Breeding / Summer Bird Survey

Stranraer Marina

April 2025

Final Report - Confidential

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Field Investigations and Data

Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work. Where any data supplied by the client or from other sources have been used it has been assumed that the information is correct. No responsibility can be accepted by EcoNorth Ltd for inaccuracies in the data supplied by any other party.

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1. Summary

EcoNorth Ltd. was commissioned by Fairhurst to undertake a breeding / summer season bird survey of land and open water at Stranraer Marina in Dumfries and Galloway, Scotland. The survey, comprising 4 no. visits, was undertaken by John Thompson, between May 2024 – August 2024 with data collected in each month of the period (May - August). Given the nature of the site, surveys were based on applying a combination of the common bird census CBC (for birds actively breeding in the study area) and the British Trust for Ornithology (BTO) Wetland Bird Survey (WEBS) methodology using a look see method focussed on waders, wildfowl and other marine birds using the marina, associated intertidal waters and open water surrounding the marina. Surveys were undertaken at low tide, mid tide and high tide throughout the survey period.

The Client is proposing to upgrade the harbour, involve dredging the harbour basin, installation of new pontoons, and enlarging of the breakwater at the harbour entrance; this report is designed to highlight key breeding season ornithological constraints and inform the EIA process for assessing the potential impacts upon the ornithological interests of the site.

A desk study completed prior to the field visit highlighted the presence of no statutory and one non-statutory site within 2km of the site boundary, Loch Ryan Important Bird Area (IBA) which overlaps the site boundary. The study also identified the presence of the following species listed on Schedule 1 of the Wildlife and Countryside Act 1981: Whooper swan, Red Kite, Fieldfare, Brambling, Scaup, Long-tailed Duck, Slavonian Grebe, Osprey, Merlin, Peregrine, Whimbrel, Black-tailed Godwit, Greenshank, Kingfisher, Redwing, Red-throated Diver, Black-throated Diver, White-tailed Eagle, Velvet Scoter, Common Scoter, Little Ringed Plover, Black Tern, Little Gull, Mediterranean Gull, Roseate Gull, Ruff, Great Northern Diver, Snow Bunting, and Black Redstart, within 2km of the site boundary.

Outside 2km, a number of designated sites identified for breeding bird interests are present. These include Glen App and Galloway Moors SPA which is located >4km away at the nearest point and is designated for its important population of breeding Hen Harrier. In relation to Marine Bird species, the closest designated site is Ailsa Craig SPA and SSSI, which although c36km distant, is well within foraging range of the Marina and wider Loch Ryan for many of the interest features such as Atlantic Gannet, Lesser Black backed Gull, Guillemot, Black-Legged Kittiwake and Herring Gull.

Throughout the summer period the Marina area supports relatively limited bird activity at high tide and was found to support numbers of Herring Gull, with more limited groups of Black-headed Gull, Oystercatcher and Black Guillemot also recorded. Mid tide bird distribution showed similar patterns to high tide, though later in the period (by August) increasing numbers of waders were present.

During low tide periods through the summer, higher numbers of gulls were present feeding on intertidal areas comprising Herring Gull, Black Headed Gull and Common Gull. Other species of note included waterfowl, which at times included Eider (including females with young) and groups of mute swan. By August, larger numbers of oystercatcher were recorded feeding as well as groups of Turnstone.

Within the wider area throughout the summer period species such as herring Gull, Black Headed Gull and Arctic Tern were routinely recorded at breeding sites associated with the former ferry terminal. Herring Gull, Black headed Gull and oystercatcher were the most abundant species within the wider area though a broad range of other species were also recorded using the marine environment surrounding the marina including

Arctic Tern , Sandwich Tern and Gannet which comprise summer visitors. Large groups of Starling were also present during the summer months associated with the Marina and surrounding terrestrial areas.

Based on an outline description of proposed works, the document identifies a range of potential impacts at construction stage. Following the identification of potential impacts, a range of potential control measures are identified to avoid or reduce potential effects where necessary mitigation measures will be refined throughout the EIA process for the proposed development.

2. Introduction

2.1 Background

EcoNorth Ltd. was commissioned by Fairhurst to undertake a breeding / summer season bird survey of land and open water at Stranraer Marina in Dumfries and Galloway, Scotland. The survey, comprising 4 no. visits, was undertaken by John Thompson, between May 2024 – August 2024 with data collected in each month of the period (May - August). Given the nature of the site, surveys were based on applying a combination of the common bird census CBC (for birds actively breeding in the study area) and the British Trust for Ornithology (BTO) Wetland Bird Survey (WEBS) methodology using a look see method focussed on waders, wildfowl and other marine birds using the marina, associated intertidal waters, and open water surrounding the marina. Surveys were undertaken at low tide, mid tide and high tide throughout the survey period..

The Client is proposing to upgrade the harbour, involve dredging the harbour basin, installation of new pontoons, and enlarging of the breakwater at the harbour;

This report:

- Sets out the results of the survey.
- Analyses the site's value for nature conservation.
- Identifies potential impacts.
- Suggests potential avoidance, mitigation and/or compensation measures required to be considered through the EIA process.

2.2 Site Context

The site is located at Stanraer marina, in Dumfries and Galloway, Southwest Scotland. The marina lies on the Southern edge of Loch Ryan. The town of Stranraer is an area of dense residential and commercial development, surrounded by agricultural land and woodland blocks.

Figures 1 and 2 identify the location and extent of the site.

Figure 1: Indicative Site Location

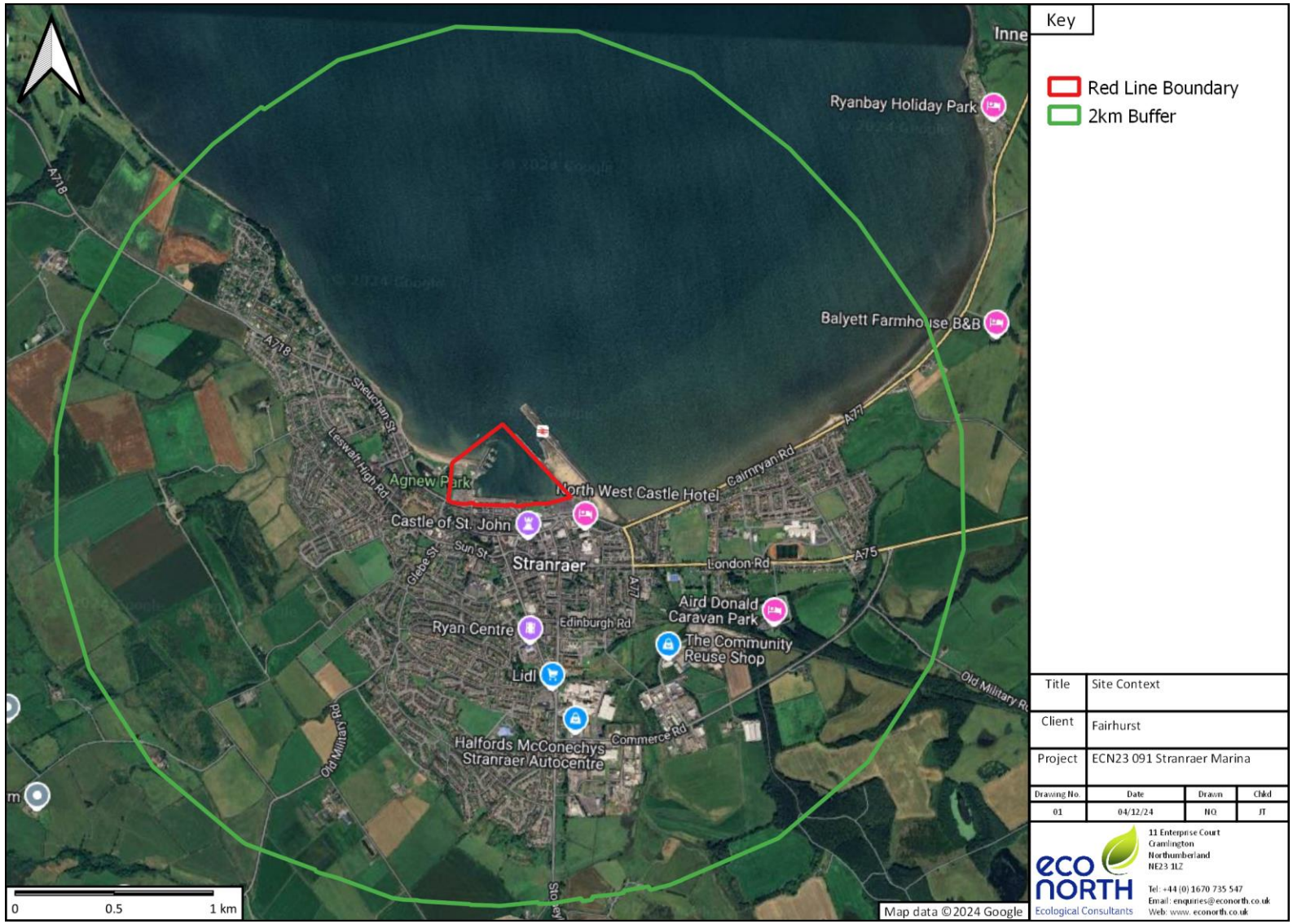
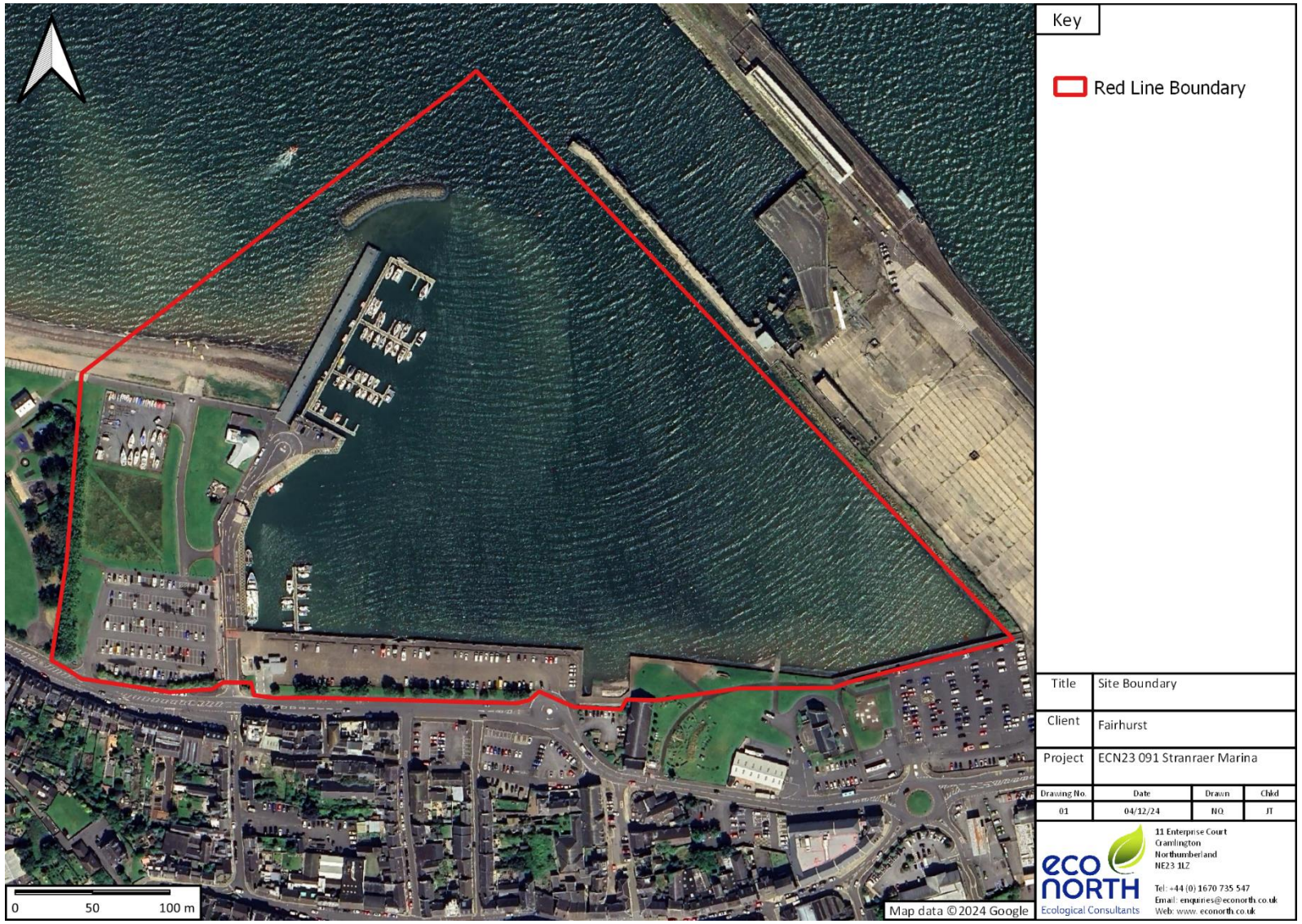


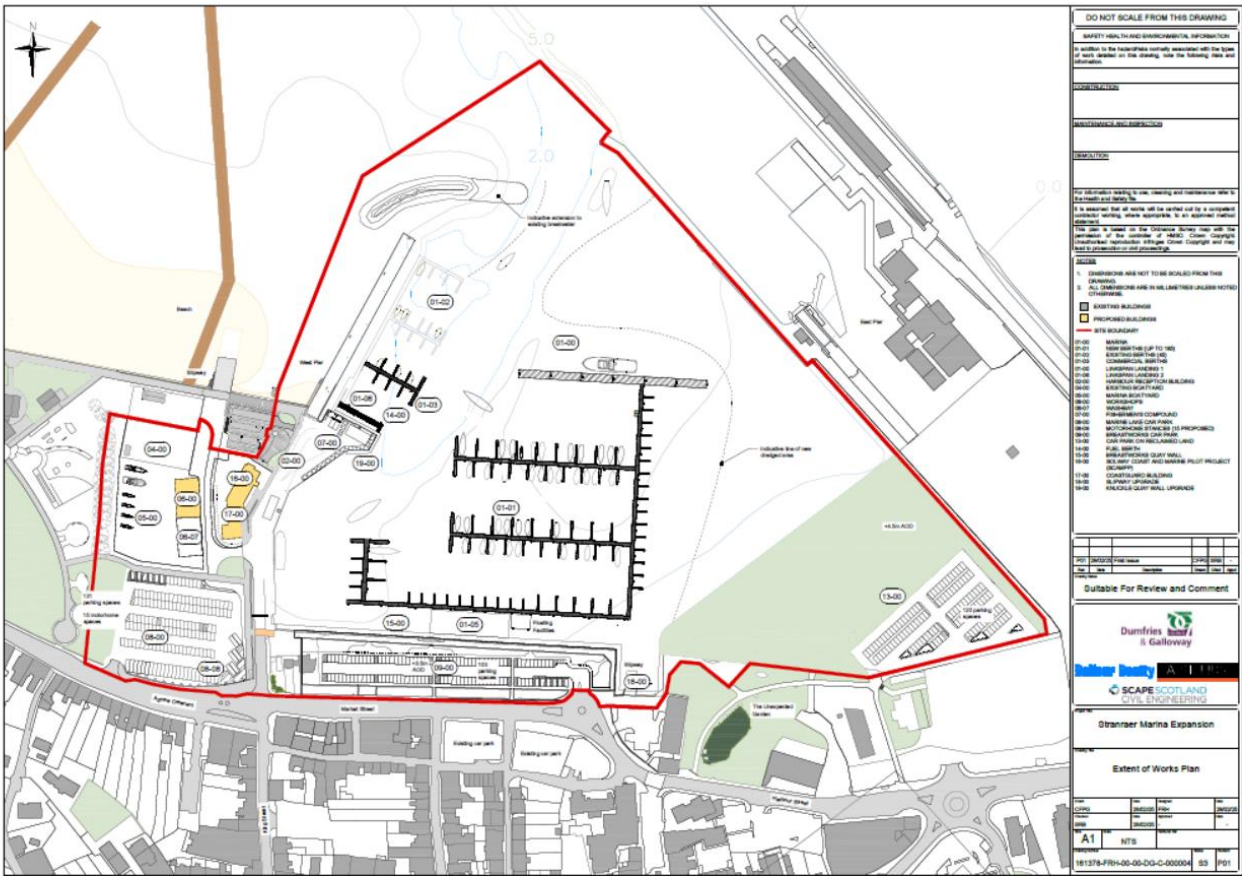
Figure 2: Indicative Site Boundary



2.3 Nature of the Proposals

It is proposed to upgrade the harbour, which will involve dredging the harbour basin, installation of new pontoons, and enlarging of the breakwater at the harbour entrance

Figure 3: Indicative Development Proposals



3. Planning Policy and Legislation

3.1 Planning Policy and Guidance

A series of national and local planning policies are in place which are designed to ensure that development works do not have an adverse impact upon biodiversity, at a site or wider level. Such policies ensure that both developers and public bodies must give due consideration to the potential effects of development works upon both ecological receptors (in line with existing wildlife legislation) and biodiversity.

3.1.1 Scottish Planning Policy (SPP) (2014)

The SPP outlines the Scottish Government's national planning policies for the development and use of land and operation of the planning system. It is designed to ensure consistency in the application of policies, while taking into account variations in local circumstances across Scotland. Local authorities must take the principles detailed in the document into account when assessing planning applications and appeals, as well as during the production of their own development plans. Paragraphs 193-218 deal with 'Valuing the Natural Environment'. Further details are provided on the Scottish Government's website (http://www.gov.scot/Resource/0045/00453827.pdf).

3.1.2 Habitats and Species of Principal Importance / Biodiversity Action Plans (BAPs)

The UK BAP was published in 1994 to guide national strategies for the conservation of biodiversity. BAPs were designed to ensure the conservation and re-establishment of natural habitats, and that measures were implemented to aid the conservation and enhancement of habitats and species of local importance, the latter through the development of Local BAPs. The UK BAP was succeeded by the 'UK Post-2010 Biodiversity Framework' in 2012, however, the lists of species and habitats of conservation importance are still considered a valuable tool for identifying features of local and national conservation concern. As such, the potential presence of both Local and UK BAP habitats and species were considered throughout the surveys and assessment.

Species and habitats formerly identified and included within UK BAPs are typically also those which are which the Scottish Ministers consider to be of principal importance for biodiversity conservation in Scotland. Such species are identified on the Scottish Biodiversity List SBL as part of the Nature Conservation Scotland Act (2004). Such species and habitats need to be taken into consideration by a public body when performing any of its functions.

3.1.3 Birds of Conservation Concern (BoCC)

The Birds of Conservation Concern Partnership, which includes bodies such as the RSPB, have published a colour-coded list of UK bird species based on their level of conservation importance/concern at a national level. Originally published by the RSPB in 2002, the list was updated in 2021 to reflect changes in conservation and population status which had occurred in the interim (Eaton *et al.* 2021). Those species of highest concern are included on the Red List and meet at least one of the following criteria:

- Globally threatened.
- Historical population decline during 1800-1995.
- Rapid contraction of the UK breeding range (50% or more during the last 25 years).
- Rapid decline in the UK breeding population (50% or more during the past 25 years).

The Amber List covers species of moderate conservation concern, which meet at least one of the following criteria:

- Historical population decline during 1800-1995, but now recovering, with the population size having more than doubled over the last 25 years.
- Moderate (25-49%) decline in the UK breeding population over the last 25 years.
- Moderate (25-49%) contraction of the UK breeding range over the last 25 years.
- Moderate (25-49%) decline in the UK non-breeding population over the last 25 years.
- Species with unfavourable conservation status in Europe (SPEC = Species of European Conservation Concern).
- Five-year mean of 1-300 breeding pairs in the UK.
- 50% or more of the UK breeding population in 10 or fewer sites, but not rare breeders.
- 20% or more of European breeding population in the UK.
- 20% or more of the NW European (wildfowl), East Atlantic Flyway (waders) or European (others) non-breeding populations in the UK.

Those species included on the Green List are of lowest conservation concern, there currently being no identified threat to the species' population status.

3.2 Legislation

A range of legislation is in place to ensure that habitats and species of conservation importance are protected from both direct and indirect harm. Key legislation relating to birds includes:

- The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.
- The Convention on the Conservation of European Wildlife and Natural Habitats 1979 (The Bern Convention).
- The Wildlife and Countryside Act 1981 (as amended).
- The Natural Environment and Rural Communities (NERC) Act 2006.
- The Countryside and Rights of Way (CRoW) Act 2000.

An overview of the above legislation is provided in Appendix A.

With the exception of some species listed on Schedule 2, the majority of bird species are protected under the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to intentionally or recklessly:

- Kill, injure or take any wild bird.
- Take, damage or destroy any nest which is in use or being built.
- Take, damage or destroy the eggs of any such bird.

Additional protection against disturbance at the nest is also afforded to any bird species listed on Schedule 1 of the Act.

4. Methodology

4.1 Desk Study

Contextual information was gathered as part of a desk study undertaken prior to the start of field surveys. Such information can identify protected or notable species which may occur on the proposed development site or in the local area, as well as identifying statutory and non-statutory ecological sites which may have the potential to be affected by the proposals. Species records and the location of statutory and non-statutory nature conservation sites designated for their ornithological interest within 2km of the survey site were obtained from the Environmental Records and Information Centre for the North East (ERIC North East), the British Trust for Ornithology (BTO), and from the Multi-Agency Geographic Information for the Countryside (MAGIC) website (www.magic.gov.uk).

It should be noted that an absence of records is likely to reflect an absence of survey data and cannot be taken as confirmation that a particular species is not present in the site or surrounding area.

4.2 Field Survey

4.2.1 Breeding / Summer Bird Surveys

Given the nature of the site and nature of the interest features of relevant designated sites, surveys were based on a combination of the Common Bird Census (for terrestrial breeding activity) and Wetland Bird Survey (WeBS) methodology as set out by the British Trust for Ornithology (2017) in relation to birds using the intertidal and marine areas. Surveys covered the red line boundary and a minimum buffer of 500m to identify species which may be affected by the construction works and/or habitat changes on the site. The site was walked so that all areas of the site and surrounding buffer could be viewed, and bird use recorded.

All target species associated with WeBS methodology including wading birds, wildfowl, gulls and, where relevant, raptors were recorded and plotted on suitably scaled plans following identification and census by experienced ornithologists. While the method was focused on wetland habitats and species, any other notable species outside the typical scope of WeBS were also recorded.

Surveys included a survey of species within the site around low tide, high tide and mid tide in the months between May 2024 and August 2024.

4.2.2 Survey Conditions and Personnel

The breeding / summer bird surveys were completed by Executive Director John Thompson, an experienced surveyor who has extensive experience of completing bird surveys in coastal habitats such as those found on site. John is an accredited European Seabirds at Sea surveyor.

Table 1 shows details of, including weather conditions during the surveys.

Table 1: Survey Conditions

Date	Survey Times	Survey (Low/ Mid/ High)	Tide	Precipitation	Temp. (°C)	Cloud Cover (Oktas)	Wind (Beaufort Scale)	Visibility
30.5.24	17:30 – 18:45	High	High@ 18:28 2.75m	Nil	15-16	3	4- 5 NW	Good
31.5.24	11:20 – 12:55	Low	Low @13:04 0.52m	Nil	16-17	2	3-4 NW	Good
31.5.24	07:45- 09:20	Mid	Low @13:04 0.52m	Nil	14	2	3-4 NNW	Good
28.6.24	12:00 – 13:30	Low	Low @11:33	Nil	17	4	3-4 WNW	Good
28.6.24	14:30 – 16:00	Mid	High @18:04	Nil	15 - 6	6	WNW 2- 3	Good
28.6.24	16:45 – 18:00	High	High @18:04	Nil	17	6	1-2 N	Good
24.7.25	09:15 – 10:45	Low	Low @08:28	Nil	15	8	2 SW	Moderate
24.7.25	11:30 – 13:15	Mid	High@15:11	Nil	15	8	3 SW	Good
24.7.25	14:00 – 15:20	High	High@15:11	Nil	15-16	8	3 – 4 SW	Good
18.08.24	12:00 – 13:15	High	High @11:38	Nil	18	4	2-3 SW	Good
18.08.24	14:10 – 15:45	Mid	High @11:38	Nil	18-19	2	3 W	Good
18.08.24	16:45 – 18:10	Low	Low @17:19	Nil	17	8	2 W	Good

Any constraints or limitations to the survey are discussed in Section 6.1.

4.3 Assessment

The value of the site, as determined through the breeding bird surveys, was based on the criteria published by the Chartered the Institute of Ecology and Environmental Management (CIEEM) in 2016

(http://www.cieem.net/ecia-guidelines-terrestrial-). Each feature was classified as being as one of the following levels of value:

- International.
- National.
- Regional/County.
- City/District/Borough.
- Local.
- Low.

Examples of different ecological features meeting each of these criteria are outlined in Appendix B.

5. Baseline Conditions

5.1 Desk Study

5.1.1 Designated Sites

Table 2 shows those sites designated for their ornithological importance identified through the desk study as lying within 2km of the site boundary. Notably the designated site identified within 2km is designated for wintering interests.

Outside 2km, a number of designated sites identified for breeding bird interests are present. These include Glenn App and Galloway Moors SPA which is located >4km away at the nearest point and is designated for its important population of breeding Hen Harrier. In relation to Marine Bird species, the closest designated site is Ailsa Craig SPA and SSSI, which although c36km distant, is well within foraging range of the Marina and wider Loch Ryan for many of the interest features such as Atlantic Gannet, Lesser Black backed Gull, Guillemot, Black-Legged Kittiwake and Herring Gull.

Table 2: Designated Ornithological Sites within 2km

Designated Site	Distance & Direction from Site	Reasons for Designation
Loch Ryan Important Bird Area (IBA)	Overlaps Site	A large, shallow sea loch at the western end of Dumfries and Galloway, which supports the only commercial native oysterbeds in Scotland. The IBA supports important numbers of wintering waterbirds. See: https://datazone.birdlife.org/site/factsheet/loch-ryan-iba-united-kingdom Notably the fact sheet cites the important population of Greater Scaup *Aythya marila.*

5.1.2 Protected and Notable Species

A range of protected and notable bird species were identified through the desk study as having been recorded within 2km of the site boundary within the last 10 years. This includes following species listed on Schedule 1 of the Wildlife and Countryside Act 1981: Whooper swan *Cygnus cygnus*, Red Kite *Milvus milvus*, Fieldfare *Turdus pilaris*, Brambling *Fringilla montifringilla*, Scaup *Aythya marila*, Long-tailed Duck *Clangula hyemalis*, Slavonian Grebe *Podiceps auritus*, Osprey *Pandion haliaetus*, Merlin *Falco columbarius*, Peregrine *Falco peregrinus*, Whimbrel *Numenius phaeopus*, Black-tailed Godwit *Limosa limosa*, Greenshank *Tringa nebularia*, Kingfisher *Alcedo atthis*, Redwing *Turdus iliacus*, Red-throated Diver *Gavia stellata*, Black-throated Diver *Gavia arctica*, White-tailed Eagle *Haliaeetus albicilla*, Velvet Scoter *Melanitta fusca*, Common Scoter *Melanitta nigra*, Little Ringed Plover *Charadrius dubius*, Black Tern *Chlidonias niger*, Little Gull *Hydrocoloeus minutus*, Mediterranean Gull *Ichthyaetus melanocephalus*, Roseate Gull *Sterna dougallii*, Ruff *Calidris pugnax*, Great Northern Diver *Gavia immer*, Snow Bunting *Plectrophenax nivalis*, and Black Redstart *Phoenicurus ochruros.*

Further information is provided in Appendix C.

5.1.3 WeBS Data

A 5-year tabulated synopsis of Wetland Bird Survey (WeBS) data was also requested from the British Trust for Ornithology (BTO) for the relevant survey sector of the site (BTO survey sector Loch Ryan 71491), to support the bird survey efforts completed to date.

Table 3 displays the 5-Year Monthly Average Counts Per Species (figures in parentheses give number of complete and incomplete counts upon which the average is based). Records for 2020/2021 are limited in extent due to the Covid-19 pandemic, and therefore some data may be missing in these years. Data across the whole year are included and it is noted that many of the summer months have no data reported.

Table 3: 5-Year Monthly Average Counts Per Species at Loch Ryan (Figure in parentheses give number of complete and incomplete counts upon which the average is based)

Species	Scientific Name	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Brent Goose	*Branta bernicia*	0 (3,0)	NC	0 (2,0)	1 (3,0)	10 (3,0)	16 (3,0)	24 (1,0)	0 (1,0)	0 (1,0)	NC	NC	NC
Canada Goose	*Branta canadensis*	0 (3,0)	NC	0 (2,0)	0 (3,0)	1 (3,0)	1 (3,0)	0 (1,0)	0 (1,0)	0 (1,0)	NC	NC	NC
Greylag Goose (Icelandic)	*Anser anser*	2 (3,0)	NC	0 (2,0)	1 (3,0)	0 (3,0)	5 (3,0)	0 (1,0)	0 (1,0)	0 (1,0)	NC	NC	NC
Pink-footed Goose	*Anser brachyrhynchus*	0 (3,0)	NC	0 (2,0)	0 (4,0)	0 (4,0)	0 (5,0)	0 (1,0)	0 (1,0)	0 (1,0)	NC	NC	NC
Mute Swan	*Cygnus olor*	13 (3,0)	NC	8 (2,0)	32 (3,0)	25 (3,0)	24 (4,0)	13 (1,0)	5 (1,0)	2 (1,0)	NC	NC	NC
Whooper Swan	*Cygnus cygnus*	0 (3,0)	NC	0 (2,0)	3 (3,0)	0 (3,0)	0 (3,0)	1 (1,0)	0 (1,0)	0 (1,0)	NC	NC	NC
Shelduck	*Tadorna tadorna*	0 (3,0)	NC	0 (2,0)	0 (3,0)	6 (3,0)	7 (4,0)	4 (1,0)	0 (1,0)	28 (1,0)	NC	NC	NC
Gadwall	*Mareca strepera*	0 (3,0)	NC	0 (2,0)	0 (4,0)	0 (4,0)	0 (5,0)	0 (1,0)	0 (1,0)	0 (1,0)	NC	NC	NC
Wigeon	*Mareca penelope*	0 (3,0)	NC	82 (2,0)	628 (3,0)	1203 (3,0)	896 (3,0)	474 (1,0)	254 (1,0)	138 (1,0)	NC	NC	NC
Mallard	*Anas platyrhynchos*	27 (3,0)	NC	39 (2,0)	78 (3,0)	89 (3,0)	113 (3,0)	84 (1,0)	67 (1,0)	30 (1,0)	NC	NC	NC
Teal	*Anas crecca*	0 (3,0)	NC	0 (2,0)	0 (3,0)	3 (3,0)	1 (3,0)	0 (1,0)	0 (1,0)	0 (1,0)	NC	NC	NC
Pochard	*Aythya ferina*	0 (3,0)	NC	0 (2,0)	0 (4,0)	0 (3,0)	1 (3,0)	0 (1,0)	0 (1,0)	0 (1,0)	NC	NC	NC
Scaup	*Aythya marila*	0 (3,0)	NC	17 (2,0)	46 (3,0)	267 (3,0)	557 (3,0)	631 (1,0)	100 (1,0)	200 (1,0)	NC	NC	NC
King Eider	*Somateria spectabilis*	0 (3,0)	NC	0 (2,0)	0 (4,0)	0 (4,0)	0 (5,0)	0 (1,0)	0 (1,0)	0 (1,0)	NC	NC	NC
Eider	*Somateria mollissima*	1475 (3,0)	NC	952 (2,0)	615 (3,0)	768 (3,0)	391 (4,0)	273 (1,0)	206 (1,0)	146 (0,1)	NC	NC	NC
Common Scoter	*Melanitta nigra*	0 (3,0)	NC	4 (2,0)	29 (3,0)	90 (3,0)	21 (4,0)	0 (1,0)	61 (1,0)	0 (1,0)	NC	NC	NC
Long-tailed Duck	*Clangula hyemalis*	0 (3,0)	NC	0 (2,0)	0 (3,0)	2 (3,0)	2 (4,0)	1 (1,0)	5 (1,0)	6 (1,0)	NC	NC	NC
Goldeneye	*Bucephala clangula*	0 (3,0)	NC	0 (2,0)	0 (3,0)	137 (3,0)	182 (4,0)	131 (1,0)	68 (1,0)	18 (1,0)	NC	NC	NC
Red-breasted Merganser	*Mergus serrator*	27 (3,0)	NC	43 (2,0)	30 (3,0)	88 (3,0)	57 (4,0)	60 (1,0)	51 (1,0)	30 (1,0)	NC	NC	NC
Red-throated Diver	*Gavia stellata*	0 (3,0)	NC	2 (2,0)	10 (3,0)	26 (3,0)	22 (4,0)	15 (1,0)	15 (1,0)	2 (1,0)	NC	NC	NC
Black-throated Diver	*Gavia arctica*	0 (3,0)	NC	0 (2,0)	0 (4,0)	0 (3,0)	0 (4,0)	0 (1,0)	0 (1,0)	0 (1,0)	NC	NC	NC
Great Northern Diver	*Gavia immer*	0 (3,0)	NC	0 (2,0)	0 (4,0)	1 (3,0)	1 (4,0)	0 (1,0)	1 (1,0)	0 (1,0)	NC	NC	NC
Red-necked Grebe	*Podiceps grisegena*	0 (3,0)	NC	0 (2,0)	0 (4,0)	0 (4,0)	0 (5,0)	0 (1,0)	0 (1,0)	0 (1,0)	NC	NC	NC
Great Crested Grebe	*Podiceps cristatus*	45 (3,0)	NC	196 (2,0)	156 (3,0)	88 (3,0)	37 (4,0)	9 (1,0)	22 (1,0)	5 (1,0)	NC	NC	NC
Slavonian Grebe	*Podiceps auritus*	0 (3,0)	NC	3 (2,0)	5 (3,0)	16 (3,0)	10 (4,0)	7 (1,0)	7 (1,0)	0 (1,0)	NC	NC	NC
Black-necked Grebe	*Podiceps nigricollis*	0 (3,0)	NC	0 (2,0)	0 (3,0)	0 (3,0)	0 (4,0)	0 (1,0)	1 (1,0)	1 (1,0)	NC	NC	NC
Grey Heron	*Ardea cinerea*	4 (3,0)	NC	0 (2,0)	2 (3,0)	1 (3,0)	0 (4,0)	0 (1,0)	0 (1,0)	0 (1,0)	NC	NC	NC
Shag	*Phalacrocorax aristotelis*	3 (3,0)	NC	0 (2,0)	28 (4,0)	22 (3,0)	31 (4,0)	30 (1,0)	0 (1,0)	0 (1,0)	NC	NC	NC

Species	Scientific Name	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Cormorant	*Phalacrocorax carbo*	35 (3,0)	NC	16 (2,0)	52 (3,0)	17 (3,0)	12 (4,0)	7 (1,0)	3 (1,0)	14 (1,0)	NC	NC	NC
Oystercatcher	*Haematopus ostralegus*	634 (2,0)	NC	290 (2,0)	600 (3,0)	609 (3,0)	471 (3,0)	545 (1,0)	627 (1,0)	323 (1,0)	NC	NC	NC
Lapwing	*Vanellus vanellus*	52 (2,0)	NC	2 (2,0)	269 (3,0)	434 (3,0)	346 (3,0)	60 (1,0)	166 (1,0)	56 (1,0)	NC	NC	NC
Golden Plover	*Pluvialis apricaria*	3 (2,0)	NC	90 (2,0)	270 (3,0)	547 (3,0)	138 (4,0)	0 (1,0)	90 (1,0)	0 (1,0)	NC	NC	NC
Grey Plover	*Pluvialis squatarola*	0 (3,0)	NC	0 (2,0)	1 (3,0)	1 (3,0)	0 (4,0)	0 (1,0)	0 (1,0)	0 (1,0)	NC	NC	NC
Ringed Plover	*Charadrius hiaticula*	19 (2,0)	NC	1 (2,0)	24 (3,0)	42 (3,0)	57 (3,0)	57 (1,0)	23 (1,0)	34 (1,0)	NC	NC	NC
Curlew	*Numenius arquata*	48 (3,0)	NC	28 (2,0)	143 (3,0)	124 (3,0)	206 (3,0)	397 (1,0)	123 (1,0)	49 (1,0)	NC	NC	NC
Bar-tailed Godwit	*Limosa lapponica*	5 (2,0)	NC	0 (2,0)	0 (3,0)	1 (3,0)	2 (4,0)	0 (1,0)	0 (1,0)	0 (1,0)	NC	NC	NC
Black-tailed Godwit	*Limosa limosa*	0 (3,0)	NC	0 (2,0)	0 (3,0)	0 (3,0)	0 (3,0)	0 (1,0)	0 (1,0)	0 (1,0)	NC	NC	NC
Turnstone	*Arenaria interpres*	6 (2,0)	NC	0 (2,0)	38 (3,0)	48 (3,0)	61 (3,0)	110 (1,0)	8 (1,0)	39 (1,0)	NC	NC	NC
Knot	*Calidris canutus*	4 (2,0)	NC	72 (2,0)	26 (3,0)	28 (3,0)	18 (3,0)	9 (1,0)	20 (1,0)	0 (1,0)	NC	NC	NC
Sanderling	*Calidris alba*	2 (2,0)	NC	0 (2,0)	0 (4,0)	0 (4,0)	0 (5,0)	0 (1,0)	0 (1,0)	0 (1,0)	NC	NC	NC
Dunlin	*Calidris alpina*	5 (3,0)	NC	0 (2,0)	4 (3,0)	190 (3,0)	223 (3,0)	194 (1,0)	86 (1,0)	25 (1,0)	NC	NC	NC
Snipe	*Gallinago gallinago*	0 (3,0)	NC	0 (2,0)	0 (3,0)	1 (3,0)	1 (3,0)	0 (1,0)	0 (1,0)	0 (1,0)	NC	NC	NC
Common Sandpiper	*Actitis hypoleucos*	0 (2,0)	NC	0 (2,0)	0 (4,0)	0 (4,0)	0 (5,0)	0 (1,0)	0 (1,0)	0 (1,0)	NC	NC	NC
Redshank	*Tringa tetanus*	67 (2,0)	NC	44 (2,0)	93 (3,0)	126 (3,0)	60 (3,0)	85 (1,0)	57 (1,0)	0 (1,0)	NC	NC	NC
Greenshank	*Tringa nebularia*	0 (2,0)	NC	0 (2,0)	0 (3,0)	0 (3,0)	0 (3,0)	0 (1,0)	0 (1,0)	0 (1,0)	NC	NC	NC
Ring-billed Gull	*Larus delawarensis*		NC		1 (1,0)	1 (1,0)	0 (0,1)				NC	NC	NC
Lesser Black-backed Gull	*Larus fuscus*		NC		4 (1,0)	4 (1,0)	1 (0,1)				NC	NC	NC
Sandwich Tern	*Sterna sandvicensis*	225 (2,0)	NC	2 (1,0)	2 (0,1)		0 (2,0)				NC	NC	NC
Little Tern	*Sterna albifrons*	1 (3,0)	NC	0 (1,0)	0 (1,0)		0 (2,0)				NC	NC	NC
Common Tern	*Sterna hirundo*	49 (2,0)	NC	0 (1,0)	0 (1,0)		0 (2,0)				NC	NC	NC
Arctic Tern	*Sterna paradisea*	19 (2,0)	NC	0 (1,0)	0 (1,0)		0 (2,0)				NC	NC	NC

5.2 Field Survey

5.2.1 Breeding Bird Surveys

Table 5 sets out the results of the breeding / summer bird surveys. The location of bird usage by species is presented in Appendix C.

Table 4 below sets out a summary of the use of habitats present within the red line boundary and surrounding areas by birds considered to be present breeding, with a description of breeding locations and estimated numbers. The majority of habitats within the red line boundary comprise of areas of intertidal and subtidal habitat or areas of car park or intensively managed grassland which are not suitable for breeding. However, some features such as redundant ferry terminal structures and a range of trees and other structures present both within and adjacent to the scheme do present breeding opportunities for a range of bird species. Wider bird use of the study area during the summer period is presented in Table 5. The location of bird usage by species is presented in Appendix D.

Table 4: Summary of Bird Breeding Activity within the site Boundary and surrounding areas

Species	Numbers (estimated breeding pairs)	Distribution
Ringed Plover	1	Breeding on car waiting / loading area of former ferry terminal.
Oystercatcher	1	Breeding on outer section of former ferry terminal north of train station.
Herring Gulll	14+	Associated with various elements of former ferry terminal and structures associated with train station.
Black -headed Gull	1	Breeding on hard standing in the eastern extent of the former ferry terminal.
Arctic Tern	4+	Breeding / attempted breeding on car waiting / loading area of former ferry terminal.
Black Guillemot	5-6	Primarily distributed around docking site of former ferry terminal. Possible breeding on existing marina structures where nest boxes are understood to have been added.
Starling	6+	Possibly associated with marine structures and rail building infrastructure.
House sparrow	10+	Possibly associated wit Marina office buildings and other buildings in the locality falling outside the scheme boundary
Mallard	3-4	Associated with pond at Agnew park west of the scheme boundary
Mute Swan	1	Associated with pond at Agnew park west of the scheme boundary

Table 5: Breeding / Summer period survey bird survey results

Species	May						June						July						August					
	Low Tide		Mid Tide		High Tide		Low Tide		Mid Tide		High Tide		Low Tide		Mid Tide		High Tide		Low Tide		Mid Tide		High Tide	
	Marina	500m Buffer	Marina	500m Buffer	Marina	500m Buffer	Marina	500m Buffer	Marina	500m Buffer	Marina	500m Buffer	Marina	500m Buffer	Marina	500m Buffer	Marina	500m Buffer	Marina	500m Buffer	Marina	500m Buffer	Marina	500m Buffer
Arctic Tern	2	3		1		8		5		7			1	4										
Black Guillemot							1	1		2				2	1	6	2	3		7		1		
Black-headed Gull	9	20	2	8		50	1	19	2	4	2	27	7	19	2	106		50	7	64		70	1	66
Common Gull	5	11	1	1						6														3
Cormorant		1						2				2	2	2				3	1	3				
Curlew								1																
Eider		6	1	1		1		4		3				6		11						6		
Gannet								1						5		5		1						1
Great-crested Grebe						8								1		1				1				
Greater Black-backed Gull	1	2												1										
Grey Heron																						4		
Herring Gull	10	148		16	7	36	1	22		6		11	39	46	29	121	58	107	7	1	14	37	4	70
Lesser Black-Backed Gull		2		1		2						1						1						
Mallard				7		6										4		11				18		12
Mute Swan				1		7				6				7		12		2			7	52		10
Oystercatcher	1	13		17	24	24	0	14	1	11	5	21	1	63			1	143	25	31	1	139	2	223
Red- Breasted Merganser										1														
Redshank														16								17		24
Ringed Plover						2										2						7		12
Sandwich Tern		6											4	4		2		3				2		
Shag																					1	1	1	1
Starling																			50	50				12
Teal														5										

Species	May						June						July						August					
	Low Tide		Mid Tide		High Tide		Low Tide		Mid Tide		High Tide		Low Tide		Mid Tide		High Tide		Low Tide		Mid Tide		High Tide	
	Marina	500m Buffer	Marina	500m Buffer	Marina	500m Buffer	Marina	500m Buffer	Marina	500m Buffer	Marina	500m Buffer	Marina	500m Buffer	Marina	500m Buffer	Marina	500m Buffer	Marina	500m Buffer	Marina	500m Buffer	Marina	500m Buffer
Turnstone				1										2					12	12				6

Species-Specific Details – breeding /summer season use of the study area

Waders

Waders were regularly recorded utilising a range of high tide roosting features, including the rock armour, break water, old ferry terminal, and Stranraer west beach. Waders were also recorded loafing and feeding on the mudflats at low tide. The distribution of bird species recorded are illustrated in Appendix D, Figures D1 – D 12.

- Oystercatcher – Regularly recorded at both high and low tide across the survey period though in lower numbers than reported across the winter period. Activity includes some low levels of foraging within the marina at low tide. High tide roosts include the old ferry terminal, rock armour within the marina and west beach. Peak counts of Oystercatcher present within the marina peaked at 25 in August, larger counts were also noted within the wider study area at this stage in late summer (post breeding). The overall counts present in the wider area comprise a large proportion of the overall Cairnryan population (peak high tide count of 627). While the number feeding (c3%) or roosting (<10%) within the marina represent a smaller proportion of the Cairnryan population.

- As noted above a single pair of oystercatcher were considered to be attempting breeding on the former ferry terminal structures.

- Redshank - Redshank were absent in May and June (key breeding months for the species) however, numbers were returning through July (16) in the wider study area and increasing further in August (24). BTO WeBS data indicate that peak populations for Cairnryan comprise of 126 (November)**.** Roosts located in late summer (peak 24) to the east side of the ferry terminal / rail embankment comprise a significant proportion of the Loch Ryan late summer population (67).

- Ringed Plover – Ringed plover were present attempting to breed on the redundant ferry terminal throughout the summer period. Numbers of Ringed Plover increased to 12 by August reflecting post breeding roosting.

- Turnstone – Recorded in low numbers at both high and low tide across the survey period. High tide roosting locations include the west beach area. Small numbers were also recorded roosting on the existing breakwater at the entrance to the marina and rock armour on the east of the rail line into the ferry terminal. A group of 12 were recorded feeding within the Marina in August.

Terns

Arctic Tern were routinely present throughout the summer in small numbers. Their regular presence reflects the attempted breeding on the former ferry terminal car loading areas by a small number of breeding pairs (4). Survey data indicated that breeding may have been unsuccessful with no well developed young or fledged birds recorded at any stage.

Sandwich Tern were recorded on a number of occasions typically flying over the study area or recorded searching for food or actively foraging in the wider area. The peak count of 6 reported in May comprises <3 % of the peak Loch Ryan summer population when contrasted to available BTO data.

No other species of Tern were recorded throughout surveys.

Gannet

Gannet were recorded in all months except May. A peak count of 5 was recorded in the 500m buffer however it is expected that much higher numbers will be present within Loch Ryan Given the proximity of the site to the major colony on Ailsa Craig 36km to the North and taking into account the extensive foraging range of Gannet as reported by Woodward et al, (2019).

Auks, Cormorants and Wildfowl

Black Guilliemot were regularly present throughout surveys reflecting a breeding presence of a small number of pairs which utilise cavities within former ferry terminal structures for breeding. Eider were routinely present in modest numbers and on at least 1 occasion this included a group with young within the Marina. Other species recorded in smaller numbers included mallard, Teal, Red Breasted Merganser, Cormorant and Shag. Cormorant and Shag form qualifying interests of Aisla Craig SPA and the site lies within or close to maximum reported foraging ranges (40km and 35km respectively) of the species from Ailsa Craig (c 36km) in accordance with data presented by Woodward et al (2019).

Gulls

Herring Gull were present in high numbers across the site (peaking at 148) many of those present close to the marina are associated with breeding efforts on marine structures. Black headed Gull were also frequent and were recorded feeding in the marina area at low tide (peak 19 in July). Great Black-backed gulls were sighted in low numbers during the surveys. Of these species, Herring Gull and Lesser Black-backed Gull form qualifying interests of Aisla Craig SPA and the site lies within maximum reported foraging ranges of the species form Ailsa Craig in accordance with data presented by Woodward et al (2019).

6. Interpretation and Discussion

6.1 Survey Constraints and Further Survey Requirements

Data was collected at both high and low tide across a survey period of a year. Therefore, there are considered to be no constraints to the survey. At this stage no further ornithological survey requirements are considered necessary.

6.2 Assessment of Value

Based on the results of the desk study and field work completed to date, the site and associated study area is considered to be of up to Regional value for breeding / summering birds..

6.3 Input into the Design Process

While the full detail of proposals is not known at this stage some potential inputs to the design are outlined below. In order to minimise the potential impacts of the proposals upon the key ornithological interests of the site, which comprises primarily an assemblage of overwintering bird species-, the proposals will, where possible, ensure that:

- Areas of roosting habitat will be retained where possible – this may include areas of Rock armour to the east of the Marina.
- Features used by breeding seabird species such as Black, Guilliemot, Arctc Tern and Herring Gull will not be directly affected by the proposals
- Where possible additional / alternative roosting habitat will be incorporated into the design of the scheme.
- Roosting features retained within the marina will be visually screened where possible to minimise potential recreational disturbance.
- Areas of existing intertidal habitat subject to infill works will incorporate a beach edge feature to facilitate some level of retained feeding for overwintering birds where possible.
- Where possible extensions to the breakwater structure should be designed to include features which may support breeding terns

6.4 Impact Assessment

At this stage the proposals are under development however in the absence of any mitigation the proposals could result in the following potential effects:

- Construction stage disturbance to birds while occupying nest sites
- Construction stage disturbance to breeding birds while either feeding, high tide roosting or a combination of both.
- Pollution – Works are likely to be within or hydrologically connected to areas of habitat used by overwintering bird assemblages for feeding. Any potential contamination of marine waters habitats with fuel, oil or other construction stage chemicals therefore has the potential to cause indirect harm to overwintering bird assemblages. Sedimentation during piling or dredging works also has the potential to inhibit in water feeding for a range of waterfowl and seabirds which feed in the water column,
- Short term and permanent habitat loss impacting an assemblage of birds of regional importance and individual species of regional importance.
- Operational disturbance to breeding / feeding birds the marina or disturbance through increased vessel traffic to birds using the marina or open waters of Loch Ryan.

7. Mitigation and Compensation Strategy

The following measures will be implemented in order to minimise the ornithological impacts of the proposals these measures will be developed further through the EIA process:

- Where possible, works will be phased to minimise construction stage disturbance to breeding birds.
- Where high tide roosting areas are identified works around such features could be phased to avoid high tide periods avoiding works within 2 hours of high water.
- All construction personnel should be provided with a toolbox talk which will be reviewed, updated, and re-issued throughout the year highlighting relevant seasonal constraints.
- Operational stage interpretive material highlighting the presence of marine birds within Loch Ryan and operational behaviours to minimise risk of disturbance to feeding birds or
- Pollution control measures will be required throughout all works.

8. References

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Appendix A – Key Legislation

Table A1: Overview of Key Legislation

Legislation	Key Features
The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019	These Regulations consolidate and update the Conservation of Habitats and Species Regulations 2010 (the "Habitats Regulations 2010"). The Conservation of Habitats and Species Regulations 20179 ("the Habitats Regulations 2019") transpose Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora ("the Habitats Directive) and elements of Directive 2009/147/EC on the conservation of wild birds ("the Birds Directive") in England, Wales and, to a limited extent, Scotland and Northern Ireland. The objective of the Habitats Directive is to protect biodiversity through the conservation of natural habitats and species of wild fauna and flora. The Directive lays down rules for the protection, management and exploitation of such habitats and species. The Habitat Regulations make it an offence (with certain exceptions) to deliberately capture, disturb, kill or trade in those animal species listed in Schedule 2, or to pick, cut, uproot, collect, destroy or trade in those plant species listed in Schedule 4. The EC Birds Directive requires member states to establish and monitor Special Protection Areas (SPAs) for all rare or vulnerable species included in Annex I, as well as for all regularly occurring migratory species, with key focus on wetlands of international importance. Annex I and II of the Habitats Directive respectively list those habitats and species for which a similar network of sites – Special Areas of Conservation (SACs) – must be established and monitored. Collectively, SPAs and SACs form a network of pan-European protected areas which are referred to as 'Natura 2000' sites.
The Convention on the Conservation of European Wildlife and Natural Habitats 1979 (Bern Convention)	The Bern Convention was adopted in 1979 and ratified by the UK Government in 1982. The principal aims of the Convention are to ensure the conservation and protection of all wild plant and animal species and their natural habitats (listed in Appendices I and II), to increase cooperation between contracting parties, and to afford special protection to the most vulnerable or threatened species (including migratory species). Members of the European Community meet their obligations via the Birds Directive and the Habitats Directive. These are transposed into UK law by the Wildlife and Countryside Act 1981 (as amended), Nature Conservation (Scotland) Act 2004 (as amended), Wildlife (Northern Ireland) Order 1985, and the Nature Conservation and Amenity Lands (Northern Ireland) Order 1985.
The Wildlife and Countryside Act 1981 (as amended)	The Wildlife and Countryside Act consolidates and amends existing national legislation to implement the requirements of the Bern Convention and the Birds Directive throughout Great Britain. The Act is the primary UK mechanism for the designation of statutory ecological sites - Sites of Special Scientific Interest (SSSIs) - and the protection of individual species listed under Schedules 1, 2, 5, 6 and 8 of the Act, each of which is subject to varying levels of protection. Schedule 9 of the Act also lists those plant species which it is an offence to plant or otherwise cause to grow in the wild, while Schedule 14 prevents the release into the wild or sale of certain plant and animal species which may cause ecological, environmental or socio-economic harm.

Legislation	Key Features
Nature Conservation Scotland Act (2004)	The Nature Conservation Scotland Act places a duty on public bodies to consider and conserve biodiversity through the exercise of their functions and includes a range of measures to strengthen the protection of both habitats and wildlife. Under the Act a series of priority habitats and species are identified under the Scottish Biodiversity list SBL. The Act makes provision in respect of biodiversity, pesticides harmful to wildlife, protection of birds and invasive non-native species.

Appendix B – Value of Ecological Receptors

Table B1: Examples of Ecological Receptors of Differing Value

Value	Examples
International	• An internationally designated site or candidate site (SPA, pSPA, SAC, cSAC, pSAC, Ramsar site) or an area which meets the designation criteria for such sites. • Internationally significant and viable areas of a habitat type listed in Annexe 1 of the Habitats Directive, or smaller areas of such habitat, which are essential to maintain the viability of a larger whole. • Any regularly occurring, globally threatened species. • A regularly occurring population of an internationally important species, which is threatened or rare in the UK, of uncertain conservation status • A regularly occurring, nationally significant population/number of any internationally important species.
National	• A nationally designated site (e.g. SSSI, NNR) or a discrete area which meets the published selection criteria for national designation (e.g. SSSI selection guidelines) irrespective of whether or not it has yet been notified. • A viable area of a UK BAP priority habitat, or smaller areas of such habitat which are essential to maintain the viability of a larger whole. • A regularly occurring significant number/population of a nationally important species e.g. listed on the Wildlife and Countryside Act 1981 (as amended). • A regularly occurring population of a nationally important species that is threatened or rare in the county or region. • A feature identified as being of critical importance in the UK BAP.
Regional/County	• Viable areas of key habitat identified in the Regional or County BAP or smaller areas of such a habitat, which are essential to maintain the viability of the larger whole. • Regional/county significant and viable areas of key habitat identified as being of regional value. • A regularly occurring significant population/number of any important species important at a regional/county level. • Any regularly occurring, locally significant population of a species which is listed in a Regional/County Red Data Book or BAP on account of its regional rarity or localisation.

Value	Examples
	• Sites of conservation importance that exceed the district selection criteria but that fall short of SSSI selection guidelines.
City/District/Borough	• Areas of habitat identified in a District/City/Borough BAP or in the relevant Natural Area profile. • Sites that the designating authority has determined meet the published ecological selection criteria for designation, including Local Nature Reserves selected on District/City/Borough ecological criteria. • Sites/features that are scarce within the District/City/Borough or which appreciably enrich the District/City/Borough habitat resource. • A diverse and/or ecologically valuable hedgerow network. • A population of a species that is listed in a District/City/Borough BAP because of its rarity in the locality or in the relevant Natural Area profile because of its regional rarity or localisation. • A regularly occurring, locally significant number of a District/City/Borough important species during key phases of its life cycle.
Local	• Areas identified in a Local BAP or the relevant natural area profile. • Sites/features which area scarce in the locality or which are considered to appreciably enrich the habitat resource within the local context, e.g. species-rich hedgerows. • Local Nature Reserves selected on Parish/Local ecological criteria. • Significant numbers/population of a locally important species e.g. one which is listed on the Local BAP. • Any species, populations or habitats of local importance.
Low	• Habitats of moderate to low diversity which support a range of locally and nationally common species, the loss of which can be easily mitigated.

Appendix C – Protected and Notable Species Identified by the Desk Study

Table C1: Protected Species Records within 2km

Species	Number of Records	Most Recent Record	On Site?	Level of Protection		
				HR 2019	WCA 1981	NERC /UK BAP
Whooper swan *Cygnus cygnus*	23	2021	No	☐	☒	☐
Red Kite *Milvus milvus*	2	2016	No	☐	☒	☐
Fieldfare *Turdus pilaris*	4	2017	Yes	☐	☒	☐
Brambling *Fringilla montifringilla*	1	2016	No	☐	☒	☐
Scaup *Aythya marila*	301	2021	Yes	☐	☒	☒
Long-tailed Duck *Clangula hyemalis*	74	2020	Yes	☐	☒	☐
Slavonian Grebe *Podiceps auritus*	125	2022	Yes	☐	☒	☐
Osprey *Pandion haliaetus*	2	2017	No	☐	☒	☐
Merlin *Falco columbarius*	4	2014	No	☐	☒	☐
Peregrine *Falco peregrinus*	35	2018	Yes	☐	☒	☐
Whimbrel *Numenius phaeopus*	15	2017	Yes	☐	☒	☐
Black-tailed Godwit *Limosa limosa*	87	2019	Yes	☐	☒	☐
Greenshank *Tringa nebularia*	7	2019	No	☐	☒	☐
Kingfisher *Alcedo atthis*	10	2022	Yes	☐	☒	☐
Redwing *Turdus iliacus*	2	2021	No	☐	☒	☐
Red-throated Diver *Gavia stellata*	129	2022	Yes	☐	☒	☐

Species	Number of Records	Most Recent Record	On Site?	Level of Protection		
				HR 2019	WCA 1981	NERC /UK BAP
Black-throated Diver *Gavia arctica*	19	2019	Yes	☐	☒	☒
White-tailed Eagle *Haliaeetus albicilla*	1	2015	Yes	☐	☒	☐
Velvet Scoter *Melanitta fusca*	14	2017	Yes	☐	☒	☐
Common Scoter *Melanitta nigra*	78	2021	Yes	☐	☒	☒
Little Ringed Plover *Charadrius dubius*	2	2016	No – adjacent	☐	☒	☐
Black Tern *Chlidonias niger*	8	2017	No	☐	☒	☐
Little Gull *Hydrocoloeus minutus*	8	2017	No	☐	☒	☐
Mediterranean Gull *Ichthyaetus melanocephalus*	715	2020	Yes	☐	☒	☐
Roseate Gull *Sterna dougallii*	3	2015	No	☐	☒	☒
Ruff *Calidris pugnax*	14	2018	No	☐	☒	☐
Great Northern Diver *Gavia immer*	31	2018	Yes	☐	☒	☐
Snow Bunting *Plectrophenax nivalis*	1	2018	No	☐	☒	☐
Black Redstart *Phoenicurus ochruros*	39	2016	Yes	☐	☒	☐

Key:

HR 2019 – The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019

WCA 1981 – The Wildlife and Countryside Act 1981 (as amended) (Bird species listed relate solely to those included on Schedule 1)

NERC – The Natural Environment and Rural Communities Act 2006

UK BAP – UK Biodiversity Action Plan

Appendix D – Survey Maps

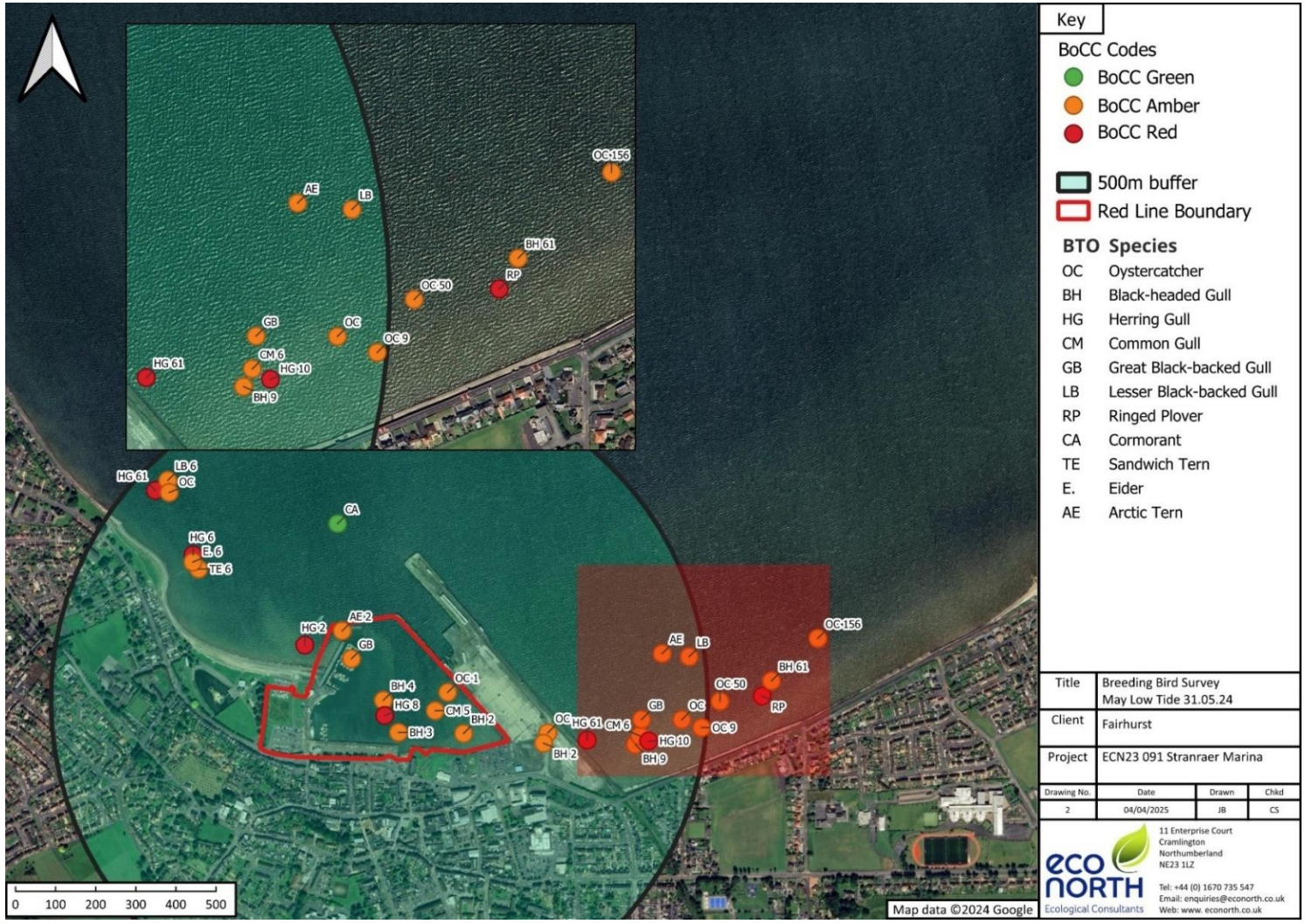

Figure D1 May Low Tide

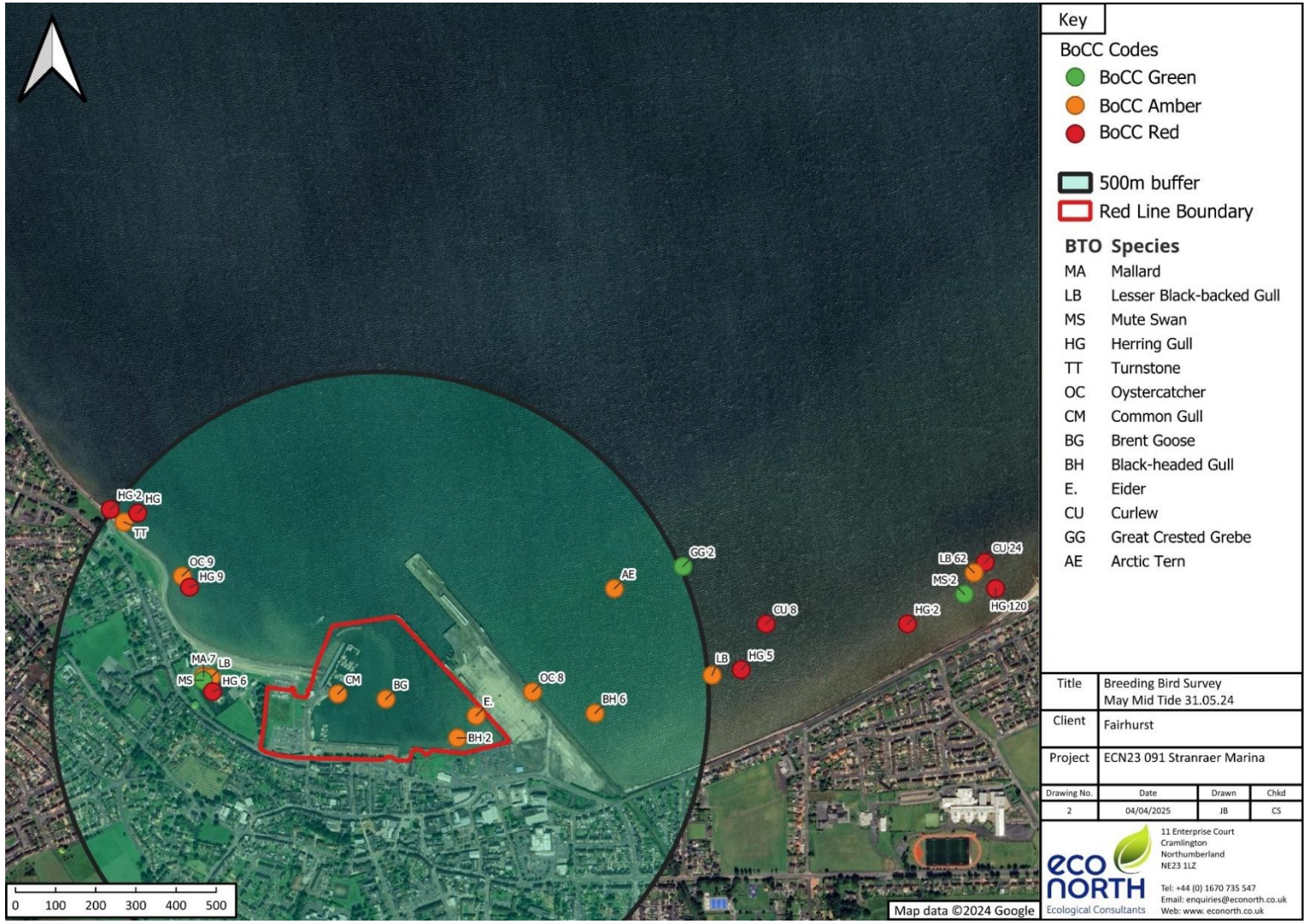

Figure 2 May Mid Tide

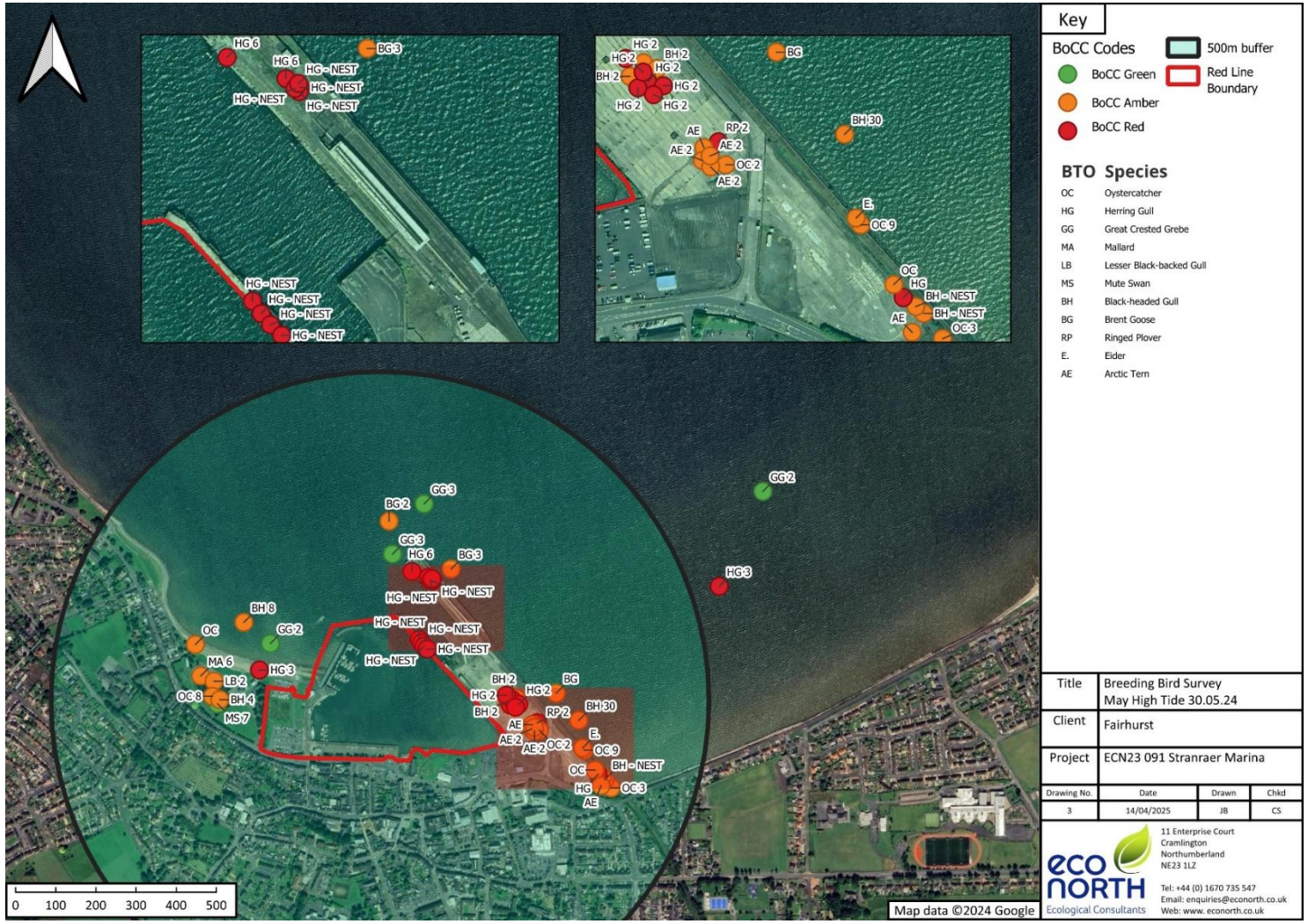

Figure D3 May High Tide

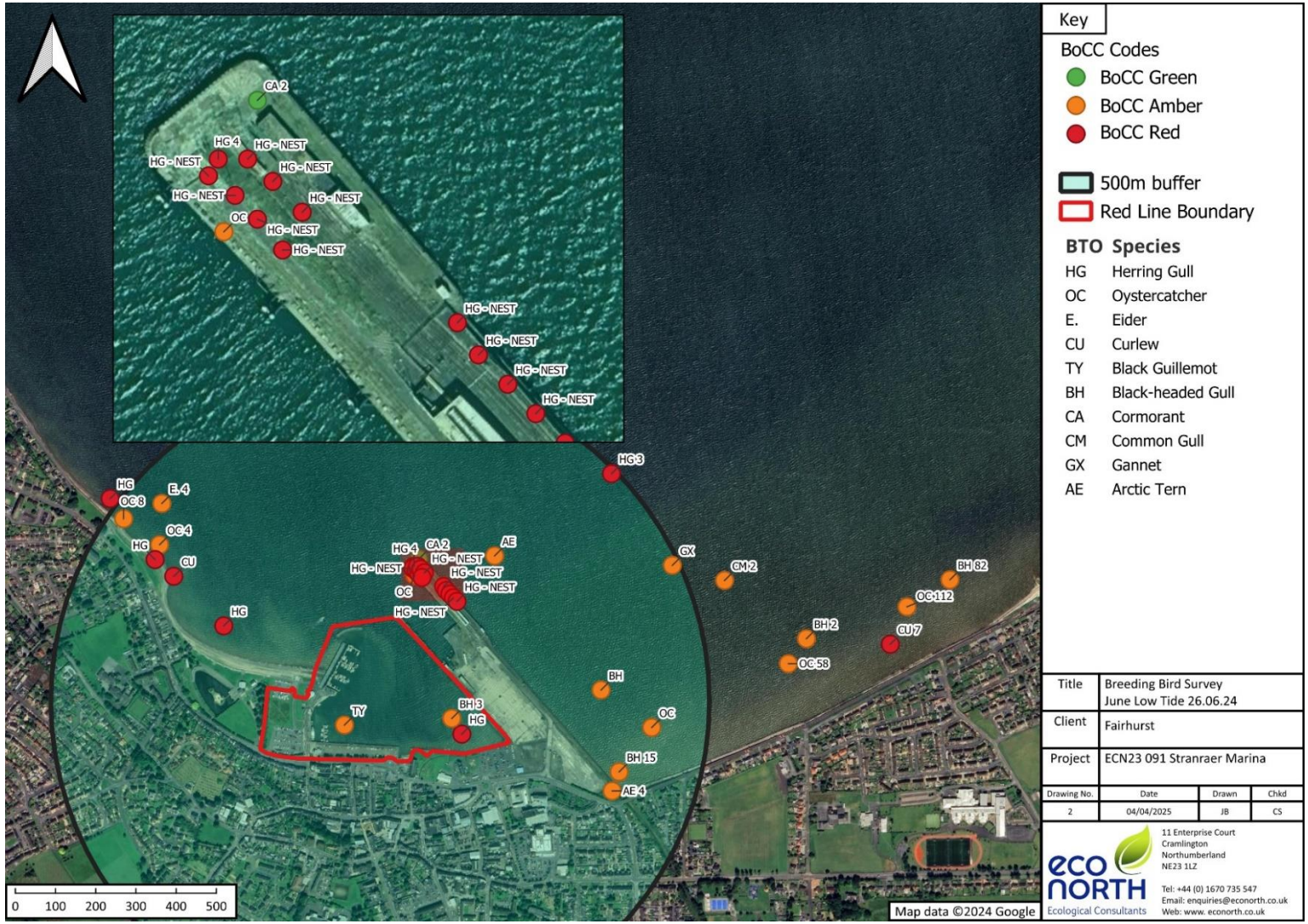

Figure D4 June Low Tide

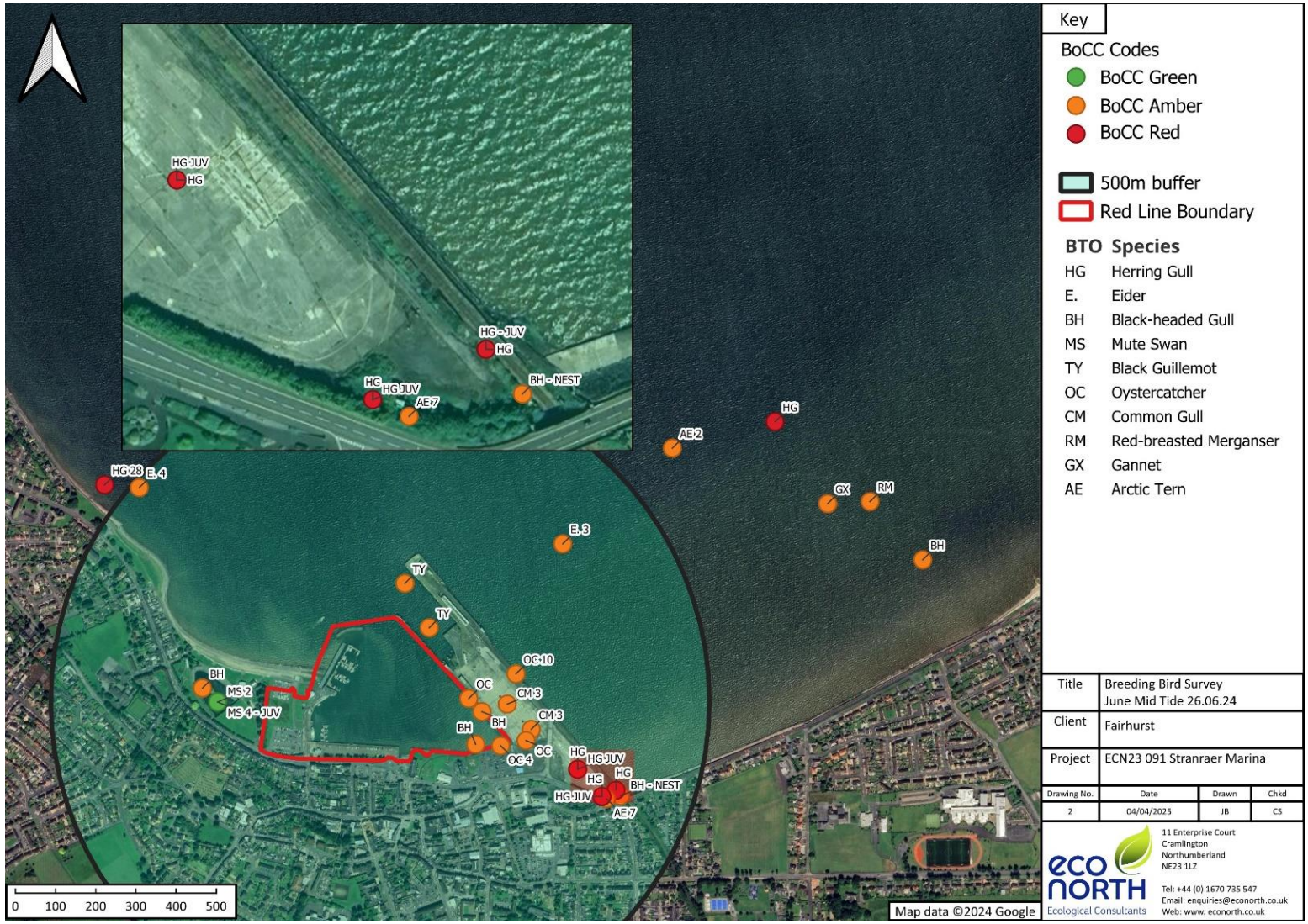

Figure D5 June Mid Tide

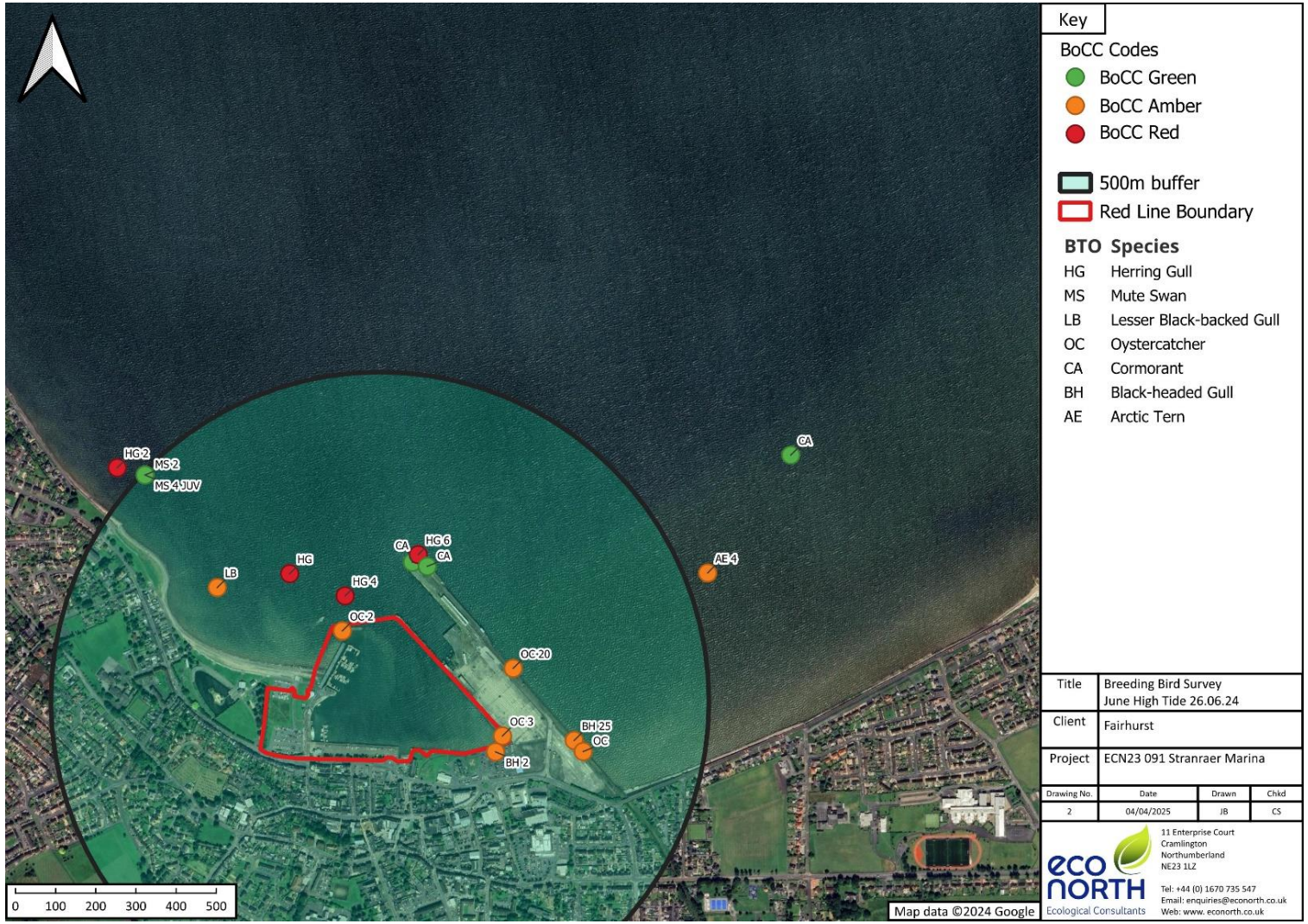

Figure D6 June High Tide

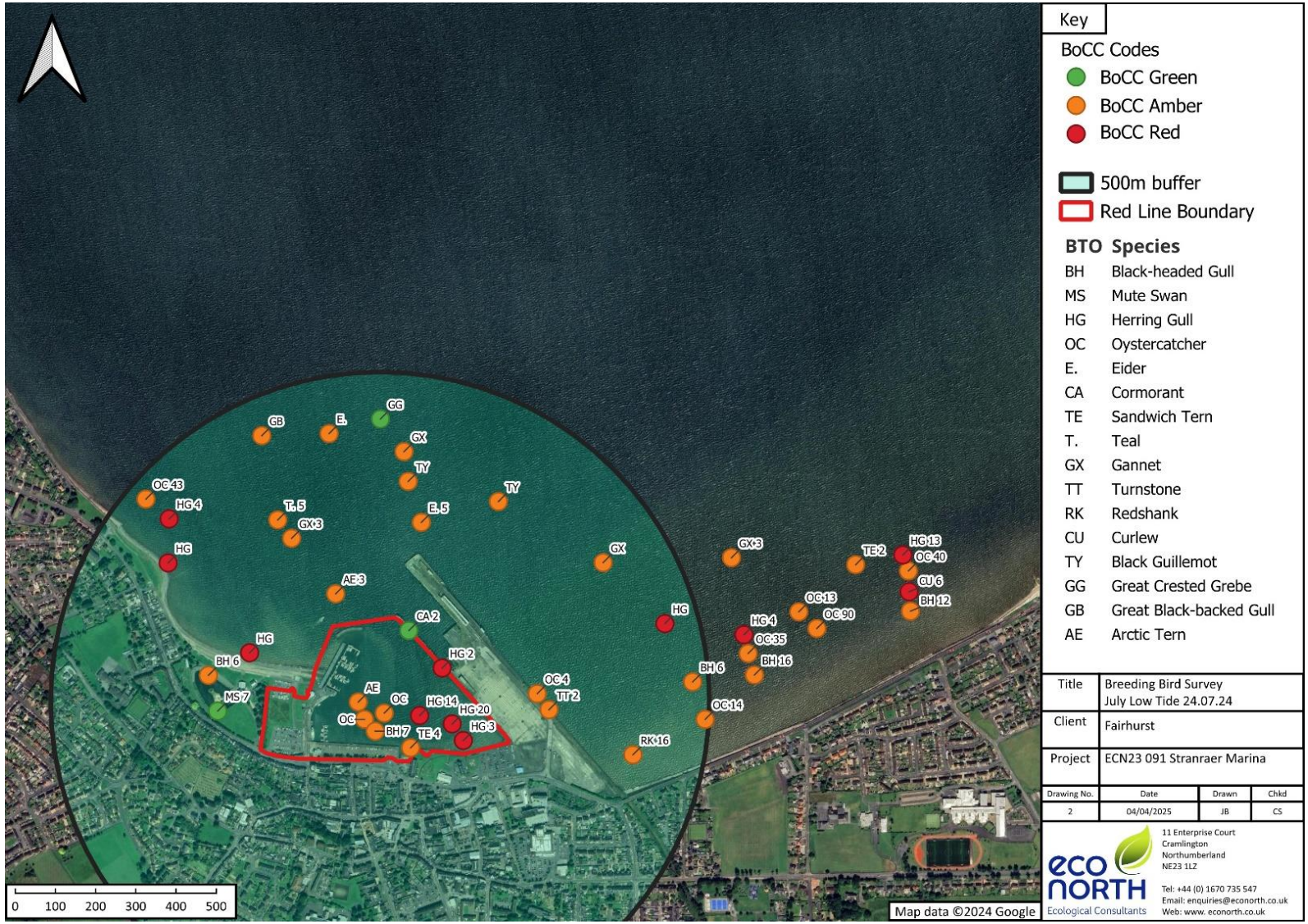

Figure D7 July Low Tide

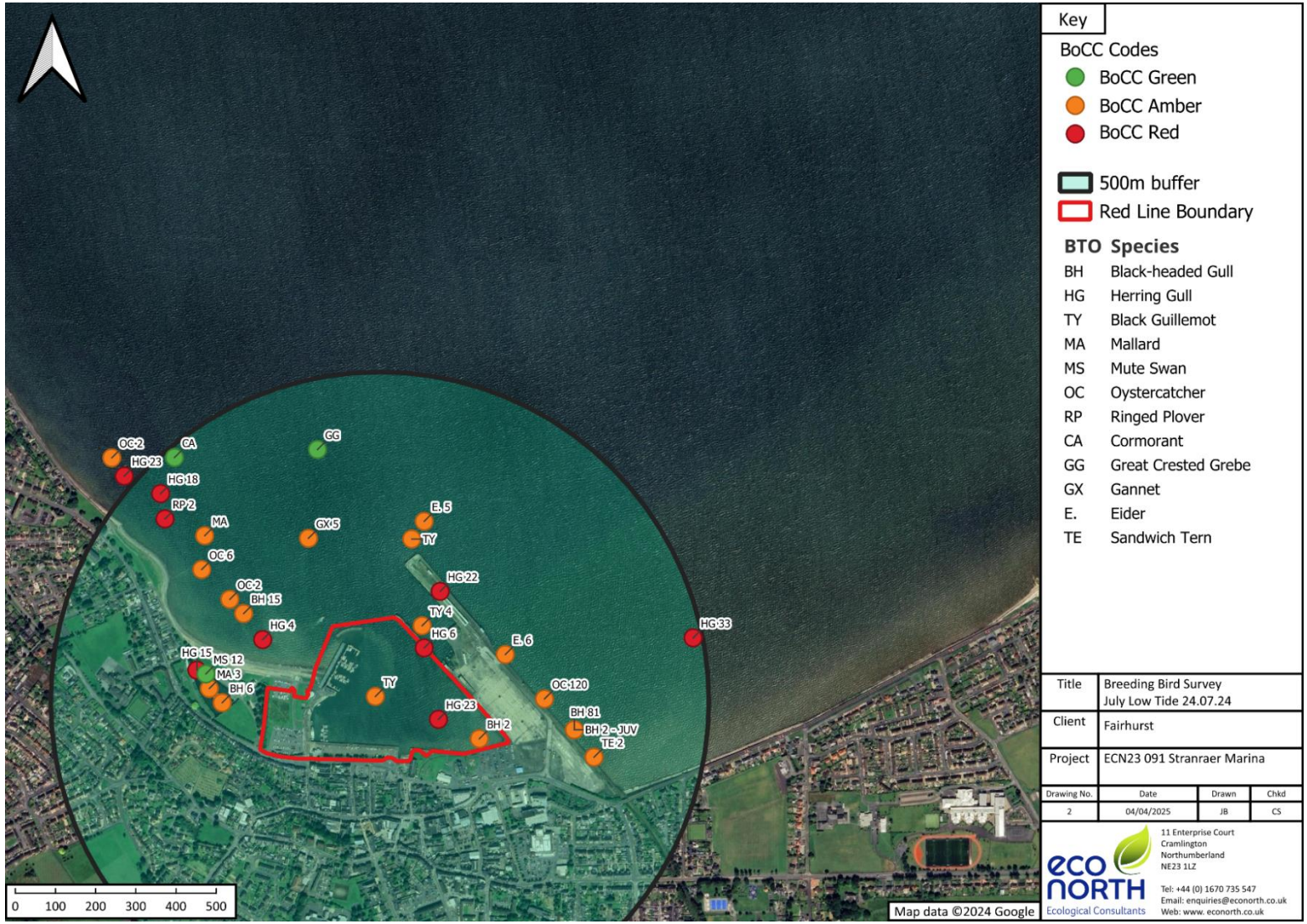

Figure D9 July Mid Tide

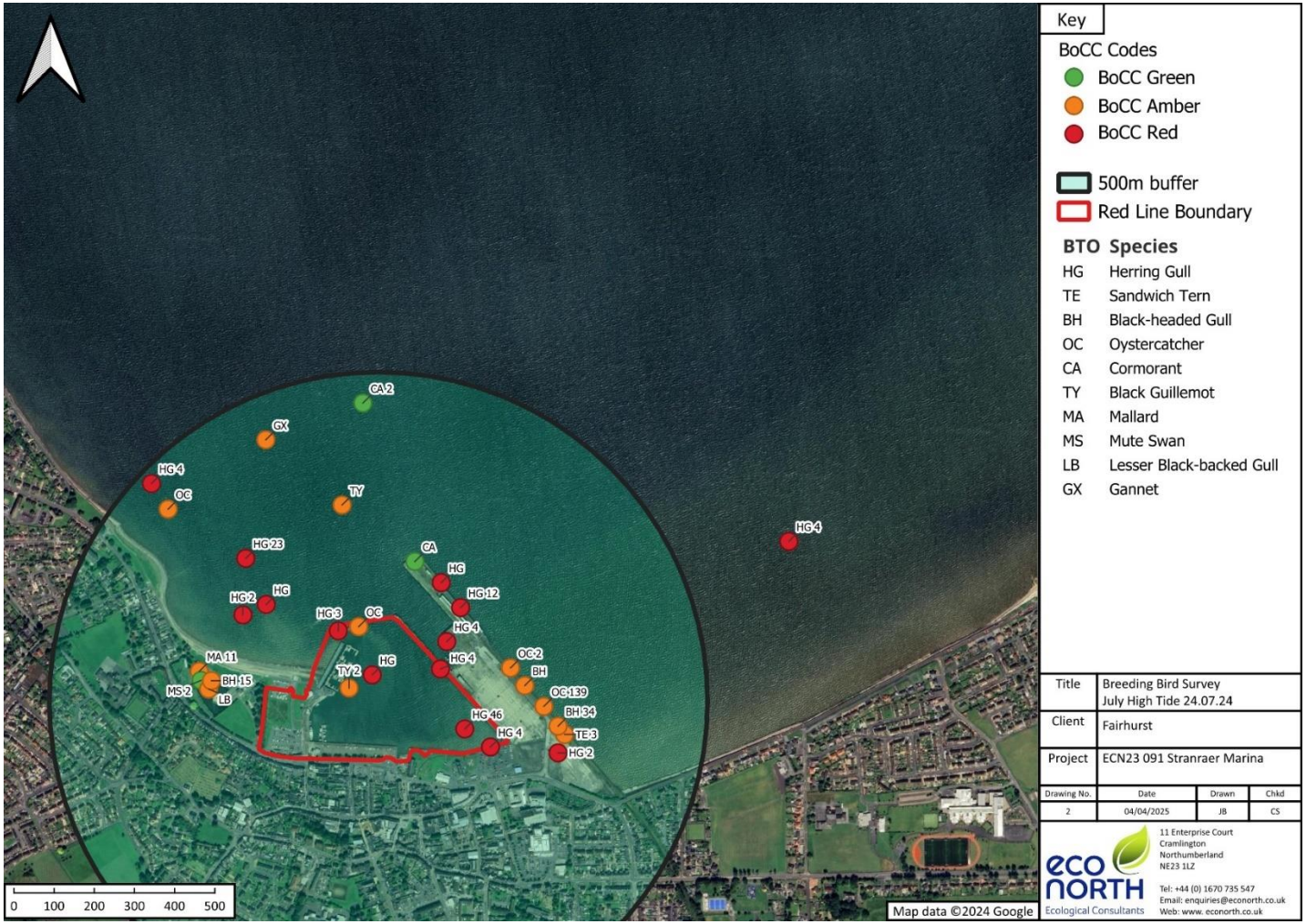

Figure D9 July High Tide

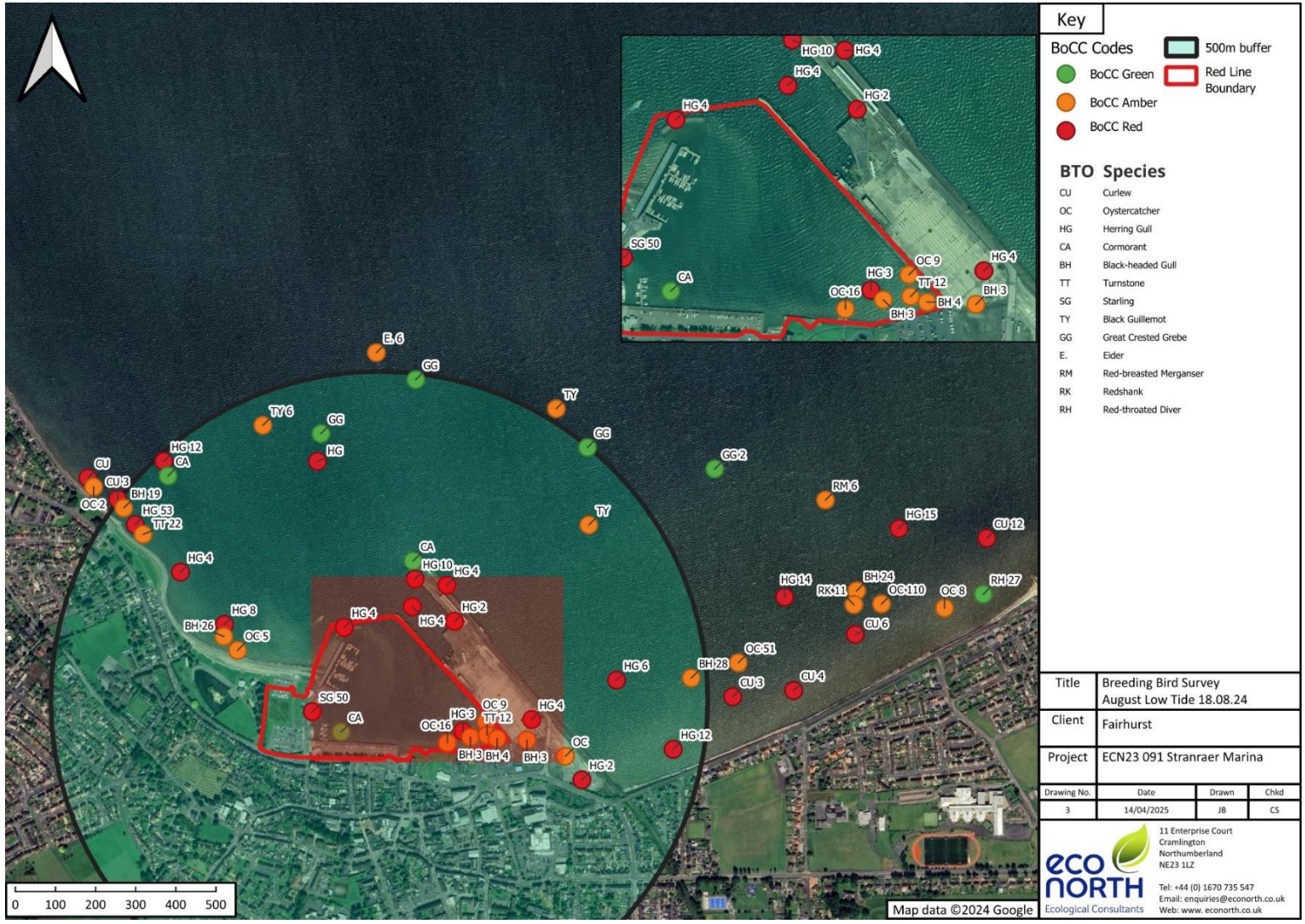

Figure D10 August Low Tide

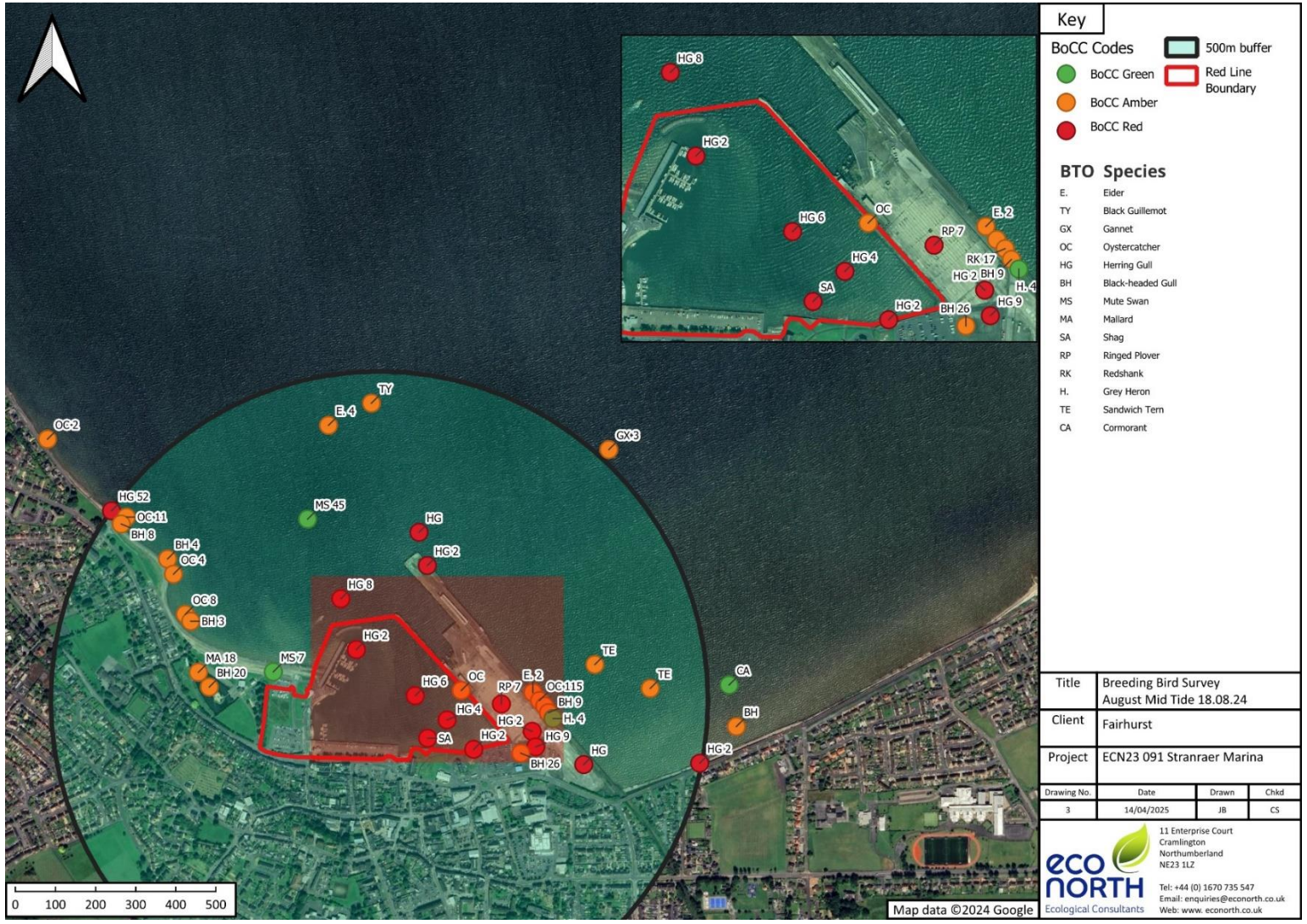

Figure D11 August Mid Tide

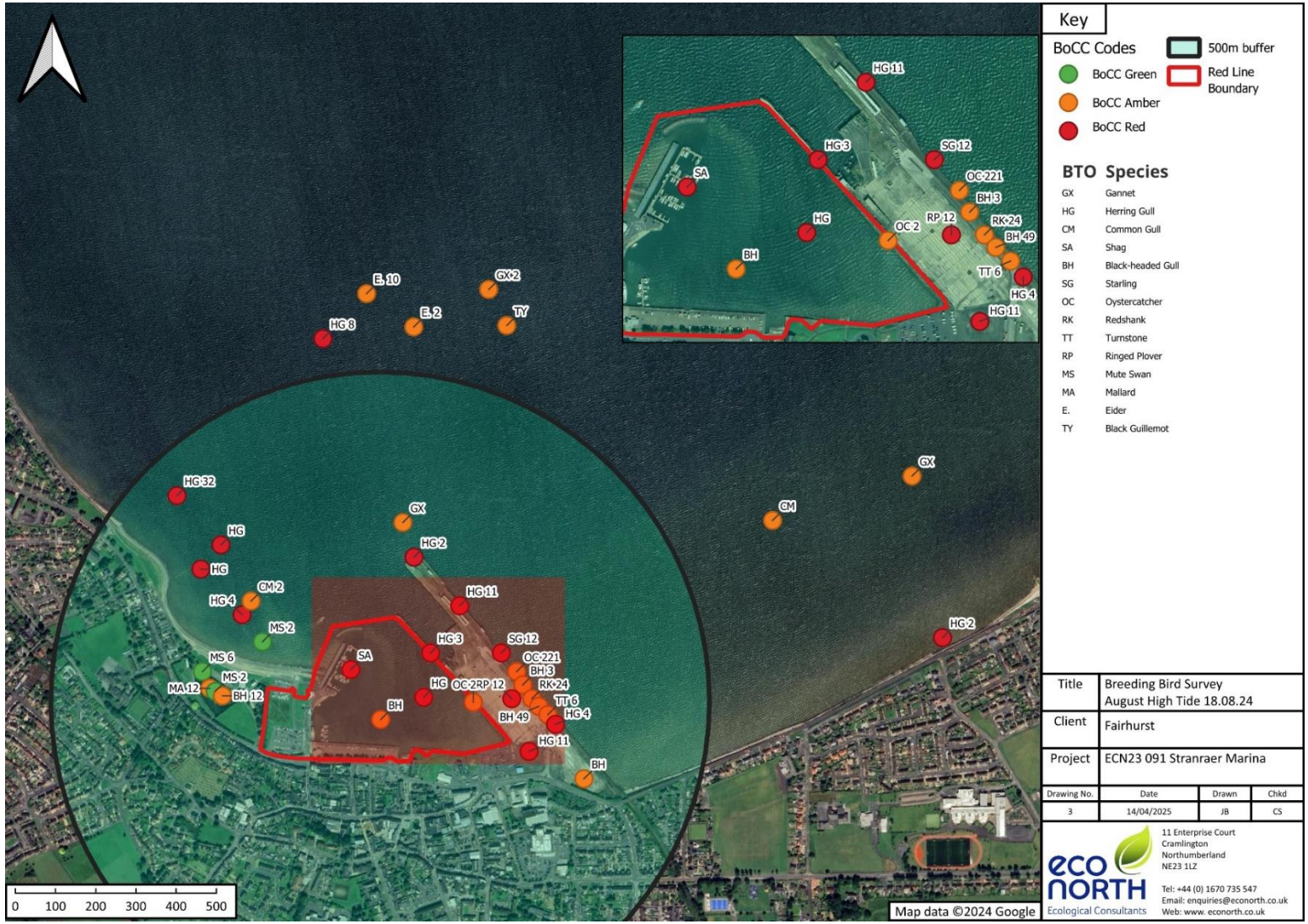

Figure D12 August High Tide