.
- *Managing Natura 2000 sites: The Provisions of Article 6 of the Habitats Directive 92/43/EEC:* European Commission, 2000

As set out in these guidance documents, AA comprises up to four stages:

Stage One: Screening

The process which identifies the likely impacts upon a Natura 2000 site of a project or plan, either alone or in combination with other projects or plans, and considers whether these impacts are likely to be significant.

Stage Two: Appropriate Assessment

The consideration of the impact on the integrity of the Natura 2000 site of the project or plan, 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 adverse impacts, an assessment of the potential mitigation of those impacts.

Stage Three: Assessment of Alternative Solutions

The process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site.

Stage Four: Assessment where no alternative solutions exist and where adverse impacts remain

An assessment of compensatory measures where, in the light of an assessment of imperative reasons of overriding public interest (IROPI), it is deemed that the project or plan should proceed.

The Habitats Directive promotes a hierarchy of avoidance, mitigation and compensatory measures. Firstly, the project or plan should aim to avoid any impacts on Natura 2000 sites by identifying possible effects early in the plan-making process and altering the project or plan in order to avoid such impacts. Secondly, mitigation measures should be applied, if necessary, during the AA process to the point where no adverse impacts on the site(s) remain. If significant effects on the site(s) are likely, and no further practicable mitigation is

possible, the Plan or project may not proceed unless for imperative reasons of overriding public interest (IROPI test) under Article 6(4) of the Habitats Directive, in which case compensation measures are required for any remaining adverse effect(s).

This report documents the first of these stages. The conclusion that significant impacts on Natura 2000 sites are not foreseen means that further AA stages are not required.

2 ASSESSMENT CRITERIA

2.1 DESCRIPTION OF THE PROJECT

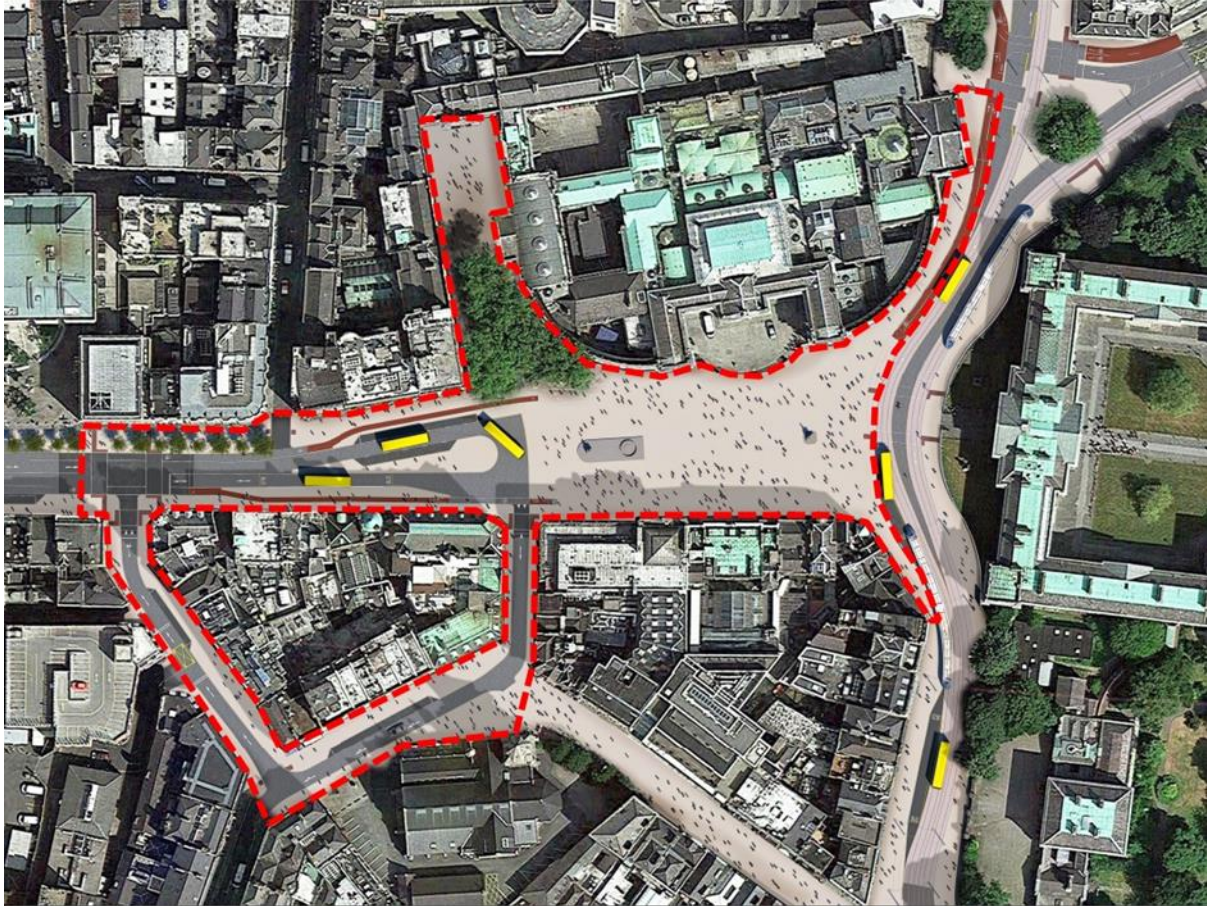


Figure 2.1 Core of College Green Traffic Management Measures

2.1.1 Proposed Development

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.

A separate architectural led process will examine the use of the plaza area, the type of materials to be used and street lighting. The City Council intends to procure through international tender an architectural design team to develop the detailed proposals for the space, consistent with this traffic management proposal if and when adopted. The design team will be required, as part of their brief, to hold a design workshop open to the public, which will in turn inform their proposals for the design and use of the space. It is anticipated that a public consultation process for a public realm design for a civic space of international quality at College Green will be held by the end of 2016.

The proposed development will consist of;

Traffic Management Proposals on College Green [see above], including:

- No through east-west traffic movements in the College Green area except for pedestrians and cyclists.
- Reversal of Church Lane and Trinity Street to allow for traffic to access this area for deliveries, car parks etc. and to use this route to turn around and leave the area.
- Two-way bus and tram movements on Lower Grafton Street and Nassau Street.
- 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.

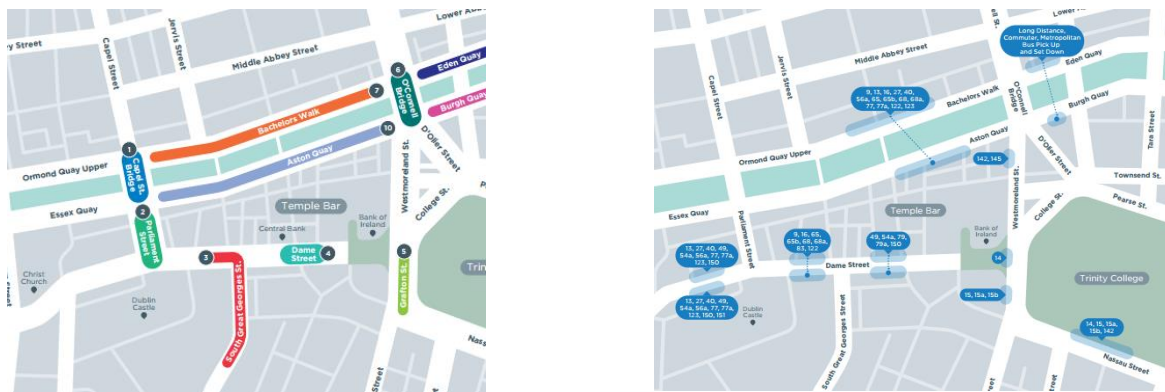


Figure 2.2 Bus re-routing [left] and bus stop amendments [right]

Bus re-rerouting elsewhere [see map on left above] as well as amended principal bus stops [see map on right above] to include:

- A right turn from O’Connell Bridge to the South Quays for south-bound buses;
- A right turn from Eden Quay to the Rosie Hackett Bridge
- A left turn from the South Quays to Parliament Street;
- Introduction of a bus only lane on Parliament Street;
- Introduction of a contra-flow bus lane on Parliament Street;
- A right turn from Dame Street to South Great Georges Street;
- A right turn from Dame Street to Parliament Street for northbound buses;
- Introduction of a contra-flow bus lane on Capel Street Bridge;
- A bus-only right turn from Capel Street Bridge to the North Quays.
- Introduction of a left turn from Lord Edward Street to Parliament Street;
- Provision of a turnaround arrangement to the west of College Green to allow a number of routes to move their terminuses to Dame Street.

Bus routes will also be amended, as per the diagrams below



Figure 2.3 Bus route amendments

2.1.2 Type of Development

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].

2.1.3 Extent of Development

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 2.5 hectares - though the extent of actual works is considerably less.

On the other hand, the extent of the area affected, directly and indirectly, by the amendment of the movements, routes and stops for buses is very large – as shown by figures 2 and 3. The extent of this area, including both the works and potential effects is over 50 hectares [see figure 4].

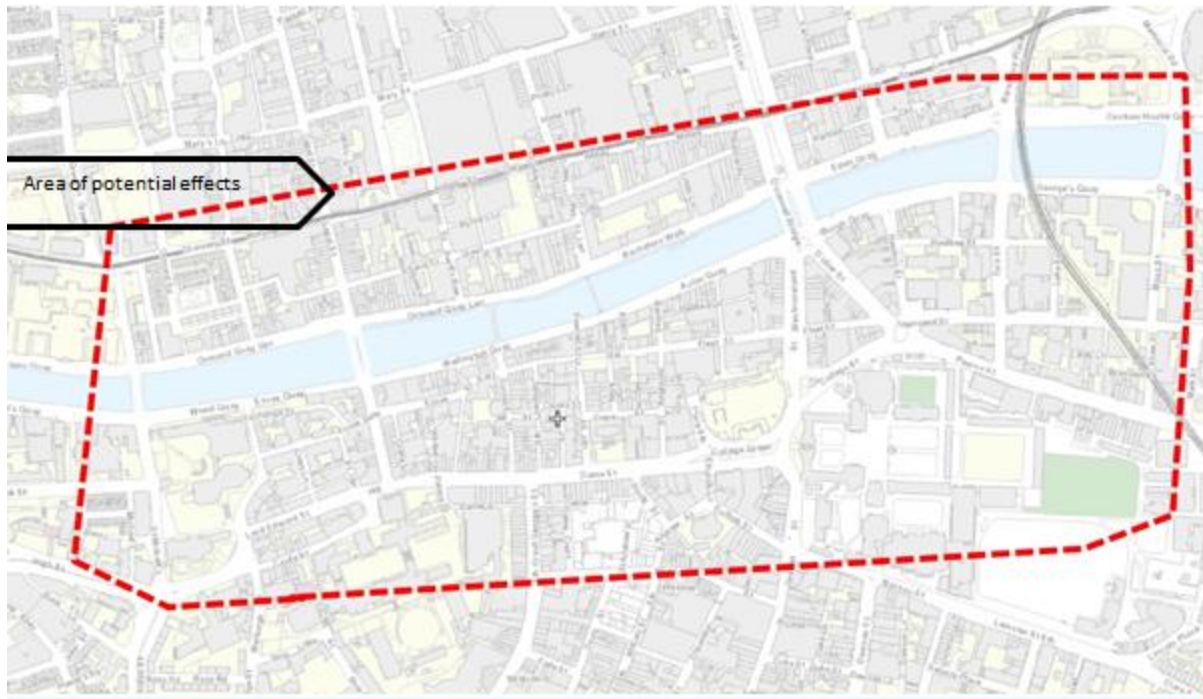


Figure 2.4 Areas of potential effects

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:

- Luas Cross City works;
- 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

2.2 SITE DESCRIPTION

Habitats that occur on the site are limited to buildings and artificial surfaces².

2.3 IS THE PROJECT NECESSARY TO THE MANAGEMENT OF EUROPEAN SITES?

Under Article 6(3) of the Habitats Directive, projects that are directly connected with or necessary to the management of a European site do not require AA. For this exception to apply, management is required to be interpreted narrowly as nature conservation management in the sense of Article 6(1) of the Habitats Directive. This refers to specific measures to address the ecological requirements of annexed habitats and species (and their habitats) present on a site(s). The relationship should be shown to be direct and not a by-product of the project, even if this might result in positive or beneficial effects for a site(s).

The primary purpose of the project is not the nature conservation management of European sites, but to manage traffic in a City Centre location. Therefore, the project is not considered by the Habitats Directive to be directly connected with or necessary to the management of European designated sites

2.4 DESCRIPTION OF THE NATURA 2000 SITES

This section of the screening report describes the Natura 2000 sites around the proposed development site. Seventeen Natura 2000 sites lie within 15km of the proposed development site. These are listed in Table 2.1 together with their qualifying interest features.

National Parks and Wildlife Service site synopses for these sites are included as Appendix A of this report.

² Habitat type BL3 per Fossitt, J. (2000). A Guide to Habitats in Ireland. The Heritage Council, Kilkenny

Table 2.1 Natura 2000 Sites within 15km of the Proposed Development Area

Site Code	Approximate distance to site	Site Name	Qualifying Interests [and Natura 2000 Habitat Code]
000210	2.5km	South Dublin Bay SAC	Mudflats and sandflats not covered by seawater at low tide [1140]
000206	5.5km	North Dublin Bay SAC	Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] <i>Petalophyllum ralfsii</i> (Petalwort) [1395]
000199	10.5km	Baldoyle Bay SAC	Mudflats and sandflats not covered by seawater at low tide [1140] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]
000202	11.5km	Howth Head SAC	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030]
002193	14.5km	Ireland's Eye SAC	Mudflats and sandflats not covered by seawater at low tide [1140] Salicornia and other annuals colonising mud and sand [1310] Spartina swards (<i>Spartinion maritimae</i>) [1320] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]
000205	14km	Malahide Estuary SAC	Mudflats and sandflats not covered by seawater at low tide [1140] Salicornia and other annuals colonising mud and sand [1310] Spartina swards (<i>Spartinion maritimae</i>) [1320] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]

Site Code	Approximate distance to site	Site Name	Qualifying Interests [and Natura 2000 Habitat Code]
001209	13km	Glenasmole Valley SAC	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] Petrifying springs with tufa formation (Cratoneurion) [7220]
002122	12km	Wicklow Mountains SAC	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Natural dystrophic lakes and ponds [3160] Northern Atlantic wet heaths with Erica tetralix [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] Blanket bogs (* if active bog) [7130] Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Lutra lutra (Otter) [1355]
003000	11.5km	Rockabill to Dalkey Island SAC	Reefs [1170] Phocoena phocoena (Harbour Porpoise) [1351]
004006	7km	North Bull Island SPA	Light-bellied Brent Goose (Branta bernicla hrota) [A046] Shelduck (Tadorna tadorna) [A048] Teal (Anas crecca) [A052] Pintail (Anas acuta) [A054] Shoveler (Anas clypeata) [A056] Oystercatcher (Haematopus ostralegus) [A130] Golden Plover (Pluvialis apricaria) [A140] Grey Plover (Pluvialis squatarola) [A141] Knot (Calidris canutus) [A143] Sanderling (Calidris alba) [A144] Dunlin (Calidris alpina) [A149] Black-tailed Godwit (Limosa limosa) [A156] Bar-tailed Godwit (Limosa lapponica) [A157] Curlew (Numenius arquata) [A160] Redshank (Tringa totanus) [A162] Turnstone (Arenaria interpres) [A169] Black-headed Gull (Chroicocephalus ridibundus) [A179] Wetland and Waterbirds [A999]

Site Code	Approximate distance to site	Site Name	Qualifying Interests [and Natura 2000 Habitat Code]
004024	3.5km	South Dublin Bay and River Tolka Estuary SPA	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] Wetland and Waterbirds [A999]
004016	10.5km	Baldoye Bay SPA	Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Shelduck (<i>Tadorna tadorna</i>) [A048] Ringed Plover (<i>Charadrius hiaticula</i>) [A137] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Wetland and Waterbirds [A999]
004113	11.5km	Howth Head Coast SPA	Kittiwake (<i>Rissa tridactyla</i>) [A188]
004117	14.5km	Ireland's Eye SPA	Cormorant (<i>Phalacrocorax carbo</i>) [A017] Herring Gull (<i>Larus argentatus</i>) [A184] Kittiwake (<i>Rissa tridactyla</i>) [A188] Guillemot (<i>Uria aalge</i>) [A199] Razorbill (<i>Alca torda</i>) [A200]
004025	14km	Malahide Estuary SPA	Great Crested Grebe (<i>Podiceps cristatus</i>) [A005] Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Shelduck (<i>Tadorna tadorna</i>) [A048] Pintail (<i>Anas acuta</i>) [A054] Goldeneye (<i>Bucephala clangula</i>) [A067] Red-breasted Merganser (<i>Mergus serrator</i>) [A069] 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] Dunlin (<i>Calidris alpina</i>) [A149]

Site Code	Approximate distance to site	Site Name	Qualifying Interests [and Natura 2000 Habitat Code]
			Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Redshank (<i>Tringa totanus</i>) [A162] Wetland and Waterbirds [A999]
004040	12km	Wicklow Mountains SPA	Merlin (<i>Falco columbarius</i>) [A098] Peregrine (<i>Falco peregrinus</i>) [A103]
004172	13km	Dalkey Island SPA	Roseate Tern (<i>Sterna dougallii</i>) [A192] Common Tern (<i>Sterna hirundo</i>) [A193] Arctic Tern (<i>Sterna paradisaea</i>) [A194]

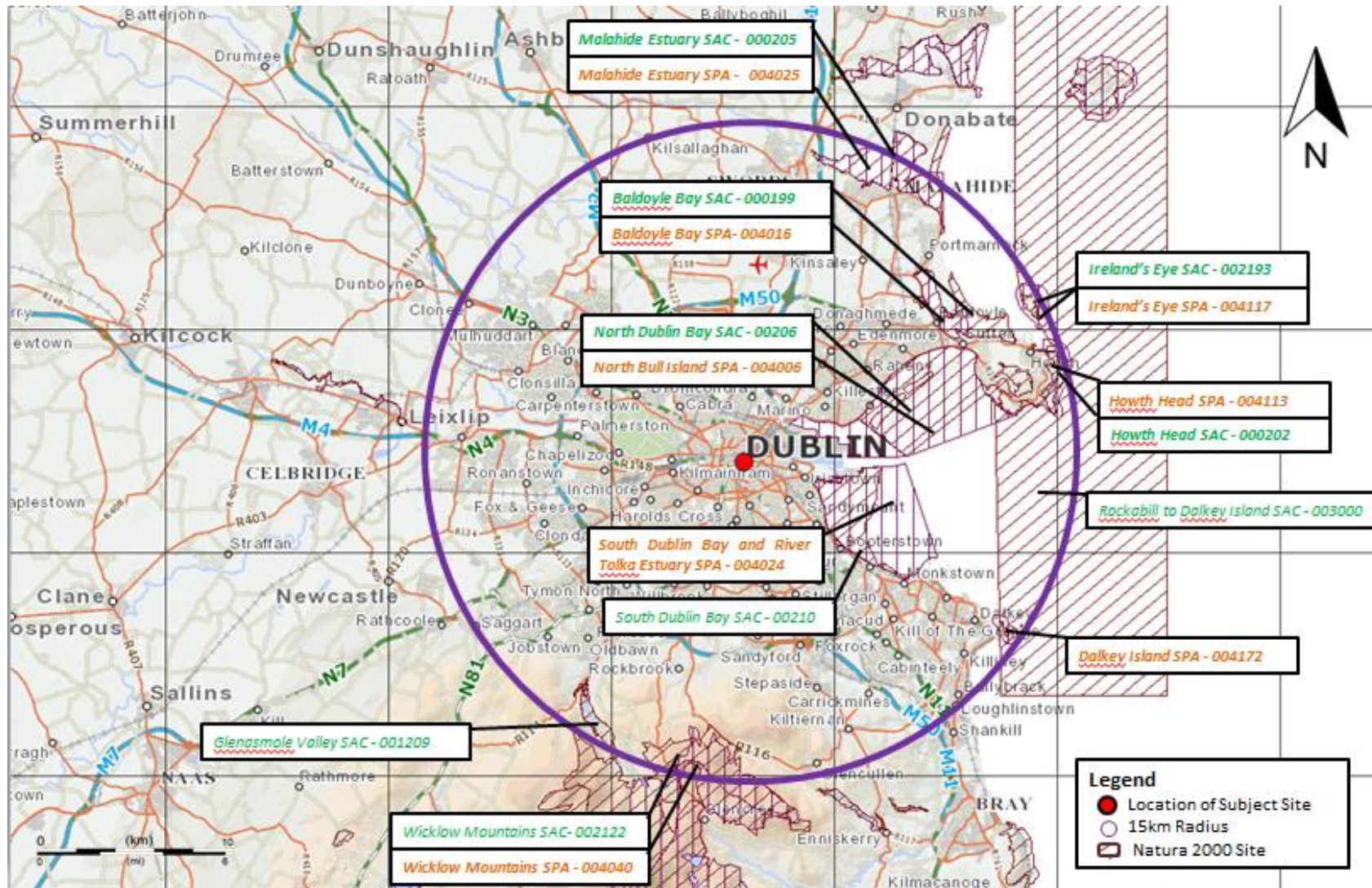


Figure 2.5 Natura 2000 Sites

2.5 ELEMENTS OF THE PROJECT THAT COULD GIVE RISE TO POTENTIAL IMPACTS

European Commission Environment DG document "*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*" outlines the types of impacts that may affect Natura 2000 sites. These include impacts from the following activities:

- Land take
- Resource Requirements (Drinking Water Abstraction Etc.)
- Emissions (Disposal to Land, Water or Air)
- Excavation Requirements
- Transportation Requirements
- Duration of Construction, Operation, Decommissioning

In addition, the Guidance document outlines the following likely changes that may occur at a designated site, which may result in impacts on the integrity and function of that site:

- Reduction of Habitat Area
- Disturbance to Key Species
- Habitat or Species Fragmentation
- Reduction in Species Density
- Changes in Key Indicators of Conservation Value (Water Quality Etc.)
- Climate Change

This section discusses the elements of the project that could potentially give rise to impacts, while potential impacts on the Natura 2000 sites in the surroundings are considered in Section 2.6 below.

2.5.1 Land take

The proposed change of use will not result in the loss or reduction of any habitats for which designated for protection, thus not impacting on the Natura 2000 network.

2.5.2 Resource Requirements (Drinking Water Abstraction Etc.)

Abstraction for water or other natural resources is not part of this proposed development. It will not have any impact on the Natura 2000 network in this respect.

2.5.3 Emissions (Disposal to Land, Water or Air)

No direct emissions to water are associated with this development. There will be no significant impact on any Natura 2000 site as a result on the increased surface runoff resulting from the proposed development.

The proposed development will not directly result in any changes in emissions to air that would have significant potential to impact on the Natura 2000 network.

2.5.4 Excavation Requirements

There are no significant excavation works associated with this development. The proposed development will therefore not have any impacts on groundwater systems. The proposed development will not have any impact on the Natura 2000 network of sites in this respect.

2.5.5 Transportation Requirements

Transportation requirements during both the construction and operational phases will not have significant potential to impact on the Natura 2000 network.

2.5.6 Duration of Construction, Operation, Decommissioning

The duration of the construction or operation phases will not impact on the Natura 2000 network

2.6 DIRECT, INDIRECT OR SECONDARY IMPACTS

This section describes the potential direct, indirect or secondary impacts on Natura 2000 sites in the surroundings.

2.6.1 Reduction of Habitat Area

The proposed development will not result in the loss or reduction of any habitats which are designated for protection. It will not have any impact on the Natura 2000 network in this respect.

2.6.2 Disturbance to Key Species

The proposed development will not result in the disturbance of any species for which any of the sites within 15km are designated. The works will take place at a sufficient distance from the boundary of any SAC/SPA to ensure that these species will not be disturbed. The proposed development will not have any impact on the Natura 2000 network in this respect.

2.6.3 Habitat or Species Fragmentation

Habitat and species fragmentation can occur through the breaking up of habitats resulting in interference with existing ecological units or when construction introduces a barrier to the free movement of species from one habitat to another. No element of the proposed development will result in fragmentation of habitats or populations of species for which any Natura 2000 sites are designated. Therefore, the proposed development will not result in the fragmentation of populations of any of these species.

2.6.4 Reduction in Species Density

As outlined in Sections 2.6.1 and 2.6.3, there will be no loss of habitat or fragmentation of populations of species that would result in any reduction in species density of any protected species associated with any of the Natura 2000 Sites within 15km of the development.

2.6.5 Changes in Key Indicators of Conservation Value (Water Quality Etc.)

Due to the nature and scale of the proposed development, distance from the designated sites, the proposed works will not give rise to impacts on any SAC or SPA in this regard.

The proposed development will not result in any discharges to or abstraction of groundwater. Therefore, there will be no groundwater related impact on any of the qualifying features of the Natura Sites.

Surface water discharge from the proposed development into local surface water sewer network, which discharges directly to Dublin Bay will have no significant effect on designated European sites.

Overall, the proposed development will not have any impact on the Natura 2000 network through changes to ground or surface water quality.

2.6.6 Climate Change

Due to the nature and scale of development, the impact of the proposed development on the Natura 2000 network as a result of potential climate change effects will not be significant.

2.7 OTHER PLANS AND PROJECTS

Article 6(3) of the Habitats Directive requires an assessment of a plan or project to consider other plans or projects that might, in combination with the plan or project, have the potential to adversely impact upon Natura 2000 sites.

2.7.1 Other Plans

A requirement of the AA process is to take into consideration any cumulative impacts as a result of other plans in the area. Other plans of relevance in the context of this development include

- Dublin City Development Plan 2016 -2022
- Transport Strategy for the Greater Dublin Area 2016-2035
- Luas Cross-City Dawson Northbound Stop Environmental Impact Statement Annex A Appropriate Assessment Screening Report.

There is no potential for the development of Traffic Management Measures at College Green to cause impacts on the Natura 2000 network when considered in combination with such other projects.

2.7.2 Other Projects

This being in a City Centre location, there are numerous other proposed projects in the vicinity including planning application for works on specific sites. Including but are not limited to:

- Luas Cross City works;
- 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

There is no potential for the development of Traffic Management Measures at College Green to cause impacts on the Natura 2000 network when considered in combination with such other projects.

3 CONCLUSION

In order to determine the potential impacts if any, of the development of the proposed College Green Traffic Management Measures, on European sites, Appropriate Assessment screening was undertaken. The likely impacts (direct, indirect and cumulative), that could arise from the proposed development (its construction, operation and decommissioning) have been examined in the context of a number of factors that could potentially affect the integrity of European sites.

It has been determined that the proposed development is not directly connected with or necessary to the management of European sites.

It can be objectively concluded that the proposed development will not cause any effects on the Natura 2000 network of sites and accordingly it is unnecessary to proceed to the next step and prepare a Natura Impact Statement / Appropriate Assessment, in this instance.

4 FINDING OF NO SIGNIFICANT IMPACTS MATRIX

Name of project or plan	Proposed College Green Traffic Management Measures.
Name and location of Natura 2000 sites	<p>South Dublin Bay SAC – 2.5km</p> <p>North Dublin Bay SAC – 5.5km</p> <p>Baldoyle Bay SAC – 10.5km</p> <p>Howth Head SAC – 11.5km</p> <p>Ireland’s Eye SAC –14.5km</p> <p>Malahide Estuary SAC-14km</p> <p>Glenasmole Valley SAC-13.5km</p> <p>Wicklow Mountains SAC-12.5km</p> <p>Rockabill to Dalkey Island SAC -11.5km</p> <p>North Bull Island SPA -7km</p> <p>South Dublin Bay and River Tolka Estuary SPA -3.5km</p> <p>Baldoyle Bay SPA-10.5km</p> <p>Howth Head Coast SPA-11.5km</p> <p>Ireland’s Eye SPA-14.5km</p> <p>Malahide Estuary SPA-14km</p> <p>Wicklow Mountains SPA-12km</p> <p>Dalkey Island SPA-13km</p>
Description of the project or plan	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.
Is the project or plan directly connected with or necessary to the management of the site (provide details)?	No
Are there other projects or plans that together with the project or plan being assessed could affect the site?	Other plans and projects have been examined. There will be no significant effects from the proposed development in combination with other plans or permitted developments in the proposed development area
The Assessment of Significance of Effects	
Describe how the project or plan (alone or in combination) is likely to affect the Natura 2000 site.	The proposed development is not likely to affect any Natura 2000 site.
Explain why these effects are not considered significant.	The proposed development is not likely to affect any Natura 2000 site
Data Collected to Carry Out the Assessment	
Who carried out the assessment?	CAAS ltd
Sources of data	NPWS database, National Biodiversity Database and site synopses
Level of assessment completed	Stage 1 AA screening
Where can the full results of the assessment be accessed and viewed?	Full results of the screening assessment are included in this report
Overall Conclusion	Stage 1 Screening concludes that the proposed development will not have a significant negative impact on any Natura 2000 site. Therefore, a Stage 2 'Appropriate Assessment' under Article 6(3) of the Habitats Directive 92/43/EEC is not required.

APPENDIX A FIGURES

Figure 2.2 Bus re-routing [left] and bus stop amendments [right]

Figure 2.3 Bus route amendments

Figure 4.1 Bus re-routing [left] and bus stop amendments [right]

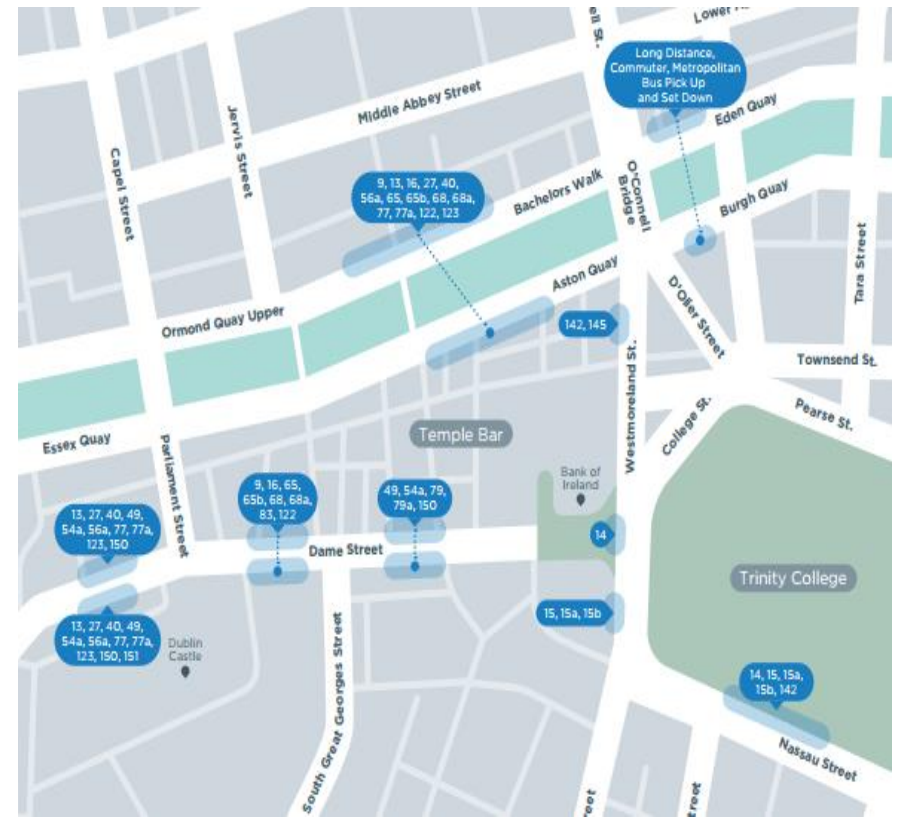


Figure 4.2 Bus route amendments



**APPENDIX B SITE SYNOPSES OF NATURA 2000 SITES WITHIN 15KM
OF PROPOSED DEVELOPMENT**

South Dublin Bay SAC (002010)
North Dublin Bay SAC (000206)
Baldoye Bay SAC (000199)
Howth Head SAC (000202)
Ireland's Eye SAC (002193)
Malahide Estuary SAC (000205)
Glenasmole Valley SAC (001209)
Wicklow Mountains SAC (001209)
Rockabil ro Dalkey Island (003000)
North Bull Island SPA (004006)
South Dublin Bay and River Tolka Estuary SPA (004024)
Baldoye Bay SPA (004016)
Howth Head Coast SPA (004113)
Ireland's Eye SPA (004117)
Malahide Estuary SPA (004025)
Wicklow Mountains SPA (004040)
Dalkey Island SPA (004172)

South Dublin Bay SAC (000210)

This site lies south of the River Liffey in Co. Dublin, and extends from the South Wall to the west pier at Dun Laoghaire. It is an intertidal site with extensive areas of sand and mudflats. The sediments are predominantly sands but grade to sandy muds near the shore at Merrion Gates. The main channel which drains the area is Cockle Lake.

The bed of Dwarf Eelgrass (*Zostera noltii*) found below Merrion Gates is the largest stand on the east coast. Green algae (*Enteromorpha* spp. and *Ulva lactuca*) are distributed throughout the area at a low density. Furoid algae occur on the rocky shore in the Maretimo to Dún Laoghaire area. Species include *Fucus spiralis*, *F. vesiculosus*, *F. serratus*, *Ascophyllum nodosum* and *Pelvetia canaliculata*. Several small, sandy beaches with incipient dune formation occur in the northern and western sectors of the site, notably at Poolbeg, Irishtown and Merrion/ Booterstown. The formation at Booterstown is very recent. Drift line vegetation occurs in association with the embryonic and incipient fore dunes. Typically drift lines occur in a band approximately 5 m wide, though at Booterstown this zone is wider in places. The habitat occurs just above the High Water Mark and below the area of embryonic dune. Species present are Sea Rocket (*Cakile maritima*), Frosted Orache (*Atriplex laciniata*), Spear-leaved Orache (*A. prostrata*), Prickly Saltwort (*Salsola kali*) and Fat Hen (*Chenopodium album*). Also occurring is Sea Sandwort (*Honkenya peploides*), Sea Beet (*Beta vulgaris* subsp. *maritima*) and Annual Sea-blite (*Suaeda maritima*).

A small area of pioneer saltmarsh now occurs in the lee of an embryonic sand dune just north of Booterstown Station. This early stage of saltmarsh development is here characterised by the presence of pioneer stands of glassworts (*Salicornia* spp.) occurring below an area of drift line vegetation. As this is of very recent origin, it covers a small area but ample areas of substrate and shelter are available for the further development of this habitat. Lugworm (*Arenicola marina*), Cockles (*Cerastoderma edule*) and annelids and other bivalves are frequent throughout the site. The small gastropod *Hydrobia ulvae* occurs on the muddy sands off Merrion Gates. South Dublin Bay is an important site for waterfowl. Although birds regularly commute between the south bay and the north bay, recent studies have shown that certain populations which occur in the south bay spend most of their time there. The principal species are Oystercatcher (1215), Ringed Plover (120), Sanderling (344), Dunlin (2628) and Redshank (356) (average winter peaks 1996/97 and 1997/98). Up to 100 Turnstones are usual in the south bay during winter. Brent Goose regularly occur in numbers of international importance (average peak 299). Bar-tailed Godwit (565), a species listed on Annex I of the E.U. Birds Directive, also occur. Large numbers of gulls roost in South Dublin Bay, e.g. 4,500 Black-headed Gulls in February 1990; 500 Common Gulls in February 1991. It is also an important tern roost in the autumn, regularly holding 2000-3000 terns including Roseate Terns, a species listed on Annex I of the E.U. Birds Directive. South Dublin Bay is largely protected as a Special Protection Area. At low tide the inner parts of the south bay are used for amenity purposes. Baitdigging is a regular activity on the sandy flats. At high tide some areas have windsurfing and jet-skiing. This site is a fine example of a coastal system with extensive sand and mudflats, a habitat listed on Annex I of the E.U. Habitats Directive. South Dublin Bay is also an internationally important bird site.

North Dublin Bay SAC (000206)

This site covers the inner part of north Dublin Bay, the seaward boundary extending from the Bull Wall lighthouse across to the Martello Tower at Howth Head. The North Bull Island is the focal point of this site. It now extends for about 5 km in length and is up to 1 km wide in places. A well-developed and dynamic dune system stretches along the seaward side of the island. Various types of dunes occur, from fixed dune grassland to pioneer communities on foredunes. Marram Grass (*Ammophila arenaria*) is dominant on the outer dune ridges, with Lyme-grass (*Leymus arenarius*) and Sand Couch (*Elymus farctus*) on the foredunes. Behind the first dune ridge, plant diversity increases with the appearance of such species as Wild Pansy (*Viola tricolor*), Kidney Vetch (*Anthyllis vulneraria*), Common Bird's-foot-trefoil (*Lotus corniculatus*), Common Restharrow (*Ononis repens*), Yellow-rattle (*Rhinanthus minor*) and Pyramidal Orchid (*Anacamptis pyramidalis*). In these grassy areas and slacks, the scarce Bee Orchid (*Ophrys apifera*) occurs.

About 1 km from the tip of the island, a large dune slack with a rich flora occurs, usually referred to as the 'Alder Marsh' because of the presence of Alder trees (*Alnus glutinosa*). The water table is very near the surface and is only slightly brackish. Saltmarsh Rush (*Juncus maritimus*) is the dominant species, with Meadowsweet (*Filipendula ulmaria*) and Devil's-bit Scabious (*Succisa pratensis*) being frequent. The orchid flora is notable and includes Marsh Helleborine (*Epipactis palustris*), Common Twayblade (*Listera ovata*), Autumn Lady's-tresses (*Spiranthes spiralis*) and Marsh Orchids (*Dactylorhiza* spp.). Saltmarsh extends along the length of the landward side of the island. The edge of the marsh is marked by an eroding edge which varies from 20 cm to 60 cm high. The marsh can be zoned into different levels according to the vegetation types present. On the lower marsh, Glasswort (*Salicornia europaea*), Common Saltmarsh-grass (*Puccinellia maritima*), Annual Sea-blite (*Suaeda maritima*) and Greater Sea-spurrey (*Spergularia media*) are the main species. Higher up in the middle marsh Sea Plantain (*Plantago maritima*), Sea Aster (*Aster tripolium*), Sea Arrowgrass (*Triglochin maritima*) and Thrift (*Armeria maritima*) appear. Above the mark of the normal high tide, species such as Common Scurvygrass (*Cochlearia officinalis*) and Sea Milkwort (*Glaux maritima*) are found, while on the extreme upper marsh, the rushes *Juncus maritimus* and *J. gerardi* are dominant.

Towards the tip of the island, the saltmarsh grades naturally into fixed dune vegetation. The habitat 'annual vegetation of drift lines' is found in places, along the length of Dollymount Strand, with species such as Sea Rocket (*Cakile maritima*), Oraches (*Atriplex* spp.) and Prickly Saltwort (*Salsola kali*). The island shelters two intertidal lagoons which are divided by a solid causeway. The sediments of the lagoons are mainly sands with a small and varying mixture of silt and clay. The north lagoon has an area known as the "Salicornia flat", which is dominated by *Salicornia dolichostachya*, a pioneer glasswort species, and covers about 25 ha. Beaked Tasselweed (*Ruppia maritima*) occurs in this area, along with some Narrow-leaved Eelgrass (*Zostera angustifolia*). Dwarf Eelgrass (*Z. noltii*) also occurs in Sutton Creek. Common Cordgrass (*Spartina anglica*) occurs in places but its growth is controlled by management. Green algal mats (*Enteromorpha* spp., *Ulva lactuca*) cover large areas of the flats during summer. These sediments have a rich macrofauna, with high densities of Lugworms (*Arenicola marina*) in parts of the north lagoon. Mussels (*Mytilus edulis*) occur in places, along with bivalves such as *Cerastoderma edule*, *Macoma balthica* and *Scrobicularia plana*. The small gastropod *Hydrobia ulvae* occurs in high densities in places, while the crustaceans *Corophium volutator* and *Carcinus maenas* are common. The sediments on the seaward side of North Bull Island are mostly sands. The site extends below the low spring tide mark to include an area of the sublittoral zone.

Three rare plant species which are legally protected under the Flora (Protection) Order, 1999 have been recorded on the North Bull Island. These are Lesser Centaury (*Centaureum pulchellum*), Red Hemp-nettle (*Galeopsis angustifolia*) and Meadow Saxifrage (*Saxifraga granulata*). Two further species listed as threatened in the Red Data Book, Wild Clary/Sage (*Salvia verbenaca*) and Spring Vetch (*Vicia lathyroides*), have also been recorded. A rare liverwort, *Petalophyllum ralfsii*, was first recorded from the North Bull Island in 1874 and has recently been confirmed as still present. This species is of high conservation value as it is listed on Annex II of the E.U. Habitats Directive. The North Bull is the only known extant site for the species in Ireland away from the western seaboard.

North Dublin Bay is of international importance for waterfowl. During the 1994/95 to 1996/97 period the following species occurred in internationally important numbers (figures are average maxima): Brent Goose 2,333; Knot 4,423; Bar-tailed Godwit 1,586. A further 14 species occurred in nationally important concentrations - Shelduck 1505; Wigeon 1,166; Teal 1,512; Pintail 334; Shoveler 239; Oystercatcher 2,190; Ringed Plover 346; Grey Plover 816; Sanderling 357; Dunlin 6,238; Black-tailed Godwit 156; Curlew 1,193; Turnstone 197 and Redshank 1,175. Some of these species frequent South Dublin Bay and the River Tolka Estuary for feeding and/or roosting purposes (mostly Brent Goose, Oystercatcher, Ringed Plover, Sanderling and Dunlin). The tip of the North Bull Island is a traditional nesting site for Little Tern. A high total of 88 pairs nested in 1987. However, nesting attempts have not been successful since the early 1990s. Ringed Plover, Shelduck, Mallard, Skylark, Meadow Pipit and Stonechat also nest. A well-known population of Irish Hare is resident on the island. The invertebrates of the North Bull Island have been studied and the island has been shown to contain at least seven species of regional or national importance in Ireland (from the Orders Diptera, Hymenoptera and Hemiptera). The main land uses of this site are amenity activities and nature conservation.

The North Bull Island is the main recreational beach in Co. Dublin and is used throughout the year. Much of the land surface of the island is taken up by two golf courses. Two separate Statutory Nature Reserves cover much of the island east of the Bull Wall and the surrounding intertidal flats. The site is used regularly for educational purposes. North Bull Island has been designated a Special Protection Area under the E.U. Birds Directive and it is also a statutory Wildfowl Sanctuary, a Ramsar Convention site, a Biogenetic Reserve, a Biosphere Reserve and a Special Area Amenity Order site. This site is an excellent example of a coastal site with all the main habitats represented. The site holds good examples of nine habitats that are listed on Annex I of the E.U. Habitats Directive; one of these is listed with priority status. Several of the wintering bird species have populations of international importance, while some of the invertebrates are of national importance. The site contains a numbers of rare and scarce plants including some which are legally protected. Its proximity to the capital city makes North Dublin Bay an excellent site for educational studies and research.

Baldoyle Bay SAC (000199)

Baldoyle Bay SAC extends from just below Portmarnock village to the west pier at Howth in Co. Dublin. It is a tidal estuarine bay protected from the open sea by a large sand-dune system. Two small rivers, the Mayne and the Sluice, flow into the bay. The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes): [1140] Tidal Mudflats and Sandflats [1310] Salicornia Mud [1330] Atlantic Salt Meadows [1410] Mediterranean Salt Meadows Large areas of intertidal flats are exposed at

low tide at this site. These are mostly sands but grade to muds in the inner sheltered parts of the estuary. Extensive areas of Common Cord-grass (*Spartina anglica*) occur in the inner estuary. Both the Narrow-leaved Eelgrass (*Zostera angustifolia*) and the Dwarf Eelgrass (*Z. noltii*) are also found here. During summer, the sandflats of the sheltered areas are covered by mats of green algae (*Enteromorpha* spp. and *Ulva lactuca*). The sediments have a typical macrofauna, with Lugworm (*Arenicola marina*) dominating the sandy flats. The tubeworm *Janice conchilega* is present in high densities at the low tide mark and the small gastropod *Hydrobia ulvae* occurs in the muddy areas, along with the crustacean *Corophium volutator*.

Areas of saltmarsh occur near Portmarnock Bridge and at Portmarnock Point, with narrow strips along other parts of the estuary. Species such as glassworts (*Salicornia* spp.), Sea-purslane (*Halimione portulacoides*), Sea Plantain (*Plantago maritima*) and Sea Rush (*Juncus maritimus*) are found here. Portmarnock Spit formerly had a welldeveloped sand dune system but this has been largely replaced by golf courses and is mostly excluded from the site. A few dune hills are still intact at Portmarnock Point, and there are small dune hills east of Cush Point and below the Claremont Hotel. These are mostly dominated by Marram (*Ammophila arenaria*), though Lymegrass (*Leymus arenarius*) is also found. The site includes a brackish marsh along the Mayne River. Soils here have a high organic content and are poorly drained, and some pools occur. Rushes (*Juncus* spp.) and salt tolerant species such as Common Scurvygrass (*Cochleria officinalis*) and Greater Sea-spurrey (*Spergularia media*) are typical of this area. Knotted Hedgeparsley (*Torilis nodosa*), a scarce plant in eastern Ireland, has been recorded here, along with Brackish Water-crowfoot (*Ranunculus baudotti*), a species of brackish pools and ditches which has declined in most places due to habitat loss.

Two plant species, legally protected under the Flora (Protection) Order, 1999, occur in the Mayne marsh, Borrer's Saltmarsh-grass (*Puccinellia fasciculata*) and Meadow Barley (*Hordeum secalinum*). Baldoyle Bay is an important bird site for wintering waterfowl and the inner part of the estuary is a Special Protection Area under the E.U. Birds Directive as well as being a Statutory Nature Reserve. Internationally important numbers of Pale-bellied Brent Goose (418) and nationally important numbers of two Annex I Birds Directive species - Golden Plover (1,900) and Bar-tailed Godwit (283) - have been recorded. Four other species also reached nationally important numbers: Shelduck (147), Pintail (26), Grey Plover (148) and Ringed Plover (218) - all figures are average peaks for four winters 1994/95 to 1997/1998. Breeding wetland birds at the site include Shelduck, Mallard and Ringed Plover. Small numbers of Little Tern, a species listed on Annex I of the E.U. Birds Directive, have bred on a few occasions at Portmarnock Point but not since 1991. The area surrounding Baldoyle Bay is densely populated and so the main threats to the site include visitor pressure, disturbance to wildfowl and dumping. In particular, the dumping of spoil onto the foreshore presents a threat to the value of the site. Baldoyle Bay is a fine example of an estuarine system. It contains four habitats listed on Annex I of the E.U. Habitats Directive, and supports two legally protected plant species. The site is also an important bird area and part of it is a Special Protection Area under the E.U. Birds Directive, as well as being a Statutory Nature Reserve. It supports internationally important numbers of Brent Goose and nationally important numbers of six other bird species, including two Annex I Birds Directive species.

Howth Head SAC (000202)

Howth Head is a rocky headland situated on the northern side of Dublin Bay. The peninsula is composed of Cambrian slates and quartzites, joined to the mainland by a post-glacial

raised beach. Limestone occurs on the north-west side while glacial drift is deposited against the cliffs in places. The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes): [1230] Vegetated Sea Cliffs [4030] Dry Heath A mosaic of heathland vegetation occurs on the slopes above the sea cliffs and in the area of the summit. This is dominated by Western Gorse (*Ulex gallii*), Heather (*Calluna vulgaris*), Bell Heather (*Erica cinerea*) and localised patches of Bracken (*Pteridium aquilinum*). In more open areas species such as English Stonecrop (*Sedum anglicum*), Wood Sage (*Teucrium scorodonia*) and Navelwort (*Umbilicus rupestris*) occur, along with some areas of bare rock. The heath merges into dry grassland in places, with bent grasses (*Agrostis* spp.), Red Fescue (*Festuca rubra*), Cock's-foot (*Dactylis glomerata*), Yorkshire-fog (*Holcus lanatus*), Sweet Vernal-grass (*Anthoxanthum odoratum*), Lady's Bedstraw (*Galium verum*), Ribwort Plantain (*Plantago lanceolata*) and Yellow-wort (*Blackstonia perfoliata*). In the summit area there are a few wet flushes and small bogs, with typical bog species such as Bog Asphodel (*Narthecium ossifragum*) and sundews (*Drosera* spp.). Patches of scrub, mostly Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*), Willow (*Salix* spp.) and Downy Birch (*Betula pubescens*), occur in places.

The maritime flora is of particular interest as a number of scarce and local plants have been recorded, including Golden-samphire (*Inula crithmoides*), Sea Wormwood (*Artemisia maritima*), Grass-leaved Orache (*Atriplex littoralis*), Frosted Orache (*Atriplex laciniata*), Sea Spleenwort (*Asplenium marinum*), Bloody Crane's-bill (*Geranium sanguineum*), Spring Squill (*Scilla verna*), Sea Stork's-bill (*Erodium maritimum*) and three uncommon clover species: Knotted Clover (*Trifolium striatum*), Bird's-foot Clover (*T. ornithopodioides*) and Western Clover (*T. occidentalis*). Rock outcrops which are important for lichens are distributed widely around Howth Head. The richest area for lichens appears to be around Balscadden quarries.

In addition, the Earlscliffe area is of national importance for lichens and is the type locality for the black, yellow and grey lichen zonation. A number of Red Data Book plant species, the latter five of which are legally protected under the Flora (Protection) Order, 1999, have been recorded at this site - Green-winged Orchid (*Orchis morio*), Bird's-foot (*Ornithopus perpusillus*), Hairy Violet (*Viola hirta*), Rough Poppy (*Papaver hybridum*), Pennyroyal (*Mentha pulegium*), Heath Cudweed (*Omalotheca sylvatica*) and Betony (*Stachys officinalis*). Curved Hard-grass (*Parapholis incurva*), a species which had not previously been recognized as occurring in Ireland, was found at Red Rock in 1979. The site is of national importance for breeding seabirds. A census in 1985-87 recorded the following numbers: Fulmar (105 pairs), Shags (25 pairs), Herring Gulls (70 pairs), Kittiwake (c. 1,700 pairs), Guillemot (585 birds), Razorbill (280 birds). In 1990, 21 pairs of Black Guillemot were counted. A number of rare invertebrates have been recorded from the site: the fly *Phaonia exoleta* (Order Diptera) occurs in the woods at the back of Deerpark and has not been seen anywhere else in Ireland, while the ground beetle *Trechus rubens* (Order Coleoptera) is found on storm beaches on the eastern cliffs. A hoverfly, known from only a few Irish locations, *Sphaerophoria batava* (Order Diptera), is present in the heathland habitat within the site. The main land use within the area is recreation, mostly walking and horse-riding, and this has led to some erosion within the site. Fires also pose a danger to the site. There may also be a threat in some areas from further housing development. Howth Head displays a fine range of natural habitats, including two Annex I habitats, within surprisingly close proximity to Dublin city. The site is also of scientific importance for its seabird colonies, invertebrates and lichens. It also supports populations of at least two legally protected plant species and several other scarce plants.

Ireland's Eye SAC (002193)

Ireland's Eye is located about 1.5 km north of Howth in Co. Dublin. It is a Cambrian island with quartzite which forms spectacular cliffs on the north-east side. Elsewhere much of the area is covered by drift. There is a Martello tower at the west end of the island and an ancient ruined church in the middle. The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes): [1220] Perennial Vegetation of Stony Banks [1230] Vegetated Sea Cliffs On Ireland's Eye the drift soils support a plant community of Bracken (*Pteridium aquilinum*) and various grasses, especially Red Fescue (*Festuca rubra*), along with Bluebells (*Hyacinthoides non-scripta*), Common Dog-violet (*Viola riviniana*) and Navelwort (*Umbilicus rupestris*).

The thinner soils have some interesting species, including Spring Squill (*Scilla verna*), Knotted Clover (*Trifolium striatum*) and Field Mouse-ear (*Cerastium arvense*). Bloody Cranesbill (*Geranium sanguineum*) has also been recorded from here. The cliff maritime flora includes Rock Sea-spurrey (*Spergularia rupicola*), Sea Stork'sbill (*Erodium maritimum*), Rock Samphire (*Crithmum maritimum*), Golden Samphire (*Inula crithmoides*), Rock Sea-lavender (*Limonium binervosum*), Meadow Rue (*Thalictrum minor*), Portland Spurge (*Euphorbia portlandica*) and Tree-mallow (*Lavatera arborea*). A small area of shingle vegetation occurs above the sandy beach at Carrigeen Bay on the western side of the island. Species such as Curled Dock (*Rumex crispus*), Silverweed (*Potentilla anserina*) and Spear-leaved Orache (*Atriplex prostrata*) occur, while the rare Sea-kale (*Crambe maritima*), a characteristic species of this habitat, has been known from this site since 1894 and was recorded as recently as 1981. Sea-kale is listed as threatened in the Irish Red Data Book. Also occurring on the sandy/ shingle beach is the Red Data Book species Henbane (*Hyoscyamus niger*). Ireland's Eye is of national importance for breeding seabirds. In 1999 the following were counted: Fulmar - 70 pairs; Cormorant - 306 pairs; Shag - 32 pairs; Lesser Blackbacked Gull - 1 pair; Herring Gull – approx. 250 pairs; Great Black-backed Gull – approx. 100 pairs; Kittiwake - 941 pairs; Guillemot – 2,191 individuals; Razorbill - 522 individuals.

A Gannet colony was established on the stack at the east end of the island in the late 1980s, and in 1999 142 pairs bred. Puffin was formerly common, but nowadays not more than 20 individuals occur. Black Guillemot also breeds, with 15 individuals recorded in 1998. Several pairs each of Oystercatcher and Ringed Plover breed, while the island is a traditional site for Peregrine Falcon. In winter small numbers of Greylag and Pale-bellied Brent Goose graze on the island. This uninhabited marine island has a well-developed maritime flora, with two habitats (sea cliffs and shingle) listed on Annex II of the E.U. Habitats Directive, and nationally important seabird colonies. Owing to its easy access and proximity to Dublin it has great educational and amenity value.

Malahide Estuary SAC (000205)

Malahide Estuary is situated immediately north of Malahide and east of Swords in Co. Dublin. It is the estuary of the River Broadmeadow. The site is divided by a railway viaduct which was built in the 1800s. The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes): [1140] Tidal Mudflats and Sandflats [1310] Salicornia Mud [1320] Spartina Swards [1330] Atlantic Salt Meadows [1410] Mediterranean Salt Meadows [2120] Marram Dunes (White Dunes) [2130] Fixed Dunes (Grey Dunes)* The outer part of the estuary is mostly cut off from the sea by a large sand

spit, known as 'the island'. The outer estuary drains almost completely at low tide, exposing sand and mud flats. There is a large bed of Eelgrass (Dwarf Eelgrass, *Zostera noltii*, and Narrow-leaved Eelgrass, *Z. angustifolia*) in the north section of the outer estuary, along with Beaked Tasselweed (*Ruppia maritima*) and extensive mats of green algae (*Enteromorpha* spp., *Ulva lactuca*). Common Cord-grass (*Spartina anglica*) is also widespread in this sheltered part of the estuary. The dune spit has a well-developed outer dune ridge dominated by Marram Grass (*Ammophila arenaria*). The dry areas of the stabilised dunes have a dense covering of Burnet Rose (*Rosa pimpinellifolia*), Red Fescue (*Festuca rubra*) and species such as Yellow-wort (*Blackstonia perfoliata*), Autumn Gentian (*Gentianella amarella*), Hound's-tongue (*Cynoglossum officinale*), Carline Thistle (*Carlina vulgaris*) and Pyramidal Orchid (*Anacamptis pyramidalis*). Much of the interior of the spit is taken up by a golf course.

The inner stony shore has frequent Sea-holly (*Eryngium maritimum*). Welldeveloped saltmarshes occur at the tip of the spit. Atlantic salt meadow is the principle type and is characterised by species such as Sea-purslane (*Halimolobos portulacoides*), Sea Aster (*Aster tripolium*), Thrift (*Armeria maritima*), Sea Arrowgrass (*Triglochin maritima*) and Common Saltmarsh-grass (*Puccinellia maritima*). Elsewhere in the outer estuary, a small area of Mediterranean salt meadow occurs which is characterised by the presence of Sea Rush (*Juncus maritimus*). Below the salt marshes there are good examples of pioneering glasswort (*Salicornia* spp.) swards and other annual species, typified by *S. dolichostachya* and Annual Sea-blite (*Suaeda maritima*). The inner estuary does not drain at low tide apart from the extreme inner part. Here, patches of saltmarsh and salt meadows occur, with Sea Aster, Sea Plantain (*Plantago maritima*) and Sea Club-rush (*Scirpus maritimus*). Beaked Tasselweed occurs in one of the channels. The site includes a fine area of rocky shore south-east of Malahide and extending towards Portmarnock. This represents the only continuous section through the fossiliferous Lower Carboniferous rocks in the Dublin Basin, and is the type locality for several species of fossil coral.

The estuary is an important wintering bird site and holds an internationally important population of Brent Goose and nationally important populations of a further 15 species. Average maximum counts during the 1995/96-1997/98 period were: Brent Goose 1217; Great Crested Grebe 52; Mute Swan 106; Shelduck 471; Pochard 200; Goldeneye 333; Red-breasted Merganser 116; Oystercatcher 1228; Golden Plover 2123; Grey Plover 190; Redshank 454; Wigeon 50; Teal 78; Ringed Plover 106; Knot 858; Dunlin 1474; Greenshank 38; Pintail 53; Black-tailed Godwit 345; Bar-tailed Godwit 99. The high numbers of diving birds reflects the lagoon-type nature of the inner estuary. The estuary also attracts migrant species such as Ruff, Curlew Sandpiper, Spotted Redshank and Little Stint. Breeding birds of the site include Ringed Plover, Shelduck and Mallard. Up to the 1950s there was a major tern colony at the southern end of the island and the habitat remains suitable for these birds. The inner part of the estuary is heavily used for water sports. A section of the outer estuary has recently been infilled for a marina and housing development. This site is a fine example of an estuarine system with all the main habitats represented. The site is important ornithologically, with a population of Brent Goose of international significance.

Glenasmole Valley SAC (001209)

Glenasmole Valley in south Co. Dublin lies on the edge of the Wicklow uplands, approximately 5 km from Tallaght. The River Dodder flows through the valley and has been impounded here to form two reservoirs which supply water to south Dublin. The non-calcareous bedrock of the Glenasmole Valley has been overlain by deep drift deposits which

now line the valley sides. They are partly covered by scrub and woodland, and on the less precipitous parts, by a herb-rich grassland. There is much seepage through the deposits, which brings to the surface water rich in bases, which induces local patches of calcareous fen and, in places, petrifying springs. The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes): [6210] Orchid-rich Calcareous Grassland* [6410] Molinia Meadows [7220] Petrifying Springs* At this site, examples of calcareous fen and flush occur between the two reservoirs, where sedges (including *Carex flacca* and *C. panicea*) are joined by such species as Grass-of-parnassus (*Parnassia palustris*), Few-flowered Spike-rush (*Eleocharis quinqueflora*), Zig-zag clover (*Trifolium medium*) and the scarce Fen Bedstraw (*Galium uliginosum*).

Tufa depositing springs are long-known from the site, along the valley sides, and some have substantial tufa mounds and banks. Tufa formation is also known from small streams within the woodland at the site. Within the hazel woods, and associated with the springs and flushes, a distinctive flora with Marsh Hawk'sbeard (*Crepis paludosa*) and luxuriant stands of Great Horsetail (*Equisetum telmateia*) has developed. Orchid-rich grassland occurs in the drier parts of this site and in places grades into Molinia meadow. Orchids recorded in these habitats include Frog Orchid (*Coeloglossum viride*), Northern Marsh-orchid (*Dactylorhiza purpurella*), Fragrant Orchid (*Gymnadenia conopsea*), Marsh Helleborine (*Epipactis palustris*), Early-purple Orchid (*Orchis mascula*) and Greater Butterfly Orchid (*Platanthera chlorantha*). Two further orchid species, both Red Data Book-listed, have also been found here, Greenwinged Orchid (*Orchis morio*) and Small-white Orchid (*Pseudorchis albida*). Common grasses in the sward include Sweet Vernal-grass (*Anthoxanthum odoratum*), Creeping Bent (*Agrostis stolonifera*) and Crested Dog's-tail (*Cynosurus cristatus*). Other species which occur are Common Bird's-foot-trefoil (*Lotus corniculatus*), Kidney Vetch (*Anthyllis vulneraria*), Common Restharrow (*Ononis repens*), Yellow-wort (*Blackstonia perfoliata*) and Autumn Gentian (*Gentianella amarella*). While much of the calcareous grassland has been improved to some extent for agriculture, a suite of typical species still remain. The areas of Molinia meadows at the site occur associated with the grasslands on the valley sides, and in particular in seepage and flushed areas. Typical and indicative species include Greater Bird's-foot-trefoil (*Lotus uliginosus*), Tormentil (*Potentilla erecta*), Purple Moor-grass (*Molinia caerulea*), Sharp-flowered Rush (*Juncus acutiflorus*), Adder's-tongue (*Ophioglossum vulgatum*), Meadow Thistle (*Cirsium dissectum*) and Fen Bedstraw.

As noted above, orchids are frequent in the grasslands at this site. Woodland occurs in patches around the site. On the east side of the valley, below the northern lake, a Hazel (*Corylus avellana*) wood has developed on the unstable calcareous slopes and includes other species such as Ash (*Fraxinus excelsior*), Downy Birch (*Betula pubescens*), Goat Willow (*Salix caprea*) and (Irish) Whitebeam (*Sorbus hibernica*). Spring Wood-rush (*Luzula pilosa*), Wood Speedwell (*Veronica montana*) and Bramble (*Rubus fruticosus* agg.) are present in the ground flora. Wet semi-natural broadleaved woodland is also found around the reservoirs and includes Alder (*Alnus glutinosa*) and willow (*Salix* spp.), with Yellow Iris (*Iris pseudacorus*), horsetails (*Equisetum* spp.), Bramble and localised patches of Japanese Knotweed (*Reynoutria japonica*), an introduced and invasive species. The lake shore vegetation is not well developed, which is typical of a reservoir. There are occasional patches of Reed Canary-grass (*Phalaris arundinacea*) and Purpleloosestrife (*Lythrum salicaria*), which are more extensive around the western shore of the northern lake, along with Common Marsh-bedstraw (*Galium palustre*) and Water Mint (*Mentha aquatica*). Other vegetation includes Shoreweed (*Littorella uniflora*) and the scarce Water Sedge (*Carex aquatilis*). As well as the Green-winged Orchid and Small-white Orchid, two other threatened

species which are listed in the Irish Red Data Book occur in the site, Yellow Archangel (*Lamiastrum galeobdolon*) and Yellow Bird's-nest (*Monotropa hypopitys*). Small-white Orchid is legally protected under the Flora (Protection) Order, 1999. The site provides excellent habitat for bats, with at least four species recorded: Pipistrelle, Leisler's, Daubenton's and Brown Long-eared. Otter occurs along the river and reservoirs. The site supports Kingfisher, an Annex I species under the E.U. Birds Directive. Glenasmole Valley contains a high diversity of habitats and plant communities, including three habitats listed on Annex I of the E.U. Habitats Directive. The presence of four Red Data Book plant species further adds to the value of the site, as does the presence of populations of several mammal and bird species of conservation interest.

Wicklow Mountains SAC (002122)

Wicklow Mountains SAC is a complex of upland areas in Counties Wicklow and Dublin, flanked by the Blessington reservoir to the west and Vartry reservoir in the east, Cruagh Mountain in the north and Lybagh Mountain in the south. Most of the site is over 300 m, with much ground over 600 m. The highest peak is 925 m at Lugnaquilla. The Wicklow uplands comprise a core of granites flanked by Ordovician schists, mudstones and volcanics. The form of the Wicklow Glens is due to glacial erosion. The topography is typical of a mountain chain, showing the effects of more than one cycle of erosion. The massive granite has weathered characteristically into broad domes. Most of the western part of the site consists of an elevated moorland, covered by peat. The surrounding schists have assumed more diverse outlines, forming prominent peaks and rocky foothills with deep glens. The dominant topographical features are the products of glaciation. High corrie lakes, deep valleys and moraines are common features of this area. The substrate over much of the area is peat, usually less than 2 m deep. Poor mineral soil covers the slopes, and rock outcrops are frequent. The Wicklow Mountains are drained by several major rivers including the Dargle, Liffey, Dodder, Slaney and Avonmore. The river water in the mountain areas is often peaty, especially during floods. The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes): [3130] Oligotrophic to Mesotrophic Standing Waters [3160] Dystrophic Lakes [4010] Wet Heath [4030] Dry Heath [4060] Alpine and Subalpine Heaths [6230] Species-rich *Nardus* Grassland* [7130] Blanket Bogs (Active)* [8110] Siliceous Scree [8210] Calcareous Rocky Slopes [8220] Siliceous Rocky Slopes [91A0] Old Oak Woodlands [1355] Otter (*Lutra lutra*)

The vegetation over most of Wicklow Mountains SAC is a mosaic of heath, blanket bog and upland grassland (mostly on peaty soil, though some on mineral soil), stands of dense Bracken (*Pteridium aquilinum*), and small woodlands mainly along the rivers. Mountain loughs and corrie lakes are scattered throughout the site. The two dominant vegetation communities in the area are heath and blanket bog. Heath vegetation, with both wet and dry heath well represented, occurs in association with blanket bog, upland acid grassland and rocky habitats. The wet heath is characterised by species such as Heather (*Calluna vulgaris*), Cross-leaved Heath (*Erica tetralix*), cottongrasses (*Eriophorum* spp.), Tormentil (*Potentilla erecta*), Mat-grass (*Nardus stricta*), bent grasses (*Agrostis* spp.) and bog mosses (*Sphagnum* spp.). In places the wet heath occurs in conjunction with flush communities and streamside vegetation, and here species such as Heath Rush (*Juncus squarrosus*) and sedges (*Carex* spp.) are found. Dry heath at this site is confined to shallow peaty soils on steep slopes where drainage is better and particularly in sheltered conditions. It is characterised by species such as Heather, gorse (*Ulex* spp.), Bell Heather (*Erica cinerea*), Bilberry (*Vaccinium myrtillus*), Purple Moor-grass (*Molinia caerulea*) and lichens (*Cladonia* spp.). In places the heath grades into upland grassland on mineral soil. Blanket bog is

usually dominated by cottongrasses, Heather and bog mosses. On steeper slopes there is some flushing and here Purple Moor-grass, Heath Rush and certain Sphagnum species become more common. The Liffey Head blanket bog is among the best of its kind in eastern Ireland, with deep peat formations and an extensive system of dystrophic pools developed among the hummocks and hollows on the bog surface. The vegetation is largely dominated by Heather and Cross-leaved Heath, with cottongrasses (*Eriophorum vaginatum* and *E. angustifolium*), Deergrass (*Scirpus cespitosus*) and Bog Asphodel (*Narthecium ossifragum*). In drier areas, Bilberry and Cowberry (*Vaccinium vitis-idaea*) are common, while the scarce Bog-rosemary (*Andromeda polifolia*) is also found. Blanket bog occurs over extensive areas of deeper peat on the plateau and also on gentle slopes at high altitudes. Due to the underlying rock strata, the water of the rivers and streams is acid rather than alkaline. The water is generally oligotrophic and free from enrichment. The lakes within the area range from the high altitude lakes of Lough Firrib and Three Lakes, to the lower pater-noster lakes of Glendalough, Lough Tay and Lough Dan. Spectacular corrie lakes, such as Loughs Bray (Upper and Lower), Ouler, Cleevaun, Arts, Kellys and Nahanagan, exhibit fine sequences of moraine stages. The deep lakes are characteristically species-poor, but hold some interesting plants including an unusual form of Quillwort (*Isoetes lacustris* var. *morei*), a stonewort (*Nitella* sp.) and Floating Bur-reed (*Sparganium angustifolium*).

Alpine vegetation occurs on some of the mountain tops, notably in the Lugnaquilla area, and also on exposed cliffs and scree slopes elsewhere in the site. Here alpine heath vegetation is represented with heath species such as Crowberry (*Empetrum nigrum*) and Cowberry, and others such as Dwarf Willow (*Salix herbacea*), the greygreen moss *Racomitrium lanuginosum*, and scarce species such as Mountain Clubmoss (*Diphasiastrum alpinum*), Firmoss (*Huperzia selago*), and Starry Saxifrage (*Saxifraga stellaris*). Some rare arctic-alpine species have been recorded, including Alpine Lady's-mantle (*Alchemilla alpina*) and Alpine Saw-wort (*Saussurea alpina*). Small areas of old oakwood (*Blechno-Quercetum petraeae* type) occur on the slopes of Glendalough and Glenmalure, near Lough Tay and Lough Dan, with native Sessile Oak (*Quercus petraea*) trees, many of which are 100-120 years old. On wetter areas, wet broadleaved semi-natural woodlands occur which are dominated by Downy Birch (*Betula pubescens*). Mixed woodland with non-native tree species also occurs. The site supports a range of rare plant species. Parsley Fern (*Cryptogramma crispa*), Marsh Clubmoss (*Lycopodiella inundata*), Lanceolate Spleenwort (*Asplenium billotii*), Small-white Orchid (*Pseudorchis albida*) and Bog Orchid (*Hammarbya paludosa*) are all legally protected under the Flora (Protection) Order, 1999. Greater Broomrape (*Orobanche rapum-genistae*), Alpine Saw-wort and Alpine Lady's-mantle are listed in the Irish Red Data Book. The rare Myxomycete fungus *Echinostelium colliculosum* has been recorded from the Military Road.

The Red Data Book fish species Arctic Char has been recorded from Lough Dan, but this population may now have died out. Mammals and birds which occur are typical of the uplands. Deer are abundant, mainly hybrids between Red and Sika Deer. Other mammals include Hare, Badger and Otter, the latter being a species listed on Annex II of the E.U. Habitats Directive. Pine Marten has recently been confirmed as occurring within the site. Among the birds, Meadow Pipit, Skylark, Raven and Red Grouse are resident throughout the site. Wheatear, Whinchat and the scarce Ring Ouzel are summer visitors. Wood Warbler and Redstarts are rare breeding species of the woodlands. Dipper and Grey Wagtail are typical riparian species. Merlin and Peregrine, both Annex I species of the E.U. Birds Directive, breed within the site. Recently, Goosander has become established as a breeding species. Large areas of the site are owned by the National Parks and Wildlife Service (NPWS) and are managed for nature conservation based on traditional land uses of upland areas. The most common land use is traditional sheep grazing, but others include turf cutting, mostly hand-

cutting but some machine-cutting also occurs. These activities are largely confined to the Military Road, where there is easy access. Large areas which had been previously hand-cut and are now abandoned are regenerating. In the last 40 years, forestry has become an important land use in the uplands, and has affected both the wildlife and the hydrology of the area. Amenity use is very high, with Dublin city close to the site. Peat erosion is frequent on the peaks. This may be a natural process, but is likely to be accelerated by activities such as grazing. Wicklow Mountains is important as a complex, extensive upland site. It shows great diversity from a geomorphological and a topographical point of view. The vegetation provides examples of the typical upland habitats with heath, blanket bog and upland grassland covering large, relatively undisturbed areas. In all, eleven habitats listed on Annex I of the E.U. Habitats Directive are found within the site. Several rare or protected plant and animal species occur, adding further to its value.

Rockabill to Dalkey Island SAC (003000)

This site includes a range of dynamic inshore and coastal waters in the western Irish Sea. These include sandy and muddy seabed, reefs, sandbanks and islands. This site extends southwards, in a strip approximately 7 km wide and 40 km in length, from Rockabill, running adjacent to Howth Head, and crosses Dublin Bay to Frazer Bank in south Co. Dublin. The site encompasses Dalkey, Muglins and Rockabill islands. The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes): [1170] Reefs [1351] Harbour Porpoise (*Phocoena phocoena*) Reef habitat is uncommon along the eastern seaboard of Ireland due to prevailing geology and hydrographical conditions. Expansive surveys of the Irish coast have indicated that the greatest resource of this habitat within the Irish Sea is found fringing offshore islands which are concentrated along the Dublin coast. A detailed survey of selected suitable islands has shown areas with typical biodiversity for this habitat both intertidally and subtidally.

Species recorded in the intertidal included *Fucus spiralis*, *Fucus serratus*, *Pelvetia canaliculata*, *Ascophyllum nodosum*, *Semibalanus balanoides* and *Necora puber*. Subtidally, a wide range of species include *Laminaria hyperborea*, *Flustra foliacea*, *Alaria esculenta*, *Halidrys siliquosa*, *Pomatocereos triqueter*, *Alcyonium digitatum*, *Metridium senile*, *Caryophyllia smithii*, *Tubularia indivisa*, *Mytilus edulis*, *Gibbula umbilicalis*, *Asterias rubens*, and *Echinus esculentus*. These reefs are subject to strong tidal currents with an abundant supply of suspended matter resulting in good representation of filter feeding fauna such as sponges, anemones and echinoderms. The area selected for designation represents a key habitat for the Annex II species Harbour Porpoise within the Irish Sea. Population survey data show that porpoise occurrence within the site boundary meets suitable reference values for other designated sites in Ireland. The species occurs year-round within the site and comparatively high group sizes have been recorded. Porpoises with young (i.e. calves) are observed at favourable, typical reference values for the species. Casual and effort-related sighting rates from coastal observation stations are significant for the east coast of Ireland and the latter appear to be relatively stable across all seasons. The selected site contains a wide array of habitats believed to be important for Harbour Porpoise including inshore shallow sand and mudbanks and rocky reefs scoured by strong current flow. The site also supports Common Seal and Grey Seal, for which terrestrial haul-out sites occur in immediate proximity to the site. Bottlenosed Dolphins has also occasionally been recorded in the area. A number of other marine mammals have been recorded in this area including Minke, Fin and Killer Whales and Risso's and Common Dolphins. The coastal environment of Co. Dublin is a very significant resource to birds with some nationally and internationally important populations. Of particular note in this site are the large number of terns (Arctic,

Common and Roseate) known to use Dalkey Island as a staging area (approx. 2,000) after breeding. Other seabirds commonly seen include Kittiwake, Razorbill, Guillemot, Puffin, Fulmar, Shag, Cormorant, Manx Shearwater, Gannet and gulls. This site is of conservation importance for reefs, listed on Annex I, and Harbour Porpoise, listed on Annex II, of the E.U. Habitats Directive.

North Bull Island SPA (004006)

This site covers all of the inner part of north Dublin Bay, with the seaward boundary extending from the Bull Wall lighthouse across to Drumleck Point at Howth Head. The North Bull Island sand spit is a relatively recent depositional feature, formed as a result of improvements to Dublin Port during the 18th and 19th centuries. It is almost 5 km long and 1 km wide and runs parallel to the coast between Clontarf and Sutton. Part of the interior of the island has been converted to golf courses. A well-developed and dynamic dune system stretches along the seaward side of the island. Various types of dunes occur, from fixed dune grassland to pioneer communities on foredunes. Marram Grass (*Ammophila arenaria*) is dominant on the outer dune ridges. Species of the fixed dunes include Wild Pansy (*Viola tricolor*), Kidney Vetch (*Anthyllis vulneraria*), Bird's-foot Trefoil (*Lotus corniculatus*), Pyramidal Orchid (*Anacamptis pyramidalis*) and, in places, the scarce Bee Orchid (*Ophrys apifera*). A feature of the dune system is a large dune slack with a rich flora, usually referred to as the 'Alder Marsh' because of the presence of Alder (*Alnus glutinosa*) trees. The water table is very near the surface and is only slightly brackish. Sea Rush (*Juncus maritimus*) is the dominant species, with Meadowsweet (*Filipendula ulmaria*) and Devil's-bit Scabious (*Succisa pratensis*) being frequent. The orchid flora is notably diverse in this area. Saltmarsh extends along the length of the landward side of the island and provides the main roost site for wintering birds in Dublin Bay.

On the lower marsh, Glasswort (*Salicornia europaea*), Common Saltmarsh-grass (*Puccinellia maritima*), Annual Seablite (*Suaeda maritima*) and Greater Sea-spurrey (*Spergularia media*) are the main species. Higher up in the middle marsh Sea Plantain (*Plantago maritima*), Sea Aster (*Aster tripolium*), Sea Arrowgrass (*Triglochin maritima*) and Thrift (*Armeria maritima*) appear. Above the mark of the normal high tide, species such as Common Scurvygrass (*Cochlearia officinalis*) and Sea Milkwort (*Glaux maritima*) are found, while on the extreme upper marsh, Sea Rush and Saltmarsh Rush (*Juncus gerardi*) are dominant. The island shelters two intertidal lagoons which are divided by a solid causeway. These lagoons provide the main feeding grounds for the wintering waterfowl. The sediments of the lagoons are mainly sands with a small and varying mixture of silt and clay. Tasselweed (*Ruppia maritima*) and small amounts of Eelgrass (*Zostera* spp.) are found in the lagoons. Common Cord-grass (*Spartina anglica*) occurs in places. Green algal mats (*Enteromorpha* spp., *Ulva lactuca*) are a feature of the flats during summer. These sediments have a rich macro-invertebrate fauna, with high densities of Lugworm (*Arenicola marina*) and Ragworm (*Hediste diversicolor*). Mussels (*Mytilus edulis*) occur in places, along with bivalves such as *Cerastoderma edule*, *Macoma balthica* and *Scrobicularia plana*. The small gastropod *Hydrobia ulvae* occurs in high densities in places, while the crustaceans *Corophium volutator* and *Carcinus maenas* are common. The sediments on the seaward side of North Bull Island are mostly sands and support species such as Lugworm and the Sand Mason (*Lanice conchilega*).

The site includes a substantial area of the shallow marine bay waters. The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Light-bellied Brent Goose, Shelduck, Teal, Pintail, Shoveler, Oystercatcher,

Ringed Plover, Golden Plover, Grey Plover, Knot, Sanderling, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Turnstone and Black-headed Gull. The site is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds. The North Bull Island SPA is of international importance for waterfowl on the basis that it regularly supports in excess of 20,000 waterfowl. It also qualifies for international importance as the numbers of three species exceed the international threshold – Light-bellied Brent Goose (1,548), Black-tailed Godwit (367) and Bar-tailed Godwit (1,529) (all waterfowl figures given are average maxima for the five winters 1995/96 to 1999/00). The site is the top site in the country for both of these species. A further 14 species have populations of national importance – Shelduck (1,259), Teal (953), Pintail (233), Shoveler (141), Oystercatcher (1,784), Ringed Plover (139), Golden Plover (1,741), Grey Plover (517), Knot (2,623), Sanderling (141), Dunlin (3,926), Curlew (937), Redshank (1,431) and Turnstone (157). The populations of Pintail and Knot are of particular note as they comprise more than 10% of the respective national totals. Species such as Grey Heron, Cormorant, Wigeon, Goldeneye, Red-breasted Merganser and Greenshank are regular in winter in numbers of regional or local importance. Gulls are a feature of the site during winter, especially Black-headed Gull (2,196). Common Gull (332) and Herring Gull (331) also occur here. While some of the birds also frequent South Dublin Bay and the River Tolka Estuary for feeding and/or roosting purposes, the majority remain within the site for much of the winter. The wintering bird populations have been monitored more or less continuously since the late 1960s and the site is now surveyed each winter as part of the larger Dublin Bay complex.

The North Bull Island SPA is a regular site for passage waders, especially Ruff, Curlew Sandpiper and Spotted Redshank. These are mostly observed in single figures in autumn but occasionally in spring or winter. The site formerly had an important colony of Little Tern but breeding has not occurred in recent years. Several pairs of Ringed Plover breed, along with Shelduck in some years. Breeding passerines include Skylark, Meadow Pipit, Stonechat and Reed Bunting. The island is a regular wintering site for Short-eared Owl, with up to 5 present in some winters. The site has five Red Data Book vascular plant species, four rare bryophyte species, and is nationally important for three insect species. The rare liverwort, *Petalophyllum ralfsii*, was first recorded from the North Bull Island in 1874 and its presence here has recently been re-confirmed. This species is of high conservation value as it is listed on Annex II of the E.U. Habitats Directive. A well-known population of Irish Hare is resident on the island. The main landuses of this site are amenity activities and nature conservation. The North Bull Island is one of the main recreational beaches in Co. Dublin and is used throughout the year. Two separate Statutory Nature Reserves cover much of the island east of the Bull Wall and the surrounding intertidal flats. North Bull Island is also a Wildfowl Sanctuary, a Ramsar Convention site, a Biogenetic Reserve, a Biosphere Reserve and a Special Area Amenity Order site. Much of the SPA is also a candidate Special Area of Conservation. The site is used regularly for educational purposes and there is a manned interpretative centre on the island. The North Bull Island SPA is an excellent example of an estuarine complex and is one of the top sites in Ireland for wintering waterfowl. It is of international importance on account of both the total number of waterfowl and the individual populations of Lightbellied Brent Goose, Black-tailed Godwit and Bar-tailed Godwit that use it. Also of significance is the regular presence of several species that are listed on Annex I of the E.U. Birds Directive, notably Golden Plover and Bar-tailed Godwit, but also Ruff and Short-eared Owl.

South Dublin Bay and River Tolka Estuary SPA (004024)

The South Dublin Bay and River Tolka Estuary SPA comprises a substantial part of Dublin Bay. It includes the intertidal area between the River Liffey and Dun Laoghaire, and the estuary of the River Tolka to the north of the River Liffey, as well as Booterstown Marsh. A portion of the shallow marine waters of the bay is also included. In the south bay, the intertidal flats extend for almost 3 km at their widest. The sediments are predominantly well-aerated sands. Several permanent channels exist, the largest being Cockle Lake. A small sandy beach occurs at Merrion Gates, while some bedrock shore occurs near Dun Laoghaire. The landward boundary is now almost entirely artificially embanked. There is a bed of Dwarf Eelgrass (*Zostera noltii*) below Merrion Gates which is the largest stand on the east coast. Green algae (*Enteromorpha* spp. and *Ulva lactuca*) are distributed throughout the area at a low density. The macro-invertebrate fauna is well-developed, and is characterised by annelids such as Lugworm (*Arenicola marina*), Nephthys spp. and Sand Mason (*Lanice conchilega*), and bivalves, especially Cockle (*Cerastoderma edule*) and Baltic Tellin (*Macoma balthica*). The small gastropod Spire Shell (*Hydrobia ulvae*) occurs on the muddy sands off Merrion Gates, along with the crustacean *Corophium volutator*. Sediments in the Tolka Estuary vary from soft thixotropic muds with a high organic content in the inner estuary to exposed, well-aerated sands off the Bull Wall. The site includes Booterstown Marsh, an enclosed area of saltmarsh and muds that is cut off from the sea by the Dublin/Wexford railway line, being linked only by a channel to the east, the Nutley stream. Sea water incursions into the marsh occur along this stream at high tide.

An area of grassland at Poolbeg, north of Irishtown Nature Park, is also included in the site. The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Light-bellied Brent Goose, Oystercatcher, Ringed Plover, Golden Plover, Grey Plover, Knot, Sanderling, Dunlin, Bar-tailed Godwit, Redshank, Black-headed Gull, Roseate Tern, Common Tern and Arctic Tern. The E.U. Birds Directive pays particular attention to wetlands, and as these form part of the SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The site is an important site for wintering waterfowl, being an integral part of the internationally important Dublin Bay complex – all counts for wintering waterbirds are mean peaks for the five year period 1995/96-99/2000. Although birds regularly commute between the south bay and the north bay, recent studies have shown that certain populations which occur in the south bay spend most of their time there. An internationally important population of Light-bellied Brent Goose (525) occurs regularly and newly arrived birds in the autumn feed on the Eelgrass bed at Merrion. Light-bellied Brent Goose is also known to feed on the grassland at Poolbeg. The site supports nationally important numbers of a further nine species: Oystercatcher (1,263), Ringed Plover (161), Golden Plover (1,452), Grey Plover (183), Knot (1,151), Sanderling (349), Dunlin (2,753), Bar-tailed Godwit (866) and Redshank (713). Other species occurring in smaller numbers include Great Crested Grebe (21), Curlew (397) and Turnstone (75). South Dublin Bay is a significant site for wintering gulls, especially Black-headed Gull (3,040), but also Common Gull (330) and Herring Gull (348). Mediterranean Gull is also recorded from here, occurring through much of the year, but especially in late winter/spring and again in late summer into winter. Both Common Tern and Arctic Tern breed in Dublin Docks, on a man-made mooring structure known as the E.S.B. dolphin – this is included within the site. Small numbers of Common Tern and Arctic Tern were recorded nesting on this dolphin in the 1980s.

A survey of the dolphin in 1999 recorded Common Tern nesting here in nationally important numbers (194 pairs). This increase was largely due to the ongoing management of the site for breeding terns. More recent data highlights this site as one of the most important Common Tern sites in the country with over 400 pairs recorded here in 2007. The south bay is an important tern roost in the autumn (mostly late July to September). Birds also use the Dalkey Islands to the south. The origin of many of the birds is likely to be the Dublin breeding sites (Rockabill and the Dublin Docks) though numbers suggest that the site is also used by birds from other sites, perhaps outside the state. More than 10,000 terns have been recorded, consisting of Common, Arctic and Roseate terns. The wintering birds within this site are now well-monitored. More survey, however, is required on the wintering gulls and the autumn terns. Booterstown Marsh supports an important population of Borrer's Saltmarsh-grass (*Puccinellia fasciculata*), a rare, Red Data Book species that is listed on the Flora (Protection) Order, 1999. The South Dublin Bay and River Tolka Estuary SPA is of international importance for Light-bellied Brent Goose and of national importance for nine other waterfowl species. As an autumn tern roost, it is also of international importance. Furthermore, the site supports a nationally important colony of Common Tern. All of the tern species using the site are listed on Annex I of the E.U. Birds Directive, as are Bartailed Godwit and Mediterranean Gull.

Baldoyle Bay SPA (004016)

Baldoyle Bay extends from just below Portmarnock village to the west pier at Howth, Co. Dublin. It is a tidal estuarine bay protected from the open sea by a large sanddune system. Two small rivers, the Mayne and the Sluice, flow into the inner part of the estuary. Large areas of intertidal flats are exposed at low tide. These are mostly sands but grade to muds in the inner sheltered parts of the estuary. Extensive areas of Common Cord-grass (*Spartina anglica*) occur in the inner estuary. Both the Narrow-leaved Eelgrass (*Zostera angustifolia*) and the Dwarf Eelgrass (*Z. noltii*) are also found here. During summer, the sandflats of the sheltered areas are covered by mats of green algae (*Enteromorpha* spp. and *Ulva lactuca*). The sediments have a typical macrofauna, with Lugworm (*Arenicola marina*) dominating the sandy flats. The tubeworm *Lanice conchilega* is present in high densities at the low tide mark and the small gastropod Laver Spire-shell (*Hydrobia ulvae*) occurs in the muddy areas, along with the crustacean *Corophium volutator*. Areas of saltmarsh occur near Portmarnock Bridge and at Portmarnock Point, with narrow strips along other parts of the estuary. Species such as Glasswort (*Salicornia* spp.), Sea-purslane (*Halimione portulacoides*), Sea Plantain (*Plantago maritima*) and Sea Rush (*Juncus maritimus*) are found here.

Baldoyle Bay is of high ornithological importance for wintering waterfowl, providing good quality feeding areas and roost sites for an excellent diversity of waterfowl species. It supports an internationally important population of Pale-bellied Brent Geese (726), and has a further seven species with nationally important populations (all figures are average peaks for the five winters 1995/96 to 1999/2000): Great Crested Grebe (42), Shelduck (147), Pintail (22), Ringed Plover (221), Golden Plover (1810), Grey Plover (200) and Bar-tailed Godwit (353). The occurrence of Golden Plover and Bar-tailed Godwit is of particular note as these species are listed on Annex I of the E.U. Birds Directive. Other species which occur in significant numbers include Teal (124), Mallard (48), Common Scoter (61), Oystercatcher (531), Lapwing (480), Knot (115), Dunlin (879), Black-tailed Godwit (72), Curlew (96), Redshank (224), Greenshank (11) and Turnstone (43). Regular breeding birds include Shelduck, Mallard and Ringed Plover. In autumn, passage migrants such as Curlew Sandpiper, Spotted Redshank and Green Sandpiper are regular in small numbers. Baldoyle Bay SPA is of high conservation importance, with an internationally important population of

Brent Geese and nationally important populations of a further seven species, including two which are listed on Annex I of the E.U. Birds Directive.

The inner estuarine section is a Statutory Nature Reserve and is also designated as a wetland of international importance under the Ramsar Convention. The site is a candidate Special Area of Conservation under the E.U. Habitats Directive. The main threat to the birds is disturbance as it is located in a densely populated area.

Howth Head Coast SPA (004113)

Howth Head is a rocky headland situated on the northern side of Dublin Bay. The peninsula is composed of Cambrian rock of the Bray Group, the most conspicuous component being quartzite. The site comprises the sea cliffs extending from just east of the Nose of Howth to the tip of the Bailey Lighthouse peninsula. The marine area to a distance of 500 m from the cliff base, where seabirds socialise and feed, is included within the site. The cliffs vary from between about 60 m and 90 m in height, and in places comprise fairly sheer, exposed rock face. Here plants such as Rock Sea-spurrey (*Spergularia rupicola*), Navelwort (*Umbilicus rupestris*), Rock Samphire (*Crithmum maritimum*), English Stonecrop (*Sedum anglicum*) and Biting Stonecrop (*Sedum acre*) are found, along with a good diversity of lichen species. Where the gradient allows, shallow glacial drift supports a typical maritime flora, with such conspicuous species as Thrift (*Armeria maritima*), Sea Campion (*Silene vulgaris* subsp. *maritima*), Common Scurvygrass (*Cochlearia officinalis*), Sea Plantain (*Plantago maritima*), Sea Mayweed (*Matricaria maritima*) and Sea Beet (*Beta vulgaris*). Spring Squill (*Scilla verna*), Bloody Crane's-bill (*Geranium sanguineum*), Sea Stork's-bill (*Erodium maritimum*) and Golden-samphire (*Inula crithmoides*) are notable species of the cliff flora.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for Kittiwake. Howth Head has important colonies of breeding seabirds. A census in 1999 recorded the following species: Fulmar (33 pairs), Shag (12 pairs), Herring Gull (17 pairs), Great Black-backed Gull (5 pairs), Kittiwake (2,269 pairs), Guillemot (990 individuals) and Razorbill (416 individuals). In addition, 39 individual Black Guillemot were counted within the site in May 1998. The populations of Kittiwake and Black Guillemot are of national importance, while the Razorbill, Guillemot and Fulmar populations are of regional importance. The cliffs also support a breeding pair of Peregrine Falcon, a species listed on Annex I of the E.U. Birds Directive. The seabird colony at Howth Head has been monitored at intervals since the Operation Seafarer project in 1969/70. The Kittiwake, Guillemot and Razorbill populations have increased in recent years. The seabirds within the site are not under significant threat at present. This site is of high ornithological importance, with four seabird species having populations of national importance. It is also a traditional nesting site for Peregrine Falcon. The site is easily accessible and has important amenity and educational value due to its proximity to Dublin City

Ireland's Eye SPA (004117)

Ireland's Eye is an uninhabited island located about 1.5 km north of Howth in Co. Dublin. The island has an area of c.24 ha above the high tide mark. The underlying geology is Cambrian greywhackes and quartzites. These rocks form impressive nearvertical cliffs, reaching 69 m, along the northern and eastern sides of the island, with scattered exposures elsewhere on the island and especially in the high northern half. A tall stack, which is completely cut off from the main island at mid to high tide, occurs at the eastern side of the cliffs. A sandy beach, backed by low sand hills, occurs at Carrigeen Bay on the western shore, while a shingle beach extends from Carrigeen to Thulla Rocks. Elsewhere the island is

covered by glacial drift. A lowlying, sparsely vegetated islet, known as Thulla, occurs a little to the south of the island, and an extensive area of bedrock shore (heavily covered by brown seaweeds) is exposed at low tide between Thulla and the main island. There are no watercourses or springs on the island, though two small rainwater ponds form during winter in the north-west and north-east sectors. A substantial area of the sea to the north and east of the island, where seabirds socialise and feed, is included in the site. The drift soils support a plant community of Bracken (*Pteridium aquilinum*) and various grasses, especially Red Fescue (*Festuca rubra*), along with Bluebells (*Hyacinthoides non-scripta*), Common Dog-violet (*Viola riviniana*) and Pennywort (*Umbilicus rupestris*). The localised Spring Squill (*Scilla verna*) is a feature of the flora. The cliff maritime flora includes Rock Spurrey (*Spergularia rupicola*), Sea Stork's-bill (*Erodium maritimum*), Rock Samphire (*Crithmum maritimum*), Golden Samphire (*Inula crithmoides*) and Sea Lavender (*Limonium binervosum*). The small area of shingle vegetation supports two Red Data Book plant species, Sea Kale (*Crambe maritima*) and Henbane (*Hyoscyamus niger*).

The seabird populations exercise a strong influence on the vegetation over much of the island and in places only those plants which can survive liberal spraying with guano manage to survive. Hogweed (*Heracleum sphondylium*), Nettles (*Urtica dioica*) and Slender Thistle (*Carduus tenuiflorus*) are common in such areas. Ireland's Eye has important populations of breeding seabirds. In 1999 the following were counted: Fulmar 70 pairs; Gannet 142 pairs, Cormorant 306 pairs; Shag 32 pairs, Lesser Black-backed Gull 1 pair; Herring Gull c.250 pairs; Great Black-backed Gull c.100 pairs; Kittiwake 941 pairs; Guillemot 2,191 individuals; Razorbill 522 individuals. In 2001 the following were counted: Gannet 202 pairs; Cormorant 438 pairs; Shag 39 pairs; Great Black-backed Gull 110 pairs; Kittiwake 1024 pairs; Guillemot 2948 individuals; Razorbill 686+ individuals. Puffin was formerly common, but nowadays not more than 20 individuals occur. Black Guillemot also breeds, with 15 individuals recorded in 1998. Manx Shearwater has bred in the past. The Gannet, Cormorant, Herring Gull, Great Black-backed Gull, Kittiwake, Guillemot and Razorbill populations are of national importance. When the Cormorant population is considered as part of a larger grouping with the colonies on nearby Lambay and St. Patrick's Island, this population is of international importance. The Gannet colony is of particular note as it is one of five in the country and the only one on the east coast. It is also notable that it has only been established as recently as the late 1980s. Several pairs each of Shelduck, Oystercatcher and Ringed Plover breed, while the island is a traditional site for Peregrine Falcon, a species listed on Annex I of the EU Birds Directive. In winter small numbers of Greylag and Pale-bellied Brent Geese graze on the island and it is used as a roost site by gulls and some waders.

Ireland's Eye is now one of the best monitored sites in the country, with the breeding seabirds having been systematically censused using standard methods almost annually since 1990 (and also in 1986). Prior to that, census data are available for 1969/70 from the Operation Seafarer project. The present status of most of the breeding seabirds on Ireland's Eye appears favourable. The principal direct threat to the nesting birds is potential disturbance from visitors to the island. While the present level of disturbance does not appear to be having adverse impacts on the majority of the breeding birds (most of which are on relatively inaccessible cliffs), regulation and management of visitors to the island may be necessary in the future. Brown rats are long established on the island but their recent status is not well known. It is likely, however, that the presence of rats may be a factor in keeping the Puffin population at a low level. This relatively small island is of high ornithological importance, with seven seabird species having populations of national importance. The regular presence of a breeding pair of Peregrine Falcon is also of note.

Malahide Estuary SPA (004025)

Malahide Estuary is situated in north Co. Dublin, between the towns of Malahide and Swords. The site encompasses the estuary, saltmarsh habitats and shallow subtidal areas at the mouth of the estuary. A railway viaduct, built in the 1800s, crosses the site and has led to the inner estuary becoming lagoonal in character and only partly tidal. Much of the outer part of the estuary is well-sheltered from the sea by a large sand spit, known as "The Island". This spit is now mostly converted to golf-course. The outer part empties almost completely at low tide and there are extensive intertidal flats exposed. Substantial stands of eelgrass (both *Zostera noltii* and *Z. angustifolia*) occur in the sheltered part of the outer estuary, along with Tasselweed (*Ruppia maritima*). Green algae, mostly *Ulva* spp., are frequent on the sheltered flats. Common Cord-grass (*Spartina anglica*) is well established in the outer estuary and also in the innermost part of the site. The intertidal flats support a typical macroinvertebrate fauna, with polychaete worms (*Arenicola marina* and *Hediste diversicolor*), bivalves such as *Cerastoderma edule*, *Macoma balthica* and *Scrobicularia plana*, the small gastropod *Hydrobia ulvae* and the crustacean *Corophium volutator*. Salt marshes, which provide important roosts during high tide, occur in parts of the outer estuary and in the extreme inner part of the inner estuary. These are characterised by such species as Sea Purslane (*Halimione portulacoides*), Sea Aster (*Aster tripolium*), Thrift (*Armeria maritima*), Sea Arrowgrass (*Triglochin maritima*) and Common Saltmarsh-grass (*Puccinellia maritima*). The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Great Crested Grebe, Light-bellied Brent Goose, Shelduck, Pintail, Goldeneye, Red-breasted Merganser, Oystercatcher, Golden Plover, Grey Plover, Knot, Dunlin, Black-tailed Godwit, Bar-tailed Godwit and Redshank. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

This site is of high importance for wintering waterfowl and supports a particularly good diversity of species. It has internationally important populations of Lightbellied Brent Goose (1,104 individuals or 5% of the all-Ireland total) and Black-tailed Godwit (409 individuals or 2.9% of the all-Ireland total) - figures given here and below are mean peaks for the five winters 1995/96-1999/2000. Furthermore, the site supports nationally important populations of an additional 12 species: Great Crested Grebe (63), Shelduck (439), Pintail (58), Goldeneye (215), Red-breasted Merganser (99), Oystercatcher (1,360), Golden Plover (1,843), Grey Plover (201), Knot (915), Dunlin (1,594), Bar-tailed Godwit (156) and Redshank (581). The high numbers of diving ducks reflects the lagoon-type nature of the inner estuary, and this is one of the few sites in eastern Ireland where substantial numbers of Goldeneye can be found. A range of other species occurs, including Mute Swan (37), Pochard (36), Ringed Plover (86), Lapwing (1,542), Curlew (548), Greenshank (38) and Turnstone (112). The estuary also attracts other migrant wader species such as Ruff, Curlew Sandpiper, Spotted Redshank and Little Stint. These occur mainly in autumn, though occasionally in spring and winter. Breeding birds of the site include Ringed Plover, Shelduck and Mallard. Up to the 1950s there was a major tern colony at the southern end of Malahide Island. Grey Herons breed nearby and feed regularly within the site. Malahide Estuary SPA is a fine example of an estuarine system, providing both feeding and roosting areas for a range of wintering waterfowl. The lagoonal nature of the inner estuary is of particular value

as it increases the diversity of birds which occur. The site is of high conservation importance, with internationally important populations of Light-bellied Brent Goose and Black-tailed Godwit, and nationally important populations of a further 12 species. Two of the species which occur regularly (Golden Plover and Bar-tailed Godwit) are listed on Annex I of the E.U. Birds Directive. Malahide Estuary (also known as Broadmeadow Estuary) is a Ramsar Convention site.

Wicklow Mountains SPA (004040)

This is an extensive upland site, comprising a substantial part of the Wicklow Mountains. Most of the site is in Co. Wicklow, but a small area lies in Co. Dublin. The underlying geology of the site is mainly of Leinster granites, flanked by Ordovician schists, mudstones and volcanics. The area was subject to glaciation and features fine examples of glacial lakes, deep valleys and moraines. Most of site is over 300 m, with much ground being over 600 m; the highest peak is Lugnaquilla (925 m). The substrate over much of site is peat, with poor mineral soil occurring on the slopes and lower ground. Exposed rock and scree are features of the site. The predominant habitats present are blanket bog, heaths and upland grassland. The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Merlin and Peregrine. A series of surveys of the Wicklow Mountains SPA indicates that up to 9 pairs of Merlin breed within the site in any one year. Traditionally a ground-nesting species, Merlin in the Wicklow Mountains are usually found nesting in old crows nests in conifer plantations. The open peatlands provide excellent foraging habitat for Merlin with small birds such as Meadow Pipit being their main prey. The cliffs and crags within the site also provide ideal breeding locations for Peregrine (20 pairs in 2002). Other birds of the open peatlands and scree slopes that have been recorded within the site include Ring Ouzel and Red Grouse. The Wicklow Mountains SPA is of high ornithological importance as it supports nationally important populations of Merlin and Peregrine, both species that are listed on Annex I of the E.U. Birds Directive.

Dalkey Island SPA (004172)

The site comprises Dalkey Island, Lamb Island and Maiden Rock, the intervening rocks and reefs, and the surrounding sea to a distance of 200 m. Dalkey Island, which is the largest in the group, lies c. 400 m off Sorrento Point on the Co. Dublin mainland from which it is separated by a deep channel. The island is low-lying, the highest point of which (c. 15 m) is marked by a Martello Tower. Soil cover consists mainly of a thin peaty layer, though in a few places there are boulder clay deposits. Vegetation cover is low-growing and consists mainly of grasses. Dense patches of Bracken (*Pteridium aquilinum*) and Hogweed (*Heracleum sphondylium*) occur in places. Lamb Island lies to the north of Dalkey Island, and at low tide is connected by a line of rocks. It has a thin soil cover and some vegetation, mainly of grasses, Nettles (*Urtica dioica*) and Hogweed. Further north lies Maiden Rock, a bare angular granite rock up to 5 m high that is devoid of higher plant vegetation.

This site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Roseate Tern, Common Tern and Arctic Tern. Dalkey Islands SPA is both a breeding and a staging site for *Sterna* terns. There is a good history of nesting by terns though success has been variable over the years. Common Tern is the most common species, usually outnumbering Arctic Tern by at least 3:1. Up to 1988, the range given for Common Tern was 15-53 pairs, and for Arctic Tern 'a few' pairs. Also, Roseate Tern attempted nesting in 1986, with 2 pairs recorded. A tern conservation scheme, co-ordinated by BirdWatch Ireland / National Parks and Wildlife Service, began in 1995, with wardening, nestbox deployment and monitoring being carried out. The ultimate aim was to

attract Roseate Tern to breed. Numbers of terns increased in subsequent years, though numbers and breeding success is still variable between years. In 2003 62 pairs of Common Tern and 24 pairs of Arctic Tern were recorded. Of great significance is that Roseate Tern has returned, with 5 pairs recorded in 2003 and 11 pairs in 2004 - this is one of only three known sites in the country for this rare species. The site, along with other parts of south Dublin Bay, is used by the three tern species as a major post-breeding/pre-migration autumn roost area. Birds are present from about late-July to September, with c. 2,000 individuals of all three species being recorded.

The origin of the birds is likely to be the Dublin breeding sites (Rockabill and Dublin Docks) though the numbers recorded suggests that birds from other sites, perhaps outside the State, are also present. The site also has breeding Great Black-backed Gull (7 pairs in 2001), Shelduck (1-2 pairs) and Oystercatcher (1-2 pairs). Herring Gull bred in large numbers in the past but is now very scarce (14 pairs recorded in 1999). The site is known to be frequented in winter by Turnstone and Purple Sandpiper but recent count data are not available. Dalkey Islands SPA is of particular importance as a post-breeding/pre-migration autumn roost area for Roseate Tern, Common Tern and Arctic Tern. The recent nesting by Roseate Tern is highly significant. All three tern species using the site are listed on Annex I of the E.U. Birds Directive.