Table of Contents

Table of Figures

Table of Tables

10 Biodiversity

10.1 Introduction

This section of the Environmental Impact Assessment Report (EIAR) was carried out by Altemar Ltd. It assesses the biodiversity value of the proposed development area and the potential impacts of the development on the ecology of the surrounding area and within the potential zone of influence (ZOI). Standard construction and operational phase mitigation measures, in addition to monitoring measures are proposed to minimise potential impacts and to improve the biodiversity potential of the proposed development site.

Desk studies were carried out to obtain relevant existing biodiversity information within the ZOI. This area includes the areas of built land and habitats on site. The assessment extends beyond the immediate development area to include those species and habitats that are likely to be impacted upon by the project. It should be noted that the Santry River flows through the site. As a result the potential ZOI beyond the site would be deemed not just to be limited to noise and light impacts, but included the potential for downstream impacts to extend the ZOI beyond the site outline. Details of the proposed development are seen in Chapter 2 of the EIAR.

The programme of work in relation to biodiversity aspects of the EIAR have been designed to identify and describe the existing ecology of the area and detail sites, habitats or species of conservation interest. It also assesses the significance of the likely impacts of the scheme on the biodiversity elements and designs mitigation measures to alleviate identified impacts. Full details of all the mitigation measures and the phasing of the project are contained in the accompanying Construction Environmental Management Plan (CEMP). The project team has consulted Inland Fisheries Ireland (IFI) since 2016 to ensure an agreed landscape strategy within the riparian corridor and that a robust mitigation strategy is developed to limit instream, upstream or downstream impacts.

A separate Natura Impact Statement, in accordance with the requirements of Article 6(3) of the EU Habitats Directive, has been produced to identify potential impacts of the development on Natura 2000 sites, Annex species or Annex habitats. It concludes that standard construction phase mitigation measures will be implemented on site and no significant impacts on Natura 2000 sites are likely.

Altemar Ltd. is an established environmental consultancy that is based in Greystones that has been in operating in Ireland since 2001. Conor Kelleher (Aardwolf Surveys) was the bat ecologist on the project. Conor Kelleher is a full time bat ecologist with over 30 years of bat surveying experience. Bryan Deegan MCIEEM is the Managing Director of Altemar Ltd. who holds a M.Sc. Environmental Science, BSc (Hons.) in Applied Marine Biology and National Diploma in Applied Aquatic Science. He has over 25 years' experience as an environmental consultant in Ireland.

10.2 Proposed Development

A comprehensive description of the proposed development is presented in **Chapter 2** of this EIAR Briefly, the proposal consists of the demolition of existing buildings and redeveloping it for 495 Build to Rent residential units, which are proposed to be split into 4 no. proposed blocks (Blocks A1, A2 each with two 10 storey elements, and Blocks B & C ranging from 3no. to 7no. storeys and associated residential services and facilities, as well as courtyard spaces. In addition, the scheme includes for a service building comprising of a crèche (300 sq. m), café (34 sq. m) and gym (412 sq. m), as well as streets, public realm amenity and green open space.

10.3 Methodology

A pre-survey biodiversity data search was carried out. This included examining records and data from the National Parks and Wildlife Service, National Biological Data Centre and the EPA, in addition to aerial, 6 inch maps and satellite imagery. In addition, a desk based assessment in relation to bat fauna was carried out by Aardwolf Surveys. A Phase I habitat survey of the site was undertaken within the appropriate seasonal timeframe for terrestrial fieldwork. Field surveys were carried out as outlined in Table 10.1.

Area	Surveyors	Survey Dates
Terrestrial Ecology	Bryan Deegan* (MCIEEM) of Altemar	3rd November 2016 & 7th August 2018
Bat Fauna	Aardwolf Surveys Bryan Deegan* (MCIEEM) of Altemar	3rd November 2016 14th March 2019

TABLE 10.1 ASSESSMENT OF KEY ECOLOGICAL AREAS IN THE ENVIRONMENTAL IMPACT ASSESSMENT.

Proximity to designated conservation sites and habitats or species of conservation interest

Designated conservation sites within 15km of the site were examined. This included sites of international importance; Natura 2000 sites (Special Areas of Conservation (SAC), Special Protection Areas (SPA)) and Ramsar sites and sites of National importance ((Natural Heritage Areas (NHA), proposed Natural Heritage Areas (pNHA). Up to date GIS data (2019 NPWS data shapefiles) were acquired and plotted against 5, 10 and 15km buffers from the proposed development site. A data search of rare and threatened species within 5km of the proposed site was provided by NPWS. Additional information on rare and threatened species was researched through the National Biodiversity Data Centre maps. In addition, a separate Natura Impact Statement was carried out for the project.

10.3.1 Terrestrial and Avian Ecology

A pre-survey data search was carried out. This included a literature review to identify and collate relevant published information and ecological studies previously conducted and comprised of information from the following sources; the National Parks and Wildlife Service, NPWS Rare and Protected Species Database, National Biodiversity Data Centre, EPA WMS rivers data, in addition to aerial, 6 inch, satellite imagery. Following the desktop study, walk-over assessments of the site were carried out on the 3rd November 2016 and 7th August 2018. Surveys were carried out by means of a thorough search within the study area. The presence of mammals is indicated principally by their signs, such as resting areas, feeding signs or droppings - though direct observations are also occasionally made. Habitat mapping was carried out according to Fossitt (2000) using AcrGIS 10.2 and displayed on Bing satellite imagery or street mapping. Any rare or protected species or habitats were noted. As part of the fieldwork an invasive species assessment was carried out. It should be noted that the Santry River flows through the site.

10.3.2 Bat Fauna

All internal and external areas of the onsite structures were inspected for bats and/or their signs using a powerful torch (141 Lumens) – Petzl MYO RXP. The site survey was supplemented by a review of Bat Conservation Ireland's (BCIreland) National Bat Records Database and an additional building and tree assessment in March 2019.

The bat fauna expected to occur onsite were described and the likely impacts of the planned works on protected species discussed. Mitigation measures are given to safeguard bats prior to and during planned works, in addition to reducing potential lighting impacts during the operational phase of the project. The site survey was supplemented by a review of Bat Conservation Ireland's (BCIreland) National Bat Records Database.

10.3.3 Difficulties Encountered

No difficulties were encountered in relation to the preparation of the Biodiversity chapter of the EIAR. The bat surveys were undertaken outside of the active bat period so a detector survey was not possible.

10.3.4 Project Team

The proposed layout, drainage strategy and landscape design were reviewed to inform this assessment. Further, Chapter 2, Development Description, Chapter 8, Land and Soils and Chapter 9, Water and Hydrology of this EIAR were reviewed.

10.3.5 Rating of Effects

The terminology for rating impacts is derived from the EPA *Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports* (2017).

10.4 Baseline Scenario

10.4.1 Designated Conservation Sites

As can be seen from Figures 10.1 (SAC's within 15km), 10.2 (SAC's and watercourses within 5km), 10.3 (SPA's and Ramsar sites within 15km), 10.4 (SPA's and watercourses within 5km) and 10.5 (NHA and pNHA) there are no conservation sites within one kilometre of the proposed development site. The Santry River flows through the site with the potential to act as a vector for pollutants to downstream conservation sites (Figures 10.6 and 10.7). The distance and details of the conservation sites within 15km of the proposed development are seen in Table 10.2.

It should be noted that no species of conservation importance were noted on site, based on NPWS and NBDC records as fine resolution. Species recorded within the 10km grid include *Lamiastrum galeobdolon subsp. montanum* (Yellow Archangel) (Artane, Cardiff's Bridge, Drimnagh, Finglas), *Hyoscyamus niger* (Henbane) (Kilmainham and Clontarf), *Galeopsis angustifolia* (Red Hemp-Nettle) (Dun Laoire and Rathdown), *Hordeum secalinum* (Meadow barley) (Finglas, Lotts, Glasnevin), *Hypericum hirsutum* (Hairy St John's-wort)(Drimnagh, Landsdown Valley), *Puccinellia fasciculate* (Borrer's Saltmarsh-Grass)(Sandymount, Pigeon House Road, Ringsend), *Carex divisa* (Divided Sedge) (North Lotts), *Groenlandia densa* (Opposite-leaved Pondweed)(Numerous locations in Grand Canal), *Agrostemma githago* (Corncockle)(Glasnevin), *Centaurea cyanus* (Cornflower)(Glasnevin), *Salvia verbenaca* (Wild Clary)(Glasnevin, Phoenix Park), *Scandix pecten-veneris* (Shepherd's-needle)(Clontarf, Kimmage), *Anthemis arvensis* (Corn Chamomile)(Finglas, Customs House docks), *Lolium temulentum* (Darnel), *Papaver hybridum* (Rough Poppy) (Dublin Port), *Scrophularia umbrosa* (Green Figwort)(Chapelizod), *Viola hirt*a (Hairy Violet)(Phoenix Park), *Larus argentatus* (Herring gull) (Coolock), *Larus canus* (Common gull)(Coolock), *Larus ridibundus* (Black-headed gull) Coolock, *Rana temporaria* (Common Frog) (at numerous locations including Coolock) and *Erinaceus europaeus* (West European Hedgehog) (Ballsbridge) were also noted within the 10km square.

The only species of conservation importance recorded at a finer resolution within 2km of the proposed development was *Rana* temporaria (Common frog) 1.8 km to the south west in Coolock. No species of conservation importance were noted by NBDC within the site boundary.

Name	Distance (km)	Type
Santry Demesne (upstream)	2.5	pNHA
North Bull Island (downstream)	3.2	SPA/Ramsar
North Dublin Bay (downstream)	3.2	SAC
Feltrim Hill	4.3	pNHA
Baldoyle Bay	4.4	SAC/SPA/Ramsar
Sluice River Marsh	4.6	pNHA
Royal Canal	4.9	pNHA
Dolphins, Dublin Docks	5.7	pNHA
Grand Canal	5.8	pNHA
South Dublin Bay and River Tolka SPA	6.3	SPA/Ramsar
South Dublin Bay	6.3	SAC/pNHA
Malahide Estuary	6.8	SAC/pNHA
Broadmeadow/Swords Estuary	7.1	SPA/Ramsar
Howth head	7.6	SAC/pNHA
Rockabill to Dalkey Island	7.9	SAC
Ireland's Eye	8.2	SPA
Ireland's Eye	8.6	SAC/pNHA
Booterstown Marsh	9.0	pNHA
Howth Head Coast	9.2	SPA
Rogerstown Estuary SPA	12.5	SPA/Ramsar

TABLE 10.2 DISTANCE TO DESIGNATED SITES OF CONSERVATION IMPORTANCE (NATURA 2000 SITES 15KM, NHA 10KM)

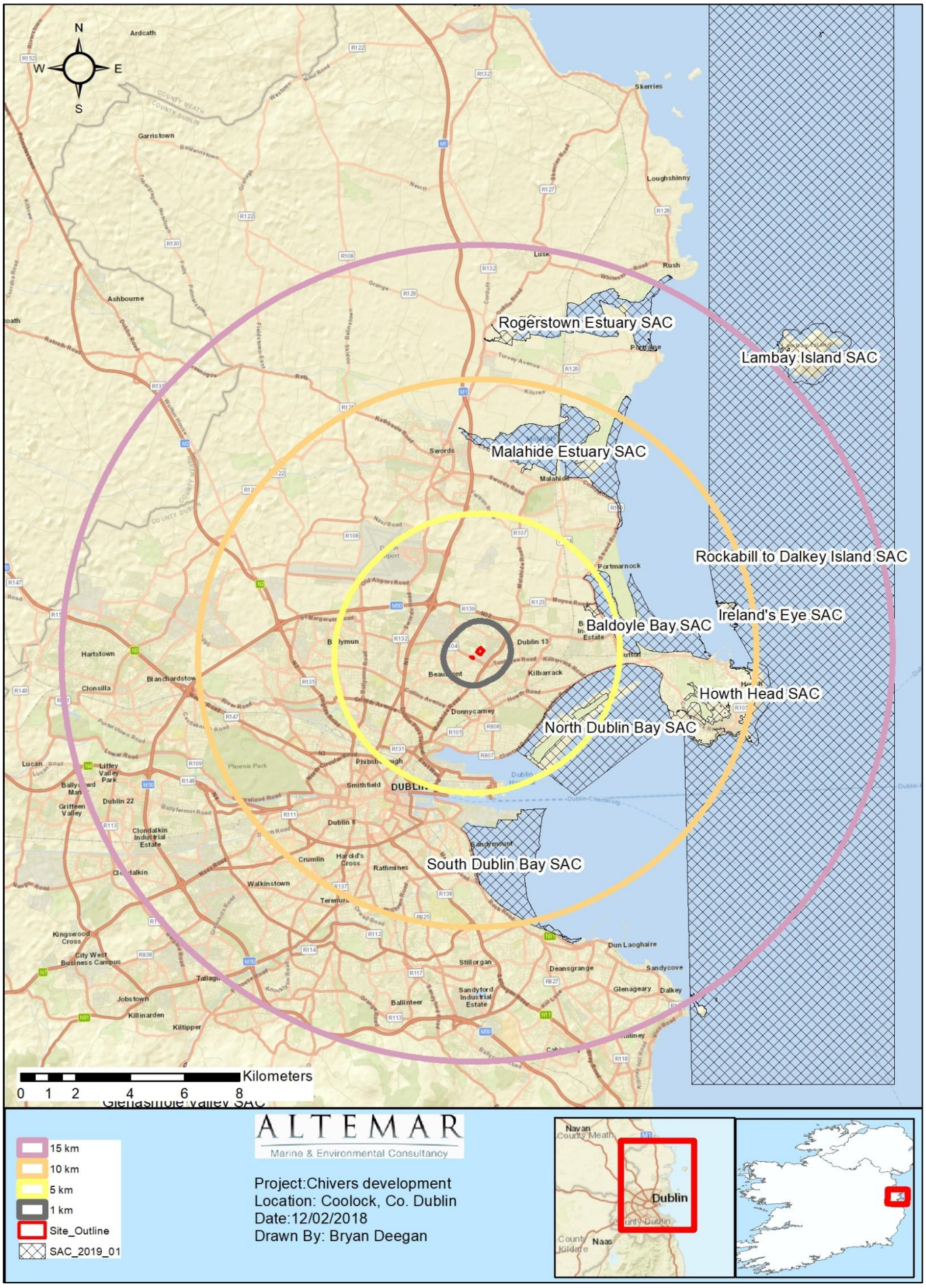

FIGURE 10.1 SACS WITHIN 15KM OF THE PROPOSED DEVELOPMENT.

FIGURE 10.2 SACS AND WATERCOURSES WITHIN 5KM OF THE PROPOSED DEVELOPMENT

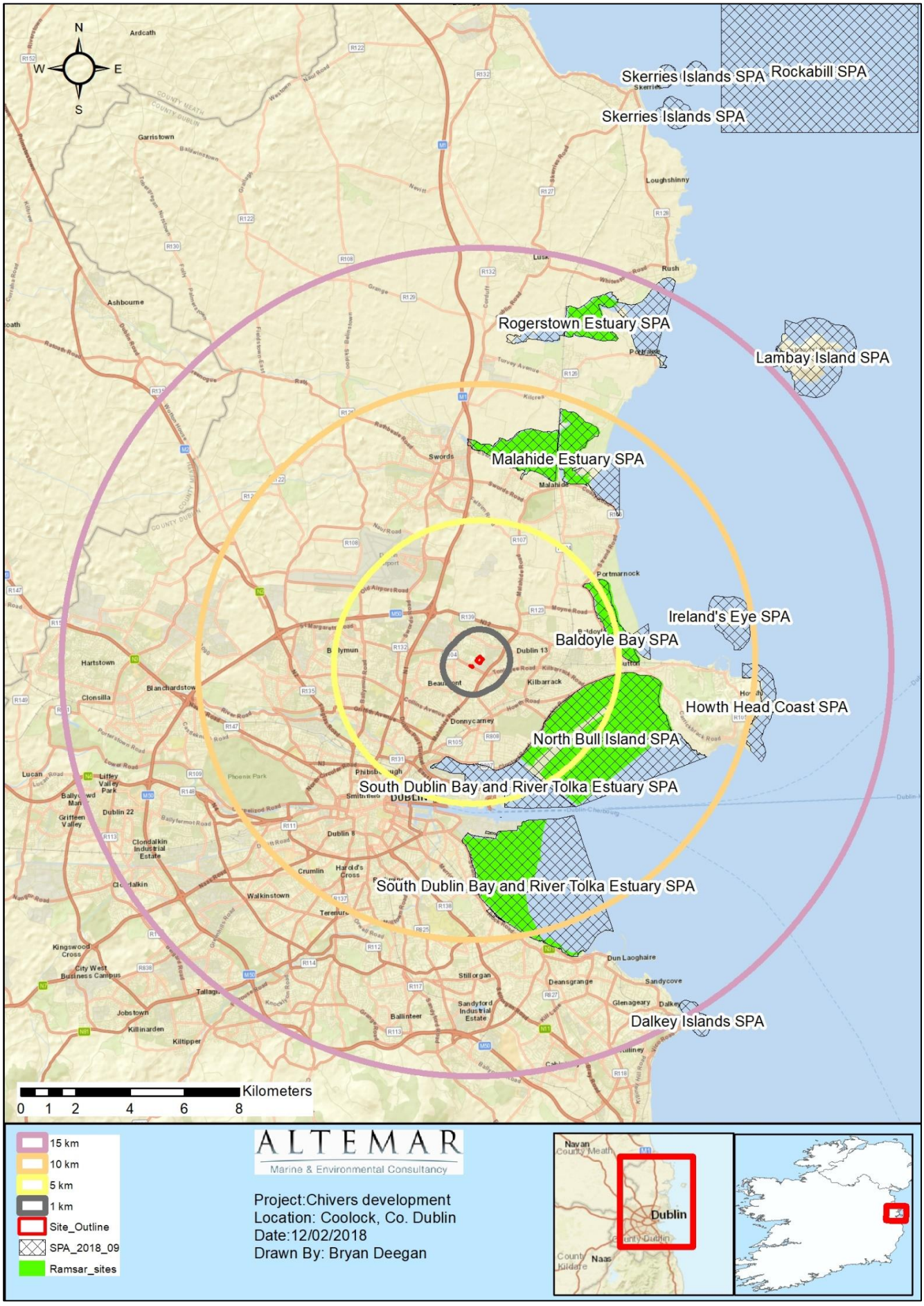

FIGURE 10.3 SPAS & RAMSAR SITES WITHIN 15KM OF THE PROPOSED DEVELOPMENT

FIGURE 10.4 SPAS AND WATERCOURSES WITHIN 5KM OF THE PROPOSED DEVELOPMENT

FIGURE 10.5 PROPOSED NHAS AND NHAS WITHIN 15KM OF THE PROPOSED DEVELOPMENT

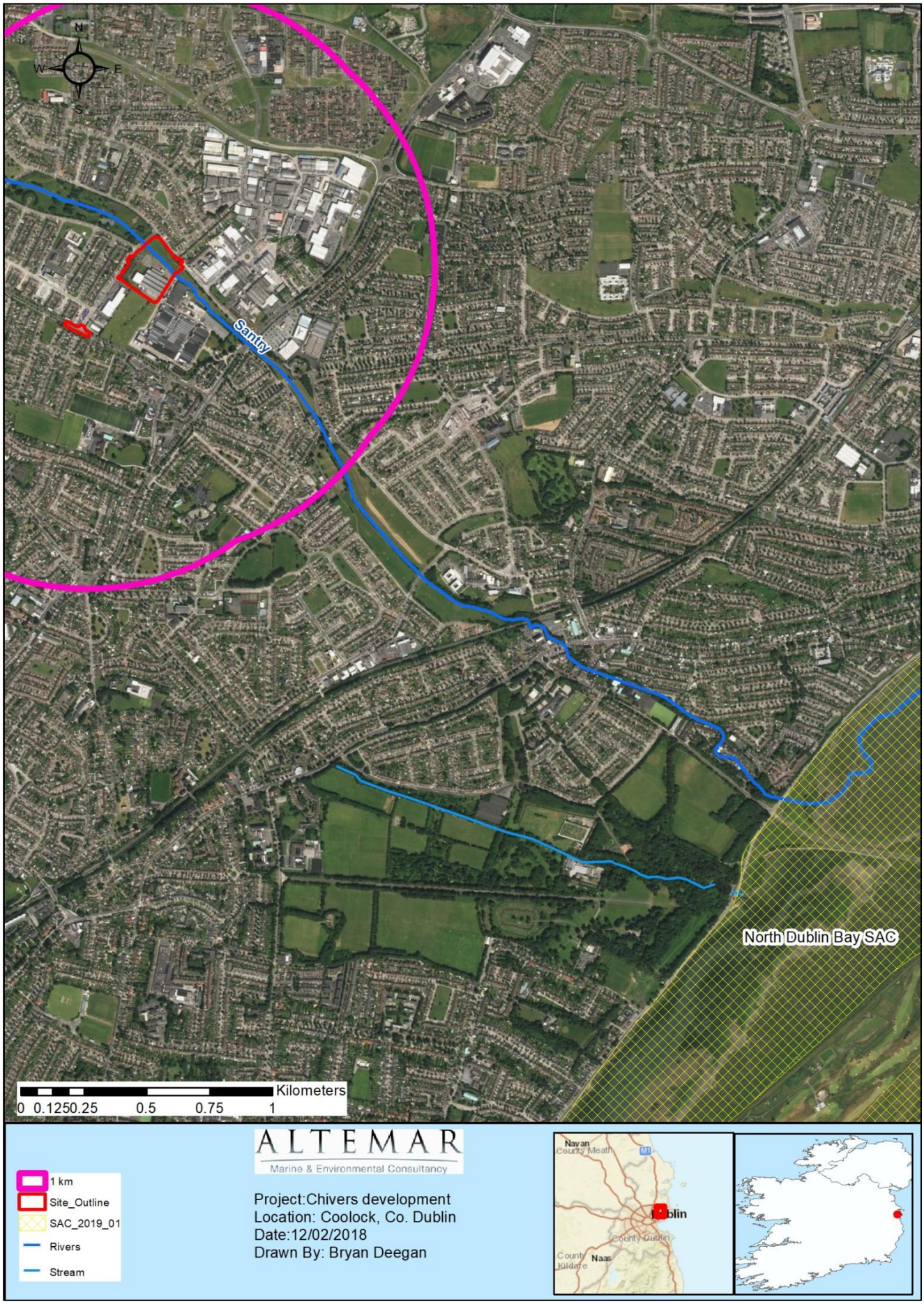

FIGURE 10.6 THE PROPOSED DEVELOPMENT SITE AND PROXIMITY TO NORTH DUBLIN BAY SAC (OVERLAID ON SATELLITE IMAGERY (BING))

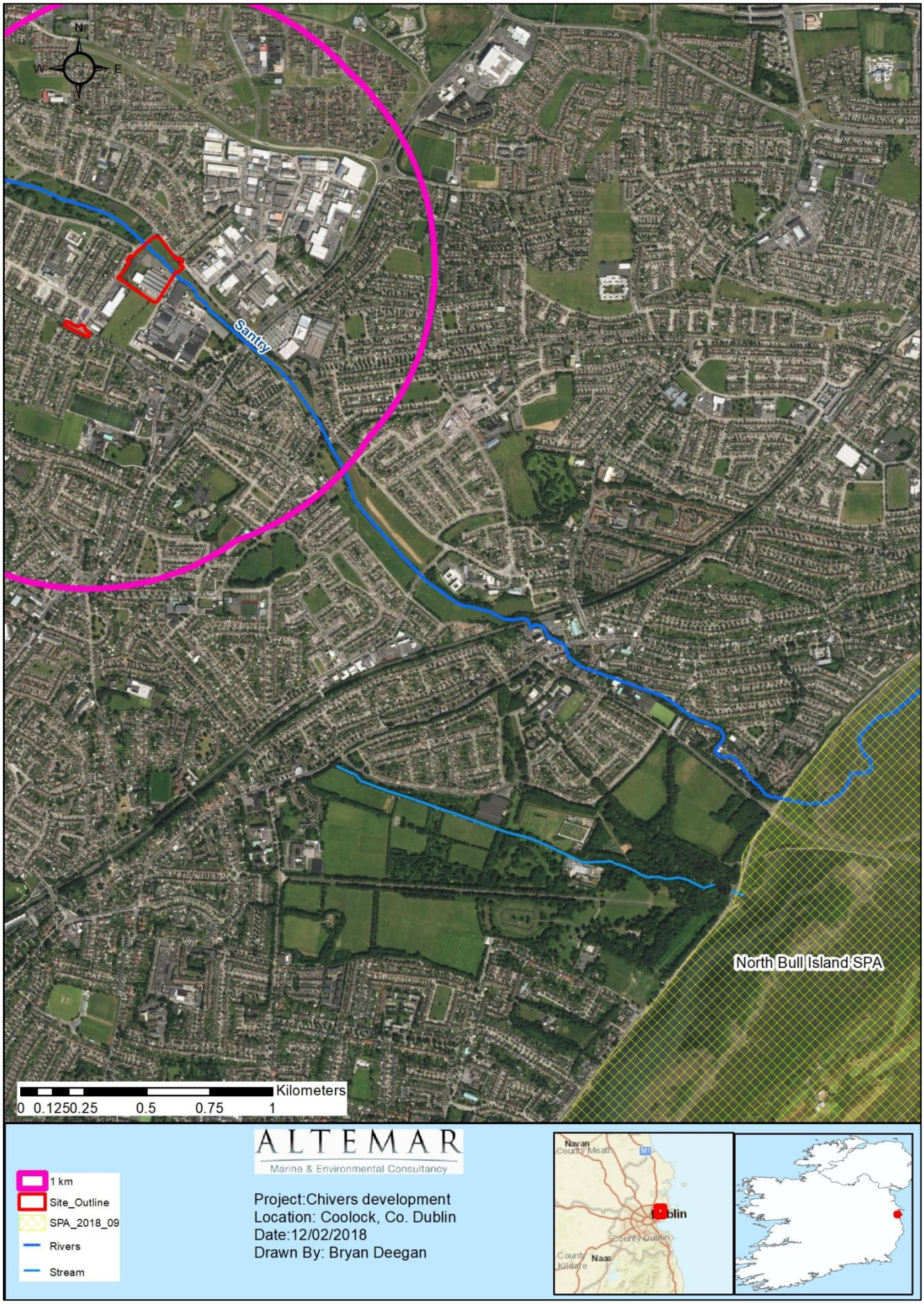

FIGURE 10.7 THE PROPOSED DEVELOPMENT SITE AND PROXIMITY TO NORTH BULL ISLAND SPA (OVERLAID ON SATELLITE IMAGERY (BING))

10.4.2 Terrestrial Ecology

10.4.2.1 Habitats and species

Habitats encountered were classified according to Fossitt (2000) and are seen in Figure 10.8. Distinct habitats were noted and species detailed in Table 10.3. Bird species encountered on site were also noted (Table 10.4).

FIGURE 10. 8 HABITATS REFERRED TO IN THE TEXT FOSSITT (2000) TERMINOLOGY (OSCAR TRAYNOR ROAD INSET).

Fossitt	Habitat and species description
BL3	 *Buildings and artificial surfaces -.*The majority of the Chivers site (60%) comprised of buildings and artificial surfaces which consisted of the former Chivers factory and associated hardstanding areas. The site has been derelict for a number of years and had been vandalised extensively with little remaining of the interior features. A substantial amount of the roof glass had been broken allowing water to enter interior of the building (inset). As the site had been derelict for some years opportunistic flora species had begun to grow in cracks and joints and in areas where debris had accumulated. Species included bramble larger specimens of butterfly-bush (*Buddleja davidii*) right across the BL3 area in addition to (*Rubus fruticosus agg*.), ragworts (*Senecio spp*.), blackcurrant (*Ribes nigrum*), nettle (*Urtica dioica*), dandelion (*Taraxacum spp*.), rosebay willowherb (*Epilobium angustifolium*), plantains (*Plantago spp*.), thistles (*Cirsium arvense & C. vulgare*), docks (*Rumex spp*.), rapeseed (*Brassica napus*) and hedge bindweed (*Calystegia sepium*). Numerous feral pigeon (*Columba livia f. domestica*) occupy the interior of the building. The bat surveys deemed the building to be unsuitable for bat roosts due to temperature extremes and no evidence of bats was noted. The build land in the vicinity of the Oscar Taynor Road is built land comprised of a busy road and footpaths which are of little ecological value.

GA2	 *Amenity grassland (improved)* – Three areas of GA2 were noted on site (Figure 10.8). The larger "greenfield" area was divided by the Santry River and appeared to have not been previously developed. All grassland areas appeared to have been previously maintained but since the site had become derelict maintenance appeared to have ceased. The north eastern site outline extended beyond the existing fence into an area of well-maintained GA2 (inset) (within Cadburys). Species in GA2 consisted of ragworts (*Senecio spp*.) creeping buttercup (*Ranunculus repens*), white clover (*Trifolium repens*), red clover (*Trifolium pratense*), cow parsley (*Anthriscus sylvestris*), bramble (*Rubus fruticosus*), dandelion (*Taraxacum spp*.), daisy (*Bellis perennis*), plantains (*Plantago spp*.), thistles (*Cirsium vulgare*), docks (*Rumex spp*.), nettle (*Urtica dioica*). An old stone bridge crosses the Santry River and has now colonised with amenity grassland. A single small stand of Japanese knotweed (*Fallopia japonica*) was noted on this bridge. Mammal paths (fox) and the remains of several herring gull were noted in this habitat. The amenity grassland in the vicinity of Oscar Traynor Road is well maintained and regularly cut.

BC4

Flower beds and borders – Several areas of the site consisted of flower beds and borders with garden shrub species. Many of these areas were planted with firethorn (*Pyracantha* sp), cotoneaster (*Cotoneaster sp*.) and Rose of Sharon (*Hypericum calycinum).*

WS1/ WS3/ WD2

WS1 (Scrub)/ WS3 (Ornamental/non-native shrub)/ WD2 Mixed broadleaved/conifer woodland – The south eastern perimeter of the site contained a mixture of habitats that would have been originally planted as BC4-Flower beds and borders but had grown wild and unkempt since the site had become derelict. The majority of species in this area were non-native garden verities including the species in BC4 above and other species including Griselinia littoralis, (New Zealand broadleaf), Rhododendron (*Rhododendron ponticum*), Cherry Laurel (*Prunus laurocerasus*).in addition to butterfly-bush (*Buddleja davidii*) and saplings of sycamore (*Acer pseudoplatanus*). Specimens of Hybrid black poplar (Populus x euramericana), hornbeam (*Carpinus betulus*) and

	small-leaved lime (*Tilia cordata*) were also noted in this area. The undergrowth of this area is dense with no groundcover. No setts or burrows were found.
FW2	 *Depositing/lowland rivers* The Santry River divides an area of amenity grassland. Although appearing clear during site visits the river appeared to have a paucity of biodiversity. No fish, invertebrates or instream vegetation of significance was noted. The banks consisted mainly of encroaching scrub of bramble (*Rubus fruticosus agg*.), thistles (*Cirsium vulgare*), nettle (*Urtica dioica*), rosebay willowherb (*Epilobium angustifolium*), great willowherb (*Epilobium hirsutum*), ragworts (*Senecio spp*.), Cow Parsley (*Anthriscus sylvestris*), hedge bindweed (*Calystegia sepium*) and meadowsweet (*Filipendula ulmaria*). A moorhen (*Gallinula chloropus*) was noted in the river during the 2016 survey. The Water Framework Directive water quality status of this section of the Santry River is “unassigned” but 850m upstream it is classed as “poor”. As can be seen from figure 10.6 this section of the river is in an urban environment with potential inputs from both domestic and industrial areas.
WL2	 *Treelines* – A single treeline was noted on the north east boundary of the site. As outlined in the

	tree survey this treeline is primarily made up of Hybrid black poplar (*Populus x euramericana*). And Leyland cypress x *Cuprocyparis leylandii.* Beneath the treeline vegetation was relatively sparse but included nettle (Urtica dioica), dandelion (Taraxacum spp.), plantains (Plantago spp.), thistles (Cirsium arvense & C. vulgare), docks (Rumex spp.), and Ivy (Hedera helix) and lords and ladies (*Arum maculatum*). It is proposed to retain this treeline.

TABLE 10.3 TERRESTRIAL HABITATS AND FLORAL SPECIES COMPOSITION.

The following bird species were noted on site (Table 10.4).

Common Name	Scientific Name	Conservation Status
Woodpigeon	*Columba palumbus*	Green
Feral pigeon	Columba livia f. domestica	Green
Herring Gull (dead on site & flying overhead)	*Larus argentatus*	Red-listed (90%breeding decline over 30 years to 2000*)*
Robin	*Erithacus rubecula*	Green
Great Tit	*Parus major*	Green
Wren	*Troglodytes troglodytes*	Green
Blackbird	*Turdus merula*	Green
Starling	*Sturnus vulgaris*	Green
Raven*	*Corvus corax*	Green

**Nesting within the Chivers factory in March 2019.*

TABLE 10.4 SPECIES OF BIRDS NOTED DURING ON-SITE SURVEYS.

No flora or terrestrial fauna species or habitats of National or international conservation importance were noted on site during the surveys. As previously discussed no flora species of conservation importance were noted on site by the NPWS or NBDC. No amphibians or reptiles were noted on site. However, frogs would be expected given the presence of the Santry River on site. It would not be expected that this river would form an important breeding areas for frogs due to the fast flowing nature of the river. In relation to bird Species, no bird species on Annex I of the EU Birds Directive were noted on site by the NPWS or NBDC. Herring gulls are assumed to frequent the site given the presence of a carcass on site.

Invasive Species

A single small stand of Japanese knotweed was noted on site on the stone bridge over the Santry River. No other stands were noted on site, including along the banks of the watercourse. No other invasive plant or animal species listed under the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) Section 49, the Third Schedule: Part 1 Plants, Third Schedule: Part 2A Animals were noted on site. No terrestrial or aquatic invasive species such as giant rhubarb, Himalayan balsam, giant hogweed etc. that could hinder removal of soil from the site during groundworks. The presence of invasive species on site are addressed in the CEMP.

Discussion Terrestrial Species and habitats

As can be seen from Figure 10.8 the proposed development site consists primarily of Built Land (BL3) and Amenity Grassland (GA2) with Treelines (WL2)/ WS1 (Scrub)/ WS3 (Ornamental/non-native shrub)/ WD2 Mixed broadleaved/conifer around the perimeter of the site. No flora or terrestrial fauna species or habitats of National or international conservation importance were noted during the survey surveys. The Santry River flows through the site and has a paucity of diversity. As previously discussed no flora or terrestrial fauna species of conservation importance were noted on site by NPWS or NBDC. In relation to bird species no bird species on Annex I of the EU Birds Directive were noted on site by NPWS or NBDC. However, it is expected that herring gulls frequent the site.

10.4.3 Bats

As outlined in EIAR Volume 2, Appendix 10.1, the bat survey carried out by Conor Kelleher noted that “the main building onsite shows poor potential for use by bats being large and uninsulated, frequently disturbed and recently vandalised. Internal timber partitions have been demolished or burnt and these would have

been the most favourable places for roosting bats. A full examination of the building yielded no evidence of past or current bat presence. No sign of bats was observed on external walls. All smooth-sided containers, cisterns, basins etc. were inspected for bat corpses but none was found. The other structures in the grounds; the small bridge and culvert, were also fully inspected for bats or their signs and none were found. The onsite trees were inspected for their potential to harbour bats and any evidence of the presence of a roost. The trees along the site boundaries have limited potential for roosting bats as they are mostly tall, thin specimens and, in some cases, multi-stemmed with no features such as hollows or crevices that might be used by bats. Individual bats may occasionally rest behind ivy-cover but, in the absence of hollows within the tree beneath, large roosts would not be present."

In summary "no evidence of past or current use by bats of any of the onsite structures or trees was found during the present survey. Due to the high boundary treelines and surrounding the site, the grounds are well vegetated and very sheltered and so are favourable for swarming insects which then attract bats and, during the summer months, one or two bats may be expected to hunt onsite occasionally. A follow up buildings assessment survey was carried out on the 14th February 2019 and the results of this survey concur with the results of the previous survey, in that no evidence of past or current use by bats of any of the onsite structures or trees was found.

10.5 Difficulties Encountered

No difficulties were encountered in relation to the preparation of the Biodiversity chapter of the EIAR. This includes all fieldwork and reporting elements.

10.6 Impact Assessment

10.6.1 Do Nothing Scenario

The current species diversity on site is poor and the majority of the land within the site is built land (BL3) or Amenity Grassland (GA2), of little biodiversity value. If the proposed development does not take place it is assumed that the lands will continue to be derelict and unmanaged. In the short term no difference in biodiversity value would be expected. In the longer term biodiversity value may increase with the colonisation of artificial surfaces. The stand of Japanese knotweed and distribution of buddleja would be expected to increase and spread on site. The banks of the Santry River would be expected to colonise further possibly with further encroachment of scrub reducing light to the stream further.

10.6.2 Construction Phase

A CEMP and a Natura Impact Statement have been prepared outlining the construction and operation phase mitigation measures in addition to detailing the potential impacts on sensitive receptors within the ZOI and to designated conservation sites including the Natura 2000 sites downstream of the proposed development. The proposed construction of the development, would potentially impact on the existing ecology of the site and the surrounding area. These potential construction impacts would include impacts that may arise during the site clearance, re-profiling of the site and the building phases of the proposed development. The proposed demolition of existing structures and development of the new onsite buildings will entail the loss of amenity grassland, built land and the Flower beds and borders on site, as well as scrub, Ornamental/non-native shrub) and Mixed broadleaved/conifer woodland areas. Potential Impacts are assessed below for each of the ecological components. The treeline on the northern boundary will remain, with the scrub and trees at Coolock Drive proposed to be felled. It is not proposed to divert or carry out instream works in the Santry River. However, as outlined in the CEMP re-profiling works will be carried out on the south bank of the river.

10.8.2.1 Designated Conservation Sites within 15km

The proposed development is not within a designated conservation site and the nearest conservation site is 2.5km from the proposed development across an urban environment. It should be noted that the proposed development site is proximate the Santry River and the Santry Demesne pNHA is located 2.5km upstream and both the North Bull Island SPA/Ramsar site and the North Dublin Bay SAC are located 3.2km downstream of the proposed development site. The Santry River is not a salmonid river and there are no features of interest of these conservation sites that would migrate through this site. The water quality of the river (800m upstream) is classed as poor (Source: EPA WFD data).

Runoff during site demolition, re-profiling, the construction and operation of project elements could impact on the Santry River, with water quality or downstream/upstream impacts. Impacts on the Santry River would

be seen as the primary vector for impacts on conservation sites. As outlined in the CEMP and NIS, ensuring water quality and compliance with Inland Fisheries Ireland procedures/ conditions and the water pollution Acts would be seen as the primary method of ensuring no significant impact on designated conservation sites.

The project team has consulted IFI since 2016 and the proposed works will be carried out based on best practice mitigation procedures as outlined in the CEMP and compliance with IFI requirements or conditions. In addition, the proposed development will have to comply with SUDS, Dublin City Council requirements and the provision of additional measures such as petrochemical interceptors and silt interception. Standard construction phase and operational controls and good environmental practice in relation to construction and onsite drainage will be carried out and no impact is foreseen in relation to designated conservation sites. See NIS and CEMP for further details.

Impacts: Neutral/Imperceptible/Temporary/localised/unlikely. Standard Mitigation is required.

10.8.2.2 Terrestrial Ecology

The impact of the development during construction phase will be a loss of existing habitats and species on site. It would be expected that the fauna associated with these habitats would also be displaced. During the site visits no flora, bird, amphibian or mammal species of conservation importance were recorded on site or in NPWS or NBDC records.

Common mammalian species. Loss of habitat and habitat fragmentation may affect some common mammalian species and there is expected to be mortality during construction. Small mammals such as long-tailed field mouse, house mouse, brown rat, and protected species such as pygmy shrew and hedgehog may be directly impacted. Evidence of a fox (not-protected) was noted on site. There are limited ways to protect such species and these species are common in Ireland.

Amphibians and reptiles. Frogs and reptiles were not observed on site - There are a no pond / wet ditch areas within the study area. However, the Santry River flows through the site and frogs may occur on site. The common lizard may occur on site but was not observed. The proposed development will remove some potential foraging habitats on site. Some mortality may occur during construction.

Construction Phase Impact: Neutral/ Slight to Moderate/ Short-term, localised, unlikely.

Bat Fauna

As outlined in the Aardwolf bat survey “no evidence of past or current use by bats of any of the onsite structures or trees was found”. “Due to the high boundary treelines and surrounding the site, the grounds are well vegetated and very sheltered and so are favourable for swarming insects which then attract bats and, during the summer months, one or two bats may be expected to hunt onsite occasionally. The removal of the existing buildings will have no negative impacts on bats as the structures are not in use by these animals.

Impacts: Neutral/Imperceptible/Temporary/localised/unlikely. Mitigation for bats is required.

10.8.3 Operational Phase

No SUDS drainage is currently present on site with a significant un-attenuated hardstanding and roof area. .All onsite drainage will be connected to separate foul and surface water systems. Surface water runoff will comply with SUDS. The biodiversity value of the site would be expected to improve as the landscaping matures.

Operational Impacts: Positive, Slight to Moderate*, localised, unlikely*; Permanent.

10.8.4.1 Designated Conservation sites within 15km

Currently the site has no attenuation or SUDS control or petrochemical interception. The proposed development has a sustainable drainage strategy. This will improve the drainage network, particularly during extreme weather events. The development will comply to DCC requirements and the Water Pollution Acts and measures will be in place to prevent downstream impacts. The accompanying NIS found that no significant effects are likely for all Natura 2000 sites. No significant impacts on designated sites are likely.

Operational Impacts: None foreseen (possibly beneficial long-term)

10.8.4.2 Terrestrial Ecology

Currently the site has no attenuation, or SUDS control, or petrochemical interception. The proposed development has a sustainable drainage strategy. This will improve the drainage network, particularly during extreme weather events. The development must comply to DCC requirements and the Water Pollution Acts and measures will be in place to prevent downstream impacts. The accompanying NIS found that no significant effects are likely for all Natura 2000 sites within 15km. No significant impacts on designated sites are likely.

Operational Impacts: None foreseen (possibly beneficial long-term)

10.8.4.3 Bat Fauna

As outlined in EIAR Volume 2, Appendix 10.1 "the proposed development will change the local environment as new structures are to be erected in place of the existing buildings, new roads and parking areas constructed and some of the existing vegetation will be removed. The removal of the onsite buildings will not negatively impact bats as none are present. No bat roosts will be lost due to this development and the species expected to occur onsite should persist." Lighting on site may reduce the foraging activity on site but this would be expected to be a minor impact. Lighting is not proposed in the riparian corridor or in the vicinity of the treeline.

Operational Impact: Negative; Slight; Temporary, localised.

10.9 Mitigation

Standard construction and operational controls will be incorporated into the proposed development project to minimise the potential impacts on the ecology within the ZOI.

10.9.1 Incorporated Design Mitigation

Standard SUDS drainage is included on site with petrochemical interception included in the design. No additional mitigation measures are incorporated in the design.

10.9.2 Construction Phase Mitigation

Standard construction and operational controls will be incorporated into the proposed development project to minimise the potential negative impacts on the ecology within the ZOI. These measures are outlined below in sequence are designed to incorporate elements outlined elsewhere in this EIAR.

Designated Conservation sites within 15km

As the main potential vector for impacts would be seen to be via the Santry River, no additional controls are required besides those outlined below, during the construction and operational phases of the development, to mitigate against potential negative impacts on designated conservation sites. The mitigation has been designed to ensure that the project will comply with the Water Pollution Acts and standard DCC and IFI Conditions in relation to construction and drainage. All measures outlined below and in the CEMP will be followed. The CEMP will be updated following any additional conditions received during planning and approved by IFI and DCC prior to the commencement of works on site.

Development Construction

Contamination of watercourses. All works in the riparian corridor (<10m from the river) will be carried out in consultation with Inland Fisheries Ireland and the project ecologist following the best practice guidelines for construction in the vicinity of watercourses. All tanks and underground storage areas/tanks should be cleaned, existing services and drains on site leading to the Santry River should be blanked off/ or removed prior to the commencement of demolition on site. Toilet facilities will be supplied on site, away from drains and maintained regularly. Raw or uncured waste concrete will not be disposed of within 20m of a drain. Runoff from works will not enter drainage network directly without settlement and petrochemical interception.

Use of generators and small plant on site. Oil/diesel spillages and risk of ground and surface water contamination. Drip trays placed below all small plant. Spill kits will be present on all working sites to clean up spillages. A record of all spillages will be kept and monitored. Generators and small plant will not be used within 10m of drains.

Plant refuelling activities. Oil/diesel spillages and risk of ground and surface water contamination. All mobile plant to be refuelled in a central refuelling area in a compound where a spillage containment sump will be

constructed within the refuelling area. All collected fuel will be disposed offsite under license. A record of all spillages will be kept and monitored.

Storage of materials

Material, sediment being washed into drains. Stockpiling of loose materials and soil will be kept to a minimum of 20m from watercourses and drains. In the event that stockpiles are required, they will have suitable barriers to prevent runoff of fines into the drainage system. Damping down of stockpiles will need to take pace in dry windy weather to prevent wind-blown movement of fines.

Spillages that could contaminate the drainage network. Fuel, oil and chemical storage should be sited within a bunded area. The bund must be able to take the volume of the largest container plus 10% and be located at least 10m away from drains, ditches, excavations and other locations where it may cause pollution. Bunds should be kept clean and spills within the bund area will be cleaned immediately to prevent groundwater contamination.

Ecology

Relevant guidelines and legislation (Section 40 of the Wildlife Acts, 1976 to 2012) in relation to the removal of trees and timing of nesting birds will need be followed e.g. do not remove trees or shrubs during the nesting season (1st March to 31st August). A raven was seen nesting within the Chivers factory. Removal of any nests should be outside nesting period.

Replanting of the site post construction should be carried out with native species where possible.

Native Hedgerow planting should be included in planting schemes within the site, to reinstate nesting resource lost during site clearance.

Construction operations outside of daylight should be kept to a minimum in order to minimise disturbance to fauna in addition to roosting bird species. A bat detector survey should be carried out prior to construction.

Boundary vegetation: Linear features such as hedgerows and treelines serve as commuting corridors for bats (and other wildlife) and the onsite boundary vegetation should be retained and/or replaced once construction ends. Native species should be chosen in all landscaping schemes, if possible. Planting schemes should attempt to link in with existing wildlife corridors (hedgerows and treelines), both onsite and off, to provide continuity of wildlife corridors.

A single small stand of Japanese knotweed is present on site on the bridge to be retained. As outlined in DCC (2016) “this plant is very prevalent along waterways in Dublin City but is also more widespread away from water than either Giant Hogweed or Himalayan Balsam. NBDC records show it to be present along the Dodder, Liffey, Tolka, Cammock and Santry rivers as well as the Grand and Royal Canals.” Prior to construction commencing an Invasive species management plan should be prepared and the Japanese knotweed should be dealt with in compliance with best practice.

Human Health and Accidents & Disasters

Impacts on Human Health and Disasters are not deemed likely. However, all works should be carried out under compliance with relevant Health and Safety Legislation.

10.9.3 Operational Phase Mitigation

No significant effects are predicted for the operational phase thus mitigation measures are not proposed.

10.10 Monitoring

Mitigation measures outlined above should be integrated into the Construction Environmental Management Plan to be prepared by the appointed contractor. The effectiveness of the proposed mitigation should be monitored throughout the construction period. An ecologist will be appointed to monitor ground clearance and excavation die to the presence of the Santry River.

10.11 Cumulative Impacts

The proposed development site is mostly brownfield, with some areas of grassland, in an urban area. The majority of the grassland habitat will be retained and in particular the grassland to the north of the Santry River. Construction on this site will create localised light and noise disturbance. Mitigation measures will be

in place to ensure there are no significant impacts on the Santry River which leads to conservation sites. Surface water discharge from site will be developed in accordance with the requirements of the Drainage Division as set out in the Greater Dublin Strategic Drainage Study's 'Technical Document on New Development' with regard to SUDS, DCC conditions and Water Pollution Acts. The proposed development site is within a significant urban area with both domestic and industrial pressures. The construction and presence of this development would not be deemed to have a significant cumulative impact.

As observed in the NIS no significant impacts are likely on Natura 2000 sites, alone in combination with other plans and projects based on the implementation of standard construction phase mitigation measures.

Cumulative Impact: Negative; Slight; Temporary, localised.

10.12 Worst Case Scenario

Following construction, fire or building collapse would be seen as the main potential worst case scenario risk to biodiversity, conservation sites and human health, with localised and potential airborne and potential for downstream impacts via the Santry River. Based on the development description and proposed layout, it is not expected that significant quantities of toxic/polluting materials would be stored on site. However, given the scale of the development, a significant fire would release airborne and waterborne pollutants due to the combustion of normally inert household materials and appliances. Water used in a significant fire could contain toxic materials that would enter the surface water drainage network and then the Santry River. The CEMP has outlined a robust strategy for the development of the site while limiting potential impacts. Monitoring and supervision of the site, from site clearance to development, would important to ensure these elements are carried out.

Worst Case Scenario Impacts: Unlikely, Negative, Slight*, localised*, Temporary. Mitigation required.

10.13 Residual Impacts

It is considered that the proposed development has satisfactorily addressed the current ecology on site into its design so that application of the standard construction and operational phase controls in this EIAR and the accompanying CEMP and NIS will help reduce its impact on the local ecology to an adequate level.

It is considered that, where possible, biodiversity enhancement measures have been implemented into design to enhance the overall biodiversity value of the site. Further development of the surrounding lands will need to address the continuation and maintenance of biodiversity corridors. The overall impact on the ecology of the proposed development will result in a long term slight neutral residual impact on the existing ecology of the site and locality overall. This is primarily as a result of the loss of terrestrial habitats on site, supported by the creation of attenuation features, additional biodiversity features such as green roofs, standard construction and operational controls and a sensitive native landscaping strategy. The implementation of SUDS drainage on site and riparian features in consultation with IFI would be seen as beneficial to the Santry River.

10.14 References and Sources

1 Environmental Protection Agency (August 2017): Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports. EPA, Wexford

2 Environmental Protection Agency (September 2015): Draft - Advice Notes on Current

3 Practice (in the preparation on Environmental Impact Statements). EPA, Wexford

4 Environmental Protection Agency 1997 Draft guidelines on the information to be contained in Environmental Impact Statements. EPA, Wexford, Ireland.

5 CIEEM (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland, Terrestrial, Freshwater and Coastal. Chartered Institute of Ecology and Environmental Management.

6 DoEHLG (2013) Guidelines for Planning Authorities and An Bord Pleanála on Carrying out Environmental Impact Assessment. Department of the Environment, Community and Local Government.

7 Environmental Protection Agency 2002 Guidelines on the information to be contained in Environmental Impact Statements. EPA, Wexford, Ireland.

8 Hayden, T. & Harrington, R. 2000 Exploring Irish mammals. Duchas. Town House, Dublin.

9 Institute of Environmental Assessment. 1995 Guidelines for Baseline Ecological Assessment. E&FN Spon, London.
10 Lawrence, M.J. & Brown, R.W. 1973 Mammals of Britain: their tracks, trails and signs. Blandford Press, Dorset, UK.
11 Lysaght, L. & Marnell, F (eds.) 2016 Atlas of Mammals in Ireland 2010-2015. National Biodiversity Centre, Waterford.
12 NPWS 2013 The status of protected EU habitats and species in Ireland. DoEHLG, Dublin, Ireland.
13 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;http://ec.europa.eu/environment/nature/Natura2000management/docs/art6/Natura_2000_assess_en.pdf
14 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; http://ec.europa.eu/environment/nature/Natura2000/management/docs/art6/guidance_art6_4_en.pdf
15 Guidance document on the implementation of the birds and habitats directive in estuaries and coastal zones with particular attention to port development and dredging; http://ec.europa.eu/environment/nature/Natura2000/management/docs/guidance_doc.pdf
16 The Status of EU Protected Habitats and Species in Ireland. http://www.npws.ie/publications/euconservationstatus/NPWS_2007_Conservation_Status_Report.pdf
17 Fossitt. (2000) A Guide to Habitats in Ireland. The Heritage Council
18 IFI (2016) Guidelines on the Protection of Fisheries During Construction Works in and
19 Adjacent to Waters. Inland Fisheries Ireland
20 Jackson, M. W., et al. (2016) Ireland Red Lists No. 10 Vascular Plants. The IUCN Red List of Vascular Plants.
21 King, J.L., Marnell, F., Kingston, N., Rosell, R., Boylan, P., Caffrey, J.M., FitzPatrick, Ú., Gargan, P.G., Kelly, F.L., O'Grady, M.F., Poole, R., Roche, W.K. & Cassidy, D. (2011) Ireland Red List No. 5: Amphibians, Reptiles & Freshwater Fish. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.
22 Dublin City Council 2016. Invasive Species Action Plan for Dublin City(2016-2022).