PROVISION OF INFORMATION REGARDING APPROPRIATE ASSESSMENT SCREENING FOR A PROPOSED CRUISE TERMINAL, DÚN LAOGHAIRE, CO. DUBLIN

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ON BEHALF OF DÚN LAOGHAIRE CRUISE STAKEHOLDER GROUP

Project Reference:		**130140 Dún Laoghaire Harbour Cruise Liner Berth**			
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1 Introduction

The information in this report forms part of, and should be read in conjunction with the documentation accompanying the application for planning permission for a proposed Cruise Terminal at Dún Laoghaire Harbour, Dún Laoghaire, Co. Dublin.

This report which contains information required for the competent authority (in this instance An Board Pleanála) to undertake a screening exercise for Appropriate Assessment (AA), was prepared by Scott Cawley Ltd. on behalf of the applicant. It provides information on and assesses the potential for the proposed development to significantly affect Natura 2000 sites (hereafter "European sites"[1]).

It is necessary that the proposal has regard to Article 6 of the *Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora* (as amended) (hereafter "the Habitats Directive"). This is transposed in Ireland primarily by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011) (as amended) (hereafter the Birds and Habitats Regulations) and the Planning and Development (Amendment) Act, 2010 (as amended).

An AA is required if likely significant effects on European sites arising from a proposed development cannot be ruled out at the screening stage, either alone or in combination with other plans or projects.

2 Methodology

This Screening Report for Appropriate Assessment was prepared with regard to the following guidance documents, where relevant:

- *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities.* (Department of Environment, Heritage and Local Government, 2010 revision).
- *Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities.* Circular NPW 1/10 & PSSP 2/10.
- *Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC* (European Commission Environment Directorate-General, 2001); hereafter referred to as the EC Article 6 Guidance Document. The guidance within this document provides a non-mandatory methodology for carrying out assessments required under Article 6(3) and (4) of the Habitats Directive.
- *Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC* (EC Environment Directorate-General, 2000a); hereafter referred to as MN2000.
- *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 European Commission (European Commission, January 2007).
- *Guidelines for Good Practice Appropriate Assessment of Plans under Article 6(3) Habitats Directive.* Findings of an international workshop on Appropriate Assessment in Oxford, December 2009[2].

[1] Natura 2000 sites are defined under the Habitats Directive (Article 3) as a European ecological network of special areas of conservation composed of sites hosting the natural habitat types listed in Annex I and habitats of the species listed in Annex II. The aim of the network is to aid the long-term survival of Europe's most valuable and threatened species and habitats. In Ireland these sites are designed as *European sites* - defined under the Planning Acts and/or Birds and Habitats Regulations as (a) a candidate site of Community importance, (b) a site of Community importance, (c) a candidate special area of conservation, (d) a special area of conservation, (e) a candidate special protection area, or (f) a special protection area. They are commonly referred to in Ireland as candidate Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

[2] Available online at http://www.levett-therivel.co.uk/AAguidelines.htm Accessed December 2013

- *Communication from the Commission on the precautionary principle.* European Commission (2000b).

The above referenced guidance sets out a staged process for carrying out Appropriate Assessment. To determine if Appropriate Assessment is required, documented screening is required. Screening identifies the likely effects on European sites, if any, which would arise from a proposed plan or project, either alone or in combination with other plans and projects, and further considers whether these effects are likely to adversely affect the integrity of any European sites.

If the conclusions at the end of screening are that there is no likelihood of significant effects occurring on any European sites, as a result of the proposed plan or project, either alone or in combination with other plans and projects, then there would be no requirement to undertake Appropriate Assessment.

However, even if screening makes a finding of no significant effects, and therefore concludes that Appropriate Assessment is not required, these findings must be clearly documented in order to provide transparency of decision-making, and to ensure the application of the 'precautionary principle'[3].

Screening for Appropriate Assessment involves the following:

- Determining whether a project or plan is directly connected with or necessary to the conservation management of any European sites[4];
- Describing the details of the project/plan proposals and other plans or projects that may cumulatively affect any European sites (see Table 1);
- Describing the characteristics of relevant European sites (Table 2); and
- Assessing the likelihood and significance of effects on relevant European sites (see Table 2).

The information that was collected to allow the competent authority to screen the proposal was based on a desktop study and field surveys carried out between February 2014 and February 2015. Information relied upon included the following information sources, which included maps, ecological and water quality data:

- Ordnance Survey of Ireland mapping and aerial photography available from www.osi.ie;
- Online data available on European sites as held by the National Parks and Wildlife Service (NPWS) from www.npws.ie;
- Information on land-use zoning from the online mapping of the Department of the Environment, Community and Local Government http://www.myplan.ie/en/index.html;
- Information on water quality in the area available from www.epa.ie;
- Information on the Eastern River Basin District from www.wfdireland.ie;
- Information on soils, geology and hydrogeology in the area available from www.gsi.ie;
- Information on the status of EU protected habitats and species in Ireland (National Parks & Wildlife Service, 2013a & 2013b);
- Information on the conservation status of birds in Ireland (Colhoun & Cummins, 2014);
- Information on the location, nature and design of the proposed development supplied by the applicant's design team;
- *Wave, Tide and Sediment Plume Modelling Report* produced for the proposed development (ABP MER Ltd., 2014);

[3] One of the primary foundations of the precautionary principle, and globally accepted definitions, results from the work of the Rio Declaration. Principle #15 declaration notes:

"In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."

[4] In this instance the proposed development is not directly connected with or necessary to the conservation management of any European sites.

- *Dun Laoghaire Harbour Sediment Samples and Analysis* (Hydrographic Surveys Ltd., 2015).

The following planning and policy documents were relevant to the subject lands, in particular with regard to the assessment of other plans and projects with potential for cumulative effects:

- *National Biodiversity Plan 2011 – 2016* (Department of Arts, Heritage and the Gaeltacht, 2011);
- *Dún Laoghaire Harbour Master Plan (Dún Laoghaire Harbour Company, 2011);*
- *Dún Laoghaire-Rathdown County Development Plan 2010-2016*;
- *Core Strategy of the Dún Laoghaire-Rathdown County Development Plan 2010-2016;*
- *Eastern River Basin District, River Basin Management Plan 2009-2015*;
- *Alexandra Basin Redevelopment Project Environmental Impact Statement and Natura Impact Statement (date unknown);*
- *Dún Laoghaire Urban Beach and Floating Pool Environmental Report (2013).*

Table 1 Overview of the Proposed Development and its Receiving Environment	
Brief Site Description	The subject site is located at Dún Laoghaire Harbour, Dún Laoghaire, Co. Dublin. Dún Laoghaire is a working Harbour with the Stena Line Ferry operating out of the Harbour seasonally up until Autumn 2014, commercial fishing boats operating out of the Harbour and various recreational boats utilising the Harbour. The area proposed for development is *ca.* 60 hectares and consists mainly of built land, coastal structures and coastal water habitat of the harbour and associated littoral and sublittoral habitats. Harbour related structures within the site boundary include; the Eastern Breakwater (in part), the HSS Stena Line Ferry Terminal (in part), the existing Motorists building and associated harbour facilities and existing car parks.
Features of the Surrounding Environment	Harbour porpoise *Phocoena phocoena* forage throughout Dublin Bay and are a Qualifying Interest (QI) of Rockabill to Dalkey Island SAC. The population of Harbour porpoise in Dublin Bay has been estimated at 138[5]. The most recent sightings of Harbour porpoise in the Dún Laoghaire area was 2 individuals on the 27th February 2015[6]. Grey Seal *Halichoerus grypus* and Common Seal *Phoca vitulina* have been recorded within the limits of the Harbour[7]. However, these populations are not connected with any European site. The nearest European site designated for Grey Seal is Lambay Island SAC, located more than 15km from the proposed works. The seaward edge of the west pier of the Harbour adjoins the boundary of the South Dublin Bay and River Tolka Estuary SPA. The following bird species, listed as QI's for European sites within 15km of the proposed works, were recorded within the limits of the Harbour[8]: • Oystercatcher *Haematopus ostralegus,* Black-headed Gull *Larus ridibundus*, Redshank *Tringa tetanus,* Sanderling *Calidris alba* and Dunlin *Calidris alpina* (All QI's for South Dublin Bay and River Tolka Estuary & North Bull Island SPAs); • Common Tern *Sterna hirundo* and Arctic Tern *Sterna paradisaea* (Both QI's for Dalkey Islands & South Dublin Bay and River Tolka Estuary SPAs); • Light-bellied Brent Goose *Branta bernicla hrota* and Bar-tailed Godwit *Limosa lapponica* (QI's for South Dublin Bay and River Tolka Estuary, North Bull Island & Baldoyle Bay SPAs); • Shelduck *Tadorna tadorna* (QI for North Bull Island and Baldoyle Bay SPAs); • Ringed Plover *Charadrius hiaticula* (QI for South Dublin Bay and River Tolka Estuary & Baldoyle Bay SPA); • Curlew *Numenius arquata* and Turnstone *Arenaria interpres* (Both QI's for North Bull Island SPA); • Guillemot *Uria aalge,* Razorbill *Alca torda*, Herring Gull *Larus argentatus* and Cormorant *Phalacrocorax carbo* (All QI's for Ireland's Eye SPA); • Kittiwake *Rissa tridactyla* (QI for Howth Head Coast & Ireland's Eye SPAs);

[5] Berrow *et al*., 2008
[6] According to the Irish Whale and Dolphin Group Sightings Database www.iwdg.ie Accessed 14th April 2015
[7] According to NBDC online data www.biodiversity.ie Accessed 14th April 2015
[8] According to NBDC online data www.biodiversity.ie Accessed 14th April 2015 and Ecological Impact Assessment, Dún Laoghaire Harbour Cruise Liner Berth (Scott Cawley, 2015).

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	• Peregrine *Falco peregrinus* (QI for Wicklow Mountains SPA). Evidence of Otter *Lutra lutra* activity has been recorded in the hrbour[9]. Otter are listed on Annex II of the EU Habitats Directive, however the population that exists in the harbour is not listed as a Qualifying Interest (QI) of any SAC's within 15km of the subject lands. The desktop study found no other records of any species or habitats for which European sites were designated within the subject lands or environs. There do not appear to be any freshwater watercourses within the site. The closest known watercourse to the site is Monkstown Stream which is culverted and enters the Irish sea at the base of the West Pier ca. 200m from the boundary of the proposed development. However the proposed development site is essentially coastal in nature. According to the EPA online Envision Maps, the coastal waters of Dún Laoghaire Harbour are classified as of 'Unpolluted' water quality status[10]. The proposed development will involve retaining existing toilet facilities in the Motorists building already operating on the site. Foul water will be pumped to the Ringsend WWTW for treatment and discharge to Dublin Bay. The most recent available water quality data for Dublin Bay's coastal waters indicates they are "Unpolluted" (EPA, 2010). Under the "Trophic Status Assessment Scheme" classification of the EPA, "Unpolluted" means there have been no breaches of the EPA's threshold values for nutrient enrichment, accelerated plant growth, or disturbance of the level of dissolved oxygen normally present (EPA 2010).
Description of the Proposed Development	The applicant is applying for full planning permission for a proposed cruise liner terminal and associated landside facilities. Full details can be found in the application documents, including the EIS to which this Screening Report is appended. The proposed development will consist of the construction of a new quay, cruise ship berth and access causeway to accommodate existing and next generation size cruise ships within Dún Laoghaire Harbour as well as associated landside facilities. The new berth is to be located in the centre of the harbour, directly south of the existing harbour mouth. The new quay structure will extend approximately 450m northwards from a point just west of the Hobbler Memorial on the Eastern Marina Breakwater. The berth will consist of a 120m long by 20m wide concrete quay supported on tubular steel piles, located 180m north of the breakwater, this quay will be connected to the Eastern Marina Breakwater by an approximately 8.5m wide concrete access causeway, also supported on tubular steel piles. Ships will berth along the eastern side of the quay. The berthing face of the 120m long quay will be extended to the north and to the south by means of monopoles. To provide a berthing face for a 340m vessel, a total of 8 monopiles will be required, 4 north of the quay and 4 south of the quay. The monopiles will be approximately 3m in diameter and will each support a fender on the berthing side of the pile, and a mooring bollard and lighting on the top of the pile. The mooring piles to the north of the quay will be accessed via a lightweight metal walkway. The mooring piles to the south the quay are located adjacent to the access causeway and will be connected to the causeway for operational access.

[9] According to Ecological Impact Assessment, Dún Laoghaire Harbour Cruise Liner Berth (Scott Cawley, 2015).
[10] According to EPA online data www.epa.ie accessed 14/04/15.

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	The berth will have a connection to the public water mains, to provide fresh water supply to the berthed cruise ships, where necessary, and to provide firefighting capacity. An electricity supply will also be taken to the berth for lighting of the causeway, the quay and the monopiles. Dredging works will be required as part of the proposed development to ensure access and egress of cruise ships at different states of the tide; a dredged sea access navigation channel into the harbour and a dredged turning circle outside of the harbour walls totalling approximately 2.5km in length. The creation of the navigation channel will require dredging of approximately 710,000m^3 of sand and silt from the seabed. It is proposed that dredged material will be disposed of at the existing spoil grounds at Burford Banks and partly within the harbour itself in a hollow in front of the HSS StenaLine Ferry terminal. Any disposal of dredged materials offshore will be subject to the granting of a Dumping at Sea Permit by the EPA. To cater for visiting cruise passengers, a corridor linking Harbour Road to the proposed cruise berth will be created along the western edge of the existing HSS Stenaline marshalling area, with a proposed new boardwalk to be added facing the marina. This will require some limited demolition, including the boundary wall between the existing Eastern Breakwater and HSS StenaLine marshalling area, security hut and canopy (in part) at the entrance to the existing ferry terminal. New surfacing, replacement public lighting and surface water drainage will be provided for the new corridor. Some limited landscaping is proposed for these areas. Coach pick up points will be located in the existing HSS StenaLine marshalling area. A new pedestrian footpath is proposed running east-west parallel to Harbour Road and an overflow coach parking area proposed along Accommodation Walk running parallel to the existing train line. Existing toilet facilities in the Motorists building will be retained and refurbished. Foul water will be pumped to Ringsend WWTW for treatment prior to discharge to Dublin Bay. Foul/waste water from the cruise liners will be treated entirely on board the cruise liner, with any residue discharged outside territorial waters. Surface water collecting on site will be dealt with using the existing surface water drainage on site which includes treatment by petrol interceptor prior to discharge into the harbour. **Dredging Requirements and Dredging Plant** The capital dredging works will be undertaken as the first activity of the proposed development. Prior to commencement of any physical work a complete bathymetric survey of the area to be dredged will be undertaken. This will form the baseline of the activities and will be used to establish final volumes on completion. The capital dredging works consist of a turning circle and approach channel from deep water in Dublin Bay to the proposed cruise terminal to a depth of -10.5m CD. The current seabed shallows to approximately -7m CD outside the existing harbour and to a minimum depth of around -4m CD close to the existing HSS berth. The total dredge volume is approximately 710,000m^3, covering an area of approximately 472,000m^2. The ground investigation shows that the dredge material is almost entirely (approximately 90%) unconsolidated sands with a very small amount of silt close to the HSS berth. This application seeks to cover two types of dredging plant equipment due to the layout of the harbour, plant constraints and accessibility issues. These are a trailer suction hopper dredger (TSHD) and a small, shallow draft vessel, plough, or barge mounted excavator for use in

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	shallow areas, or areas inaccessible by the TSHD. The primary item of plant will be a medium sized TSHD, which is likely to have a loaded draft of approximately 7m and a hopper capacity of 5,000m³. The ship will be equipped with one or two suction pipes, designed to hang along the side of the vessel. A draghead is fixed at the lower end of the suction pipe, which is then trailed along the seabed in a controlled manner. Suction is provided by a pump, which lifts the sand off the seabed and discharges the sand/seawater mix into the hopper storage well. The dredger will be equipped with a GPS navigation system which is interfaced to a dredge computer. This allows the real time position of the vessel to be shown in relation to both the dredging and discharge areas and provides for accurate positioning of the vessel thus mitigating over-excavation. Once loaded the dredger will sail to the offshore disposal site, the Burford Bank to the east of Dublin Bay, see Figure 2, approximately 4 nautical miles distant, where the loaded material will be discharged via its bottom doors. To prevent the formation of significant high spots at the disposal site, the dredger will continue sailing at reduced speed whilst dumping. The dredging works may be supplemented with a small, shallow draft vessel, plough, or barge mounted excavator for use in shallow areas, or areas inaccessible by the TSHD. This equipment would simply be used to move material from shallow and/or inaccessible areas to an area where it could be dredged by the TSHD. The dredger is anticipated to work 7 days a week, and the shortest programme would be achieved where the dredger operates 24 hours a day during summer time (March – September). The overall dredging programme will depend on the precise vessel available at the time of construction. It is anticipated that, based on 24/7 summer time working, the dredge programme would be in the region of 14-17 weeks duration. Although dependent on the precise vessel used for the dredging activities, sound outputs are likely to be in the region of a minimum 51.5dB and maximum 62dB, dependent on background noise. These figures are based on two noise monitoring reports prepared for two different TSHD's, similar to the vessel being proposed for use for the proposed development, operating in Cardiff Bay and the River Clyde, UK (Acoustic Technology Ltd. (2001) & Enviro Centre Ltd. (2010)). Specification sheets of the typical trailer suction hopper dredgers envisaged to be used for this development can be found in Appendix 1. <u>Sediment Testing</u> Ground investigations were undertaken to test for the potential presence of contaminants in sediments within the proposed development footprint. These investigations have confirmed that there are no contaminants present in the sediments (Hyrdrographic Surveys Ltd., 2015). <u>Wave, Tide and Sediment Plume Modelling</u> Wave, tide and sediment plume modelling was undertaken for the proposed development, see ABP MER Ltd. (2014). The modelling concluded that any re-suspended solids as a result of dredging operations would settle out of the water column within a matter of minutes

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	within and outside the harbour. Silts and fines within the harbour could remain in suspension from between one hour to a day. They may exit from the harbour, but would rapidly disperse to negligible levels within 2km. The modelling considered sediment plume modelling at the disposal site, Burford Bank. It concluded that the majority (~90%) of the sediment load would fall directly to the seabed without entering re-suspension. The remaining 10% could enter re-suspension in the water column or near the seabed. Fines may remain in suspension for days or weeks, but the plume would disperse to negligible levels and would not be expected to enter Dublin Bay, based on known tidal movements. As a worst case scenario, it was predicted that the maximum thickness of silt settling out onto the seabed would be *ca.* 10mm. The modelling also concluded that the proposed development would have no impact on sediment transport and deposition in the harbour or within the study area (ABP MER Ltd., 2014). **Piling Requirements** All piling on the project will be undertaken within the confines of the harbour. Piling will be in the form of steel tubes filled with reinforced concrete. The main quay structure and access causeway will be supported on a grid of 750mm-1000mm diameter piles. 3m diameter monopiles will be used to take mooring and breasting loads away from the main quay area. Piling operations will be undertaken from a heavy duty crane barge moored using spud legs and anchors if required. A multi-purpose support vessel will also be used to transfer crew and materials to the barge. It is anticipated that the same equipment will be used for all pile diameters irrespective of the pile diameter. The steel piles will be manufactured off site and shipped to site. Piling operations will commence with the installation of a piling frame to guide the piles into the correct position. Piles will be installed using a drive-drill-drive method, whereby the initial installation of the casing is by using a vibrating hammer or hydraulic piling hammer. The soil and rock within the steel tube will be removed by rotary drilling, with a final drive of the tube to achieve the required depth. With this method it is anticipated that the piles can be founded at the correct design depth without the need for excessive post installation cutting. On commencement of the piling a 'soft start' method will be adopted with the vibrating hammer being used on minimum power being over the initial 20 minute period. The piles will be constructed from water level through the soil/water vertical profile consisting mainly of boulder clay underlain by rock at approximately -30.0mCD – the proportion of shallow bed deposits entrained within a pile will be very small. Arisings flushed from the pile may overtop the steel casing and enter the sea but these are likely to take the form of the courser materials considered in the plume analysis for the dredging, which will tend to settle to the bed almost immediately rather than be transported latterly. Hence the impact of discharge from piles will be considerably less than that considered for the dredge activities - all in terms of volume, intermittent occurrence, and dispersed pile locations. After completion of the installation of the steel tube, the vibrating hammer and piling frame will be removed. A reinforcement cage will be

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	inserted into the steel tube and the whole pile concreted up to the underside of the quay deck level. Appropriate protection measures will be adopted to ensure that concrete is not spilled into the harbour. The overall piling programme will be approximately 12 weeks with the contractor using extended working hours together with night-time working for quieter activities and deliveries. There will be some overlap between dredging and piling works, *ca.* 4 weeks. **Deck Construction** The deck structure is in two parts: A. the main quay which will be used for berthing operations and for the embarkation/disembarkation of passengers B. An access causeway which provides access for passengers and light vehicles from the land to the quay. Both parts of the structure have been designed to maximise the use of precast concrete elements to provide a permanent shutter and a working platform for the *insitu* works. This will minimise the risk of concrete spills into the water as a complete and sealed precast concrete platform will be present before the commencement of *in-situ* concreting work. This approach also minimise the requirements for temporary works over water. The main quay structure has been designed as a two way spanning slab supported on a grid of precast beams which span approximately 8m in a longitudinal direction and 6m in a transverse direction. The concrete deck will be 500mm thick, with a solid 200mm precast concrete slab forming a permanent shutter and a 300mm reinforced concrete slab. The precast beams could either be manufactured in a yard on site, or alternatively manufactured off site and transported by either road or sea, depending on the preferences of the selected contractor. Space for a casting yard exists within the landside site area, in the HSS StenaLine marshalling area, and is conveniently placed to receive via Harbour Road, the normal compliment of road deliveries, notably ready mixed concrete, formwork and reinforcement steel bars. The beams could be lifted into position using a heavy duty barge mounted crane. The beams will be mechanically fixed to the piles as a temporary measure and then the precast permanent shutters will be lifted into place. The whole of the deck structure, including the joints between the precast beam elements, will then then have a reinforcement cage fixed in position. Embedments for bollards and fenders will also be incorporated at this stage. The final operation will be to pour an *insitu* concrete slab over the whole of the deck area. Concrete could be delivered using ready mix trucks travelling on the already available previously constructed deck and pumped into the final position using a concrete pump similarly situated. This is normal construction practice involving no new or novel features, is well known to contractors, so the likelihood of large grout escape to the receiving harbour waters is low assuming the normal preventative measures are taken. After completion and curing of the reinforced concrete slab the bollards, fenders and other furniture will be lifted into position and bolted to the deck. It is envisaged that these elements of the proposed construction will take in the region of approximately 24 to 32 weeks to

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	complete. **Scour Protection** The scour protection at the southern end of the berth when installed will help prevent scour and the undermining of the existing structures when the cruise ship is moving on and off the berth. The scour protection will be in the form of one of the following: 1. A hollow mattress using impermeable closed sock features that is positioned by divers and then temporarily fixed to the floor of the berthing pocket using steel pins inserted using hand tools. The whole of the mattress is then injected with grout from the top to form a permanent concrete protection to the soil slope at the end of the berth. The top, bottom and sides of the mattress will be protected with rock armour to prevent undermining of the mattress once installed. Concrete injection methods will be specified to prevent excessive grout release to the harbour waters; 2. A precast concrete methodology using precasted blocks tied laterally and longitudinally into flexible mats which are then lifted bodily in draped segments by crane and manipulated into position by divers on the harbour bed. This method further reduces the use of *insitu* concrete and the attendant (albeit low) risk of leakage to the harbour waters; 3. Hybrid systems combining elements of 1 and 2 above such as precast counterweights and *insitu* mattress of impermeable socks injected with grout.
Other existing or proposed plans or projects nearby which may lead to cumulative effects on European sites.	**Existing habitat loss pressures** The landside area, quay construction area and dredge footprint do not physically overlap with any European sites. They are dominated by built land, built structures and coastal water with some limited vegetated landscaped areas, all of which are habitats that are not listed under Annex I of the Habitats Directive. The habitats are indirectly connected with habitats within European sites in Dublin Bay (*e.g.* via marine open water). However, the proposed works in these areas will not result in any direct habitat loss of European sites. The proposed dredge spoil disposal site, Burford Bank, is located within Rockabill to Dalkey Island SAC and is a licenced disposal site. The Qualifying Interests (QI's) for the site are reefs and Harbour Porpoise. According to the reef habitat distribution map[11], no reef habitat occurs in the vicinity of the Burford Bank. According to the dredge plume modelling, dredge soil disposal will not result in any significant levels of sediment re-suspension in the water column, any suspended sediments would be dispersed to negligible levels and any re-suspended sediment will not disperse to reef habitat areas (ABP MER Ltd., 2014). Therefore the proposed development will not result in the direct loss of any qualifying interest habitat. **Existing noise pressures** The proposed development area is subject to marine traffic currently varying in size from small sailing boats to commercial vessels and

[11] Rockabill to Dalkey Island SAC (site code: 3000) Conservation objectives supporting document - Marine Habitats and Species (NPWS, 2013).

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	previously car/passenger ferries. The HSS Stena Fastcraft previously operated from Dún Laoghaire Harbour during the summer season (April to September), but ceased operation in Autumn 2014. The shipping lane into Dublin Port is located in close proximity to the works area, and is also subject to daily marine traffic including car/passenger ferries, and on occasion, large cruise liner vessels. Therefore, the marine waters and species therein are already habituated to a certain degree of daily background noise. Due to the proposed construction methodology, with dredging and piling works proposed, and due to the fact that Harbour porpoise, a QI of Rockabill to Dalkey Island SAC and a range of SCI wintering and breeding birds for SPAs in the area are known to occur in the proposed development area, potential for cumulative effects relating to noise cannot be ruled out. **Existing and proposed developments in the area** Other plans and projects in the wider area that may act in combination with the proposed Dún Laoghaire Harbour cruise berth include maintenance dredging carried out by Dublin Port on a regular basis, the Alexandra Basin Redevelopment (Dublin Port), Dublin Array wind farm and Dún Laoghaire Urban Beach. It is difficult to assess the potential for cumulative effects owing to a lack of certainty around the timeframe for any of these projects. The current timeline for the Dublin Array is for construction to commence in 2018 (Dublin Array, 2015); however, this development has not yet received consent. Similarly, the Alexandra Basin Redevelopment is proposed to commence piling works in October 2015 and continue to March 2018, with dredging to extend for a minimum of six years and up to ten years (RPS, 2015). Sound generated by impact piling on all projects will result in some level of disturbance to harbour porpoises within, and inshore of, the Rockabill to Dalkey Island SAC. The Alexandra Basin Redevelopment will involve a 38 month piling programme and it was concluded that it would not have any significant effect on marine mammals (RPS, 2015). The principally small diameter piles used in the works proposed for Dún Laoghaire Harbour and the very short piling period (12 weeks) means that this project would have the lowest impact on the sound environment of the area of the three considered, and a negligible in-combination effect. Based on the current timelines, it is not expected that the Dublin Array will have commenced construction works before the piling works are completed for the Dún Laoghaire Harbour cruise berth, meaning there will be no cumulative effect through overlapping works. The distance between the three projects also means that the likelihood of a measureable negative effect is low, with the sound levels attenuating with distance. All three projects will involve the use of Marine Mammal Observers to minimise the risk of injury or hearing loss for marine mammals. Sound generated by impact piling on the Alexandra Basin Redevelopment and the proposed development could result in noise disturbance to wintering and breeding bird species, though the principally small diameter piles used in the works proposed for Dún Laoghaire harbour and the much shorter construction period means that this project would have the lowest impact on the sound environment of the area. The Alexandra Basin Redevelopment will also involve dredging, with some of the dredge spoil disposed of on land due to the levels of contamination, but with the remainder dumped at the Burford Bank spoil dump site. The Alexandra Basin Redevelopment is expected to dispose of 5,900,000 m^3 of spoil in the course of the development works (RPS, 2014), as compared to approximately 710,000 m^3 for the proposed project at Dún Laoghaire. The volume of dredge spoil disposed by the Dún Laoghaire Harbour cruise berth project will comprise 11% of the two projects combined. It is proposed that dredging will be carried out for the Alexandra Basin Redevelopment in the period

Table 1 Overview of the Proposed Development and its Receiving Environment	
	October – March over a six year period (up to a maximum of 10), due to the presence of out-migrating salmon smolts and so it will not overlap with the Dún Laoghaire Harbour dredging, which is proposed to take place over one summer period of March - September, with a planned duration of 14-17 weeks. Given the scale of the Alexandra Basin Redevelopment in comparison to the proposed development at Dún Laoghaire in terms of time and quantity of dredging, that noise generated by the operation of dredging plant is similar to that emitted by regular shipping activity, that Harbour porpoise and birds in the Dublin Bay area are likely to have become habituated to a high degree of disturbance and background noise given the location with working ports, harbours and operation of the Dublin port shipping lane in through the Bay, no cumulative impacts are predicted. Maintenance dredging is carried out on a regular basis in Dublin Port to maintain the navigation channel depth. Once operational, the maintenance dredging of Dublin Port will be of similar magnitude to the existing situation, and so will not lead to a deviation from the existing environment in Dublin Bay. The Dún Laoghaire Urban Beach will be moored off the East Pier in Dún Laoghaire Harbour. Construction works will be mainly landside, with some pile driving expected to last in the region of 4 to 10 days. It is difficult to assess the potential impact due to lack of uncertainty around the timing of the construction works. Although noise generated from construction and piling works could cause disturbance to Harbour Porpoise and wintering and/or breeding bird species, construction works will be relatively limited and piling works of very short duration. The project is expected to be completed by spring/summer 2016 therefore the works involved will not lead to any cumulative impacts, as they will be completed before Dún Laoghaire Harbour cruise berth commences and will not result in any significant effects on Harbour Porpoise breeding or wintering birds in-combination. The facility will operate seasonally, in spring and summer months, overlapping with the operation of the proposed cruise terminal development in the harbour, thus potentially causing disturbance to breeding birds or wintering birds if operation overlaps with the wintering bird season in part. However, the Urban Beach will be permanently moored in the harbour, the East Pier is already heavily used as a recreation area, there is frequent shipping activity in the harbour and birds in the area are likely to have become habituated to a high degree of disturbance from human presence, shipping activity and background noise. **Existing pressures on water quality within European sites in proximity to the site** Several intertidal habitats for which European Sites in Dublin Bay are designated are failing to meet favourable conservation status. For some of these, water pollution is considered a threat ranked as being of "high importance"[12] (NPWS, 2013a). *Pressures on European sites in Dublin Bay from effluent* The Greater Dublin area including the subject lands and satellite towns in counties bordering Dublin, fall within the catchment of the Ringsend Waste Water Treatment Works (WWTW). The WWTW will treat wastewater from the small number of toilets being retained within the Motorists building as part of the proposed development. Foul water comprising sewage and industrial effluent (and some surface water run-off) from the Greater Dublin area has historically, and will continue to be treated at Ringsend WWTW prior to discharge to Dublin Bay. Ringsend WWTW has historically operated at or above capacity, with a contributing residential population in the order of 1.1 million and a

[12] For example, "tidal mudflats and sandflats" was of "Inadequate" conservation status. This habitat was threatened by water pollution and was a reason for designation of North Dublin Bay SAC, and South Dublin Bay SAC. Under 'wetlands', the habitat was also a Special Conservation Interest of the South Dublin Bay and River Tolka Estuary SPA, and North Dublin Bay SPA.

Table 1 Overview of the Proposed Development and its Receiving Environment	
	total load (including non-domestic load) of 1.7 million P.E. on average, with significant fluctuations from day to day. There has been a sizeable decline in annual loading in recent years in line with the economic downturn which has offset most of the earlier overloading[13]. In 2013 the plant was non-compliant with several parameters as set under the EPA discharge licence. Any existing or proposed projects discharging to the plant have the potential to act cumulatively to reduce water quality in Dublin Bay, affecting European sites therein. Planning permission has been received to upgrade the plant to 2.1 million P.E. firm capacity and Irish Water, the responsible authority as of 1st January 2014, are committed to developing the plant as an urgent national priority. Process upgrades have been approved and are in progress in the plant and will be completed by 2015, with an extension to the plant to be delivered by 2015-2016. Upgrading of the existing plant to meet a capacity of 2.1 million P.E. will be implemented in 2016-2018 [9]. Foul/waste water from the cruise liners will be treated entirely on board the cruise liner, with any residue discharged outside territorial waters. *Conclusion for potential in-combination effects from foul waters* There will be no likelihood of significant effects on any European sites, and there will be no adverse effects on European site integrity during the construction or operation of the proposed development in combination with other plans or projects. This judgement was reached on the basis that: • The coastal waters in Dublin Bay are classed as "Unpolluted" by the EPA; • There has been a sizeable decline in annual loading in recent years due to the economic downturn which has offset the problem of overloading; • The Ringsend WWTW upgrades are currently under way and are to be delivered between 2015 and 2018. This is likely to maintain the "Unpolluted" water quality status of coastal waters despite potential pressures from future development; • Even without upgrade works to the Ringsend WWTW, the proposed development will only be retaining existing toilet facilities and therefore there will be a negligible increase in foul water; • There was no proven link between WWTW discharges and nutrient enrichment of sediments in Dublin Bay based on analyses of dissolved and particulate Nitrogen signatures (Wilson and Jackson, 2011); • Enriched water entering Dublin bay has been shown to rapidly mix and become diluted such that the plume is often indistinguishable from the rest of bay water (O'Higgins and Wilson, 2005); • Foul water from cruise liners will be treated entirely on board and residue will be discharged outside territorial waters. <u>*Pressures on European sites in Dublin Bay from surface waters*</u>

[13] According to Irish Water, North Lotts and Grand Canal Docks SDZ Oral Hearing Evidence, 24th February 2014

Table 1 Overview of the Proposed Development and its Receiving Environment	
	The section entitled "Features of the Surrounding Environment" of this report describes the baseline environment of receiving coastal waters for the proposed development, Dublin Bay. The pollutant content of future surface water discharges to the Bay is considered likely to be decreased in the long-term. This is because it is an objective of the *Greater Dublin Strategic Drainage Study,* and all development plans within the catchment of Ringsend WWTW, to include *Sustainable Urban Drainage Systems* in new developments. The waters of Dublin Bay are also known to have the potential to rapidly mix and assimilate pollutants (Wilson & Jackson, 2011). Together these objectives are considered likely to reduce pressures on designated marine and intertidal species and habitats in Dublin Bay. Construction and operation of the proposed development have the potential to result in an accidental pollution incident *e.g.* spillage of hydrocarbons, chemicals or silt laden run-off, affecting the coastal water environment and hence Dublin Bay. It is considered extremely unlikely that an accidental pollution incident of a magnitude that would result in loss of QI habitats, species or SCI species for designated sites in the Dublin Bay region would result from the proposed development. *Conclusion for potential in-combination effects from surface waters* An accidental pollution incident, although unlikely, has the potential to lead to significant effects on European sites in Dublin Bay in-combination with other plans or projects and therefore cannot be ruled out.

European sites within 1km, 5km and 15km of the proposed development site are shown in Figure 1.

Table 2 outlines each European site and the corresponding qualifying interests as well as identifying any relevant source-pathway-receptor links between the proposed development and the European site that may result in adverse effects on the qualifying interests of these European sites.

Table 2 Analysis of European sites within 15km of the Proposed Development Site (information downloaded from www.npws.ie in April 2015) (European sites are "Relevant" where a relevant source-pathway-receptor link[14] exists).

Site name and code	Reasons for designation[15] (*= Priority Habitat) (Sourced from NPWS online Conservation Objectives Generic Version 4.0 for SACs and 4.0 for SPAs, unless otherwise stated)	Do any potential source-pathway-receptor links exist between the proposed development and the European site?
Special Areas of Conservation (SAC)		
Rockabill to Dalkey Island SAC [003000] ca. 1km	**Conservation Objectives Version 1.0 (07/05/13)** **Annex I Habitats:** • Reefs [1170] **Annex II Species:** • Harbour porpoise *Phocoena phocaena* [1351]	Yes. There are a number of linkages between the proposed development and European site. 1. Construction works, including dumping of dredge material at Burford Bank, have the potential to generate noise impact that could impact on Harbour porpoise and/or could result in direct fatalities of Harbour porpoise e.g. by boat strike. Significant effects on the European site cannot be ruled out in view of the conservation objectives; 2. Accidental pollution events during construction or in operation could carry pollutants into the local coastal waters of Dublin Bay. Significant effects on European sites cannot be ruled out in view of the conservation objectives; 3. Dumping of dredge material at Burford Bank, located

[14] For significant effects to arise, there must be a risk enabled by having a 'source' (e.g. construction works at a proposed development site), a 'receptor' (e.g. a SAC), and a pathway between the source and the receptor (e.g. a watercourse connecting a proposed development site to a SAC). The identification of a pathway does not automatically mean significant effects will arise. The likelihood for significant effects will depend upon the characteristics of the source (e.g. duration of construction works), the characteristics of the pathway (e.g. water quality status of watercourse receiving run-off from construction) and the characteristics of the receptor (e.g. the ecology including conservation status of the SAC reason for designation). When expert judgment determines, that significant effects are likely to arise, both the pathway, and the European site are considered "Relevant", and an Appropriate Assessment is triggered

[15] "Qualifying Interests" for SACs and "Special Conservation Interests" for SPAs based on relevant Statutory Instruments for each SPA, and NPWS Conservation Objectives for SACs downloaded from www.npws.ie in April 2015

Table 2 Analysis of European sites within 15km of the Proposed Development Site (information downloaded from www.npws.ie in April 2015) (European sites are "Relevant" where a relevant source-pathway-receptor link[14] exists).		
Site name and code	**Reasons for designation[15] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives Generic Version 4.0 for SACs and 4.0 for SPAs, unless otherwise stated)**	**Do any potential source-pathway-receptor links exist between the proposed development and the European site?**
		within the European site, has the potential to result in sedimentation of material on reef communities. However, no significant effects are predicted for reasons set out under "Potential for Cumulative effects upon European sites" (Table 1 above); 4. Dredging of the seabed and dumping of dredge spoil could impact on prey abundance of the Harbour porpoise. However no significant impacts are predicted for the reasons set out below: - Harbour porpoise feed on a wide range of fish, cephalopod and crustacean species occurring in the water column and close to the seabed. Therefore they are not dependent on demersal fish species, which could be temporarily impacted by the dredge spoil disposal as a food source (www.iwdg.ie accessed 19th May 2015); - The disposal site occupies a small area within the European site with a large area of alternative foraging grounds available for exploitation; - Foraging habitat of the Harbour Porpoise is usually located in areas of strong tidal currents, often close to shore adjacent to islands or headlands (Dolman et. al., 2013). 5. Foul waters generated during operation will be treated at Ringsend WWTW and following treatment will be discharged into Dublin Bay. No significant effects are predicted for the reasons already set out under "Potential for Cumulative effects upon European sites" (Table 1 above)

Table 2 Analysis of European sites within 15km of the Proposed Development Site (information downloaded from www.npws.ie in April 2015) (European sites are "Relevant" where a relevant source-pathway-receptor link[14] exists).		
Site name and code	**Reasons for designation[15] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives Generic Version 4.0 for SACs and 4.0 for SPAs, unless otherwise stated)**	**Do any potential source-pathway-receptor links exist between the proposed development and the European site?**
South Dublin Bay SAC [000210] ca. 0.4km	**Conservation Objectives Version 1.0 (22/08/13)** **Annex I Habitats:** • Mudflats and sandflats not covered by seawater at low tide [1140]	Yes, there are a number of linkages between the proposed development and European site. 1. Accidental pollution events during construction or in operation could carry pollutants into the local coastal waters of Dublin Bay. Significant effects on European sites cannot be ruled out in view of the conservation objectives; 2. There is the potential for escape of plant materials, seeds/seedlings from new planting to be introduced to the receiving water environment via surface water drainage. If any non-native invasive species were to be used in the landscaping proposals this could present a risk of introduction/spread of non-native invasive species to habitats within Dublin Bay. Significant effects on European sites cannot be ruled out in view of the conservation objectives; 3. Dredging works during construction could lead to re-suspension and settling out of sediments within the European site. However, no significant effects are predicted due to the findings of the dredge plume modelling; that any re-suspended sediments would rapidly disperse to negligible levels and that the proposed project would not have any impact on sediment transport and deposition in Dublin Bay (ABP MER Ltd. 2014); 4. Foul waters generated during operation will be treated at Ringsend WWTW and following treatment will be discharged into Dublin Bay. No significant effects are predicted for the reasons already set out under "Potential for Cumulative effects upon European sites" (Table 1 above).

Table 2 Analysis of European sites within 15km of the Proposed Development Site (information downloaded from www.npws.ie in April 2015) (European sites are "Relevant" where a relevant source-pathway-receptor link[14] exists).		
Site name and code	**Reasons for designation[15] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives Generic Version 4.0 for SACs and 4.0 for SPAs, unless otherwise stated)**	**Do any potential source-pathway-receptor links exist between the proposed development and the European site?**
North Dublin Bay SAC [000206] ca. 4.2km	**Conservation Objectives Version 1.0 (06/11/13)** **Annex I Habitats:** • Mudflats and sandflats not covered by seawater at low tide [1140] • Annual vegetation of drift lines [1210] • *Salicornia* and other annuals colonizing mud and sand [1310] • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] • *Petalophyllum ralfsii* [1395] • Mediterranean salt meadows (*Juncetalia maritimi*) [1410] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes") [2120] • *Fixed coastal dunes with herbaceous vegetation ("grey dunes") [2130] • Humid dune slacks [2190]	Yes, see entry under South Dublin Bay SAC above.
Howth Head SAC [000202] ca. 7km	**Conservation Objectives Generic Version 4.0 (13/02/15)** **Annex I Habitats:** • Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] • European dry heaths [4030]	No significant effects are predicted due to the findings of the dredge plume modelling; that any re-suspended sediments would rapidly disperse to negligible levels and that the proposed project would not have any impact on sediment transport and deposition in Dublin Bay (ABP MER Ltd. 2014). In the case of European dry heaths this habitat is located above the shoreline and therefore there is no hydrological connection to it.
Ireland's Eye SAC [002193] ca. 11.4km	**Conservation Objectives Generic Version 4.0 (13/02/15)** **Annex I Habitats:**	No, due to distance and the significant marine open water buffer between the sites.

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Site name and code	**Reasons for designation[15] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives Generic Version 4.0 for SACs and 4.0 for SPAs, unless otherwise stated)**	**Do any potential source-pathway-receptor links exist between the proposed development and the European site?**
	• Perennial vegetation of stony banks [1220] • Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	
Baldoyle Bay SAC [000199] ca. 9.5km	**Conservation Objectives Version 1.0 (19/11/12)** **Annex I Habitats:** • Mudflats and sandflats not covered by seawater at low tide [1140] • *Salicornia* and other annuals colonizing mud and sand [1310] • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] • Mediterranean salt meadows (*Juncetalia maritimi*) [1410]	No, due to distance and separation by land and significant marine open water between the sites.
Bray Head SAC [000714] ca. 12km	**Conservation Objectives Generic Version 4.0 (13/02/15)** **Annex I Habitats:** • Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] • European dry heaths [4030]	No, due to distance and the combination of there being a significant marine open water buffer between the sites and in the case of European dry heaths the fact that this habitat is located above the shoreline and therefore there is no hydrological connection to it.
Ballyman Glen SAC [000713] ca. 10km	**Conservation Objectives Generic Version 4.0 (13/02/15)** **Annex I Habitats:** • *Petrifying springs with tufa formation (*Cratoneurion*) [7220] • Alkaline fens [7230]	No, due to distance and absence of any hydrological connection between the sites.
Knocksink Wood SAC [000725] ca. 10.6km	**Conservation Objectives Generic Version 4.0 (13/02/15)** **Annex I Habitats:** • *Petrifying springs with tufa formation (*Cratoneurion*) [7220] • *Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)	No, due to distance and absence of any hydrological connection between the sites.

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Site name and code	**Reasons for designation[15] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives Generic Version 4.0 for SACs and 4.0 for SPAs, unless otherwise stated)**	**Do any potential source-pathway-receptor links exist between the proposed development and the European site?**
Wicklow Mountains SAC [002122] ca. 11.6km	**Conservation Objectives Generic Version 4.0 (05/03/15)** **Annex I Habitats:** • Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea* [3130] • Natural dystrophic lakes and ponds [3160] • Northern Atlantic wet heaths with *Erica tetralix* [4010] • European dry heaths [4030] • Alpine and Boreal heaths [4060] • Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and sub-mountain areas, in Continental Europe) [6230] • Blanket bogs (* if active only) [7130] • Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [8110] • Calcareous rocky slopes with chasmophytic vegetation [8210] • Siliceous rocky slopes with chasmophytic vegetation [8220] • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] **Annex II Species:** • Otter - *Lutra lutra* [1355]	No, due to distance and absence of any hydrological connection between the sites.
Special Protection Areas (SPA)		
Dalkey Islands SPA [004172]	**Conservation Objectives Generic Version 4.0 (13/02/15)**	Yes. There are a number of linkages between the proposed development and European site. Although the

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Site name and code	**Reasons for designation[15] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives Generic Version 4.0 for SACs and 4.0 for SPAs, unless otherwise stated)**	**Do any potential source-pathway-receptor links exist between the proposed development and the European site?**
ca. 3km	• Roseate Tern (*Sterna dougallii*) [A192] [passage] • Common Tern (*Sterna hirundo*) [A193] [passage] • Arctic Tern (*Sterna paradisaea*) [A194] [passage]	European site is not within the footprint of the proposed development, mobile SCI species may use the harbour and surrounding area for roosting and/or feeding. 1. Noise and vibration during construction works, including dredging and pile driving, could disturb or displace SCI species utilising the harbour (outside of the SPA) for feeding and/or roosting into the wider Dublin Bay area. However no significant impacts are predicted for the reasons set out below: - Piling will be carried out within the confines of the harbour, estimated to take *ca.* 12 weeks, thus reducing the transmission of noise into the wider water column. The piling programme may overlap with the winter bird season in part (March – September), and the migration period for terns. Common tern were recorded in the proposed development area on a single occasion only during bird surveys for the proposed development (Scott Cawley, 2015). Given that terns can feed outside of the harbour in the larger Dublin Bay area and the infrequency of their occurrence within the harbour, the impact of noise and vibration from dredging and piling during construction works is not considered significant. Roseate tern and Arctic tern were not recorded within the proposed development area during the survey period. - The dredging programme will overlap with the

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Site name and code	**Reasons for designation[15] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives Generic Version 4.0 for SACs and 4.0 for SPAs, unless otherwise stated)**	**Do any potential source-pathway-receptor links exist between the proposed development and the European site?**
		early winter and late winter bird season, often referred to as the 'shoulder period' when, in general, winter bird numbers would not be at their peak, and also with the breeding bird season. . Noise emitted by dredgers is similar to that emitted by regular shipping activity. SCI species in the area are likely to have become habituated to a high degree of disturbance and background noise given the location within a working harbour and proximity to the Dublin Port shipping lane. For this reason, and reasons set out above, the impact of dredging is not considered significant. 2. Accidental pollution events during construction or in operation could carry pollutants into the local coastal waters of Dublin Bay. Significant effects on European sites cannot be ruled out in view of the conservation objectives. 3. Noise during operation, with the cruise vessels sailing up the navigation channel could result in disturbance to the SCIs species at the site. Burger (1998) found that watercraft utilising established channels were less likely to disturb Common Tern colonies, and that a disturbance distance of 100m should be established between colonies and watercraft. No significant effects are predicted due to the distance between the site and the navigation channel, *ca.* 3km, and the fact that the navigation channel is located within existing shipping lanes to Dublin Port and Dún

Table 2 Analysis of European sites within 15km of the Proposed Development Site (information downloaded from www.npws.ie in April 2015) (European sites are "Relevant" where a relevant source-pathway-receptor link[14] exists).		
Site name and code	**Reasons for designation[15] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives Generic Version 4.0 for SACs and 4.0 for SPAs, unless otherwise stated)**	**Do any potential source-pathway-receptor links exist between the proposed development and the European site?**
		Laoghaire Harbour.
South Dublin Bay and River Tolka Estuary SPA [004024] ca. 0.06km	**Conservation Objectives Version 1.0 (09/03/15)** • Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] [wintering] • Oystercatcher (*Haematopus ostralegus*) [A130] [wintering] • Ringed Plover (*Charadrius hiaticula*) [A137] [wintering] • Grey Plover (*Pluvialis squatarola*) [A140] [wintering] • Knot (*Calidris canutus*) [A143] [wintering] • Sanderling (*Calidris alba*) [A144] [wintering] • Dunlin (*Calidris alpina*) [A149] [wintering] • Bar-tailed Godwit (*Limosa lapponica*) [A157] [wintering] • Redshank (*Tringa totanus*) [A162] [wintering] • Black-headed Gull (*Croicocephalus ridibundus*) [A179] [wintering] • Roseate Tern (*Sterna dougallii*) [A192] [passage] • Common Tern (*Sterna hirundo*) [A193] [breeding] • Arctic Tern (*Sterna paradisaea*) [A194] [passage] • Wetlands & Waterbirds [A999]	Yes. There are a number of linkages between the proposed development and European site. Although the European site is not within the footprint of the proposed development, mobile SCI species may use the harbour or surrounding areas for roosting and/or feeding. 1. Noise and vibration during construction works, including dredging and pile driving, could disturb SCI species within the SPA (in close proximity to the harbour walls) and could also disturb SCI species utilising the harbour (outside of the SPA) for feeding and/or roosting. However no significant impacts are predicted for the reasons set out below: - Piling will be carried out within the confines of the harbour, thus reducing the transmission of noise into the wider water column. - The dredging and piling programme (March – September) may overlap with the winter bird season in part, and the breeding and migration period for terns. Common tern were recorded in the proposed development area on a single occasion only during bird surveys for the proposed development (Scott Cawley, 2015). Roseate and Arctic Tern were not recorded. Wintering SCI species were recorded within the harbour area in small numbers not exceeding the 1% National Thresholds with the exception of

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Site name and code	**Reasons for designation[15] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives Generic Version 4.0 for SACs and 4.0 for SPAs, unless otherwise stated)**	**Do any potential source-pathway-receptor links exist between the proposed development and the European site?**
		Dunlin and Sanderling that were recorded high tide roosting. Dunlin were recorded regularly in the area with a peak count equating to approximately 17% of the overall Dublin Bay population, and Sanderling recorded on only three occasions with a peak count equating to approximately 35% of the overall Dublin Bay population. Larger flocks of Dunlin and Sanderling that were recorded high tide roosting were located on the outside of the harbour walls, with the harbour walls forming a buffer to potential disturbance from within the confines of the harbour (Scott Cawley, 2015). The construction works will only overlap with the winter bird season in part. Wintering birds can feed outside the harbour in the larger Dublin Bay area, and were recorded in relatively small numbers in relation to the overall populations in Dublin Bay. Noise emitted by dredgers is similar to that emitted by regular shipping activity and SCI species in the area are likely to have become habituated to a high degree of disturbance and background noise given the location within a working harbour and proximity to the Dublin Port shipping lane. Due to the above and the short term duration of disturbance effects, the impact of noise and vibration from dredging and piling during construction works is not considered significant;

Table 2 Analysis of European sites within 15km of the Proposed Development Site (information downloaded from www.npws.ie in April 2015) (European sites are "Relevant" where a relevant source-pathway-receptor link[14] exists).		
Site name and code	**Reasons for designation[15] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives Generic Version 4.0 for SACs and 4.0 for SPAs, unless otherwise stated)**	**Do any potential source-pathway-receptor links exist between the proposed development and the European site?**
		2. Accidental pollution events during construction or in operation could carry pollutants into the local coastal waters of Dublin Bay. Significant effects on European sites cannot be ruled out in view of the conservation objectives. 3. Dredging works during construction could lead to suspension of sediments in the water column which could impact on underwater visibility and hence ability of fish eating waterbirds to hunt and catch prey. However, no significant effects are predicted as high suspended solids levels are common in shallow waters close to the coastline. Also due to the findings of the dredge plume modelling, that suspended solid concentrations from dredging operations will rapidly disperse to negligible levels within 2km (ABP MER Ltd. 2014). 4. Noise during operation, with the cruise vessels sailing into the harbour ca. 68m from the SPA boundary could result in disturbance to the SCIs species at the site. No significant effects are predicted due to the fact that the operation of the facility will be seasonal, April – September, thus largely avoiding the winter bird season, disturbance to SCI species in the overlap period would be limited to shipping movements into and out of the harbour in the early morning and late evening and SCI species utilising the area are likely to have become habituated to a high degree of disturbance and background noise given the location within a working harbour and proximity to the Dublin

Table 2 Analysis of European sites within 15km of the Proposed Development Site (information downloaded from www.npws.ie in April 2015) (European sites are "Relevant" where a relevant source-pathway-receptor link[14] exists).		
Site name and code	**Reasons for designation[15] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives Generic Version 4.0 for SACs and 4.0 for SPAs, unless otherwise stated)**	**Do any potential source-pathway-receptor links exist between the proposed development and the European site?**
		Port shipping lane; For breeding and passage species, there are no tern colonies located within the harbour itself and any disturbance to terns within the harbour would be limited to small numbers recorded feeding or flying over the area. Given that terns can feed outside of the harbour in the larger Dublin Bay area and the infrequency of their occurrence within the harbour, the impact of disturbance during operation of the cruise vessels is not considered significant.
North Bull Island SPA [004006] ca. 4.2km	**Conservation Objectives Generic Version 4.0 (13/02/15)** • Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] [wintering • Shelduck (*Tadorna tadorna*) [A048] [wintering] • Teal (*Anas crecca*) [A052] [wintering] • Pintail (*Anas acuta*) [A054] [wintering] • Shoveler (*Anas clypeata*) [A056] [wintering] • Oystercatcher (*Haematopus ostralegus*) [A130] [wintering] • Golden Plover (*Pluvialis apricaria*) [A140] [wintering] • Grey Plover (*Pluvialis squatarola*) [A141][wintering] • Knot (*Calidris canutus*) [A143] [wintering] • Sanderling (*Calidris alba*) [A144] [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]	Yes. There are a number of linkages between the proposed development and European site. Although the European site is not within the footprint of the proposed development, mobile SCI species may use the harbour and surrounding areas for roosting and/or feeding. 1. Noise and vibration during construction works, including dredging and pile driving, could disturb SCI species utilising the harbour (outside of the SPA) for feeding and/or roosting. However, no significant impacts are predicted for the reasons set out below: - Piling will be carried out within the confines of the harbour, thus reducing the transmission of noise into the wider water column. - The dredging and piling programme (March – September) will overlap with the winter bird season in part. Wintering SCI species were recorded within the harbour area in small numbers not exceeding the

Table 2 Analysis of European sites within 15km of the Proposed Development Site (information downloaded from www.npws.ie in April 2015) (European sites are "Relevant" where a relevant source-pathway-receptor link[14] exists).		
Site name and code	**Reasons for designation[15] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives Generic Version 4.0 for SACs and 4.0 for SPAs, unless otherwise stated)**	**Do any potential source-pathway-receptor links exist between the proposed development and the European site?**
	• Redshank (*Tringa totanus*) [A162] [wintering] • Turnstone (*Arenaria interpres*) [A169] [wintering] • Black-headed Gull (*Croicocephalus ridibundus*) [A179] [wintering] • Wetlands & Waterbirds [A999]	1% National Thresholds with the exception of Dunlin and Sanderling that were recorded high tide roosting. Dunlin were recorded regularly in the area with a peak count equating to approximately 17% of the overall Dublin Bay population, and Sanderling recorded on only three occasions with a peak count equating to approximately 35% of the overall Dublin Bay population. Larger flocks of Dunlin and Sanderling that were recorded high tide roosting were located on the outside of the harbour walls, with the harbour walls forming a buffer to potential disturbance from within the confines of the harbour (Scott Cawley, 2015). The construction works will only overlap with the winter bird season in part. Wintering birds can feed outside the harbour in the larger Dublin Bay area, and were recorded in relatively small numbers in relation to the overall populations in Dublin Bay. Noise emitted by dredgers is similar to that emitted by regular shipping activity and SCI species in the area are likely to have become habituated to a high degree of disturbance and background noise given the location within a working harbour and proximity to the Dublin Port shipping lane. Due to the above and the short term duration of disturbance effects, the impact of noise and vibration from dredging and piling during construction works is not considered

Table 2 Analysis of European sites within 15km of the Proposed Development Site (information downloaded from www.npws.ie in April 2015) (European sites are "Relevant" where a relevant source-pathway-receptor link[14] exists).		
Site name and code	**Reasons for designation[15] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives Generic Version 4.0 for SACs and 4.0 for SPAs, unless otherwise stated)**	**Do any potential source-pathway-receptor links exist between the proposed development and the European site?**
		significant; 2. Accidental pollution events during construction or in operation could carry pollutants into the local coastal waters of Dublin Bay. Significant effects on European sites cannot be ruled out in view of the conservation objectives.

Table 2 Analysis of European sites within 15km of the Proposed Development Site (information downloaded from www.npws.ie in April 2015) (European sites are "Relevant" where a relevant source-pathway-receptor link[14] exists).		
Site name and code	**Reasons for designation[15] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives Generic Version 4.0 for SACs and 4.0 for SPAs, unless otherwise stated)**	**Do any potential source-pathway-receptor links exist between the proposed development and the European site?**
Howth Head Coast SPA [004113] ca. 7km	**Conservation Objectives Generic Version 4.0 (13/02/15)** • Kittiwake (*Rissa tridactyla*) [A188] [breeding]	Yes. There are a number of linkages between the proposed development and European site. Although the European site is not within the footprint of the proposed development, mobile SCI species may use the harbour and surrounding areas for roosting and/or feeding. 1. Noise and vibrations during construction works, including dredging and pile driving (March – September), could disturb SCI species utilising the harbour (outside of the SPA) for feeding and/or roosting. However no significant impacts are predicted for the reasons set out below: - Piling will be carried out within the confines of the harbour, thus reducing the transmission of noise into the wider water column. The piling programme may overlap with breeding season. Kittiwake were recorded on six occasions during winter bird surveys for the proposed development, with the peak count of two birds on two occasions (Scott Cawley, 2015). Given that Kittiwake can feed outside of the harbour in the larger Dublin Bay area and the low numbers recorded, the impact of noise and vibration from dredging and piling during construction works is not considered significant. Roseate tern and Arctic tern were not recorded within the proposed development area during the survey period.

Table 2 Analysis of European sites within 15km of the Proposed Development Site (information downloaded from www.npws.ie in April 2015) (European sites are "Relevant" where a relevant source-pathway-receptor link[14] exists).		
Site name and code	**Reasons for designation[15] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives Generic Version 4.0 for SACs and 4.0 for SPAs, unless otherwise stated)**	**Do any potential source-pathway-receptor links exist between the proposed development and the European site?**
		2. The dredging programme lmay overlap with the winter bird season in the shoulder period (early winter, or late winter). . Noise emitted by dredgers is similar to that emitted by regular shipping activity. SCI species in the area are likely to have become habituated to a high degree of disturbance and background noise given the location within a working harbour and proximity to the Dublin Port shipping lane. For this reason, and reasons set out above, the impact of dredging is not considered significant 3. Accidental pollution events during construction or in operation could carry pollutants into the local coastal waters of Dublin Bay. Significant effects on European sites cannot be ruled out in view of the conservation objectives 4. Dredging works during construction could lead to suspension of sediments in the water column which could impact on underwater visibility and hence ability of fish eating waterbirds to hunt and catch prey. However, no significant effects are predicted as high suspended solids levels are common in shallow waters close to the coastline. Also due to the findings of the dredge plume modelling, that suspended solid concentrations from dredging operations will rapidly disperse to negligible levels within 2km (ABP MER Ltd. 2014).
Baldoyle Bay SPA [004016]	**Conservation Objectives Version 1.0 (21/02/13)**	Yes. There are a number of linkages between the proposed development and European site. Although the

Table 2 Analysis of European sites within 15km of the Proposed Development Site (information downloaded from www.npws.ie in April 2015) (European sites are "Relevant" where a relevant source-pathway-receptor link[14] exists).		
Site name and code	**Reasons for designation[15] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives Generic Version 4.0 for SACs and 4.0 for SPAs, unless otherwise stated)**	**Do any potential source-pathway-receptor links exist between the proposed development and the European site?**
ca. 9.5km	• Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] [wintering] • Shelduck (*Tadorna tadorna*) [A048] [wintering] • Ringed Plover (*Charadrius hiaticula*) [A137] [wintering] • Golden Plover (*Pluvialis apricaria*) [A140] [wintering] • Grey Plover (*Pluvialis squatarola*) [A141] [wintering] • Bar-tailed Godwit (*Limosa lapponica*) [A157] [wintering] • Wetlands & Waterbirds [A999]	European site is not within the footprint of the proposed development, mobile SCI species may use the harbour and surrounding areas for roosting and/or feeding. 1. Noise and vibration during construction works, including dredging and pile driving (March – September), could disturb SCI species utilising the harbour (outside of the SPA) for feeding and/or roosting. However, no significant impacts are predicted for the reasons set out below: - Piling will be carried out within the confines of the harbour, thus reducing the transmission of noise into the wider water column. - The dredging and piling programme may overlap with the winter bird season in part during the shoulder period when winter bird numbers are generally not at their peak. Wintering SCI species, Light-bellied Brent Goose, Shelduck, Ringed Plover and Bar-tailed Godwit were recorded within the harbour area in small numbers not exceeding the 1% National Thresholds (Scott Cawley, 2015). Given that the birds can feed outside of the harbour in the larger Dublin Bay area, the relatively small numbers recorded in relation to the overall populations in Dublin Bay, that noise emitted by dredgers is similar to that emitted by regular shipping activity and SCI species in the area are likely to have become habituated to a

Table 2 Analysis of European sites within 15km of the Proposed Development Site (information downloaded from www.npws.ie in April 2015) (European sites are "Relevant" where a relevant source-pathway-receptor link[14] exists).		
Site name and code	**Reasons for designation[15] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives Generic Version 4.0 for SACs and 4.0 for SPAs, unless otherwise stated)**	**Do any potential source-pathway-receptor links exist between the proposed development and the European site?**
		high degree of disturbance and background noise given the location within a working harbour and proximity to the Dublin Port shipping lane, and the short term duration of disturbance effects, the impact of noise and vibration from dredging and piling during construction works is not considered significant; 2. Accidental pollution events during construction or in operation could carry pollutants into the local coastal waters of Dublin Bay. Significant effects on European sites cannot be ruled out in view of the conservation objectives.
Ireland's Eye SPA [004117] ca. 10.3km	**Conservation Objectives Generic Version 4.0 (13/02/15)** • Cormorant (*Phalacrocorax carbo*) [A017] [breeding] • Herring Gull (*Larus argentatus*) [A184] [breeding] • Kittiwake (*Rissa tridactyla*) [A188] [breeding] • Guillemot (*Uria aalge*) [A199] [breeding] • Razorbill (*Alca torda*) [A200] [breeding]	Yes. There are a number of linkages between the proposed development and European site. Although the European site is not within the footprint of the proposed development, mobile SCI species may use the harbour and surrounding areas for roosting and/or feeding. 1. Noise and vibrations during construction works, including dredging and pile driving (March – September), could disturb SCI species utilising the harbour (outside of the SPA) for feeding and/or roosting. However no significant impacts are predicted for the reasons set out below: - Piling will be carried out within the confines of the harbour, thus reducing the transmission of noise into the wider water column. The construction programme will overlap with breeding season. Cormorant were recorded

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Site name and code	**Reasons for designation[15] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives Generic Version 4.0 for SACs and 4.0 for SPAs, unless otherwise stated)**	**Do any potential source-pathway-receptor links exist between the proposed development and the European site?**
		regularly (22 occasions) within the harbour area with peak counts equating to approximately 27% of the overall Dublin Bay population, and numbers did not exceed the 1% National Threshold. Herring Gull were recorded regularly (24 occasions) within the harbour area with peak counts equating to approximately 11% of the overall Dublin Bay population. Kittiwake were recorded on six occasions during winter bird surveys for the proposed development, with the peak count of two birds on two occasions. Guillemot were recorded regularly (24 occasions) within the harbour area with a peak count of 62. Razorbill were recorded less frequently (8 occasions) with a peak count of 94. (Scott Cawley, 2015). Given that the SCI species are not breeding within the harbour can feed outside of the harbour in the larger Dublin Bay area and the relatively low numbers recorded, the impact of noise and vibration from dredging and piling during construction works is not considered significant. 2. Accidental pollution events during construction or in operation could carry pollutants into the local coastal waters of Dublin Bay. Significant effects on European sites cannot be ruled out in view of the conservation objectives. 3. Dredging works during construction could lead to suspension of sediments in the water column which

Table 2 Analysis of European sites within 15km of the Proposed Development Site (information downloaded from www.npws.ie in April 2015) (European sites are "Relevant" where a relevant source-pathway-receptor link[14] exists).		
Site name and code	**Reasons for designation[15] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives Generic Version 4.0 for SACs and 4.0 for SPAs, unless otherwise stated)**	**Do any potential source-pathway-receptor links exist between the proposed development and the European site?**
		could impact on underwater visibility and hence ability of fish eating waterbirds to hunt and catch prey. However, no significant effects are predicted as high suspended solids levels are common in shallow waters close to the coastline. Also due to the findings of the dredge plume modelling, that suspended solid concentrations from dredging operations will rapidly disperse to negligible levels within 2km (ABP MER Ltd. 2014).
Wicklow Mountains SPA [004040] ca. 12km	**Conservation Objectives Generic Version 4.0 (13/02/15)** • Merlin (*Falco columbarius*) [A098] [breeding] • Peregrine (*Falco peregrinus*) [A103] [breeding]	No, although there is a linkage between the proposed development and European site as mobile SCI species may use the harbour and surrounding areas for roosting and/or feeding significant impacts are not predicted for reasons set out below: 1. Noise from construction works, including dredging and pile driving, could disturb SCI species utilising the harbour for feeding. Peregrine can feed on waders, waterfowl, gulls and seabirds, therefore any disturbance of birds out of the area could impact on the Peregrines prey abundance. As Peregrine mainly catch prey mid-air they are unlikely to be impacted in other ways by the construction works. However, a single Peregrine only was only recorded on a single occasion in flight over the area (Scott Cawley, 2015). Given the distance between the sites, the harbour is unlikely to be the SCI species core foraging area. Given that the birds can feed outside of the harbour in the larger Dublin Bay area and other foraging

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Site name and code	**Reasons for designation[15] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives Generic Version 4.0 for SACs and 4.0 for SPAs, unless otherwise stated)**	**Do any potential source-pathway-receptor links exist between the proposed development and the European site?**
		grounds, the infrequency of the occurrence and the short term duration of disturbance effects, the impact of noise from dredging and piling during construction works is not considered significant.

Figure 1. All European sites within 15km of the site

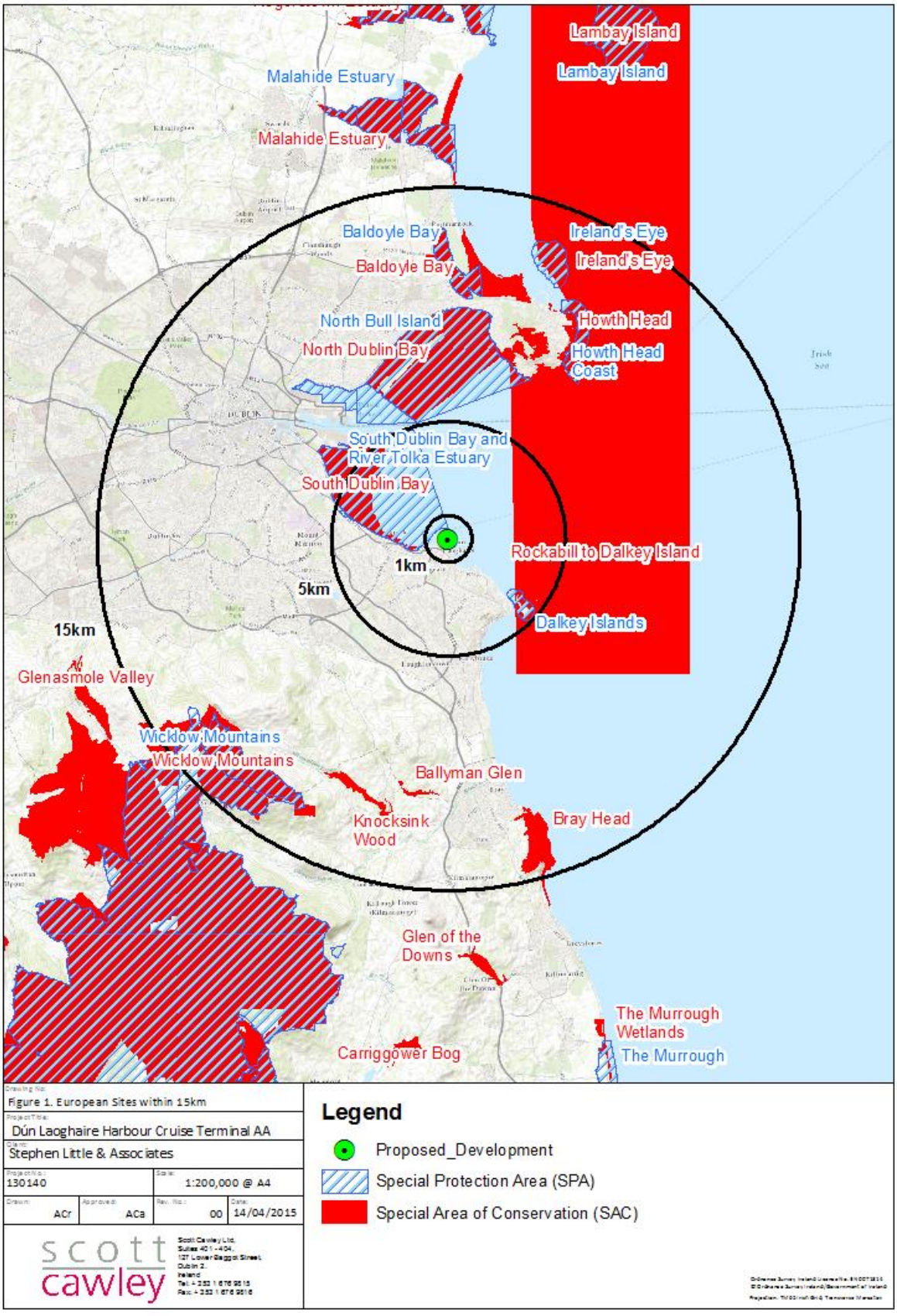
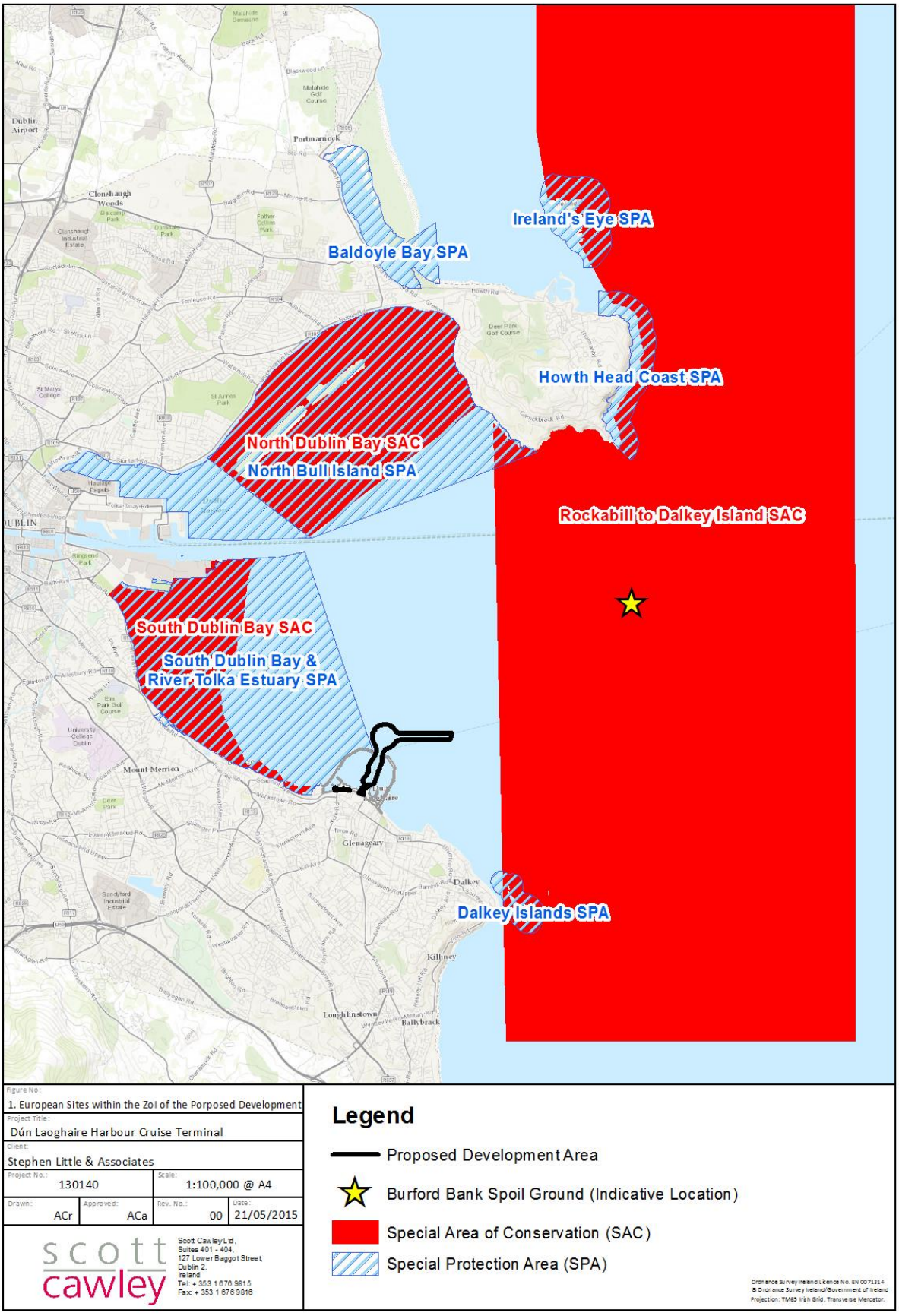


Figure 2. Indicative Location of the Burford Bank in relation to the proposed development and European sites within the Zone of Influence



3 Conclusions of the Screening Assessment

Following an analysis of the proposed development, potential relationships with European sites and by applying the precautionary principle, it was determined that it was not possible to rule out significant impacts on Rockabill to Dalkey Island SAC, North Dublin Bay SAC, South Dublin Bay SAC, Dalkey Islands SPA, South Dublin Bay and River Tolka Estuary SPA, North Bull Island SPA, Howth Head Coast SPA, Baldoyle Bay SPA and Ireland's Eye SPA. Therefore, for these European sites the AA needs to proceed to production of a Natura Impact Statement (NIS) to inform an Appropriate Assessment.

Any likelihood of significant impacts on all other European sites has been ruled out, therefore, they will not be discussed in the NIS.

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