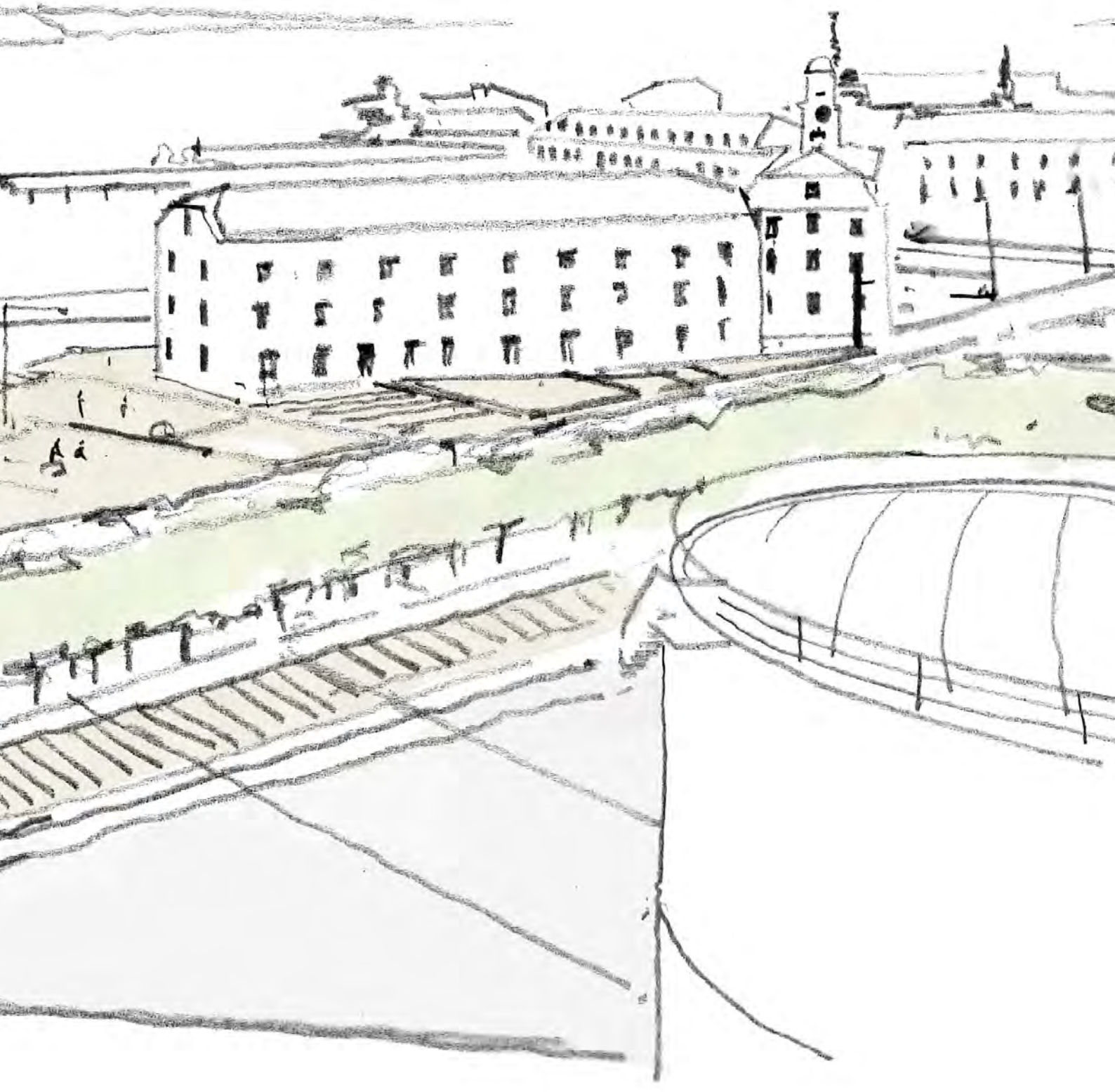
HAULBOWLINE MASTERPLAN

Design 2015 - Final



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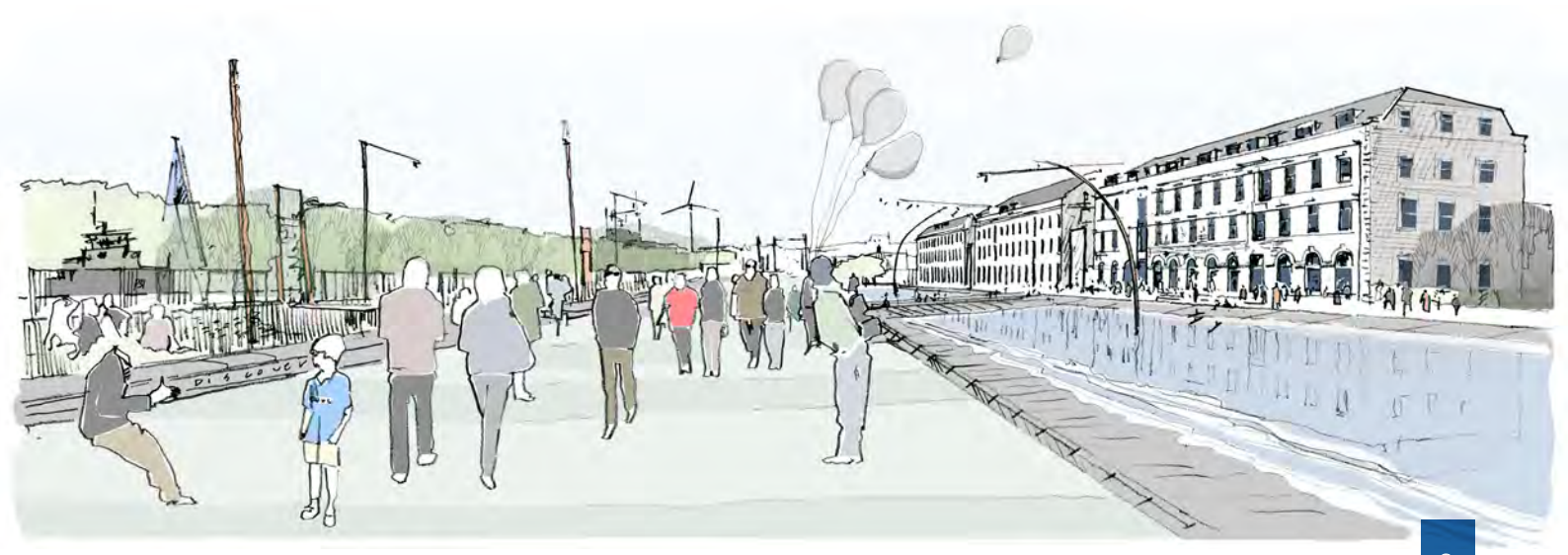

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(SEA) SCREENING REPORT

SCREENING REPORT FOR STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA)

In respect of

Haulbowline Masterplan

Prepared by

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3rd September 2015

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1.0 INTRODUCTION AND TERMS OF REFERENCE

1.1 The purpose of this assessment is to consider whether the proposed Haulbowline Masterplan requires a Strategic Environmental Assessment (SEA). This Screening for Environmental Assessment has been carried out in accordance with the criteria set out in Annex 2A of the SEA Directive (2001/42/EC) as transposed in Schedule 2A of the Planning and Development (Strategic Environmental Assessment) Regulations 2004.

1.2 Strategic Environmental Assessment (SEA) is the process by which environmental considerations are required to be fully integrated into the preparation of plans and programmes and prior to their final adoption.

1.3 The objectives of the SEA process are to provide for a high level of protection of the environment and to promote sustainable development by contributing to the integration of environmental considerations into the preparation and adoption of specified plans and programmes.

1.4 This Screening Statement is intended to assist the planning authority in reaching a determination as to whether or not a Strategic Environmental Assessment of the Haulbowline Masterplan will be required.

2.0 LEGISLATIVE AND STATUTORY CONTEXT

2.1 The requirement for SEA derives from the SEA Directive (2001/42/EC). Article 1 of the SEA Directive states:

"The objective of this Directive is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development, by ensuring that, in accordance with this Directive, an environmental assessment is carried out of certain plans and programmes which are likely to have significant effects on the environment."

2.2 The Planning and Development (Strategic Environment Assessment) Regulations 2004 require that when Regional Planning Guidelines, Development Plans, Local Area Plans or Strategic Development Zone (SDZ) planning schemes are being made by the relevant authority, they must be accompanied by information about the likely significant effects on the environment of implementing such plans.

2.3 The proposed Haulbowline Masterplan will be a non-statutory land use planning document.

2.4 It is noted that there is no statutory requirement to carry out a Strategic Environmental Assessment in respect of a non-statutory land use planning document. Notwithstanding this, it is considered relevant to carry out a Screening for Strategic Environmental Assessment of the proposed Masterplan in order to inform the determination by the planning authority as to whether the proposed Masterplan would be likely to have any significant effects on the environment at a strategic level. This Screening Statement will assist the planning authority in the

future in the event that the Haulbowline Masterplan at some future date is proposed to form part of the statutory planning context.

2.5 The screening process is the first stage of the Strategic Environmental Assessment. Screening assesses the need to undertake a Strategic Environmental Assessment.

2.6 This Screening Statement has been prepared having regard to the following:

- Development of Strategic Environmental Assessment (SEA) Methodologies for Plans and Programmes in Ireland – Synthesis Report (Environmental Protection Agency, 2003)
- Implementation of SEA Directive 92001/42/EC): Assessment of the Effects of Certain Plans and Programmes on the Environment – Guidelines for Local Authorities and Planning Authorities (Department of the Environment, Heritage and Local Government, 2004), and
- SEA Pack (2013) (Environmental Protection Agency, 2013)

3.0 LOCATION AND DESCRIPTION OF SITE

3.1 Haulbowline Island occupies a strategic and central location within Cork Harbour, approximately 14 kilometres southeast of Cork City and adjacent to Ringaskiddy. The island is approximately 84 acres in area. The Central Statistics office indicates resident population of 148 in its 2011 Survey.

3.2 The island is currently in state ownership. The headquarters of the Irish Naval Service occupy a significant part of the western side of the island as well as the eastern side of the dock basin in the centre.

3.3 The former ISPAT / Irish Steel site comprises the lands in the centre to the west of the dock basin and the eastern part of the island is the location of a former tipping ground for the waste generated from the ISPAT / Irish Steel operation.

3.4 Almost half of the approximate 84 acre land mass of the island comprises made ground. The naval base buildings are located on the original island, which has been the site of fortifications back as far as the early 1600's.

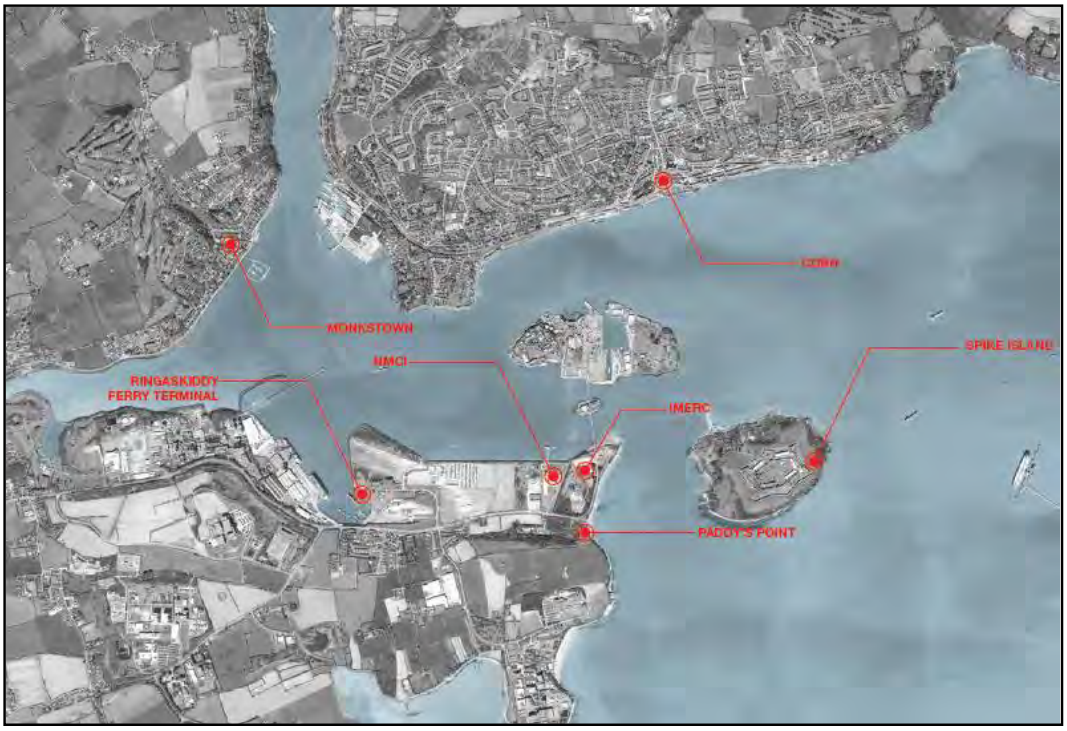

Figure 1: Haulbowline Locational Context
Source: BDP Architects

3.5 Haulbowline is also part of a wider maritime community that contributes to the life of Cork Harbour. There are a series of non-statutory land-use plans relating to the Cork Harbour area, such as the Spike Island Masterplan (2012), IMERC Masterplan (2013), the Draft Cork Harbour Study (2011) and the Port of Cork Strategic Development Plan 2012.

3.6 Cobh is the traditional partner of Haulbowline and its ramparts face the island directly.

3.7 Access to the island by road is via a bridge from Ringaskiddy at Paddy's Point. The bridge also provides access to Rocky Island, a small island approximately halfway between Paddy's Point and Haulbowline which accommodates a crematorium.

3.8 Ringaskiddy is the closest residential community to the island. The National Maritime College (NMCI) is the closest building to the island along with the soon to be completed Beaufort Centre. The Irish Maritime Cluster (IMERC) is developing a new campus at this location.

3.9 Spike Island is the closest island to Haulbowline, located a short distance to the south-east. Spike Island comprises of a disused prison which is now proposed as major visitor attraction in accordance with the Spike Island Masterplan (2012).

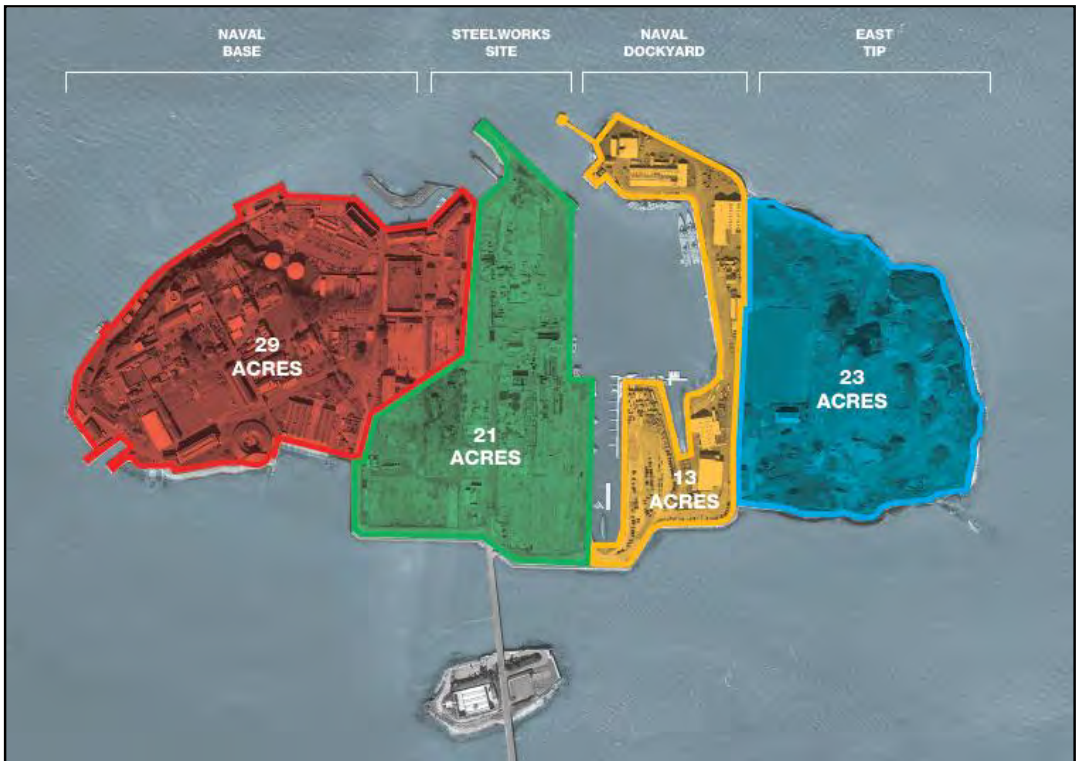

Figure 1: Haulbowline Areas
Source: BDP Architects

3.10 Haulbowline has numerous fine examples of 19th century maritime buildings along with naval heritage artefacts. The spaces between the buildings operate well as parade rings and as training areas for the naval cadets.

3.11 The Haulbowline East Tip Remediation Project was approved by An Bord Pleanala in May 2014. Permission had been sought by Cork County Council for the remediation of the each tip, comprising of the following:

- Demolition of 3 no. existing buildings on the site and site clearance
- Re-profiling of the site
- Construction of a perimeter engineered structure (PES) and an engineered capping system with surface water drainage system - the PES would include a rock arbour on the sea side.
- Provision of a public park.
- Provision of a playing pitch to replace the existing naval facility.
- 2 no. 2-lane access roadways to provide segregated access from Haulbowline Bridge to the proposed public park and to the naval dockyard, with associated revised security arrangements.
- Provision of new footpaths.

3.12 The East Tip Remediation Project is a key factor in the formulation of the Haulbowline Masterplan. It should be noted that this Screening Statement does not include an assessment of the East Tip Remediation, which is an approved development and which is not a proposal as part of the Masterplan.

4.0 DESCRIPTION OF PROPOSED HAULBOWLINE MASTERPLAN

4.1 The Masterplan's central concept is restoring the qualities of the island nature of Haulbowline. The physical proximity to water based activities and the encouragement of view and through the island's landscape are key structuring devices.

4.2 The overarching theme for the proposed development is the surrounding tradition of the harbour and the rich history of the island. The key structuring principles for the Masterplan are to provide:

1) A restoration and a balance of the island as a shared community.
2) A secure home for the navy.
3) A fitting place for the Lusitania experience.
4) An exemplar in green sustainable development and future management.
5) A connected place.
6) A place for maritime community.

4.3 The Masterplan concept proposes the retention and securing of the existing Naval uses of the Island, whilst introducing some new uses, in both new buildings and the refurbishment of existing vacant buildings, in order to encourage tourist activity on the island.

5.0 SCREENING ASSESSMENT

5.1 This Screening Statement considers whether the proposed land use plan, would be likely to have significant effects on the environment, taking into account of relevant criteria set out in Schedule 2A of the Planning and Development (Strategic Environmental Assessment) Regulations 2004 and the criteria set out therein for determining whether a Plan is likely to have significant effects on the environment.

5.2 The criteria set out at Schedule 2A of the Regulations are as follows:

- The characteristics of the plan having regard, in particular, to:
  - The degree to which the plan or programme sets a framework for projects and other activities, either with regard to the location, nature, size and operating conditions or by allocating resources
  - The degree to which the plan or programme influences other plans and programmes including those in a hierarchy
  - The relevance of the plan or programme for the integration of environmental considerations in particular with a view to promoting sustainable development
  - Environmental problems relevant to the plan or programme
  - The relevance of the plan or programme for the implementation of Community legislation on the environment (e.g. plans and programmes linked to waste-management or water protection)
- Characteristics of the effects and of the area likely to be affected:
  - The probability, duration, frequency, and reversibility of the effects
  - The cumulative nature of the effects
  - The transboundary nature of the effects
  - The risks to human health of the environment (e.g. due to accidents)
  - The magnitude and spatial extent of the effects (geographical area and size of the population likely to be affected)
  - The value and vulnerability of the area likely to be affected due to – special natural characteristics or cultural heritage
    - (i) Special natural characteristics or cultural heritage,
    - (ii) *Exceeded environmental quality standards or limit values,*

(iii) Intensive land-use.

- The effects on areas or landscapes which have a recognised national, community or international protection status

5.3 These criteria are examined below in the context of the proposed Haulbowline Masterplan.

The characteristics of the plan having regard, in particular, to:

The degree to which the plan or programme sets a framework for projects and other activities, either with regard to the location, nature, size and operating conditions or by allocating resources

5.4 The proposed Haulbowline Masterplan will be a non-statutory land use planning framework for the island. The Masterplan will not have any statutory status.

5.5 The Masterplan sets outs a broad vision for the potential future development of the island. The Masterplan will be had regard to by Cork County Council in the consideration of proposals for development on the island.

5.6 Therefore, whilst the Masterplan does set out a broad vision and framework for the island, it is not required to be strictly adhered to in the future development of the island.

The degree to which the plan or programme influences other plans and programmes including those in a hierarchy

5.7 As indicated above, the proposed Haulbowline Masterplan will be a non-statutory land use planning document.

5.8 Cork County Council may at some future date seek to incorporate the Masterplan, or parts of the Masterplan, into the statutory planning policy framework.

5.9 However, in its current status, the non-statutory Masterplan does not have any direct effect on other plans or programmes.

The relevance of the plan or programme for the integration of environmental considerations in particular with a view to promoting sustainable development

5.10 The preparation of the proposed Haulbowline Masterplan has had regard to the existing statutory planning policy framework in its formulation.

5.11 The Cork County Development Plan 2015 - 2021 acknowledges the development of the East Tip at Haulbowline as a recreational area. (Section 6.6.1) and states that the remainder of the island is suitable for naval/marine related developments (Section 6.6.1).The County Development Plan also recognises that the full potential of the Cork Harbour area could be better realised through a more integrated approach to its planning and development. The Midleton Electoral Area Local Area Plan 2011 recognises the brownfield nature of the island.

5.12 It is noted in particular that both the Cork County Development Plan 2015 – 2021 and the Midleton Electoral Area Local Area Plan 2011 were subject to Strategic Environmental Assessment and as such their policies and objectives have been tested in terms of the promotion of sustainable development.

5.13 The formulation of the Masterplan has sought to promote the development of the island, identified in the statutory planning policy context as an underutilised resource in Cork Harbour, to generate additional tourist activity in Cork.

5.14 The formulation of the Haulbowline Masterplan within the context of the hierarchy of local, regional and national planning policy ensures that the principles of sustainable development set out and promoted in the higher-tiered documents has been taken into account in the Masterplan.

Environmental problems relevant to the plan or programme

5.15 A review of the relevant statutory planning policy context has identified that the following environmental issues have been raised in respect of the potential development of Haulbowline:

- The Midleton Electoral Local Area Plan states that the continued existence of hazardous waste material at the former Steel Factory site is a significant restriction to new development.

- The Midleton Electoral Local Area Plan sets out a number of constraints associated with development at Haulbowline. The identified constraints which have the potential to have an environmental impact are the lack of adequate mains water supply and wastewater infrastructure.

5.16 These environmental issues are assessed below in the context of the proposed Haulbowline Masterplan. The issues of biodiversity / flora and fauna and flood risk are also considered appropriate.

Hazardous Waste

5.17 The Haulbowline East Tip Remediation Project was approved by An Bord Pleanala in May 2014. Permission had been sought by Cork County Council for the remediation of the each tip to ultimately deliver a public park. The Masterplan proposals do not interfere with or preclude the delivery of this project and the remediation of the site.

5.18 The site of the former ISPAT / Steel Works factory buildings is also subject to hazardous waste issues. Cork County Council has adopted an all-Island approach in terms of addressing the steelworks legacy. The remediation project also extends well beyond the East Tip park site to include the central 8.5 hectare portion of the island, which was formerly the ISPAT factory site. A risk assessment of the former steelworks was commissioned in April 2014 and the detailed design of the remedial solution for this site is being finalised. These remediation works are being progressed independently of the Masterplan.

5.19 The Masterplan proposals do not include any proposed built development on the former ISPAT / Steel Works site. The Masterplan identifies the potential for creation of a public plaza/civic space at this location, following remediation.

5.20 It is therefore considered that hazardous waste remediation works are subject to a separate process from the Masterplan and as such does not directly affect the Masterplan.

Waste Water

5.21 In terms of wastewater treatment, Haulbowline is served by a privately operated on-site wastewater treatment plant. We understand that this is operating at or near capacity.

5.22 Any significant development on the island which would deliver a material increase in population or visitor numbers may cause the capacity of the existing wastewater treatment plant to be exceeded,

5.23 It is recommended that no additional the Haulbowline Masterplan require that prior to the granting of planning permission for any significant development on the island, the capacity of the existing wastewater treatment plant should be investigated and measures put in place to accommodate the additional loading that any proposed development would generate.

Flora and Fauna and Biodiversity

5.24 The draft Haulbowline Masterplan has been subject to a Natura Impact Statement Screening prepared by Openfield Ecological Consulting. This Natura Impact Statement concludes the Masterplan, in combination with other plans and developments, will not result in significant effects to the integrity of the Cork Harbour SPA and Great Island Channel SAC.

5.25 It is further noted that an Ecology Report of the island was prepared by Openfield Ecological Consulting to inform both the SEA Screening and the Natura Impact Statement. This Ecology Report assesses the flora and fauna present on the island itself. A number of recommendations for the Masterplan are included in this Ecology Report, as follows:

*"**Recommendation 1**: The potential presence of bat roosts should be highlighted in the text of the Master Plan. It should highlight the need for a detector-based bat survey prior to any works on buildings. This should be undertaken by a suitably qualified bat ecologist during the appropriate season, typically from mid-April to mid- September. Surveys outside this period will be inaccurate and may lead to further information requests from the planning authority. Should a bat roost be found then a derogation licence will be required from the National Parks and Wildlife Service. An application for this licence must be made concurrently with the planning application.*

Recommendation 2*: Any clearance of vegetation or demolition of buildings should only occur outside the nesting season, i.e. it should only occur from September to February inclusive.*

Recommendation 3*: The landscaping scheme should include an open water feature which may result in the retention of the Grey Wagtail population.*

Recommendation 4: *The existing capability of the treatment plant on Haulbowline Island should be determined including its design capacity and licencing status. If it is found that adequate treatment capacity is not available then it should be made clear in the Master Plan that new building works cannot proceed until such time that problems are addressed.*

Recommendation 5: *Disturbance to species from human activity*
Lighting on the island should conform to Bat Conservation Ireland's guidance for minimising impacts to bats from artificial lighting (BCI, 2010). This should include minimising light spatially and temporally and avoiding the use of high pressure sodium or metal halide bulbs. The increasing use of LED lighting has energy-saving benefits but uncertain impacts to Bats. Available research indicates that it has little impact on Pipistrellus or Nyctalus sp. but that other species may be sensitive (Stone et al., 2012). Further mitigation may arise as a result of any bat survey that may be undertaken".

5.26 These recommendations have been incorporated into the Masterplan. It is therefore considered that there is not likely to be any significant effects on flora, fauna or biodiversity on the island arising from the draft Masterplan.

The relevance of the plan or programme for the implementation of Community legislation on the environment (e.g. plans and programmes linked to waste-management or water protection)

5.27 The proposed Haulbowline Masterplan is not directly related to the provision of waste management or water protection measures or programmes, or community legislation on the environment.

5.28 The implementation of the vision set out in the proposed Masterplan is likely to require the provision of additional capacity in terms of water supply and waste water treatment and disposal. This is subject to detailed consideration at planning application stage.

Characteristics of the effects and of the area likely to be affected:

The probability, duration, frequency, and reversibility of the effects

5.29 The probability / frequency of effects will be dependent on the extent of development likely to be undertaken during the lifetime of the land use plan. The proposed Haulbowline Masterplan is a non-statutory land use plan and as such will not directly and in isolation deliver any future development at Haulbowline. Any future development will be considered in accordance with the relevant statutory planning policy framework.

5.30 Notwithstanding the above, the development targets envisioned in the proposed Masterplan are modest in nature, with the purpose of promoting the island as a tourist destination whilst preserving the functionality of the existing Naval base. Only modest new development is proposed. Most development envisioned in the Masterplan is considered to be reversible, if necessary.

The cumulative nature of the effects

5.31 Haulbowline island is also part of a wider maritime community that contributes to the life of Cork Harbour. There are a series of non-statutory land-use plans relating to the Cork Harbour area, such as the Spike Island Masterplan (2012), IMERC Masterplan (2013), the Draft Cork Harbour Study (2011) and the Port of Cork Strategic Development Plan 2012.

5.32 The cumulative effect of these Masterplan proposals has been considered in the preparation of the Haulbowline Masterplan. It is considered that the implementation of these other Masterplan projects has the potential to create synergy with Haulbowline island, thus promoting the Cork Harbour area in a positive manner.

5.33 All Masterplans referred to above are non-statutory in nature and as such comprise only of vision documents.

The transboundary nature of the effects

5.34 No significant transboundary effects are anticipated.

5.35 The proposed Masterplan, in line with the principles of sustainability promotes the island in being transformed to an exemplar green national project. The creation of a “green” island energy sustainable grid is part of the infrastructure considerations for the Master Plan. Water management and the creation of a bio-diverse environment are also considerations.

The risks to human health of the environment (e.g. due to accidents)

5.36 It is considered that the proposed Masterplan would not pose any significant risk to human health or to the environment.

5.37 Section 14.5 of the Cork County Development Plan 2014 – 2020 relates to control of major accidents hazards and the Seveso II Directive 96/082/EC as amended by Directive 105/2003/EC, which seeks to reduce the risk and to limit the consequences of accidents at manufacturing and storage facilities involving dangerous substances that present a major accident hazard.

5.38 Objective ZU 5-1 of the County Development Plan seeks to “Reduce the risk and limit the consequences of major industrial accidents by, where appropriate, taking into account the advice of the Health and Safety Authority when proposals for new development are considered”.

5.39 It is noted that there are two Seveso sites located in Ringaskiddy, namely the Novartis Ringaskiddy site and the Pfizer Ireland Pharmaceutical site. The

Carrigaline Electoral Area Local Area Plan states at Table 2.7 that both of these Seveso sites have a consultation distance of 1,000 metres. Haulbowline is located in excess of 1,000 metres from both sites.

5.40 Therefore, the proximity of the Seveso sites is unlikely to have any material impact on the land use planning options for Haulbowline as set out in the proposed Masterplan.

The magnitude and spatial extent of the effects (geographical area and size of the population likely to be affected)

5.41 The proposal Masterplan relates only to the island of Haulbowline. The eastern tip area of circa 23 acres is excluded from the Masterplan proposals, having regard to the permitted remediation project at this location. The area adjoining the eastern tip, comprising of the existing dockyard and extending to circa 13 acres, is also largely excluding having regard to the ongoing operation of the dockyard. The western part of the island, comprising circa 29 acres is also largely excluded, having regard to the continued operation of the Naval base at this location.

5.42 The Masterplan proposals therefore relate primarily to the 21 acres located centrally on the island. There are proposals in the Masterplan for integration with other parts of the island.

5.43 The Masterplan does not propose any additional fixed linkages to adjoining areas.

5.44 The geographical extent of the Masterplan is therefore limited.

5.45 The Masterplan proposals are unlikely to generate any significant additional permanent population of the island. It is considered that the Masterplan proposals may over time increase visitor numbers of the island. The visitor numbers dependent largely upon the implementation of various aspects of the Masterplan proposals and as such the numbers that may be attracted are uncertain at this time.

The value and vulnerability of the area likely to be affected due to:

(i) Special natural characteristics or cultural heritage

5.46 The nature designations in the surrounding area have been considered separately in the context of a Natura Impact Statement (NIS) of the proposed Masterplan. This NIS Screening has concluded that with the implementation of these recommendations, it can be expected that significant effects will not arise to the integrity of Natura 2000 areas from the implementation of the Master Plan.

5.47 In terms of built heritage, the Midleton Electoral Local Area Plan identifies the following protected structures on the island:

- Martello Tower
- Group of limestone warehouse buildings

5.48 In addition to the above, it should be noted that the National Inventory of Architectural Heritage (NIAH) lists a number of other buildings of importance, including the tank building, church, boathouse, a number of houses, and naval office.

5.49 The LAP identifies that the western part of the island is an Architectural Conservation Area (ACA).

5.50 The Masterplan does not propose the demolition of any buildings on the site. There are proposals to refurbish existing vacant protected structures known as the group of limestone warehouse buildings and to return them to an appropriate active use. This is considered to be a significant positive impact in terms of cultural heritage.

5.51 It is an objective of the Midleton Electoral Local Area Plan to conserve and enhance the special character of this area. This is recognised and supported in the proposed Masterplan.

5.52 In terms of archaeology, any proposed development is subject to the policies and objectives of the Midleton Electoral Area Local Area Plan 2011 and the Cork County Development Plan 2014 in relation to archaeology. The LAP and County Development Plan includes policies and objectives to protect and preserve monuments in the plan area.

(ii) Exceeded environmental quality standards or limit values,

5.53 It is anticipated that environmental quality standards will not be exceeded and that the value of the area will not be limited as a result of the implementation of the Masterplan.

5.54 The proposed Haulbowline Masterplan is a non-statutory land use plan and as such will not directly and in isolation deliver any future development at Haulbowline. Any future development will be considered in accordance with the relevant statutory planning policy framework and the environmental criteria set out therein.

(iii) Intensive land-use.

5.55 The Masterplan does not promote intensive land use.

5.56 The western (Naval base) and eastern (remediation for creation of a public park) parts of the island are largely unaffected by the Masterplan proposals.

5.57 The key proposals are for the re-use and refurbishment of the protected structures, and the potential for the introduction of new buildings on parts of the island, to assist with the establishment of a visitor attraction on the island.

5.58 Even in the full implementation of the Masterplan proposals, the land use of the island will not be intensive.

The effects on areas or landscapes which have a recognised national, community or international protection status

5.59 There are no Natura 2000 sites located within the development boundaries of the Masterplan. The nature and landscape designations in the surrounding area have been considered separately in the context of a Natura Impact Statement (NIS) of the proposed Masterplan.

5.60 This NIS has concluded that with the implementation of these recommendations it can be expected that significant effects will not arise to the integrity of Natura 2000 areas from the implementation of the Master Plan.

6.0 SCREENING DECISION

6.1 The Masterplan has incorporated a number of recommendations as set out in the SEA Screening Report, together with the NIS Screening and Ecology Report.

6.2 It is considered that the likely impact of the proposed Masterplan in terms of the environment and sustainable development is likely to be neutral from a strategic perspective.

6.3 This is subject to the recommendations set out herein, and as set out in the Natura Impact Statement and the Ecology Report, being included in the Masterplan.

6.4 Therefore, it does not appear that there is a need for an SEA in this instance as the proposed Masterplan is unlikely to result in development which would have significant negative effects on the environment.

6.5 It is therefore considered that the proposed Masterplan shall not be subject to the requirement to prepare an Environmental Report on the likely significant effects of implementing the Masterplan and it is recommended the County Council does not proceed to SEA scoping in this case.

6.6 In preparing this SEA Screening Report, consultation has been undertaken with the EPA. The R

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AA SCREENING REPORT

Screening Report for Appropriate Assessment of the Draft Haulbowline Master Plan (May 2015)

prepared by OPENFIELD Ecological Services
for John Spain & Associates

Pádraic Fogarty MSc, MIEMA

July 2015

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1.0 INTRODUCTION

1.1 Protection of biodiversity

Biodiversity is a contraction of the words 'biological diversity' and describes the enormous variability in species, habitats and genes that exist on Earth. It is an integral component of our heritage while also providing food, building materials, fuel and clothing, maintaining clean air, water, soil fertility and pollinating crops. A study by the Department of Environment, Heritage and Local Government placed the economic value of biodiversity to Ireland at €2.6 billion annually (Bullock et al., 2008) for these 'ecosystem services'.

All life depends on biodiversity and its current global decline is a major challenge facing humanity. In 1992, at the Rio Earth Summit, this challenge was recognised by the United Nations through the Convention on Biological Diversity which has since been ratified by 193 countries, including Ireland. Its goal to significantly slow down the rate of biodiversity loss on Earth has been echoed by the European Union, which set a target date of 2010 for *halting* the decline. This target was not met but in 2010 in Nagoya, Japan, governments from around the world set about redoubling their efforts and issued a strategy for 2020 called 'Living in Harmony with Nature'. In 2011 the Irish Government incorporated the goals set out in this strategy, along with its commitments to conservation biodiversity under national and EU law, in the second national biodiversity action plan (Dept. of Arts, Heritage and the Gaeltacht, 2011).

The main policy instruments for arresting the decline in biodiversity have been the Birds Directive of 1979 and the Habitats Directive of 1992. These Directives require member states to designate areas of their territory that contain important bird populations in the case of the former; or a representative sample of important or endangered habitats and species in the case of the latter. These areas are known as Special Protection Areas (SPA) and Special Areas of Conservation (SAC) respectively. Collectively they form a network of sites across the European Union known as Natura 2000. A report into the economic benefits of the Natura 2000 network concluded that "there is a new evidence base that conserving and investing in our biodiversity makes sense for climate challenges, for saving money, for jobs, for food, water and physical security, for cultural identity, health, science and learning, and of course for biodiversity itself" (EC, 2013).

Unlike traditional nature reserves or national parks, Natura 2000 sites are not 'fenced-off' from human activity and are frequently in private ownership. It is the responsibility of the competent national authority to ensure that 'favourable conservation status' exists for their SPAs and SACs and specifically that Article 6(3) of the Directive is met. Article 6(3) requires that an 'appropriate assessment' (AA) be carried out for these sites where projects, plans or proposals are likely to have an effect. In some cases this is obvious from the start, for instance where a road is to pass through a designated site. However, where this is not the case, a preliminary screening must first be carried out to determine whether or not a full AA is required.

1.2 Methodology

The assessment was carried out in accordance with the following methodologies and guidelines:

1. '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' (Oxford Brookes, 2001).
2. 'Appropriate Assessment of Plans and Projects in Ireland'. (Department of Environment, Heritage and Local Government, 2009)
3. 'Appropriate Assessment of plans' (Scott-Wilson et al., 2009)

Reference is also made to the Circulars from the Department of Environment, Community and Local Government on the transposition of the Habitats Directive and the Strategic Environmental Assessment Directive into Irish law: Letter PSSP 6/2011; Letter PSSP 5/2001; and Circular NPW 1/10 & PSSP 2/10.

In accordance with the above mentioned guidance notes, the following steps are followed:

Step 1: Analysis of the Natura 2000 network
This involves assessing the current status of SACs and SPAs within the zone of influence of the plan and underlying trends affecting them. This is done through a combination of literature review, site survey, and consultation with relevant stakeholders.

Step 2: Analysis of the draft Master Plan
Identifying aspects of the draft Master Plan that may effect the integrity of the Natura 2000 network.

Step 3: Analysis of other plans
Identifying aspects of other plans or projects that may act 'in combination' with the Master Plan to effect the integrity of the Natura 2000 network.

Step 4: Determination of significance
Determination whether any of these effects, either alone or in combination with other plans and projects, will be significant.

Step 5: Avoidance or mitigation
Recommendation of avoidance or mitigation measures to ensure that no significant effects occur to the integrity of the Natura 2000 network.

The AA process is an iterative one where the report actively identifies potential effects, the plan or project is then modified to avoid or mitigate these effects, and then the new plan is re-assessed until such point as no significant effects are predicted to occur. It is also important to note that any final 'Appropriate Assessment' is made by the relevant competent authority, in this case Cork County Council.

In the event that significant effects remain in the final version of the plan, then it can only proceed where all alternatives to the plan have been fully examined and there are 'Imperative Reasons of Overriding Public Interest' (IROPI) as per Article 6(4) of the Directive. Where there are impacts to priority habitats the development can only proceed for reasons of human health and safety, important environmental reasons or

other reasons that have been approved by the European Commission. Compensatory measures must be provided and both the Minister for Environment, Community and Local Government and the European Commission must be informed.

2.0 Step 1 – Analysis of the Master Plan area

2.1 Location and extent

The Haulbowline Master Plan encompasses the island of the same name, which lies within Cork Harbour, but which is connected to the mainland by a bridge. Cork harbour is a large, sheltered body of marine water with extensive areas of exposed sand and mud at low tide.

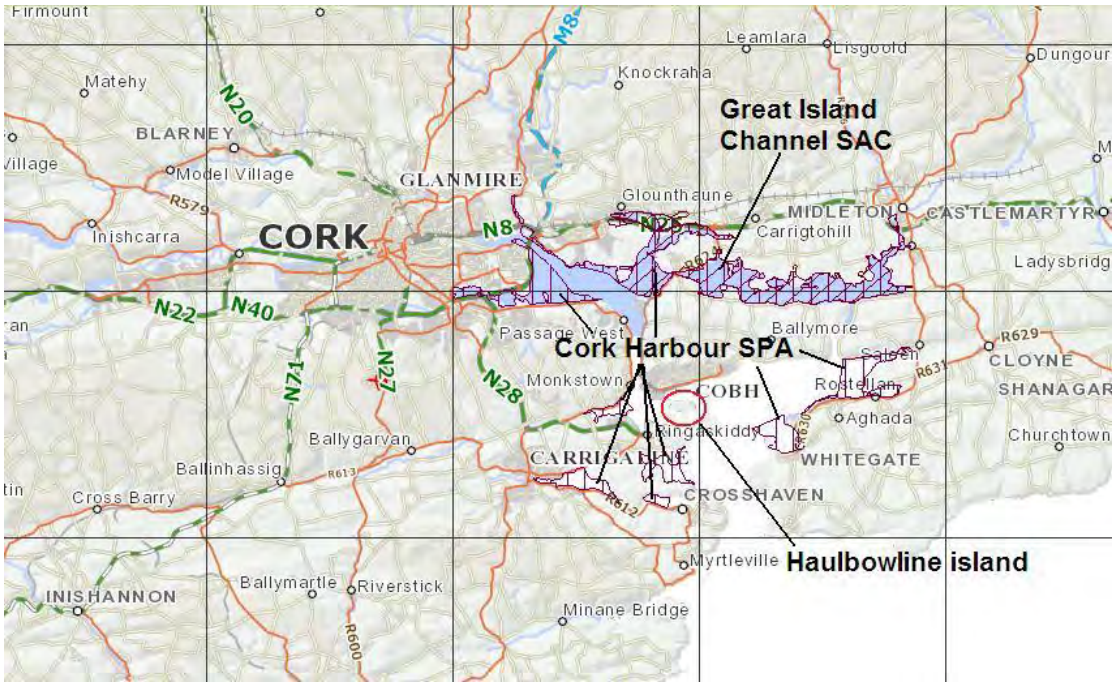

Figure 1 – The location of Haulbowline island showing the location of all Natura 2000 areas within a 15km radius from (www.npws.ie) .

2.2 Natura 2000 sites within the Zone of Influence

Best practice guidance (DoE, 2009) recommends that all Natura 2000 sites within 15km of the plan boundary be initially screened for impacts. This is a somewhat arbitrary distance and may be modified as this process progresses. Within this radius one SAC and one SPA have been identified from the NPWS website (www.npws.ie). These are shown in figure 1.

2.2.1 Great Island Channel SAC (site code: 1058)

The Great Island Channel stretches from Little Island to Midelton and is a part of the Cork Harbour marine area. It included the estuaries of two rivers, the Owennacurra and Dungourney. The sheltered conditions to be found here promote the settlement of sediment and so there are extensive areas of exposed sand and mud (NPWS, 2013). These form the basis for the SAC's two qualifying interests (i.e. the reasons why this area is of European importance). These are detailed in table 1. The status given is that of the habitat at a national level and not necessarily that within the Great Island Channel SAC.

Table 1 – Qualifying interests for the Great Island Channel SAC (from NPWS)

Code	Habitats	National Status
1140	Mudflats and sandflats not covered by seawater at low tide	Intermediate
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	Intermediate

- **Tidal mudflats (1140)**. This is an intertidal habitat characterised by find silt and sediment. Most of the area in Ireland is of favourable status however water quality and fishing activity, including aquaculture, are negatively affecting some areas.
- **Atlantic and Mediterranean salt meadows (1330 & 1410)**: these are intertidal habitats that differ somewhat in their vegetation composition. They are dynamic habitats that depend upon processes of erosion, sedimentation and colonisation by a typical suite of salt-tolerant organisms. The main pressures are invasion by the non-native *Spartina anglica* and overgrazing by cattle and sheep.

2.2.2 Cork Harbour SPA (site code: 4030)

The estuaries of the Lee, along with other rivers flowing into Cork Harbour provides a source of nutrients that promotes considerable productivity on surfaces that are exposed at low tide. This in turn provides a food source and place of shelter for bird populations, both resident and overwintering flocks. SPAs are designated for their internationally important species (listed on Annex I of the Birds Directive) or population sizes (>1% of the global population or >20,000 individuals). Most recent available data indicate that a mean of 25,125 birds utilised the area during the winters from 2006-11 (Crowe et al., 2012). This includes internationally important numbers of Black-tailed godwit *Limosa limosa* and nationally important numbers Shelduck *Tadorna tadorna,* Wigeon *Anas penelope,* Teal *A. crecca,* Mallard *A. platyrhynchos,* Shoveler *Anas clypeata,* Red-breasted Merganser *Mergus serrator,* Little Grebe *Tachybaptus ruficollis*, Great-crested Grebe *Podiceps cristatus*, Cormorant *Phalacrocorax carbo*, Oystercatcher *Haematopus ostralegus,* Golden plover *Pluvialis apricaria,* Lapwing *Vanellus vanellus,* Dunlin *Charadrius alpina,* Bar-tailed godwit *L. lapponica,* Curlew *Numenius arquata,* Greenshank *Tringa nebularia* Redshank *T. totanus,* and Turnstone *Arenaria interpres*.

Table 2 – Features of interest for the Cork Harbour SPA

Species		Status[1]
Pintail	*Anas acuta*	Red (Wintering)
Shoveler	*Anas clypeata*	Red (Wintering)
Golden plover	*Pluvialis apricaria*	Red (Breeding & Wintering)
Grey Plover	*Pluvialis squatarola*	Amber (Wintering)
Lapwing	*Vanellus vanellus*	Red (Breeding & Wintering)
Dunlin	*Calidris alpina*	Red (Breeding & Wintering)
Bar-tailed Godwit	*Limosa lapponica*	Amber (Wintering)
Black-tailed Godwit	*Limosa limosa*	Amber (Wintering)

[1] Colhoun & Cummins, 2013. *Birds of Conservation Concern in Ireland 2014-2019*

Redshank	*Tringa totanus*	Red (Breeding & Wintering)
Black-headed Gull	*Croicocephalus ridibundus*	Red (Breeding)
Common Gull	*Laurus canus*	Amber (Breeding)
Lesser Black-backed Gull	*L. fuscus*	Amber (Breeding)
Shelduck	*Tadorna tadorna*	Amber (Breeding & Wintering)
Wigeon	*Anas penelope*	Red (Wintering)
Teal	*Anas crecca*	Amber (Breeding & Wintering)
Cormorant	*Phalacrocorax carbo*	Amber (Breeding & Wintering)
Great-crested Grebe	*Podiceps cristatus*	Amber (Breeding & Wintering)
Little Grebe	*Tachybaptus ruficollis*	Amber (Breeding & Wintering)
Grey Heron	*Ardea cinerea*	Green (Breeding & Wintering)
Curlew	*Numenius arquata*	Red (Breeding & Wintering)
Red-breasted Merganser	*Mergus serrator*	Green (Breeding & Wintering)
Oystercatcher	*Haematopus ostralegus*	Amber (Breeding & Wintering)
Wetlands & Waterbirds		

- **Pintail**. Dabbling duck wintering on grazing marshes, river floodplains, sheltered coasts and estuaries. It is a localised species and has suffered a small decline in distribution in Ireland for unknown reasons.
- **Teal**. In winter this duck is widespread throughout the country. Land use change and drainage however have contributed to a massive decline in its breeding range over the past 40 years.
- **Wigeon**. There is a small unconfirmed breeding population of this duck in Ireland but the bulk of the population arrives to winter in coastal and inland wetlands. Changes in its wintering population have been attributed to climate change.
- **Grey Heron.** A distinctive birds of coastal and inland wetlands Heron numbers have rise substantially in recent decades.
- **Dunlin.** Although widespread and stable in number during the winter season, the Irish breeding population has collapsed by nearly 70% in 40 years. Breeding is now confined to just seven sites in the north and west as habitat in former nesting areas has been degraded.
- **Black-headed Gull.** Widespread and abundant in winter these gulls are nevertheless considered to be in decline. The reasons behind this are unclear but may relate to the loss of safe nesting sites, drainage, food depletion and increase predation.
- **Oystercatcher.** Predominantly coastal in habit Oystercatchers are resident birds whose numbers continue to expand in Ireland.
- **Common Gull.** Breeding sites for this gull in Ireland are confined to coastal locations, and mostly in the north and west. Their population is boosted by winter arrivals but again, there is a distinct coastal bias in their distribution.
- **Lesser Black-backed Gull.** The wintering range of this distinctive gull has expanded in Ireland by 55% since the early 1980s while breeding colonies have similarly increased.
- **Bar-tailed Godwit.** These wetland wading birds do not breed in Ireland but are found throughout the littoral zone during winter months. They prefer estuaries where there are areas of soft mud and sediments on which to feed.

- **Black-tailed Godwit.** Breeding in Iceland these waders winter in selected sites around the Irish coast, but predominantly to the east and southern halves. Their range here has increase substantially of late.
- **Red-breasted Merganser.** A widely distributed duck in winter Red-breasted Mergansers also breed in Ireland at certain coastal and inlands locations to the north and west. They have suffered small declines in both their wintering and breeding ranges and possible reasons have been cited as predation by American Mink and shooting.
- **Curlew.** Still a common sight during winter at coastal and inland areas around the country it breeding population here has effectively collapsed. Their habitat has been affected by the destruction of peat bogs, afforestation, farmland intensification and land abandonment. Their wintering distribution also appears to be in decline.
- **Cormorant.** Wintering populations of this large, fish-eating bird have increased in Ireland since the early 1980s. Breeding also occurs widely along the coast and inland waterways. It is amber-listed due to a moderate decline in numbers.
- **Golden Plover.** In winter these birds are recorded across the midlands and coastal regions. They breed only in suitable upland habitat in the north-west. Wintering abundance in Ireland has changed little in recent years although it is estimated that half of its breeding range has been lost in the last 40 years.
- **Grey Plover.** These birds do not breed in Ireland but winter throughout coastal estuaries and wetlands. Its population and distribution is considered to be stable.
- **Great-crested Grebe.** These birds breed predominantly on freshwater sites north of the River Shannon while coastal areas along the east and south are used for wintering. Numbers in Ireland have decline by over 30% since the 1990s.
- **Little Grebe.** A small, diving birds that frequents freshwater and coastal wetlands throughout the country. Numbers are believed to be increasing.
- **Shelduck.** The largest of our ducks, Shelduck both breed and winter around the coasts with some isolate stations inland. Its population and range is considered stable.
- **Redshank.** Once common breeders throughout the peatlands and wet grasslands of the midlands Redshanks have undergone a 55% decline in distribution in the past 40 years. Agricultural intensification, drainage of wetlands and predation are the chief drivers of this change.
- **Lapwing.** Although still one of the most widespread of the breeding waders Lapwing populations have declined by over 50% in the past 40 years. This has been driven by changes in agricultural practices and possibly increased predation.

The effects of the Master Plan must be measured against the SAC's/SPA's conservation objectives. Specific conservation objectives have been set for both areas (NPWS, 2014a & b). For the SPA each species is given the following objectives:

1. Population trend: long term population trend stable or increasing
2. Distribution: no significant decrease in the range, timing or intensity of use […] other than that occurring from natural patterns of variation.

For the SAC the objectives relate to habitat area and distribution, as well as (in the case of the Atlantic salt-meadows qualifying interest) physical and vegetation structure. These are in line with the generic objectives cited below.

To maintain or restore the favourable conservation condition of the species/habitats listed as Special Conservation Interests [features of interest]/qualifying interests for this SPA/SAC.

Favourable conservation status of a habitat is achieved when:
• its natural range, and area it covers within that range, are stable or increasing, and
• the specific structure and functions which are necessary for its long - term maintenance exist and are likely to continue to exist for the foreseeable future, and
• the conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:
• population dynamics data on the species concerned indicate that it is maintaining itself on a long - term basis as a viable component of its natural habitats, and
• the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
• there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long - term basis.

2.3 Literature review and field study

Haulbowline island is situated in Cork Harbour, facing the town of Cobh across the channel to the north. It is connected to the mainland by a road bridge leading to the south and is home to an Irish Defence Forces naval base. Historic mapping shows that human-centred land uses on this island have dominated for at least the past 100-150 years. However the contours of the island have been altered in this time and the eastern half of the existing land has been reclaimed from the sea. Recent decades have seen the eastern portion of the island in use as a steel plant and landfill for associated waste. This industrial facility has since been demolished.

As part of this study a site visit was carried out on March 9th 2015. Habitats on the island were surveyed in accordance with best practice guidance (Smith et al., 2009). All habitats were classified to Fossitt level 3 (Fossitt, 2000) and species lists are presented as an appendix to this report. March lies outside the optimal period for general habitat survey and so a full inventory of vegetation species is not presented. It is however within the optimal season for breeding birds, amphibians and mammals. For an Appropriate Assessment study it is essential that pathways between the site and Natura 2000 areas be identified and assessed and in this regard a full evaluation has been possible. While the AA is strictly focussed on potential impacts to Natura 2000 areas a full flora and fauna assessment has also been carried out and is presented separately.

A habitat map of the island based on the field survey is presented in figure 2. As can be seen there are a total of seven habitats above the high tide mark. Much of the island is occupied by the naval base and dockyard, and the now-demolished remains of the steel plant. Collectively these are **buildings and artificial surfaces – BL3** and are of negligible biodiversity value. Fragmented areas of **amenity grassland – GA2** are found within this space and these are also considered to be of negligible biodiversity value as they are highly managed and species poor.

Figure 2 – Habitat map of Haulbowline

The north-eastern fringe of the island rises steeply and forms a rocky cliff, an example of **exposed calcareous rock – ER2.** It is clothed in vegetation such as Ivy *Hedera helix,* Navalwort *Umbilicus rupestris* and Common Polypody *Polypodium vulgare.* Many of these species are non-native, such as Red Valerian *Centranthus ruber,* Alexanders *Smyrnium olusatrum* and Winter Heliotrope *Petasites fragrans* but nevertheless it does provide a habitat of local interest. The eastern end develops into a **treeline – WL2** with mature specimens of Scots' Pine *Pinus sylvestris* with some Ash *Fraxinus excelsior,* Sycamore *Acer pseudoplatanus* and Hawthorn *Crataegus monogyna.*

The eastern end of the island is the site of the former steel facility tip head. It has not been disturbed for many years and so is classified as **recolonising bare ground – ED3** although there are significant areas of **bare ground – ED2**. The species present include Butterfly-bush *Buddlia davidii,* Gorse *Ulex europaeus* and Ivy-leaved Toadflax *Cymbalaria muralis*.

The island's fringe is mostly artificial in nature and so is classified as **sea walls, piers and jetties – CC1.** The eastern end of the island has been reclaimed from the sea and so it too is artificial in nature. However it does have natural characteristics and the exposed stones and rocks at low tide have been colonised by dense growths of the brown seaweed *Fucus sp.* It has been classified as a **sheltered rocky shore – LR3.**

None of these habitats is an example of any listed on Annex I of the Habitats Directive. There are no areas of soft mud or sand that are exposed at low tide and which are typical of nutrient-rich habitats sought by the wading birds listed in table 2.

2.4 Consultation

A letter was sent to the Development Application Unit of the Department of Arts, Heritage and the Gaeltacht on March 6th 2015 requesting nature conservation observations (reference no.: GPre0073/2015) . A written response was not received. In a phone call on March 16th 2015 the Regional Ecologist, Dr Jervis Goode, highlighted the need for the AA to reflect the final version of any Master Plan that is published.

2.5 Trends affecting the Cork Harbour SPA and Great Island Channel SAC

The aforementioned SAC and SPA are entirely dependant upon the daily tidal movements that wash seawater through the islands and channels of the harbour. The habitats which are qualifying interests of the SAC (salt marsh and exposed mudflats) rely for their integrity upon the continual forces of erosion and deposition provided by this water movement. The nutrients that arrive from the input of rivers such as the Lee provide the conditions that make the aforementioned habitats among the most productive on Earth (Little, 2000). The abundance of small invertebrates living in the sand and mud in turn provide a wealthy food source for resident and visiting birdlife. Specific data on the status of non-breeding bird numbers in Cork Harbour is available (NPWS, 2014). In total nine species: Pintail, Shoveler, Red-breasted Merganser, Cormorant, Grey Plover, Lapwing, Black-headed Gull, Common Gull and Lesser Black-backed Gull are assessed as 'highly unfavourable'. Six species: Shelduck, Wigeon, Great-crested Grebe, Dunlin, Curlew and Redshank are assessed as 'unfavourable'. Three species: Teal, Grey Heron and Oystercatcher are

assessed as '(intermediate) unfavourable', while only four species: Little Grebe, Golden Plover, Black-tailed Godwit and Bar-tailed Godwit were assessed as 'favourable'. Of those species assessed as unfavourable the following species were found to be declining in Cork Harbour against a background of stable or increasing populations nationally: Shelduck, Pintail, Shoveler, Red-breasted Merganser, Cormorant and Redshank. This suggests that one or more of the conditions in Cork Harbour are responsible for these declines. The NPWS has examined the activities at Cork Harbour that may be impacting upon wetland bird numbers. These include: habitat loss, modification and adjacent land use; water quality; fisheries and aquaculture; recreational activity and others. However the document stops short of determining whether declines in specific species are associated with particular activities. It does highlight however the loss of habitat, on-going issues with water quality and the effects of disturbance from walkers (with our without dogs) and other activities in the intertidal zone. It may be that effects to waterbird populations have arisen as a result of one or all of these effects acting in combination.

Water quality data are available from the Environmental Protection Agency (EPA) and water bodies are assessed under the EU's Water Framework Directive (WFD). The waters around Haulbowline are assessed as 'unpolluted'. Nearer the mouth of rivers entering the harbour however this status is 'intermediate' or 'potentially eutrophic'. This indicates 'unsatisfactory' status in these areas due to excessive nutrient input. The main wastewater treatment plant for Cork is located on Little Island and in this vicinity water quality is 'intermediate'.

The relationship between moderate pollution and populations of wading birds is dependant upon the bird species and the site in question. Water quality is not listed as a conservation objective for either SPA or SAC. There is some evidence that elevated levels of nutrients is benefiting wintering bird populations by fuelling primary production (Nairn & O'Halloran, eds, 2012). Research from Lough Neagh in Northern Ireland suggests that improvements to water quality there have resulted in dramatic declines in the populations of wintering ducks (Tomankova et al., 2013). However excessive pollution can lead to mats of the green alga *Ulva sp.* that disadvantage certain bird species but provide a food source for others. It is not known whether this effect is to be found in Cork Harbour. Overall bird counts from BirdWatch Ireland show a mean of 25,125 individuals using the harbour during the winters from 2006-2011 (the most recent data available (Crowe et al., 2012). This compares to a mean of 28,014 for the years from 1997-2002 (Boland & Crowe, 2005). In the main it suggests that total numbers are stable however this clearly masks variations between species.

3.0 Step 2 – Analysis of the Master Plan

This analysis is based on the Haulbowline Draft Master Plan May 2015.

NB: It is important to note that this Screening Report for AA refers to this document only and any subsequent versions or amendments must be subject to a separate screening assessment. Also, any final screening must be carried out by the competent authority.

Chapter 1 of the Master Plan sets the context and includes background information on the geography and history of the island. It sets the vision for the future of the island and identifies the 'overarching pillars' upon which future development decisions will be made. These are: importance of water, developing operational infrastructure, securing the future, spaces in-between, encouraging innovation, sustainable island, and wider linkages. This chapter also sets the background to the need for a development Master Plan and the work that has been done to-date, particularly with regard to the plans for remediation of the area known as 'East Tip'. As such Chapter 1 does not contain any proposals that could impact upon Natura 2000 areas.

Chapter 2 presents an in depth analysis of the island and its land use history. It discusses its population, naval and trading traditions, and impacts of the ISPAT steel plant which was constructed in the 1960s. It appraises the island's sea and land access points and notionally divides the area into 'four places': the naval base, the former ISPAT site, the dockyard and the East Tip. The risk of flooding on the island is addressed along with the preservation of heritage structures and the context of Haulbowline within the wider tourist 'offering' in the Cork Harbour area. The opportunities and constraints posed by these inherent features are presented. Like Chapter 1, Chapter 2 does not include any specific objectives or action points and so there are no linkages to potential effects to Natura 2000 areas.

Chapter 3 of the Master Plan consists of an analysis of existing infrastructure and activites in the form of details on transport, movement etc. It also discusses the planning policy in which this Master Plan is situated and so has not direct connection to Natura 2000 areas. Section 3.2 discusses the wastewater treatment facilities on the island, highlighting that there are two wastewater treatment plants. One for the base, commissioned in 2006 and with a population equivalent (P.E.) of 600, and another for the dockyard, commissioned in 2013 and with a P.E. of 75. Both of these systems are believed to be operating well within their design capacities and are monitored on a regular basis. There is spare capacity at both but the Master Plan acknowledges that potential surges could occur in line with irregular visitor use. It states that if there is to be future intensification of use then "connection to the public sewer in Ringaskiddy" should be considered.

Chapter 4 sets out the vision for Haulbowline and initially sets out the following tenets:

1) A secure home for the navy.
2) A restoration and a balance of the island as a shared community.
3) A fitting place for the visitor experience.
4) An exemplar in green sustainable development and future management.
5) A connected place.
6) A place for maritime community

These are elaborated upon in **Chapter 5** which describes a total of 9 drivers:

1. Active Naval Base – securing the future
2. Maritime - the importance of water
3. Sustainability – the green jewel
4. Cultural – heritage and tourism
5. Movement – water linkages and connectivity
6. Planning Context – Land use and infrastructural framework
7. Tourism and Employment – encouraging innovation through partnerships
8. Public Realm and Arrival - the creation of an arrival experience
9. Genius Loci – the extension of the landscape tradition
10. Implementation – alternatives and different futures

These can be considered broadstroke objectives, none of which can be considered to have direct effects on Natura 2000 areas.

Chapter 6 contains the recommendations which are proposed. These are reproduced here and assessed individually for their potential connections to ecological receptors.

Table 3 – Recommendations of the Master Plan and potential links to Natura 2000 areas

Action Point	Link to Natura 2000 area
HERITAGE	
A Conservation Plan should be compiled	None
The buildings should be individually assessed and a condition analysis completed, to act as an inventory of the protected structures and their curtilage.	None
A desk top Archaeological study should identify any areas of archaeological potential	None
Any clearance of vegetation or demolition of buildings should only occur outside the nesting season, i.e. it should only occur from September to February inclusive.	None
INFRASTRUCTURE	
An existing analysis of the Island's existing infrastructural capacity, including surveys and condition reports of existing subterranean systems.	None
The existing capability of the treatment plant on Haulbowline Island should be determined including its design capacity and licensing status. If it is found that adequate treatment capacity is not available then it should be made clear that any new building works cannot proceed until such time that problems are addressed.	Will help to ensure pollution does not arise to Cork Harbour
Capacity analysis of the island's existing sewerage system and requirements for upgrading will require a dedicated study.	Will help to ensure pollution does not arise to Cork Harbour

Water Management on the island will require an integrated management plan that links with the existing demands.	None
SUSTAINABILITY & ECOLOGY MANAGEMENT	
The existing energy demands of the island should be analysed based on empirical data. Options for reducing the carbon footprint of the island which involve the wider IMERC campus should also be explored.	None
The potential presence of bat roosts will require ecological surveys to be undertaken by the appropriate qualified personnel.	Will be beneficial to the biodiversity of the area
The ecological diversity of the island should become part of the wider “sustainability story” for the East Tip landscape design.	Will help to raise awareness of biodiversity assets
LANDSCAPE	
The agreement of a one island, one place landscape philosophy should be clearly defined.	None
The landscape structure of the land use zoning should be integrated within the East Tip and ISPAT remediation areas. Tree lined avenues and fences should be defined in tandem with all security requirements.	None
The landscaping scheme should include an open water feature which may result in the retention of the Grey Wagtail population, whilst assisting in a sustainable urban drainage (SUDs) strategy.	Will benefit water quality and biodiversity
TOURISM	
A destination led tourism plan for Haulbowline should be developed which closely links with other visitor attractions in Cork Harbour.	Increased use of the island by visitors will increase demand on wastewater and freshwater facilities
Options for the major visitor attraction should be tested in conjunction with the landscape wider Fáilte Ireland initiatives	
The development of heritage walks tours and access through the base to the Martello towers should be developed in conjunction with a management plan for the Naval Base.	
The integration of an Ocean Yacht Racing hub should be integrated with the graving docks development.	
A Cost Benefit Analysis of the recommendations should be undertaken.	None

<u>Passageway</u> The Master Plan identifies clearly a north south passageway that has both formal naval use potential and recreational value. Both functions benefit from the proximity to the Store Houses; the views through to Cobh and the potential of linkages with Spike Island as a major tourist destination. It must be noted that the movement through this space should will be subject to the control and management of the Naval Service.	Any construction projects on, or near to the sea front, have the potential to impair water quality and disturb wildlife
<u>Pedestrian Bridge</u> Spike Island will be accessed by the proposed pedestrian bridge and linkage with the East Tip. Haulbowline Island should form part of total visitor experience. The development of dedicated pedestrian extensions to the existing bridge should also be integrated into a wider pedestrian and cycle network of paths that links to the surrounding harbour communities.	Any construction projects on, or near to the sea front, have the potential to impair water quality and disturb wildlife
PUBLIC REALM	
There should be a single coherent lighting strategy across the island. The development of a series of lighting zones and character areas should be progressed.	Could affect bats but also birds using the SAC/SPA
The selection of external seating and furniture should also consider the potential for design innovation. The integration of seating along heritage trails and the promenade should allow for opportunities for small gathering areas for ad hoc performance or educational groups.	None
Signage should be designed as a single wayfinding brand. The use of sensitive graphics and original branding will contribute to enhancing a single identity for the island early, with relatively modest investment. IMERC and Spike should also form part of this branding narrative.	None
The surrounding landscape curtilage around the buildings and base is critical in developing an appropriate sense of place for the island. Landscape and material selection should be sensitively selected especially surrounding the Architectural Conservation Area to contribute to the overall townscape of the buildings.	None
COSTING, IMPLEMENTATION AND THE STORE HOUSES	
The Master Plan areas and future capacities should be developed further in order to establish the quantum of enabling costs required for the island's future development.	None
The Store Houses should be initially re-adapted for temporary uses to encourage innovation and shared custodianship. Opportunities for an IMERC North exist in the medium term to complement the educational and research activities already in place.	Any construction projects on, or near to the sea front, have the potential to impair water quality and disturb wildlife

Other private public sector partnership models for parts should be developed to assist in “seed” funding for the island’s public elements.	None
ISLAND TRUST	
Investigate mechanisms for an island Trust which connects the stories and aspirations of Cork Harbour’s assets.	None
The island’s unique maritime history, story and value should be communicated to a wider audience.	None

Chapter 7 identifies the next steps in implementing the Master Plan and so has no direct connection to Natura 2000 areas.

Chapter 8 contains supporting documentation including detailed drawing and area schedules. It also details the Screening for AA which has taken place, and the SEA.

As can be seen from this analysis of the Master Plan there are only indirect connections between the recommendations and Natura 2000 areas in Cork Harbour. These may arise from wastewater, construction and disturbance from lighting.

The aspects of the Master Plan are presented visually in figure 3.

Figure 3 – Overview of Master Plan

4.0 Step 3 – Analysis of Other Plans

Individual impacts from one-off developments or plans may not in themselves be significant. However, these may become significant when combined with similar, multiple impacts elsewhere. These are sometimes known as cumulative impacts but in AA terminology are referred to as 'in combination' effects.

The Cork Harbour is a very large area, mostly intertidal or marine in nature, that stretches from the outskirts of Cork city to the mouth of the harbour over 10km to the south-east. The SAC and SPA boundaries do not encompass all of this area but are concentrated on shallow estuaries and channels, and intertidal zones where there is exposed sediment for at least part of the day. The NPWS has highlighted the pressures on these areas from habitat loss, water quality, aquaculture and disturbance. The latter is particularly associated with walkers or bait diggers and their dogs (while disturbance from boating or shipping traffic is not highlighted as a significant pressure). All of these effects can act in combination with each other and may be responsible for the unfavourable status of many species within the SPA.

The connection between moderately poor water quality and populations of wading birds is unclear. There is some evidence that elevated levels of nutrients is in fact benefiting wintering bird populations by fuelling primary production (Nairn & O'Halloran, eds, 2012). Research from Lough Neagh in Northern Ireland suggests that improvements to water quality there have resulted in dramatic declines in the populations of wintering ducks (Tomankova et al., 2013). In Baldoyle Bay, in County Dublin, where water is seriously polluted, mats of the green alga *Ulva sp.* have impacted upon certain species as the seaweed impedes their access to the sediments beneath. However it has also benefited species that feed on the alga. It is not known if, or to what extent, this effect is occurring within Cork Harbour.

The Cork City wastewater treatment plant is licenced by the EPA to discharge treated effluent into Cork Harbour (licence no.: D0033-01). The most recent Annual Environmental Report (AER) for this plant, prepared by Irish Water for the 2014 calendar year, indicates that the discharge was compliant with the emission limit values prescribed for all but one parameter: total nitrogen. It states that the plant is currently impacting negatively upon receiving water quality and that an upgrade of the plant is required to remove nitrogen. However no date has been set for these works and the proposed course of action is unclear.

Three other discharges into Cork Harbour, from Cobh, Ringaskiddy/Crosshaven/Carrigaline and Carrigtwohill were either providing no treatment or substandard treatment of waste effluent (Shannon et al., 2014).

The redevelopment of Haulbowline is taking place alongside similar plans for Spike Island and Camden. These will all see increase visitor and recreational traffic in these areas. Disturbance to waterbirds, and subsequently affects to population trends, can occur from the cumulative effects of this impact.

The following known plans or proposed projects have been considered for this assessment:

4.1 River Basin Management Plan for the Southern River Basin District.

The overriding purpose of this plan was to achieve 'good ecological status' of all waters by 2015 in accordance with the EU Water Framework Directive. However these goals have not been met. The plan identifies bodies of water that do not meet satisfactory standards and proposes a 'programme of measures' to improve this status. The on-going implementation of this plan is expected to result in the long-term improvement of water quality.

The status of the outer harbour (and so the waters surrounding Haulbowline island) have been assessed as 'good' in the 2010-2012 reporting period). The status of the inner harbour ranges from moderate to poor.

4.2 Cork County Development Plan 2014

The Plan emphasises the importance of Natura 2000 sites for the county's natural heritage and states that an Appropriate Assessment will be required where a project or plan is likely to result in a significant effect upon the integrity of any SAC or SPA.

An AA of the plan itself was undertaken and found that its implementation was not likely to significantly affect the integrity of the Natura 2000 network.

4.3 The remediation of the East Tip

Planning permission for the remediation of the East Tip site and its transformation into an amenity park was granted in 2014. As part of the planning approval process an Environmental Impact Statement and a Natura Impact Statement (NIS) were prepared. The NIS found that no significant negative effects were likely to occur to Natura 2000 areas in Cork Harbour.

5.0 Step 4: Determination of Significance

5.1 Impact prediction

The scope of this report considers the impacts to the Natura 2000 network only. A separate Strategic Environmental Assessment has been carried out for this Master Plan with input by Openfield Ecological Services to assess broader impacts to flora and fauna/biodiversity. Under Article 6 of the Habitats Directive the term 'significance' is taken to mean an effect on the integrity of the SAC or SPA in question. Unlike Environmental Impact Assessment for instance, there are no degrees of significance, and where an effect is determined to be significant, mitigation or avoidance measures must be considered.

It must also be noted that this is a strategic document. This AA Screening report does not negate the need for further studies under Article 6 of the Habitats Directive at the project planning stage. This will apply for any project that may arise form the implementation of the Master Plan. It is also highlighted that any screening for AA, or full AA, is carried out by the relevant competent authority, in this case Cork County Council.

When assessing whether an effect from the draft Haulbowline Master Plan is likely to impact upon a Natura 2000 site it is important to establish the pathway between the source and receptor. Where a pathway does not exist an impact cannot occur.

This assessment has found that there is one SAC and one SPA within 15km of the Master Plan boundary. These are both physically remote from Haulbowline island itself. It was found however that pathways for impacts to occur do exist to the Cork Harbour SPA and Great Island Channel SPA. 15km is an arbitrary radius however it is considered that there are no other SACs or SPAs falling within the zone of influence of this plan. The following impacts are considered:

5.1.1 Impacts to habitats and species within the Cork Harbour SPA and the Great Island Channel SAC

Because of the distance separating Haulbowline from the aforementioned SAC and SPA there is no pathway for direct disturbance to lands within their boundaries. This impact is not significant. Indirect impacts from water quality are assessed below.

5.1.2 Direct disturbance to birds within the Cork Harbour SPA

Disturbance to roosting or feeding birds on areas of exposed intertidal sediment has been identified by the NPWS as a potential significant cause of negative effects to non-breeding bird populations. This arises chiefly from walkers with or without dogs, and bait digging. Haulbowline island is not adjacent to any of these roosting/feeding areas the nearest of which is at Monkstown Creek, 1.5km to the east, or Lough Beg, 1.7km to the south. These distances are considered too great to cause disturbance effects to birds. The proposed increase in amenity/tourist traffic is therefore considered not to be significant, even in combination with other similar development nearby which are designed to increase tourist and visitor traffic.

A recommendation of the plan is for a 'single, coherent lighting strategy'. Inappropriate lighting can impact on birds by displacing them from their roost sites or

by drawing them in. However, the birds present in the harbour are not among those species which are attracted to artificial night light, typically Shearwaters. Given the separation distance to the closest known roosting areas it is considered that disturbance cannot occur.

5.1.3 Effects to water quality from construction projects

Construction projects can result in temporary pollution issues through the ingress of sediments as well as dangerous substances such as oils and concrete. Toxic effects could impact upon benthic invertebrates and, in turn, affect the requirements of feeding birds. Any construction project **will comply with the *Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites*** published by Inland Fisheries Ireland. These include the following generic measures:

1. Fuels, oils, greases and hydraulic fluids must be stored in bunded compounds well away from the watercourse. Refuelling of machinery, etc., should be carried out in bunded areas.
2. Runoff from machine service and concrete mixing areas must not enter the watercourse.
3. Stockpile areas for sands and gravel should be kept to minimum size, well away from the watercourse.
4. Runoff from the above should only be routed to the watercourse via suitably designed and sited settlement ponds/filter channels.
5. Settlement ponds should be inspected daily and maintained regularly.

The full text of this document is available at:
http://www.fishingireland.net/environment/fullconstructionanddevelopment.htm

A method statement will be prepared and supplied to Inland Fisheries Ireland well in advance of commencing works at the site. This should provide details of how these guidelines, and in particular points number 1, 4 and 5, will be implemented on the site to the satisfaction of the fisheries board.

Impacts to water bodies are of a temporary nature and can be avoided through good site management practices as described. This impact is therefore **not significant**.

5.1.4 Impacts to water quality from the operation phase of the Master Plan

The implementation of the Master Plan will result in increased visitor numbers and a commensurate increased demand on the sewerage network. Foul sewage is currently treated at two on-site treatment plants on Haulbowline island. These have both been commissioned since 2006 and are operating well within their design capacity. They are subject to regular testing and inspection and there is no evidence that pollution is arising from a poor standard of treatment. However, any increase to the loading to these plants will need to be assessed as they may become a contributing factor to the unsatisfactory status of the inner harbour. In particular the pattern of flow is likely to change as pressure from visitors is irregular. While there is no conclusive evidence that pollution is resulting in negative effects to non-breeding birds in the harbour such effects cannot be ruled out. It is also possible that these discharge could act in combination with other poorly treated sources of urban effluent in the harbour. This can affect the conservation objectives of the Cork Harbour SPA by perpetuating the long term trend in those bird species currently assessed as

'unfavourable'. It could also affect the conservation objective for the Great Island Channel by altering the community distribution within the mudflats and sandflats qualifying interest.

The Master Plan highlights the risks associated with this potential impact. It recommends a full assessment of the wastewater treatment capacity and suggests that a mains connection to the municipal plant at Ringaskiddy could be opened. This plant is currently being upgraded while plans for a new plant at Shanabally are at an advanced stage. Given these developments, and the precautionary approach that is being taken in the Master Plan this impact can be considered **not significant.**

5.1.5 Impact arising from greater demand of freshwater

The drinking water supply for Cork city is abstracted from the River Lee. Abstraction is highly unlikely to be affecting water bodies below the high tide line and so this effect can be considered **not significant.**

6.0 Avoidance or Mitigation

Potential significant effects must be avoided or mitigated in order to maintain the integrity of the Great Island Channel SAC and the Cork Harbour SPA. Where this is not possible, development can only proceed for Imperative Reasons of Overriding Public Interest (IROPI). This must be done in consultation with the Minister for the Environment, Heritage and Local Government, be accompanied by compensatory measures to maintain the overall coherence of the Natura 2000 network, and can only proceed with the approval of the European Commission. In addition, it must be demonstrated that all alternative options have been considered – including not proceeding with a plan at all.

In the case where significant effects are likely to occur to a priority habitat, the plan can only proceed for reasons of human health and safety, where there are important environmental benefits, or other IROPI. Again, compensatory measures will be required and the Commission must be informed.

Section 5.0 assessed five potential impacts and these are summarised in table 4 below.

Table 4 – Summary of impact assessment

	Impact	Assessment
1	Impacts to habitats and species within the Cork Harbour SPA and the Great Island Channel SAC	Not significant
2	Direct disturbance to birds within the Cork Harbour SPA	Not significant
3	Effects to water quality from construction projects	Not significant
4	Impacts to water quality from the operation phase of the Master Plan	Not significant
5	Impact arising from greater demand of freshwater	Not significant

7.0 Conclusion and Finding of No Significant Effects

The draft Haulbowline Master Plan (May 2015) has been assessed as per Article 6 of the Habitats Directive. This study found that there are no aspects of the plan which, in combination with other plans and developments, may result in significant effects to the integrity of the Cork Harbour SPA and Great Island Channel SAC.

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3

ECOLOGY REPORT

Ecology Report for draft Haulbowline Master Plan – February 2015

Compiled by OPENFIELD Ecological Services

Pádraic Fogarty, MSc MIEMA

for John Spain & Associates

www.openfield.ie

March 2015

1 INTRODUCTION

Pádraic Fogarty of OPENFIELD Ecological Services has worked for 20 years in the environmental field and in 2007 was awarded an MSc from Sligo Institute of Technology for research into Ecological Impact Assessment (EcIA) in Ireland. OPENFIELD is a full member of the Institute of Environmental Management and Assessment (IEMA) and an affiliate member of the Chartered Institute of Ecology and Environmental Management (IEEM).

Under the SEA Directive as well as best practice methodology from the EPA, the analysis of impacts to flora and fauna is an essential component of the SEA process, and so is a required chapter in any SEA, should this be required for this project.

Under Article 6(3) of the Habitats Directive an 'appropriate assessment' of plans must be carried out to determine if significant effects are likely to arise to the integrity of Natura 2000 sites. A Natura Impact Statement has been prepared for this Master Plan This will allow the Local Authority to make a full AA, should this be required.

2 STUDY METHODOLOGY

The assessment was carried out in accordance with the 'Guidelines for Ecological Impact Assessment in the United Kingdom' by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2006).

A site visit was carried out on the 9th of March 2015. The site was surveyed in accordance with the Heritage Council's Best Practice Guidance for Habitat Survey and Mapping (Smith et al., 2010). Habitats were identified in accordance with Fossitt's Guide to Habitats in Ireland (Fossitt, 2000). A species list for each habitat was compiled and these are presented in Appendix 1 of this report. Species abundance was determined using the DAFOR scale (D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare). This is a subjective form of habitat description commonly used in conjunction with habitat classifications. Sample digital photos were also taken. Data were then uploaded to the ArcView 9.2 GIS software suite.

The nomenclature for vascular plants is taken from *The New Flora of the British Isles* (Stace, 2010) and for mosses and liverworts *A Checklist and Census Catalogue of British and Irish Bryophytes* (Hill et al., 2009).

March lies outside the optimal period for general habitat survey. It is within the optimal period for breeding birds and amphibians but is not suitable for detector-based bat surveys (Smith et al., 2010). It is also within the optimal season for general mammal survey (NRA, 2009). Despite these limitations it was possible to classify all habitats on the island to Fossitt level 3. A flora species list is presented as an appendix to this report however because of the timing of the survey this should be considered incomplete.

3 EXISTING RECEIVING ENVIRONMENT

3.1 Zone of Influence

Best practice guidance suggests that an initial zone of influence be set at a radius of 2km for non-linear projects (IEA, 1995). However some impacts are not limited to this distance and so sensitive receptors further from the project footprint may need to be considered as this assessment progresses. This is shown in figure 1.

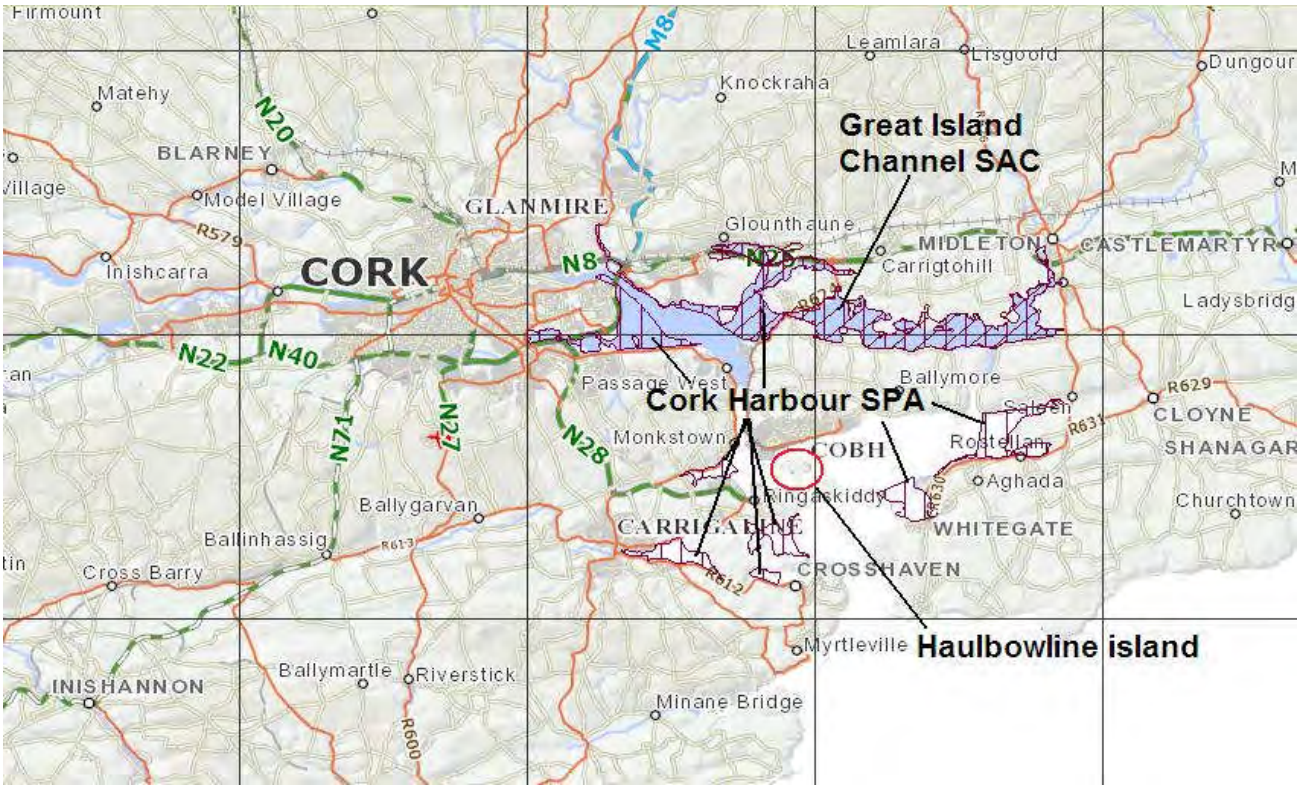

Figure 1 – Approximate 15km radius of proposed site. The boundary of SACs are shown in diagonal lines while those of SPAs are in vertical lines. (from www.npws.ie) Note that these areas are also designated as proposed Natural Heritage Areas.

There are a number of designations for nature conservation in Ireland including National Park, National Nature Reserve, RAMSAR site, UNESCO Biosphere reserves, Wildfowl Sanctuary, Special Protection Areas (SPA – Birds Directive), Special Areas of Conservation (SAC – Habitats Directive); and Natural Heritage Areas. The mechanism for these designations is through national or international legislation. Proposed NHAs (pNHA) are areas that have yet to gain full legislative protection. They are generally protected through the relevant County Development Plan. There is no system in Ireland for the designation of sites at a local, or county level. Within 2km of the subject site there are a number of such areas.

As can be seen from figure 1 the site is not located within any area designated for nature conservation. It can be considered linked to the Cork Harbour SPA and the Great Island Channel SAC via their shared hydrology.

Great Island Channel SAC (site code: 1058)

The Great Island Channel stretches from Little Island to Midelton and is a part of the Cork Harbour marine area. It included the estuaries of two rivers, the Owennacurra and Dungourney. The sheltered conditions to be found here promote the settlement of sediment and so there are extensive areas of exposed sand and mud (NPWS, 2013). These form the basis for the SAC's two qualifying interests (i.e. the reasons why this area is of European importance). These are detailed in table 1. The status given is that of the habitat at a national level and not necessarily that within the Great Island Channel SAC.

Table 1 – Qualifying interests for the Great Island Channel SAC (from NPWS)

Code	Habitats	National Status
1140	Mudflats and sandflats not covered by seawater at low tide	Intermediate
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	Intermediate

- **Tidal mudflats (1140)**. This is an intertidal habitat characterised by find silt and sediment. Most of the area in Ireland is of favourable status however water quality and fishing activity, including aquaculture, are negatively affecting some areas.
- **Atlantic and Mediterranean salt meadows (1330 & 1410)**: these are intertidal habitats that differ somewhat in their vegetation composition. They are dynamic habitats that depend upon processes of erosion, sedimentation and colonisation by a typical suite of salt-tolerant organisms. The main pressures are invasion by the non-native *Spartina anglica* and overgrazing by cattle and sheep.

Cork Harbour SPA (site code: 4030)

The estuaries of the Lee, along with other rivers flowing into Cork Harbour provides a source of nutrients that promotes considerable productivity on surfaces that are exposed at low tide. This in turn provides a food source and place of shelter for bird populations, both resident and overwintering flocks. SPAs are designated for their internationally important species (listed on Annex I of the Birds Directive) or population sizes (>1% of the global population or >20,000 individuals). Most recent available data indicate that a mean of 25,125 birds utilised the area during the winters from 2006-11 (Crowe et al., 2012). This includes internationally important numbers of Black-tailed godwit *Limosa limosa* and nationally important numbers Shelduck *Tadorna tadorna,* Wigeon *Anas penelope,* Teal *A. crecca,* Mallard *A. platyrhynchos,* Shoveler *Anas clypeata,* Red-breasted Merganser *Mergus serrator,* Little Grebe *Tachybaptus ruficollis*, Great-crested Grebe *Podiceps cristatus*, Cormorant *Phalacrocorax carbo*, Oystercatcher *Haematopus ostralegus,* Golden plover *Pluvialis apricaria,* Lapwing *Vanellus vanellus,* Dunlin *Charadrius alpina,* Bar-tailed godwit *L. lapponica,* Curlew *Numenius arquata,* Greenshank *Tringa nebularia* Redshank *T. totanus,* and Turnstone *Arenaria interpres*.

Table 2 – Features of interest for the Cork Harbour SPA

Species		Status[1]
Pintail	*Anas acuta*	Red (Wintering)
Shoveler	*Anas clypeata*	Red (Wintering)
Golden plover	*Pluvialis apricaria*	Red (Breeding & Wintering)
Grey Plover	*Pluvialis squatarola*	Amber (Wintering)
Lapwing	*Vanellus vanellus*	Red (Breeding & Wintering)
Dunlin	*Calidris alpina*	Red (Breeding & Wintering)
Bar-tailed Godwit	*Limosa lapponica*	Amber (Wintering)
Black-tailed Godwit	*Limosa limosa*	Amber (Wintering)
Redshank	*Tringa totanus*	Red (Breeding & Wintering)
Black-headed Gull	*Croicocephalus ridibundus*	Red (Breeding)
Common Gull	*Laurus canus*	Amber (Breeding)
Lesser Black-backed Gull	*L. fuscus*	Amber (Breeding)
Shelduck	*Tadorna tadorna*	Amber (Breeding & Wintering)
Wigeon	*Anas penelope*	Red (Wintering)
Teal	*Anas crecca*	Amber (Breeding & Wintering)
Cormorant	*Phalacrocorax carbo*	Amber (Breeding & Wintering)
Great-crested Grebe	*Podiceps cristatus*	Amber (Breeding & Wintering)
Little Grebe	*Tachybaptus ruficollis*	Amber (Breeding & Wintering)
Grey Heron	*Ardea cinerea*	Green (Breeding & Wintering)

[1] Colhoun & Cummins, 2013. *Birds of Conservation Concern in Ireland 2014-2019*

Curlew	*Numenius arquata*	Red (Breeding & Wintering)
Red-breasted Merganser	*Mergus serrator*	Green (Breeding & Wintering)
Oystercatcher	*Haematopus ostralegus*	Amber (Breeding & Wintering)
Wetlands & Waterbirds		

- **Pintail**. Dabbling duck wintering on grazing marshes, river floodplains, sheltered coasts and estuaries. It is a localised species and has suffered a small decline in distribution in Ireland for unknown reasons.
- **Teal**. In winter this duck is widespread throughout the country. Land use change and drainage however have contributed to a massive decline in its breeding range over the past 40 years.
- **Wigeon**. There is a small unconfirmed breeding population of this duck in Ireland but the bulk of the population arrives to winter in coastal and inland wetlands. Changes in its wintering population have been attributed to climate change.
- **Grey Heron.** A distinctive birds of coastal and inland wetlands Heron numbers have rise substantially in recent decades.
- **Dunlin.** Although widespread and stable in number during the winter season, the Irish breeding population has collapsed by nearly 70% in 40 years. Breeding is now confined to just seven sites in the north and west as habitat in former nesting areas has been degraded.
- **Black-headed Gull.** Widespread and abundant in winter these gulls are nevertheless considered to be in decline. The reasons behind this are unclear but may relate to the loss of safe nesting sites, drainage, food depletion and increase predation.
- **Oystercatcher.** Predominantly coastal in habit Oystercatchers are resident birds whose numbers continue to expand in Ireland.
- **Common Gull.** Breeding sites for this gull in Ireland are confined to coastal locations, and mostly in the north and west. Their population is boosted by winter arrivals but again, there is a distinct coastal bias in their distribution.
- **Lesser Black-backed Gull.** The wintering range of this distinctive gull has expanded in Ireland by 55% since the early 1980s while breeding colonies have similarly increased.
- **Bar-tailed Godwit.** These wetland wading birds do not breed in Ireland but are found throughout the littoral zone during winter months. They prefer estuaries where there are areas of soft mud and sediments on which to feed.
- **Black-tailed Godwit.** Breeding in Iceland these waders winter in selected sites around the Irish coast, but predominantly to the east and southern halves. Their range here has increase substantially of late.
- **Red-breasted Merganser.** A widely distributed duck in winter Red-breasted Mergansers also breed in Ireland at certain coastal and inlands locations to the north and west. They have suffered small declines in both their wintering and breeding ranges and possible reasons have been cited as predation by American Mink and shooting.
- **Curlew.** Still a common sight during winter at coastal and inland areas around the country it breeding population here has effectively collapsed. Their habitat has been affected by the destruction of peat bogs, afforestation, farmland intensification and land abandonment. Their wintering distribution also appears to be in decline.
- **Cormorant.** Wintering populations of this large, fish-eating bird have increased in Ireland since the early 1980s. Breeding also occurs widely along the coast and inland waterways. It is amber-listed due to a moderate decline in numbers.
- **Golden Plover.** In winter these birds are recorded across the midlands and coastal regions. They breed only in suitable upland habitat in the north-west. Wintering abundance in Ireland has changed little in recent years although it is estimated that half of its breeding range has been lost in the last 40 years.
- **Grey Plover.** These birds do not breed in Ireland but winter throughout coastal estuaries and wetlands. Its population and distribution is considered to be stable.
- **Great-crested Grebe.** These birds breed predominantly on freshwater sites north of the River Shannon while coastal areas along the east and south are used for wintering. Numbers in Ireland have decline by over 30% since the 1990s.
- **Little Grebe.** A small, diving birds that frequents freshwater and coastal wetlands throughout the country. Numbers are believed to be increasing.
- **Shelduck.** The largest of our ducks, Shelduck both breed and winter around the coasts with some isolate stations inland. Its population and range is considered stable.

- **Redshank.** Once common breeders throughout the peatlands and wet grasslands of the midlands Redshanks have undergone a 55% decline in distribution in the past 40 years. Agricultural intensification, drainage of wetlands and predation are the chief drivers of this change.
- **Lapwing.** Although still one of the most widespread of the breeding waders Lapwing populations have declined by over 50% in the past 40 years. This has been driven by changes in agricultural practices and possibly increased predation.

Cork Harbour is a RAMSAR site (no.: 837) however the RAMSAR website only indicates these areas with a pin, rather than boundary lines. Because of the legal status afforded RAMSAR it is believed that this area is coincident with the Cork Harbour SPA. The harbour has also been identified by BirdLife International as an Important Bird Area (IBA; site code: IE088)[2].This area is larger than that designated as SPA or SAC and is shown in figure 2. As can be seen the boundary of the IBA encompasses the coastal channel to the south of Haulbowline Island.

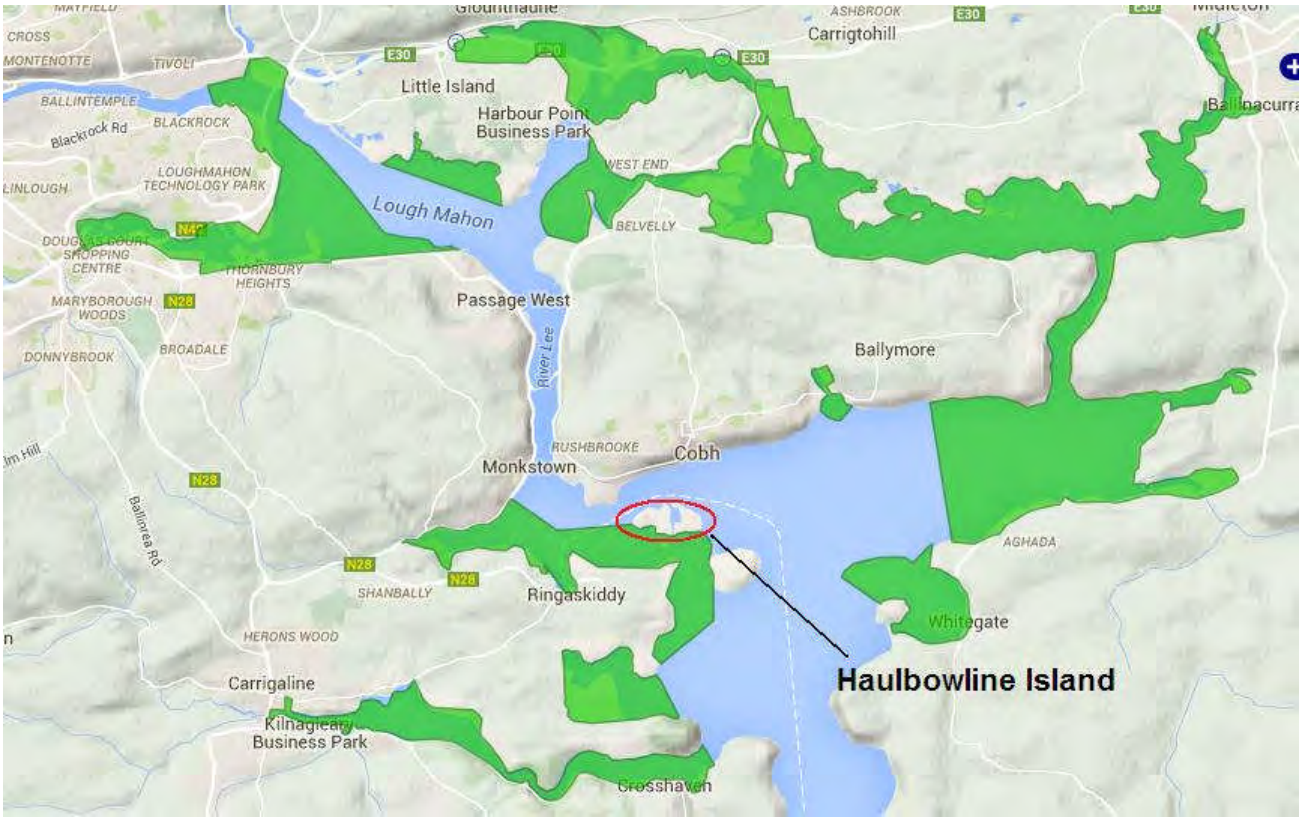

Figure 2 – Extent of Cork Harbour IBA showing the relative location of Haulbowline Island

The IBA has been identified under the following criteria:

A4iii: The site is known or thought to hold, on a regular basis, ≥ 20,000 waterbirds or ≥ 10,000 pairs of seabird of one or more species.
B1i: The site is known or thought to hold ≥ 1% of a flyway or other distinct population of a waterbird species.
B2: The site is one of the most important in the country for a species with an unfavourable conservation status in Europe (SPEC 2, 3) and for which the site-protection approach is thought to be appropriate.

[2] BirdLife International (2015) Important Bird Areas factsheet: Cork Harbour. Downloaded from http://www.birdlife.org on 17/03/2015

C3: The site is known to regularly hold at least 1% of a flyway population of a migratory species not considered threatened at the EU level (as referred to in Article 4.2 of the EC Birds Directive) (not listed on Annex I).
C4: The site is known to regularly hold at least 20,000 migratory waterbirds and/or 10,000 pairs of migratory seabirds of one or more species.
C6: The site is one of the five most important in the European region (NUTS region) in question for a species or subspecies considered threatened in the European Union (i.e. listed in Annex I of the EC Birds Directive).

The NPWS web site (www.npws.ie) contains a mapping tool that indicates historic records of legally protected species within a selected Ordnance Survey (OS) 10km grid square. Haulbowline island is located within the square W76 and four protected plant species are recorded in addition to five protected mammals. It must be noted that this list cannot be seen as exhaustive as suitable habitat may be available for other important and protected species. Table 4 lists these and their known current status. As can be seen none of the plant records can be considered current. All of the mammal records meanwhile are up-to-date.

Table 3 – Known records of protected species from the W76 square (from www.npws.ie)

Species	Habitat[3] [4]	Current status[5], [6]
Hordeum secalinum Meadow Barley	Upper parts of brackish marshes, chiefly near the sea	Record pre-1970
Mentha pulegium Pennyroyal	Damp, sandy places	Record pre-1970
Misopates orontium Lesser Snapdragon	Arable fields	Record pre-1970
Scleranthus annus Annual Knawel	Waste places and roadsides on dry, sandy soils	Record pre-1970
Erinaceus europaeus Hedgehog	A wide variety of habitats	
Lutra lutra Otter	Rivers, lakes, wetlands and coasts	Current
Mustela erminea Stoat	A wide variety of habitats	Current
Sciurus vulgaris Red Squirrel	Woodlands	Current
Sorex minutus Pygmy shrew	Woodlands, heathland, and wetlands	Current

[3] Parnell et al., 2012
[4] Hayden & Harrington, 2001
[5] Preston et al., 2002
[6] www.biodiversityireland.ie

Water quality data are available from the Environmental Protection Agency (EPA) and water bodies are assessed under the EU's Water Framework Directive (WFD). The waters around Haulbowline are assessed as 'unpolluted'. Nearer the mouth of rivers entering the harbour however this status is 'intermediate' or 'potentially eutrophic'. This indicates 'unsatisfactory' status in these areas due to excessive nutrient input. The main wastewater treatment plant for Cork is located on Little Island and in this vicinity water quality is 'intermediate'.

3.2 Stakeholder Consultation

A letter was sent to the Development Application Unit of the Department of Arts, Heritage and the Gaeltacht on March 6th 2015 requesting nature conservation observations (reference no.: GPre0073/2015) . A written response has yet to be received but a period of six weeks is normally required. In a phone call on March 16th 2015 the Regional Ecologist, Dr Jervis Goode, highlighted the need for an Appropriate Assessment to reflect the final version of any Master Plan that is published.

3.3 Plans or policies relating to natural heritage

Convention on Biological Diversity (CBD): The protection of biodiversity is enshrined in the CBD to which Ireland is a signatory. As part of its commitment to this international treaty Ireland, as part of a wider European Union initiative, was committed to the halt in loss of biodiversity by the year 2010. This target was not met but in 2010 in Nagoya, Japan, governments from around the world set about redoubling their efforts and issued a strategy for 2020 called 'Living in Harmony with Nature'. In 2011 the Irish Government incorporated the goals set out in this strategy, along with its commitments to conservation biodiversity under national and EU law, in the second national biodiversity action plan (Dept. of Arts, Heritage and the Gaeltacht, 2011).

Cork County Biodiversity Action Plan 2009 – 2014: This document sets six objectives:

- To review biodiversity information for County Cork and to prioritise habitats and species for conservation action;
- To collect data and use it to inform conservation action and decision making;
- To incorporate positive action for biodiversity into local authority actions and policy;
- To promote best practice in biodiversity management and protection;
- To facilitate the dissemination of biodiversity information;
- To raise awareness of County Cork's biodiversity and encourage people to become involved in its conservation.

In general the actions arising from these objectives do not relate to planning and development. The plan does not identify areas of local biodiversity importance although priority species and habitats are listed in Appendix 7.

Cork County Development Plan 2014: The importance of Appropriate Assessment is emphasised through out the CDP. The plan itself was subject to AA and SEA. The AA found that no significant effects were likely to arise from its implementation. Chapter 12 of the Plan discusses the heritage of the county and part 2 of this chapter specifically deals with natural heritage and biodiversity. Objective HE2-1 states the Local Authority's commitment to protecting all areas that have been designated for nature conservation. Objective HE2-3 discusses the importance of biodiversity outside of these areas and commits to retaining features including the coastal and marine zone with emphasis on those habitats of special conservation interest in Cork.

South West River Basin District Management Plan: Under the Water Framework Directive (Directive 2000/60/EC) all Irish waters must achieve 'good ecological status' by 2015. The South West River Basin District encompasses all of County Kerry and in 2010 a River Basin Management Plan was published (ERBD, 2010). Haulbowline Island, as a part of Cork Harbour, is within the Transitional and Coastal Waters Action Programme. Nearly 60% of the transitional areas were assigned 'moderate' (i.e. unsatisfactory) status under this plan.

3.4 Site Survey

Haulbowline island is situated in Cork Harbour, facing the town of Cobh across the channel to the north. It is connected to the mainland by a road bridge leading to the south and is home to an Irish Defence Forces naval base. Historic mapping shows that human-centred land uses on this island have dominated for at least the past 100-150 years. However the contours of the island have been altered in this time and the eastern half of the existing land has been reclaimed from the sea. Recent decades have seen the eastern portion of the island in use as a steel plant and landfill for associated waste. This industrial facility has since been demolished.

3.4.1 Flora

A habitat map of the island based on the field survey is presented in figure 2. As can be seen there are a total of seven habitats above the high tide mark. Much of the island is occupied by the naval base and dockyard, and the now-demolished remains of the steel plant. Collectively these are **buildings and artificial surfaces – BL3** and are of negligible biodiversity value. Fragmented areas of **amenity grassland – GA2** are found within this space and these are also considered to be of negligible biodiversity value as they are highly managed and species poor.

The north-eastern fringe of the island rises steeply and forms a rocky cliff, an example of **exposed calcareous rock – ER2.** It is clothed in vegetation such as Ivy *Hedera helix,* Navalwort *Umbilicus rupestris* and Common Polypody *Polypodium vulgare.* Many of these species are non-native, such as Red Valerian *Centranthus ruber,* Alexanders *Smyrnium olusatrum* and Winter Heliotrope *Petasites fragrans* but nevertheless it does provide a habitat of local interest. The eastern end develops into a **treeline – WL2** with mature specimens of Scots' Pine *Pinus sylvestris* with some Ash *Fraxinus excelsior,* Sycamore *Acer pseudoplatanus* and Hawthorn *Crataegus monogyna.*

The eastern end of the island is the site of the former steel facility tip head. It has not been disturbed for many years and so is classified as **recolonising bare ground – ED3** although there are significant areas of **bare ground – ED2**. The species present include Butterfly-bush *Buddlia davidii,* Gorse *Ulex europaeus* and Ivy-leaved Toadflax *Cymbalaria muralis*.

The island's fringe is mostly artificial in nature and so is classified as **sea walls, piers and jetties – CC1.** The eastern end of the island has been reclaimed from the sea and so it too is artificial in nature. However it does have natural characteristics and the exposed stones and rocks at low tide have been colonised by dense growths of the brown seaweed *Fucus sp.* It has been classified as a **sheltered rocky shore – LR3.**

None of these habitats is an example of any listed on Annex I of the Habitats Directive. There are no areas of soft mud or sand that are exposed at low tide and which are typical of nutrient-rich habitats sought by the wading birds listed in table 2.

Figure 2 – Habitat map of Haulbowline

3.4.2 Fauna

The site survey included incidental sightings or proxy signs (prints, scats etc.) of faunal activity, while the presence of certain species can be concluded where there is suitable habitat within the known range of that species. Table 4 details those mammals that are protected under national or international legislation in Ireland. Cells are greyed out where suitable habitat is not present or species are outside the range of the study area.

Table 4 – Protected mammals in Ireland and their known status within the zone of influence (Harris & Yalden, 2008)[7] Those that are greyed out indicate either that suitable habitat is not present or that there are no records of the species from the National Biodiversity Date Centre.

Species	Level of Protection	Habitat[8]	Red List Status[9]
Otter *Lutra lutra*	Annex II & IV Habitats Directive; Wildlife (Amendment) Act, 2000	Rivers, wetlands and coastal areas	Near Threatened
Lesser horseshoe bat *Rhinolophus hipposideros*		Disused, undisturbed old buildings, caves and mines	Least Concern
Grey seal *Halichoerus grypus*	Annex II & V Habitats Directive; Wildlife (Amendment) Act, 2000	Coastal habitats	-
Common seal *Phocaena phocaena*			-
Whiskered bat *Myotis mystacinus*	Annex IV Habitats Directive; Wildlife (Amendment) Act, 2000	Gardens, parks and riparian habitats	Least Concern
Natterer's bat *Myotis nattereri*		Woodland	Least Concern
Leisler's bat *Nyctalus leisleri*		Open areas roosting in attics	Near Threatened
Brown long-eared bat *Plecotus auritus*		Woodland	Least Concern
Common pipistrelle *Pipistrellus pipistrellus*		Farmland, woodland and urban areas	Least Concern
Soprano pipistrelle *Pipistrellus pygmaeus*		Rivers, lakes & riparian woodland	Least Concern
Daubenton's bat *Myotis daubentonii*		Woodlands and bridges associated with open water	Least Concern
Nathusius' pipistrelle *Pipistrellus nathusii*		Parkland, mixed and pine forests, riparian habitats	Least Concern
Irish hare *Lepus timidus hibernicus*	Annex V Habitats Directive;	Wide range of habitats	Least Concern

[7] Excludes marine mammals
[8] Harris & Yalden, 2008
[9] Marnell et al., 2009

Pine Marten *Martes martes*	Wildlife (Amendment) Act, 2000	Broad-leaved and coniferous forest	Least Concern
Hedgehog *Erinaceus europaeus*	Wildlife (Amendment) Act, 2000	Woodlands and hedgerows	Least Concern
Pygmy shrew *Sorex minutus*		Woodlands, heathland, and wetlands	Least Concern
Red squirrel *Sciurus vulgaris*		Woodlands	Near Threatened
Irish stoat *Mustela erminea hibernica*		Wide range of habitats	Least Concern
Badger *Meles meles*		Farmland, woodland and urban areas	Least Concern
Red deer *Cervus elaphus*		Woodland and open moorland	Least Concern
Fallow deer *Dama dama*		Mixed woodland but feeding in open habitat	Least Concern
Sika deer *Cervus nippon*		Coniferous woodland and adjacent heaths	-

The site survey found little direct evidence of mammal activity. Habitats on the island provide few resources for large mammals. Of those species listed in table 4 Hedgehog, Irish Stoat and Pygmy Shrew are considered more or less ubiquitous. Other mammals not protected under law may also be present including Brown Rat *Rattus norvegicus,* House Mouse *Mus domesticus,* Wood Mouse *Apodemus sylvatica* and Fox *Vulpes vulpes.* Rabbits *Oryctolagus cuniculus* were observed in number at the East Tip. Otter and Seals may use the waters surrounding the island however the lack of freshwater would prevent Otters residing permanently. Seals are not known to haul out on Haulbowline.

No evidence of Irish Hare was found on the site although they are recorded from the area and avail of a variety of habitats (Reid et al., 2007).

Features on the site are considered to be of moderate value to roosting bats (Hundt, 2012) as the numerous old and disused buildings provide extensive roosting opportunities. However the lack of semi-natural vegetation in the vicinity of the buildings may limit the opportunities for foraging. All bats, including their roosting areas, are protected under national and European legislation. In 2012 a dedicated bat survey was undertaken as part of the EIS for the East Tip site (Kelleher, 2012). This found no roosts and recorded only one bat, a Common Pipistrelle, flying over the site. It concluded that “The eastern tip of Haulbowline Island offers little to favour bats.” However this study did not examine the old grain buildings or other structures beyond the boundary of the aforementioned development.

Relatively few bird species were recorded during the site survey (March lies just within the ideal season for breeding birds). A Buzzard *Buteo buteo* was roosting at the East Tip and was likely hunting Rabbits. Grey wagtails *Motacilla cinerea* and Mallard *Anas platyrhynchos* were noted around areas of standing water while Jackdaws *Corvus monedula* seem numerous at the west end of the island. A Peregrine *Falco peregrinnus* was seen at rest on top of the tall grain store adjacent to the former ISPAT site. It is possible that nesting is

occurring in this location. Peregrines are listed on Annex I of the Birds Directive although there are of low conservation concern (Colhoun & Cummins, 2013). Feral Pigeon *Columbus livia* were also noted in this area and are likely to be roosting within the old buildings. There were few birds along the western margin of the island, where seawalls and piers etc leave little space for roosting. Black-headed Gulls *Chroicocephalus ridibundus* and Lesser Black-backed Gulls *Larus fuscus* were noted roosting at a disused pier on the northern side. The more naturalised eastern margin provides more opportunity for shore birds. Grey Heron *Ardea cinerea,* Cormorant *Phalacrocorax carbo* and Common Gull *Larus canus* were noted at roost on the stone spit that extends from the south-east of the island. A field survey of the island, undertaken in August 2012 for the East Tip EIS, found a number of other species including Ringed Plover *Charadrius hiaticula*, Rock Pipit *Anthus petrosus*, Meadow Pipit *A. pratensis,* Pied Wagtail *Motacilla alba,* Swallow *Hirundo rustica,* Dunnock *Prunella modularis*, Robin *Erithacus rubecula*, Wren *Troglodytes troglodytes,* Wheatear *Oenanthe oenanathe,* Stonechat *Saxicola torquata*, Song Thrush *Turdus* philomelos, Blackbird *T. merula,* House Sparrow *Parus domesticus,* Starling *Sturnus vulgaris,* Linnet *Carduelis cannabina* and Goldfinch *Carduelis carduelis.* Of these species three: Black-headed Gull (breeding only), Meadow Pipit and Grey Wagtail are listed on BirdWatch Ireland's red list, and so are of 'high conservation concern' (Colhoun & Cummins, 2013). Black-headed Gulls are not recorded as breeding in Cork Harbour (Balmer et al., 2013). Both Meadow Pipit and Grey Wagtail are on the red list due to a historic decline in their breeding population, described as a "large and widespread population decline since 1800" (Colhoun & Cummins, 2013). It is not considered that Haulbowline provides habitat opportunities for other red list species.

Common Frog *Rana temporaria* and Common Lizard *Lacerta vivipara* are protected under the Wildlife Act 1976 and may be present on this site. Suitable habitat exists for spawning Frogs in any areas of standing water. However despite March being the prime season for spawning none was observed. Smooth Newts *Lissotriton vulgaris* are to be found in Cork but there the permanent ponds on this site are considered unsuitable due to their artificial nature combined with a lack of significant aquatic vegetation.

There are no water bodies on the site that could support fish. The marine waters surrounding the island will support a range of fish however no species is listed for legal protection while data on marine biodiversity is severely lacking in Ireland.

Most habitats, even highly altered ones, are likely to harbour a wide diversity of invertebrates. In Ireland only one insect is protected by law, the Marsh Fritillary butterfly *Euphydryas aurinia,* and this is not to be found on the disturbed and artificial habitats present on Haulbowline. Other protected invertebrates are confined to freshwater and wetland habitats and so are not present on this site.

3.5 Overall Evaluation of the Context, Character, Significance and Sensitivity of the Master Plan area

In summary it has been seen that Haulbowline Island is not within any area that has been designated for nature conservation at a national or international level. The southern channel between the island and the mainland is within an Important Bird Area, however this is not a legal boundary. On the island itself there are no examples of habitats listed on Annex I of the Habitats Directive or records of rare or protected plants. There is habitat or potential habitat for a number of protected species, particularly bats and various birds. Particular birds species of note are the Peregrine, which is listed on Annex I of the Birds Directive, Meadow Pipit and Grey Wagtail both of which are on BirdWatch Ireland's red list.

Significance criteria are available from guidance published by the National Roads Authority (NRA, 2009). These are reproduced in table 5. From this an evaluation of the various habitats and ecological features on the site has been made and this is shown in table 6.

Table 5 Site evaluation scheme taken from NRA guidance 2009

Site Rating	***Qualifying criteria***
A - International importance	SAC, SPA or site qualifying as such. Sites containing 'best examples' of Annex I priority habitats (Habitats Directive). Resident or regularly occurring populations of species listed under Annex II (Habitats Directive); Annex I (Birds Directive); the Bonn or Berne Conventions. RAMSAR site; UNESCO biosphere reserve; Designated Salmonid water
B - National importance	NHA. Statutory Nature Reserves. Refuge for Flora and Fauna. National Park. Resident or regularly occurring populations of species listed in the Wildlife Act or Red Data List 'Viable' examples of habitats listed in Annex I of the Habitats Directive
C - County importance	Area of Special Amenity, Tree Protection Orders, high amenity (designated under a County Development Plan) Resident or regularly occurring populations (important at a county level, defined as >1% of the county population) of European, Wildlife Act or Red Data Book species Sites containing semi-natural habitat types with high biodiversity in a county context, and a high degree of naturalness, or populations of species that are uncommon in the county
D - Local importance, higher value	Sites containing semi-natural habitat types with high biodiversity in a county context, and a high degree of naturalness, or populations of species that are uncommon in the locality Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.
E - Local importance, lower value	Sites containing small areas of semi-natural habitat that are of some local importance for wildlife; Sites or features containing non-native species that are of some importance in maintaining habitat links.

Table 6 Evaluation of the importance of habitats on Haulbowline

Treeline – WL2 Exposed Calcareous Rock – ER2 Sheltered Rocky Shore – LR3	Local Importance (Higher Value). Semi-natural habitats types with high biodiversity in a local context.
All other habitats	Negligible ecological value (notwithstanding that artificial features may be, or are known to be, habitat for protected and/or endangered species of birds and bats).

4 LIKELY CHARACTERISTICS OF THE MASTER PLAN

The Master Plan provides the framework in which future development on the island will take place. The main elements are described below:

Chapter 1 of the Master Plan sets the context and includes background information on the geography and history of the island. It sets the vision for the future of the island and identifies the 'overarching pillars' upon which future development decisions will be made. These are: importance of water, developing operational infrastructure, securing the future, spaces in-between, encouraging innovation, sustainable island, and wider linkages. This chapter also sets the background to the need for a development Masterplan and the work that has been done to-date, particularly with regard to the plans for remediation of the area known as 'East Tip'. As such Chapter 1 does not contain any proposals that could impact upon flora and fauna features.

Chapter 2 presents an in-depth analysis of the island and its land use history. It discusses its population, naval and trading traditions, and impacts of the ISPAT steel plant which was constructed in the 1960s. It appraises the island's sea and land access points and notionally divides the area into 'four places': the naval base, the former ISPAT site, the dockyard and the East Tip. The risk of flooding on the island is addressed along with the preservation of heritage structures and the context of Haulbowline within the wider tourist 'offering' in the Cork Harbour area. The opportunities and constraints posed by these inherent features are presented. Like Chapter 1, Chapter 2 does not include any specific objectives or action points and so there are no linkages to potential effects to flora and fauna features.

Chapter 3 sets out the vision for Haulbowline and initially sets out the following tenets:

1) A restoration and a balance of the island as a shared community.
2) A secure home for the navy.
3) A fitting place for the Lusitania experience.
4) An exemplar in green sustainable development and future management.
5) A connected place.
6) A place for maritime community

These are elaborated upon in a total of 34 'drivers' which could be described as action points arising from the Master Plan. These are reproduced here and assessed individually for their potential connections to ecological receptors.

Table 7 – Drivers of the Master Plan and potential links to ecological features

Action Point	Link to Flora & Fauna features
Driver 1 Any future developments should celebrate the proximity with the water's edge.	None
Driver 2 The use of perimeter buildings, structured landscape and formal gateways as boundaries are used to extend this tradition in the future proposals.	None
Driver 3 The development of direct logical pedestrian linkages across the island for naval use is essential in the creation of one cohesive naval base.	None
Driver 4 The re-greening of the island and the extension of the landscape throughout the island as a green grid should provide the framework for all future land use zones and neighbourhoods.	Positive impact upon flora and fauna in attracting greater biodiversity
Driver 5 The central portion of the island has been defined within the Master Plan as a logistics service spine and carpet for the adjacent developments. It is intended as a highly flexible urban space that has minimal buildings.	None
Driver 6 The central area of the masterplan is treated as a logistical space that can accommodate all of the anticipated naval uses.	None
Driver 7 The development of dockyard architecture should be functional. Opportunities for supporting dockyard facilities to be designed as elements within this space should form part of a cohesive approach to place making on the island.	None
Driver 8 The creation of an arrival space and experience that celebrates the island and addresses the southern approach is a central organising principle for the master plan.	Any construction projects on, or near to the sea front, have the potential to impair water quality. Works on old buildings could impact upon bats or birds.

Driver 9 The proposed plaza will act as an integrated transportation hub that will link all modes of travel including: 1. Car parking 2. Bus drop off 3. Pedestrian arrival 4. Cycling 5. Eco-Shuttle bus 6. Boats and island hopping	None
Driver 10 Cycleways	None
Driver 11 First Impressions The approach to the island will require significant upgrading and improvements to the roadway. 1) New foot paths and cycle ways will need to connect to a broader network of local and national linkages. 2) Signage and wayfinding through the IMERC cluster and Haulbowline will need to be of one consistent brand. 3) Landscaping and green infrastructure should be improved beyond the boundaries of this study to Ringaskiddy. A structured approach to landscape design should reinforce the identity of the complete area.	Construction projects have the potential to result in impacts to water quality. Any works on old buildings could impact upon bats or birds.
Driver 12 - Ecology Rich natural environment setting - Important Bird Areas (IBA) Programme identifies the most important sites for site-based conservation efforts as identified by BirdLife International.	Potential to positively impact on flora and fauna by highlighting their presence and ecological value
Driver 13 The master plan provides for a structured landscaping approach and the creation of sunny places that will be attractive. The creation of a southern approach lawn will become the people focus of the island.	None
Driver 14 The north south axis in the plan is an organising principle for the complete island development.	None
Driver 15 The development of structured screened tree lined fenced boundaries that create visual permeability whilst ensuring secure operations are of central importance in place making within the island.	Positive impact upon flora and fauna in attracting greater biodiversity
Driver 16 - Link to Spike Various alternative options exist for linking to Spike Island. The linkages can either be physical, (bridge) or by boat. The linkages should integrate with the overall car parking and arrival strategy for the island.	Construction projects have the potential to result in impacts to water quality. Greater disturbance of the coastal area may result in greater

	disturbance to shore birds.
Driver 17 The development of the major visitor attraction is considered the central building in the master plan. The central space and arrival vista will be fully defined by this major development.	Construction projects have the potential to result in impacts to water quality. Any demolition works on old buildings could impact upon bats and birds. Increased use of the island by visitors will increase demand on wastewater and freshwater facilities.
Driver 18 The re-adaptation of existing facilities for other uses should be implemented as “early wins” for the master plan. The refurbishment of the existing grain buildings along the East camber should be a priority. A number of proposed uses have been proposed as part of the master plan. These uses will adapt and change in time so flexibility in the planning of the space for different short term uses should be considered. 1. Short stay accommodation for naval crews during maintenance. 2. Hotel/apartment type accommodation for visiting staff for IMERC or the wider Cork Harbour business community. 3. Hostel. 4. Start up businesses	Construction projects have the potential to result in impacts to water quality. Any works on old buildings could impact upon bats and birds Increase use of the island by visitors will increase demand on wastewater and freshwater facilities
Driver 19 The southern boat buildings would provide an opportunity for some “quick start” educational facilities that would integrate within the maritime theme of the island. Also the broader integration of IMERC teaching facilities could be developed in this location.	None
Driver 20 The restoration of the graving dock into an active shared use for maritime uses should be examined as a future use.	Construction projects have the potential to result in impacts to water quality.

	Any works on old buildings could impact upon bats and birds.
Driver 21 The graving dock will require adjacent infrastructural development to support it activities. Two proposals exist for dock side activities. 1. Highly flexible maritime workshops for either private or naval use dependent on demand. 2. A covered moveable dock yard that will become a major maintenance facility.	Construction projects have the potential to result in impacts to water quality
Driver 22 Ocean Yacht Racing Hub The possibility of including a hub for a commercial high technology ocean yacht racing team would also enhance the attraction of the island. The reinforcement of the island as a centre of maritime excellence, (including sport) will also create other spin of activities through visitor attractions and technology transfers with the naval facilities. A dedicated technology hub for a maritime workshop which is accessible to the public is also part of the visitor experience.	Increase use of the island by visitors will increase demand on wastewater and freshwater facilities
Driver 23 The use of raised East Camber water garden will assist in restoring in part the heritage curtilage for the buildings.	?? I don't know what this means
Driver 24 The development of a promenade which allows the visitor controlled access around the base and is part of the "whole" island experience will require close management structures and some naval decanting to more secure areas.	Increase use of the island by visitors will increase demand on wastewater and freshwater facilities
Driver 25 The creation of views through the island between Cobh and IMERC should be encouraged in the creation of tree lined avenues, and strategically placed objects.	None
Driver 26 Potential alternative sites and intermediate camouflaging and landscape screening of the tanks should be considered as part of the master plan proposal.	None
Driver 27 The opening of vistas from the arrival point to the Cathedral should be a priority in defining the master plan north south linkages. The long views through the island from the NMCI should also be preserved.	None

Driver 28 Improved access to these facilities [Martello Tower] should be explored as part of the master plan. The creation of a great stair that allows direct accessibility should be explored as an option which releases the heritage asset.	None
Driver 29 The development of quality public spaces that enhance the curtilage of the island should become a priority when place making. Newly formed spaces should develop a palette of materials which is appropriate the waterside thematic of the island.	Increase use of the island by visitors will increase demand on wastewater and freshwater facilities
Driver 30 – Public spaces The adjacent buildings must address this space and any new designs should animate the edges of the space to ensure activity and visibility. The spaces are intended as defined threshold spaces that can be opened and closed dependent on the naval operational requirements.	Increase use of the island by visitors will increase demand on wastewater and freshwater facilities
Driver 31 Initial studies have highlighted that at peak times the existing road bridge is inadequate for pedestrian and cycle access. Proposals for an alternative pedestrian friendly bridge or extended walkway should form part of a cohesive movement strategy. These route ways will also promote greater connectivity between the IMERC campus, Spike Island and the island as a whole.	Construction projects have the potential to result in impacts to water quality and local marine biodiversity. Additional disturbance could affect shore birds.
Driver 32 The island is highly visible from the surrounding communities. The evening prominence of the island should be celebrated through the use of lighting on some key buildings such as the grain stores. The grain stores should be lit initially to develop a stronger sense of identity for the activity on the island.	Artificial night lighting could disturb birds and bats using Cork Harbour through attractive or repellent forces.
Driver 33 There is a strong economic case for regenerating historic buildings. The benefits relate not only to the individual building, but also to the wider area and community. The inclusion of heritage assets in regeneration schemes provides a focus and catalyst for sustainable change. The impact of successful schemes is felt beyond the boundaries of the heritage asset itself and can boost the economy of the whole town or city.	None
Driver 34 All of the strategic landscape moves should be agreed early. All of the secure boundaries and landscape avenues should be designed in conjunction with place making moves.	None

Chapter 4 of the Master Plan consists of supporting documentation in the form of details on transport, movement etc. It also discusses the planning policy in which this Master Plan is situated and so has not direct connection to flora and fauna.

Chapter 5 identifies the next steps in implementing the Master Plan and so has no direct connection to flora and fauna.

Chapter 6 is an appendix with photos of Haulbowline island and a process flow diagram. It has no direct connection to flora and fauna.

As can be seen from this analysis of the Master Plan there are aspects of the various drivers that have the potential to influence local flora and fauna. Specific aspects that may impact upon Natura 2000 areas within Cork Harbour are specifically addressed in the Natura Impact Statement. These may arise from wastewater, construction and disturbance from lighting.

The aspects of the Master Plan are presented visually in figure 3.

Figure 3 – Overview of Master Plan

5 POTENTIAL IMPACT OF IMPLEMENTING THE MASTER PLAN

This section describes the likely impacts that can be expected from implementing the Drivers of the Master Plan during both the construction and operation phases.

5.1 Construction Phase

The following potential impacts are likely to occur during the construction phase in the absence of mitigation:

1. Change in Habitat

The existing treeline and calcareous rock habitats are unlikely to be affected by the current proposals. Sheltered rocky shore habitat is confined to the eastern end of the island and there are no proposals in the Master Plan that will directly affect this area. Other habitats are artificial or highly modified and are considered to be of negligible biodiversity value.

The landscaping of open spaces will add to the biodiversity of the island and the use of a variety of tree/shrub species will add new habitat.

Overall the change of habitat is considered positive.

2. Effects to high value species during construction

The creation of new public spaces and construction or refurbishment of existing buildings may impact populations of birds and bats. There are no data on the status of bats within buildings on the island away from the East Tip site. Of the birds that are likely to be breeding three are special conservation status: Peregrine, Meadow Pipit and Grey Wagtail.

Peregrine is now on BirdWatch Ireland's 'green' list as being of low conservation concern. Its population has risen significantly in recent decades. Peregrine is likely to be attracted to Haulbowline by the presence of Feral Pigeons, upon which it preys. The loss of the Pigeons from demolition or refurbishment works is likely to result in the loss of Peregrine from the island.

Meadow pipits are associated with open upland habitats and lowland agricultural landscapes. Their numbers have declined by a significant 39% in Ireland between 1998-2010 (Balmer et al., 2013). The reasons for this decline are unknown but are consistent with declines across Europe, which points to possible changes in land use or climate. Landscaping of the island is likely to retain features that are of interest to Meadow Pipits.

Grey Wagtails are birds of freshwater habitats where they are attracted by emerging insects. They are susceptible to changes in water quality but are not tolerant of very cold temperatures. Contractions in the breeding range in Ireland are believed to be associated with the cold winters from 2009-2011. At Haulbowline they can be seen around artificial pools of stagnant rainwater. The loss of these pools is likely to result in the loss of Grey Wagtails from the island.

Bat roosts are strictly protected under national and European law. Birds, their nests and eggs are protected under the Wildlife Act. The scale of such impacts is therefore dependent upon: 1. whether bat roosts are present and 2. whether the timing of works coincides with the bird breeding season.

3. Pollution during construction works

Construction projects can result in temporary pollution issues through the ingress of sediments as well as dangerous substances such as oils and concrete. Toxic effects could impact upon benthic invertebrates and, in turn, affect the requirements of feeding birds. Any construction project **will comply with the *Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites*** published by Inland Fisheries Ireland. These include the following generic measures:

1. Fuels, oils, greases and hydraulic fluids must be stored in bunded compounds well away from the watercourse. Refuelling of machinery, etc., should be carried out in bunded areas.
2. Runoff from machine service and concrete mixing areas must not enter the watercourse.
3. Stockpile areas for sands and gravel should be kept to minimum size, well away from the watercourse.
4. Runoff from the above should only be routed to the watercourse via suitably designed and sited settlement ponds/filter channels.
5. Settlement ponds should be inspected daily and maintained regularly.

The full text of this document is available at:
http://www.fishingireland.net/environment/fullconstructionanddevelopment.htm

A method statement will be prepared and supplied to Inland Fisheries Ireland well in advance of commencing works at the site. This should provide details of how these guidelines, and in particular points number 1, 4 and 5, will be implemented on the site to the satisfaction of the fisheries board.

Impacts to water bodies are of a temporary nature and can be avoided through good site management practices as described.

Operation Phase

The following potential impacts are likely to occur during the operation phase in the absence of mitigation:

4. Pollution of water from foul wastewater arising from the development.

The implementation of the Master Plan will result in increased visitor numbers and a commensurate increased demand on the sewerage network. Foul sewage is currently treated at an on-site treatment plant on Haulbowline island. The status of this is currently unknown (i.e. treatment quality, discharge location, licencing authority). It is believed that the existing plant is at capacity but data are lacking. Any increase to the loading therefore is likely to be a contributing factor to the unsatisfactory status of the inner harbour. It can also result in impacts to marine biodiversity in the vicinity of the discharge. While there is no conclusive evidence that pollution is resulting in negative effects to non-breeding birds in the harbour such effects cannot be ruled out. It is also possible that this discharge will act cumulatively with other poorly treated sources of urban effluent in the harbour.

5. Pollution of water from surface water run-off.

The effects of surface run off are less acute on Haulbowline due to the island geography, as opposed to areas that are part of a much larger river catchment. Meanwhile surfaces on the island is predominantly of hard

standing. The introduction of landscaping is likely to reduce the intensity of run-off rates and so any effect arising from the Master Plan will be positive.

6. Disturbance to species from increased human activity (including vehicle traffic, noise, artificial light, visitor numbers etc.).

This effect must be considered in the context of the existing environment, which already sees a high level of disturbance from vehicle and water-based traffic. The proposed new links to the mainland and Spike Island cross an area that is within the Cork Harbour Important Bird Area. However all of these areas are highly modified littoral environments and are not characterised by the exposed sand and mudflats that attract significant numbers of wetland and wading birds. New transport links will be raised above the shoreline and so any additional disturbance effects are likely to be very minor in the local context.

Noise and light pollution will both increase the implementation of the Master Plan. Artificial lighting is known to have impacts on animal activity through both attractive and repellent forces. The effects are species and location specific, for instance some bats are attracted to lights as prey items become concentrated around light sources (Rich & Longcore, 2006 eds). However other species may be deterred. Impacts are also related to the type of lighting used and so the ultimate impact is dependant on the species of bat that may be present within the zone of influence and the final design of lighting for the project. Brown Long-eared bat, Whiskered bat, Natterer's bat, Daubenton's bat and Lesser Horseshoe bat are considered by Bat Conservation Ireland as being most susceptible to lighting effects. The effect of artificial lighting is unknown given the lack of data on bats within the Master Plan area.

7. Impact arising from greater demand of freshwater

The drinking water supply for Cork city is abstracted from the River Lee. This effect is not known to be negatively affecting features of ecological interest.

In summary it can be seen that the likely negative effects to flora and fauna arising from the implementation of the Master Plan include: loss of populations of species of conservation interest (bats, peregrine and grey wagtail), and pollution from wastewater during the operation phase of the plan.

6 AVOIDANCE, REMEDIAL AND MITIGATION MEASURES

Mitigation measures should be incorporated into the Master Plan to ensure that significant effects to flora and fauna do not occur. Mitigation for the loss of Peregrine is not possible due to the likely loss of its food source during building renovation.

6.1 Mitigation Measures Proposed

The following recommendation are proposed for the Master Plan

Construction Phase

Recommendation 1: The potential presence of bat roosts should be highlighted in the text of the Master Plan. It should highlight the need for a detector-based bat survey prior to any works on buildings. This should be undertaken by a suitably qualified bat ecologist during the appropriate season, typically from mid-April to mid-September. Surveys outside this period will be inaccurate and may lead to further information requests from the planning authority. Should a bat roost be found then a derogation licence will be required from the National Parks and Wildlife Service. An application for this licence must be made *concurrently* with the planning application.

Recommendation 2: Any clearance of vegetation or demolition of buildings should only occur outside the nesting season, i.e. it should only occur from September to February inclusive.

Recommendation 3: The landscaping scheme should include an open water feature which may result in the retention of the Grey Wagtail population.

Operation Phase

Recommendation 4: The existing capability of the treatment plant on Haulbowline Island should be determined including its design capacity and licencing status. If it is found that adequate treatment capacity is not available then it should be made clear in the Master Plan that new building works cannot proceed until such time that problems are addressed.

Recommendation 5: Disturbance to species from human activity

Lighting on the island should conform to Bat Conservation Ireland's guidance for minimising impacts to bats from artificial lighting (BCI, 2010). This should include minimising light spatially and temporally and avoiding the use of high pressure sodium or metal halide bulbs. The increasing use of LED lighting has energy-saving benefits but uncertain impacts to Bats. Available research indicates that it has little impact on Pipistrellus or Nyctalus sp. but that other species may be sensitive (Stone et al., 2012). Further mitigation may arise as a result of any bat survey that may be undertaken.

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APPENDIX 1

The nomenclature for vascular plants is taken from the *New Flora of the British Isles* (Stace, 2010). Scientific names for mosses comes from *A Checklist and Census Catalogue of British and Irish Bryophytes* (Hill et al., 2008) while common names are taken from *Mossess and Liverworts of Britain and Ireland* (Atherton et al. eds., 2010). Species indicated with an asterisk '*' are known to have been introduced to Ireland by humans.

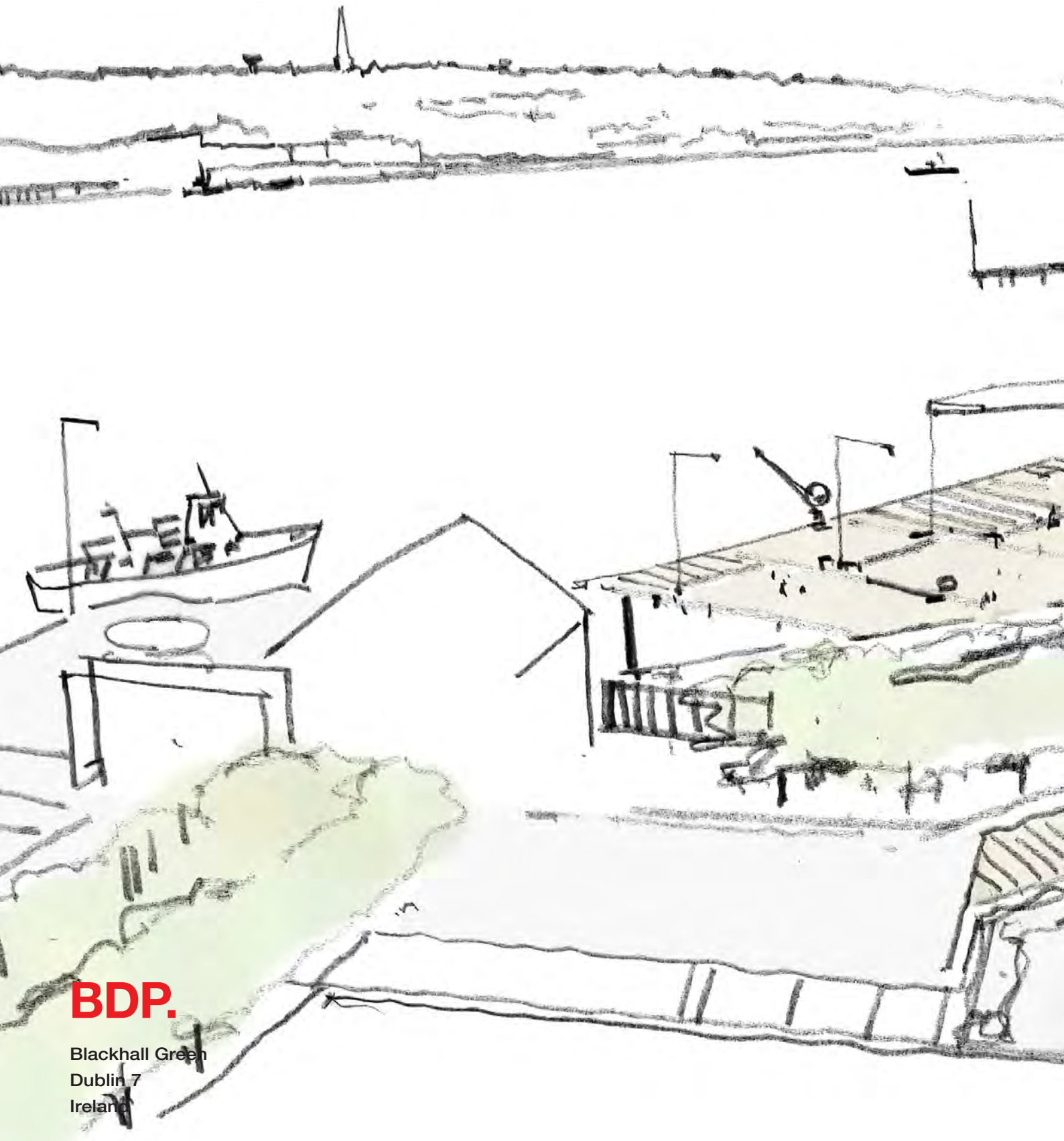
Recolonising Bare Ground - ED3		**DAFOR**
Bellis perennis	Daisy	O
*Buddleja davidii**	Butterfly-bush	F
Ceratodon purpureus	Redshank	O
*Cymbalaria muralis**	Ivy-leaved Toadflax	O
Dipsacus fullonum	Wild Teasel	O
Epilobium montanum	Broad-leaved Willowherb	O
*Lepidum coronopus**	Swine-cress	R
*Petasites fragrans**	Winter Heliotrope	O
Poa annua	Annual Meadow-grass	O
Rubus fruticosus agg.	Brambles	O
Rumex sp.	Dock	O
Sambucus nigra	Elder	R
Scrophularia nodosa	Common Figwort	R
Sedum anglicum	English Stonecrop	R
*Smyrnium olusatrum**	Alexanders	R
Tortula truncata	Common pottia	O
Tripleurospermum maritimum	Sea Mayweed	O
Ulex europaeus	Gorse	O
Urtica dioica	Common Nettle	O

Amenity Grassland - GA2		**DAFOR**
Bellis perennis	Daisy	O
Ranunculus repens	Creeping Buttercup	O
Rhytidiadelphus squarrosus	Springy Turf-moss	O
Rumex crispus	Curled Dock	O
Senecio vulgaris	Groundsel	O
Grasses		D

Sheltered Rocky Shore - LR3		**DAFOR**
Entermorpha sp.	Gutweed	O
Fucus sp.	Brown seaweed	D
Ulva sp.	Sea Lettice	O

Treeline - WL2		**DAFOR**
*Acer pseudoplatanus**	Sycamore	O
*Buddleja davidii**	Butterfly-bush	R
Crataegus monogyna	Hawthorn	O
Fraxinus excelsior	Ash	O
*Petasites fragrans**	Winter Heliotrope	O
Pinus sylvestris	Scots Pine	O
Rubus fruticosus agg.	Brambles	O
Ulex europaeus	Gorse	O

Exposed calcerous rock - ER2		**DAFOR**
Asplenium trichomanes	Maidenhair Spleenwort	O
*Centranthus ruber**	Red Valerian	O
Cerastium fontanum	Common Mouse-ear	O
*Cotoneaster sp.**	Cotoneaster	O
Dactylis glomerata	Cock's-foot	O
Fraxinus excelsior	Ash	O
Geranium robertianum	Herb-Robert	O
Grimmia pulvinata	Grey-cushioned Grimmia	O
Hedera helix	Common Ivy	O
Holcus lanatus	Yorkshire-fog	O
Homalothecium sericeum	Silky Wall Feather-moss	O
*Petasites fragrans**	Winter Heliotrope	O
Polypodium vulgare	Polypody	O
Rosa sp.	Roses	O
*Smyrnium olusatrum**	Alexanders	O
Umbilicus rupestris	Navelwort	O



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