

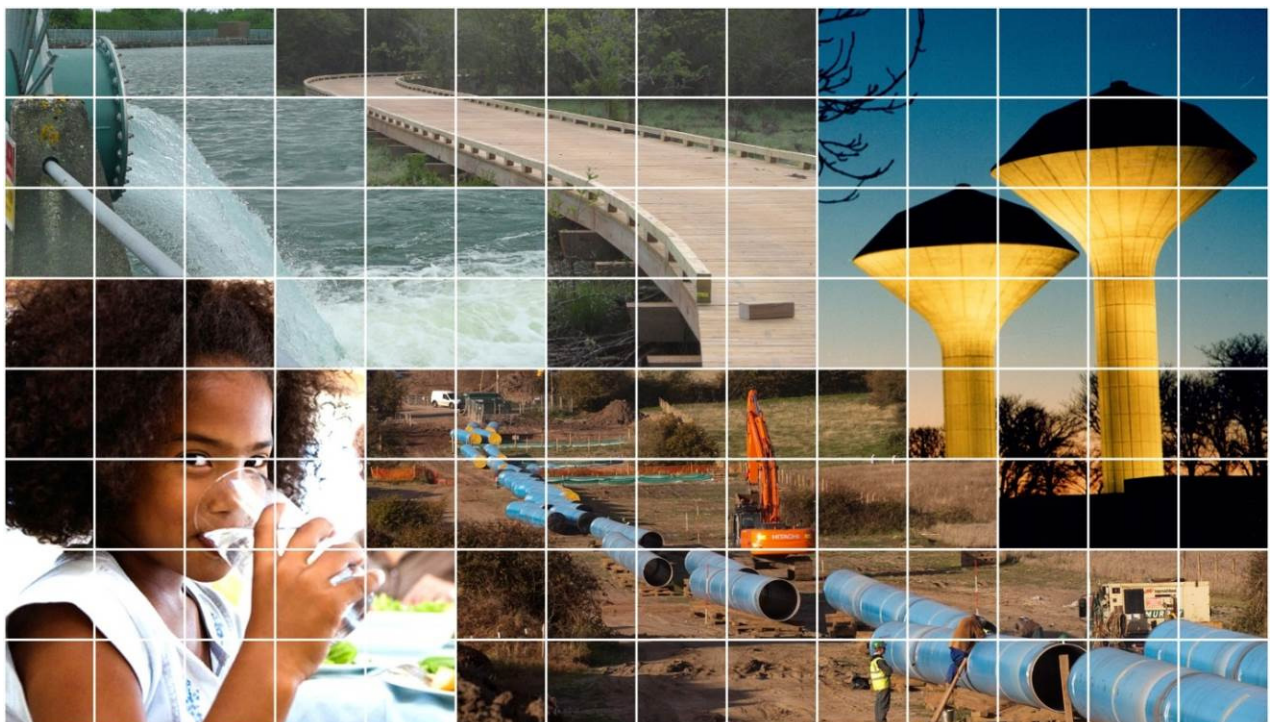
## Water Supply Project – Dublin Region

### Water and Hydrographic Sampling Programs (Lough Derg) - Appropriate Assessment Screening Statement



January 2015

Revision 1



# Document Control Sheet

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## 1

## Introduction

Irish Water, via a contract procured by Dublin City Council (DCC), has engaged Jacobs-Tobin to provide consultancy services in respect of the Water Supply Project-Dublin Region (WSP-DR) (“the Project”), which is a strategic national project.

A program of water sampling and hydrographic (bathymetric) survey (hereafter “the proposed works”) is required to aid in the determination of potential water abstraction locations in the Lough Derg/Parteen Basin area for the Project. The works are located in Lough Derg/Parteen Basin and the River Shannon. The information gathered will be used to develop a water quality model for the Lough Derg / Parteen Basin area, required to assess new water supply options sourcing water from the River Shannon. The ongoing EIA/planning approval process for the Project, to which the proposed works relate, will appraise the Shannon options within a wider group of identified water supply options that includes groundwater, desalination etc.

In accordance with the EC Habitats Directive 92/43/EEC (hereafter “The Habitats Directive”) as transposed by the Birds and Natural Habitats Regulations 2011 (S.I. 411 of 2011) (hereafter “The Habitats Regulations”), this Screening statement for Appropriate Assessment assesses the effects of the proposed works on European sites (“Natura 2000 sites”<sup>1</sup>). All other proposed plans or projects, including the overall Project and any future sampling associated with it, were also assessed with regard for in-combination effects.

### 1.1 Regulatory Context

The matters below were communicated to the Development Applications Unit of the Department of Arts, Heritage and the Gaeltacht, in January 2015 (see Section 5.0)

In accordance with Irish Water’s obligations as a public authority under Regulation 42(2) of the Habitats Regulations, Jacobs-Tobin have, on behalf of their client Irish Water, undertaken an appropriate assessment screening exercise in respect of the above proposed works.

Given the conclusion of this report, that it can be excluded (on the basis of objective scientific information) that the proposed works, individually or in combination with other plans or projects, will have a significant effect on a European site or Natural Heritage Area (or proposed Natural Heritage Area), Regulation 42 (7) obliges us to determine that an appropriate assessment is not required. We have so determined.

Because no appropriate assessment is required, the elements of the proposed works at Lough Derg constituting “(exempted) development” under the Planning and Development Act 2000 (as amended) are not “de-exempted” under section 4(4) of the Planning and Development Act 2000 (as amended). Accordingly none of the activities (which are required to be carried out in advance of submitting a planning application for the Project) require planning permission to be obtained in respect of them.

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<sup>1</sup> “European site” replaced the term “Natura 2000 site” under the EU (Environmental Impact Assessment and Habitats) Regulations 2011 S.I. No. 473 of 2011.



## 1.2 Non-AA Protected Species (White-Tailed Sea Eagle)

Despite their status as Annex 1 bird species, white-tailed sea eagles *Haliaeetus albicilla* are not qualifying features of any European sites in Ireland. They are not relevant to the scope of this Appropriate Assessment report. Jacobs-Tobin has recently received a comprehensive consultation response from the Golden Eagle Trust specifying approximate (confidential) white-tailed sea eagle breeding locations, as well as appropriate seasonal restrictions and buffer distances. The specific binding measures to protect eagles to be adopted by surveying contractors will be provided to the Golden Eagle Trust (and copied to NPWS) for their comment prior to contractor mobilisation. These measures will address the recommendations of the Golden Eagle Trust. On behalf of Irish Water, Jacobs-Tobin will additionally contact the Golden Eagle Trust and Department prior to the 2015, 2016 and 2017 breeding seasons for the white-tailed sea eagle to determine if any further measures are required (i.e. if new or altered breeding sites have been established)."

## 2

## The Appropriate Assessment Process

### 2.1 Introduction to Appropriate Assessment

The requirement to carry out an AA comes from Article 6(3) of the Habitats Directive. The first step of the AA process is to carry out a Screening to establish whether, in relation to a particular plan or project, an AA is required. Article 6(3) states:

*‘Any plan or project not directly connected with or necessary to the management of the site but likely to have [or capable of having<sup>2</sup>] a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site’s conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.’*

The above requirement has been implemented in the Republic of Ireland by the European Communities (Birds and Natural Habitats) Regulations 2011 S.I 477 of 2011 and the Planning and Development Acts 2000-2010, as amended.

### 2.2 Appropriate Assessment Methodology

The European Commission (2002) and Department of Environment, Heritage and Local Government (2010) have divided the provisions of Article 6 into four “stages” in the AA process. This approach is used industry-wide as standard and is followed in this Screening Statement<sup>3</sup>. These four stages are as follows:

- **Stage One: Screening (overview)** - This process identifies the likely effects upon a European site from a project or plan, either alone or in combination with other projects or plans, and considers whether these effects are likely [or capable of being] significant. Reasoned application of the Precautionary Principle is fundamental to the Screening Stage (and AA). Where there is evidence of possible effects on a European site(s) from the project, but uncertainty remains, significant effects must be presumed without evidence to the contrary. The project will be “screened-in”, requiring a Stage Two AA. Where there is no evidence of significant effects, and no reasonable scientific doubt remains regarding this judgement, the assessment is stopped, and the project is “screened-out” from further assessment. The broad approach to

<sup>2</sup> In accordance with the Opinion of Advocate General Eleanor Sharpston in *Reference for a Preliminary Ruling from the Supreme Court (Ireland)*, Case C-258/11, the term “likely to have a significant effect” in Article 6 (3) was interpreted as “capable of having a significant effect” (i.e. a lower probability is required to trigger Appropriate Assessment).

<sup>3</sup> Defining AA as Stage 2 of the AA process is, strictly speaking, incorrect. Similarly, screening determines whether an AA should be undertaken, but is not Stage 1 of the process. However the widespread adoption by industry and public authorities of this EC terminology has made it difficult to remove the “stage” concept from reporting without introducing confusion.

undertaking the screening assessment is outlined in Section 2.2.1, while the detailed approach is provided in Section 6.1.

- **Stage Two: Appropriate Assessment** – The competent authority then considers the effect of the project or plan on the integrity of the European site (s), with respect to the site structure and function and its conservation objectives either alone or in combination with other projects or plans. Where there are adverse effects identified, mitigation measures are proposed as appropriate to avoid adverse effects. For projects, Stage Two of the AA process is documented within a Natura Impact Statement (NIS). This is provided to the competent authority by the applicant, to facilitate an informed assessment of the project.
- **Stage Three: Assessment of alternative solutions** - The process of examining alternative ways to complete the project and avoid adverse effects to the integrity of any European sites is likely to have been incorporated into Stages One and Two of the AA process. However, alternatives will be revisited at this stage. In the event that two (or more) alternative projects or plans are being developed, AAs will be undertaken for all.
- **Stage Four: Assessment where no alternative solutions exist and where adverse effects remain** - Stage Four is highly unlikely to be required. Implementation of mitigation under Stage 2 and/or use of alternatives under Stage 3 are preferable options to Stage Four.

### 2.2.1 Screening Methodology

This screening was informed by a desk study of all relevant environmental information and involved the following steps (broadly based on EC, 2000b):

1. Determining whether the project or plan (in this instance the proposed works) is directly connected with or necessary to the management of the site (In this case it is not)
2. Describing the project (see Section 3);
3. Assessing the baseline environment (Section 4) to identify the relevant European site(s) which may be potentially affected (Section 6); and
4. Assessing the significance of any effects on relevant European site(s) (see Section 6).

The approach to completing steps 3 and 4 is expanded upon in Section 6. The AA Screening process was undertaken in accordance with the following guidance:

- *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities* (Department of Environment, Heritage and Local Government (DEHLG), 2010);
- *Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC* (EC Environment Directorate-General, 2000);
- *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* (The European Commission (EC), 2002); and
- Findings from the *International Workshops on Appropriate Assessment* in Oxford (2011), and Mikolov (2013).

## 3 Description of Proposed Works

### 3.1 Scope of Proposed Works

The detailed technical requirements for the proposed hydrographic and water quality sampling works are described in two separate tender specifications. The relevant aspects of works to the screening assessment are summarised below.

### 3.2 Survey area

The proposed works locations are illustrated in Figure 2. Data collection will be undertaken primarily using boats, some of which are similar to that shown in Photo 1. Up to four boats are likely to be operational at any time, each manned by a minimum of two staff. Further detailed discussion of vessels is included in relation to the discussion of wake impacts to birds later in this report



**Photo 1: One type of vessel likely to be used**

#### 3.2.1 Hydrographic Survey

The items below are needed to aid the development of a 3D hydrodynamic model to assess a sustainable abstraction regime for two options for the WSP scheme:

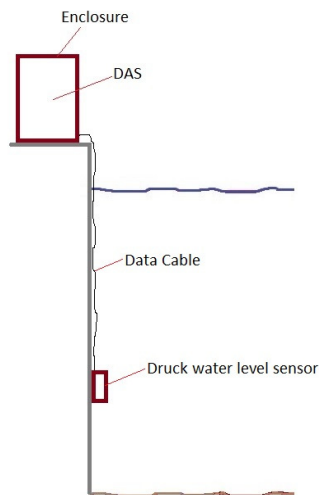
- A boat employed over c. 50 days for comprehensive Multibeam Echo Sounder (MBES) and sidescan sonar surveys (or comparable methodology) of specified areas (125-500kHz frequency range), and ground-truthing of sediment character changes recorded spatially across the lake bed including use of a drop-down video or still camera;
- Supporting Singlebeam Echo Sounder (SBES), where MBES survey of the lakebed cannot be completed due to risk of vessel grounding (125-300kHz frequency range);
- Survey control points on hardstanding using a pin hammered into concrete (Photo 3); and



**Photo 3: Typical Topographical survey control point**

- Use of 4 no. Automatic Water Level Recorders bolted/attached onto quay walls for readings of water levels in lough Derg during the survey (Graphic 1).

T400: WATER LEVEL SURVEY



**Graphic 1: Water Level Recorder installed on quay wall**

The survey will be defined by the waterline of the lough and mouth of/the immediate upstream 50 meters of watercourses entering it.

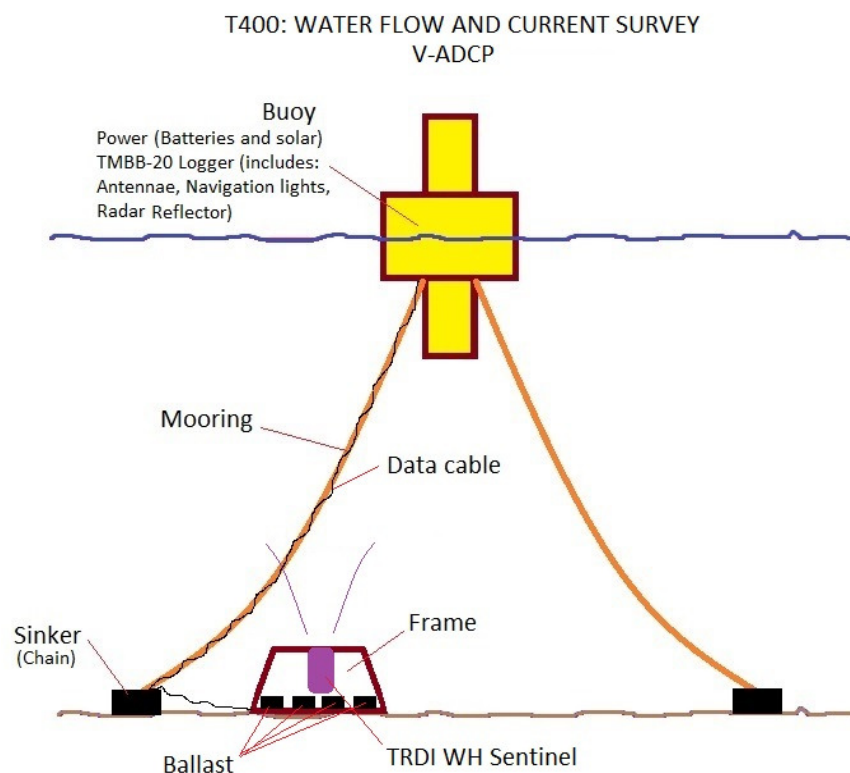


### 3.2.2 Water Quality Sampling:

The sampling program will use a combination of fixed terrestrial installations, moored installations, repeat land-based surveys with manual devices, and repeat boat-based surveys. None of the moored installations will be lit.

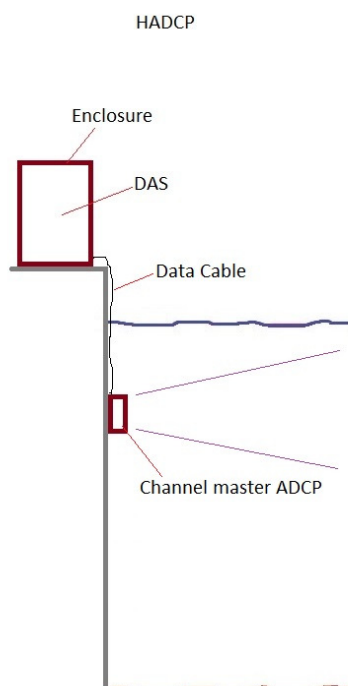
There is a potential requirement for monthly recalibration visits to all sampling equipment. The following items will be included, as illustrated at locations in Figure 2:

- Acoustic Doppler Current Profilers (ADCP) to measure water flow, velocity and direction using of an acoustic beam within a dynamic range of 80db and at a frequency of 6000 kHz. These will record at 15 minute intervals through the sampling program (2014-2017). 3 no. vertical ADCPs will be weighted on the lake bed using ballast and linked to a moored (unlit) buoy using a chained “sinker” (Graphic 2);



**Graphic 2 Vertical ADCP installed on lakebed**

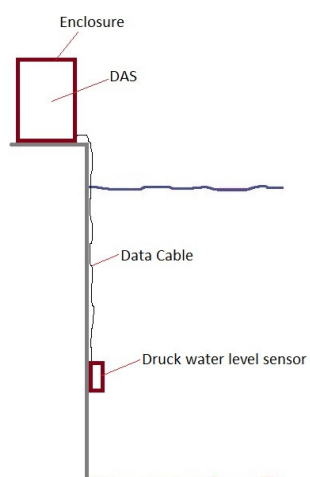
1 horizontal ADCP will be bolted to a quay wall or other existing structure in the main Shannon channel near Portumna (Graphic 3).



**Graphic 3: Horizontal ADCP to be installed on quay wall at Portumna**

- Automatic Water Level Recorders (AWLR) for reading levels within the lough and in-flowing tributaries. These will record at 15 minute intervals through the sampling program (2014-2017). 6 no. existing Office of Public Works-operated AWLR will be used for readings of levels at in-flowing tributaries (no installation required), additionally supported by: two on in-flowing tributaries (one attached/bolted onto an existing bridge/wall with a conduit hanging into the river; one in an enclosure mounted on two poles with a rigid conduit buried extending into the river); one bolted on a quay wall in the River Shannon north of Portumna; and three bolted onto/attached onto quay walls and/or existing floating pontoons within the lough (Graphic 4);

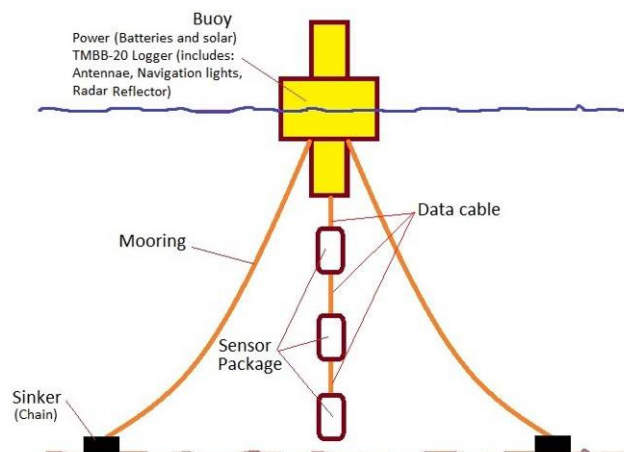
T400: WATER LEVEL SURVEY



**Graphic 4: Water Level Recorder to be installed**

- Continuous physiochemical water quality monitoring using: (unlit) moored stations (4 no.) and one unlit enclosure free standing on Portumna bridge secured to an existing signal standard; all co-located with automated nutrient analysers to be installed by boat (Graphic 5);

T500: WATER QUALITY SURVEY



**Graphic 5: Physicochemical water quality station**

- Boat-based water quality spot sampling and lab analysis from the surface, mid and bottom of the lake water column at a fortnightly intervals;
- Water quality spot sampling and lab analysis from the surface of the river column at key incoming tributaries at a fortnightly interval;
- Continuous water temperature monitoring on (unlit) moored thermistor chains (20 no.);
- Plankton and zooplankton sampling at 11 sites;
- Meteorological monitoring using two meteorological stations (Graphic 7), located outside qualifying interest habitats of designated areas:
  - 10m cable-stayed mast by northern shore at Portumna Water Recreation Park: to be installed using pre-cast block buried in a shallow hole; on rough ground beside amenity grassland beside a car park; 'collocated' beside existing c.10m high lamp post with attached sensor meteorological installation; proposed footprint of c. 4x4m. (Graphic 6 ; see location in Figure 2)



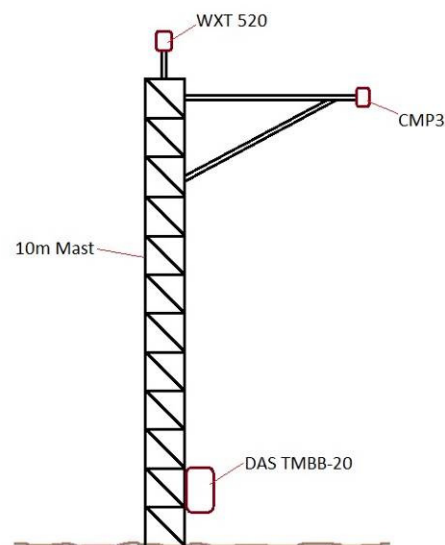
**Graphic 6: Met Mast Location (Portumna Water Recreation Park)**

- 2-9m high mast on southern lough, on or adjacent to the existing Parteen Weir; to be installed on hardstanding on or adjacent existing weir (Graphic 7)



**Graphic 7: Proposed Met Mast Location at Parteen Weir**

MET:



**Graphic 8: Meteorological Station (10m example; also 1 no. 2m not illustrated)**

- Maintenance, servicing and calibration of all survey instrumentation/equipment over the monitoring period, including moored equipment; and
- Photographs of all installed equipment.

### 3.2.3 Ancillary works

Separate site compounds, labs and offices including sanitary facilities will be required for the water quality and hydrographic surveys. All will be outside designated areas on existing hardstanding in existing office/industrial space and shall be agreed with the Employers' Representative prior to works commencing on site as stipulated in the contract documentation.

The installing and maintenance of buoys and other markers will be required for the submerged work and moorings.

### 3.2.4 Detailed Mitigation for Pollution and Invasive Species Control

The contract specifications include a suite of clauses that will be contractually binding on the appointed contractor to remove any risks from pollution or invasive species effects.

As specified in the contract, draft method statements, shall be submitted in full to the Employers Representative (ER). The ecologist within the ER's team will review the method statements to ensure the general clauses are implemented through detailed task-specific mitigation measures. In this way, there remains no doubt as to the efficacy of the mitigation measures or the ability of the contractor to provide appropriate resources (competent persons or equipment). Accordingly, this approach ensures that there will be no significant effects on any European sites arising from pollution or invasive species risks<sup>4</sup>.

#### 3.2.4.1 Pollution Control

Contractually binding measures to remove pollution risks are as follows:

- The works *"shall be restricted to the best possible environmental option and shall include contingency plans and environmental procedures to minimise damage caused by anchoring, accidents, spillages or other unforeseen event"*;
- *"Method Statements shall be submitted in full to the Employers Representative for review and approval two weeks prior to the commencement of the Works on site."*;
- *"The Contractor shall take all necessary precautions to ensure that no pollution discharge either of solid or liquid material is made to any watercourses or to the lake and that no work carried out in any watercourse or in the lake is done in such a manner as to cause pollution"*;

<sup>4</sup> The consideration of such "best work practice" as intrinsic to the proposed works, and inclusion of such mitigation in screening for Appropriate Assessment is in accordance with a recent Preliminary Judgement of the Irish High Court (28 August 2014); Ireland: Rossmore and Killross v An Bord Pleanála, the State and Eirgrid.



- *“The contractor shall prevent by his operation pollution of land, ditches, streams, rivers, drains, beaches, watercourses, lakes and the like and prevent erosion of their beds or banks”;*
- *“The Contractor shall ensure that all fuel or lubricating oils stored in bulk on the site are located as far as reasonably possible from any watercourse and that such stores are covered and surrounded with an effective bund capable of holding the full contents of the store, and shall be kept locked when not in use”;*
- *“The Contractor shall locate equipment using fuel oil as far away as reasonably possible from any watercourse and shall surround them with an oil-absorbent material to contain spills or leaks”;*
- *“Any refuelling or lubricating activities should be completed in manner that avoids/minimises the risk of spillages to the environment, and suitable spill kits should be at hand during any procedures”;* and
- *“On completion of the Works all apparatus, plant, tools, offices, sheds, surplus materials, rubbish and temporary erections or works of any kind shall be removed from the site by the Contractor”..*

Furthermore, the water quality contractor’s Safe Operating Procedure<sup>5</sup> specifies that petrol fuelled vessels will be refilled ashore in filling stations, while diesel vessels will be refuelled using an approved fuel bowser, with magnetic isolator valve (no discharge unless nozzle is securely in the fuel filler aperture).

#### 3.2.4.2 Biosecurity

Contractually binding measures to remove invasive species risks are as follows:

- *“The contractor will comply with all restrictions imposed by Waterways Ireland, with specific regard to their requirements on the bio-security of boat movements”;*<sup>6</sup> and
- *“Restrictions/Provisions of Inland Fisheries Ireland (2010) Biosecurity Protocol for Field Survey Work”.*

#### 3.2.5 Programme and Timing of Works

The proposed water sampling works are expected to be conducted over a continuous period of 26 months from March 2015 to spring/summer 2017. The hydrographic survey works, will run concurrently with a portion of this programme in spring/summer 2015, and the boat-based multi-beam surveys will last approximately 50 days during this period.

There is potential for contract extension beyond this period. Any expansions in the scope or duration of the programme with potential for significant effects to European sites will be subject to a revised screening for appropriate assessment.

<sup>5</sup> Provided by Water Technology Ltd. in January 2015.

<sup>6</sup> Method statement review for both water quality and hydrographic contracts will ensure this complies with the 2013 document entitled *“Biosecurity Protocol for the Movement of Boats, Workboats and Machinery along and between different waterways”*.

Site visits to calibrate water sampling equipment will be required on a monthly basis.

The water sampling will be staggered such that visits do not overlap with the monthly EPA sampling dates at the site. In this way, water sampling will be undertaken over three weeks in a given month. Spot physical and chemical water sampling frequency will vary from fortnightly to every three months as dictated by the methodology and parameters involved.

Works shall be carried out in daylight hours only.

**4****Description of Relevant Baseline Environment****4.1 Sources informing the Baseline Description**

The baseline environment of the site for the proposed works as it related to European sites was analysed using the key sources below. Additional information sources are included in the References section:

- Ordnance Survey Ireland mapping and aerial photography available from [www.osi.ie](http://www.osi.ie);
- Information on land zonings and land-use plans available from the Department of the Environment, Community and Local Government at [www.myplan.ie](http://www.myplan.ie);
- Mapping of European site boundaries, Conservation Objectives and habitat /species distributions from NPWS online at [www.npws.ie](http://www.npws.ie);
- Protected species and habitat mapping data obtained from the NPWS Research Branch on 4th June 2014;
- Information on the conservation status of relevant cSAC species and habitats from NPWS conservation status assessments (NPWS, 2013a; 2013b); and
- Information on the conservation status of bird species of designated sites from the Birds of Conservation concern in Ireland 2014-2019 (Colhoun & Cummins, 2013).
- Information on seasonal boat traffic at Portumna Lock (2013) provided by Waterways Ireland
- Information on the scope of the water quality and bathymetric surveys from
  - The tender specifications
  - Consultation with appointed contractor (applies to Water Quality programme only; bathymetric contractor not appointed at time of writing)

Relevant plans from national to local scales are critical to inform a robust assessment of in-combination impacts, and these are listed below:

- National Biodiversity Plan, 2011-2016;
- Galway County Development Plan 2009-2015;
- North Tipperary County Development Plan 2010-2016;
- South Tipperary County Development Plan 2010-2015;
- Clare County Development Plan 2011-2017; and
- Phase 2 Strategic Environmental Assessment (SEA) for the Water Supply Project – Dublin Region.

**4.2 Baseline Description**

The following baseline data was relevant to the identification of any SOURCE-PATHWAY-RECEPTOR relationships between the works and any European sites.

**4.2.1 Lough Derg and the River Shannon**

The locations of the proposed works are shown in Figure 2. The proposed works are primarily located within the large shallow alkaline Lough Derg which straddles the boundaries of counties Galway (to the northwest), Tipperary (to the east), and Clare

(to the west). There are additionally two sampling locations in the River Shannon a short distance upstream of the lough near Portumna and a short distance downstream near Killaloe.

The Lough is fed primarily by the River Shannon at its northern end near Portumna, which exits the lake at its southern end, and meets the sea in the Shannon estuary southwest of Limerick City. Lough Derg is also fed by several other key tributaries around its shores, including the Nenagh, Woodford, Ballyfinboy, Scariff and Crow Rivers.

The margins of Lough Derg are shallow, allowing opportunities for plant colonisation (including several invasive aquatic species). The shoreline is predominantly lined by reed and rush beds beside small settlements, pastures and woods.

#### 4.2.2 Surface Water Quality

Lough Derg and the nearby reaches of the River Shannon are part of the Lough Derg Water Management Unit of the Shannon River Basin Management Plan 2009-2015. According to the plan, the River and Lough are of “Moderate” water quality status. All the rivers feeding the northern part of the Lough are of “Moderate” or “Poor” Water quality status while the majority of rivers flowing into the southern part of the Lough are of “High” or “Good” water quality status. As with all river catchments in Ireland, agriculture is the predominant polluting nutrient source (71% of total phosphorous). Waste Water Treatment Plants (WwTPs) also significantly contribute to nutrient inputs, and fourteen 14 WwTPs are at risk within the Lough Derg Water Management Unit of the Shannon River Basin District Management Plan 2009-2015 (Anon, 2009).

#### 4.2.3 Invasive Species

The invasive zebra mussel *Dreissena polymorpha* is abundant in Lough Derg, which was found to have one of the largest densities of mussels in the Shannon-Boyle navigation system in surveys in 2000 and 2001. The species has been expanding its range in the lough in recent years, and has led to the decline of two native mussel species in the Shannon system (Minchin *et al.*, 2002).

Designated populations of two diving ducks are resident in winter at Lough Derg. Tufted duck *Aythya fuligula* and goldeneye *Bucephala clangula* both readily feed on zebra mussels (Hamilton *et al.*, 1994). The mussel improves water clarity by filtering particulate matter. However, despite the associated benefits to water quality, and the prey items zebra mussels provide for tufted duck, goldeneye and other species, zebra mussels outcompete native mussels that may also form part of wetland bird diets, and pose a potential risk to the lough ecosystem in the long term.

The Asian clam *Corbicula fluminea* was recorded in both the River Shannon and Lough Derg in surveys in 2011 and 2012 (Minchin, 2014). In Lough Derg it is apparently restricted to the northern third of the lake, and Dromineer Bay approximately half-way down the lake (Minchin, in press). As with zebra mussels, Asian clams are suspension feeders that can reduce particulate matter resulting in increased water clarity and plant growth which at Lough Derg includes several invasive plant species. They may also deplete dissolved oxygen leading to mortality of crustaceans and their fish predators.

Both the Zebra mussel and the Asian clam are listed under Schedule 3 to the Bird and Habitat Regulations 2011 S.I 477 of 2011, under which it is an offence to offer

for sale or introduce these species. These species are thought to spread via fishing equipment, waders, bilge water, and engine-cooling water, via macrophytes vegetation attached to boating equipment, or can break off from boat hulls under their own weight if in dense clusters. Passive spread by water currents and via waterbirds predating the mussels is also possible.

Seven invasive aquatic plant species recorded in Lough Derg (Minchin & Boelens, 2011) are “Most Wanted” or “Problematic” invasive species according to the Invasive Species Ireland National Invasive Species Database<sup>7</sup>. These are Water Fern *Azolla filiculoides*, Canadian Pondweed *Elodea Canadensis*, Nuttall’s waterweed *Elodea nuttalli*, Water Violet *Hottonia palustris*, Common Duckweed *Lemna minuta*, and water soldier *Stratiotes aloides*. The *Elodea* species, Water Fern and Water Solider are also listed under Schedule 3 to the Bird and Habitat Regulations under which it is an offence to cause or allow their spread. The improvement of water clarity by zebra mussel has accelerated the spread of these macrophytes as they can root deeper into the water column due to increased light penetration (Minchin & Boelens, 2011). These species are spread via movement of live vegetative material on boating and fishing equipment.

#### 4.2.4 Bird Data

Irish Wetland Bird Survey Data was obtained from Birdwatch Ireland for the five most recent years (2007-2012) to assess the recent historical trends in bird populations at the site. Information on breeding Corncrake was obtained by consulting the online databases of the British Trust for Ornithology’s Bird Atlas 2007 to 2011<sup>8</sup>, the National Biodiversity Data Centre<sup>9</sup>, and consultations with the Conservation Rangers of the National Parks & Wildlife Service.

Bird data was also obtained from the NPWS Birds Unit in June 2013 for breeding common tern *Sterna hirundo* colonies on Goat Island (2013) and great cormorant *Phalacrocorax carbo* colonies on Silver Island (2010) and Rabbit Island (2010).

<sup>7</sup> Available online at [http://invasives.biodiversityireland.ie/wordpress/wp-content/uploads/Species-List\\_Jan2012\\_invasive-status-added.pdf](http://invasives.biodiversityireland.ie/wordpress/wp-content/uploads/Species-List_Jan2012_invasive-status-added.pdf). Accessed June 2014.

<sup>8</sup> <http://www.bto.org/volunteer-surveys/birdatlas>. Accessed June 2014.

<sup>9</sup> <http://maps.biodiversityireland.ie/#/Map>. Accessed June 2014



## 5 Consultation

A meeting was held between Jacobs Tobin, Irish Water the NPWS District Conservation Officer, NPWS Head of Ecological Assessment, and NPWS Divisional Ecologist on the 1<sup>st</sup> May 2014 to discuss the overall Water Supply Project. Irish Water stated that a preferred option for the overall project may be secured by December 2015. The specifics of the current water quality and bathymetric surveys were not discussed, but the NPWS' comment on the Appropriate Assessment for the overall project are applicable, namely that AA needs to clearly assess the significance of the effects on European sites, based on objective and scientific information [be] well-referenced and substantiated, and address the issue of cumulative effects and alternatives.

An AA screening report was issued to the Development Applications Unit of the Department of Arts, Heritage and the Gaeltacht on the 28th October 2014. A detailed response (G Pre00139/2014) was issued on 11<sup>th</sup> December 2014. The consultation response highlighted potential regulatory requirements for: consents under other legislation including the Inland Fisheries Acts 1959-2010; and the need for clarification over the potential requirement for planning permission under the Planning & Development Acts as amended (see section 1.1). Concerns raised relating to potential effect European sites included concerns over effect of navigation lights on buoyed installations (authors note - these are not proposed), collision risk from met masts (see section 6.2.1); and the general nature of pollution control measures (authors note - refer to binding contractual arrangement for contractor method statements to be reviewed by an ecologist in section 3.2.4).

Several Conservation Rangers of the National Parks & Wildlife Service with responsibility for different areas of Lough Derg were contacted by phone in early June 2014 for local site-specific knowledge not contained within the available designated site documentation. In particular, the distribution of qualifying interest habitats and species for designated European sites, and any known threats or pressures were discussed.

A meeting was held with the Lough Derg Science Group on the 19<sup>th</sup> May 2014. The Group provided a series of relevant scientific papers published by Group members including research on the distribution and environmental impacts of zebra mussel, Asian clams, and invasive aquatic plant species. The group also noted that there is existing natural stress to littoral vegetation due to changing water levels which can lead to localised habitat loss. These observations are referenced in this report where relevant. Water quality at the lough was highlighted. The improvement in lough water quality was discussed due to Athlone and Portumna Waste Water Treatment Plants (WwTPs); resulting in water has becoming more clarified and a reduction in diatoms.

Consultation with the NPWS and the Lough Science Derg will be ongoing throughout the Water Supply Project (in addition to the Golden Eagle Trust, relating to eagle effects unrelated to the Appropriate Assessment process).

## 6

## Screening Assessment

**6.1 Methodology for Identification of Relevant Sites****6.1.1 Identifying Relationships between the Works and any ‘Relevant’ European sites**

A standard SOURCE-RECEPTOR-PATHWAY conceptual model was used to identify a preliminary list of ‘relevant’ European sites (i.e. those which could be potentially affected). This conceptual model is a standard tool in environmental assessment<sup>10</sup>. In order for an effect to occur, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism means there is no likelihood for the effect to occur. In the context of the proposed works, the model comprises:

- **Source (s)** – e.g. Boat-traffic
- **Pathway (s)** – e.g. noise from boat engines and surveyors on-board
- **Receptor (s)** – Qualifying bird populations of European sites.

The model was focused solely on the habitats and species for which sites were designated as described under the sites’ Conservation Objectives. If any relevant sites were identified, the pathways required assessment of whether effects would be “likely” and/or “significant”.

Where uncertainty existed due to data gaps, the precautionary principle prevailed. To account for far-field effects and/or more subtle indirect effects, Jacobs Tobin ecological expertise was applied to an examination of known threats and ecological requirements of qualifying ecological features<sup>11</sup>.

The duration of the works and their associated effects was also a key consideration, in particular because the European Court of Justice has recently ruled—albeit in specific reference to priority habitats—that effects to site integrity must be “lasting”<sup>12</sup>.

**6.1.2 Proximity of European sites and their Qualifying Interests**

Of primary importance for an analysis of some effects was the location and proximity of European sites to the proposed works. In the case of pollution effects, increasing the distance between the pollution source and the ecological receptor will—for many contaminants—increase the rate of likely dispersion and dilution of polluting materials by virtue of the increased volumes and mixing interactions. Location and proximity of the works is also important in relation to the potential disturbance of mobile qualifying species—both within and outside European sites.

<sup>10</sup>See for example, the methodology employed by the Environmental Protection Agency to assess waste disposal sites (EPA, 2007) and in groundwater monitoring (Daly, 2004).

<sup>11</sup> Threats and underlying ecological requirements sourced from NPWS (2013), other published sources, and Jacobs’ professional judgement as appropriate.

<sup>12</sup> Judgment Of The European Court (Third Chamber) on 11 April 2013 in Case C-258/11 (REQUEST for a preliminary ruling under Article 267 TFEU from the Supreme Court (Ireland)) in relation to Peter Sweetman, Ireland, Attorney General, Minister for the Environment, Heritage and Local Government v An Bord Pleanála, para 46 (and others).

Figure 1 illustrates all sites within 15km as per Irish departmental guidance<sup>13</sup>. The sites within 15km are also listed in Table 6.1. Much of the proposed works overlap with five sites within Lough Derg and the River Shannon. A sixth peatland site (Barrougher Bog cSAC) is adjacent the lough but there are no installations proposed therein.

**Table 6.1 All European sites within 15km of the proposed works at Lough Derg**

Site Name and Code	Qualifying Interests (Summarised)	Distance from Lough Derg
<b>Special Protection Areas</b>		
Lough Derg (Shannon) SPA [4058]	Breeding great cormorant <i>Phalacrocorax carbo</i> and common tern <i>Sterna hirundo</i> , wintering ducks, wetlands	0km
Middle Shannon Callows SPA [4096]	Breeding corncrake <i>Crex crex</i> , wintering waders, ducks, gulls, whooper swan <i>Cygnus cygnus</i> , wetlands	0km
Slieve Aughty Mountains SPA [4168]	Breeding hen harrier <i>Circus cyaneus</i> and merlin <i>Falco columbarius</i>	0.5km
Slievefelim to Silvermines Mountains SPA [004165]	Breeding hen harrier	10.5km
River Little Brosna Callows SPA [004086]	Wintering whooper swan, Greenland white-fronted goose <i>Anser albifrons flavirostris</i> , wintering ducks, gulls, and wetlands	10.5km
All Saints Bog SPA [4103]	Greenland white-fronted goose	14km
<b>Candidate Special Areas of Conservation</b>		
Lough Derg, North-east Shore cSAC [002241]	Heaths, calcareous grassland, limestone pavement, alluvial and yew forests	0km
Lower River Shannon cSAC [2165]	Freshwater pearl mussel <i>Margaritifera margaritifera</i> , three lamprey species, bottle-nosed dolphin <i>Tursiops truncatus</i> , otter <i>Lutra lutra</i> , wet grasslands, alluvial forests, floating river vegetation, estuarine, coastal, and marine habitats	0km
River Shannon Callows cSAC [216]	Otter, wet grasslands, meadows, limestone pavement, alluvial forests	0km
Barrougher Bog cSAC [231]	Raised bog habitats	0km
Slieve Bernagh Bog cSAC [2312]	Heath and blanket bog	0.7km
Cloonmoylan Bog cSAC [248]	Raised bog habitats	1km
Kilcarren-Firville Bog cSAC [647]	Raised bog habitats	1.8km
Rosturra Wood cSAC [1313]	Oakwoods	3km
Pollanknockaun cSAC [319]	Oakwoods	4.5km
Derrycrag Wood Nature Reserve cSAC [261]	Oakwoods	4.5km
Loughatorick South Bog cSAC [308]0	Blank bog habitat	6km

<sup>13</sup> Source: DEHLG, 2010.

Liskeenan Fen cSAC [1683]	Fen	6.5km
Ballyduff/Clonfinane Bog cSAC [641]	Raised bog habitats	8.5km
Glenomra Wood cSAC [1013]	Oakwoods	10.5km
Sharavogue Bog [585]	Raised bog habitats	14km
All Saints Bog and Esker cSAC [566]	Peatland and grassland habitats	14.5km

## 6.2 Relevant European Sites

Relevant sites are listed in Table 6.2 below. For these sites, SOURCE-RECEPTOR-PATHWAY relationships between the proposed works and any Qualifying Interests were identified. Qualifying interests not likely to be affected are struck out from Table 6.2, and the rationale explained in section 6.2.1.

**Table 6.2 Relevant European Sites and Source-Pathway-Relationships with proposed works**

Site and Code	Qualifying Interests potentially affected	Distance	Source-Pathway-Receptor Relationship requiring assessment
Lough Derg (Shannon) SPA [4058]	<ul style="list-style-type: none"> <li>Great cormorant <i>Phalacrocorax carbo</i> [breeding ]</li> <li>Tufted duck <i>Aythya fuligula</i> [wintering]</li> <li>Goldeneye <i>Bucephala clangula</i> [wintering]</li> <li>Common tern <i>Sterna hirundo</i> [breeding ]</li> <li><del>Wetlands [ ]</del></li> </ul>	0km	Indirect disturbance to breeding/wintering birds from boat traffic and manual onshore sampling
Middle Shannon Callows SPA [4096]	<ul style="list-style-type: none"> <li>Whooper swan <i>Cygnus cygnus</i> [wintering]</li> <li>Wigeon <i>Anas penelope</i> [wintering]</li> <li><del>Corn crane <i>Grus grus</i> [breeding]</del></li> <li>[Golden plover <i>Pluvialis apricaria</i> wintering]</li> <li>Lapwing <i>Vanellus vanellus</i> [wintering]</li> <li>Black-tailed godwit <i>Limosa limosa</i> [wintering]</li> <li>Black-headed gull <i>Chroicocephalus ridibundus</i> [wintering]</li> <li><del>Wetlands</del></li> </ul>	0km	Indirect disturbance to wintering birds from boat traffic and manual onshore sampling

### 6.2.1 Rationale for exclusion of other Source-Pathway-Receptors Relationships

#### Habitat Loss

There is no pathway for habitat loss of qualifying interests from any relevant sites because all sampling installations within designated areas will be either weighted

with sinkers(chains) onto the lough-bed and moored to a buoy, or installed on existing hard-standing (e.g. quay walls). There will be no requirement for dredging in the Lower River Shannon cSAC so no pathway to affect floating river vegetation potentially occurring there. There will be no pouring of concrete to install Topographical survey controls, which will be inserted using a hammer on existing made ground. There will be no pouring of concrete for any other infrastructure. Existing Water Level Recorders operated by the OPW will be used at in-flowing tributaries in lieu of installing new meters which would require localised earthworks. There will be no risk of habitat damage posed by site compound locations or access routes to sampling locations because all will be accessible by existing tracks or roadways and will be subject to approval by the Employers Representative Team as specified in the contract documentation.

#### *Invasive Species and Pollution*

There is no pathway for qualifying interest habitats or species to be affected by pollution or invasive species because of the protective measures in the contract documentation including adherence to the Inland Fisheries Ireland and Waterways biosecurity protocols (see section 3.1.4). These measures will be legally binding on the contractor and all method statements reviewed for compliance prior to site mobilisation. The measures will prevent new introductions of invasive plant, mussel or clam species to European sites, limit the spread within sites, and remove the likelihood of a spill incident during vessel/vehicle refuelling, fuel or chemical storage or pouring of concrete for installation of survey equipment (i.e. since all pouring of concrete is prohibited during the works). As stated in the contract documentation, the Employer's Representative Team/Engineer will ensure there is no reasonable doubt that the above measures will be correctly implemented by the contractor by reviewing the appointed contractors' method statements prior to commencement of works.

#### *Underwater Noise*

The literature indicates that the auditory bandwidth of wetland/seabirds is likely to be greatest in the range of 1-4kHz (Ryals et al., 1999), with a likely upper limit of 10 kHz (Dooling et al., 2000). This range does not overlap with the operating frequencies of the ADCP (6000 kHz) or Single-beam Echosounder (125-300 kHz), removing any potential for a pathway for injury or disturbance from sonar. There is similarly no pathway for indirect impacts via sonar disturbance of fish predated by these designated bird populations, because the auditory bandwidth for fish (0.02-1kHz; Hastings & Popper, 2005)) does not overlap with the working frequencies of these devices. There is no pathway for Bottle-nosed Dolphin to be injured or displaced by underwater noise because the detailed conservation objectives for the Lower River Shannon cSAC show Bottle-nosed Dolphin do not occur in the upper reaches of the Shannon near lough Derg.

#### *Obstruction to Fish passage and effects to spawning habitat*

The underwater footprint of the moored installations in Lough Derg and the River Shannon is small and will not obstruct passage of salmon or lamprey. There is no suitable spawning salmonid habitat within the footprint of the works due to the depth of water, so no pathway for spawning substrate to be affected by mooring sinkers or installations on the lough-bed.

#### *Disturbance to birds and otter*

There is no pathway for breeding corncrake or otter to be affected by the works because there will be no loss of suitable habitat and all accesses will be along existing hardstanding. The met masts are the only element of the works requiring Greenfield excavation and these will be constructed in amenity grassland habitat



subject to regular human disturbance where there is no risk of breeding corncrake or breeding/resting otter (see Graphics 6-7). All works will be undertaken during daylight hours, and no temporary lighting will be required that could illuminate otter/corncrake feeding or breeding habitat thereby posing a disturbance or predation risk. There is no significant collision risk from Met mast operation. The Met mast at Parteen weir will be 2-9m high. The mast at Portumna Water Recreation Park is 10m high, but will be collocated adjacent to an existing c. 10 m high pole structure. There will be no significant effects on bird populations arising from collision-related disturbance, injury or mortality because:

- The collision risk envelope for these masts and associated cable-stays is small (see graphic 8)
- Masts will not be located near qualifying interest cormorant colonies where flight activity is greatest (min. 2km distant); and
- Masts are not located between Cormorant breeding sites and wetland feeding areas;
- Masts will be unlit, which won't attract migratory flocks at night; and
- Resident qualifying interest bird populations are most active in daylight when collision risk is low;

### 6.3 Assessment of Significance of effects for Relevant Sites

This section assesses any source-pathway-receptor linkages with potential to be likely and significant.

#### 6.3.1 Defining “Likely” and “Significant” Effects

“Significant” effects on a European site(s) are those that have the potential to affect the “favourable conservation status” of species or habitats for which a site is designated (terms defined below). It is possible that effects from a project alone may not significantly affect a European site, but that significant effects may occur when accounting for in-combination effects. The potential for “synergistic” effects (*i.e.* when the joint effect of in-combination effects is greater than the sum of the individual effects) should also be considered.

With regard to the term “likely”, the European Court of Justice has argued<sup>14</sup> that translations of the Habitats Directive into the working languages of other member states have substituted the term “likely” in article 6(3) with “possible”. In this regard, Irish governmental guidance from the DEHLG states that: “A precautionary approach is fundamental”. Accordingly, unless there is no possibility that an effect may occur, an Appropriate Assessment will be undertaken.

#### 6.3.2 Defining Conservation Objectives

Conservation Objectives were obtained from the online database of the NPWS in June 2014<sup>15</sup> for any sites that could be affected based on the characteristics of the works.

To date, the NPWS have produced site-specific Conservation Objectives for only some European sites<sup>16</sup>. The NPWS have published generic objectives for cSACs

<sup>14</sup> Opinion of Advocate General Eleanor Sharpston (2012) in *Reference for a Preliminary Ruling from the Supreme Court (Ireland)*, Case C-258/11 for the Galway City outer Bypass.

<sup>15</sup> Available online at <http://webgis.npws.ie/npwsviewer/>. Accessed on various dates in June 2014.

<sup>16</sup> Sites for which site-specific objectives have been published are listed on <http://www.npws.ie/protectedsites/conservationmanagementplanning/conservationobjectives/>

and SPAs for all other sites, using the general definitions of “favourable conservation condition” for species and “favourable conservation status” of habitats in the Habitats Directive. Generic objectives read as follows:

*“To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests [= reason for designation] for this SPA”, and*

*“To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected”:*

However, in accordance with recent recommendations by the NPWS for other projects<sup>17</sup>, detailed conservation objectives for other sites with the same qualifying interests were consulted to obtain targets and attributes in lieu of generic objectives.

Conservation Objectives for three of the sites were generic, so detailed conservation objectives were taken from other sites with the same qualifying interests. All conservation objectives are provided in Appendix 1.

### 6.3.3 Assessment of Significance for Lough Derg (Shannon) SPA

The quality and importance of the site is set out in the Site Synopsis (NPWS, 2004) as follows:

*“Lough Derg is of importance for both breeding and wintering birds. The site supports a nationally important breeding colony of common tern [at Goat Island on the eastern shore] (55 pairs recorded in 1995).*

*Management of one of the islands used for nesting has increased the area of suitable habitat available and prevented nests being destroyed by fluctuating water levels. A large cormorant colony occurs in trees on the islands near Portumna [Consultation with a Conservation Ranger of the National Parks & Wildlife Service in June 2014 highlighted a second small cormorant colony on Rabbit Island on the western shore of the Lough near Rosmore Pier].*

*Lough Derg is also a noted breeding site for tufted duck. In winter, the lake is important for a range of waterfowl species, especially diving ducks, with nationally important populations of tufted duck [and] goldeneye”.*

The site also hosts smaller numbers of other bird species which are qualifying interests of the adjoining Middle Shannon Callows SPA, and may visit Lough Derg to feed or roost. These are wintering whooper swan, lapwing, Wigeon and black-headed gull.

The breeding cormorant colonies are mapped in relation to the proposed works in Figure 2.

<sup>17</sup> For instance, in a submission to An Bord Pleanála by the Development Applications Unit of the Department of Arts, Heritage and the Gaeltacht on the Natura Impact Statement completed for the N60 Balla to Claremorris Road Alignment (correspondence dated March 2014)

#### (a) Indirect Disturbance (Lough Derg (Shannon) SPA)

There will be some indirect disturbance to breeding and wetland bird populations from noise and visual disturbance associated with boat and, land-based installations calibration, servicing, and removal of equipment post-installation.

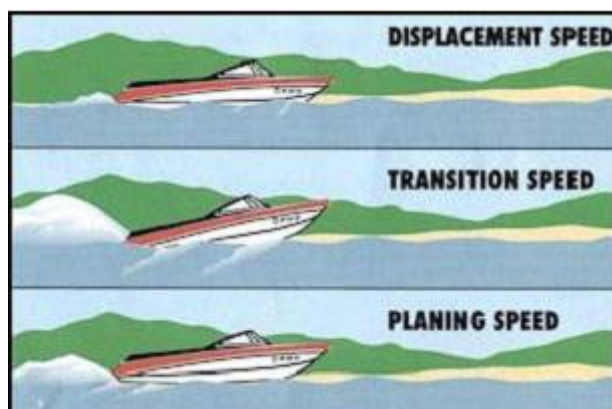
- The detailed conservation objectives for wintering tufted duck and goldeneye (Appendix 1) require there to be stable or increasing populations as measured by percentage change, and no significant decrease in range, timing, or intensity of use.

Aerial counts from the Irish Wetland Bird Survey data for the most recent five years indicate that both tufted duck and goldeneye numbers in 2012 declined to a five year low, but the five-year mean for both species remains above the qualification threshold for designation. Tufted duck is of Medium Conservation Concern nationally, while goldeneye is of High Conservation Concern. The drivers behind these declines are likely to be related to “short-stopping” of wintering birds in milder climates before reaching Ireland (Lehikoinen et al., 2013), rather than declines in quality of individual sites due to disturbance or other factors.

Tufted duck and goldeneye are likely to feed and roost throughout open water habitats in winter. Goldeneye can be sensitive to disturbance, potentially displacing within 100-200m of people on-shore or abandoning a site if motorboats pass within 350m (Hume, 1976, cited in Ruddock & Whitfield, 2007). As a species commonly resident in urban parks, tufted duck are significantly more tolerant of human disturbance, but would still be displaced by water craft in close proximity.

Wintering ducks are mobile and will use different habitat due to prevailing wind and disturbance (hunting, boating, and angling). If feeding or roosting birds are displaced by survey vessels the expansive area of the Lough will provide undisturbed alternative habitat such that displacement is likely to be localised and temporary.

Considering boat traffic from bathymetric (two vessels operating simultaneously) and water quality surveys combined (average of two vessels operating simultaneously) a maximum of four vessels is likely to be operational at any time. However, the overlap of the two survey contracts are likely to include some if not all of the summer months when wintering flocks are not present. In contrast to predictable noise or visual disturbance to which birds are likely to become accustomed, boat wake produces a direct physical disturbance to birds, and the waters in which they are roosting or feeding. Wake production is primarily a product of vessel speed and hull shape, and three ‘modes’ of speed have been identified (Graphic 9) corresponding with relatively low (displacement), moderate (planing), and high wake magnitude (transition) (Murphy et al., 2006).



**Graphic 9: Wake production at different speeds (Murphy et al, 2006)**

The two water quality vessels are a motorised catamaran and a trihedral dory. Both are of a 'low wake planing hull type', adopting a likely average speed of 17 knots (c. 31km/hr.), and a likely max speed of 22knots (c.41 km/h)<sup>18</sup>. This average speed is comfortably above the predicted minimum 'planing speeds' for both boats<sup>19</sup>; at which the boat bows drop, hull contact with water is reduced, and wake is reduced relative to other wake 'modes' (Murphy et al., 2006). Furthermore, while boats will be producing only moderate wake in 'planing' mode at average speed, they are also frequently likely to be at 'displacement' speed producing minimal wake when complying with the applicable Shannon Navigation Bye-laws<sup>20</sup>. These stipulate that it is an offence to exceed 5 km per hour (3 knots) within 200m of structures including bridges or jetties and within 100m of structures including locks, marinas, and moored vessels. The water quality contractor's Safe Operating Procedure, which will be formally reviewed by an ecologist during method statement review, additionally prescribes that "*Passage-making between waypoints will include a procedure for scanning ahead for large avifauna concentrations, and where possible changing the passage plan to avoid same*". The operation of the bathymetric vessels is likely to be conducted in the summer months and is not of relevance to wintering duck disturbance. Taking account of all the above, in combination with the habituation of resident wintering flocks to existing boat traffic on the lough, no significant effects to bird population numbers or distributions are predicted.

Conclusion: No likelihood of significant effects, taking account of in-combination effects in section 6.4

- The detailed conservation objectives for breeding cormorant and common tern require there to be no significant decline in population, productivity, or prey biomass; no adverse disturbance at the breeding site; stable or increasing population trend; and no increased barriers to connectivity (Appendix 1)

Breeding cormorant may be impacted by human disturbance at distances of 50-100m, (Carney & Sydeman, 1999), and are particularly susceptible during the chick-rearing period from April to June (Gilbert et al., 1998).

<sup>18</sup> Information provided by water quality contractor Water Technology Ltd.

<sup>19</sup> Likely to vary between approximately 8 and 15 knots, according to Water Technology Ltd, personal communication, January 2015.

<sup>20</sup> Shannon Navigation Bye-Laws and the Shannon Navigation (Construction of Vessels) Bye Laws are contained in Statutory Instruments Nos. 79 and 80 of 1992.

Breeding common terns may be impacted by human disturbance at approach distances of 100-200m, and 100m has been recommended as a safe buffer distance for water traffic (Carney & Sydeman, 1999).

There will be no quayside installations, met masts, moored equipment or land-based manual water quality sampling locations within 50-100m of the cormorant colonies or 100-200m of the common tern colony. Installation of equipment will be at the end of the cormorant and tern breeding season in autumn/winter 2014.

The two high met masts on the lough shoreline will pose no significant barrier to commuting terns or cormorants. The control of invasive species and pollutants will prevent any decrease in available prey species.

Conclusion: No likelihood of significant effects, taking account of in-combination effects in section 6.4

### 6.3.4 Assessment of Significance for Middle Shannon Callows SPA

The quality and importance of the site is set out in the Site Synopsis (NPWS, 2002) as follows:

*“The Shannon Callows has by far the largest area of lowland semi-natural grassland and associated aquatic habitats in Ireland and one in which there is least disturbance of natural wetland processes. Botanically, it is extremely diverse. In winter the site is internationally important for the total numbers of birds (regularly exceed 20,000) and for whooper swan in particular. It also holds nationally important populations of a further five species. Some of the wintering species are listed on Annex I of the EU Birds Directive, including whooper swan, Greenland white-fronted goose and golden plover. In summer the site supports important populations of breeding waders. Perhaps the most important species which occurs in the site is corncrake (the site holds 40% of the national total), as this is listed on Annex I of the EU Birds Directive and is Ireland’s only globally endangered species”.*

#### (a) Assessment of Significance for Indirect Disturbance

There is minor overlap of the proposed works and the SPA north of Portumna, where disturbance from boats or shoreline manual sampling could displace birds in the immediate area of the river. Bird usage of the Portumna bridge area is likely to be low due to the high boat activity and numerous berthing facilities around the Harbour Canal and Portumna Bridge. There will be no long-term decrease in bird population or distribution across the SPA resulting from this disturbance.

Conclusion: No likelihood of significant effects, taking account of in-combination effects in section 6.4.

### 6.4 In-combination effects

The finding of no likely significant effects has taken account of relevant existing and proposed projects and plans with potential to significantly affect European sites. The plan-level Appropriate Assessment accompanying the Strategic Environmental Assessment of the options for the Water Supply Project, including the potential option of abstraction from Lough Derg, concluded there would be no adverse effects to European site integrity. The project-level screening for appropriate assessment will address any likely significant effects, and ensure relevant mitigation measures from the SEA are addressed.

As highlighted during the consultation exercise, there is existing natural stress to littoral vegetation due to changing water levels which can lead to localised habitat loss (potentially including qualifying interest wet grasslands). However, there will be no habitat loss within designated sites arising from the proposed works, and accordingly there is no likelihood for in-combination effects of this type. In any case, implementation of planning policy in the regulation of further development on the lough is likely to ensure further development is sustainable. For instance, the Galway County Development Plan 2009-2015 has the following policies:

- Policy HL53 seeks to maintain [watercourses] in an open state capable of providing suitable habitat for flora and fauna; and



- Policy HL58: Have due regard to the aims, objectives and policies of the Waterways Corridor Study 2002 and the Sustainable Marina and Recreation Strategy for Lough Derg in the consideration of development proposals for this waterway and recreation amenity.

Extant threats to water quality are not relevant, as the potential for significant effects from these pathways were ruled out by virtue of the protective measures inherent in the contract documentation.

The main potential in-combination effects to the qualifying interests of relevant sites identified in section 6.2 are stated in the Natura 2000 standard data forms produced by the NPWS for the Lough Derg (Shannon) SPA and Middle Shannon Callows SPA, namely; eutrophication from agriculture and waste water, fertilisation, grazing, hunting, fishing, nautical sports, and walking/horse-riding/non-motorised vehicles. The site synopsis for Lough Derg (Shannon) SPA states that recreational activities cause some disturbance to the birds and an increase in such activities would be of concern. The winter portion of surveys for the proposed works will coincide with a period of reduced recreational boat activity on the lough. Data for Portumna lock in 2013 from Waterways Ireland shows a spike in boat traffic from April to September, peaking in August. Boat traffic during spring and winter months is relatively low thereby limiting potential in-combination disturbance to wintering ducks. Potential for cumulative disturbance impacts to breeding tern/cormorant colonies will be minimal because all installations are located outside buffer distances from cormorant and common tern colonies, and installation will be conducted outside the breeding season. The core cormorant breeding colony is at Portumna is within a statutory wildlife sanctuary where hunting, an identified threat on the site synopsis, is prohibited, further limiting potential for in-combination effects. In conclusion, despite the existing disturbance pressures, no significant effects to range or populations of designated populations are predicted. This judgement has been heavily influenced by the locations of the onshore instrumentation on hardstanding subject to existing disturbance, and the low intensity and frequency of proposed boat-based and pedestrian disturbance from the works.

The finding of no significant likely effects remains unchanged, taking account of existing plans and projects

## 7

**Screening Conclusion & Statement**

Despite the overlap of five designated sites within Lough Derg with the works, there was no potential for any identified SOURCE-PATHWAY-RECEPTOR relationships to result in significant effects on any European sites. Having regard to the nature of the proposed works as set out in the relevant technical specifications, it was concluded that the proposed water quality and hydrographic sampling programs are not likely to have a significant effect on any European sites, either alone or in combination with other plans or projects. The finding of no significant effects is summarized in the screening matrix in Appendix 2.

## 8

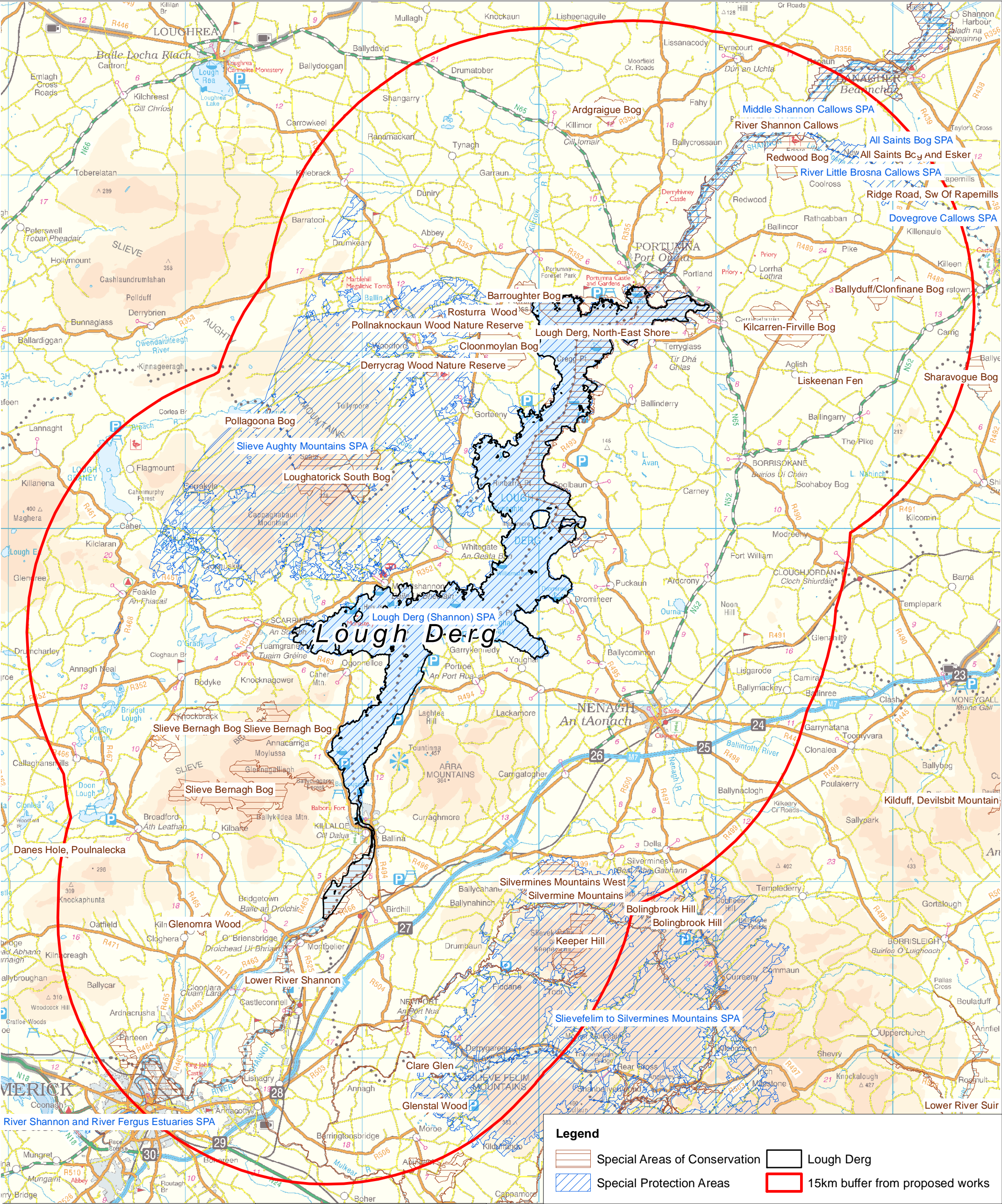
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## Figure 1 European Sites within 15km

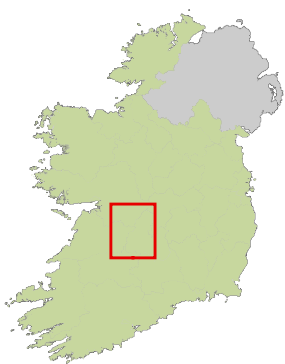




Drawing Title **Water Supply Project Dublin Region**

Designated sites within 15kms of proposed works at Lough Derg

Appropriate Assessment Screening Statement for Water Quality and Hydrographic Surveys



B	09/10/14	Issued for AA Screening Statement	BW	RF	PMcG	PS
A	10/06/14	Draft for AA Screening Statement	BW	RF	PMcG	PS
Rev.	Date	Purpose of Revision	Drawn	Checked	Rev'd	Apprd

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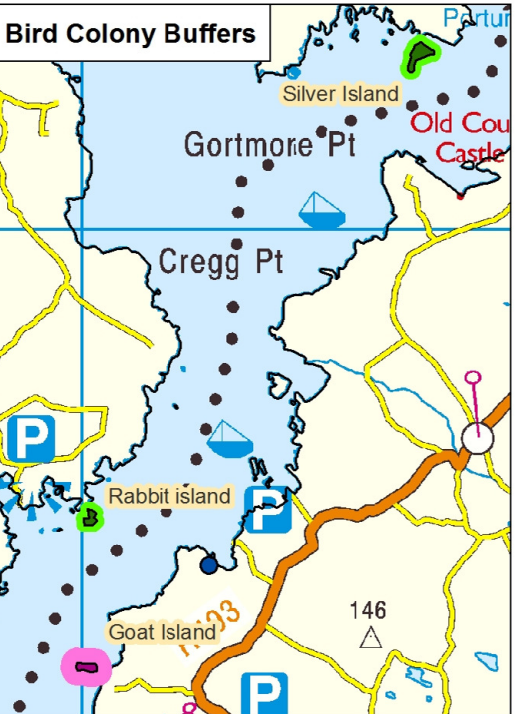
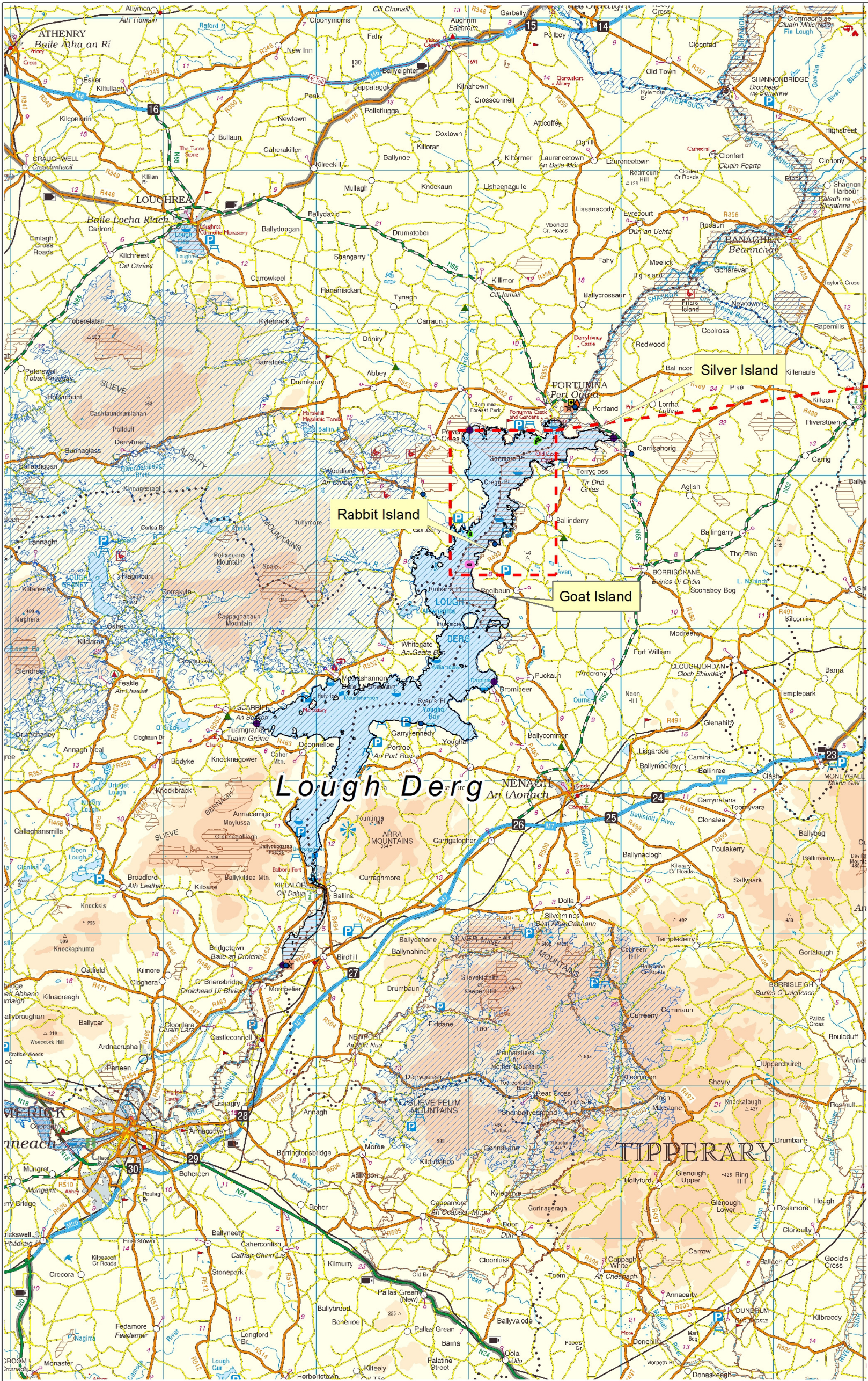
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Drawing Status	<b>FOR ISSUE</b>	
Scale @ A3	1:200,000	DO NOT SCALE
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Drawing No.	FIGURE 1	



## Figure 2 Proposed Works Locations and SPA Bird Colony locations





**Key**

**Monitoring locations**  
(Excluding moored installations - refer to Notes)

- Automatic Water Level Recorder (AWLR) (6 no.)
- Water Quality Station (1 no.)
- Existing OPWAWLR (5 no.)
- Acoustic Doppler Current Profiler (Horizontal) on quay wall (1 no.)
- Water quality spot sampling on foot at main tributary inflows (5 no.)
- Met Station (2 no.)

**Bird colonies & buffer locations**

- Common tern colony
- 200m buffer from tern colony
- Cormorant colony
- 100m buffer from cormorant colony
- Special Areas of Conservation
- Special Protection Areas

**Notes:**  
Locations of moored installations comprising vertical ADCPs (3 no.), themistor chains (20 no.) and combined physicochemical / nutrient analysers (4 no.) are not mapped. These have not been finalised, but will not be located within the buffer zones from SPA breeding colonies (refer to Screening Statement).

The site compound locations have not been determined but will be located on existing hardstanding outside designated sites (refer to Screening Statement).

The extent of boat-based bathymetric and water quality sampling is not mapped but will include Lough Derg, the Parteen basin, and tributary inflows.

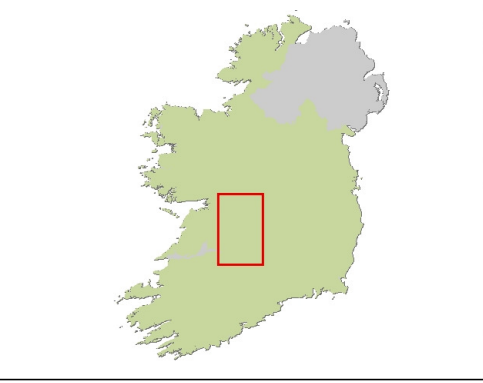
White-tailed Sea Eagle breeding sites are not mapped as they are outside the remit of the AA Screening Statement. Impacts will be avoided through consultation/design outside the screening process (refer to Section 1.2).

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WATER

Drawing Title **Water Supply Project Dublin Region**

Proposed works and bird colony buffer locations

Appropriate Assessment Screening Statement for Water Quality and Hydrographic Surveys



Rev.	Date	Purpose of Revision	Drawn	Check'd	Rev'd	App'd
D	23/01/15	Amended monitoring locations	BW	RF	PMcG	PS
C	06/10/14	Issued for AA Screening Statement	BW	RF	PMcG	PS
B	08/07/14	Draft for AA Screening Statement	BW	RF	PMcG	PS
A	12/06/14	Draft for AA Screening Statement	BW	RF	PMcG	PS

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Drawing No. **FIGURE 2**



## Appendix 1 Conservation Objectives

The tables overleaf present Conservation Objectives for all species in Table 1.A. Table 1.A contains all qualifying interests from the two relevant sites, for which source-pathway-receptor relationships were identified with the proposed works. As only generic conservation objectives were available, detailed objectives were extracted from nearby coastal sites with the same qualifying interests.

**Table 1.A: Qualifying Species from Relevant Sites**

Relevant Site	Qualifying Interest for which source-pathway-receptor relationship identified with proposed works	Source of Detailed Conservation Objective
Lough Derg (Shannon) SPA [4058]	<ul style="list-style-type: none"> <li>• Tufted duck <i>Aythya fuligula</i> [wintering]</li> <li>• Goldeneye <i>Bucephala clangula</i> [wintering]</li> </ul>	None (wintering bird objectives from wintering waders duck for Inner Galway Bay SPA applied)
	<ul style="list-style-type: none"> <li>• Great cormorant <i>Phalacrocorax carbo</i> [breeding]</li> <li>• Common tern <i>Sterna hirundo</i> [breeding]</li> </ul>	River Shannon and River Fergus Estuary SPA (4077) Version 1 (NPWS, 2012)
Middle Shannon Callows SPA [4096]	<ul style="list-style-type: none"> <li>• Whooper swan <i>Cygnus cygnus</i> [wintering]</li> <li>• Wigeon <i>Anas penelope</i> [wintering]</li> <li>• Golden plover <i>Pluvialis apricaria</i> [wintering]</li> <li>• Lapwing <i>Vanellus vanellus</i> [wintering]</li> <li>• Black-tailed godwit <i>Limosa limosa</i> [wintering]</li> <li>• Black-headed gull <i>Chroicocephalus ridibundus</i> [wintering]</li> </ul>	Inner Galway Bay SPA Version 1 (NPWS, 2013)

## Appendix 2 Screening Matrix

<b>European Sites under Consideration:</b>
Lough Derg (Shannon) SPA and Middle Shannon Callows SPA
<b>Assessment Criteria:</b>
<b>Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the Natura 2000 site</b>
See Section 3
<b>Describe any likely direct or indirect impacts of the project (either alone or in-combination with other plans or projects) on the Natura 2000 site by virtue of:</b> <ul style="list-style-type: none"> <li>• Size and scale</li> <li>• Land-take</li> <li>• Distance from the Natura 2000 site or key features of the site</li> <li>• Resource requirements</li> <li>• Emissions</li> <li>• Excavation requirements (e.g. impacts of local hydrogeology)</li> <li>• Transportation requirements</li> <li>• Duration of construction, operation etc.</li> </ul>
There will be no likely direct or indirect effects (refer to section 6.3)
<b>Describe any likely changes to the site arising as a result of:</b> <ul style="list-style-type: none"> <li>• Reduction of habitat area</li> <li>• Disturbance to key species</li> <li>• Habitat or species fragmentation</li> <li>• Reduction in species density</li> <li>• Changes in key indicators of conservation value (e.g. water quality, etc.)</li> </ul>
There will be no likely changes to the site.
<b>Describe any likely impacts on the European Site as a whole in terms of:</b> <ul style="list-style-type: none"> <li>• Interference with the key relationships that define the structure and function of the site</li> <li>• Interference with key relationships that define the function of the site</li> </ul>
See Section 6.3.3 and 6.4.4
<b>Provide indicators of significance as a result of the identification of impacts set out above in terms of:</b> <ul style="list-style-type: none"> <li>• Reduction of habitat area</li> <li>• Disturbance to key species</li> <li>• Habitat or species fragmentation</li> <li>• Loss</li> <li>• Change to key elements of the site (e.g. water quality, hydrological regime, etc.)</li> </ul>

There will be no likely direct or indirect effects on the site by virtue of any of these indicators of significance.

**Describe from the above those elements of the project, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.**

The proposed works are not likely to have a significant effect on any European sites, either alone or in combination with other plans or projects.

**Outcome of screening stage (AA required / not required):**

Consequently, it is considered that a ('Stage 2') Appropriate Assessment is not required.