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Shannon Foynes
PORT COMPANY

Capacity Extension at Shannon Foynes

Habitats Directive Assessment

Volume 6 Natura Impact Statement

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1 INTRODUCTION

1.1 BACKGROUND

1.1.1 Natura 2000 Network

With the introduction of the Habitats Directive (Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora) came the obligation to establish the Natura 2000 network of Sites of Community Interest (SCIs), comprising a network of areas of highest biodiversity importance for rare and threatened habitats and species across the European Union (EU).

In Ireland, the Natura 2000 network of European sites comprises Special Areas of Conservation (SACs, including candidate SACs) designated under domestic legislation transposing Directive 92/43/EEC, and Special Protection Areas (SPAs, including proposed SPAs) classified under the Birds Directive (Council Directive 2009/147/EC on the conservation of wild birds) and designated under the same domestic legislation.

SACs are selected for the conservation of Annex I habitats (including priority types which are in danger of disappearance) and Annex II species (other than birds). SPAs are selected for the conservation of Annex I birds and other regularly occurring migratory birds and their habitats. The annexed habitats and species for which each site is selected correspond to the qualifying interests of the sites; from these the conservation objectives of the site are derived.

SACs and SPAs make up the pan-European network of Natura 2000 sites. They are termed 'European sites' in domestic legislation transposing the Habitats Directive.

1.1.2 Appropriate Assessment

A key protection mechanism in the Habitats Directive is the requirement to subject plans and projects to Appropriate Assessment (AA) in line with the requirements of Articles 6(3) and 6(4) of the Habitats Directive. AA considers the implications of any plan or project on the Natura 2000 site network of European sites before any decision is made to allow the plan or project to proceed. European sites are designated under European Council Directives 92/43/EEC and 2009/147/EC. Such an assessment must take into consideration the possible effects a plan or project may have in combination with other plans and projects –

> ***Article 6(3)****: Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon either individually or in combination with other plans or projects, shall be 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.*

***Article 6(4)**: If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of the Natura 2000 site is protected. It shall inform the Commission of the compensatory measures adopted.*

1.1.3 Report Objective

The purpose of this report is to document a shadow screening for appropriate assessment and a subsequent appropriate assessment of the implications of the proposed Port of Foynes Capacity Extension & Harbour Development (the proposed development) on European sites in view of their conservation objectives.

This exercise has been conducted on behalf of Shannon Foynes Port Company (SFPC) in support of an application for Planning Permission to An Bord Pleanála, and an application to the Marine Planning and Foreshore Section of the Department of Housing, Planning and Local Government for a Foreshore Licence.

This report seeks to assist An Bord Pleanála as a competent authority under the Planning and Development Act 2000 (as amended); and the Department as a public authority under the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) in fulfilling their obligations in respect of conducting an appropriate assessment.

This examination and analysis has been conducted in parallel with the preparation of an Environmental Impact Assessment (EIA) Report under Directive 2014/52/EU. Certain technical and scientific studies conducted by other subject matter experts for the purposes of compiling an EIA Report are relied upon in conducting this exercise and preparing this report. They are referred to as necessary.

1.1.4 Report Structure

Section 2 of the report sets out the methodology followed and guidance documents used in conducting the shadow appropriate assessment exercise.

Section 3 of the report describes the main and ancillary elements of the proposed development, the general construction sequence and construction activities to be undertaken, and how the proposed development is intended to be used at operational phase.

Section 4 of the report contains a preliminary examination and analysis to understand whether or not the proposed development is likely to have a significant effect on a European site either individually or in combination with other plans or projects. That is the first test envisaged by Article 6(3) of the Directive, known as '*Screening for Appropriate Assessment*'.

Section 5 of the report contains a more detailed examination and analysis of the implications of the proposed development on the Conservation Objectives (COs) European sites where Likely Significant Effects (LSEs) could not be discounted in the absence of further evaluation and analysis and/or the application of mitigation measures, to determine whether or not the proposed development will adversely affect the integrity of any European site. This is the second test envisaged by Article 6(3) of the Habitats Directive 92/43/EEC, known as '*Appropriate Assessment*'.

Section 6 of the report draws conclusions about the shadow assessment conducted on behalf of SFPC.

1.1.5 Directly connected with or necessary to the management of the site

The purpose of the proposed development is to facilitate an extension to the existing jetty infrastructure, provide for the development of additional port storage and prepare a site for the expansion of future port activities and processes in accordance with Vision 2041, a thirty year masterplan setting out a port development strategy for SFPC.

On this basis, the proposed development is not directly connected with or necessary to the management of any site as a European Site.

2 METHODOLOGY

2.1 APPROPRIATE ASSESSMENT PROCESS

According to European Commission guidance document *Managing Natura 2000 sites: the provisions of Article 6 of the Habitats Directive 92/43/EEC* (EC, 2001), the assessment requirements of Article 6 establish a step-by-step approach as follows:

Step 1 - Screening for Appropriate Assessment: An initial or preliminary assessment of the project or plan's effect on a European site(s). If it cannot be concluded that there will be no significant effect upon a European site, an appropriate assessment must be conducted.

Step 2 - Appropriate Assessment: The consideration of the impact of the project or plan on the integrity of a European site, either alone or in combination with other projects of plans, and with respect to the site's structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts. A Natura Impact Statement or a Natura Impact Report is prepared.

Step 3 – Assessment of alternative solutions: The process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of a European site.

Step 4 – Assessment where no alternative solutions exist and where adverse impacts remain: An assessment of compensatory measures where, in the light of an assessment of imperative reasons of overriding public interest (IROPI), it is deemed that the project or plan should proceed.

Each step determines whether a further step in the process is required. If, for example, the conclusion at the end of Step 1 is that significant effects on European sites can be excluded, there is no requirement to proceed further.

2.1.1 Published guidance on Appropriate Assessment

Appropriate Assessment Guidelines for Planning Authorities have been published by the Department of the Environment Heritage and Local Government (DEHLG, 2010a). In addition to the advice available from the Department, the European Commission has published a number of documents which provide a significant body of guidance on the requirements of Appropriate Assessment, most notably including, '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' (EC, 2001), which sets out the principles of how to approach decision making during the process. These principal national and European guidelines have been followed in the preparation this report. The following list identifies these and other pertinent guidance documents:

- Communication from the Commission on the Precautionary Principle, Office for Official Publications of the European Communities, Luxembourg (EC, 2000a);

- Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg (EC, 2000b);
- Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC. Office for Official Publications of the European Communities, Brussels (EC, 2001);
- Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission; (EC, 2007);
- Estuaries and Coastal Zones within the Context of the Birds and Habitats Directives - Technical Supporting Document on their Dual Roles as Natura 2000 Sites and as Waterways and Locations for Ports. European Commission (EC, 2009);
- Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government, Dublin (DEHLG, 2010a);
- Department of Environment Heritage and Local Government Circular NPW 1/10 and PSSP 2/10 on Appropriate Assessment under Article 6 of the Habitats Directive – Guidance for Planning Authorities (DEHLG, 2010b);
- Guidance document on the implementation of the birds and habitats directive in estuaries and coastal zones with particular attention to port development and dredging. European Commission (EC, 2011a);
- European Commission Staff Working Document 'Integrating biodiversity and nature protection into port development' (EC, 2011b);
- Marine Natura Impact Statements in Irish Special Areas of Conservation: A working document, National Parks and Wildlife Service, Dublin (NPWS, 2012); and
- Interpretation Manual of European Union Habitats. Version EUR 28. European Commission (EC, 2013).

2.1.2 Likely Significant Effect

The threshold for a likely significant effect is treated in the screening exercise as being above a *de minimis* level. A *de minimis* effect is a level of risk that is too small to be concerned with when considering ecological requirements of an Annex I habitat or a population of Annex II species present on a European site necessary to ensure their favourable conservation condition. If low level effects on habitats or individuals of species are judged to be in this order of magnitude and that judgment has been made in the absence of reasonable scientific doubt, then those effects are not considered to be likely significant effects.

> *"the requirement that the effect in question be 'significant' exists in order to lay down a* de minimis *threshold. Plans or projects that have no appreciable effect on a European site are thereby excluded. If all plans or projects capable of having any effect whatsoever on the site*

were to be caught by Article 6(3), activities on or near the site would risk being impossible by reason of legislative overkill".

[Paragraphs 46-50 of the Opinion of the Advocate General in CJEU case C-258/11]

2.1.3 Conservation objectives

The conservation objectives for each European site are 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.

The favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing;
- 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 (or condition, at a site level) 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;
- 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.

2.1.4 Site-Specific Conservation Objectives

NPWS began preparing detailed Site-Specific Conservation Objectives (SSCOs) for European sites in 2011. The European sites of the River Shannon Complex which are considered in some detail in this report have published SSCOs, as described in Section 4.1.6.2 for the Lower River Shannon SAC and Section 4.1.7.2 for the River Shannon and River Fergus Estuaries SPA. The remaining European sites considered in an initial appraisal in Section 4.1 only have generic conservation objectives published for them.

NPWS (2012b) notes that an appropriate assessment based on the most up to date conservation objectives will remain valid even if the targets are subsequently updated, providing they were the most recent objectives available when the assessment was carried out. It is essential that the date and version are included when objectives are cited.

The most up-to-date Conservation Objectives for the European sites being considered, and details in relation to the Qualifying Interests and Special Conservation Interests of these European sites is

based on publicly available data on these European Sites, sourced from the NPWS website in March 2018. Hyperlinks are used to identify the conservation objectives reviewed in conducting this exercise.

3 THE PROPOSED DEVELOPMENT

3.1 THE LOCATION OF THE PROJECT

3.1.1 Site Location

The subject site is located within and adjacent to the settlement of Foynes, Co. Limerick and comprises the existing 'Port of Foynes' and undeveloped lands to the immediate east of the existing Port estate. The northern boundary of the subject site adjoins the Shannon Estuary. Foynes village is situated to the south (behind) the existing port estate and extends along the National Secondary (N69) Limerick – Tarbert Road. Limerick City is located circa 38km to the east (upstream), whilst the mouth of the Shannon Estuary where it meets the Atlantic Ocean (between Loop Head and Kerry Head) is located circa 56km to the west (downstream).

Situated on the Shannon Estuary, the Port of Foynes is a 'Tier 1 Pot' and is the second largest Port in Ireland and is the principle general purpose terminal on the Estuary routinely catering for cargo vessels. Due to its favourable location on the west coast of Ireland and its modern deepwater facilities, Foynes Port is ideally positioned for additional European trading as well as for further increases in ocean energy resources.

Figures 3.1, 3.2 and 3.3 show the location of Foynes Port and the extent of the project boundary and area of proposed development works.

3.1.2 Development Area

The project site for the purpose of this EIAR is defined by the red line planning application site boundary as illustrated on the planning application drawings. This area which measures 62.10 hectares (ha) extends to include specific areas in which the proposed development will occur within the existing Port estate and, on lands directly adjacent to it. The proposed development works are concentrated in two specific locations – (i) adjacent to the existing quay walls within the existing Port estate (measuring 0.51ha or 5,142m^2), and (ii) undeveloped lands adjacent to the east of the exiting port estate referred to for the purpose of this EIAR as 'Durnish' or the 'Durnish lands' as illustrated in figure 2.4 (measuring 33.95ha or 339,559m^2).

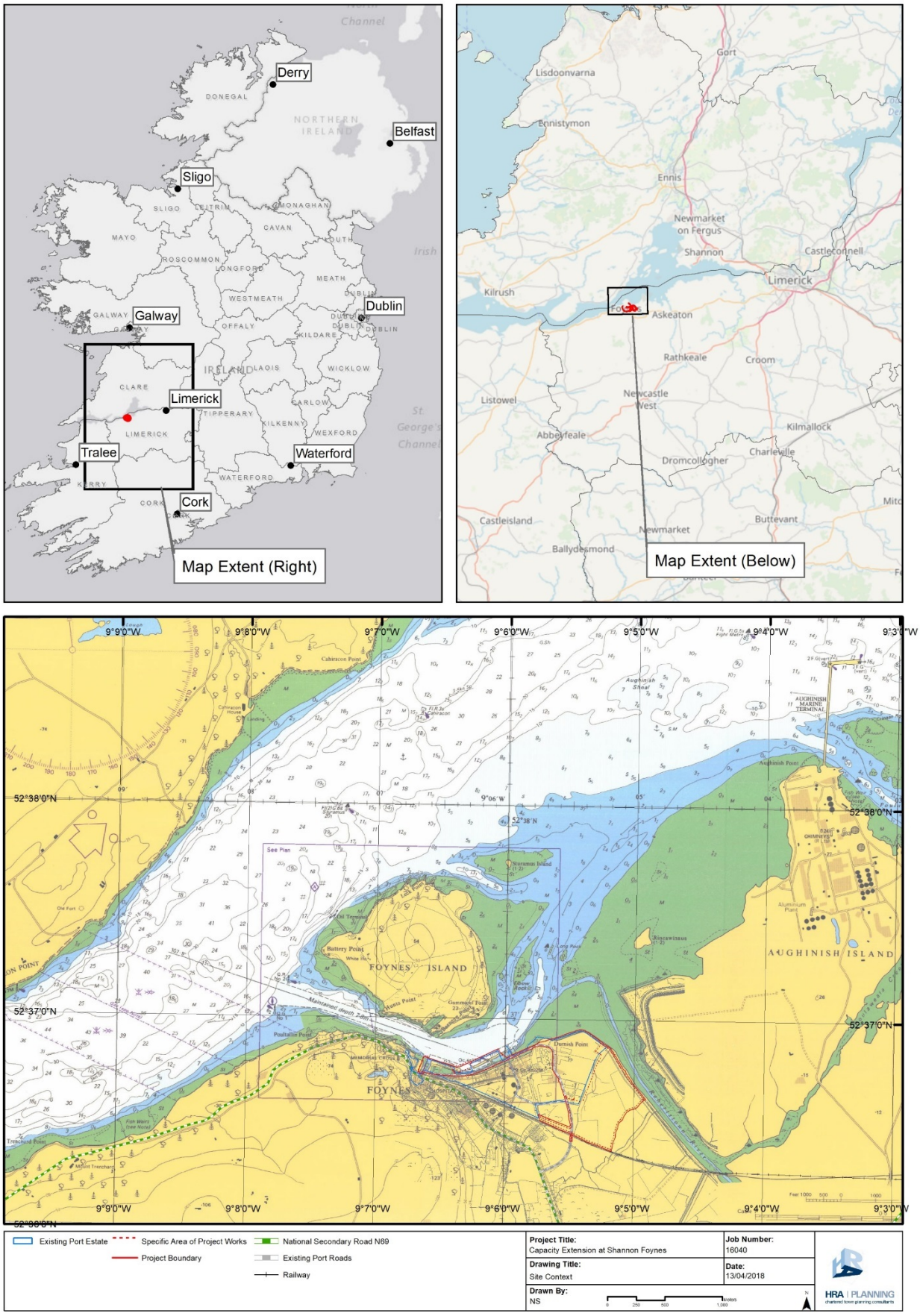

Figure 3.1 Project Location

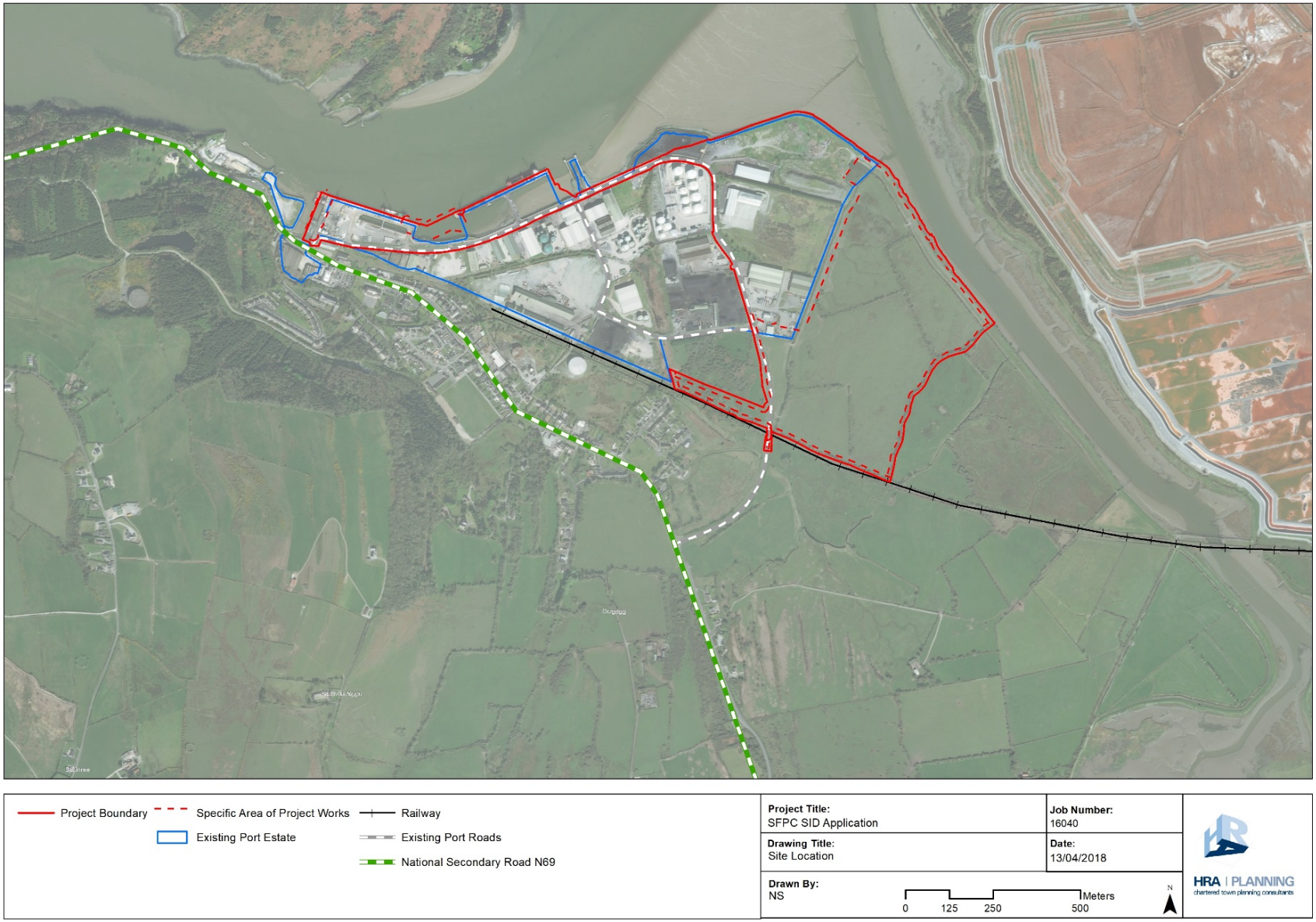

Figure 3.2 Project Location (orthophotography)

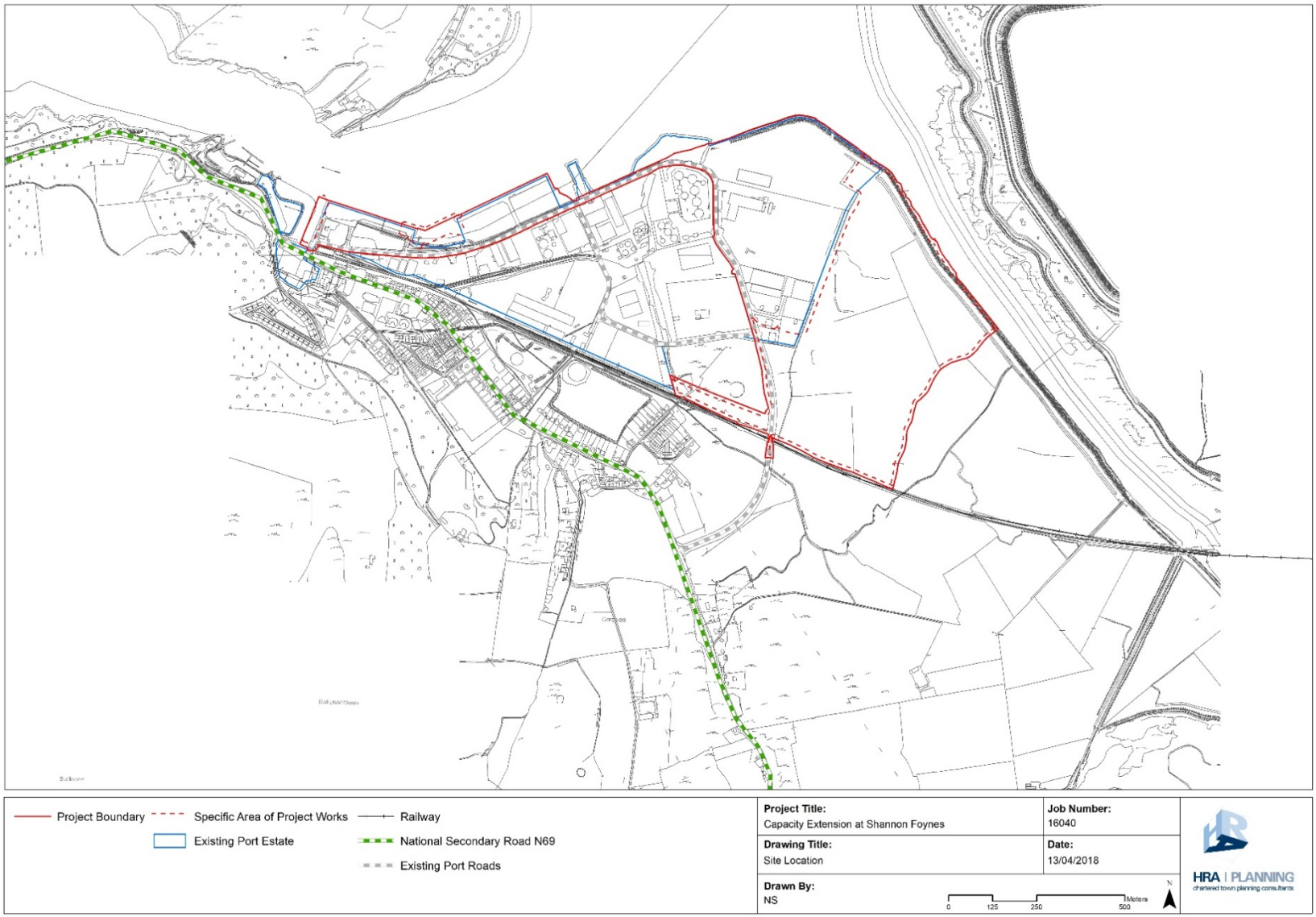

Figure 3.3 Project Location (vector mapping)

3.1.3 Adjacent Land Uses

The Shannon Estuary provides a commercial function for SFPC extending over an area encompassing circa 500km^2 (between Limerick City and Loop Head / Kerry Head) with its naturally occurring deep-waters, accommodating some of the largest vessels entering Irish Waters. Vessel movements occur along the entirety of the estuary between the Ocean and Limerick City in order to gain access to other port facilities at Moneypoint, Tarbert, Aughnish, Shannon Airport, and Ted Russell Dock at eastern extremity of the estuary at Limerick City. The existing Port estate is positioned to the immediate west and includes industrial activities and uses associated with access to the port.

3.1.4 Existing Port Operations

The port is accessed from two points from the N69 National Secondary Route which are accessed by controlled barrier. These access points are situated circa 1.4km apart and at opposite sides of the village and port access is controlled by barrier access.

From an operational Ports perspective, the Port of Foynes, specialises in the berthing primarily of commercial cargo vessels (occasional berthing of cruise ships occur), and, the handling and storage of bulk cargoes imported and exported by shipment through the Port. Typical cargo types through the Port of Foynes include; dry bulk fertilisers, animal feeds, salt, coal and alumina hydrate; Break bulk including timber, construction materials, machinery and materials for the offshore industry; Liquids – primarily oils but also chemicals; Project cargoes including materials for the renewable wind energy industry; and, Cruise vessels. The storage demands for these types of cargo are typically greater than container and/or ferry ports because of the sizes of each shipment and the duration that these types of cargos are stored in port.

The landside port operations at Foynes are maintained through a series of jetties, cargo handling equipment and storage facilities. Portside handling equipment includes various mobile harbour cranes and grabs, mobile hoppers, a variety of forklifts and handling equipment, and stevedores. Currently, there are 4 general cargo berths totalling 657m. The West jetty is 271 meters long, the East jetty 295 meters long, and the Tanker jetty is 91 meters long. The current configuration of quay allows the port to manage four 10,000 dwt vessels at any one time or two 50,000 dwt vessels and one 5,000 dwt vessel at any one time. In this configuration, berth occupancy percentage is at 40% on an annualised average and 78% on a peak seasonal average. The length of the existing quay wall and the current berthing provision is proving unsustainable in the context of predicted tonnage growth rates predicted in the Port Company Economic and Spatial Masterplan 'Vision 2041' as it will inevitably lead to longer wait times for ships, leading predictably, to increased costs to the receiver and a loss of competitiveness for SFPC and the mid-west region.

Port side operations are used for covered (warehouse or tank) and uncovered open storage of liquid, break bulk and dry bulk cargos. The existing Port Estate, in terms of open and covered storage is operating at full operational capacity with no residual or undeveloped property occurring within the estate.

3.1.5 Amenity Designations

The Shannon Estuary is subject to 2 natural amenity sites designated under the EU Habitats Directive 92/43/EEC. These are: *The Lower River Shannon Special Area of Conservation* (SAC) site code 002165 and, *the River Shannon and Fergus Estuaries Special Protection Area* (SPA) site code 004077. There are no archaeological or features of built heritage occurring with the area of the proposed development.

3.2 CHARACTERISTICS OF THE PROJECT

The project includes specific site development works, and operational activities, the characteristics of which are discussed in detail.

3.2.1 Nature of the Proposed Development

The project is to facilitate capacity extension at Shannon Foynes Port. This requirement to extend Port capacity is responsive to a historic pattern of commercial growth through the Port of Foynes consistent with the projections envisaged in the Port Company's spatial and commercial masterplan – 'Vision 2041' and the resultant fruition of those projections experienced to date. This capacity extension is provided in two interrelated ways – increased capacity of the quay wall, and, increased capacity of supporting landside storage facilities and logistics. Consequently, the project includes two specific elements of development and operational activities as follows:

- JETTY EXTENSION

  The joining of the existing 'West Quay' and the 'East Jetty', and;

- DURNISH LAND DEVELOPMENT

  To provide for increased port related storage and port-centric logistics

A copy of the pertinent drawings including site plans, elevations and cross sectional details illustrating the proposed development (which were submitted with the planning application) are appended to this document. The description of development for which this EIAR has been undertaken is as follows:

The proposed development seeks to provide for Port Capacity Extension that will consist of the following:

1. M**odifications to the existing jetties and quays to include:** connection of the existing West Quay to the existing East Jetty for the purpose of extending the length of the existing quay to

facilitate the mooring of vessels and Port related operations. Development works consist of; (i) Construction of an open piled jetty structure with suspended 116.5 metre concrete deck connecting the West Quay to the East Jetty; (ii) quayside furniture including quay fenders, mooring bollards, safety ladders, toe rail, and lighting columns, (iii) construction and remedial works to the both existing West Quay and East Jetty ends to facilitate structural 'tie-in' of the proposed new jetty structure, (iv) removal of the existing small craft landing pontoon and walkway from its current position affixed to the shore between the West Quay and the East Jetty, and provision of a new small craft landing pontoon and walkway affixed to the western side of the West Quay wall, and, (v) all associated site development works; and

2. **Phased Expansion of the Port Estate** on 33.95 hectares of land immediately adjacent to the east of the existing port estate to provide serviced industrial land, and, to accommodate marine related industry, port centric logistics and associated infrastructure that will be provided in accordance with a development framework programme prepared for the overall 'expansion' area and which is lodged with the planning application. The development includes:

   i. site development and infrastructure works to the entire expansion lands on a phased basis including (a) raising of ground levels with fill material to a typical height of +4.44m OD Malin; (b) provision of all associated services including storm water infrastructure and modification to the existing OPW drainage attenuation system; (c) provision of 2.4m high perimeter fencing, (d) landscaping berms and treatments, and (e) all associated site development works; all to be delivered on a phased basis; and

   ii. Implementation and use of 'Phase 1' of port expansion works including: (a) modification and realignment to part of the existing port estate access road including provision of new roundabout and junction arrangements on that road, and associated lighting, and storm water drainage; (b) provision of new internal Port access road (with associated footpath and combined cycle path) including the provision of bridge structures to facilitate access across existing drainage channels; (c) construction of three covered industrial type warehouse units (with typical maximum ridge height of 15.1m above raised ground level) with associated external storage, parking and circulation areas; (d) the provision of separate dedicated uncovered 'open' storage area/ container storage area and associated circulation and service area (with maximum container stacking height of 8m if/when container storage required); (e) provision of Klargester BE model (or similar) package foul water treatment system with polishing filter and discharge to ground to serve the Phase 1a expansion area; (f) modifications to existing 'Foynes Engineering' industrial building which involves the removal of the 'lean-to' structure affixed to the main building and remedial building and site development works; (g) provision of an ESB electrical substation; (h) provision of lighting columns within the 'Phase 1' expansion area; (i) provision of a new security kiosk and access control barrier on the existing Port access road; (j) provision of noise attenuation measures along parts of the southern and western boundary of 'Phase 1' expansion area; (k) provision of a 'bus-stop' on the existing Port access road; (l) landscaping; and (m) all associated site development works.

3.2.2 Planning Permission and Environmental Assessment- Clarification

For the avoidance of doubt, all works proposed as part of the planning application for which planning permission is being sought, and described in the statutory notices, have been subject to environmental assessment which is presented in this EIAR. It is proposed to seek the development of the Durnish lands in phased approach and this phasing has been considered as part of this EIAR. In order to ensure an effective and conclusive environmental impact assessment consistent with best practise, the EIAR examines the effects of the development for which planning permission is being sought, and, where necessary, the collective cumulative effects of the overall development scheme for the Durnish lands if all development phases were implemented. The examination of the 'all phase' development scenario for Durnish is consistent with best practice in order to examine a 'worst-case' scenario of the project effects. Examination of this 'worst-case' scenario is based on the likely effects of the proposed development and proposed uses as part of Phase 1, and, the anticipated landuses that will occur from subsequent operational use of Phase 2 and Phase 3 based on the information known and available at this time in respect to those subsequent Phases. Despite the consideration of those subsequent development phases as part of this environmental assessment, the future uses shall be subject to the necessary and separate planning consent in due course.

3.2.3 Physical Characteristics

3.2.3.1 Jetty Extension

The proposed extension to the existing Port berths will facilitate opportunity for the docking of larger vessels (with increased loads) in response to the increasing international trend toward larger vessel sizes or alternatively, the docking of increased smaller vessels at the same time.

Under either scenario, tonnage throughput will rise as predicted in the Port Company's strategic masterplan ('Vision 2041').

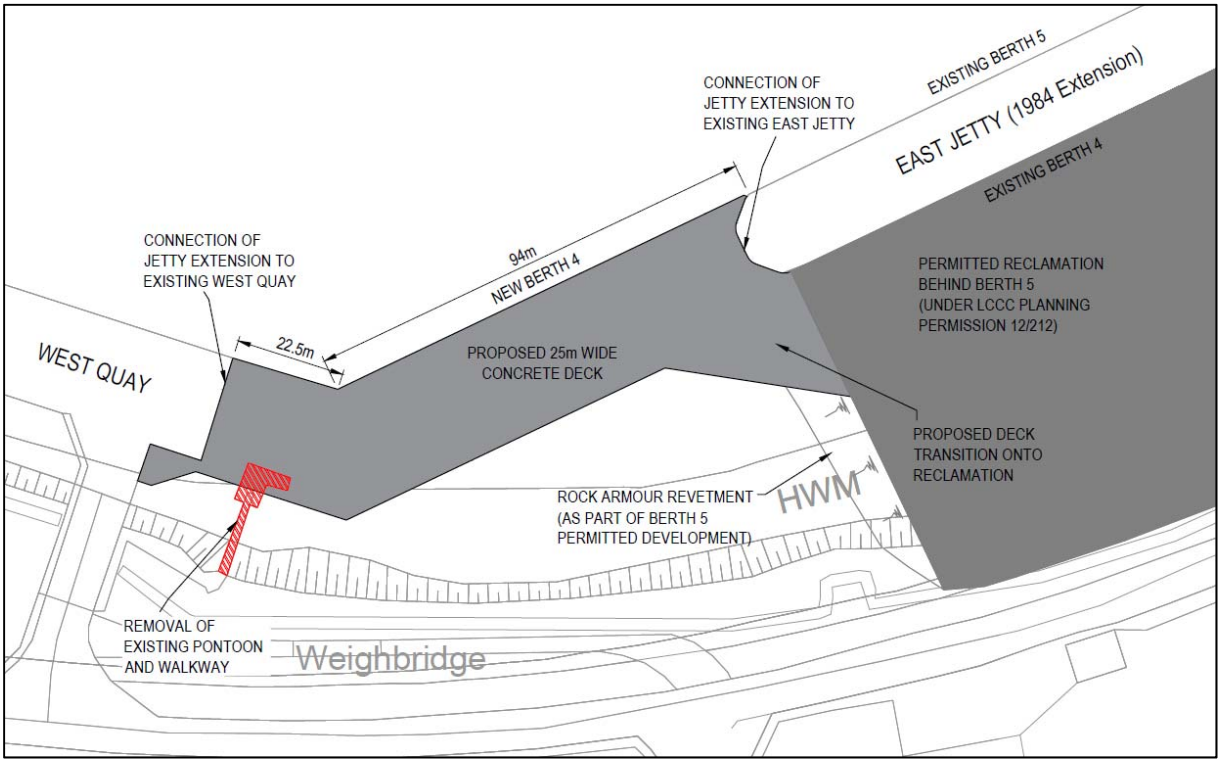

Figure 3.4 Jetty Extension connecting West Quay and East Jetty
(removal of existing pontoon also shown)

Connection of the existing West Quay to the existing East Jetty will involve the construction of an open piled jetty structure with suspended reinforced concrete deck tying into; the existing jetty and quay wall structures; and, the land reclaimed to the rear of the East Jetty (and Berth 5 of same) which already has planning consent.

A 25m wide suspended reinforced concrete deck will span between the West Quay and the East Jetty, though will be wider at its eastern end to facilitate transition of the proposed deck into the reclaimed land behind the East Jetty. The proposed deck shall extend a distance of 116.5m between the West Quay and the East Wall with the loads carried by tubular steel piles driven to provide approximately 3m deep penetration into rock.

Similar methodology will be equally applicable for the foundation piles that will accommodate the relocated small craft floating pontoon on the western side of the West Quay wall.

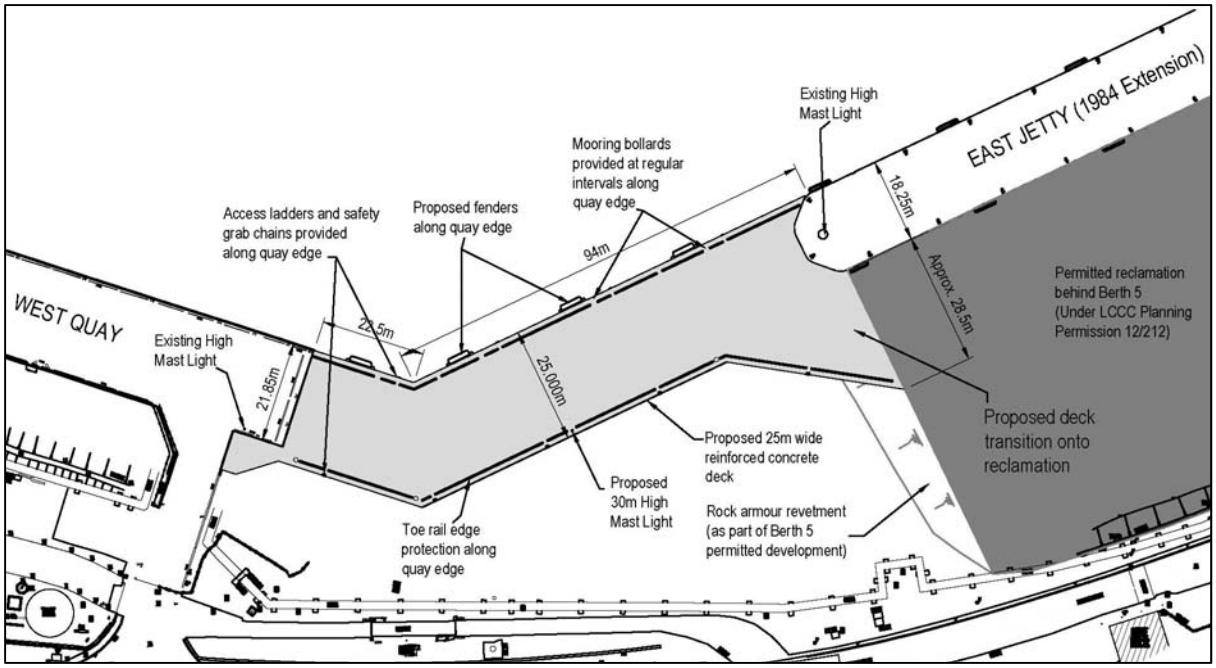

Figure 3.5 Planned layout of proposed jetty

No storm water runoff shall be permitted from the jetty connection structure but shall be collected in a dedicated storm water drainage system.

3.2.3.1.1 Quay Furniture

The proposed suspended deck will include berthing fenders and mooring bollards placed at regular intervals along the outside (northern) quay edge to accommodate mooring vessels for the purpose of loading and unloading of goods. Mooring bollards will also be placed at regular intervals along the inside (southern) quay edge. The suspended deck will facilitate port traffic and infrastructure which would typically expect to include; loading and unloading vehicles, mobile loading hoppers and craneage, and, associate port traffic and personnel. All existing jetty structures will be retained during the works and will continue to be used for berthing.

3.2.3.1.2 Safety Equipment

Fire hydrants will be provided at regular intervals along the jetty structure. Access ladders and safety chains shall be provided at regular intervals along both faces of the jetty connection structure.

3.2.3.1.3 Dredging

No capital dredging is required as part of the proposed works. The location of the proposed jetty extension is currently dredged to a declared depth of -10.5mCD as part of SFPC's current maintenance dredging campaign.

3.2.3.1.4 Mechanical and electrical services

The proposed lighting for the jetty connection working area will comprise 30.0m high; base hinged raising and lowering masts with multiple floodlight arrangements and light cowls for light pollution

control. Low energy LED lighting will provide an average lighting level of 30-50 lux for storage and operational areas, and an average of 20 lux in circulation areas. The lighting will be designed to prevent direct glare into surrounding properties and illumination of the night sky.

Power supply will be by connection to the local electricity grid system.

3.2.3.1.5 Water Supply

Water supply will be by connection to the existing water supplies on the existing East and West Jetty structures.

3.2.3.1.6 Fencing and security

The site of the proposed works is wholly contained within the existing port operational (ISPS) area and as such no additional security fencing will be required.

3.2.3.1.7 General Construction Sequence

The general sequence of the construction of the jetty connection works are anticipated to include:

1. Removal and relocation of the existing small craft landing pontoon to an area identified at the west side of West Quay. Two locating piles will be installed at the new location to accommodate the relocated landing pontoon
2. Driving of steel tubular piles to the required depth using a vibrating hammer and hydraulic impact hammer to achieve the required toe level. Piles to support a suspended concrete deck, connecting the existing West Quay to the existing East jetty to create New Berth No. 4.
3. Localised demolition of existing jetty structures and structural connection between new structure and existing jetty structures.
4. Installation of pre-cast concrete deck elements using suitable plant.
5. Pouring of in-situ concrete deck on jetty extension using concrete pump/skip
6. Installation of drainage, services, quay furniture and lighting

3.2.3.1.8 Landing Pontoon Relocation

Prior to commencement of the jetty extension works, the existing small craft landing pontoon located behind the proposed jetty extension shall be removed and relocated to an area identified at the west side of West Quay. Two locating piles shall be installed at the new location and a landing platform shall be constructed to tie in with the existing quay structure, along with a landing structure and concrete bankseat to accommodate the pontoon walkway.

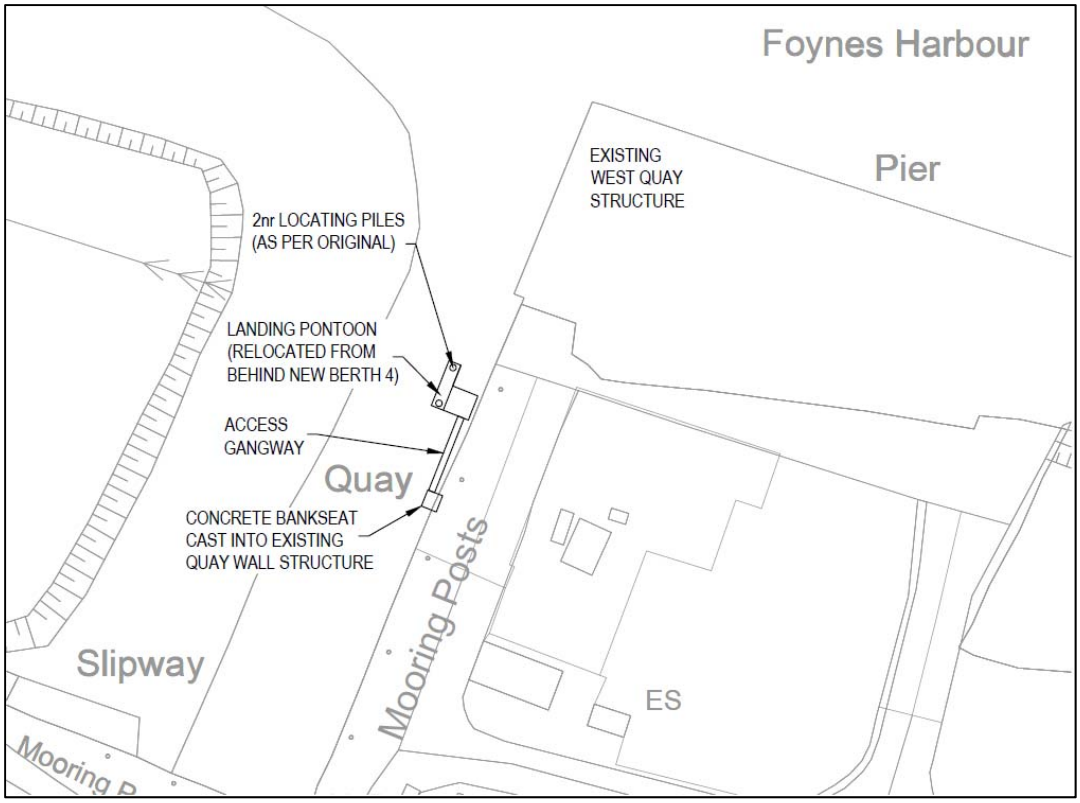

Figure 3.6 Proposed Location of Relocated Pontoon

3.2.3.1.9 Proposed Operations at East Jetty

Port operations on the jetty extension will be as per the existing jetties, and will generally comprise the loading and unloading of vessels using Harbour Mobile Cranes consistent with existing quay operations. Materials handled will vary depending on trade requirements but the following is anticipated;

- Construction materials including timber, steel sections reinforcement etc.
- Project cargoes such as wind turbine components, steel pipes etc.
- All types of dry and liquid bulk cargoes

It is intended that hours of operation on the jetty extension will be the same as the existing.

3.2.3.1.10 Equipment

Handling operations on the existing jetty will continue as is the current practice with vessels generally being loaded or unloaded by the use of the Port's existing harbour mobile cranes. Other types of port handling equipment such as mobile hoppers, mobile cranes, mobile weighbridges, loading shovels, reach stackers, mast lift trucks or similar will be used as and when required.

3.2.3.1.11 Operational Access

Access to the jetty extension will be via the existing entrances onto the East and West jetty access structures.

3.2.3.2 Durnish Lands Development

The developed lands will be used for open storage and warehousing and will be used primarily for the handling and storage of general cargo. In addition, the lands will also be used for port-centric processing operations such as bulk raw material being graded, mixed or sorted before being bagged or put into tankers. It is intended that hours of operation on the proposed developed lands will be 24/7, 364 days per year. The breakdown of uses across the Durnish lands has been calculated at;

- Covered storage Approx. 5.2ha
- Open storage Approx. 15.5ha

Materials handled will vary depending on trade requirements but the following is anticipated;

- Construction materials including timber, steel sections reinforcement etc.
- Scrap metal
- Project cargoes such as wind turbine components, steel pipes etc.
- All types of dry and liquid bulk cargoes
- Storage of containers

To provide for the development of the Durnish lands, certain site development and preparatory works are necessary to ensure the proper planning and sustainable development of this previously undeveloped land for Port and marine related industrial uses consistent with current landuse planning provisions and National Planning Guidelines. This includes the raising of the ground levels of the Durnish Lands to a level of +4.44m OD Malin to ensure that proposed uses can be carried out at an appropriate level which has been designed and are responsive to best practice and current flood risk management requirements in order to minimise flood risk to people, property, the economy and the environment. The design of ground levels adopts a precautionary approach to allow for uncertainties in data and risk assessment procedures taking account of climate change. The basis of this approach including the flood risk assessment of the proposed development is contained in EIAR Chapter 9.2.

3.2.3.2.1 Framework Plan

All phases have been considered and designed for within the context of a 'Framework Plan' for development within the Durnish Lands.

The Framework Plan (which is submitted as part of the planning consent) sets out a development concept arrangement for the entire Durnish lands (Phase 1, 2 and 3) in order to present a holistic and co-ordinated approach toward the orderly and sustainable development of the Durnish Lands. This will guide subsequent developments within subsequent Phase 2 and Phase 3 given that the specific details of uses are not known at this time and assists this assessment process. The Framework Plan has given consideration to and presents a strategic arrangement of inter-alia; general layout arrangements; the design and implementation of infrastructure including water, energy services, flood risk management, water services, lighting, and site security; the primary internal access roads,

building heights and design across the entire site. The proposed first phase of development reflects the 'development framework' for that area given that the immediate requirements are know at this time. The Framework Plan acknowledges that different Port users have different land use requirements and therefore given that the site-specific storage requirements and uses are not yet known for subsequent phases, the Framework Plan retains a degree of flexibility for operational development within the Phase 2 and Phase 3 albeit within certain limitations.

The design of the Framework Plan has derived from an iterative process conducted in parallel to the formulation of the development proposal and the execution of this EIAR. For the purpose of this EIAR, a cumulative assessment has been undertaken of all development proponents and the EIAR has taken account of and assessed the scope of anticipated end uses and anticipated building types and heights, and landscaping (set out in the Framework Plan).

3.2.3.2.2 Phased Approach and Development Framework

It is proposed to provide for land based on forecasted tonnage requirements consistent with the Port's medium (mid-line) growth scenario established in their strategic masterplan document 'Vision 2041'. Tonnage throughput at the Port of Foynes is anticipated to reach 2,770,000 tonnes by 2025. The current throughput is 1,778,126 tonnes.

Based on this tonnage projection (mid-line growth scenario set out in Vision 2041), it is projected that the tonnage growth at Foynes port over the next 10 years, and the life of this planning permission, will reach 3,280,000 tons by 2030. If it is a case that the high growth scenario is realised, then additional land will be required to accommodate such growth prior to the expiration of planning permission in ten years'.

Responsive to tonnage forecast, it is proposed to implement the operational use of the Durnish land in three phases in line with economic growth and customer demand. The proposed phasing regime is illustrated on the appended drawing (also lodged with the planning application) titled: 'Proposed Phasing Plan for Operational Uses'.

However, to ensure the effective and timely availability of the Durnish lands for operational use as the needs arise, the proposed development includes the filling of all of the Durnish land as part of the initial phase of development (Phase 1) to make them serviceable. Phasing is proposed in the following manner:

3.2.3.2.2.1 Phase 1

Proposed Development (subject of this planning application):

- Jetty Extension (including relocation of pontoon);
- Filling of entire Durnish lands, provision of infrastructure and landscaping over the entire site (phased over a 10-year period);

- Development and operation use of 8.2 hectares of filled and serviced land for marine related industry to accommodate existing tonnage throughput through the Port of 1,778,126 tonnes.

Phase 1 – Activities:

- Covered storage 1.2ha
- Open storage 7ha
    - Warehousing (up to 15m height)
    - Breakbulk and project cargo such as steel sections/reinforcement, timber, palletised fuel/fertiliser, wind turbine blades etc. (stored 10m high)
    - Loose cargoes such as woodchip biomass fuel (stored 6m high)
    - Storage of containers (up to 3nr high) approx. 8m high with handling equipment up to 17m height

Phase 1 – Implementation:

The implementation of Phase 1 is envisaged in sub-phases as follows:

- Phase 1A
    - Stripping of Topsoil over entire Durnish Lands and seeding with clover mix
    - Boundary treatment around entire site (South, East and Northern perimeters)
    - Access road improvements and roundabout construction
    - Provision of port security kiosk
    - Filling of Phase 1 extent of lands to a level 0f +4.44mOD
    - Provision of security fencing around raised lands
    - Provision of storm drainage infrastructure and attenuation pond extension
    - Removal of existing “lean to” shed
    - Construction of internal road network and drainage channel crossing structures
    - Construction of warehousing and open storage areas
    - Provision of foul water infrastructure
    - Provision of lighting and services

- Phase 1B
    - Filling of “Phase 2” extent of lands
    - Provision of storm drainage system
    - Provision of security fencing

- Phase 1C
    - Filling of “Phase 3” extent of lands
    - Provision of storm drainage system
    - Provision of security fencing

The proposed phasing regime (Phase 1A – 1C) is illustrated on the appended drawing (also lodged with the planning application) titled: 'Proposed Phasing Plan for Construction' and is illustrated in Figure 3.7.

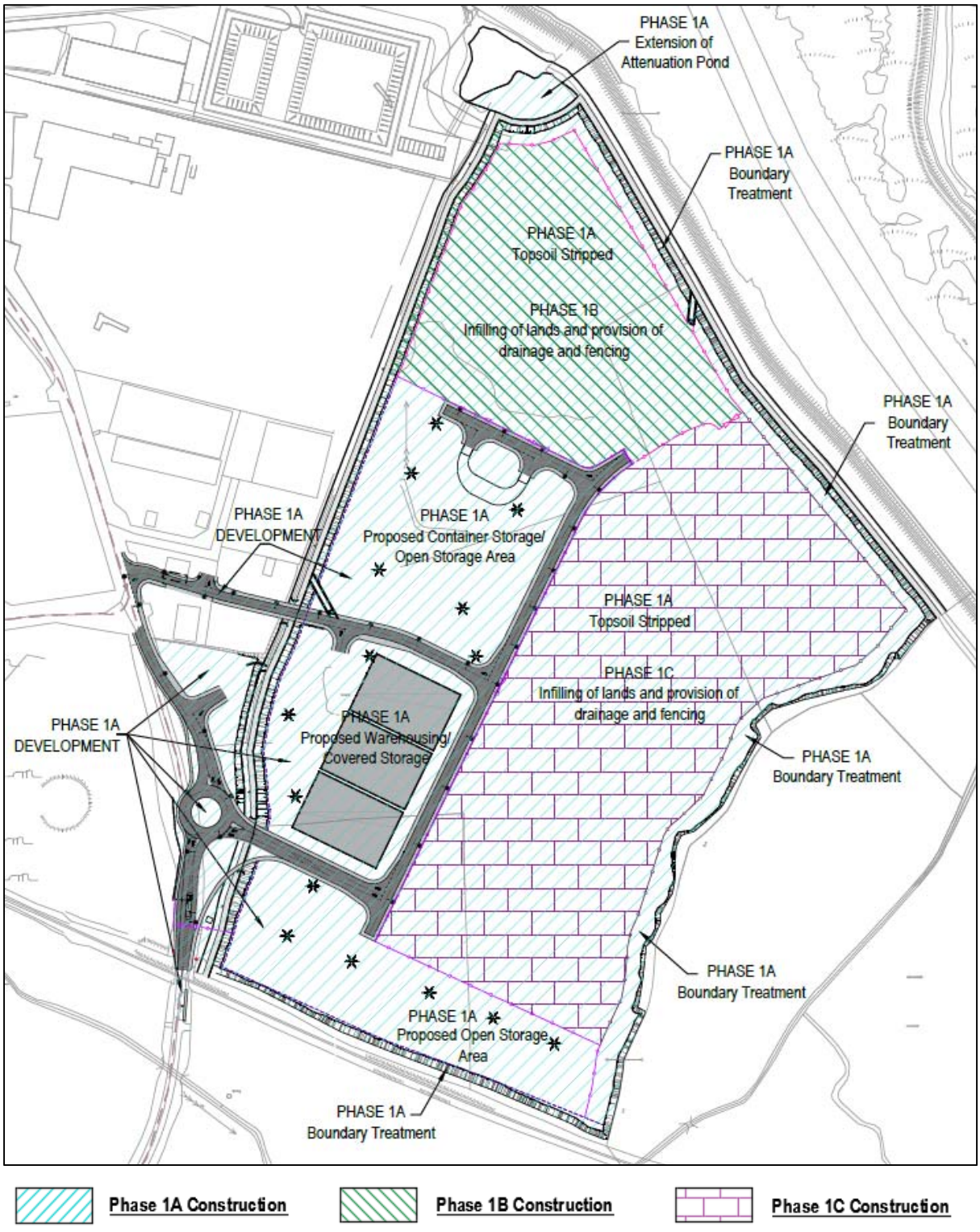

Figure 3.7 Proposed Phasing Plan for Construction

These sub-phases seek to ensure the orderly development of the expansion area. Having said that, the proposed phasing regime does not, nor cannot preclude the possibility of all Phase 1 works being carried out simultaneously if/where market conditions support that.

In the meantime, the upfront capital cost of undertaking site development works and specifically the raising of ground levels across the entire of the Durnish lands is unviable in the absence of supporting market conditions or, one specific user for the lands.

Furthermore, the timescale for implementation of that specific measure (raising the ground levels across the entire site prior to any operational use) will delay the opportunity to provide for immediate storage requirements with the potential effects on maintaining Port competitiveness.

3.2.3.2.2.2 Phases 2 and 3

The operational uses of Phase 2 and Phase 3 are unknown at this time and therefore there are no further site-specific details in terms uses that can be provided. However, for the purpose of this assessment and specifically, a cumulative consideration of proposed and likely anticipated uses (based on existing and proposed port uses), the likely operational scenarios for Phase 2 and Phase 3 are as follows;

Phase 2 – Likely Operational Scenario (Subject to future planning consent)

Accommodation of additional (predicted) 991,874 tonnes of cargo throughput to deliver total Port tonnage throughput of 2,770,000 tonnes by 2025. Anticipated delivery consisting of:

- Covered storage of circa 1.2ha
- Open storage of circa 2.4ha
    - Construction of warehousing and open storage areas for marine related industrial use and port centric activities
    - Construction of internal road network
    - Provision of foul water infrastructure
    - Provision of lighting and services
    - Provision of security fencing

Phase 3 – Likely Operational Scenario (Subject to future planning consent)

Accommodation of additional (predicted) 510,000 tonnes of cargo throughput to deliver total Port tonnage throughput of 3,280,000tonnes by 2030. Anticipated delivery consisting of:

- Covered storage 2.8ha
- Open storage 6.1ha

- Construction of warehousing and open storage areas for marine related industrial use and port centric activities
- Construction of internal road network
- Provision of foul water infrastructure
- Provision of lighting and services
- Provision of security fencing

Open storage uses (predicted for Phase 2 and 3):

- Breakbulk and project cargo such as steel sections/reinforcement, timber, palletised fuel/fertiliser, wind turbine blades etc. (stored 10m high)
- Loose cargoes such as woodchip biomass fuel (stored 6m high)
- Scrap metal (stored 8m high)
- Storage of containers (up to 3nr high) approx. 8m high with handling equipment up to 17m height

Covered storage (predicted for Phase 2 and 3):

- Warehousing (up to 20m height)
- Storage tanks (up to 15m height)

3.2.3.2.3 Infilling (Phase 1)

The top 200mm of topsoil shall be stripped across the extents of the Durnish lands, and shall be re-used in the formation of the berm required for the landscaping boundary treatment. The exposed sub-base shall be seeded with a clover mix to bind the material together.

Suitable infill material shall be sourced from authorised quarries, and shall be imported by road to raise the level of the existing Durnish lands to a finish ground level of +4.44mOD (including capping and surfacing). It is anticipated that this material can and will be sourced locally within the region and from facilities which already have the necessary consents and licensing in place for the winning and haul of such material. Consequently, there is no obligation on this project to secure planning permission or other consent for sourcing that material, or to undertake EIAR in respect to winning the material.

The anticipated volumes and type of fill material required to meet the design ground levels for Durnish lands are set out as follows:

Assuming filling of Phase 1 in a single phase

- Circa 521,000m^3 of imported material (equating to circa 937,800T based on a conversion of 1.8T/m^3)

- Circa 71,100m^3 of surfacing (equating to circa 167,100T based on a conversion of 2.35T/m^3)

Or alternatively,

Assuming filling of Phase 1 as sub-phases:

Phase 1A

- Circa 195,500m^3 of imported material (equating to circa 351,900T based on a conversion of 1.8T/m^3)
- Circa 28,000m^3 of surfacing (equating to circa 65,800T based on a conversion of 2.35T/m^3)

Phase 1B

- Circa 115,000m^3 of imported material (equating to circa 207,000T based on a conversion of 1.8T/m^3)
- Circa 13,600m^3 of surfacing (equating to circa 31,950T based on a conversion of 2.35T/m^3)

Phase 1C

- Circa 210,500m^3 of imported material (equating to circa 378,900T based on a conversion of 1.8T/m^3)
- Circa 29,500m^3 of surfacing (equating to circa 69,350T based on a conversion of 2.35T/m^3)

3.2.3.2.4 Surfacing

The surfacing shall be heavy duty impermeable surfacing, designed to take account of the proposed operational usage and associated loadings.

3.2.3.2.5 Access to Durnish Lands

3.2.3.2.5.1 Roundabout construction

It is proposed to construct a roundabout on the existing port access road to provide the main access into the developed Durnish Lands and designed to the Design Manual for Roads and Bridges (DMRB) adoptable standards.

3.2.3.2.5.2 Mid-Point Access to Durnish Lands

The Foynes Engineering lean-to structure shall be removed in order to facilitate the construction of the mid-point access to the Durnish Lands and these works have been assessed in the EIAR.

3.2.3.2.5.3 Access Structures

In order to facilitate access into the Durnish Lands, 2 No. crossing structures are required to provide access across the existing OPW drainage channel.

3.2.3.2.6 Warehousing

3 No. Warehouse units and an area of open/container storage are proposed as part of Phase 1. Warehouses to be constructed on the Durnish Lands shall be similar to the typical Argosea Foynes Warehouses which are typically approximately 50m wide x 80m long portal frame structures, with a pitch roof height of approximately 15m. Warehousing shall have a Finished Floor Level of +4.74mOD Malin. Subject to the requirements of the end user, the warehousing may be combined as one integrated building (with dividing walls) or 3 no. individual units with a 2.5m wide gap between them.

3.2.3.2.7 Provision of New Port Security Kiosk and Barrier

As part of the development works, it is proposed to provide a new security kiosk and access barriers further south along the existing port access road located at the East Entrance to Foynes Port.

3.2.3.2.8 Storm and Foul Water Drainage

Storm Water Drainage- The storm water drainage system for the Durnish Lands has been designed in accordance with SuDS principles to avoid putting any further pressure on the existing OPW drainage channels or attenuation pond.

In line with SuDS principles, it is proposed that the required storage volume of 9,200m^3 will be accommodated within the permeable imported fill over the site development.

Storm drains will collect all surface water and convey it through full retention interceptors (to collect hydrocarbons and silt) and the stormwater will then be conveyed through perforated pipes to allow percolation into the infilled ground. It is proposed that hydro-brakes will be installed at the end of each perforated drainage pipe run to ensure the existing discharge rate of 0.164m^3/s into the drainage channel is respected in the future development

In addition, the opportunity afforded by the proposed site works has been taken to propose an extension to the size of the existing OPW attenuation pond by 2,000m^2 as a failsafe measure and contribution towards extended flood protection upstream. This will allow a further storage volume of circa 5,000m^3 of influent stormwater during the upper tidal cycle when the outfall (near low water) is not operational. This represents approximately double the storage capacity in the current attenuation pond. The stormwater design of the site has been assessed using catchment hydrological analysis and rainfall intensities for varying durations at a 1:100 year return period event.

3.2.3.2.8.1 Foul Drainage

Foul (sewer) drainage arrangements have been designed and are included as part of this proposal. The foul sewer water arrangement has been designed in the context of the existing infrastructure regime and particularly, the absence of public foul sewer mains servicing the Port and the Port expansion area, the distance and limited capacity of the existing treatment plan serving the town of Foynes, and, the opportunity presented by the size of the Durnish lands to provide for a self-sufficient solution.

The preferred design solution, has derived from consideration of a number of waste-water design options explores as part of the EIAR process and is considered consistent with best practice having regard to the locational and site-specific circumstances. Foul water arrangements will be implemented on a phased basis consistent with each of the planned phases of development. Each phase will involve the implementation of a package treatment system which when implemented collectively, will service the entire Durnish lands, designed with sufficient capacity to accommodate predicted loadings (generated from the 'population equivalent' (PE) of the anticipated number of employees). This approach allows for the foul wastewater treatment system to be individually sized for each development phase to maximise efficiency and afford a level of flexibility for future development given its long programme duration and uncertain land usage requirements of subsequent phases (beyond the immediate known requirements of Phase 1). The table below shows the respective increase in Population Equivalent for each proposed phase of the Durnish Lands development.

Table 3.1: Phase 1 – Phase 3 Population Equivalent

Phase	Occupancy	Population Equivalent (PE)
PHASE 1	48	20
PHASE 2	24	10
PHASE 3	48	20
TOTAL	**120**	**50**

For the design of the Phase 1 treatment system, a factor of safety of 1.25 was applied to the occupancy figure for Phase 1. Therefore, an occupancy figure of 60 personnel was considered and a design population equivalent of 30 was used in the system design.

The package treatment system proposed for Phase 1 is a Klargester BioDisc BE (or similar), which provides both primary and secondary treatment of foul waters. Preliminary sizing of packaged system for 30pe is approx. 2.45m wide x 3.34m long, x 3.3m deep.

See Figure 2.8 for typical package treatment system proposed.

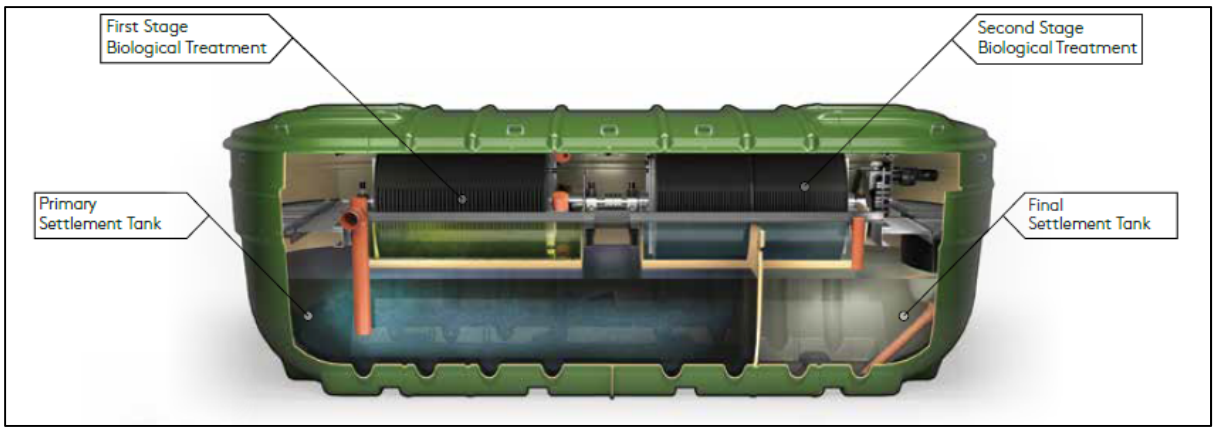

Figure 3.8 Typical Package Treatment Plant (source Kingspan Klargester BioDisc©)

In line with EPA Guidance, the treated effluent will be subjected to tertiary treatment by the means of a polishing filter which also acts as a percolation area to redistribute the treated and polished effluent to the groundwater. It is proposed to use a stratified sand polishing filter to provide the dual function of polishing the effluent and also infiltrating the treated effluent to the groundwater. The design arrangement is in accordance with EPA Code of Practice guidance and European standards.

This polishing filter shall be a minimum of 0.9m deep, with material graded as specified in EPA Guidance, underlain with imported fill material above the in-situ sub-soil/water table. The base of the proposed polishing filter shall be a minimum of 1.2m above the existing water table/bed rock within the existing ground strata. See Figure 2.9 below for typical make-up of sand polishing filter.

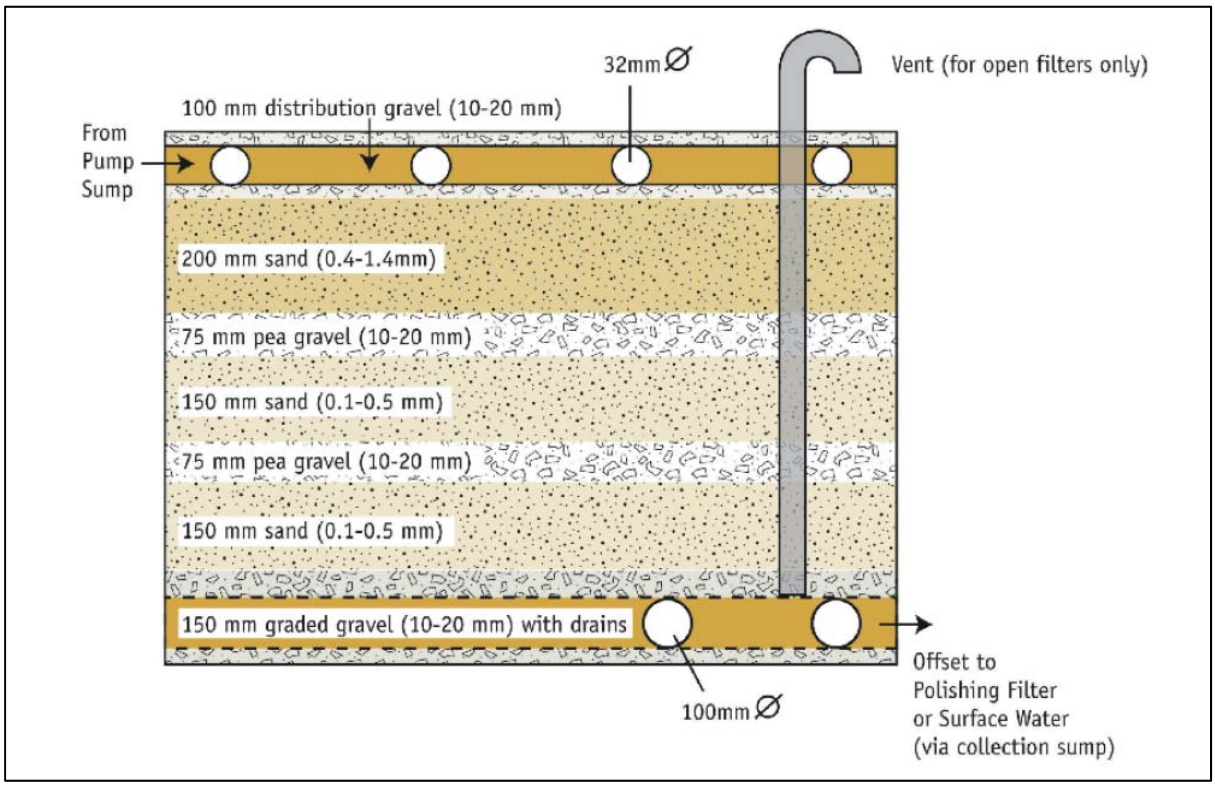

Figure 3.9 Typical Stratified Sand Polishing Filter (Source- EPA Guidance)

This design arrangement has been based on site-specific percolation testing taking account of land raising and the type of material that will be required to provide for appropriate percolation.

These design details provide for the warehousing units proposed as part of Phase 1 and for the WC which is located within the proposed security kiosk. This will be carried by a foul pipe from the kiosk, via the proposed crossing structure, to the package treatment plant being provided for the warehousing as above.

3.2.3.2.9 Water Supply

Water supply will be by connection to the local mains system within the existing port area.

3.2.3.2.10 Mechanical and Electrical Services

The proposed lighting for the general working areas/storage area will comprise 30.0m high; base hinged raising and lowering masts with multiple floodlight arrangements units and light cowls for light pollution control. Lighting will be designed to provide an average lighting level of 30-50 lux for storage and operational areas and an average of 20lux for internal access roads. 8m high lighting standards will be provided along internal roads and footpaths. The lighting will be designed to prevent direct glare into surrounding properties and illumination of the night sky.

In accordance with the mitigation measures outlined in Chapter 7 of the EIAR, the positioning of the proposed high mast lights has been refined and light shields added to ensure the lux levels along the Southern and Eastern boundaries of the Durnish lands do not exceed 5lux.

Power supply will be by connection to the local electricity grid system via a proposed ESB substation to be constructed at the South-Western boundary of the Durnish Lands.

3.2.3.2.11 Fencing and Security

Secure fencing will be provided along the perimeter of the developed Phase 1 lands. Fencing shall be in keeping with the panel mounted fencing currently used around the Port lands, and shall be 2.4m high panel fencing with a close mesh profile (5mm dia. steel wire with a 200x25mm mesh aperture), mounted on RHS posts with a bracket fixing system.

Fencing will be implemented in phases commensurate with the phased implementation of the development and provided to securitise each of those areas. This is proposed as follows:

3.2.3.2.11.1 Phase 1A

- Circa 800m of 4m high noise barrier
- Circa 930m of 2.4m high fencing
- 5 No. gates

3.2.3.2.11.2 Phase 1B

- Circa 630m length of 2.4m high fencing

- 2 No. gates

3.2.3.2.11.3 Phase 1C

- Circa 670m length of 2.4m high fencing

As part of the mitigation measures outlined in EIAR Chapter 11 (Noise & Vibration), an 800m long, 4m high noise barrier is to be provided along the Southern and Western boundaries of the Phase 1a development area. In this case, the noise barrier also acts to secure the perimeter along these boundaries in lieu of security fencing.

3.2.3.2.12 Boundary Treatment

Suitable planting will be provided to the external perimeter of the raised lands to provide a visual barrier between the developed site and the neighbouring lands.

At the beginning of the Phase 1 development, the stripped topsoil will be profiled to form a landscaping berm along the Northern, Eastern, Southern boundaries and part of the Western boundary of the Durnish Lands. The top level of this berm will be +4.44mOD (in keeping with the proposed fill levels across the site).

Planting will be carried out along the slope of the berm, extending to the crest, with the width of proposed planting varying dependent upon the width of the existing boundary planting which is to be retained and "gapped up".

Due to the exposed coastal nature of the Durnish Lands, tolerant hardy species with deeper planting depths will be planted, allowing for a careful profile of very hardy species at the front, and taller screening trees at the rear. First line of defence will include hardy salt tolerant native shrub species like Hawthorn, Blackthorn, Goat Willow, Gorse with low canopy trees Alder and Mountain Ash. This protects the second line of defence that will include native shrubs like Holly, Broom, Hazel and high canopy trees Oak, Ash, Scots Pine.

3.2.3.2.13 Safety Equipment

Fire hydrants will be provided at regular intervals in all working and storage areas.

3.2.3.2.14 Durnish Lands General Construction Sequence

3.2.3.2.14.1 Single phase Construction

The general sequence of the development of the Durnish Lands will be as set out below:

- Stripping of topsoil across the existing site and seeding with clover mix
- Profiling of topsoil to form berm for boundary treatment along perimeter of Durnish Lands and planting of visual buffer

- Raising of existing lands to a level of +4.44mOD using imported fill material (whilst providing 5m wayleave for OPW access to drainage channel)
- Roundabout construction on Port access road and main access road into developed lands
- Construction of new Port Security kiosk and access barriers
- Demolition of existing shed "lean to" to facilitate construction of mid-point access road into developed lands
- Crossing structures over existing OPW drainage channel along Western boundary of developed lands
- Hardstanding construction and appropriate surfacing for open and covered storage
- Internal road and footpath construction
- Provision of secure fencing and services (power supply, water, drainage, lighting, attenuation pond extension)
- Erection of warehousing for covered storage with FFL of +4.74mOD Malin

3.2.3.2.14.2 Indicative Phased Programme

In the event that the development of the Durnish Lands is progressed on a phased basis, then the anticipated phasing is as outlined below.

Phase 1A (as outlined on Figure 3.7)

- Stripping of topsoil across the existing site and seeding with clover mix
- Profiling of topsoil to form berm for boundary treatment along perimeter of Durnish Lands and planting of visual buffer
- Raising of Phase 1A portion of existing lands to a level of +4.44mOD using imported fill material (whilst providing 5m wayleave for OPW access to drainage channel)
- Demolition of existing shed "lean to" to facilitate construction of mid-point access road into developed lands
- Roundabout construction on Port access road and main access road into site
- Construction of new Port Security kiosk and access barriers
- Crossing structures over OPW drainage channel
- Internal road and footpath construction
- Hardstanding construction and surfacing
- Provision of secure fencing and services (power supply, water, stormwater drainage, foul treatment system, lighting)
- Erection of warehousing for covered storage with FFL of +4.74mOD Malin

Phase 1B (as outlined on Figure 3.7)

- Raising of Phase 1B portion of existing lands to a level of +4.44mOD using imported fill material (whilst providing 5m wayleave for OPW access to drainage channel)

- Provision of stormwater drainage and fencing

Phase 1C (as outlined on Figure 3.7)

- Raising of Phase 1C portion of existing lands to a level of +4.44mOD using imported fill material (whilst providing 5m wayleave for OPW access to drainage channel along northern perimeter of site)
- Provision of stormwater drainage and fencing

3.2.3.2.15 Equipment

Handling operations in the developed site will be dependent on the type of cargo which is to be accommodated at any given time. However the equipment will likely comprise some or all of those described in the following sections on an "as required" basis. The details and dimensions of particular types of equipment will vary from manufacturer to manufacturer and final dimensions will only be determined when the supplier of the equipment has been identified.

Dimensions considered in preparation of the EIAR are based on typical dimensions of equipment currently available in the marketplace. Some variation may occur in the final items of equipment provided.

Port handling equipment such as mobile cranes, mobile hoppers, mobile weighbridges, straddle carriers, loading shovels, reach stackers, mast lift trucks, or similar will be used as and when required.

3.2.3.2.15.1 Reach Stacker

Reach stackers are front lifting items of equipment which use telescopic arms to place containers at height in stacks. This type of equipment will be used in the Durnish Lands to handle containers up to 3nr high (8m high).

3.2.3.2.15.2 Straddle Carrier

Diesel powered straddle carriers are used to lift containers and deposit them in container stacks. They are mounted on rubber tyres and are usually approximately 16.5m in height. They can be used to stack containers up to 4 high (approximately 11m in height).

3.2.3.2.16 Operational Access

Access to the developed site will primarily be via the newly constructed roundabout on the existing port access road. An additional point of access is also proposed in the centre of the developed lands, created as a new access point from the existing port access road, as shown on the relevant planning drawings.

3.2.3.2.17 Rail Use

No works are proposed to the existing rail line. The future operational use of the rail line is under constant review but at this time, the operational reuse of the rail line is subject to a specific end user

requirements and/or viability of investment in the upgrade in the infrastructure. Despite that, the proposal seeks to retain and safeguard the integrity of that line and infrastructure.

3.2.3.3 Construction Activities

3.2.3.3.1 Jetty Extension

3.2.3.3.1.1 Programme

It is estimated that the proposed construction works will be undertaken during a construction period of approximately 12 months.

3.2.3.3.1.2 Temporary Site Compound

An area will be required for the establishment of the Contractor's site compound. The site compound will be used for the Contractor's site office accommodation and facilities and will include an area for temporary storage of construction materials. A suitable area will be made available on existing port lands close to the site of the proposed works.

3.2.3.3.1.3 Site Access

Existing port operations will continue as normal during the construction period. Access to the site will be via the Foynes Port Access Road (which can be accessed from the adjacent existing port access road off the N69), and along the internal port roads. In general all construction related traffic will use the port entrance to the east of Foynes village in order to avoid traffic passing through the village. Suitable traffic management and other systems will be put in place as required to minimise disruption to existing activities during the construction period.

3.2.3.3.2 Durnish Lands Development

3.2.3.3.2.1 Programme

Assuming that the development of the Durnish Lands is undertaken on a single phase basis, it is estimated that the proposed construction works will be undertaken during a construction period of approximately 39 months.

It is envisaged that the development of the Durnish Lands will be commenced whilst the jetty extension works are being undertaken. This is shown in the draft programmes included with the main EIAR report. Alternatively, subject to the availability of funding or potential tenant requirements, the development of the Durnish Lands may be undertaken in sub-phases similar to that set out below under the sub heading 'construction employment'.

The anticipated timeline from the overall strategic programme for the sub-phased development of Phase 1 of the Durnish Lands is outlined below:

- Phase 1A Durnish Development (Expected commencement 2019)
- Phase 1B Durnish Development (Expected commencement 2024)

- Phase 1C Durnish Development (Expected commencement 2027)

3.2.3.3.2.2 Temporary Site Compound

A temporary site compound will be required for the proposed works. A suitable area will be made available within the site of the proposed works. In the event that the works are progressed in sub-phases, then the locations of the proposed site compounds will be positioned accordingly.

3.2.3.3.2.3 Site Access

Access to the Durnish Lands development site will be via the existing Foynes Port Access Road which can be accessed from the adjacent N69 road. In general all construction related traffic will use the port entrance to the east of Foynes village in order to avoid traffic passing through the village. Suitable traffic management and other systems will be put in place as required to minimise disruption to existing activities during the construction period.

3.2.3.4 Employment

It is anticipated that the total potential for employment during construction phase will range from a minimum 21 no. people to 35 no. people across both the jetty construction works and the port expansion at the Durnish lands during an envisaged 39-month construction period.

On average, 15 no. personnel will be employed for the full duration of the jetty construction works over an anticipated 12 month construction programme.

Construction employment of the Durnish lands development will be more dependent on the implementation of the phasing based on implementation of the proposed phasing regimes.

It is anticipated that the operational phase of the project will result in the generation of 120 on-site port related jobs. This calculation is based on the consideration of land area in the context of the existing use, and user types currently operating within the existing Port estate. It does not take account potential residual effects of off-site support services upon which the new operations might require and which might result in off-site employment opportunities.

3.2.3.5 Pollution Control

The construction works will involve Civil and Marine Engineering works and Mechanical and Electrical works. All machinery used during the construction phase of the works will be required to be in good working order and free from oil and hydraulic fluid leakages.

If machinery maintenance has to take place, it will be carried out at the allocated Contractor's compound which will be located away from the adjacent waters. Fuel for machinery will be required to be stored in a secure and bunded area. For construction operations such as the infilling of the Durnish Lands, pollution control measures such as wheel wash facilities will be put in place.

3.2.3.6 Site Safety

Safety will be of prime importance during the construction works. The works will be subject to the Safety, Health and Welfare at Work Act 2005 and the Safety, Health and Welfare at Work (Construction) Regulations, 2006.

The Principal Contractor will be responsible for the control and co-ordination of health and safety during the works and will be appointed as the project supervisor (construction stage).

3.2.3.7 Waste Disposal

Contractors working on site during the works will be responsible for the collection, control and disposal of all wastes generated by the works.

3.2.3.8 Operational Activities

3.2.3.8.1 Maintenance

When construction work has been completed, the jetty extension and Durnish lands development will require little by way of maintenance.

3.2.3.8.2 Pollution Control

Surface water from the new working area on the jetty extension and the developed Durnish Lands will be collected by a system of drainage channels and gullies. The surface water will be discharged via interceptors to ensure that no pollution is released into the surrounding waters.

By 2020, it is the intention of SFPC to retrofit dust suppression hoppers to two of the existing hoppers used in the vicinity of the proposed jetty extension. This will assist with the control of dust from the jetty operations.

3.2.3.9 Duration of the Project

Planning permission in respect to development work is being sought for 10 years to ensure implementation for all of the above works. The duration of the operational element of the project can for the purpose of EIAR, be considered as ‘permanent’.

3.2.4 Risk of Accidents

The risk of accidents can arise during construction and operation phases as part of normal construction measures and port related operations and activities. The risk of accidents and mitigation measures considered necessary to address same, has been considered and is presented under the assessment of the each environmental variable assessed in the EIAR.

3.2.5 Project Change and Decommissioning

There are no plans proposed for the decommissioning of the project given that the nature of the project – i.e. 'port development' can in this instance, be considered as a 'permanent' operation. The decommissioning of specific buildings or layouts is likely to form part of subsequent planning consent procedures and in the unlikely event that specific decommissioning requirements are necessary, appropriate mitigation can be applied to those consents.

3.2.6 Other Related Projects and Potential for Ex-Situ Effects

The proposed development does not involve or rely on any other related projects or give rise to development occurring outside the site that should be considered as part of the EIAR. The applicant is satisfied that all projects are contained within the confines of the development (and EIAR) boundary as presented and assessed in the EIAR.

4 SCREENING FOR APPROPRIATE ASSESSMENT

4.1 EUROPEAN SITES IN PROXIMITY TO THE PORT OF FOYNES

4.1.1 Establishing an Impact Pathway

As described in Section 3, the site of proposed development comprises two inter-related and inter-dependent elements. The site of the proposed East Jetty extension works, and removal and relocation of the existing small craft landing pontoon to an area identified at the west side of the existing West Quay is located within the Lower River Shannon SAC (Site Code 002165) and the River Shannon and River Fergus Estuaries SPA (Site Code 004077) as illustrated in Figure 4.1. The coastal boundary of these European sites runs along a flood berm on the bank of the Robertstown River at the site of the proposed Durnish Lands development. The site of proposed development at Durnish contains land within the SAC and SPA for approximately 550m along the flood berm between the site of proposed development and the Robertstown River, although no development is proposed within the European sites.

NPWS (2012b) notes that the Lower River Shannon SAC overlaps with five other European sites and that it is also adjacent to a further European site, and advise that the conservation objectives for Lower River Shannon SAC should be used in conjunction with those for the overlapping and adjacent sites as appropriate.

Many screening analyses consider European sites within a 15km radius of a proposed plan or project, principally as a precautionary measure. This exercise will screen the proposed development against those European sites for which a pathway of effect can be reasonably established between a receptor and the source of effect.

The possibility of significant effects is considered in this report using the source-pathway-receptor model. 'Source' is defined as the individual elements of the proposed works that have the potential to affect the identified ecological receptors. 'Pathway' is defined as the means or route by which a source can affect the ecological receptor. 'Ecological receptor' is defined as the Special Conservation Interests (for SPAs) or Qualifying Interests (of SACs) for which conservation objectives have been set for the European sites being screened. Each element can exist independently however an effect is created when there is a linkage between the source, pathway and receptor.

Possible effects may arise under four broad impact themes:

- Water quality and habitat deterioration
- Underwater noise and disturbance
- Aerial noise and visual disturbance
- Habitat Loss

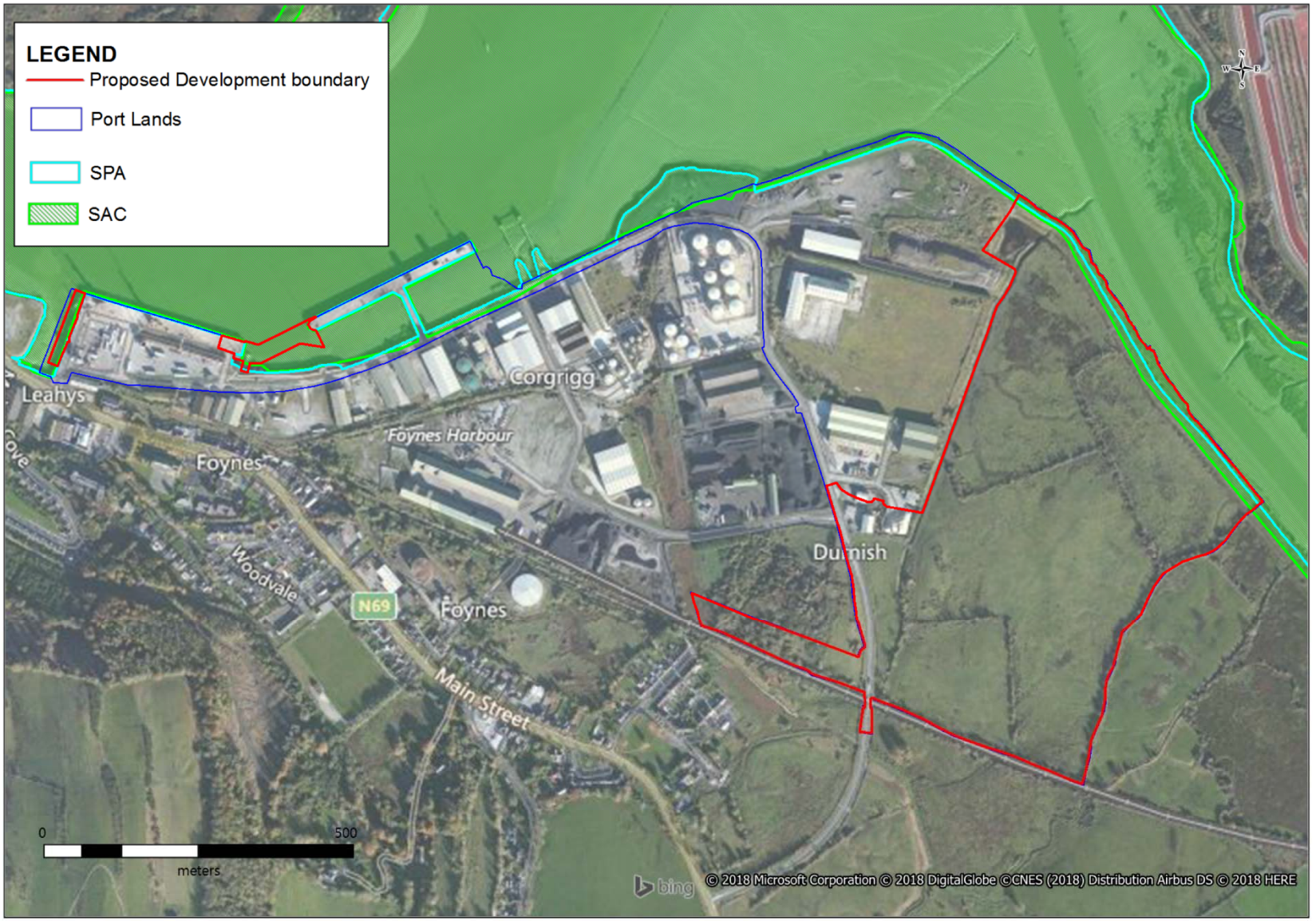

Figure 4.1 Proposed development within the European sites

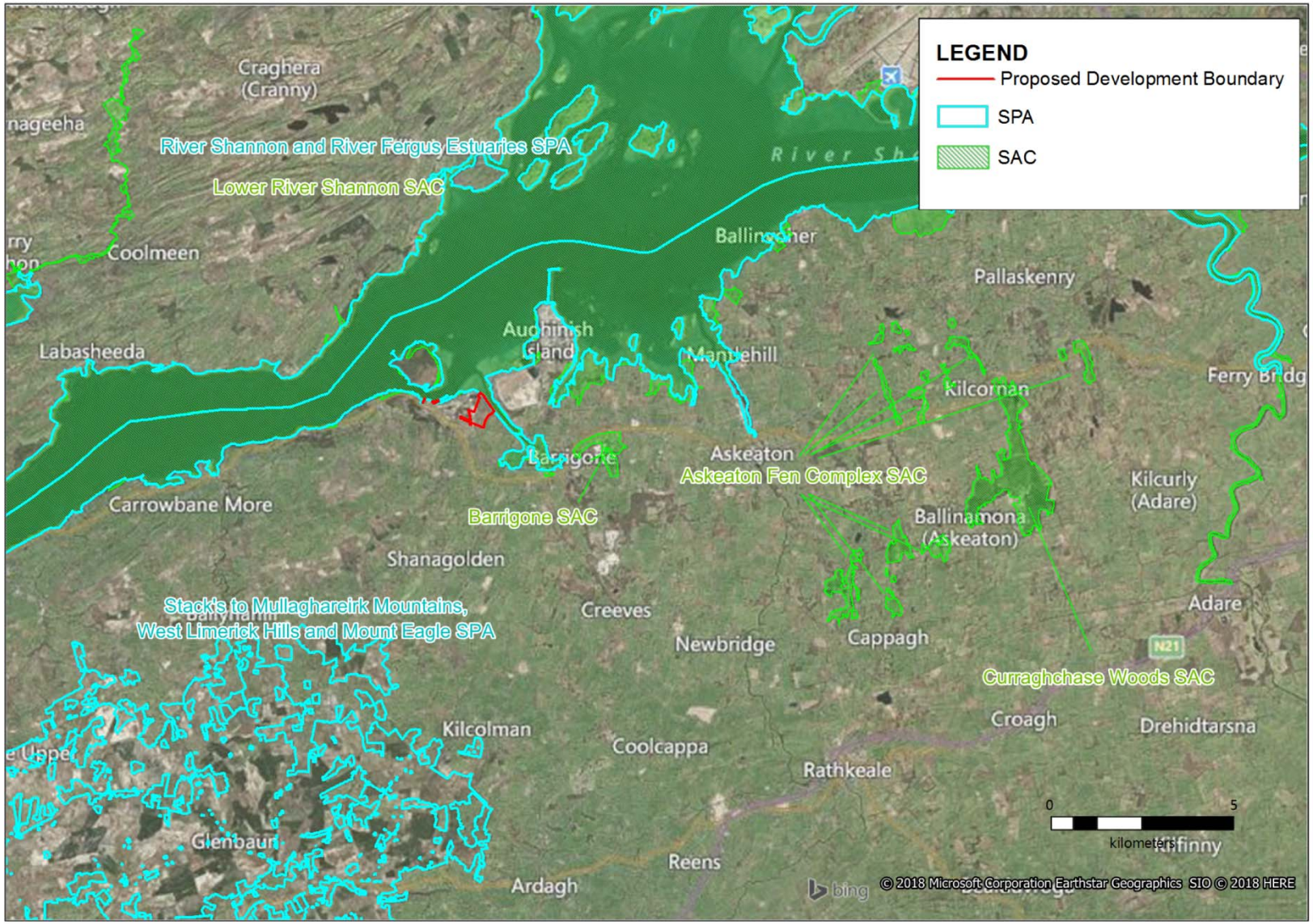

Figure 4.2 European sites around the Proposed development

The proposed marine development (East Jetty extension and relocation of a public pontoon) is located within the River Shannon and River Fergus SPA and the Lower River Shannon SAC. The coastal boundary of these European sites runs along a flood berm on the bank of the Robertstown River at the site of the proposed Durnish Lands development. The site of proposed development at Durnish contains land within the SAC and SPA for approximately 550m along the flood berm between the site of proposed development and the Robertstown River, although no development is proposed within the European sites.

The Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA will be considered in this exercise. They are described further in Sections 4.1.6 and 4.1.7 respectively.

There is a possibility of Likely Significant Effects (LSEs) on these two European sites under any of the four broad impact themes and this is discussed further in Section 4.2.

4.1.2 Stack's to Mullaghareirks, West Limerick Hills and Mount Eagle SPA

Stack's to Mullaghareirks, West Limerick Hills and Mount Eagle SPA is located 6.2km southwest and inland of the site of proposed development, and is illustrated in Figure 4.2. It is a large site, consisting of a variety of upland habitats, though almost half is afforested. It is designated for the 45 pairs of Hen harrier that breed there (NPWS, 2016). SNH (2016) notes that Hen harrier has a core range of 2km, with a maximum range of 10km. The proposed development is beyond the core range of the species but is within reach of its maximum range. Hen harriers are often seen in coastal landscapes during winter months. Chapter 7 of the EIA Report (Section 7.3.3) was checked to see if Hen harrier was observed at the Port or Durnish sites during surveys conducted monthly between November 2015 and March 2017. The species was not recorded.

A pathway of effect cannot reasonably be established between Hen Harrier and the likely sources of disturbance that may arise as a result of the construction or operation of the proposed development. Stack's to Mullaghareirks, West Limerick Hills and Mount Eagle SPA is discounted from any further analysis.

4.1.3 Askeaton Fen Complex SAC

Askeaton Fen Complex SAC is located 10.5km east and southeast of the site of proposed development and is illustrated in Figure 4.2. It consists of a number of small fen areas to the east and southeast of Askeaton. It is designated for the occurrence of 2 Annex I habitat types (Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210] and Alkaline fens [7230]); each of which exhibit many sub-types (NPWS, 2016). These wetland habitats of fen, reedbeds, open water, marsh and wet grassland are also valuable in that they supply a refuge for fauna in an otherwise intensively managed countryside.

The SAC is hydrologically connected to the River Shannon by two surface waterbodies, the River Deel and Washpool Creek. The SAC is 9.5km upstream of the River Shannon via the River Deel and

5km upstream of the River Shannon via Washpool Creek. The point where each of these two rivers join with the River Shannon are 8km and 14km upriver from the site of proposed development respectively.

A pathway of effect cannot reasonably be established between these fen habitats and the likely sources of water quality deterioration or pollution that may arise as a result of the construction or operation of the proposed development. Askeaton Fen Complex SAC is discounted from any further analysis.

4.1.4 Barrigone SAC

Barrigone SAC is a terrestrial site located 2.4km southeast of the site of proposed development. It is illustrated in Figure 4.2. It comprises an area of dry, species-rich, calcareous grassland and patches of scrub on a gentle, north-east-facing slope. It is designated for the occurrence of 3 Annex I habitat types (*Juniperus communis* formations on heaths or calcareous grasslands [5130]; Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210]; and Limestone pavements [8240]) and 1 Annex II species (Marsh Fritillary *Euphydryas aurinia* [1065]) (NPWS, 2016).

A pathway of effect cannot reasonably be established between these grassland and scrub habitats at Barrigone and the construction or operation of the proposed development at the Port. Chapter 7 of the EIA Report (Section 7.3.2.6) was checked to see if Marsh Fritillary or its larval food plant was recorded at the site of proposed development. Neither the butterfly species or Devil's-bit scabious *Succisa pratensis* was recorded. Barrigone SAC is discounted from any further analysis.

4.1.5 Curraghchase Woods SAC

Curraghchase Woods SAC is located 13km east of the site of proposed development and is illustrated in Figure 4.2. It is designated for the occurrence of 2 Annex I habitat types (Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)* [91E0]; and *Taxus baccata* woods of the British Isles [91J0]); and the hibernation site of 1 Annex II species (Lesser Horseshoe Bat *Rhinolophus hipposideros* [1303]) (NPWS, 2016).

A pathway of effect cannot reasonably be established between these woodland habitats at Curraghchase and the construction or operation of the proposed development at the Port. Chapter 7 of the EIA Report (Section 7.3.2.5) was checked to see if Lesser Horseshoe Bat was recorded at the site of proposed development. It was recorded there, but the analysis presented therein also notes that Lesser Horseshoe forages in fairly close proximity to its roosts, and not 13km from them. The assessment notes that with boundary hedgerow and treeline habitats being retained, there is no likely significant residual impact predicted upon Lesser Horseshoe Bat. Curraghchase Woods SAC is discounted from any further analysis.

4.1.6 Lower River Shannon SAC

The Lower River Shannon SAC is a European site designated for 14 habitat types and 7 species annexed to the Habitats Directive 92/43/EEC. Qualifying Interests and Conservation Objectives of Lower River Shannon SAC are described below.

4.1.6.1 Qualifying Interests

Annex I Habitats

- Sandbanks which are slightly covered by sea water all the time [1110]
- Estuaries [1130]
- Mudflats and sandflats not covered by seawater at low tide [1140]
- *Coastal lagoons [1150] (a priority habitat)
- Large shallow inlets and bays [1160]
- Reefs [1170]
- Perennial vegetation of stony banks [1220]
- Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
- Salicornia and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]
- Mediterranean salt meadows (Juncetalia maritimi) [1410]
- Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]
- Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]
- *Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] (a priority habitat)

Annex II Species

- *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029]
- *Petromyzon marinus* (Sea Lamprey) [1095]
- *Lampetra planeri* (Brook Lamprey) [1096]
- *Lampetra fluviatilis* (River Lamprey) [1099]
- *Salmo salar* (Salmon) [1106]
- *Tursiops truncatus* (Common Bottlenose Dolphin) [1349]
- *Lutra lutra* (Otter) [1355]

4.1.6.2 Conservation Objectives

To restore or maintain (as applicable, set out below) the favourable conservation condition of the following Annex I habitat types and populations of Annex II species in the SAC, as defined by a range

of attributes and targets set out in the published site specific Conservation Objectives, Version 1.0 (published 07/08/2012) for the Lower River Shannon SAC:

Restore

Annex I Habitats

- To restore the favourable conservation condition of *Coastal lagoons in the SAC, as defined by 12 no. attributes and targets.
- To restore the favourable conservation condition of Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) in the SAC, as defined by 10 no. attributes and targets.
- To restore the favourable conservation condition of Mediterranean salt meadows (*Juncetalia maritimi*) in the SAC, as defined by 10 no. attributes and targets.
- To restore the favourable conservation condition of *Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) in the SAC, as defined by 13 no. attributes and targets.

Annex II Species

- To restore the favourable conservation condition of Freshwater Pearl Mussel in the SAC, as defined by 11 no. attributes and targets.
- To restore the favourable conservation condition of Sea Lamprey in the SAC, as defined by 5 no. attributes and targets.
- To restore the favourable conservation condition of Atlantic Salmon in the SAC, as defined by 6 no. attributes and targets.
- To restore the favourable conservation condition of Otter in the SAC, as defined by 8 no. attributes and targets.

Maintain

Annex I Habitats

- To maintain the favourable conservation condition of Sandbanks which are slightly covered by sea water all the time in the SAC, as defined by 3 no. attributes and targets.
- To maintain the favourable conservation condition of Estuaries in the SAC, as defined by 2 no. attributes and targets.
- To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in the SAC, as defined by 2 no. attributes and targets.
- To maintain the favourable conservation condition of Large shallow inlets and bays in the SAC, as defined by 2 no. attributes and targets.
- To maintain the favourable conservation condition of Reefs in the SAC, as defined by 3 no. attributes and targets.

- To maintain the favourable conservation condition of Perennial vegetation of stony banks in the SAC, as defined by 6 no. attributes and targets.
- To maintain the favourable conservation condition of Vegetated sea cliffs of the Atlantic and Baltic coasts in the SAC, as defined by 8 no. attributes and targets.
- To maintain the favourable conservation condition of Salicornia and other annuals colonizing mud and sand in the SAC, as defined by 10 no. attributes and targets.
- To maintain the favourable conservation condition of Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation in the SAC, as defined by 10 no. attributes and targets.
- To maintain the favourable conservation condition of *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) in the SAC, as defined by 10 no. attributes and targets.

Annex II Species

- To maintain the favourable conservation condition of Brook Lamprey in the SAC, as defined by 5 no. attributes and targets.
- To maintain the favourable conservation condition of River Lamprey in the SAC, as defined by 5 no. attributes and targets.
- To maintain the favourable conservation condition of Bottlenose Dolphin in the SAC, as defined by 3 no. attributes and targets.

4.1.7 River Shannon and River Fergus Estuaries SPA

The River Shannon and River Fergus Estuaries SPA is a European site designated for 21 species of wading or waterbird, and as a wetland site of international importance under the Birds Directive 2009/147/EC. Qualifying Interests and Conservation Objectives of River Shannon and River Fergus Estuaries SPA are described below.

4.1.7.1 Qualifying Interests

- Cormorant (*Phalacrocorax carbo*) [A017] (breeding + wintering)
- Whooper Swan (*Cygnus cygnus*) [A038] (wintering)
- Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] (wintering)
- Shelduck (*Tadorna tadorna*) [A048] (wintering)
- Wigeon (*Anas penelope*) [A050] (wintering)
- Teal (*Anas crecca*) [A052] (wintering)
- Pintail (*Anas acuta*) [A054] (wintering)
- Shoveler (*Anas clypeata*) [A056] (wintering)
- Scaup (*Aythya marila*) [A062] (wintering)

- Ringed Plover (*Charadrius hiaticula*) [A137] (wintering)
- Golden Plover (*Pluvialis apricaria*) [A140] (wintering)
- Grey Plover (*Pluvialis squatarola*) [A141] (wintering)
- Lapwing (*Vanellus vanellus*) [A142] (wintering)
- Knot (*Calidris canutus*) [A143] (wintering)
- Dunlin (*Calidris alpina*) [A149] (wintering)
- Black-tailed Godwit (*Limosa limosa*) [A156] (wintering)
- Bar-tailed Godwit (*Limosa lapponica*) [A157] (wintering)
- Curlew (*Numenius arquata*) [A160] (wintering)
- Redshank (*Tringa totanus*) [A162] (wintering)
- Greenshank (*Tringa nebularia*) [A164] (wintering)
- Black-headed Gull (*Chroicocephalus ridibundus*) [A179] (wintering)
- Wetland and Waterbirds [A999]

4.1.7.2 Conservation Objectives

To maintain the favourable conservation condition of the populations of species listed above in the SPA, as defined by attributes and targets set out in the published site specific Conservation Objectives, Version 1.0 (published 17/09/2012) for the River Shannon and River Fergus Estuaries SPA.

- The conservation objectives for the breeding and wintering population of Cormorant is defined and measured by 8 no. attributes and targets.
- The conservation objectives for each of the remaining 20 no. wintering populations of qualifying interest species are defined and measured by the same two attributes and targets.
- The conservation objective for wetland habitat is to maintain its favourable conservation condition in the SPA as a resource for the regularly-occurring migratory waterbirds that utilise it, defined and measured by 1 no. attribute and target.

4.1.8 Description of the River Shannon European site complex

The Lower River Shannon SAC site synopsis (NPWS, 2013) notes that this SAC is a very large site stretching along the Shannon valley from Killaloe in Co. Clare to Loop Head/Kerry Head, a distance of approximately 120km. The SAC includes the Shannon, Feale, Mulkear and Fergus estuaries, the freshwater lower reaches of the River Shannon (between Killaloe and Limerick), the freshwater stretches of much of the Feale and Mulkear catchments and the marine area between Loop Head and Kerry Head. Rivers within the sub-catchment of the Feale include the Galey, Smearlagh, Oolagh, Allaughaun, Owveg, Clydagh, Caher, Breanagh and Glenacarney. Rivers within the sub-catchment of

the Mulkear include the Killeenagarriff, Annagh, Newport, the Dead River, the Bilboa, Glashacloonaraveela, Gortnageragh and Cahernahallia.

The River Shannon and River Fergus SPA site synopsis (NPWS, 2015) notes that this SPA comprising the estuaries of the River Shannon and River Fergus, form the largest estuarine complex in Ireland. The SPA comprises the entire estuarine habitat from Limerick City westwards as far as Doonaha in Co. Clare and Dooneen Point in Co. Kerry. To the west of Foynes, a number of small estuaries form indentations in the predominantly hard coastline, namely Poulnasherry Bay, Ballylongford Bay, Clonderalaw Bay and the Feale or Cashen River estuary.

4.1.8.1 Habitats of the European sites

Both the Fergus and inner Shannon Estuaries contain vast expanses of intertidal mudflats, often fringed with saltmarsh vegetation. The smaller estuaries also feature mudflats, but have their own unique characteristics.

The site supports an excellent example of a large shallow inlet and bay. Littoral sediment communities in the mouth of the Shannon Estuary occur in areas that are exposed to wave action and also in areas extremely sheltered from wave action. Characteristically, exposed sediment communities are composed of coarse sand and have a sparse fauna. Species richness increases as conditions become more sheltered.

The intertidal reefs in the Shannon Estuary are exposed or moderately exposed to wave action and subject to moderate tidal streams. Known sites are steeply sloping and show a good zonation down the shore. Other coastal habitats that occur within the site include stony beaches and bedrock shores, shingle beaches, sandbanks which are slightly covered by sea water at all times and sand dunes.

Freshwater rivers have been included in the site, most notably the Feale and Mulkear catchments, the Shannon from Killaloe to Limerick (along with some of its tributaries, including a short stretch of the Kilmastulla River), the Fergus up as far as Ennis, and the Cloon River. These systems are very different in character: the Shannon is broad, generally slow flowing and naturally eutrophic; the Fergus is smaller and alkaline; while the narrow, fast flowing Cloon is acid in nature. The Feale and Mulkear catchments exhibit all the aspects of a river from source to mouth.

Semi-natural habitats, such as wet grassland, wet woodland and marsh occur by the rivers, but improved grassland is the most common habitat type. One grassland type of particular conservation significance, *Molinia* meadows, occurs in several parts of the site and the examples at Worldsend on the River Shannon are especially noteworthy. Floating river vegetation characterised by species of water-crowfoot and the moss *Fontinalius antipyretica* are present throughout the major river systems within the site. The rivers contain an interesting bryoflora with *Schistidium alpicola* var. *alpicola* recorded from in-stream boulders on the Bilboa, new to Co. Limerick.

Alluvial woodland occurs on the banks of the Shannon and on islands in the vicinity of the University of Limerick. The woodland is up to 50m wide on the banks and somewhat wider on the largest island. The herbaceous layer consists of tall perennial herbs. On slightly higher ground above the wet woodland and on the raised embankment remnants of mixed oak-ash-alder woodland occur. The ground flora is species-rich.

There is a small area of actively regenerating cut-away raised bog at Ballyrorheen. It is situated approximately 5 km north-west of Cappamore in Co. Limerick. The bog contains some wet areas with good cover of bog mosses, but the site is being invaded by Downy Birch scrub woodland. Both commercial forestry and the spread of Rhododendron has greatly reduced the overall value of the site.

A number of plant species that are listed in the Irish Red Data Book occur within the site, and several of these are protected under the Flora (Protection) Order, 2015.

4.1.8.2 Marine Biodiversity

There is a resident population of Bottle-nosed Dolphin in the Shannon Estuary. This is the only known resident population of this Annex II species in Ireland. The population was estimated to be 140 ± 12 individuals in 2006.

Otter, a species also listed on Annex II of this Directive, is commonly found in the SAC.

Five species of fish listed on Annex II of the E.U. Habitats Directive are found within the site. These are Sea Lamprey (*Petromyzon marinus*), Brook Lamprey (*Lampetra planeri*), River Lamprey (*Lampetra fluviatilis*), Twaite Shad (*Allosa fallax fallax*) and Salmon (*Salmo salar*). The three lampreys and Salmon have all been observed spawning in the lower Shannon or its tributaries. The Fergus is important in its lower reaches for spring salmon, while the Mulkear catchment excels as a grilse fishery, though spring fish are caught on the actual Mulkear River. The Feale is important for both types. Twaite Shad is not thought to spawn within the site. There are few other river systems in Ireland which contain all three species of lamprey.

Two additional fish species of note, listed in the Irish Red Data Book, also occur, namely Smelt (Osmerus eperlanus) and Pollan (Coregonus autumnalis pollan). Only the former has been observed spawning in the Shannon. Freshwater Pearl Mussel (*Margaritifera margaritifera*), a species listed on Annex II of the E.U. Habitats Directive, occurs abundantly in parts of the Cloon River.

The marine biodiversity of the Shannon Estuary and more specifically at the site of proposed development is described further in EIAR Chapter 7, Section 7.3.1.

4.1.8.3 Avifauna

The site is designated a SPA of special conservation interest for 21 species and for holding an assemblage of over 20,000 wintering waterbirds. Overall, the Shannon and Fergus Estuaries support the largest numbers of wintering waterfowl in Ireland, and this SPA is the most important coastal wetland site in the country, regularly supporting in excess of 50,000 wintering waterfowl (57,133) - a concentration of international importance. The site has internationally important populations of:

- Light-bellied Brent Goose (494)
- Dunlin (15,131)
- Black-tailed Godwit (2,035)
- Redshank (2,645)

A further 17 species have populations of national importance:

- Cormorant (245)
- Whooper Swan (118)
- Shelduck (1,025)
- Wigeon (3,761)
- Teal (2,260)
- Pintail (62)
- Shoveler (107)
- Scaup (102)
- Ringed Plover (223)
- Golden Plover (5,664)
- Grey Plover (558)
- Lapwing (15,126)
- Knot (2,015)
- Bar-tailed Godwit (460)
- Curlew (2,396)
- Greenshank (61)
- Black-headed Gull (2,681)

These figures are five year mean peak counts for the period 1995/96 to 1999/2000. The site is among the most important in the country for several of these species, notably Dunlin (13% of national total), Lapwing (6% of national total) and Redshank (9% of national total).

The site also supports a nationally important breeding population of Cormorant (93 pairs in 2010), and other species that occur include:

- Mute Swan (103)
- Mallard (441)
- Red-breasted Merganser (20)
- Great Crested Grebe (50)
- Grey Heron (38)
- Oystercatcher (551)
- Turnstone (124)
- Common Gull (445)

A number of wintering gulls are also present, including Black-headed Gull (2,216; 1995/96), Common Gull (366; 1995/96) and Lesser Black-backed Gull (100; 1994/95). This is the most important coastal site in Ireland for a number of the waders including Lapwing, Dunlin, Snipe and Redshank. Apart from the wintering birds, large numbers of some species also pass through the site whilst on migration in spring and/or autumn. The site provides an important staging ground for species such as Black-tailed Godwit and Greenshank.

A number of species listed on Annex I to the Birds Directive breed within the site, but are not qualifying species. These include:

- Peregine Falcon (2-3 pairs)
- Sandwich Tern (34 pairs on Rat Island, 1995)
- Common Tern (15 pairs: 2 on Sturamus Island and 13 on Rat Island, 1995)
- Chough (14-41 pairs, 1992)
- Kingfisher

Other breeding birds of note include Kittiwake (690 pairs at Loop Head, 1987) and Guillemot (4,010 individuals at Loop Head, 1987).

Quoted SPA population figures are five year mean peak counts for the period 1995/96 to 1999/2000. The avifauna of the Shannon Estuary and more specifically at the site of proposed development is described further in EIAR Chapter 7, Section 7.3.3.

4.1.8.4 Threats and pressures within the River Shannon European site complex

There is a wide range of land uses within the site. The most common use of the terrestrial parts is grazing by cattle, and some areas have been damaged through over-grazing and poaching. Much of the land adjacent to the rivers and estuaries has been improved or reclaimed and is protected by embankments (especially along the Fergus estuary). Further, reclamation continues to pose a threat, as do flood relief works (e.g. dredging of rivers). Gravel extraction poses a major threat on the Feale.

In the past, cord-grass (*Spartina* sp.) was planted to assist in land reclamation. This has spread widely, and may oust less vigorous colonisers of mud and may also reduce the area of mudflat available to feeding birds.

Domestic and industrial wastes are discharged into the Shannon, but water quality is generally satisfactory, except in the upper estuary where it reflects the sewage load from Limerick City. Analyses for trace metals suggest a relatively clean estuary with no influences of industrial discharges apparent. Further industrial development along the Shannon and water polluting operations are potential threats.

Fishing is a main tourist attraction on the Shannon and there are a large number of angler associations, some with a number of beats. Fishing stands and styles have been erected in places. The River Feale is a designated Salmonid Water under the Freshwater Fish Directive. Other uses of the site include commercial angling, oyster farming, boating (including dolphin-watching trips) and shooting. Some of these may pose threats to the birds and dolphins through disturbance. Specific threats to the dolphins include underwater acoustic disturbance, entanglement in fishing gear and collisions with fast moving craft.

4.1.8.5 Summary of the value of the River Shannon European site complex

The Lower River Shannon SAC is of great ecological interest as it contains a high number of habitats and species listed on Annexes I and II to the Habitats Directive, including the priority habitats coastal lagoons and alluvial woodlands. It contains the only known resident population of Bottle-nosed Dolphin in Ireland and all three Irish lamprey species. A number of Red Data Book species are also present, perhaps most notably the thriving populations of Triangular Club-rush.

The River Shannon and River Fergus Estuaries SPA is an internationally important site that supports an assemblage of over 20,000 wintering waterbirds. It holds internationally important populations of four species, and 17 species that have wintering populations of national importance. The site also supports a nationally important breeding population of Cormorant. Of particular note is that three of the species which occur regularly are listed on Annex I of the Birds Directive. Parts of the River Shannon and River Fergus Estuaries SPA are Wildfowl Sanctuaries.

4.2 POSSIBLE EFFECTS

4.2.1 Water Quality and Habitat Deterioration

As described in Section 3, the site of proposed development comprises two inter-related and inter-dependent elements – the proposed East Jetty extension and relocation of the landing pontoon; and proposed development at Durnish to provide for the development of additional port storage and prepare a site for the expansion of future port activities and processes.

The relocation of the landing pontoon to an area identified at the west side of West Quay, and a new open pile structure and quay furniture constructed to connect the existing West Quay to the existing East Jetty, creating a new Berth No.4, shall result in significant marine engineering construction activities. The proposed East Jetty extension is located within the estuarine habitat of the Lower River Shannon SAC and the intertidal wetland habitat of the River Shannon and River Fergus Estuaries SPA.

At Durnish, the site of proposed development contains land within the SAC and SPA for approximately 550m along a flood berm between the site of proposed development and the Robertstown River, although no development is proposed within the European sites.

Imported fill material shall be brought to the site of proposed development to raise the level of the existing lands. A roundabout, roads and access structures crossing an OPW drain shall be constructed. The raised area shall be surfaced, internal roads shall be constructed and services shall be provided. The intended use is for warehousing, covered and open storage areas. The top 200mm of topsoil shall be stripped across the extents of the Durnish lands prior to the importation of fill material, and shall be stockpiled for re-use in the formation of the berm required for the landscaping boundary treatment. The exposed sub-base shall be seeded with clover to bind the material together.

The existing land drainage regime means that all runoff from the Durnish site flows into the Robertstown River and the Shannon Estuary.

Marine engineering construction, topsoil stripping and importation of a significant quantum of fill material are all activities that carry an inherent risk of accidental release of suspended sediments or polluting substances to the estuarine wetland habitats of the SAC and SPA. This pathway of effect does not exist for 3 of the Annex I QI habitat types that occur above the MHWM and do not occur in the marine waters of the estuary (Molinia meadows [6410], *Alluvial forests with Alnus glutinosa and Fraxinus excelsior (a priority habitat) [91E0] and Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]). A hydrological pathway of effect is open to the remaining 11 Annex I QI habitats, and applies also to the 7 Annex II QI species which are dependent on the water quality of this marine environment.

The risk of suspended sediments and / or contaminants escaping into the marine environment to provide a hydrological pathway of effect leading to a deterioration of wetland and marine habitats with respect to their water quality and favourable conservation status which are listed as QIs or SCIs for the Lower River Shannon SAC or River Shannon and River Fergus Estuaries SPA cannot be discounted in the absence of further evaluation and analysis and quite likely the application of mitigation measures.

4.2.2 Underwater Noise and Disturbance

The proposed East Jetty extension will comprise a deck supported by an open pile structure. Whilst the construction of the jetty extension may involve some marine traffic transporting materials, the most significant underwater noise element of the construction will be the piling requirement. The piles will be approximately 40-45 m long and driven 35-40 m into the seabed. Heavy piles such as this will sink several metres when lowered vertically to the seabed. A vibratory pile driver will then be used to drive the piles as far as possible but it remains likely however that further pile installation will require an impact hammer to drive the piles into rock. The total duration of the piling activity is anticipated be 10 months meaning that on average it will take about 3 working days to complete each pile.

Support activities will involve relocating a jack up barge and operating hydraulic power packs to power the piling rig. A crane will be required to lift the piles into place.

There are no underwater activities proposed in relation to the construction or operation of the proposed development at Durnish.

At operational phase underwater noise sources will be vessel traffic at the port. Underwater noise levels will remain as they are currently, i.e. elevated above background for sustained periods in the Estuary as a vessel navigates the channel and elevated levels for shorter periods while vessels berth in the port.

Piling and associated activities at the proposed East Jetty extension area carry an inherent risk of noise induced effects upon some marine species as a result of significant underwater acoustic energy being intermittently released into the marine environment. As these risks cannot be discounted, then it follows that the risk of underwater acoustic energy escaping into the marine environment to provide a pathway of effect leading to physical injury or disturbance to fish or marine mammal species such as Atlantic Salmon, Sea Lamprey, Brook Lamprey, River Lamprey and Bottlenose dolphin, all QIs of the Lower River Shannon SAC, cannot be discounted in the absence of further evaluation and analysis and quite likely the application of mitigation measures.

Diving seabirds are not SCIs of the River Shannon and River Fergus Estuaries SPA, and there is no realistic prospect of underwater noise and disturbance, rather than aerial noise and visual disturbance, resulting in LSEs upon its 21 species of SCI wading or waterbirds.

4.2.3 Aerial Noise and Visual Disturbance

As described previously, the landing pontoon shall be relocated to an area identified at the west side of West Quay, and a new open pile jetty will be constructed within the River Shannon and River Fergus Estuaries SPA. The proposed construction works will be undertaken over period of approximately 12 months, with existing port operations continuing during the construction period. The site of proposed development at Durnish contains land within the SPA for approximately 550m along a flood berm between the site of proposed development and the Robertstown River, although no development is proposed within the European site.

The intertidal area at the site of proposed Jetty extension and landing pontoon relocation lands are contained within count sub-site 1 of the waterbird surveys conducted for the proposed development as described in EIAR Chapter 7, Section 7.2.3. The site of proposed development at Durnish abuts count sub-site 3 of the waterbird surveys. Results of these surveys demonstrate that 20% of all waterbirds recorded during surveys were located in count sub-site 1, and 5% of all waterbirds recorded were located in count sub-site 3.

EIAR Chapter 7, Section 7.3.3.2 presents results of the waterbird surveys, and reveals that 16 of the 21 feature species of this SPA were recorded in the sub-sites containing or adjacent to the two principal components of the proposed development. Light-bellied Brent Goose, Scaup, Shoveler, Knot and Bar-tailed Godwit were not recorded (refer Table 5.1).

EIAR Chapter 7, Section 7.3.2.4 notes that otter was not recorded from the site of the proposed East Jetty extension but was recorded at the site of proposed development at Durnish. During construction phase, there will be much more noise, traffic movements and human presence than exists presently. During operational phase, the will be more noise, traffic movements and human presence than exists presently, both at daytime and at night-time. Significant noise or visual disturbance could result in indirect loss of foraging and commuting habitat for otter as they would be deterred from or less inclined to visit areas which have significant noise or activity.

This is already a busy and noisy operational Port, but lands at Durnish are currently farmland and not exposed to these activities and noise sources. There remains a risk that construction or operation of the proposed jetty extension development in proximity to intertidal feeding areas of the SPA might result in disturbance and/or loss of attractiveness of the areas used by the feature species of the SPA. There is also a risk that construction or operation of the proposed development at Durnish might result in disturbance and/or loss of attractiveness of the areas to otter.

On this basis, likely significant effects upon the overwintering waterbird populations of River Shannon and River Fergus Estuaries SPA, and otter as a QI of the Lower River Shannon SAC as a result of aerial noise and visual disturbance cannot be discounted in the absence of further evaluation and analysis and quite likely the application of mitigation measures.

4.2.4 Habitat Loss

The proposed East Jetty extension is located within the estuarine habitat of the Lower River Shannon SAC and the intertidal wetland habitat of the River Shannon and River Fergus Estuaries SPA. The application site at Durnish contains land within the SAC and SPA for approximately 550m along a flood berm between the site of proposed development and the Robertstown River, although no development is proposed here within the European sites.

EIAR Chapter 7, Section 7.3.1.2 notes that intertidal benthic surveys indicate the presence of a single community at the site of the proposed East Jetty extension which broadly corresponds with the '*Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex*' biological community. This community is identified in the NPWS *Lower River Shannon SAC Conservation objectives supporting document – marine habitats and species* publication (NPWS, 2012a) as comprising part of 3 no. Annex I habitats in the site:

- Estuaries [1130]
- Mudflats and sandflats not covered by seawater at low tide [1140]
- Large shallow inlets and bays [1160]

EIAR Chapter 7, Section 7.3.1.2 notes that subtidal benthic surveys indicate the presence of a single community in the wider area around the proposed East Jetty extension and landing pontoon relocation areas which broadly corresponds with the '*Subtidal sand to mixed sediment with* Nephtys

spp. community complex' biological community. This community is identified in the NPWS (2012a) as comprising part of 3 no. Annex I habitats in the site:

- Sandbanks which are slightly covered by sea water all the time [1110]
- Estuaries [1130]
- Large shallow inlets and bays [1160]

There is thus every possibility that the area of the proposed East Jetty extension contains a footprint within one of the Annex I habitats for which the SAC is designated. This footprint also occurs within the wetland habitat of the SPA.

Direct habitat loss of Annex I habitat within the SAC and intertidal wetland habitat within the SPA could occur as a result of the footprint of development of the proposed Jetty extension and relocation of the landing pontoon.

Also, indirect habitat loss could occur as a result of alterations to the coastal process regime of tidal flow and circulation changing sediment dispersion and deposition in this area.

On this basis, likely significant effects upon Annex I habitats of the Lower River Shannon SAC and wetland habitats of the River Shannon and River Fergus Estuaries SPA as a result of habitat loss cannot be discounted in the absence of further evaluation and analysis.

4.3 SUMMARY OF SCREENING ASSESSMENT

Table 4.1 summarises the outcome of the screening exercise for each European site considered.

Table 4.1: Screening Summary for European sites considered

Site Code	Site Name	Can Likely Significant Effects be discounted?
IE002165	Lower River Shannon SAC	No
IE004077	River Shannon and River Fergus SPA	No
IE004161	Stack's to Mullaghareirks, West Limerick Hills and Mount Eagle SPA	Yes
IE002279	Askeaton Fen Complex SAC	Yes
IE000432	Barrigone SAC	Yes
IE000174	Curraghchase Woods SAC	Yes

4.4 NEXT STEPS

A screening exercise was completed in compliance with the relevant European Commission and national guidelines to determine whether or not LSEs on any European site could be discounted as a result of the construction or operation of the proposed development.

From the findings of the Screening exercise, the possibility of LSEs upon two European sites considered cannot be discounted in the absence of further evaluation and analysis and quite likely the application of mitigation measures. This conclusion was reached without having to consider the proposed development in combination with any other plan or project.

- The possibility of likely significant **Water Quality and Habitat Deterioration** effects cannot be discounted for the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA without further evaluation and analysis.
- The possibility of likely significant **Underwater Noise and Disturbance** effects cannot be discounted for the Lower River Shannon SAC without further evaluation and analysis.
- The possibility of likely significant **Aerial Noise and Visual Disturbance** effects cannot be discounted for the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA without further evaluation and analysis.
- The possibility of likely significant **Habitat Hoss** effects cannot be discounted for the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA without further evaluation and analysis.

Having regard to the methodology employed and the findings of the screening stage exercise, it is concluded that an appropriate assessment of the implications of the proposed development on the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA is required, in view of their conservation objectives and in combination with any other relevant plans or projects.

The focus of the remainder of this report shall be on the likely significant effects of the proposed development under four impact themes as listed above, that cannot be discounted without further evaluation and analysis, and quite likely the application of mitigation measures.

5 APPROPRIATE ASSESSMENT OF THE IMPLICATIONS OF THE PROPOSED DEVELOPMENT

This scientific examination and analysis of the implications of the Port of Foynes Capacity Extension & Harbour Development on the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA in view of their conservation objectives, considers Likely Significant Effects (LSEs) not previously screened out on two European sites.

The most up-to-date Conservation Objectives and details in relation to the Qualifying Interests for the Lower River Shannon SAC are described further in Sections 4.1.6 of this report. The most up-to-date Conservation Objectives and details in relation to the Special Conservation Interests for the River Shannon and River Fergus Estuaries SPA are described further in Sections 4.1.7 of this report.

In assessing the risks at this second (appropriate assessment) stage, further evaluation and analysis must be undertaken to characterise the impacts that may occur, and to apply measures to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects to determine whether or not Adverse Effects on the Integrity of a Site (AEIS) will occur.

The possibility of LSEs upon these two European sites was considered in the screening exercise documented in Section 4 under four impact themes:

- Water quality and habitat deterioration
- Underwater noise and disturbance
- Aerial noise and visual disturbance
- Habitat loss

5.1 POSSIBLE ADVERSE EFFECTS ON THE INTEGRITY OF THE SITE

5.1.1 Lower River Shannon SAC

As noted previously in Section 4.1.6, site specific Conservation Objectives, Version 1.0 (published 07/08/2012) for the Lower River Shannon SAC have been used in this shadow appropriate assessment exercise. The Screening for appropriate assessment report concluded that LSEs cannot be discounted without further evaluation and analysis as a consequence of:

- Water Quality and Habitat Deterioration effects
- Underwater Noise and Disturbance effects
- Aerial Noise and Visual Disturbance effects
- Habitat Hoss effects

Section 4.1.6.2 notes that the site-specific conservation objectives (SSCOs) set for this European site seek to:

- **maintain** the favourable conservation condition of 10 no. Annex I habitats and 3 no. Annex II species, defined by 56 no. SSCO attributes and targets for the Annex I habitats and 13 no. SSCO attributes and targets for the Annex II species
- **restore** the favourable conservation condition of 4 no. Annex I habitats and 4 no. Annex II species, defined by 45 no. SSCO attributes and targets for the Annex I habitats and 30 no. SSCO attributes and targets for the Annex II species

Section 4.2.1 notes that a hydrological pathway of effect does not exist for 3 of the Annex I QI habitat types that occur above the MHWM and do not occur in the marine waters of the estuary but does exist for the remaining 11 Annex I QI habitats, and applies also to the 7 Annex II QI species which are dependent on the water quality of this marine environment.

5.1.1.1 Annex I Habitats to be maintained

5.1.1.1.1 Sandbanks which are slightly covered by sea water all the time [1110]

The CO for this Annex I habitat type is to maintain its favourable conservation condition in the Lower River Shannon SAC, as defined by 3. no SSCO attributes and targets:

Habitat distribution:	The distribution of sandbanks is stable, subject to natural processes
Habitat area:	The permanent habitat area is stable or increasing, subject to natural processes
Community distribution:	Conserve the following community type in a natural condition: • *Subtidal sand to mixed sediment with Nephtys spp. community complex*

The target for SSCO attribute '*Habitat distribution'* is measured by occurrence. The targets for '*Habitat area'* and '*Community distribution'* are measured in hectares. NPWS (2012a) notes that the targets for '*Habitat distribution'* and '*Habitat area'* refer to activities or operations that propose to permanently remove sandbank habitat, thus reducing the range over which this habitat occurs (in relation to '*Habitat distribution'*) or the permanent amount of habitat area (in relation to '*Habitat area'*) and does not refer to long or short term disturbance of the biology of habitat.

NPWS (2012a) also notes that for '*Community distribution'*, significant continuous or ongoing disturbance of the community should not exceed an approximate area of 15% of the interpolated area of this community type, which is estimated at 1,353ha; and proposed activities or operations that cause significant disturbance to the community but may not necessarily represent a continuous or ongoing source of disturbance over time and space may be assessed in a context-specific manner giving due consideration to the proposed nature and scale of activities during the reporting cycle and

the particular resilience of the receiving habitat in combination with other activities within the designated site.

These targets relate to habitat loss and disturbance of the Annex I habitat and its biological communities.

As noted in Section 4.2.4, subtidal benthic surveys indicate the presence of a single community in the wider area around the proposed East Jetty extension and landing pontoon relocation areas which broadly corresponds with the '*Subtidal sand to mixed sediment with* Nephtys *spp. community complex*' biological community. This community is identified in NPWS (2012a) as comprising part of the Annex I *Sandbanks which are slightly covered by sea water all the time* [1110] habitat. Figure 7.3 in Section 7.3.1.2 of the EIAR illustrates this habitat to occur in the location where the proposed jetty extension is to be located. Map 9 of NPWS (2012b) shows this community to be present at the site of proposed development.

The construction of the jetty will requires the placement of 69 tubular steel piles driven into the seabed between the West Quay and East Jetty, resulting in the permanent loss of 81m^2 of soft sediment subtidal Annex I [1110] habitat. This is in contrast to an earlier design of the East Jetty extension which proposed to reclaim the area behind the new jetty, resulting in permanent habitat loss of subtidal and intertidal habitats of 4,690m^2 (58 times more permanent estuarine Annex I habitat loss within the SAC).

The relocation of the landing pontoon will result in the removal of two existing piles from subtidal habitat at the proposed jetty extension, and replacing them with two new piles in subtidal habitat to the west of the West Quay. Permanent habitat loss and permanent habitat gain will mirror each other's effects, and the outcome will be neutral.

As a result of the construction of the proposed development, the total area of this community within the subtidal Annex I [1110] habitat in the SAC remains as previously estimated at 1,353ha. Taking this permanent loss into consideration, and in relation to the SSCO '*Habitat area'* attribute and target, the permanent amount of habitat area remains the same (1,352.99ha). In relation to the SSCO '*Habitat distribution'* attribute and target, the range over which this habitat occurs remains the same.

In the case of Sweetman and Others v An Bord Pleanála (C-258/11), the Court of Justice of the European Union ruled that –

> *"a plan or project not directly connected with or necessary to the management of a site will adversely affect the integrity of that site if it is liable to prevent the lasting preservation of the constitutive characteristics of the site that are connected to the presence of a priority natural habitat whose conservation was the objective justifying the designation of the site in the list of sites of Community importance, in accordance with the directive".*

The permanent habitat loss occurring as a result of the proposed development in this case is an Annex I and not a **priority* Annex I habitat type. In Sweetman and Others v An Bord Pleanála, a proposed road project would have resulted in the permanent loss of 1.47ha of the *priority* Annex I habitat **Limestone Pavements* [8240]. The Court noted that the area where the habitat loss was to occur was described as constituting almost 2% of a distinct sub-area having the particular characteristic of possessing substantial areas of the limestone pavement habitat.

The facts of the case in Sweetman and Others v An Bord Pleanála are sufficiently different to the current proposal. In this instance, the judgment of the Court does not concern this assessment.

It was noted in Section 4.2.4 that indirect habitat loss could also occur as a result of alterations to the coastal process regime of tidal flow and circulation changing sediment dispersion and deposition in this area.

As there is no dredging or deposition of material required for the jetty extension, the risk of suspended sediment plumes and altered patterns of recirculation do not arise as a result of the absence of such activities.

EIAR Chapter 12 notes in Section 12.4 that the installation of an additional 69 tubular steel piles in this area will have very little effect on tidal currents and a negligible impact on coastal processes. There may be some circulation around the structures themselves and in the shallow area behind the jetty extension however this is in line with the surrounding piled structures and reclaimed areas.

As a result of the foregoing examination and analysis, and in relation to the SSCOs '*Habitat area'* and '*Habitat distribution'* attributes and targets, the permanent habitat loss of 0.0081ha subtidal habitat is not considered to prevent the maintenance of the favourable conservation condition of *Sandbanks which are slightly covered by sea water all the time* [1110] in the Lower River Shannon SAC.

In relation to the SSCO '*Community distribution'* attribute and target, the subtidal habitat will be disturbed as a result of the placement of the spuds on the jack-up barge. Benthic fauna will be displaced under the footprint of the spuds. The effect will be short-term, with EIAR Section 7.5.1.2 reporting that recovery will occur rapidly following the completion of all construction works requiring the use of a jack-up barge.

Within a six-year Habitats Directive Article 17 reporting cycle, this 12 month period of jetty construction resulting in short-term disturbance to and displacement of benthic fauna of the '*Subtidal sand to mixed sediment with* Nephtys *spp. community complex*' biological community is not considered to prevent the maintenance of the favourable conservation condition of *Sandbanks which are slightly covered by sea water all the time* [1110] in the Lower River Shannon SAC.

As regards the possibility of habitat deterioration of the benthic community, Section 4.2.1 outlines the possible impact pathways that might arise as a result of both the jetty extension element of the proposed development and the development at Durnish.

There is a possibility of hydrocarbon leaks and spills associated with poorly maintained construction vehicles or during re-fuelling of plant at the site of the proposed jetty extension. Pre-cast concrete beams and planks will be used for the construction of the jetty, and liquid concrete will be poured over the top to bind all concrete elements together using concrete pumps or concrete skips suspended from a crane. Cement spills are possible.

At Durnish, a significant volume of imported fill material shall be brought to the site of proposed development to raise the level of the existing lands. The top 200mm of topsoil shall be stripped across the extents of the lands prior to the importation of fill material. A roundabout, roads and access structures crossing an OPW drain shall be constructed. The existing land drainage regime means that all runoff from the Durnish site flows into the Robertstown River and the Lower River Shannon SAC.

There is a risk involved with any construction activity either in the marine environment, in proximity to or upstream of marine waters that a pollution incident might arise and result in spills or leaks of polluting substances into the estuary.

Vegetation spaying with herbicide in advance of topsoil stripping may be required. The herbicides for potential use are Gallup Biograde Amenity or Roundup Pro Bioactive. Careless storage, handling or use of pesticides, or improper disposal of empty pesticide containers, can easily cause breaches of the legal limit for pesticides in water. EIAR Chapter 9 has assessed the magnitude of effect of release of these herbicides into the aquatic environment of extremely sensitive water bodies hydrologically connected to the development to be moderate adverse with regard to water quality. This is a potentially significant effect. Mitigation is required to manage this risk.

There is also a risk involved with normal port operations. These include the potential for pollution events to occur from:

- Discharges from vessels using the proposed jetty extension (ballast water, wastewater, oil spillages, fuel bunkering)
- Discharges from cargo handling at Durnish (leakages from containers, bulk material spillages, losses from conveyor systems); and
- Discharges from cargo storage areas at Durnish and onward transportation (losses from hoppers, flat bulk stores and HGVs).

EIAR Chapter 10 has included an assessment of the possible effects of nitrogen deposition on marine habitats based on UNECE critical loads for nitrogen deposition (in units of '*kg N/ha/year'*) on sensitive natural and semi-natural ecosystems published on the UK Air Pollution Information System (APIS) website. EIAR Table 10.24 presents the predicted nitrogen deposition concentrations on the estuarine habitats of the Lower River Shannon SAC and the intertidal wetland habitat of the River Shannon and River Fergus Estuaries SPA as a result of expanded capacity at the Port (the operation of the proposed development). The results indicate a slight increase in the level of nitrogen

generated and subsequently deposited on the SAC/SPA adjacent to the Port. However, the overall scale of the impact (1.75kg N/ha/year) is well below the UNECE critical load that have been published for marine habitats (between 20-30kg N/ha/year). Based on the predicted deposition load, that assessment concludes that the proposed development will have negligible impact on the sensitive ecosystems in the area.

Effects associated with construction or operational stage pollution events (for example leakages / spillages of fuels, oils, other chemicals and waste water, controlled discharges under licence) could lead to a deterioration of water quality in the Annex I *Sandbanks* [1110] habitat and result in a deterioration of the community type to be conserved in a natural condition.

Whilst direct disturbance to and displacement of benthic fauna of the '*Subtidal sand to mixed sediment with* Nephtys *spp. community complex*' biological community is not considered to prevent the maintenance of the favourable conservation condition of *Sandbanks which are slightly covered by sea water all the time* [1110] in the Lower River Shannon SAC, indirect effects of suspended solids or pollution incidents may lead to a deterioration of the community types to be conserved in a natural condition.

The risk of such pollution events occurring must be managed to ensure their likelihood is low and that there are effective measures which will be put in place in the event that they do occur to prevent any wide reaching or long term adverse effects. Unmanaged, these effects could prevent the maintenance of the favourable conservation condition of *Sandbanks which are slightly covered by sea water all the time* [1110] in the Lower River Shannon SAC Mitigation is required, and those measures are described in Section 5.2 of this report.

An Adverse Effect on the Integrity of the Site (AEIS) is not predicted as a result of pollution incidents, release of herbicides or elevated suspended sediments with suitable mitigation in place.

5.1.1.1.2 Estuaries [1130]

The CO for this Annex I habitat type is to maintain its favourable conservation condition in the Lower River Shannon SAC, as defined by 2 no. SSCO attributes and targets:

Habitat area:	The permanent habitat area is stable or increasing, subject to natural processes
Community distribution:	Conserve the following community types in a natural condition: • *Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex* • *Estuarine subtidal muddy sand to mixed sediment with gammarids community complex* • *Subtidal sand to mixed sediment with Nucula nucleus community complex*

- *Subtidal sand to mixed sediment with Nephtys spp. community complex*
- *Fucoid-dominated intertidal reef community complex*
- *Faunal turf-dominated subtidal reef community*
- *Anemone-dominated subtidal reef community*

The target for SSCO attributes '*Habitat area'* and '*Community distribution'* are measured in hectares. NPWS (2012a) notes that the target for '*Habitat area'* refers to activities or operations that propose to permanently remove estuary habitat, thus reducing the permanent amount of habitat area and does not refer to long or short term disturbance of the biology of habitat. The target also notes that the Annex I habitat *Estuaries* [1130] habitat encompasses the Annex I habitat *Mudflats and sandflats not covered by seawater at low tide* [1140], which is discussed in the next section.

NPWS (2012a) also notes that for '*Community distribution'*, significant continuous or ongoing disturbance of the community should not exceed an approximate area of 15% of the interpolated area of this community type, which is estimated at 4,196ha; and proposed activities or operations that cause significant disturbance to the community but may not necessarily represent a continuous or ongoing source of disturbance over time and space may be assessed in a context-specific manner giving due consideration to the proposed nature and scale of activities during the reporting cycle and the particular resilience of the receiving habitat in combination with other activities within the designated site.

These targets relate to habitat loss and disturbance of the Annex I habitat and its biological communities.

EIAR Chapter 7, Section 7.3.1.2 notes that intertidal benthic surveys indicate the presence of a single community at the site of the proposed East Jetty extension which broadly corresponds with the '*Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex*' biological community. Map 9 of NPWS (2012b) shows this community to be present at the site of proposed development also.

This community is identified in NPWS (2012a) as comprising part of the Annex I *Estuaries* [1130] habitat. Figure 7.3 in Section 7.3.1.2 of the EIAR illustrates this habitat to occur behind the location where the proposed jetty extension is to be located, with the habitat occurring under the footprint of proposed development being *Sandbanks which are slightly covered by sea water all the time* [1110] habitat, as described in Section 5.1.1.1.1.1.

The estimated area of this community within the Estuaries habitat is estimated to be 4,196ha. The habitat loss which will occur as a result of the proposed development is described in more detail in the preceding section, but on the basis of that discussion, as a result of the construction of the proposed development, the total area of this community within the Annex I [1130] habitat in the SAC remains as previously estimated at 4,195.66ha.

As a result of the foregoing examination and analysis, and in relation to the SSCO '*Habitat area'* attribute and target, the permanent habitat loss of 0.0081ha subtidal habitat is not considered to prevent the maintenance of the favourable conservation condition of *Estuaries* [1130] in the Lower River Shannon SAC.

In relation to the SSCO '*Community distribution'* attribute and target, the estuary habitat will be disturbed as a result of the placement of the spuds on the jack-up barge. Benthic fauna will be displaced under the footprint of the spuds. The effect will be short-term, with EIAR Section 7.5.1.2 reporting that recovery will occur rapidly following the completion of all construction works requiring the use of a jack-up barge.

Within a six-year Habitats Directive Article 17 reporting cycle, this 12 month period of jetty construction resulting in short-term disturbance to and displacement of benthic fauna of the '*Subtidal sand to mixed sediment with* Nephtys *spp. community complex*' biological community is not considered to prevent the maintenance of the favourable conservation condition of Annex I *Estuaries* [1130] in the Lower River Shannon SAC.

As regards the possibility of habitat deterioration of the benthic communities, Section 4.2.1 outlines the possible impact pathways that might arise as a result of both the jetty extension element of the proposed development and the development at Durnish. Section 5.1.1.1.1.1 describes how water quality and habitat deterioration effects associated with construction or operational stage pollution events could lead to a deterioration of water quality in the Annex I *Sandbanks* [1110] habitat and result in a deterioration of the community type to be conserved in a natural condition. The indirect effects of suspended solids or pollution incidents may lead to a deterioration of the Annex I *Estuaries* [1130] community types to be conserved in a natural condition.

Vegetation spaying with herbicide in advance of topsoil stripping may be required. The herbicides for potential use are Gallup Biograde Amenity or Roundup Pro Bioactive. Careless storage, handling or use of pesticides, or improper disposal of empty pesticide containers, can easily cause breaches of the legal limit for pesticides in water. EIAR Chapter 9 has assessed the magnitude of effect of release of these herbicides into the aquatic environment of extremely sensitive water bodies hydrologically connected to the development to be moderate adverse with regard to water quality. This is a potentially significant effect. Mitigation is required to manage this risk.

The risk of such pollution events occurring must be managed to ensure their likelihood is low and that there are effective measures which will be put in place in the event that they do occur to prevent any wide reaching or long term adverse effects. Unmanaged, these effects could prevent the maintenance of the favourable conservation condition of *Estuaries* [1130] in the Lower River Shannon SAC Mitigation is required, and those measures are described in Section 5.2 of this report.

An Adverse Effect on the Integrity of the Site (AEIS) is not predicted as a result of pollution incidents, release of herbicides or elevated suspended sediments with suitable mitigation in place.

5.1.1.1.3 Mudflats and sandflats not covered by seawater at low tide [1140]

The CO for this Annex I habitat type is to maintain its favourable conservation condition in the Lower River Shannon SAC, as defined by 2 no. SSCO attributes and targets:

Habitat area:	The permanent habitat area is stable or increasing, subject to natural processes
Community distribution:	Conserve the following community types in a natural condition: • *Intertidal sand with Scolelepis squamata and Pontocrates spp. Community* • *Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex*

EIAR Chapter 7, Section 7.3.1.2 notes that intertidal benthic surveys indicate the presence of a single community at the site of the proposed East Jetty extension which broadly corresponds with the '*Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex*' biological community. Map 9 of NPWS (2012b) shows this community to be present at the site of proposed development.

This community is identified in NPWS (2012a) as comprising part of the Annex I *Mudflats and sandflats not covered by seawater at low tide* [1140] habitat. Figure 7.3 in Section 7.3.1.2 of the EIAR illustrates this habitat to occur behind the location where the proposed jetty extension is to be located, with the habitat occurring under the footprint of proposed development being *Sandbanks which are slightly covered by sea water all the time* [1110] habitat, as described in Section 5.1.1.1.1.1.

The target for SSCO attributes '*Habitat area'* and '*Community distribution'* are measured in hectares. NPWS (2012a) notes that the target for '*Habitat area'* refers to activities or operations that propose to permanently remove intertidal mudflat and sandflat habitat, thus reducing the permanent amount of habitat area and does not refer to long or short term disturbance of the biology of habitat.

NPWS (2012a) also notes that for '*Community distribution'*, significant continuous or ongoing disturbance of the community should not exceed an approximate area of 15% of the interpolated area of this community type, which is estimated at 8,596ha; and proposed activities or operations that cause significant disturbance to the community but may not necessarily represent a continuous or ongoing source of disturbance over time and space may be assessed in a context-specific manner giving due consideration to the proposed nature and scale of activities during the reporting cycle and the particular resilience of the receiving habitat in combination with other activities within the designated site.

These targets relate to habitat loss and disturbance of the Annex I habitat and its biological communities.

There will be no loss of Annex I *Mudflats and sandflats not covered by seawater at low tide* [1140] habitat as a result of the proposed development. Therefore, in relation to the SSCO '*Habitat area'* attribute and target, the proposed development is not considered to prevent the maintenance of the favourable conservation condition of *Mudflats and sandflats not covered by seawater at low tide* [1140] in the Lower River Shannon SAC.

In relation to the SSCO '*Community distribution'* attribute and target, the estuary habitat will be disturbed as a result of the placement of the spuds on the jack-up barge, but this will occur in the subtidal habitats and not the intertidal habitats behind the proposed jetty extension. Therefore, in relation to the SSCO '*Community distribution'* attribute and target, the proposed development is not considered to prevent the maintenance of the favourable conservation condition of *Mudflats and sandflats not covered by seawater at low tide* [1140] in the Lower River Shannon SAC.

As regards the possibility of habitat deterioration of the benthic communities, the possible suspended sediment and pollution impact pathways that might arise as a result of both the jetty extension element of the proposed development and the development at Durnish have been discussed and detailed previously. The indirect effects of suspended solids or pollution incidents may lead to a deterioration of the Annex I *Mudflats and sandflats not covered by seawater at low tide* [1140] community types to be conserved in a natural condition.

Vegetation spaying with herbicide in advance of topsoil stripping may be required. The herbicides for potential use are Gallup Biograde Amenity or Roundup Pro Bioactive. Careless storage, handling or use of pesticides, or improper disposal of empty pesticide containers, can easily cause breaches of the legal limit for pesticides in water. EIAR Chapter 9 has assessed the magnitude of effect of release of these herbicides into the aquatic environment of extremely sensitive water bodies hydrologically connected to the development to be moderate adverse with regard to water quality. This is a potentially significant effect. Mitigation is required to manage this risk.

The risk of such pollution events occurring must be managed to ensure their likelihood is low and that there are effective measures which will be put in place in the event that they do occur to prevent any wide reaching or long term adverse effects. Unmanaged, these effects could prevent the maintenance of the favourable conservation condition of *Mudflats and sandflats not covered by seawater at low tide* [1140] in the Lower River Shannon SAC Mitigation is required, and those measures are described in Section 5.2 of this report.

An Adverse Effect on the Integrity of the Site (AEIS) is not predicted as a result of pollution incidents, release of herbicides or elevated suspended sediments with suitable mitigation in place.

5.1.1.1.4 Large shallow inlets and bays [1160]

The CO for this Annex I habitat type is to maintain its favourable conservation condition in the Lower River Shannon SAC, as defined by 2 no. SSCO attributes and targets:

Habitat area:	The permanent habitat area is stable or increasing, subject to natural processes
Community distribution:	Conserve the following community types in a natural condition: • *Intertidal sand with Scolelepis squamata and Pontocrates spp. community* • *Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex* • *Subtidal sand to mixed sediment with Nephtys spp. community complex.* • *Subtidal sand to mixed sediment with Nucula nucleus community complex* • *Fucoid-dominated intertidal reef community complex* • *Mixed subtidal reef community complex* • *Faunal turf-dominated subtidal reef community* • *Anemone-dominated subtidal reef community* • *Laminaria-dominated community complex*

Whilst the '*Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex*' biological community has been recorded next to the site of proposed development, it forms part of the Annex I *Mudflats and sandflats not covered by seawater at low tide* [1140] habitat at this location. Map 7 of NPWS (2012b) shows the *Large shallow inlets and bays* [1160] habitat to be absent from the site of proposed development, being approximately 25km seaward at its closest mapped location.

There will be no loss of Annex I *Large shallow inlets and bays* [1160] habitat as a result of the proposed development, and the possibility of adverse effects as a result of pollution events occurring at the site of proposed development which may lead to a deterioration of the associated community types to be conserved in a natural condition are very unlikely given that measures must be put in place to manage the pollution risks for more proximate Annex I habitats.

Therefore, in relation to the SSCO '*Habitat area'* and '*Community distribution'* attributes and targets, the proposed development is not considered to prevent the maintenance of the favourable conservation condition of *Large shallow inlets and bays* [1160] in the Lower River Shannon SAC.

An Adverse Effect on the Integrity of the Site (AEIS) is not predicted as a result of pollution incidents or elevated suspended sediments with suitable mitigation in place.

5.1.1.1.5 Reefs [1170]

The CO for this Annex I habitat type is to maintain its favourable conservation condition in the Lower River Shannon SAC, as defined by 3. no SSCO attributes and targets:

Habitat distribution:	The distribution of Reefs is stable, subject to natural processes
Habitat area:	The permanent habitat area is stable or increasing, subject to natural processes
Community distribution:	Conserve the following community type in a natural condition: • *Fucoid-dominated intertidal reef community complex* • *Mixed subtidal reef community complex* • *Faunal turf-dominated subtidal reef community* • *Anemone-dominated subtidal reef community* • *Laminaria-dominated community complex*

The target for SSCO attribute '*Habitat distribution'* is measured by occurrence. The targets for '*Habitat area'* and '*Community distribution'* are measured in hectares. NPWS (2012a) notes that the targets for '*Habitat distribution'* and '*Habitat area'* refer to activities or operations that propose to permanently remove sandbank habitat, thus reducing the range over which this habitat occurs (in relation to '*Habitat distribution'*) or the permanent amount of habitat area (in relation to '*Habitat area'*) and does not refer to long or short term disturbance of the biology of habitat.

Map 8 of NPWS (2012b) shows the *Reefs* [1170] habitat to be absent from the site of proposed development, being located approximately 2km to the north and northwest in the main channel of the River Shannon.

There will be no loss of Annex I *Reefs* [1170] habitat as a result of the proposed development, and the possibility of adverse effects as a result of pollution events occurring at the site of proposed development which may lead to a deterioration of the associated community types to be conserved in a natural condition are very unlikely given that measures must be put in place to manage the pollution risks for more proximate Annex I habitats.

An Adverse Effect on the Integrity of the Site (AEIS) is not predicted as a result of pollution incidents or elevated suspended sediments with suitable mitigation in place.

5.1.1.1.6 Perennial vegetation of stony banks [1220]

Map 10 of NPWS (2012b) shows this Annex I habitat to be absent from the site of proposed development, being approximately 26km seaward at its closest mapped location. NPWS (2012b) does however note that further unsurveyed areas maybe present within the SAC. It was not recorded from the site of proposed development.

There will be no loss of Annex I *Perennial vegetation of stony banks [1220]* habitat as a result of the proposed development, and the possibility of adverse effects as a result of pollution events occurring at the site of proposed development which may lead to a deterioration of the habitat to be maintained at a favourable conservation condition is very unlikely given that measures must be put in place to manage the pollution risks for more proximate Annex I habitats.

An Adverse Effect on the Integrity of the Site (AEIS) is not predicted as a result of pollution incidents or elevated suspended sediments with suitable mitigation in place.

5.1.1.1.7 Salicornia and other annuals colonizing mud and sand [1310]

Map 12 of NPWS (2012b) shows this Annex I habitat to be absent from the site of proposed development, being approximately 1.2km southeast at its closest mapped location at the Robertstown River estuary. NPWS (2012b) does however note that further unsurveyed areas maybe present within the SAC. It was not recorded from the site of proposed development.

There will be no loss of Annex I *Salicornia and other annuals colonizing mud and sand [1310]* habitat as a result of the proposed development, and the possibility of adverse effects as a result of pollution events occurring at the site of proposed development which may lead to a deterioration of the habitat to be maintained at a favourable conservation condition is very unlikely given that measures must be put in place to manage the pollution risks for more proximate Annex I habitats.

An Adverse Effect on the Integrity of the Site (AEIS) is not predicted as a result of pollution incidents or elevated suspended sediments with suitable mitigation in place.

5.1.1.1.8 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]

Map 13 of NPWS (2012b) shows this Annex I habitat to be absent from the site of proposed development, being approximately 27km towards Limerick City at its closest mapped location at the River Maigue, and at Ardbane and Muckinish Points on the River Shannon. One of its 10 SSCO attributes and targets is for 'Water quality: nutrients', with the target being that the concentration of nutrients in the water column should be sufficiently low to prevent changes in species composition or habitat condition.

There will be no loss of Annex I [3260] habitat as a result of the proposed development, and the possibility of adverse effects as a result of pollution events occurring at the site of proposed development which may lead to a deterioration of the habitat to be maintained at a favourable conservation condition is very unlikely given that measures must be put in place to manage the pollution risks for more proximate Annex I habitats.

An Adverse Effect on the Integrity of the Site (AEIS) is not predicted as a result of pollution incidents or elevated suspended sediments with suitable mitigation in place.

5.1.1.2 Annex I Habitats to be restored

5.1.1.2.1 Coastal lagoons [1150]

Map 6 of NPWS (2012b) shows this Annex I habitat to be absent from the site of proposed development, being approximately 7km by hydrological pathway around Aughinish Island at its closest mapped location (Quayfied and Poulaweala Loughs).

There will be no loss of Annex I *Coastal Lagoons* [1150] habitat as a result of the proposed development, and no risk to maintaining the favourable reference area of 33.4ha. NPWS (2012c) notes that the three water quality targets (for Chlorophyll a, Molybdate reactive phosphorus and Dissolved inorganic nitrogen) address the risk of excessive shading from phytoplankton. The possibility of adverse effects as a result of pollution events occurring at the site of proposed development which may lead to a deterioration of the lagoon habitat to be restored at a favourable conservation condition is very unlikely given that measures must be put in place to manage the pollution risks for more proximate Annex I habitats.

An Adverse Effect on the Integrity of the Site (AEIS) is not predicted as a result of pollution incidents or elevated suspended sediments with suitable mitigation in place.

5.1.1.2.2 Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] and Mediterranean salt meadows (Juncetalia maritime) [1410]

Map 12 of NPWS (2012b) shows these potential Atlantic salt meadows to be present on the opposite bank of the Robertstown River from the site of proposed development at Durnish, and both Atlantic salt meadows and Mediterranean salt meadows to be present at the Robertstown River estuary.

There will be no loss of these Annex I [1330] or [1410] habitats as a result of the proposed development. The possibility of adverse effects as a result of pollution events occurring at the site of proposed development which may lead to a deterioration of the salt meadow habitats to be restored at a favourable conservation condition is very unlikely given that measures must be put in place to manage the pollution risks for more proximate Annex I habitats.

An Adverse Effect on the Integrity of the Site (AEIS) is not predicted as a result of pollution incidents or elevated suspended sediments with suitable mitigation in place.

5.1.1.3 Annex II Species to be maintained

5.1.1.3.1 Brook Lamprey [1096] and River Lamprey [1099]

The CO for Brook Lamprey and River Lamprey is to maintain their favourable conservation condition in the Lower River Shannon SAC, as defined by 5. no SSCO attributes and targets:

Distribution:	Access to all watercourses down to first order streams
Population structure of juveniles:	At least three age/size groups of brook/river lamprey present
Juvenile density in fine sediment:	Mean catchment juvenile density of brook/river lamprey at least 2/m^2
Extent and distribution of spawning habitat:	No decline in extent and distribution of spawning beds
Availability of juvenile habitat:	More than 50% of sample sites positive

The target for SSCO attribute '*Distribution'* is measured by % of river accessible. The target for '*Population structure of juveniles*' is measured in number of age/size groups. The target for '*Juvenile density in fine sediment*' is measured in Juveniles/m^2. The target for '*Extent and distribution of spawning habitat*' is measured in m^2 and occurrence. The target for '*Availability of juvenile habitat*' is measured in number of positive sites in 2nd order channels (and greater), downstream of spawning areas.

EIAR Chapter 7, Section 7.3.1.3 describes the biology and presence of these species in the River Shannon estuary. Section 7.4.1.3 describes how the majority of migrating adults will be found in the 2km wide main Shannon River channel at any given time but especially during flood tides with perhaps a smaller amount of migrating adults in the narrower Foynes side-channel, mainly during ebb tides. The assessment notes that very little is known about sound detection in lamprey but as they do not possess a swim bladder it is thought that they respond to particle motion rather than sound pressure and are therefore less sensitive to sound. Piling will produce very high noise levels detectable as particle motion and is likely to generate an avoidance response in the species that would displace the species away from the closest 6-7m radius around an active piling activity where the sound levels could result in injury or death.

Looking then at the COs set for Brook Lamprey and River Lamprey, their distribution shall not be adversely affected, and they will continue to have access to all watercourses draining into the Shannon Estuary down to first order streams throughout construction and operation of the proposed development. Population structure of juveniles and juvenile density in fine sediment shall not be adversely affected as the species are largely absent from the port area immediately adjacent to the proposed development. Extent and distribution of spawning habitat shall not be adversely affected as any loss of spawning habitat will not occur and no decline in extent and distribution of spawning beds will occur. Availability of juvenile habitat shall not be adversely affected as there will be no loss of positive sites in 2nd order channels (and greater), downstream of spawning areas.

There is a possibility of hydrocarbon leaks and spills associated with poorly maintained construction vehicles or during re-fuelling of plant at the site of the proposed jetty extension. Pre-cast concrete beams and planks will be used for the construction of the jetty, and liquid concrete will be poured over the top to bind all concrete elements together using concrete pumps or concrete skips suspended from a crane. Cement spills are possible.

At Durnish, a significant volume of imported fill material shall be brought to the site of proposed development to raise the level of the existing lands. The top 200mm of topsoil shall be stripped across the extents of the lands prior to the importation of fill material. A roundabout, roads and access structures crossing an OPW drain shall be constructed. The existing land drainage regime means that all runoff from the Durnish site flows into the Robertstown River and the Lower River Shannon SAC.

There is a risk involved with construction activity either in the marine environment, in proximity to or upstream of marine waters that a pollution incident might arise and result in spills or leaks of polluting substances into the estuary. Mitigation measures must be put in place to reduce these risks.

The possibility of adverse effects on the COs set for Brook Lamprey and River Lamprey as a result of pollution events occurring at the site of proposed development contributing to a failure to maintain their favourable conservation condition in the SAC is very unlikely given that measures must be put in place to manage the pollution risks for other QI COs.

An Adverse Effect on the Integrity of the Site (AEIS) is not predicted as a result of pollution incidents; elevated suspended sediments; disturbance or injury caused by noise and vibration; or habitat loss with suitable mitigation in place.

5.1.1.3.2 Bottlenose Dolphin [1349]

The CO for this Annex II species is to maintain its favourable conservation condition in the Lower River Shannon SAC, as defined by 3. no SSCO attributes and targets:

Access to suitable habitat:	Species range within the site should not be restricted by artificial barriers to site use.
Habitat use: critical areas:	Critical areas, representing habitat used preferentially by bottlenose dolphin, should be maintained in a natural condition.
Disturbance:	Human activities should occur at levels that do not adversely affect the bottlenose dolphin population at the site

The target for SSCO attribute '*Access to suitable habitat'* is measured by number of artificial barriers. The target for '*Habitat use: critical areas'* is measured by location and hectares. The target for '*Disturbance*' is measured in the level of impact.

NPWS (2012a) notes that the size, community structure, distribution and habitat use of the resident population in the Lower River Shannon SAC are well understood. EIAR Chapter 7, Section 7.3.1.2 describes how Bottlenose dolphins are found throughout the estuary (as shown in Map 16 of NPWS, 2012b), use the waters adjacent to Foynes Harbour and occasionally enter the port. That assessment is based on the Shannon Estuary being one of the most extensively studies study sites for bottlenose dolphins in Europe with studies ongoing since 1993 (Berrow *et al.*, 1996) including extensive use of passive acoustic monitoring since 2001 (Berrow, 2001).

EIAR Section 7.4.1.2 notes that sound pressure from piling activities may have a negative impact on bottlenose dolphins. If a marine mammal's received sound exposures, irrespective of the anthropogenic source, exceed the relevant criterion, auditory injury (Permanent Threshold Shift or PTS) is assumed to be likely. Pile driving is classed as a multi pulse source of impulsive sound. Its

measured effects on marine mammals are largely based on work by Southall *et al.* (2007) who proposed a dual criterion based on peak Sound Pressure Level (SPL) and sound exposure level (SEL), where the level that is exceeded first is what should be used as the working injury criterion (i.e. the precautionary of the two measures). The potential impacts on marine mammals from piling activity include PTS, Temporary Threshold Shift (TTS) and behavioural disturbance; each of which have varying degrees of severity for exposed individuals. As all marine mammals do not hear equally across all frequencies, the use of frequency weightings is applied to compensate for differential frequency responses of their sensory systems (M-weighting).

Bailey et al. (2010) estimated the effect of pile driving on coastal cetaceans in the Moray Firth (42m water depth), within 25km from the sound source. They found that based on the broadband peak to peak sound level, PTS onset would have occurred within 5m of the pile-driving operation for cetaceans and within 20m for pinnipeds. The level for TTS onset would have been exceeded within 10m and 40m of the pile-driving for cetaceans and pinnipeds respectively. They found that the closest measurement of the pile-driving noise recorded at 100m, had an M-weighted SEL of 166dB re 1 $\mu Pa^2/s$ which was less than the PTS and TTS SEL criteria for cetaceans and pinnipeds. They suggest that this indicated that no form of injury or hearing impairment should have occurred at ranges greater than 100m from the pile-driving operation.

EIAR Chapter 11 contains an underwater noise assessment. It is based on measured underwater background noise levels at Foynes Harbour and in the Shannon Estuary during normal port operations, and an underwater noise model to estimate underwater noise levels as a result of various construction activities. The predicted model outputs were then compared with international exposure guidelines for a range of sensitive species.

Table 11.2 of the EIAR notes the threshold dB at which mortality, PTS, TTS and various behavioural effects occurs in different types of marine species. Table 11.3 lists noise levels for construction activities with potential to generate significant underwater noise. Table 11.4 lists estimated impact piling sound source levels at the site of proposed development. Table 11.5 lists the distances from the source of underwater noise at which various types of impact (in Table 11.2) are predicted to occur for various marine species.

This analysis reveals that PTS effects are not predicted to occur for Bottlenose dolphin, and behavioural effects may occur out to 250m from the noise source. EIAR Section 7.5.1.2 notes that Bottlenose dolphins have highly developed acoustically but are resident in the Shannon and have been exposed to shipping and marine industry for many years. It is predicted that adverse effects on individual Bottlenose dolphins may occur if they are close to piling at the point of initial piling start-up.

Looking then at the COs set for Bottlenose dolphin, their access to suitable habitat shall not be adversely affected, and their range within the SAC will not be restricted by artificial barriers to their use of the site.

Preferentially used habitats (critical areas) are located >15km seaward of the site of proposed development as indicated in Map 16 of NPWS (2012b) will not be interfered with and should be maintained in a natural condition.

The level of impact is the measure of the CO attribute 'Disturbance', with the target being that human activities should occur at levels that do not adversely affect the bottlenose dolphin population at the site. EIAR chapter 7 has predicted that no adverse population level effects are predicted, but that disturbance effects upon individuals of the population may arise, and mitigation measures must be put in place to prevent this happening.

An Adverse Effect on the Integrity of the Site (AEIS) is not predicted as a result of disturbance or injury caused by noise and vibration disturbance or deterioration of suitable habitat or critical areas with suitable mitigation in place.

5.1.1.4 Annex II Species to be restored

5.1.1.4.1 Freshwater Pearl Mussel [1029]

The CO for this Annex II species is to restore its favourable conservation condition in the Lower River Shannon SAC, as defined by 11. no SSCO attributes and targets:

Distribution:	Maintain at 7km. See map 15.
Population size:	Restore to 10,000 adult mussels.
Population structure: recruitment:	Restore to least 20% of population no more than 65mm in length; and at least 5% of population no more than 30mm in length.
Population structure: adult mortality:	No more than 5% decline from previous number of live adults counted; dead shells less than 1% of the adult population and scattered in distribution.
Habitat extent:	Restore suitable habitat in more than 3.3km (see map 15) and any additional stretches necessary for salmonid spawning.
Water quality: macroinvertebrate and phytobenthos (diatoms)	Restore water quality-macroinvertebrates: EQR greater than 0.90; phytobenthos: EQR greater than 0.93.
Substratum quality: filamentous algae *(macroalgae), macrophytes (rooted higher plants)*	Restore substratum quality-filamentous algae: absent or trace (<5%); macrophytes: absent or trace (<5%).

Substratum quality: sediment:	Restore substratum quality – stable cobble and gravel substrate with very little fine material; no artificially elevated levels of fine sediment.
Substratum quality: oxygen availability:	Restore to no more than 20% decline from water column to 5cm depth in substrate.
Hydrological regime: flow variability:	Restore appropriate hydrological regimes.
Host fish:	Maintain sufficient juvenile salmonids to host glochidial larvae.

The target for SSCO attribute '*Distribution'* is measured in kilometres. The target for '*Population size*' is measured in number of adult mussels. The target for '*Population structure: recruitment"* is measured in percentage per size class. The target for 'Population structure: adult mortality' is measured by percentage. The target for '*Habitat extent*' is measured in kilometres. The target for '*Water quality: macroinvertebrate and phytobenthos (diatoms)*' is measured in Ecological quality ratio (EQR). The target for '*Substratum quality: filamentous algae (microalgae), macrophytes (rooted higher plants*)' is measured in percentage. The target for '*Substratum quality: sediment*' is measured in occurrence. The target for '*Substratum quality: oxygen availability*' is measured in redox potential. The target for '*Hydrological regime: flow variability'* is measured in metres per second. The target for '*Host fish'* is measured by number.

This species is recorded in parts of the Cloon River, which drains into the Shannon Estuary at Clonderalaw Bay. The site of proposed development is hydrologically located >25km further east and upstream of the Cloon River. An effective hydrological pathway of effect is not present to cause any adverse effects upon this species.

An Adverse Effect on the Integrity of the Site (AEIS) is not predicted as a result of any impact pathway.

5.1.1.4.2 Sea Lamprey [1095]

The CO for this Annex II species is to restore its favourable conservation condition in the Lower River Shannon SAC, as defined by 5. no SSCO attributes and targets:

Distribution: *extent of anadromy:*	Greater than 75% of main stem length of rivers accessible from estuary.
Population structure of juveniles:	At least three age/size groups present
Juvenile density in fine sediment:	Juvenile density at least 1/m^2
Extent and distribution of spawning habitat:	No decline in extent and distribution of spawning beds
Availability of juvenile habitat:	More than 50% of sample sites positive

The target for SSCO attribute '*Distribution'* is measured by % of river accessible. The target for '*Population structure of juveniles*' is measured in number of age/size groups. The target for '*Juvenile density in fine sediment*' is measured in Juveniles/m^2. The target for '*Extent and distribution of spawning habitat*' is measured in m^2 and occurrence. The target for '*Availability of juvenile habitat*' is measured in number of positive sites in 3rd order channels (and greater), downstream of spawning areas.

The discussion in Section 5.1.1.3.1 for Brook Lamprey and River Lamprey is relevant and applicable here also.

Looking then at the COs set for Sea Lamprey, their distribution (extent of anadromy) shall not be adversely affected, and they will continue to have access to >75% of main stem length of rivers accessible from the estuary. The population structure of juveniles and juvenile density in fine sediment shall not be adversely affected as the species are largely absent from the port area immediately adjacent to the proposed development. Extent and distribution of spawning habitat shall not be adversely affected as any loss of spawning habitat will not occur and no decline in extent and distribution of spawning beds will occur. Availability of juvenile habitat shall not be adversely affected as there will be no loss of positive sites in 3rd order channels (and greater), downstream of spawning areas.

Also applicable to Sea Lamprey is the possibility of pollution resulting in deterioration of their habitat, and again mitigation measures must be put in place to reduce these risks. The possibility of adverse effects on the COs set for Sea Lamprey as a result of pollution events occurring at the site of proposed development contributing to a failure to maintain their favourable conservation condition in the SAC is very unlikely given that measures must be put in place to manage the pollution risks for other QI COs.

An Adverse Effect on the Integrity of the Site (AEIS) is not predicted as a result of pollution incidents; elevated suspended sediments; disturbance or injury caused by noise and vibration; or habitat loss with suitable mitigation in place.

5.1.1.4.3 Atlantic Salmon [1106]

The CO for this Annex II species is to restore its favourable conservation condition in the Lower River Shannon SAC, as defined by 6. no SSCO attributes and targets:

Distribution: *extent of anadromy:*	100% of river channels down to second order accessible from estuary.
Adult spawning fish:	Conservation Limit (CL) for each system consistently exceeded.
Salmon fry abundance:	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 min sampling.

Out-migrating smolt abundance:	No significant decline.
Number and distribution of redds:	No decline in number and distribution of spawning redds due to anthropogenic causes.
Water quality:	At least Q4 at all sites sampled by EPA.

The target for SSCO attribute '*Distribution: extent of anadromy'* is measured by % of river accessible. The target for '*Adult spawning fish'* is measured by number. The target for '*Salmon fry abundance'* is measured in number of fry/5mins electrofishing. The target for '*Out-migrating smolt abundance'* is measured by number. The target for '*Number and distribution of redds'* is measured in number and occurrence. The target for '*Water quality'* is measured by the EPA Q value.

EIAR Chapter 7, Section 7.3.1.3 describes the biology and presence of Atlantic salmon in the River Shannon and its tributaries. EIAR Table 7.7 sets out the Conservation Limit (CL) for tributaries of the River Shannon, where available. Section 7.4.1.3 describes how, during the period of inward adult salmon migration up the Shannon Estuary, there are times during parts of the ebb tide when some salmon may stem back down into the channel fronting the Foynes Port area and as such could be exposed to significant noise levels from pile driving, It notes that Salmon are considered poor hearing specialists, but known to be diverted by very loud sound levels and as a result are unlikely to come sufficiently close to the active pile to be at risk of injury or death (i.e. within 6-7m as noted in EIAR Table 11.2). When it is further considered that piles will only be driven periodically and not constantly, the fisheries assessment concludes that the possibility of a significant adverse effect on the population is very unlikely.

As regards smolts, on their outward journey Salmon smolts appear to follow a similar strategy as adults moving into the fastest flows toward the centre of the channel during ebb tides and moving toward the margins during flood tides in order to stem landward displacement during the flood. There is strong evidence that smolts actively swim during their outmigration in order to reach the open sea as quickly as possible, and have also been shown to swim faster in the lower parts of estuaries where the salinities are higher and in these reaches also are likely to make seaward progress, albeit slower, during the flood tide. There is also a suggestion that smolts are more likely to emigrate faster in estuaries with less complex typographies and current systems which is the case in the Lower Shannon Estuary. What is clear is that smolts do not hang about and are generally seen to make rapid seaward progress.

The fisheries assessment concludes that during most if not all ebb tides, smolts will be concentrated in the main channel of the Lower Shannon where the highest current speeds are to be found, i.e. outside of the Foynes channel. During the flood, some of smolts passing that part of the estuary at that stage of the tide may enter the side channel where the currents will be slacker in order to stem their landward progress potentially bringing them into the higher noise energy zone in proximity to piling where exposure could result in recoverable injury or death. The Foynes channel is approximately 350m wide and of adequate width for the smolts to travel downstream without piling

causing a barrier to movement. The assessment in EIAR Chapter 7 concludes that at most a very small number of the many thousand smolts emigrating from the Upper Shannon Estuary are likely to be impacted by the piling, with no significant adverse impact predicted to occur at the population level.

Looking then at the COs set for Atlantic Salmon, their distribution (extent of anadromy) shall not be adversely affected, as they will continue to have access to all river channels down to 2nd order accessible from the estuary. The CL for each system is unlikely to be significantly affected, and the number of Adult spawning fish likely to be unaffected by the construction or operation of the proposed development. Salmon fry abundance in the Shannon tributaries are unlikely to be affected. Number and distribution of redds shall not be affected in their spawning habitat as this is not present in the area of proposed development.

Out-migrating smolt abundance may be affected if high numbers of smolt were to be present in the Foynes channel in proximity to the works, but the fisheries assessment does not consider this possible effect to adversely affect the population level. The measure of this target could reduce if individuals were to suffer mortality as a result of the piling works, although smolts are known to avoid loud sounds (EIAR Table 7.8). Measures are required to prevent this happening.

There is a possibility of hydrocarbon leaks and spills associated with poorly maintained construction vehicles or during re-fuelling of plant at the site of the proposed jetty extension. Pre-cast concrete beams and planks will be used for the construction of the jetty, and liquid concrete will be poured over the top to bind all concrete elements together using concrete pumps or concrete skips suspended from a crane. Cement spills are possible.

At Durnish, a significant volume of imported fill material shall be brought to the site of proposed development to raise the level of the existing lands. The top 200mm of topsoil shall be stripped across the extents of the lands prior to the importation of fill material. A roundabout, roads and access structures crossing an OPW drain shall be constructed. The existing land drainage regime means that all runoff from the Durnish site flows into the Robertstown River and the Lower River Shannon SAC.

There is a risk involved with construction activity either in the marine environment, in proximity to or upstream of marine waters that a pollution incident might arise and result in spills or leaks of polluting substances into the estuary and cause a reduction in EPA Q value, being the measure of the CO 'Water Quality' attribute. Mitigation measures must be put in place to reduce these risks.

The possibility of adverse effects on the COs set for Atlantic Salmon as a result of pollution events occurring at the site of proposed development contributing to a failure to maintain their favourable conservation condition in the SAC is very unlikely given that measures must be put in place to manage the pollution risks for other QI COs.

An Adverse Effect on the Integrity of the Site (AEIS) is not predicted as a result of pollution incidents; elevated suspended sediments; disturbance or injury caused by noise and vibration; or habitat loss with suitable mitigation in place.

5.1.1.4.4 Otter [1355]

The CO for this Annex II species is to restore its favourable conservation condition in the Lower River Shannon SAC, as defined by 8. no SSCO attributes and targets:

Distribution:	No significant decline.
Extent of terrestrial habitat:	No significant decline. Area mapped and calculated as 596.8ha above high water mark (HWM); 958.9ha along river banks/around ponds.
Extent of marine habitat:	No significant decline. Area mapped and calculated as 4,461.6ha.
Extent of freshwater (river) habitat:	No significant decline. Length mapped and calculated as 500.1km
Extent of freshwater (lake/lagoon) habitat:	No significant decline. Area mapped and calculated as 125.6ha.
Couching sites and holts:	No significant decline.
Fish biomass available:	No significant decline.
Barriers to connectivity:	No significant increase.

The target for SSCO attribute '*Distribution'* is measured by percentage positive survey sites. The target for '*Extent of terrestrial habitat'* is measured in hectares. The target for '*Extent of marine habitat'* is measured in hectares. The target for '*Extent of freshwater (river) habitat'* is measured in kilometres. The target for '*Extent of freshwater (lake/lagoon) habitat'* is measured in hectares. The target for '*Couching sites and holts'* is measured by the number. The target for *'Fish biomass available'* is measured in kilograms. The target for '*Barriers to connectivity'* is measured by the number.

Map 17 of NPWS (2012b) shows a 250m wide Otter commuting buffer to be present all along the Shannon Estuary, including the Robertstown River and at the port. As noted in Section 5.1.1.3.2, EIAR Chapter 11, EIAR Chapter 11 contains an underwater noise assessment based on measured underwater background noise levels at Foynes Harbour and in the Shannon Estuary during normal port operations, and an underwater noise model to estimate underwater noise levels as a result of various construction activities. The predicted model outputs were then compared with international exposure guidelines for a range of sensitive species.

Table 11.2 of the EIAR notes the threshold dB at which mortality, PTS, TTS and various behavioural effects occurs in different types of marine species including Otter. Table 11.3 lists noise levels for construction activities with potential to generate significant underwater noise. Table 11.4 lists

estimated impact piling sound source levels at the site of proposed development. Table 11.5 lists the distances from the source of underwater noise at which various types of impact (in Table 11.2) are predicted to occur for various marine species and reveals that for Otter, PTS effects are not predicted to occur as a result of construction activities generating the most significant levels of underwater noise.

EIAR Section 7.3.2.4 notes that Otter activity was confined to the northern part of the Durnish site, around the drainage channel and larger drainage pool. Signs of Otter were not observed at the site of the proposed Jetty extension of pontoon relocation during two years of bird surveys or two discrete mammal surveys conducted for the project. No evidence of the existence of Otter holts or couches was recorded on or adjacent to the site of proposed development. The ground mammal assessment concluded that Otters do not breed at the site, but visit the edge of the site occasionally to forage in the drainage channels and pool.

Otters are known to be relatively abundant across the Robertstown River in both the western and eastern parts of Aughinish Island, and breed in both areas (Liam Dundon, wildlife specialist Aughinish, *pers.comm*). This is only 300m across the river. Otter activity at Durnish and Foynes is thus considered most likely to be a result of animals visiting the site occasionally from the Aughinish area.

Looking then at the COs set for Otter, their distribution shall not be adversely affected, as their recorded activity was confined only to the northern part of the Durnish site in aquatic habitats. There will be no significant decline in the extent of terrestrial, freshwater (river, lake or lagoon) habitats, as the area within the SAC above high water mark along river banks and around ponds, and all river, lake and lagoon areas shall not be removed or reduced. The amount of marine area shall be reduced by 0.0081ha (refer Section 5.1.1.1.1) but not by any significant quantum. This small loss will not result in any measurable effect on the Shannon Estuary population of Otter.

No couches or holt sites were identified and their number will therefore not decline as a result of the construction or operation of the proposed development. Mitigation measures are being put in place to reduce pollution and water quality deterioration risks. The fisheries assessment concludes that there will be no significant residual effect on wild or commercial fisheries. Mitigation measures will be put in place to prevent mortality of fish during marine piling. The CO attribute ‘Fish biomass available’ will not be adversely affected. Lastly, the proposed development will not introduce any barriers to the connectivity of habitats used by Otters in the Shannon Estuary.

An Adverse Effect on the Integrity of the Site (AEIS) is not predicted as a result of pollution incidents; elevated suspended sediments; disturbance or injury caused by noise and vibration; or habitat loss with suitable mitigation in place.

5.1.2 River Shannon and River Fergus Estuaries SPA

As noted previously in Section 4.1.7, site specific Conservation Objectives, Version 1.0 (published 17/09/2012) for the River Shannon and River Fergus Estuaries SPA have been used in this shadow appropriate assessment exercise. The Screening for appropriate assessment report concluded that LSEs cannot be discounted without further evaluation and analysis as a consequence of:

- Water Quality and Habitat Deterioration effects
- Aerial Noise and Visual Disturbance effects
- Habitat Hoss effects

Section 4.1.7.2 notes that the site-specific conservation objectives (SSCOs) set for this European site seek to:

- maintain the favourable conservation condition of Cormorant defined by 8 no. SSCO attributes and targets
- maintain the favourable conservation condition of 20 no. wading and waterbird species defined by 2 no. SSCO attributes and targets
- maintain the favourable conservation condition of the wetland habitat in the SPA as a resource for the regularly-occurring migratory waterbirds that utilise it, defined and measured by 1 no. attribute and target.

As noted in Section 4.2.3, Section 7.3.3.2 of EIAR Chapter 7 discusses how 16 of the 21 feature species of this SPA were recorded in the sub-sites containing or adjacent to the two principal components of the proposed development. Light-bellied Brent Goose, Scaup, Shoveler, Knot and Bar-tailed Godwit were not recorded (refer Table 5.1), and are not discussed further here.

Non-breeding waterbird surveys across four survey areas illustrated in EIAR Section 7.2.3.2 were carried out within approximately 3hrs of low tide monthly between November 2015 and March 2017. In this period the majority of waterbirds were dispersed in their foraging areas.

Sub-site 1 contains the marine area of proposed development comprising relocation of the landing pontoon to an area identified at the west side of West Quay, and a new open pile structure and quay furniture constructed to connect the existing West Quay to the existing East Jetty, creating a new Berth No.4.

Sub-site 3 contains the terrestrial area of proposed development to provide additional port storage and prepare a site for the expansion of future port activities and processes.

Table 5.1: Summary of River Shannon and River Fergus Estuaries SPA SCI species recorded during bird surveys (all sub-sites)

Special Conservation Interest Species	Mean of 17 counts	Peak count	Frequency (no of counts)	Frequency (%)	Comments*
Cormorant	11.3	47	15	88	Very frequent in most months. Non- breeding. Steady small numbers but one high peak in January 2017.
Whooper Swan	0.4	2	1	6	Single occurrence of 2 birds flying past in October 2016. Not recorded in other months.
Light-bellied Brent Goose	0	0	0	0	Not recorded
Shelduck	10.6	57	14	82	Very frequent in winter. Moderate numbers. Peak in January to March 2016
Wigeon	42.7	130	12	71	Very frequent in winter. Moderate numbers. Peaks in January.
Teal	61.4	162	13	76	Very frequent in winter. Moderate numbers. Peaks in November to February.
Pintail	1.0	7	2	12	Infrequent in winter. Very small numbers.
Shoveler	0	0	0	0	Not recorded
Scaup	0	0	0	0	Not recorded
Ringed Plover	28.5	114	7	41	Frequent. Moderate numbers. Mainly present August to January.
Golden Plover	309.0	1570	6	35	Frequent. High numbers. Peaks in December to January.
Grey Plover	0.8	2	5	29	Infrequent. Very small numbers.
Lapwing	130.8	495	9	53	Frequent. Moderate numbers. Peaks in November to February.
Knot	0	0	0	0	Not recorded.
Dunlin	126.0	710	11	65	Frequent. Moderate numbers. Peaks in November to February.
Black-tailed Godwit	39.7	188	12	71	Very frequent. Moderate numbers. Present September to April.
Bar-tailed Godwit	0	0	0	0	Not recorded
Curlew	60.6	151	15	88	Very frequent in most months. Moderate numbers. Present July to March.
Redshank	48.6	114	15	88	Very frequent in most months. Moderate numbers. Present July to April.
Greenshank	8.6	26	13	76	Very frequent. Moderate numbers. Peak on passage in October.
Black-headed Gull	166.6	410	17	100	Very frequent in all months. Moderate numbers. Peaks September to March. Recorded in small numbers in the development area at East Jetty.

* *Frequency:* 1-33% Infrequent; 34-66% Frequent; 67-100% Very frequent.

5.1.2.1 Breeding Special Conservation Interests

5.1.2.1.1 Cormorant [A017] (breeding)

The CO is to maintain the favourable conservation condition of Cormorant in the River Shannon and River Fergus Estuaries SPA, as defined by 8. no SSCO attributes and targets. Six of the eight are discussed here:

Breeding population abundance:	No significant decline
Productivity rate:	No significant decline
Distribution: breeding colonies:	No significant decline
Prey biomass available:	No significant decline
Barriers to connectivity:	No significant increase
Disturbance at the breeding site:	Human activities should occur at levels that do not adversely affect the breeding cormorant population

The target for SSCO attribute '*Breeding population abundance: apparently occupied nests (AONs)'* is measured by number. The target for '*Productivity rate*' is measured by the mean number. The target for '*Distribution: breeding colonies'* is measured by the number; location; area (hectares). The target for '*Prey biomass available'* is measured in kilogrammes. The target for '*Barriers to connectivity*' is measured by the number; location; shape; area (hectares). The target for '*Disturbance at the breeding site*' is measured by the level of impact. The target for *'Population trend'* is measured in percentage change. The target for '*Distribution*' is measured by range; timing and intensity of use of areas.

NPWS (2012d) notes that Cormorant colonies are usually sited on flat or rocky islets or sea stack tops, less often on cliffs but they can also nest in trees (Walsh *et al.,* 1995). EIAR Section 7.3.3.1 describes the breeding birds recorded at the site of proposed development. Whilst Cormorant was recorded occasionally at Durnish lands in the grassland habitat, no evidence of breeding behaviour was observed during surveys. There is no breeding site of Cormorant at the Durnish site. There is also no breeding site for Cormorant at the site of the proposed marine development.

Six of the eight CO attributes for Cormorant apply to the breeding population. Of these, Breeding population abundance (AONs); Productivity rate; Distribution of breeding colonies; Barriers to connectivity and Disturbance at the breeding site will remain unaffected as a result of the construction and operation of the proposed development. As there is no Cormorant breeding site in this part of the Shannon Estuary, there is unlikely to be any significant decline in distribution of breeding colonies or AONs or productivity at the breeding colonies; nor is there likely to be any significant increase in barriers to connectivity between breeding colonies or disturbance caused by human activity at levels likely to adversely affect the breeding cormorant population.

An adverse effect on the conservation objectives set for breeding Cormorant is not predicted as a result of the construction or operation of the proposed development.

5.1.2.2 Non-breeding Special Conservation Interests

In relation to maintaining the favourable conservation condition of wading and waterbird species, NPWS (2012d) notes that the overarching CO for the SPA is to ensure that waterbird populations and their wetland habitats are maintained at, or restored to, favourable conservation condition. This includes, as an integral part, the need to avoid deterioration of habitats and significant disturbance; thereby ensuring the persistence of site integrity.

To be favourable, the long term population trend for each waterbird SCI species should be stable or increasing. Waterbird populations are deemed to be unfavourable when they have declined by 25% or more, as assessed by the most recent population trend analysis. To be favourable, there should be no significant decrease in the range, timing or intensity of use of areas by the waterbird species of SCI, other than that occurring from natural patterns of variation.

NPWS (2012d) points out that factors that can adversely affect the achievement of the COs include:

- *Habitat modification*: activities that modify discreet areas or the overall habitat(s) within the SPA in terms of how one or more of the listed species use the site (e.g. as a feeding resource) could result in the displacement of these species from areas within the SPA and/or a reduction in their numbers
- *Disturbance*: anthropogenic disturbance that occurs in or near the site and is either singular or cumulative in nature could result in the displacement of one or more of the listed waterbird species from areas within the SPA, and a reduction in their numbers
- *Ex-situ factors*: several of the listed waterbird species may at times use habitats situated within the immediate hinterland of the SPA or in areas ecologically connected to it. The reliance on these habitats will vary from species to species and from site to site. Significant habitat change or increased levels of disturbance within these areas could result in the displacement of one or more of the listed waterbird species from areas within the SPA, and/or a reduction in their numbers

Whilst Table 5.1 lists the mean count and frequency of SCI species recorded during waterbird surveys, EIAR Section 7.5.3 confirms that less than 10 individual non-breeding birds occurred in the area of the proposed marine development during the period 2105 to 2017. Oystercatcher and Black-headed Gull were the only waterbird species present here. Oystercatcher is not a SCI of this SPA. The remaining species recorded during survey occur in the marine and intertidal environment around the Port of Foynes and lands at Durnish within some or all of the four sub-sites surveyed, but not at the site of proposed development.

Waterbird surveys conducted for a previous port development to reclaim land at the East Jetty (Planning Reg. Ref.: 12/212) found the port area to be unimportant for SCI species also.

Whilst it is likely that SCI waterbirds avoid the port area in part due to port activities, Section 7.3.1.2 of the EIAR describes the benthic community present at the intertidal and shallow subtidal areas at the port as containing low abundances of benthic infauna. Other areas within the SPA are likely to provide higher yielding feeding areas for wintering wader and waterbird SCI species.

5.1.2.2.1 Cormorant [A017] (wintering)

The CO is to maintain the favourable conservation condition of Cormorant in the River Shannon and River Fergus Estuaries SPA, as defined by 2. no additional SSCO attributes and targets.

Population trend:	Long term population trend stable or increasing
Distribution:	There should be no significant decrease in the range, timing or intensity of use of areas by cormorant other than that occurring from natural patterns of variation

The target for SSCO attribute '*Population trend*' is measured by percentage change. The target for '*Distribution*' is measured by range; timing and intensity of use of areas.

NPWS (2012d) notes that the conservation condition of Cormorant is 'undetermined' and that it is widely distributed throughout the SPA during winter. It has highly specialised food/prey requirements and its principal supporting habitats within the SPA are sheltered and shallow subtidal sand and mud flats.

Cormorant was recorded very frequently in most months in steady small numbers in the sub-sites shown in EIAR Section 7.2.3.2 but it was not recorded at the site of proposed marine development. It was recorded at the Durnish site during the breeding season but was not breeding here. As such, construction or operation of the proposed development will not interfere with the range, timing or intensity of use of areas within the SPA by Cormorant. Construction or operation of the proposed development will not affect achieving a stable or increasing long term population trend for the species.

An adverse effect on the conservation objectives set for wintering Cormorant is not predicted as a result of the construction or operation of the proposed development.

5.1.2.2.2 Whooper Swan [A038] (wintering)

The CO is to maintain the favourable conservation condition of Whooper Swan in the River Shannon and River Fergus Estuaries SPA, as defined by 2. no SSCO attributes and targets:

Population trend:	Long term population trend stable or increasing.
Distribution:	There should be no significant decrease in the range, timing or intensity of use of areas by whooper swan other than that occurring from natural patterns of variation.

The target for SSCO attribute '*Population trend'* is measured by percentage change. The target for '*Distribution*' is measured by range; timing and intensity of use of areas.

NPWS (2012d) notes that the SPA regularly supports 1% or more of the all-Ireland population of Whooper Swan, and the mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 118 individuals. EIAR Chapter 7, Section 7.3.3 notes that a peak number of 2 Whooper swan individuals were recorded in surveys spanning two successive winter seasons (2015/16 and 2016/17). The conservation condition of Whooper Swan is 'favourable' and that it is widely distributed throughout the SPA during winter. It has wide ranging food/prey requirements and its principal supporting habitats within the SPA are lagoon and associated habitats, intertidal mudflats and shallow subtidal areas.

Cormorant was recorded only once overflying the survey area shown in EIAR Section 7.2.3.2. It was not recorded at the site of proposed development. As such, construction or operation of the proposed development will not interfere with the range, timing or intensity of use of areas within the SPA by Whooper Swan. Construction or operation of the proposed development will not affect achieving a stable or increasing long term population trend for the species.

An adverse effect on the conservation objectives set for wintering Whooper Swan is not predicted as a result of the construction or operation of the proposed development.

5.1.2.2.3 Shelduck [A048] (wintering)

The CO is to maintain the favourable conservation condition of Shelduck in the River Shannon and River Fergus Estuaries SPA, as defined by 2. no SSCO attributes and targets:

Population trend:	Long term population trend stable or increasing.
Distribution:	There should be no significant decrease in the range, timing or intensity of use of areas by shelduck other than that occurring from natural patterns of variation.

The target for SSCO attribute '*Population trend'* is measured by percentage change. The target for '*Distribution*' is measured by range; timing and intensity of use of areas.

NPWS (2012d) notes that the conservation condition of Shelduck is 'undetermined' and that it has a localised distribution throughout the SPA during winter. It has wide ranging food/prey requirements and its principal supporting habitats within the SPA are intertidal mud and sand flats.

Shelduck was recorded very frequently in winter in moderate numbers in the sub-sites shown in EIAR Section 7.2.3.2 but it was not recorded at the site of proposed development. As such, construction or operation of the proposed development will not interfere with the range, timing or intensity of use of

areas within the SPA by Shelduck. Construction or operation of the proposed development will not affect achieving a stable or increasing long term population trend for the species.

An adverse effect on the conservation objectives set for wintering Shelduck is not predicted as a result of the construction or operation of the proposed development.

5.1.2.2.4 Wigeon [A050] (wintering)

The CO is to maintain the favourable conservation condition of Wigeon in the River Shannon and River Fergus Estuaries SPA, as defined by 2. no SSCO attributes and targets:

Population trend:	Long term population trend stable or increasing.
Distribution:	There should be no significant decrease in the range, timing or intensity of use of areas by wigeon other than that occurring from natural patterns of variation.

The target for SSCO attribute '*Population trend*' is measured by percentage change. The target for '*Distribution*' is measured by range; timing and intensity of use of areas.

NPWS (2012d) notes that the conservation condition of Wigeon is 'highly unfavourable' and that it has a widespread distribution throughout the SPA during winter. It has narrower ranging food/prey requirements than some other ducks and its principal supporting habitats within the SPA are intertidal mud and sand flats and sheltered and shallow subtidal areas.

Wigeon was recorded very frequently in winter in moderate numbers in the sub-sites shown in EIAR Section 7.2.3.2 but it was not recorded at the site of proposed development. As such, construction or operation of the proposed development will not interfere with the range, timing or intensity of use of areas within the SPA by Wigeon. Construction or operation of the proposed development will not affect achieving a stable or increasing long term population trend for the species.

An adverse effect on the conservation objectives set for wintering Wigeon is not predicted as a result of the construction or operation of the proposed development.

5.1.2.2.5 Teal [A052] (wintering)

The CO is to maintain the favourable conservation condition of Teal in the River Shannon and River Fergus Estuaries SPA, as defined by 2. no SSCO attributes and targets:

Population trend:	Long term population trend stable or increasing.
Distribution:	There should be no significant decrease in the range, timing or intensity of use of areas by teal other than that occurring from natural patterns of variation.

The target for SSCO attribute '*Population trend'* is measured by percentage change. The target for '*Distribution*' is measured by range; timing and intensity of use of areas.

NPWS (2012d) notes that the conservation condition of Teal is 'undetermined' and that it has a widespread distribution throughout the SPA during winter. It has wide ranging food/prey requirements and its principal supporting habitats within the SPA are intertidal mud and sand flats and sheltered and shallow subtidal areas.

Teal was recorded very frequently in winter in moderate numbers in the sub-sites shown in EIAR Section 7.2.3.2 but it was not recorded at the site of proposed development. It was recorded at the Durnish site as a possible breeding species also. As such, construction or operation of the proposed development will not interfere with the range, timing or intensity of use of areas within the SPA by Teal in winter. Construction or operation of the proposed development will not affect achieving a stable or increasing long term population trend for the species.

An adverse effect on the conservation objectives set for wintering Teal is not predicted as a result of the construction or operation of the proposed development.

5.1.2.2.6 Pintail [A054] (wintering)

The CO is to maintain the favourable conservation condition of Pintail in the River Shannon and River Fergus Estuaries SPA, as defined by 2. no SSCO attributes and targets:

Population trend:	Long term population trend stable or increasing.
Distribution:	There should be no significant decrease in the range, timing or intensity of use of areas by pintail other than that occurring from natural patterns of variation.

The target for SSCO attribute '*Population trend'* is measured by percentage change. The target for '*Distribution*' is measured by range; timing and intensity of use of areas.

NPWS (2012d) notes that the conservation condition of Pintail is 'undetermined' and that it has a localised distribution throughout the SPA during winter. It has wide ranging food/prey requirements and its principal supporting habitats within the SPA are intertidal mud and sand flats and sheltered and shallow subtidal areas.

Pintail was recorded infrequently in winter in very small numbers in the sub-sites shown in EIAR Section 7.2.3.2 and it was not recorded at the site of proposed development. As such, construction or operation of the proposed development will not interfere with the range, timing or intensity of use of areas within the SPA by Pintail. Construction or operation of the proposed development will not affect achieving a stable or increasing long term population trend for the species.

An adverse effect on the conservation objectives set for wintering Pintail is not predicted as a result of the construction or operation of the proposed development.

5.1.2.2.7 Ringed Plover [A137] (wintering)

The CO is to maintain the favourable conservation condition of Ringed Plover in the River Shannon and River Fergus Estuaries SPA, as defined by 2. no SSCO attributes and targets:

Population trend:	Long term population trend stable or increasing.
Distribution:	There should be no significant decrease in the range, timing or intensity of use of areas by ringed plover other than that occurring from natural patterns of variation.

The target for SSCO attribute '*Population trend'* is measured by percentage change. The target for '*Distribution*' is measured by range; timing and intensity of use of areas.

NPWS (2012d) notes that the conservation condition of Ringed Plover is 'undetermined' and that it has a localised distribution throughout the SPA during winter. It has wide ranging food/prey requirements and its principal supporting habitats within the SPA are intertidal mud and sand flats.

Ringed Plover was recorded frequently in winter in moderate numbers in the sub-sites shown in EIAR Section 7.2.3.2 but it was not recorded at the site of proposed development. As such, construction or operation of the proposed development will not interfere with the range, timing or intensity of use of areas within the SPA by Ringed Plover. Construction or operation of the proposed development will not affect achieving a stable or increasing long term population trend for the species.

An adverse effect on the conservation objectives set for wintering Ringed Plover is not predicted as a result of the construction or operation of the proposed development.

5.1.2.2.8 Golden Plover [A140] (wintering)

The CO is to maintain the favourable conservation condition of Golden Plover in the River Shannon and River Fergus Estuaries SPA, as defined by 2. no SSCO attributes and targets:

Population trend:	Long term population trend stable or increasing.
Distribution:	There should be no significant decrease in the range, timing or intensity of use of areas by golden plover other than that occurring from natural patterns of variation.

The target for SSCO attribute '*Population trend'* is measured by percentage change. The target for '*Distribution*' is measured by range; timing and intensity of use of areas.

NPWS (2012d) notes that the conservation condition of Golden Plover is 'undetermined' and that it has an intermediate distribution throughout the SPA during winter. It has wide ranging food/prey requirements and its principal supporting habitats within the SPA are intertidal mud and sand flats.

Golden Plover was recorded frequently in winter in high numbers in the sub-sites shown in EIAR Section 7.2.3.2 but it was not recorded at the site of proposed development. As such, construction or operation of the proposed development will not interfere with the range, timing or intensity of use of areas within the SPA by Golden Plover. Construction or operation of the proposed development will not affect achieving a stable or increasing long term population trend for the species.

An adverse effect on the conservation objectives set for wintering Golden Plover is not predicted as a result of the construction or operation of the proposed development.

5.1.2.2.9 Grey Plover [A141] (wintering)

The CO is to maintain the favourable conservation condition of Grey Plover in the River Shannon and River Fergus Estuaries SPA, as defined by 2. no SSCO attributes and targets:

Population trend:	Long term population trend stable or increasing.
Distribution:	There should be no significant decrease in the range, timing or intensity of use of areas by grey plover other than that occurring from natural patterns of variation.

The target for SSCO attribute '*Population trend*' is measured by percentage change. The target for '*Distribution*' is measured by range; timing and intensity of use of areas.

NPWS (2012d) notes that the conservation condition of Grey Plover is 'undetermined' and that it has a localised distribution throughout the SPA during winter. It has wide ranging food/prey requirements and its principal supporting habitats within the SPA are intertidal mud and sand flats.

Grey Plover was recorded infrequently in winter in very small numbers in the sub-sites shown in EIAR Section 7.2.3.2 but it was not recorded at the site of proposed development. As such, construction or operation of the proposed development will not interfere with the range, timing or intensity of use of areas within the SPA by Grey Plover. Construction or operation of the proposed development will not affect achieving a stable or increasing long term population trend for the species.

An adverse effect on the conservation objectives set for wintering Grey Plover is not predicted as a result of the construction or operation of the proposed development.

5.1.2.2.10 Lapwing [A142] (wintering)

The CO is to maintain the favourable conservation condition of Lapwing in the River Shannon and River Fergus Estuaries SPA, as defined by 2. no SSCO attributes and targets:

Population trend:	Long term population trend stable or increasing.
Distribution:	There should be no significant decrease in the range, timing or intensity of use of areas by lapwing other than that occurring from natural patterns of variation.

The target for SSCO attribute '*Population trend'* is measured by percentage change. The target for '*Distribution*' is measured by range; timing and intensity of use of areas.

NPWS (2012d) notes that the conservation condition of Lapwing is 'undetermined' and that it has a widespread distribution throughout the SPA during winter. It has wide ranging food/prey requirements and its principal supporting habitats within the SPA are intertidal mud and sand flats.

Lapwing was recorded frequently in winter in moderate numbers in the sub-sites shown in EIAR Section 7.2.3.2 but it was not recorded at the site of proposed development. As such, construction or operation of the proposed development will not interfere with the range, timing or intensity of use of areas within the SPA by Lapwing. Construction or operation of the proposed development will not affect achieving a stable or increasing long term population trend for the species.

An adverse effect on the conservation objectives set for wintering Lapwing is not predicted as a result of the construction or operation of the proposed development.

5.1.2.2.11 Dunlin [A149] (wintering)

The CO is to maintain the favourable conservation condition of Dunlin in the River Shannon and River Fergus Estuaries SPA, as defined by 2. no SSCO attributes and targets:

Population trend:	Long term population trend stable or increasing.
Distribution:	There should be no significant decrease in the range, timing or intensity of use of areas by dunlin other than that occurring from natural patterns of variation.

The target for SSCO attribute '*Population trend'* is measured by percentage change. The target for '*Distribution*' is measured by range; timing and intensity of use of areas.

NPWS (2012d) notes that the conservation condition of Dunlin is 'undetermined' and that it has an intermediate distribution throughout the SPA during winter. It has wide ranging food/prey requirements and its principal supporting habitats within the SPA are intertidal mud and sand flats.

Dunlin was recorded frequently in winter in moderate numbers in the sub-sites shown in EIAR Section 7.2.3.2 but it was not recorded at the site of proposed development. As such, construction or operation of the proposed development will not interfere with the range, timing or intensity of use of

areas within the SPA by Dunlin. Construction or operation of the proposed development will not affect achieving a stable or increasing long term population trend for the species.

An adverse effect on the conservation objectives set for wintering Dunlin is not predicted as a result of the construction or operation of the proposed development.

5.1.2.2.12 Black-tailed Godwit [A156] (wintering)

The CO is to maintain the favourable conservation condition of Black-tailed Godwit in the River Shannon and River Fergus Estuaries SPA, as defined by 2. no SSCO attributes and targets:

Population trend:	Long term population trend stable or increasing.
Distribution:	There should be no significant decrease in the range, timing or intensity of use of areas by black-tailed godwit other than that occurring from natural patterns of variation.

The target for SSCO attribute '*Population trend*' is measured by percentage change. The target for '*Distribution*' is measured by range; timing and intensity of use of areas.

NPWS (2012d) notes that the conservation condition of Black-tailed Godwit is 'undetermined' and that it has a localised distribution throughout the SPA during winter. It has wide ranging food/prey requirements and its principal supporting habitats within the SPA are intertidal mud and sand flats.

Black-tailed Godwit was recorded very frequently in winter in moderate numbers in the sub-sites shown in EIAR Section 7.2.3.2 but it was not recorded at the site of proposed development. As such, construction or operation of the proposed development will not interfere with the range, timing or intensity of use of areas within the SPA by Black-tailed Godwit. Construction or operation of the proposed development will not affect achieving a stable or increasing long term population trend for the species.

An adverse effect on the conservation objectives set for wintering Black-tailed Godwit is not predicted as a result of the construction or operation of the proposed development.

5.1.2.2.13 Curlew [A160] (wintering)

The CO is to maintain the favourable conservation condition of Curlew in the River Shannon and River Fergus Estuaries SPA, as defined by 2. no SSCO attributes and targets:

Population trend:	Long term population trend stable or increasing.
Distribution:	There should be no significant decrease in the range, timing or intensity of use of areas by curlew other than that occurring from natural patterns of variation.

The target for SSCO attribute '*Population trend*' is measured by percentage change. The target for '*Distribution*' is measured by range; timing and intensity of use of areas.

NPWS (2012d) notes that the conservation condition of Curlew is 'undetermined' and that it has a widespread distribution throughout the SPA during winter. It has wide ranging food/prey requirements and its principal supporting habitats within the SPA are intertidal mud and sand flats.

Curlew was recorded very frequently in moderate numbers between July and March in the sub-sites shown in EIAR Section 7.2.3.2 but it was not recorded at the site of proposed development. As such, construction or operation of the proposed development will not interfere with the range, timing or intensity of use of areas within the SPA by Curlew. Construction or operation of the proposed development will not affect achieving a stable or increasing long term population trend for the species.

An adverse effect on the conservation objectives set for wintering Curlew is not predicted as a result of the construction or operation of the proposed development.

5.1.2.2.14 Redshank [A162] (wintering)

The CO is to maintain the favourable conservation condition of Redshank in the River Shannon and River Fergus Estuaries SPA, as defined by 2. no SSCO attributes and targets:

Population trend:	Long term population trend stable or increasing.
Distribution:	There should be no significant decrease in the range, timing or intensity of use of areas by redshank other than that occurring from natural patterns of variation.

The target for SSCO attribute '*Population trend*' is measured by percentage change. The target for '*Distribution*' is measured by range; timing and intensity of use of areas.

NPWS (2012d) notes that the conservation condition of Redshank is 'undetermined' and that it has an intermediate distribution throughout the SPA during winter. It has wide ranging food/prey requirements and its principal supporting habitats within the SPA are intertidal mud and sand flats.

Redshank was recorded very frequently in moderate numbers between July and April in the sub-sites shown in EIAR Section 7.2.3.2 but it was not recorded at the site of proposed development. As such, construction or operation of the proposed development will not interfere with the range, timing or intensity of use of areas within the SPA by Redshank. Construction or operation of the proposed development will not affect achieving a stable or increasing long term population trend for the species.

An adverse effect on the conservation objectives set for wintering Redshank is not predicted as a result of the construction or operation of the proposed development.

5.1.2.2.15 Greenshank [A164] (wintering)

The CO is to maintain the favourable conservation condition of Greenshank in the River Shannon and River Fergus Estuaries SPA, as defined by 2. no SSCO attributes and targets:

Population trend:	Long term population trend stable or increasing.
Distribution:	There should be no significant decrease in the range, timing or intensity of use of areas by greenshank other than that occurring from natural patterns of variation.

The target for SSCO attribute '*Population trend*' is measured by percentage change. The target for '*Distribution*' is measured by range; timing and intensity of use of areas.

NPWS (2012d) notes that the conservation condition of Greenshank is 'undetermined' and that it has an intermediate distribution throughout the SPA during winter. It has wide ranging food/prey requirements and its principal supporting habitats within the SPA are intertidal mud and sand flats.

Greenshank was recorded very frequently in winter moderate numbers, peaking in passage in October in the sub-sites shown in EIAR Section 7.2.3.2 but it was not recorded at the site of proposed development. As such, construction or operation of the proposed development will not interfere with the range, timing or intensity of use of areas within the SPA by Greenshank. Construction or operation of the proposed development will not affect achieving a stable or increasing long term population trend for the species.

An adverse effect on the conservation objectives set for wintering Greenshank is not predicted as a result of the construction or operation of the proposed development.

5.1.2.2.16 Black-headed Gull [A179] (wintering)

The CO is to maintain the favourable conservation condition of Black-headed Gull in the River Shannon and River Fergus Estuaries SPA, as defined by 2. no SSCO attributes and targets:

Population trend:	Long term population trend stable or increasing.
Distribution:	There should be no significant decrease in the range, timing or intensity of use of areas by black-headed gull other than that occurring from natural patterns of variation.

The target for SSCO attribute '*Population trend*' is measured by percentage change. The target for '*Distribution*' is measured by range; timing and intensity of use of areas.

NPWS (2012d) notes that the conservation condition of Black-headed Gull is 'undetermined'. It has wide ranging food/prey requirements and its principal supporting habitats within the SPA are intertidal flats and sheltered and shallow subtidal areas.

Black-headed Gull was recorded very frequently in moderate numbers in all months in the sub-sites shown in EIAR Section 7.2.3.2 and it was recorded at the site of proposed development East Jetty extension area in very small (single) numbers.

Disturbance to this species could result in:

- Birds looking up or heads raised, temporarily stopping feeding or roosting
- Birds moving from the cause of the disturbance by walking away before resuming previous activity
- Birds taking flight and landing somewhere further from the disturbance stimulus in the same feeding area or mudflat
- Birds taking flight and leaving the area completely

This species has a foraging range of 40km (Thaxter *et al.*, 2012). The Dot-density distribution diagram for Black-headed Gull at Appendix 8 of the River Shannon and River Fergus Estuaries SPA Conservation Objectives Supporting Document (NPWS, 2012d) shows that the species forages widely across the estuary, and that the site of proposed development at the Port in Foynes and the Robertstown River flanking the site of proposed development at Durnish does not represent a significant foraging or roosting site for this species. Black-headed Gull using the site of the proposed East Jetty extension already co-exists alongside existing port activities at the existing port quays.

Given that the numbers observed here are very low (single figures) throughout the survey period when compared with the 8,550 peak count of the 2010/11 Waterbird Survey Programme (NPWS, 2012d), construction or operation of the proposed development will not likely interfere with the range, timing or intensity of use of areas within the SPA by Black-headed Gull. Construction or operation of the proposed development will not affect achieving a stable or increasing long term population trend for the species.

An adverse effect on the conservation objectives set for wintering Black-headed Gull is not predicted as a result of the construction or operation of the proposed development.

5.1.2.3 Wetland and Waterbirds [A999]

NPWS (2012d) notes that the wetland habitats contained within this SPA are considered to be a SCI in their own right. The wetland habitat is an important resource for other waterbird species which are part of the total waterbird assemblage of the site but are not specifically listed as Special Conservation Interests. These species may include those that stopover at the site during passage,

those that are present in months of the year outside of the non-breeding season between September and March or species that use the site at certain times only (e.g. as a cold weather refuge).

NPWS (2012d) also notes that the maintenance of the 'quality' of wetland habitat lies outside the scope of the conservation objective for Wetlands, but for the SCI species, the scope of the other principal objective (to maintain the favourable conservation condition of the SCI species) covers the need to maintain, or improve where appropriate, the different properties of the wetland habitats contained within the SPA.

Given that the risk of pollution that exists during marine construction operations at the port and soil stripping and import of fill material at Durnish, mitigation measures are to be put in place to reduce this risk, and as a consequence the possibility of adverse effects on the COs set for Wetlands as a result of pollution events is very unlikely given that measures will be put in place to manage the pollution risk.

5.1.3 In-combination Effects

5.1.3.1 Future phases of the proposed development

Having regard to the 10 year lifespan of the intended planning permission and the predicted increase in tonnage presented in Section 3 of this report and Chapter 2 of the EIAR, it is proposed to implement the operational use of the Durnish land in three phases in line with economic growth and customer demand. However, to ensure the effective and timely availability of the Durnish lands for operational use as the needs arise, the proposed development includes the filling of all of the Durnish land as part of the initial phase of development.

It is possible that all sub phases could be undertaken simultaneously if market conditions dictate. However, the upfront capital cost of undertaking site development works and specifically the raising of ground levels across the entire of the Durnish lands is unviable in the absence of one specific user for the lands. Furthermore, the timescale for implementation of that specific measure (raising the ground levels across the entire site prior to any operational use) will delay the opportunity to provide for immediate storage requirements with the potential effects on maintaining Port competitiveness. Thus, in adopting a balanced approach, the development strategy has pursued a phased approach to the development of the Durnish lands, and, within the context of a defined 'development framework'. The proposed first phase of development reflects the 'development framework' for that area given that the immediate requirements are know at this time.

A Framework Plan (which is submitted as part of the planning application) sets out a development concept arrangement for the entire Durnish lands (Phase 1, 2 and 3) in order to present a holistic and co-ordinated approach toward the orderly and sustainable development of the Durnish Lands. This will guide subsequent developments within subsequent Phase 2 and Phase 3 given that the specific details of uses are not known at this time and assists this assessment process. The Framework

Plan presents a strategic arrangement of inter-alia; general layout arrangements; the design and implementation of infrastructure including water, energy services, flood risk management, water services, lighting, and site security; the primary internal access roads, building heights and design across the entire site.

Examination of this 'worst-case' scenario is based on the likely effects of the proposed development and proposed uses as part of Phase 1, and, the anticipated land uses that will occur from subsequent operational use of Phase 2 and Phase 3 based on the information known and available at this time in respect of those subsequent Phases. Despite the consideration of those subsequent development phases as part of this in-combination assessment, the future uses in those phases shall be subject to planning consent in the future. Proposed and likely anticipated uses for future development in Phases 2 and 3 (based on existing and proposed port uses) are:

Phase 2 – Likely Operational Scenario (Subject to future planning consent)

Accommodation of additional (predicted) 991,874 tonnes of cargo throughput to deliver total Port tonnage throughput of 2,770,000 tonnes by 2025. Anticipated delivery consisting of:

- Covered storage of circa 1.2ha
- Open storage of circa 2.4ha
    - Construction of warehousing and open storage areas for marine related industrial use and port centric activities
    - Construction of internal road network
    - Provision of foul water infrastructure
    - Provision of lighting and services
    - Provision of security fencing

Phase 3 – Likely Operational Scenario (Subject to future planning consent)

Accommodation of additional (predicted) 510,000 tonnes of cargo throughput to deliver total Port tonnage throughput of 3,280,000tonnes by 2030. Anticipated delivery consisting of:

- Covered storage 2.8ha
- Open storage 6.1ha
    - Construction of warehousing and open storage areas for marine related industrial use and port centric activities
    - Construction of internal road network
    - Provision of foul water infrastructure
    - Provision of lighting and services
    - Provision of security fencing

Open storage uses (predicted for Phase 2 and 3):

- Breakbulk and project cargo such as steel sections/reinforcement, timber, palletised fuel/fertiliser, wind turbine blades etc. (stored 10m high)
- Loose cargoes such as woodchip biomass fuel (stored 6m high)
- Scrap metal (stored 8m high)
- Storage of containers (up to 3nr high) approx. 8m high with handling equipment up to 17m height

Covered storage (predicted for Phase 2 and 3):

- Warehousing (up to 20m height)
- Storage tanks (up to 15m height)

The Framework Plan has been reviewed and the strategic plans of general layout arrangements; the design and implementation of infrastructure including water, energy services, flood risk management, water services, lighting, and site security; internal access roads, building heights and design across the entire site have been taken into account in making the cumulative assessment.

Mitigation has been proposed in Section 5.2 of this report which mirrors mitigation proposed in the EIAR dealing with water quality impact pathways.

The assessment of the initial phase has considered the raising of the lands by infilling, provision of infrastructure and landscaping across a ten year window as shown in EIAR Figure 2.10. No new land-take is required for later phases. Operational noise and visual disturbance is not predicted to be significant as a result of the set-back distance of the proposed later phase uses and physical screen provided by both the landscaping to be planted and the flood berm of the Robertstown River in the north of the site.

Operational uses in later phases are not considered to act in combination to increase the magnitudes of predicted effect on the designated sites.

5.1.3.2 Other permitted development

A number of other consented developments were reviewed, as outlined in Table 7.6.1, to take account of any likely significant adverse effects on biodiversity features that were relevant to the in-combination assessment on European sites.

Table 5.2: Other Projects considered for in-combination effects

Planning Reg. Ref.	*Location and description of consented development*
12/212 and 17/7019	• 2.49 hectares of reclamation at the East Jetty in Foynes Port. • This application was accompanied by an EIS and a NIS.
13/164	• Aughinish East, Aughinish West, Island Mac Teige & Glenbane West, Askeaton. • Amendment of planning reference no. 12/343 for provision of 2 no. gas-fired steam boilers including 2 no. 32m high exhaust stacks. • This application relates to development requiring an IPCC Licence.
14/603	• Lands at Durnish, Internal Port Road, Shannon Foynes Port, Foynes. • Alterations and extension to the existing industrial building, erection of new buildings and new hardcore area for external storage, to accommodate the storage, screening, processing, binding and packaging of solid fuel briquettes by CPL and to use the property for purposes associated with the import and export of products through the Port of Foynes. • An EIS and an AA Screening Statement were submitted with the planning application.
15/468	• Durnish, International Port Road, Shannon Foynes Port. • Smokeless and bio-mass based solid fuel manufacturing and packaging facility at and adjacent to existing coal storage and baggage facility. • This application was accompanied by an EIS and a NIS.
16/418	• Aughinish East, Aughinish West, Island Mac Teige, Glenbane West, Morgan North & Fawnamore, at/or adjacent to Aughinish Island, Askeaton. • A ten year permission for development on a site of c. 0.225 ha located within the existing Aughinish Alumina plant consisting of the installation of 2 no. deep thickeners and ancillary elements, including stairs, access platforms and walkways linking to adjacent vessels, pumps, cabling and pipework.
17/714	• Aughinish East, Aughinish West, Island Mac Teige, Glenbane West, Morgan North and Fawnamore at or adjacent to Aughinish Island, Askeaton. • A ten year permission for development on this site of c. 7 hectares located adjoining the existing Aughinish Alumina Ltd plant for the provision of a Borrow Pit with an extraction area of c. 4.5 hectares to extract c. 374.000 m³ of rock over a 10 year period. • An EIS accompanied the application.

Shannon Foynes Port Company was granted planning permission (Planning Reg. Ref.: 12/212) to reclaim the foreshore behind the existing East Jetty. The permission for this consented development was extended in 2017 (17/7019). The project results in the provision of additional port lands but also the loss of 2.49ha subtidal and intertidal habitat from within the Lower River Shannon SAC and River

Shannon, River Fergus Estuaries SPA and partially within the Inner Shannon Estuary - South Shore pNHA. The consented development also includes management of *Spartina anglica* within the designated sites at the Barrigone Inlet, Aughinish. A Foreshore Licence application (FS006785) has been submitted to permit the habitat management works on the foreshore to open up more intertidal areas for overwintering waders and waterfowl.

When read together, the extant Planning Permission (12/212) together with the conditions/restrictions and environmental commitments enshrined therein, result in no AEIS being predicted upon the European sites. With the mitigation proposed in this application applied to the proposed development, there is no AEIS predicted upon the European sites.

Predicted significant effects of the extant (12/212) Planning Permission and the proposed development do not act cumulatively or in combination under any of the following impact pathway themes to result in AEIS upon any European site:

- Water quality and habitat deterioration
- Underwater noise and disturbance
- Aerial noise and visual disturbance
- Habitat Loss

The remaining projects considered in Table 5.2 do not result in significant adverse ecological effects upon the designated sites. With the mitigation proposed in this application applied to the proposed development, there is no significant adverse ecological effect upon the designated sites. Cumulatively, there is no significant adverse cumulative effect of the proposed development and the other projects listed in Table 5.2.

5.2 MITIGATION MEASURES

5.2.1 Construction Phase

5.2.1.1 Water Quality

A Construction stage Environmental Management Plan (CEMP) will be prepared to capture all mitigation measures together with any conditions imposed by the competent authority to develop a practical programme of measures for the Contractor. The CEMP will form part of the specification of the Contract Documents for the construction stage. The CEMP will include mitigation measures to safeguard the receiving waters. It will set out established lines of communication, reporting and actions, and will contain at least but not limited to the following:

- Waste Management Plan
- Contamination Strategy
- Water Quality Management Plan

It will contain mitigation measures informed by best practice and adherence to relevant Irish guidelines, or recognised international guidelines where Irish guidelines are not available:

- Good practice guidelines on the control of water pollution from construction sites developed by the Construction Industry Research and Information Association (CIRIA, 2001);
- Guidance for Pollution Prevention series (GPP), Pollution prevention guidelines (PPGs) in relation to a variety of activities developed by the Environment Agency (EA), the Scottish Environmental Agency (SEPA) and the Northern Ireland Environment Agency (NIEA);
- Fisheries Guidelines for Local Authority Works. Department of Communications, Marine & Natural Resources, Dublin, (Anonymous, 1998);
- Guidelines on protection of fisheries habitats during construction projects (Eastern Regional Fisheries Board, 2006);
- International Convention for the Prevention of Pollution From Ships, 1973, as modified by the Protocol of 1978 (MARPOL) for domestic waste discharges to the environment;
- International Marine Organisation guidelines; and
- Control of Substances Hazardous to Health (COSHH) Handling of Hazardous Materials.

5.2.1.1.1 Sediment Control

Mitigation and control measures to address the impact from suspended sediments associated with construction activities on the landward side of the development will follow best practice guidance and sound design principals as outlined above. Sediment control measures will be consistent with the following guidance outlined above.

Based on the guidance documents listed above the following measures will be used to mitigate the impact of suspended sediments and the potential damage they can cause to marine Annex I habitats in the SAC and associated marine biodiversity features that exist within and adjacent to the proposed development area as outlined in Section 5.1 of this report:

- Establish vegetation as soon as practical on all areas where soil has been exposed e.g. the stripped topsoil and the exposed sub-base at Durnish shall be seeded with clover to bind the material together to ensure that these areas do not provide a source of sediment prior to the infilling with imported rock material.
- The construction of the berm and the boundary treatment on the Northern, Eastern, Southern boundaries and part of the Western boundary of the Durnish Lands during the early stages of the phase 1 development will ensure that an effect barrier to intercept the pathway of any potential run-off from the site to the Ardaneer Stream and Robertstown Estuary will be established at the early stages of the development as illustrated in Drawing 1773.5.01 *Proposed Boundary Treatments*. As outlined in Section 3 of this report and Chapter 2 of the EIAR, planting will be carried out along the slope of the berm, extending to

the crest, with the width of proposed planting varying dependent upon the width of the existing boundary planting which is to be retained and "gapped up". The retention of a minimum 5m buffer at the Durnish Stream on the Western Boundary for OPW access to the drainage channel, should this be required for maintenance will provide a buffer along the Western boundary.

- At the site accesses, where the Durnish Stream is crossed twice, proposed culverts will be laid in both instances with bank protection using gabions and bed protection using reno mattress as illustrated in Drawings H0548-RPS-XX-00-DR-HE-510-01 *Proposed Culvert Detail at Roundabout Access* and H0548-RPS-XX-00-DR-HE-510-02 *Proposed Culvert Detail at Secondary Access*. This will ensure that bank and bed will be protected from erosion that could introduce suspended solids to these water courses.
- The infilling of the site will be undertaken using suitable infill material sourced from authorised quarries. The location of active crushed rock quarries in the vicinity of the Durnish Lands is provided in Section 3 of this report and Chapter 2 of the EIAR. Any imported fill will be clean stone to ensure the wash out of fines and generation of suspended sediments does not occur across the site.
- During the construction of phase 1 at Durnish lands careful placement of the topsoil in the landscaping berms will be required. Silt fences or other suitable barrier measures will be installed where the working area for the berm treatment encroaches within 10m of a watercourse (with the exception of dedicated site access locations as illustrated on the site layout plan) and the local topography indicates there is potential for run-off to directly enter the watercourse.
- In the unlikely event that dewatering of foundations is required during construction and/or discharge of surface water from sumps, and exposed soil surfaces is required this will only happen through a treatment system prior to the discharge to storm water network, e.g. to silt traps or settlement skips prior to discharge;
- Construction of additional capacity at the existing attenuation pond will be undertaken at an early stage in the construction programme as part of Phase 1. This measure will provide additional treatment of storm water from the construction areas prior to discharge to the Robertstown Estuary.
- All water bodies that occur in areas proposed for site compounds and storage facilities will be fenced off to a minimum distance of 10m to reduce the risk to the aquatic environment. Appropriate sediment control measures will be installed where necessary, e.g., where preferential flow paths occur, silt fencing or other suitable barriers will be used to ensure silt laden or contaminated surface runoff from the compound does not discharge directly to a water body;
- Tool Box talks shall be given by the Environmental Manager nominated under the CEMP to all contractor's site personnel to inform them of the mitigation measures required to ensure protection and conservation the aquatic environment.

5.2.1.1.2 Cement and Concrete

Breaking of concrete (associated with structure demolition) has the potential to emit alkaline dust into the receiving environment. A barrier between the dust source and the sensitive receptor (the water body in this case) should be erected where possible to limit the possibility of dust contacting the receptor.

The use of concrete in close proximity to water bodies requires a great deal of care. Fresh concrete and cement are very alkaline and corrosive and can cause serious pollution in water bodies. It is essential to ensure that the use of wet concrete and cement in or close to any water body is carefully controlled so as to minimise the risk of any material entering the water, particularly from shuttered structures or the washing of equipment.

Concrete use and production shall adhere to control measures outlined in GPP 5: Works and maintenance in or near water (2017) particularly if on-site concrete production is proposed and careful initial siting of concrete mixing facilities is required with no production within a minimum of 10m from the aquatic zone.

It is noted in Section 3 of this report and Chapter 2 of the EIAR that the concrete beams and planks supported by the tubular piles will be precast and lifted into position by crane. An in-situ concrete deck will be poured over the top of these precast units to bind all concrete elements together, using a concrete pump or concrete skips suspended from a crane. The in-situ concrete pour for the decking is likely to be located above the MHWS level however concrete placement below MHWS may be required e.g. to plug the top of piles, into the precast concrete troughs.

Where in situ stitching is required or where concrete is to be placed under water or in tidal conditions, specific fast-setting mix is required to limit segregation and washout of fine material / cement. This will normally be achieved by having either a higher than normal fines content, a higher cement content or the use of chemical admixtures.

5.2.1.1.3 Oils and Chemicals

The use of oils and chemicals on-site requires significant care and attention. It is important to ensure that the following procedures are followed to reduce the potential risk from oils and chemicals.

- Fuel, oil and chemical storage must be sited on an impervious base within a bund and secured. The base and bund walls must be impermeable to the material stored and of adequate capacity. The control measures in GPP2: Above Ground Oil Storage Tanks and PPG 26 “Safe storage – drums and intermediate bulk containers” (Environment Agency, 2011a) shall be implemented to ensure safe storage of oils and chemicals.
- The safe operation of refuelling activities shall be in accordance with PPG 7 “Safe Storage – The safe operation of refuelling facilities” (Environment Agency, 2011b).
- Port of Foynes has developed a Contingency Plan, which is approved by the Minister for Transport (Irish Coast Guard Section) under the Sea Pollution (Amendment) Act 1999, to

address any major oil/HNS spill (or potential spill) within the Estuary. The plan is adhered to by all staff including those employed to carry out capital dredging on behalf of the Port. This plan is provided to assist the Harbour Master, or in his absence the Deputy Harbour Master of the Port of Foynes in dealing with an accidental discharge of oil and/or Hazardous Noxious Substances (HNS). Its primary purpose is to set in motion the necessary actions to stop or minimise the discharge and to mitigate its effects. Effective planning ensures that the necessary actions are taken in a structured, logical and timely manner. This plan (Oil Spill /HNS Plan) guides Port of Foynes staff (and other related organisations who hold a copy of the plan) through the various actions and decisions which will be required in an incident response. In the unlikely event that a major spill occurs during construction of the proposed development this contingency plan will be followed where required.

5.2.1.1.4 Contingency Planning

As is required for all major construction projects an environmental emergency response plan will be developed as part of the CEMP for the construction works and will be prepared in accordance with *PPG 21 Pollution Incident Response Planning* (Environment Agency, 2009). Whilst a major incident is unlikely to occur if the mitigation measures are fully detailed in the CEMP and implemented by the main works contractor and all sub-contractors the preparation of this document is considered to be best practice. The Plan will also detail the procedures to be followed if there is a breach in any licence conditions or a non-compliance.

It will be important to ensure that the contractors Environmental Manager and the client are notified of all incidents where there has been a breach in agreed environmental management procedures. Suitable training shall be provided to relevant personnel detailed within the Pollution Incident Response Plan to ensure that appropriate and timely actions will be taken.

5.2.1.1.5 Herbicide Control

The application of Herbicides will only be undertaken by trained operators who are registered under the European Communities (Sustainable Use of Pesticides) Regulations 2012. The use of trained professionals to apply the herbicides in accordance with the Sustainable Use of Pesticides Directive will ensure that the potential impact from the application of herbicides during site preparation will be minimised.

5.2.1.2 Marine Mammals and Fisheries

NPWS *Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters* (NPWS, 2014) shall be implemented.

A Marine Mammal Observer (MMO) shall be employed to ensure the marine piling area is clear of marine mammals prior to the commencement of piling activities.

A soft start procedure will be used where the equipment is ramped up slowly to full power.

The buffer zone to be monitored will be outwards to 1,000m in line with DoEHLG (2007) guidance *Code of Practice for the Protection of Marine Mammals during Acoustic Seafloor Surveys in Irish Waters* unless otherwise agreed with NPWS.

Visual mitigation measures require daylight and favourable sea conditions in order to be implemented effectively. Bottlenose dolphins are quite easily detected in good to moderate sea-states and the port area is quite sheltered from all wind directions. The MMO can work effectively from land, with a suitable Vantage Point. This is consistent with MMO mitigation measures implemented as part of the most recent port project.

5.2.2 Operational Phase

5.2.2.1 Water Quality

5.2.2.1.1 Shannon Estuary Anti-Pollution Team (SEA-PT)

Shannon Foynes Port Company are part of a consortium consisting of the Port Company, Local Authorities and oil importers and was initiated to form a unified coordinated response to pollution incidents on the Shannon Estuary. Each member contributed initially to provide pollution response equipment and support tools. This equipment is available to respond to any pollution incident or threat. Members contribute annually to maintain equipment, carry out exercises and training and purchase new and replacement equipment.

The group has been in operation for the past 24 years under a committee of pollution officers representing the members. The aim of the group is to provide a unified response to oil pollution within the region, even though each member has individual responsibility for their own area. An Oil Spill Tracking Model, Geographic Information System, Environmental Atlas, Sensitivity Study, Oil Spill Response Strategy, Hydrocarbon Baseline Study and Emergency Response Plans have been developed for the region and updated.

The Pollution Control Plan is provided to assist the Shannon Estuary Ports Anti-Pollution Team (SEA-PT) in dealing with an accidental discharge of oil. Its primary purpose is to set in motion the necessary actions to stop or minimise the discharge and to mitigate its effects. Effective planning ensures that the necessary actions are taken in a structured, logical and timely manner. This plan guides the Coordinator and On Scene Commander and other involved personnel through the decisions, which will be required in an incident response. The tables, figures and checklists provide a visible form of information, thus reducing the chance of oversight or error during the early stages of dealing with an emergency situation. For the plan to be effective, it must be:

- familiar to those with key response functions in the ports
- regularly exercised
- reviewed and updated on a regular basis.

The capacity extension and harbour development will be subject to the SEA-PT Pollution Control Plan allow effective controls to address pollution incidents.

5.2.2.1.2 East Jetty Extension

The key issues associated with the operation of the port facilities are associated with the risk of leaks or spillage of fuel, either during storage, quayside activities and vessel refuelling. The mitigation for the storm water drainage system is dealt with below. In addition care will be required during maintenance works, in order to ensure that adequate protection is given to receiving waters. As a result the key mitigation measures proposed include:

- Compliance with the Port of Foynes Contingency Plan as outlined under construction mitigation above
- Adequate bunding for any fuel, oils or chemicals stored on-land in accordance with relevant PPG, building regulations and following the same guidance outlined for storage and refuelling during the construction phase
- Regular inspection of the condition of chemical and fuel storage facilities along with routine maintenance to ensure the risk of leaks is minimised.

In particularly, the following shall be adhered to with respect to vessels at berth or travelling through the Port and Lower Shannon Estuary:

- No waste shall be disposed of at sea
- Ballast water shall be treated in accordance with MARPOL standards
- Ballast tanks shall be separate from hydrocarbon storage areas and no potentially contaminated streams shall be diverted to the ballast tanks
- De-ballasting shall be undertaken offshore in accordance with IMO guidelines
- Hazardous wastes shall be stored in sealed, labelled drums in locked chemical cabinets
- Vessels shall be equipped with oil-water separation systems in accordance with MARPOL requirements
- Spills on deck shall be contained and controlled using absorbing materials
- Vessels without sewage treatment systems shall have suitable holding tanks and will bring waste onshore for treatment by licensed contractors
- All chemicals used on-board shall be handled in compliance with COSHH instructions on handling hazardous materials
- Chemicals shall be stored appropriately in suitably bunded areas and with material safety data sheets; and
- All waste discharges shall be monitored and recorded as per vessel procedures.

5.2.2.1.3 Lands at Durnish

For all phases within the Durnish Lands, adequate bunding for any fuel, oils or chemicals stored on-land in accordance with relevant PPGs, building regulations will be followed by the Port and its tenants on these lands to ensure there is safe and adequate storage of such chemicals.

Control measures to collect and manage any spillage on hard standing areas within the different development phases are described below.

5.2.2.1.4 Foul Water drainage

As outlined in Section 3 of this report and Chapter 2 of the EIAR foul water arrangements will be implemented on a phased basis consistent with each of the planned phases of development. Each phase will involve the implementation of a package treatment system which when implemented collectively, will service the entire Durnish lands, designed with sufficient capacity to accommodate predicted loadings (generated from the 'population equivalent' (PE) of the anticipated number of employees) thereby ensuring adequate treatment and protection of water quality. This approach allows for the foul wastewater treatment system to be individually sized for each development phase to maximise efficiency and afford a level of flexibility for future development given its long programme duration and uncertain land usage requirements of subsequent phases (beyond the immediate known requirements of Phase 1)

The preliminary design of the treatment plants has been based on the assumption that circa 120 people will occupy the fully developed site (calculated from the 186 FTE employees supported at Foynes Port within a 64ha site), with an assumption that 48nr people will be occupying Phase 1.

This system for phase 1 will consist of:

- Collection point for wastewater from the 3nr warehouses
- A package wastewater treatment plant which provides both primary and secondary treatment of foul waters I accordance with the EPA Guidance for Treatment Systems for Small Communities, Business, Leisure Centres and Hotels (EPA, 1999). For the design of the Phase 1 treatment system, a factor of safety of 1.25 was applied to the occupancy figure for Phase 1. Therefore, an occupancy figure of 60 personnel was considered and a design population equivalent of 30 was used in the system design (such as Klargester BioDisc model or similar)
- A 6m x 6m stratified sand polishing filter
- Collection sump and discharge to ground under Section 4 Licence (Water Pollution Act)

In line with EPA Code of Practice: Wastewater Treatment Systems for Single Houses, the treated effluent will be subjected to tertiary treatment by the means of a polishing filter which also acts as a percolation area to redistribute the treated and polished effluent to the groundwater. It is proposed to use a stratified sand polishing filter to provide the dual function of polishing the effluent and also

infiltrating the treated effluent to the groundwater. The design arrangement is in accordance with EPA Code of Practice guidance and European standards (EN12566).

The design process followed for phase 12 as outlined above will also be applicable to phase 2 and 3 and will therefore ensure adequate foul water treatment across the Durnish Lands thereby mitigating any potential impact from foul water from the development site.

5.2.2.1.5 Storm Water Drainage

5.2.2.1.5.1 East Jetty Extension

As outlined above under the Ports Environmental Management Plan, Port of Foynes has a responsibility to ensure that no potentially polluting substances enter marine/riverine environment from its facilities. Runoff from jetties is managed by ensuring that the potential for cargo spillages onto the jetty deck is minimised through good handling practice, together with good housekeeping and cleaning practices to ensure that minor spills for hoppers or grabs are swept up.

As outlined in Section 3 of this report and Chapter 2 of the EIAR storm water runoff will not be permitted to discharge directly to the marine environment from the jetty connection structure, but will be collected in a dedicated storm water drainage system. The surface water drainage system will be designed to consist of heavy duty gullies cast into the reinforced concrete deck, with concrete pipes cast into the in-situ concrete deck structure. These pipes will carry the storm water to an appropriate full retention oil separator which will trap oils and silt from the jetty prior to being discharged into the harbour waters through a non-return flap valve. A readily and safely accessible monitoring chamber will be provided on the storm water pipeline to allow for inspection and sampling of the storm water being discharged.

5.2.2.1.5.2 Lands at Durnish

The storm water drainage for Durnish Lands will be installed during Phase 1 for all phases of the development and therefore will be fully operational in advance of operational phases.

Storm drains will collect all surface water and convey it through full retention interceptors (to collect hydrocarbons and silt) and the stormwater will then be conveyed through perforated pipes to allow percolation into the infilled ground. Readily and safely accessible monitoring chambers will be provided on the storm water pipelines to allow for inspection and sampling of the storm water being discharged

The oil interceptors on the surface water drainage network will be selected and sized based on the pollution prevention guideline: “Use and design of oil separators in surface water drainage systems: PPG 3” (Environment Agency, 2006) and BS EN 858 which is the European Standard for the design, performance, testing, marking and quality control of separators within the EU. All separators must comply with this standard. In accordance with PPG3 a class 1 bypass separator will be required for general and car parking areas of the site whilst a class 1 full retention separator will be required for

the HGV parking and loading areas. Notwithstanding this full retention separators are proposed for each phase of the development and will be sized in accordance with the design flow as present in Section 3 of this report and Chapter 2 of the EIAR (590 l/s for a 6 hour duration storm) and the drainage area to be serviced.

6 CONCLUSION

A Natura Impact Statement was prepared having regard to relevant legislation outlined in Section 1 of this report and methodological guidance outlined in Section 2 of this report.

A screening exercise was completed in Section 4 of this report to determine whether or not LSEs on any European site could be discounted as a result of the construction or operation of the proposed development.

From the findings of the Screening exercise, the possibility of LSEs upon two European sites considered could not be discounted in the absence of further evaluation and analysis and quite likely the application of mitigation measures.

- The possibility of likely significant Water Quality and Habitat Deterioration effects could not be discounted for the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA
- The possibility of likely significant Underwater Noise and Disturbance effects could not be discounted for the Lower River Shannon SAC
- The possibility of likely significant Aerial Noise and Visual Disturbance effects could not be discounted for the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA.
- The possibility of likely significant Habitat Hoss effects could not be discounted for the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA

An appropriate assessment of the implications of the proposed development on the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA was completed in Section 5 of this report, in view of their conservation objectives and in combination with any other relevant plans or projects.

Having conducted further investigation and analysis, adverse effects upon the integrity of the European sites was not predicted, with mitigation measures being applied to reduce the risk of:

- pollution incidents upon Annex I habitats and Annex II species that use them
- underwater noise or disturbance to Annex II species

Having conducted further investigation and analysis, adverse effects upon the integrity of the European sites was not predicted, without mitigation measures being applied, as a result of:

- Aerial Noise and Visual Disturbance effects
- Habitat Hoss effects