

National Grid
Cable Tunnel Replacement
Project

Environmental Statement
Volume VI

Appendix 7.2 Ornithological
Baseline Report

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Quality information

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Table of Contents

1	Introduction	1
1.1	Background	1
1.2	Site Description	1
1.3	Aims and Objectives.....	2
2	Relevant Legislation, Policy and Guidance	3
2.1	Legislation	3
2.2	Guidance.....	4
3	Methods	7
3.1	Characterising the baseline	7
3.2	Desk Study	7
3.3	Field Survey	8
3.4	Assessment criteria	9
3.5	Assumptions and Limitations	10
4	Results	12
4.1	Desk Study – Designated Sites	12
4.2	Desk Study – WeBS data	15
4.3	Desk Study - Relevant Data From Other Projects.....	16
4.4	Field Survey	19
5	Evaluation	24
5.1	Intertidal birds.....	24
5.2	Non-breeding birds.....	28
5.3	Breeding birds	29
Annex A	Survey Metadata	30
Annex B	Intertidal Survey Data.....	32
Annex C	Figures.....	34

Tables

Table 1: Thames Estuary and Marshes SPA qualifying species and 5-year peak mean counts (taken from the original citation)	13
Table 2: Thames Estuary and Marshes Ramsar Site qualifying species and 5-year peak mean.....	14
Table 3: WeBS Core Count data (2017/18–2021/22) for waterbird species cited on the Thames Estuary and Marshes Ramsar / SPA	15
Table 4: Peak counts of waterbird species recorded for the Tilbury 2 project and occurring within the Tilbury Site	16
Table 5: Peak counts of waterbird species recorded for the Thurrock Flexible Generation Plant project and occurring within the Tilbury Site	18
Table 6: Peak counts of SPA / Ramsar or notable bird species recorded during intertidal VP surveys for the LTC project	19
Table 7: Species peak counts recorded during surveys of the intertidal area at high and low tide.....	20
Table 8: Peak count data and conservation status of non-breeding bird species.....	21
Table 9: Breeding status, number of territories and conservation status of birds recorded within the Survey Area	23
Table 10: Species peak counts and comparison with original Thames Estuary SPA citation figures; alongside current 1% thresholds for national and international importance.....	24

Table 11: Species recorded during surveys in 2022/2023 which exceeded 1% of the SPA/Ramsar populations and overall context of Site usage	26
Table 12: Species recorded during surveys in 2022/2023 which exceeded 1% of the SPA/Ramsar populations and context in the Site and wider area	27

1 Introduction

1.1 Background

1.1.1 AECOM Ltd (hereafter referred to as AECOM) was commissioned by National Grid to undertake an ecological assessment to support the Environmental Statement for the Tilbury to Grain and Tilbury to Kingsnorth (TKRE) Cable Tunnel Replacement Project (hereafter referred to as the Proposed Development). The Proposed Development relates to the replacement of the below ground cabled section of the TKRE 400 kV circuits with the construction of a new bored tunnel under the River Thames to carry new XLPE cables, together with following above-ground components at both ends of the new tunnel:

- **A new cable sealing end compound:** consisting of:
 - **a new tunnel headhouse** which will cover the shaft into the tunnel;
 - **a new overhead line gantry structure** which will connect the overhead line downlead conductors and transfer them to six sealing end structures; and
- **Modifications to the existing overhead line (OHL):** The new OHL conductors will be connected to the existing TKRE 400kV OHL conductors via new terminal pylons. The old OHL conductors and existing pylons will be either replaced, refurbished or removed.

1.1.2 The required headhouses and SECs would fall within the jurisdiction of Thurrock Council (north of the River Thames) and Gravesham Borough Council (south of the River Thames).

1.1.3 A Preliminary Ecological Appraisal (PEA) (ES Volume VI Appendix 7.1) was completed in November 2022 in support of the Proposed Development, covering a wider area than the Red Line Boundary shown on Figure 1 in ES Volume II Chapter 1 Introduction as part of an options appraisal process. In addition, the options appraisal included an ornithological appraisal of a potential overhead line option, which was rejected as erecting tension towers would have required works within the Thames Estuary and Marshes Special Protection Area (SPA).

1.2 Site Description

1.2.1 The extent of land required for the Proposed Development (hereafter 'the Site') is split into two areas, one in Tilbury ('the Tilbury Site') and the other in Gravesend ('the Gravesend Site'). They are split from each other by the River Thames and Thames Estuary.

Tilbury Site

1.2.2 The area north of the River Thames is located at Tilbury in the borough of Thurrock, Essex at Ordnance Survey (OS) grid reference TQ 66312 75869. The Tilbury Site is a mixture of in-use and disused industrial grounds and consists of a mixture of sparsely vegetated hard-standing, and larger areas of grassland, scrub and adjoining ditches.

1.2.3 The Tilbury Site is surrounded by an industrial and agricultural landscape with the River Thames and associated foreshore habitats adjacent to the south.

1.2.4 Two ditches are located within/adjacent to the Tilbury Site. The first runs north to south on the western edge of proposed Tilbury Sealing End Compound (SEC) facility, and then continues east to west just to the north of the haul road that passes through the centre of the Tilbury Site. The second is located to the east of the existing Tilbury SEC.

Gravesend Site

- 1.2.5 The area to the south of the River Thames is located at Gravesend, in the borough of Gravesham, Kent at OS grid reference TQ 67440 74151. The habitats on Site include grassland, scrubland, bare ground, ditches and marshy grassland. The eastern sections of the Gravesend Site are within Milton Rifle Range, and the western sections contain grazed pasture fields and the existing Eastcourt Marshes Electricity Substation.
- 1.2.6 A network of interconnected tidal ditches are present within and adjacent to the Gravesend Site. These adjoin the eastern boundary of the proposed Gravesend SEC facility and the western boundary with the Metropolitan Police Training Facility and are linked by a small east to west running section that is located within the Site.
- 1.2.7 The River Thames (and associated foreshore habitats) adjoin the northern boundary and the Thames and Medway Canal runs along the southern boundary of the Gravesend Site.

1.3 Aims and Objectives

- 1.3.1 The objectives of the assessment, reported in this document, were to establish the baseline ornithological conditions relevant to the Proposed Development. This was achieved by:
- undertaking a desk study to establish species presence and abundance within the Site (where known) and wider area to provide context of the importance of the Site. This desk study included a review of publicly available ornithological survey data collected in support of adjacent and overlapping large-scale infrastructure developments; and
 - undertaking surveys of the Site, to:
 - establish the abundance and distribution of waterbirds using intertidal and terrestrial habitat in proximity to the Site during passage and winter periods. In particular the importance of the habitats within and adjoining the site for the bird species for which the Thames Estuary and Marshes Ramsar site and Thames Estuary and Marshes Special Protection Area (SPA) are designated (see Section 2.1);
 - determine the presence, assemblage and distribution of non-breeding bird species within the Site; and
 - confirm the presence, assemblage and distribution of breeding bird species within the Site.
- 1.3.2 Combined, this is being used to determine the importance of the habitats within and adjoining the Site for bird species that the Thames Estuary and Marshes Ramsar site and Thames Estuary and Marshes Special Protection Area (SPA) are designated (see section 2.1 of this report) and the potential impacts of the Proposed Development on birds during the non-breeding and breeding period.
- 1.3.3 An assessment of the expected impacts of the Proposed Development and associated mitigation recommendations are provided in the Environmental Statement (ES) Volume III Chapter 7 Biodiversity – Tilbury and ES Volume IV Chapter 15 Biodiversity – Gravesend.

2 Relevant Legislation, Policy and Guidance

2.1 Legislation

Wildlife and Countryside Act

- 2.1.1 The legislative provisions for the protection of wild birds in the UK are contained primarily in Sections 1-7 of the Wildlife and Countryside Act (WCA) 1981 (as amended)¹. Under the WCA, a wild bird is defined as any bird of a species that occurs in a wild state as a resident or a visitor to the European Territory of any member state but does not include poultry or (except in relation to the power to grant licences and prohibition on certain methods of killing) any game bird.
- 2.1.2 When breeding, all birds, their nest, eggs and nestlings are afforded protection under the Wildlife and Countryside Act 1981, as updated by 'The Countryside and Rights of Way Act 2000'². Therefore, during the bird breeding season it is an offence to:
- intentionally kill, injure or take any wild bird;
 - intentionally take, damage or destroy the nest of any wild bird while it is in use or being built; or
 - intentionally take or destroy the eggs of any wild bird.
- 2.1.3 Typically, the breeding season is defined as between March and August, inclusive, although it is important to note that for some species, breeding can occur outside of these months.
- 2.1.4 Additionally, special penalties exist for offences related to species listed on Schedule 1 of the Wildlife and Countryside Act, 1981 (as amended), for which there are additional offences for intentionally or recklessly disturbing these birds while it is building a nest or is in, on or near their nest containing eggs or young and for disturbing their dependent young. No licences are available for disturbance to breeding bird species during a development even in circumstances where that development is fully authorised by consents such as a valid planning permission.

Directive on the Conservation of Wild Birds

- 2.1.5 A number of bird species recorded within the UK (including those that are resident, overwintering and migratory) are protected under European legislation through the Directive of the Conservation of Wild Birds³, which lists 193 species, or sub-species, of birds in Annex 1 which are:
- in danger of extinction;
 - are rare, or have restricted local distribution;
 - are vulnerable to specific changes in their habitat; or
 - require particular attention for reasons of the specific nature of habitat.
- 2.1.6 The Birds Directive was most recently transposed into English law by the Conservation of Habitats and Species Regulations 2017⁴ (as amended). Although the UK is no longer a member state of the EU, the 2019 amendments⁵ to the Conservation of Habitats and Species Regulations 2017 make it clear that provisions regarding the protection and designation of Special Protection Areas (SPAs) are maintained. Species listed in Annex 1 are those for which the UK government takes special conservation measures; including the designation of land as SPAs to ensure the survival and

¹ HMSO (1981, as amended); 'The Wildlife and Countryside Act 1981'. The Stationery Office, <http://www.legislation.gov.uk/ukpga/1981/69/contents>

² HMSO (2000); 'The Countryside and Rights of Way Act (CROW) 2000'. <http://www.legislation.gov.uk/ukpga/2000/37/contents>.

³ EC (2009). Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (codified version). EC, Brussels.

⁴ HMSO (2017) The Conservation of Habitats and Species Regulations 2017 (as amended) (the Habitats Regulations) <https://www.legislation.gov.uk/uksi/2017/1012/contents>

⁵ HMSO (2019) The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. HMSO, London

reproduction of these species throughout their distributions. These sites are automatically included within the National Site Network; a network of core breeding and resting sites that are protected for rare and threatened species.

Natural Environment and Rural Communities Act

- 2.1.7 In addition to the above legislation, 49 bird species are listed as being Species of Principal Importance for conservation in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006⁶. These species are of material consideration during the planning process.
- 2.1.8 The NERC list of Species of Principal Importance is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under Section 40 of the NERC Act 2006). Under Section 40, every public authority (e.g. a local authority or local planning authority) must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity, including restoring or enhancing a population or a habitat.
- 2.1.9 The UK Biodiversity Action Plan (UKBAP)⁷ was launched in 1994 and established a framework and criteria for identifying species (and habitat types) of conservation concern. From this list, action plans for Priority Species of conservation concern were published and have subsequently been succeeded by the UK Post-2010 Biodiversity Framework (July 2012)⁸ which is relevant in the context of Section 40 of the NERC Act. These species are identified as those of conservation concern, due to their rarity or a declining population trend.

2.2 Guidance

Local Biodiversity Action Plans or Local Biodiversity Strategy

- 2.2.1 Formerly, local Biodiversity Action Plans (BAPs) provided context to inform identification of threatened or uncommon species of local relevance, alongside priorities for conservation and enhancement targeted at a local level. However, under the Environment Act 2021⁹, these are being replaced by Local Nature Recovery Strategies (LNRs), which are a system of spatial strategies for nature which will support delivery of biodiversity net gain (BNG) and provide more focussed action for nature recovery. These are still being developed for each county and within Essex, there is no specific species plan currently in place for birds.
- 2.2.2 In Kent, the Kent Nature Partnership Biodiversity Strategy (KNPBS)¹⁰ (2020-2045) provides context to inform identification of threatened or uncommon species of local relevance. Whilst it confers no particular legislative or policy protection to any species identified, in some cases this is provided through related legislation and local planning policy. Species listed in Appendix 1 of the KNPBS are:
- Turtle Dove;
 - Nightingale;
 - Swift;
 - Lapwing; and,
 - Sandwich Tern;

Birds of Conservation Concern

⁶ HMSO (2006). The Natural Environment and Rural Communities Act. HMSO, London.

⁷ HMSO (1994) Biodiversity: The UK Action Plan. HMSO, London.

⁸ Joint Nature Conservation Committee and Department for Environment, Food and Rural Affairs (2012) UK Post-2010 Biodiversity Framework.. Available at: http://jncc.defra.gov.uk/pdf/UK_Post2010_Bio-Fwork.pdf

⁹ HMSO (2021). The Environment Act. Available at: <https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted>

¹⁰ Kent Nature Partnership (2020) Kent Nature Partnership Biodiversity Strategy 2020 to 2045. Available at <https://kentnature.org.uk/wp-content/uploads/2022/01/Kent-Biodiversity-Strategy-2020.pdf>

- 2.2.3 The Birds of Conservation Concern (BoCC)¹¹ is an assessment of the conservation status of all regularly occurring British birds. The lists (Red, Amber and Green), that indicate the level of conservation importance for each species, are derived from quantitative assessments from standardised criteria and are drawn together by the UK's leading bird conservation organisations, including the Royal Society for the Protection of Birds (RSPB) and British Trust for Ornithology (BTO).
- 2.2.4 The most recent BoCC assessment (BoCC 5¹²) was published in December 2021 and is based on the most up-to-date evidence available and includes conservation status at global and European levels and, within the UK: historical decline, trends in population and range, rarity, localised distribution and international importance.
- 2.2.5 Although the BoCC lists confer no legal status in themselves, where any BoCC Red or Amber-listed species are present at a site, their conservation status should be taken into account when determining the likely impacts (and significance) of proposed plans and projects and in determining the level of mitigation that may be required when birds are to be affected by plans or projects.
- 2.2.6 The criteria for birds being included in the BoCC lists are as follows.

Red list species:

- species that are globally threatened (Critically Endangered, Endangered and Vulnerable, but not Near Threatened) under International Union for Conservation of Nature (IUCN) Red List guidelines;
- species that have shown a historical decline in breeding populations, declining severely between 1800 and 1995 and have subsequently not recovered;
- species that have suffered a severe (>50%) breeding or non-breeding population decline within the UK in either the last 25 years or the longer-term (since 1969); or
- species whose UK range in either the breeding or non-breeding season has declined by more than 50% between respective breeding and non-breeding atlases.

Amber list species:

- species that are threatened in Europe (Critically Endangered, Endangered and Vulnerable, but not Near Threatened as per IUCN Red List Guidelines);
- species that were previously red-listed for historical population decline, followed by an increase of at least 100% over 25 years or the longer-term period;
- species that have suffered a moderate (>25% but <50%) breeding or non-breeding population decline within the UK in either the last 25 years or the longer-term (since 1969);
- species whose UK range in either the breeding or non-breeding season has declined by more than 25% but less than 50% between respective breeding and non-breeding atlases;
- breeding or non-breeding rarities (UK population <300 breeding pairs or <900 non-breeding individuals);
- breeding or non-breeding localisation whereby more than 50% of the UK population was found at ten or fewer sites in either the breeding or the non-breeding season; or
- breeding or non-breeding international importance whereby the UK holds at least 20% of the European population in either the breeding or the non-breeding season of a particular species.

¹¹ <https://www.bto.org/our-science/publications/birds-conservation-concern>

¹² Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. *British Birds* 114: 723-747

Green list species:

- species that are not showing moderate or severe declines and do not qualify under any of the above criteria, typically including all commonly occurring birds in the UK.

3 Methods

3.1 Characterising the baseline

3.1.1 Within this report, the baseline for birds was characterised using the following terminology, which is used when referring to the geographic areas within which assessments were made:

- Study Area – the area within the Site and up to 10 km from the Site which was subject to collection of background information e.g. locations of internationally designated sites (10km) or desk study records for birds (2km);
- Zone of Influence (Zol) – the area over which birds may be affected by the Proposed Development. It is important to recognise that the potential Zol of the Proposed Development may vary over time (e.g., the construction zone of influence may differ from the operational zone of influence) and/or depending on the individual sensitivities of different ecological features. The Zol was determined through review of likely impacts of the Proposed Development and results of the desk study, which was then used to define the scope of field surveys; and
- Survey Area – this is the area within which the field survey work for birds was undertaken. For intertidal surveys (as presented in Figures 1.1-1.19 and 2 in Annex C) this included the intertidal areas of the Proposed Development (on both the Tilbury Site and the Gravesend Site) with the addition of a 500 m survey radius. Surveys of terrestrial areas for non-breeding and breeding birds were undertaken within the Site, with the addition of a 100m survey radius. However, for breeding bird species of greater conservation value and/or higher sensitivity, e.g. those listed on Annex 1 of the EU Birds Directive and sensitive to potential noise or visual disturbance, where any such species were recorded, the Survey Area was extended up to 200 m from the Site.

3.2 Desk Study

3.2.1 A desk study was completed to identify statutory and non-statutory designated sites and notable species potentially relevant to the assessment of the Proposed Development. Sources of information used to inform this desk study, which are relevant to birds included:

- identifying, through searching the MAGIC¹³ website, sites of international nature conservation value (Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites) within 10 kilometres (km) of the Site and statutorily designated sites of national nature conservation value, e.g. Sites of Special Scientific Interest (SSSIs) and Local Nature Reserves (LNRs) within 2 km of the Site, where birds are noted as the, or one of the qualifying features;
- obtaining records of protected and/or notable species recorded within a 2km radius of the Proposed Development from Essex Field Club and Kent¹⁴ and Medway Biological Records Centre (KMBRC)¹⁵ in support of the PEA (ES Volume VI Appendix 7.10); and
- reviewing Wetland Bird Survey (WeBS) data for the Thames Estuary, the count sector for which the Site sits in. WeBS is a joint scheme run by the British Trust for Ornithology (BTO), the Wildfowl & Wetlands Trust (WWT), Royal Society for the Protection of Birds (RSPB) and Joint Nature Conservation Committee (JNCC) to monitor non-breeding waterbirds in the UK. Given that the populations of waterbirds presented in the designated sites citations are based on data from approaching twenty years old, it is appropriate to consider these cited populations in the context of up to date population information, where available. Current trends, based on the most recent species and assemblage five-year peak means, as presented by WeBS, are considered in relation to species cited on the relevant designations.

3.2.2 Furthermore, sections of the Tilbury and Gravesend sites have been subject to surveys in recent years to provide baseline information for Development Consent Order (DCO) applications. Therefore, a review of publicly available information collected in support of nearby large-scale

¹³ MAGIC (defra.gov.uk)

¹⁴ Essex Field Club (2022) Datasearch Report Ref: EFC5454 28-11-2022

¹⁵ Kent and Medway Biological Records Centre (2022) Records Search Ref: ENQ/22/506

infrastructure developments has been undertaken, including a search for relevant ornithological survey data in planning documentation for the following developments:

- Tilbury 2¹⁶ - surveys undertaken in 2016/2017, within the intertidal areas to the immediate west of and overlapping with the Tilbury Site;
- Thurrock Flexible Generation Plant¹⁷ - surveys undertaken in 2019/2020, within the intertidal areas to the immediate east of and overlapping with the Tilbury Site; and
- Lower Thames Crossing¹⁸ - surveys undertaken between 2017 and 2019 of intertidal areas c. 4-500m east (at their closest point) of the Site. Furthermore, walkover surveys of terrestrial areas were undertaken as part of this project¹⁹, covering Tilbury Power Station and Shorne Marshes which are adjacent to the Tilbury Site and Gravesend Site.

3.2.3 Additionally, surveys of breeding birds have been undertaken on behalf of Natural England, along the North Thames Estuary and Marshes in 2022²⁰, with survey routes and transects covering the terrestrial areas of the Tilbury Site. Therefore, these data were reviewed for relevant survey information pertaining to the terrestrial areas of the Tilbury Site.

3.3 Field Survey

3.3.1 AECOM employed multiple survey methods to capture baseline data for a range of bird species and species groups across the Site. This section summarises the survey methods, survey period and the purpose of the survey. Metadata (such as survey dates, weather conditions and survey times) for all surveys is provided in Annex A.

Intertidal survey for waterbirds

3.3.2 Surveys of the intertidal mudflats within the Survey Area were undertaken to identify the temporal and spatial distribution of waterbirds occurring within the Survey Area.

3.3.3 Spatial data was collected on a monthly basis between October 2022 and March 2023 and between June and September 2023, with two types of count data collected:

- high water roost counts (one high-water count per month); and
- low water feeding counts (one low-water count per month).

3.3.4 Tide tables were used to confirm the start and end times of these counts and at high water the Survey Area was visited sequentially, and a single count of all species present undertaken within the two-hour period either side of high water. At low water, the Survey Area was visited sequentially and counts of waterbirds feeding on the intertidal mud undertaken. The intertidal survey was undertaken from suitable vantage points to observe all waterbirds in the Survey Area without causing undue disturbance. As the Site is a linear area with good visibility, birds could be observed from distance to avoid disturbance and to ensure that if any moved they were not double-counted. In addition, this allowed for any observations of waterbirds using terrestrial areas for roosting at high water.

3.3.5 All waterbirds and their numbers and distribution were recorded on both the rising and falling tide, where possible. The location and extent of flocks and individual waterbirds were recorded directly into survey base maps of the Site (and adjacent land). Birds were either plotted as individual counts at a location or as a flock, the extent of which could be plotted directly onto the base map in the field. The ornithologists undertaking the survey were proficient in the use of this method and equipment having undertaken such surveys on numerous occasions previously around the UK on coastal, estuarine and inland terrestrial and wetland sites. This is a robust and reliable method for recording birds and plotting their distribution.

¹⁶ [Tilbury2 | National Infrastructure Planning \(planninginspectorate.gov.uk\)](https://planninginspectorate.gov.uk/tilbury2/)

¹⁷ [Thurrock Flexible Generation Plant | National Infrastructure Planning \(planninginspectorate.gov.uk\)](https://planninginspectorate.gov.uk/thurrock-flexible-generation-plant/)

¹⁸ [Lower Thames Crossing | National Infrastructure Planning \(planninginspectorate.gov.uk\)](https://planninginspectorate.gov.uk/lower-thames-crossing/)

¹⁹ <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010032/TR010032-001723-6.2%20Environmental%20Statement%20Figure%208.10%20-%20Ornithology%20Survey%20Areas.pdf>

²⁰ Natural England (2023). North Thames Estuary and Marshes Breeding Bird Survey, first published August 2023. Natural England commissioned report NECR472.

Non-breeding birds

- 3.3.6 In addition to the surveys of the intertidal areas, walkover surveys of terrestrial areas within the Site were undertaken between November 2022 and March 2023 to record non-breeding (wintering) bird species and assemblages. The survey was based on transect methods following Bibby et al.²¹ (and Gilbert et al.²² and is similar to that used in the surveys for breeding birds (see below) as birds encountered visually or by sound, either within the Survey Area or flying over the Survey Area, were recorded. The survey method allowed all species to be recorded, including waders, wildfowl and Priority Species.
- 3.3.7 A survey route was walked on a monthly basis between November 2022 and March 2023, with five monthly survey visits undertaken. Surveys were undertaken during appropriate weather conditions for surveying when the weather was dry and with little to no wind.
- 3.3.8 On each visit the route was walked at a slow pace with start and finish times noted. All birds seen and heard were recorded directly onto paper maps or an ArcGIS base map using 'Field Maps' software on hand-held PDA devices, with a 1:10,000 scale Ordnance Survey base map of the Survey Area. Registrations of birds was recorded using standard British Trust for Ornithology (BTO) two letter species codes.

Breeding Birds

- 3.3.9 Within the areas of terrestrial habitat at and surrounding the Proposed Development, surveys for breeding birds were based on a standard territory mapping methodology for surveying breeding birds as detailed in Bibby et al. (2000) and Gilbert et al. (1998). This method is based on the principle that many species during the breeding season are territorial. This is found particularly amongst passerines, where territories are often marked by conspicuous song, display and periodic disputes with neighbouring individuals.
- 3.3.10 A survey route was walked at a slow pace and regular stopping points were included along the survey route to record any species that may be using or passing through the Survey Area. Survey routes were mapped, and the direction walked alternated on each visit, to ensure that all areas are covered at various times of day across the duration of the survey. Surveys were undertaken early in the morning, commencing just after sunrise and finishing before midday. A total of three survey visits were undertaken between June and July 2023.
- 3.3.11 Registrations of birds were recorded using BTO two letter species codes. Specific codes were used to record bird behaviour, including singing, calling, flights and movements between areas, carrying food, nest building, aggressive encounters, and other bird behaviour.

3.4 Assessment criteria

- 3.4.1 The assessment of the ornithological importance of the Site for non-breeding and breeding species and of birds using the intertidal areas of the Site was made by evaluating any species afforded special statutory protection or those included on one, or more, of the lists of species of conservation interest, as detailed in section 2 of this report.
- 3.4.2 For non-breeding and breeding bird species, these include:
- species listed on Annex 1 of the EU Birds Directive²³;
 - breeding bird species listed on Schedule 1 of the WCA, 1981 (as amended)²⁴;
 - priority bird species in the UK²⁵;

²¹ Bibby, C.J., Burgess, N.D. and Hill, D.A. (1992). Bird Census Techniques. The University Press, Cambridge

²² Gilbert G., Gibbons D.W., and Evans J. (1998). Bird Monitoring Methods: A manual of techniques for key UK species. RSPB, Bedfordshire.

²³ EC (2009). Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (codified version). EC, Brussels.

²⁴ HMSO (1981, as amended); 'The Wildlife and Countryside Act 1981'. The Stationery Office, <http://www.legislation.gov.uk/ukpga/1981/69/contents>

²⁵ JNCC (2007); UK Biodiversity Action Plan. List of UK BAP Priority Bird Species

- species included in the Birds of Conservation Concern (BoCC) Red and Amber Lists²⁶;
- species included on the KNPBS²⁷ (relevant to the Gravesend Site only); and
- species abundance and diversity within the Survey Area.

3.4.3 For intertidal species, given the location of the Site and its proximity to designated sites of international importance, it is also appropriate to consider the importance of the Site to birds in the context of the waterbird assemblages of these designated sites (as detailed in section 4 of this report), for example, do recorded numbers of birds represent a significant proportion of the designated site population, i.e., 1%. Further to this a comparison to the BTO's WeBS Alerts was also made. The WeBS Alerts system provides a method of identifying changes in numbers of waterbirds and provides a review of the status of species on sites in the UK which are designated due to their conservation value for non-breeding waterbirds (including The Thames Estuary and Marshes SPA). Species that have undergone changes in numbers are identified, through the issue of 'alerts'. Species trends are assessed over the short-, medium-, and long-terms (5, 10 and up to 25 year respectively). Where declines exceed 50%, High-Alerts are issued and where declines lie between 25% and 50%, Medium-Alerts are issued. Considering these alerts in the context of the species recorded during AECOM surveys provides important background information on the trends of species populations and the existing pressures that the populations may already be experiencing. This is important as it could determine how sensitive the species may be to the potential impacts of the Proposed Development and the reaction of these populations to these impacts.

3.5 Assumptions and Limitations

Desk Study

3.5.1 The desk study aims to assess the baseline context of the Proposed Development and provides valuable background information that would not be captured by site surveys alone. Desk study data, obtained through a data search, are dependent upon people and organisations submitting records for the area of interest. As such, a lack of records for a particular species does not necessarily mean that those species do not occur in the study area. Likewise, the presence of records for species does not automatically mean that these still occur within the area of interest or are relevant in the context of the proposed development/works.

Survey Areas

3.5.2 Whilst standardised survey buffers for assessing the impacts of development on bird populations do not exist, the Survey Areas used (as described above) provide information on birds both within the Site and the area immediately surrounding the Site, including areas contiguous with the Site where birds may potentially be adversely affected. Therefore, the Survey Areas set out above are sufficient in determining the likely impacts of the Proposed Development on the majority of bird species occurring or likely to occur within the vicinity of the Site.

Intertidal survey for waterbirds

3.5.3 Surveys for intertidal waterbirds were undertaken between October 2022 and March 2023; and between June and September 2023. No surveys for intertidal birds were undertaken in April or May 2023, or during a high tide period in June 2023, however, the wealth of data set out in Section 4.3 is sufficient in aiding the characterisation of the baseline conditions, such that the absence of project survey data for the months of April and May is not a constraint to characterising the temporal use of intertidal areas relevant to the Proposed Development.

²⁶ BTO (2021). Birds of Conservation Concern 5. <https://www.bto.org/sites/default/files/publications/bocc-5-a5-4pp-single-pages.pdf>

²⁷ Kent Nature Partnership (2020) Kent Nature Partnership Biodiversity Strategy 2020 to 2045. Available at <https://kentnature.org.uk/wp-content/uploads/2022/01/Kent-Biodiversity-Strategy-2020.pdf>

Non-breeding birds

- 3.5.4 Surveys of non-breeding birds were undertaken within accessible terrestrial habitats of the Site. Although, there were some limitations to access and changes were made to the Site extents during and post surveys, the survey area was viewable from accessed areas and as such, all relevant species could be and were recorded.

Breeding birds

- 3.5.5 To account for the surveys of breeding birds commencing in June a precautionary approach was taken to establishing the breeding assemblage, with it being assumed that a confirmed territory was present for any species recorded within the terrestrial habitats of the Site and showing any breeding behaviour, i.e., recorded singing; were in suitable habitat; agitated behaviour/anxiety calls from adults (suggesting the presence of a nest or young nearby); or juvenile birds were recorded. Therefore, the absence of AECOM surveys during the first half of the breeding season is not considered a limitation on the efficacy of the survey. In addition, recent surveys undertaken on behalf of Natural England for the North Thames Estuary and Marshes (which in part overlaps the Site) provide further detailed data for the full breeding season. As such, the combined datasets provide a robust baseline for characterising the breeding bird assemblage of the Site.

4 Results

4.1 Desk Study – Designated Sites

- 4.1.1 The desk study identified the following international and nationally designated sites of relevance to the assessment of birds. These are:
- Thames Estuary and Marshes Ramsar Site and SPA, located 1.9km to the east of the Tilbury Site and sited adjacent to the Gravesend Site; and
 - South Thames Estuary and Marshes Site of Special Scientific Interest (SSSI), located 1.6km south of the Tilbury Site and 0.5km south of the Gravesend Site.
- 4.1.2 The following sections in this report summarise the ornithological interest features of the Thames Estuary and Marshes Ramsar site and SPA and the South Thames Estuary and Marshes SSSI.
- 4.1.3 The legal list of qualifying species, for which a SPA is selected and managed, is given on the relevant SPA citation, but a review of the UK network of SPAs was co-ordinated by Joint Nature Conservation Committee (JNCC) in the late 1990s. Following formal submission to, and agreement by, relevant Ministers, the results were published in 2001.
- 4.1.4 However, it has taken time to revise all the relevant SPA citations in light of the review. Therefore, where there is a discrepancy between species listed in extant citations and listed in the 2001 Review for the same sites, there has been confusion as to the correct list of qualifying species to be used at any site for purposes of management, assessment and development control.
- 4.1.5 At sites where there remain differences between species listed in the 2001 Review and the extant site citation, then the original citations for the relevant sites have been used as the primary source within the evaluation.

Thames Estuary and Marshes SPA

- 4.1.6 The SPA is located on the north and south sides of the Thames Estuary in southern England. The marshes extend for about 15 km along the south side of the estuary and also include intertidal areas on the north side of the estuary. To the south of the river, much of the area is brackish grazing marsh, although some of this has been converted to arable use. At Cliffe, there are flooded clay and chalk pits, some of which have been infilled with dredgings. Outside the sea wall, there is a small extent of saltmarsh and broad intertidal mud-flats. The estuary and adjacent grazing marsh areas support an important assemblage of wintering waterbirds including grebes, geese, ducks and waders. The site is also important in spring and autumn migration periods.
- 4.1.7 Table 1 presents the qualifying interest features listed in the citation report (2000) for the SPA.

Table 1: Thames Estuary and Marshes SPA qualifying species and 5-year peak mean counts (taken from the original citation)

Article 4.1 Qualifying Species ²⁸	Five-year peak mean
Avocet <i>Recurvirostra avosetta</i>	283 individuals (5-year peak mean for 1993/94 to 1997/98)
Hen Harrier <i>Circus cyaneus</i>	seven individuals (5-year peak mean for 1993/94 to 1997/98)
Article 4.2 Qualifying Species ²⁹	
Ringed Plover <i>Charadrius hiaticula</i>	1,324 individuals (5-year peak mean for 1993/94 to 1997/98)
Grey Plover <i>Pluvialis squatarola</i>	2,593 individuals (5-year peak mean for 1993/94 to 1997/98)
Dunlin <i>Calidris alpina</i>	29,646 individuals (5-year peak mean for 1993/94 to 1997/98)
Knot <i>Calidris canutus</i>	4,848 individuals (5-year peak mean for 1993/94 to 1997/98)
Black-tailed Godwit <i>Limosa limosa (islandica)</i>	1,699 individuals (5-year peak mean for 1993/94 to 1997/98)
Redshank <i>Tringa totanus</i>	3,251 individuals (5-year peak mean for 1993/94 to 1997/98)
Waterfowl Assemblage ³⁰	Over winter, the area regularly supports 75,019 individual waterfowl (5-year peak mean 1991/92 to 1995/96)

4.1.8 The JNCC SPA review, although having no current legal standing, also includes information on the Thames Estuary and Marshes SPA and lists the qualifying features as:

- This site qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive: Over winter:
 - **Avocet**, 276 individuals representing at least 21.7% of the wintering population in Great Britain (5-year peak mean 1991/2 - 1995/6); and
 - **Hen Harrier**, seven individuals representing at least 0.9% of the wintering population in Great Britain (5-year mean 93/4-97/8).
- This site also qualifies under Article 4.2 of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species:

On passage:

- **Ringed Plover**, 559 individuals representing at least 1.1% of the Europe/Northern Africa - wintering population (5-year peak mean 1991/2 - 1995/6).

Over winter:

- **Ringed Plover**, 541 individuals representing at least 1.1% of the wintering Europe/Northern Africa - wintering population (5-year peak mean 1991/2 - 1995/6).
- The area qualifies under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl.
 - Over winter, the area regularly supports 33,433 individual waterfowl (5-year peak mean 1991/2 - 1995/6) including: Redshank, Black-tailed Godwit, Dunlin, Lapwing *Vanellus vanellus*, Grey Plover, Shoveler *Anas clypeata*, Pintail *Anas acuta*, Gadwall *Anas strepera*, Shelduck *Tadorna tadorna*, White-fronted Goose *Anser albifrons*, Little Grebe *Tachybaptus ruficollis*, Ringed Plover, Avocet and Whimbrel *Numenius phaeopus*.

Thames Estuary and Marshes SPA Conservation Objectives

4.1.9 The Conservation Objectives for the SPA were revised and published by Natural England on 21st February 2019 and are as follows:

²⁸ The site qualifies under Article 4.1 of the Wild Birds Directive (2009/147/EC) as it is used regularly by 1% or more of the GB populations of the following species listed on Annex I, in any season.

²⁹ The site qualifies under article 4.2 of the Directive (79/409/EEC) as it is used regularly by 1% or more of the biogeographical populations of the following regularly occurring migratory species (other than those listed on Annex I), in any season.

³⁰ The site qualifies under article 4.2 of the Directive (79/409/EEC) as it is used regularly by over 20,000 waterfowl in any season.

4.1.10 “With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the ‘Qualifying Features’ listed below), and subject to natural change:

- Ensure that the integrity of the site is maintained or restored as appropriate and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:
 - the extent and distribution of the habitats of the qualifying features;
 - the structure and function of the habitats of the qualifying features;
 - the supporting processes on which the habitats of the qualifying features rely;
 - the population of each of the qualifying features; and
 - the distribution of the qualifying features within the site.

4.1.11 The qualifying features of the SPA are listed as:

- Hen Harrier (Non-breeding);
- Avocet (Non-breeding);
- Ringed Plover (Non-breeding);
- Grey Plover (Non-breeding);
- Knot (Non-breeding);
- Dunlin (Non-breeding);
- Black-tailed Godwit (Non-breeding);
- Redshank (Non-breeding); and
- waterbird assemblage”.

Thames Estuary and Marshes Ramsar Site

4.1.12 Ramsar sites are wetlands of international importance designated under the International Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention).

4.1.13 Table 2 presents the qualifying features under the relevant Ramsar criteria.

Table 2: Thames Estuary and Marshes Ramsar Site qualifying species and 5-year peak mean

Criterion 5 – Assemblages of international importance	
Species with peak counts in winter: 45,118 waterfowl (5-year peak mean 1998/99-2002/03).	
Criterion 6 – Species / populations occurring at levels of international importance.	
Species with peak counts in spring/autumn	
Ringed Plover	595 individuals (5-year peak mean 1998/99-2002/03)
Black-tailed Godwit	1,640 individuals (5-year peak mean 1998/99-2002/03)
Species with peak counts in winter	
Grey Plover	1,643 individuals (5-year peak mean 1998/99-2002/03)
Knot	7,279 individuals (5-year peak mean 1998/99-2002/03)
Dunlin	15,171 individuals (5-year peak mean 1998/99-2002/03)
Redshank	1,178 individuals (5-year peak mean 1998/99-2002/03)
‘Noteworthy fauna’ - Species currently occurring at levels of national importance	
Species with peak counts in spring / autumn	
Little Grebe,	251 individuals (5-year peak mean 1998/99-2002/03)
Little Egret <i>Egretta garzetta</i> ,	54 individuals (5-year peak mean 1998/99-2002/03)
Ruff <i>Philomachus pugnax</i>	23 individuals (5-year peak mean 1998/99-2002/03)

Greenshank <i>Tringa nebularia</i>	38 individuals (5-year peak mean 1998/99-2002/03)
Species with peak counts in winter	
Shelduck	1,238 individuals (5-year peak mean 1998/99-2002/03)
Gadwall	359 individuals (5-year peak mean 1998/99-2002/03)
Shoveler	288 individuals (5-year peak mean 1998/99-2002/03)
Water Rail <i>Rallus aquaticus</i>	6 individuals (5-year peak mean 1998/99-2002/03)
Avocet	607 individuals (5-year peak mean 1998/99-2002/03)
Spotted Redshank <i>Tringa erythropus</i>	6 individuals (5-year peak mean 1998/99-2002/03)

South Thames Estuary and Marshes SSSI

4.1.14 The statutory nature conservation agencies have a duty under the Wildlife and Countryside Act 1981, as amended, to notify any land which in their opinion is 'of special interest by reason of any flora, fauna, or geological or physiographical features'. Such areas are known as Sites of Special Scientific Interest (SSSI).

4.1.15 The notification for the South Thames Estuary and Marshes SSSI states:

'The South Thames Estuary and Marshes SSSI from Gravesend to the eastern end of the Isle of Grain forms a major component of the Greater Thames Estuary. The site consists of an extensive mosaic of grazing marsh, saltmarsh, mudflats and shingle characteristic of the estuarine habitats of the north Kent marshes.

The site supports outstanding numbers of waterfowl with total counts regularly exceeding 20,000. Many species regularly occur in nationally important numbers and some species regularly use the site in internationally important numbers. The breeding bird community is also of particular interest. The diverse habitats within the site support a number of nationally rare and scarce invertebrate species and an assemblage of nationally scarce plants.

The mudflats attract large numbers of feeding waders and wildfowl with the site being regularly used by Redshank in internationally important numbers. There is evidence from recent winter low-water counts that Knot and Dunlin exceed internationally important numbers when feeding on the mudflats. These counts also indicate that Avocet and Ringed Plover regularly exceed nationally important numbers'.

4.2 Desk Study – WeBS data

4.2.1 Data from the WeBS online portal for the Thames Estuary was reviewed to provide context of the wider area and to support the results of the field surveys undertaken by AECOM.

4.2.2 The most recent WeBS core count data available (2017/18–2021/22) were reviewed for the Thames Estuary and these data provide the most up to date populations for waterbirds occurring within the Thames Estuary, although it is important to note that the count sector boundaries do not match exactly the boundaries of the designated sites. It should also be noted that there are a number of count sectors within the Thames Estuary which have not been subject to counts in the five-year period considered here (2017/18–2021/22), so the five-year peak means presented here are considered incomplete.

Table 3: WeBS Core Count data (2017/18–2021/22) for waterbird species cited on the Thames Estuary and Marshes Ramsar / SPA

Thames Estuary and Marshes SPA / Ramsar citation species	Thames Estuary 5-year peak mean (2017/18–2021/22), taken from WeBS online
Avocet	3,804
Black-tailed Godwit	6,629
Dunlin	22,402
Gadwall	494

Thames Estuary and Marshes SPA / Ramsar citation species	Thames Estuary 5-year peak mean (2017/18–2021/22), taken from WeBS online
Greenshank	61
Grey Plover	1,955
Knot	22,859
Lapwing	7,938
Little Grebe	388
Little Egret	426
Pintail	140
Redshank	2,275
Ringed Plover	738
Ruff	7
Shelduck	1,722
Shoveler	834
Spotted Redshank	7
Water Rail	17
White-fronted Goose	60
Whimbrel	64

4.3 Desk Study - Relevant Data From Other Projects

4.3.1 This section presents relevant ornithological survey data from adjacent and overlapping projects and is being used to provide historical context of the waterbird species and assemblages using the Site and to support the results of the field surveys undertaken by AECOM.

Tilbury 2

4.3.2 Surveys of the intertidal area by the former Tilbury power station, on the north side of the Thames, were undertaken as part of the Tilbury 2 (T2) project³¹ between November 2016 and March 2017; and again in September and October 2017. Where their survey compartment datasets overlap with the Tilbury Site, these data have been extracted from the relevant planning application on the PINS website³²³³³⁴. The relevant survey compartment references that were used for the Tilbury 2 project include IT5, IT6, IT7 and IT8 which cover the intertidal areas, E6, E7 and E8 which cover the estuary and J2, J2a and J3 which cover the jetties. Data from these areas have been summed per survey visit to present peak count data for the area of interest. Data from outside of the areas of interest, i.e. the Tilbury Site Survey Area, have not been included.

4.3.3 The peak counts of all waterbird species recorded are presented in Table 4.

Table 4: Peak counts of waterbird species recorded for the Tilbury 2 project and occurring within the Tilbury Site

Species	Relevant Conservation Status (where applicable)	Nov 2016	Dec 2016	Jan 2017	Feb 2017	Mar 2017	Sep 2017	Oct 2017	Peak Count
Black-headed Gull	BoCC Amber	101	24	1	74	209	321	169	209

³¹ <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR030003/TR030003-000213-6.1%20Environmental%20Statement.pdf>

³² <https://infrastructure.planninginspectorate.gov.uk/projects/south-east/tilbury2/>

³³ [https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR030003/TR030003-000426-6.3%20Figures%20and%20Drawings%20-%20Figure%2010.12%20Wintering%20bird%20survey%20compartments%20\(2016-17\).pdf](https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR030003/TR030003-000426-6.3%20Figures%20and%20Drawings%20-%20Figure%2010.12%20Wintering%20bird%20survey%20compartments%20(2016-17).pdf)

³⁴ [https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR030003/TR030003-000236-ES%20Appendix%2010.1%20Wintering%20bird%20survey%20results%20by%20compartment%20\(2016-17\).pdf](https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR030003/TR030003-000236-ES%20Appendix%2010.1%20Wintering%20bird%20survey%20results%20by%20compartment%20(2016-17).pdf)

Species	Relevant Conservation Status (where applicable)	Nov 2016	Dec 2016	Jan 2017	Feb 2017	Mar 2017	Sep 2017	Oct 2017	Peak Count
Black-tailed Godwit	SPA / Ramsar species, BoCC Red	-	-	-	-	-	4	-	4
Common Gull	BoCC Amber	-	4	1	-	-	-	-	4
Common Sandpiper	BoCC Amber	-	-	-	-	-	1	-	1
Cormorant	-	-	-	-	2	-	1	1	2
Curlew	BoCC Red	13	31	3	-	20	-	2	31
Dunlin	SPA / Ramsar species, BoCC Red	-	-	1	-	-	33	3	33
Gadwall	SPA / Ramsar species, BoCC Amber	-	-	29	-	-	-	-	29
Great Black-backed Gull	BoCC Amber	-	1	-	-	-	-	3	3
Grey Heron	-	-	-	-	-	-	1	-	1
Grey Plover	SPA / Ramsar species, BoCC Amber	-	-	2	-	-	-	-	2
Herring Gull	BoCC Red	-	-	-	-	-	1	-	1
Little Egret	Annex I species, SPA / Ramsar species	-	2	-	-	-	-	-	2
Little Gull	-	-	-	-	-	-	1	-	1
Mallard	BoCC Amber	20	27	72	75	24	56	72	75
Oystercatcher	BoCC Amber	-	-	-	1	4			4
Redshank	SPA / Ramsar species, BoCC Amber	9	12	2	-	-	1	1	12
Ringed Plover	SPA / Ramsar species, BoCC Red	-	-	-	-	-	10	44	44
Shelduck	SPA / Ramsar species, BoCC Amber	-	-	9	-	10	-	-	10
Teal	BoCC Amber	50	93	48	26	15	-	-	93
Turnstone	BoCC Amber	-	-	1	-	-	-	-	1

Source: Proposed Port Terminal at Former Tilbury Power Station: Tilbury 2. Environmental Statement Volume 6 Part A.

Notes on Tables 5: SPA / Ramsar species - species listed on the citations for Thames Estuary and Marshes SPA / Ramsar (either qualifying or noteworthy species). BoCC – species listed on the Red or Amber lists of Birds of Conservation Concern 5.

Thurrock Flexible Generation Plant

- 4.3.4 As part of the Thurrock Flexible Generation Plant (TFGP) project, surveys were undertaken of the intertidal area between September 2019 and March 2020. Where survey compartment datasets from the TFGP project overlap with the Tilbury Site, these data have been extracted from the relevant planning application on the PINS website³⁵. The relevant survey compartment references that were used from the TFGP project are 1a (which covered areas inland of the intertidal area), 1b (the intertidal area) and 1c (the estuary). The peak count of waterbird species recorded within compartments 1a, 1b and 1c, taken directly from the survey report²⁹ which had summed the data for

³⁵ [https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010092/EN010092-001026-Environmental%20Statement%20Volume%206%20Appendix%209.4%20-%20Foreshore%20Wintering%20Bird%20Surveys%202019-2020%20\(Nov%202020\).pdf](https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010092/EN010092-001026-Environmental%20Statement%20Volume%206%20Appendix%209.4%20-%20Foreshore%20Wintering%20Bird%20Surveys%202019-2020%20(Nov%202020).pdf)

each survey visit, are presented in Table 5. Data from outside of the areas of interest, i.e. the Tilbury Site Survey Area, have not been included.

Table 5: Peak counts of waterbird species recorded for the Thurrock Flexible Generation Plant project and occurring within the Tilbury Site

Species	Relevant Conservation Status (where applicable)	Peak Count
Avocet	Annex I species, SPA/Ramsar species, BoCC Amber	49
Black-headed Gull	BoCC Amber	240
Black-tailed Godwit	SPA/Ramsar species, BoCC Red	2
Common Gull	BoCC Amber	6
Common Sandpiper	BoCC Amber	1
Cormorant	-	2
Curlew	BoCC Red	27
Dunlin	SPA/Ramsar species, BoCC Red	124
Gadwall	SPA/Ramsar species, BoCC Amber	11
Great Black-backed Gull	BoCC Amber	7
Green Sandpiper	BoCC Amber	1
Grey Heron	-	1
Herring Gull	BoCC Red	19
Kingfisher	Annex 1 species	1
Lesser Black-backed Gull	BoCC Amber	2
Mallard	BoCC Amber	60
Oystercatcher	BoCC Amber	6
Redshank	SPA/Ramsar species, BoCC Amber	5
Ringed Plover	SPA/Ramsar species, BoCC Red	65
Shelduck	SPA/Ramsar species, BoCC Amber	8
Teal	BoCC Amber	35
Wigeon	BoCC Amber	6
Yellow-legged Gull	BoCC Amber	3

Source: Thurrock Flexible Generation Plant Appendix 9.4 Environmental Statement Volume 6 2020

Notes on Tables 5: SPA / Ramsar species - species listed on the citations for Thames Estuary and Marshes SPA / Ramsar (either qualifying or noteworthy species). BoCC – species listed on the Red or Amber lists of Birds of Conservation Concern 5.

Lower Thames Crossing

4.3.5 A programme of intertidal vantage point (VP) surveys of the intertidal area to the east of the Site were undertaken as part of the Lower Thames Crossing (LTC) project between 2017 and 2019. Whilst the VP locations for the project are to the east of the Site (the closest relevant VP's to the Site being NW on the north bank of the River Thames (c.500m east of the Tilbury Site) and SW, on the south bank (c400m east of the Gravesend Site)), peak count data (derived from the highest total number of individuals recorded during a single hour-long count across five VP locations) of bird species have been extracted (note, these data are not broken down in the LTC report into separate survey locations) and are presented in Table 6. These data, although not overlapping with the Tilbury

Site or Gravesend Site have been used to present the importance of the intertidal areas to the east of the Site and have been reviewed alongside the distribution maps for the individual species³⁶.

Table 6: Peak counts of SPA / Ramsar or notable bird species recorded during intertidal VP surveys for the LTC project

Species	Relevant Conservation Status	Overall Peak Count
Avocet	Annex I species, SPA/Ramsar species, BoCC Amber	830
Black-tailed godwit	SPA / Ramsar species, BoCC Red	1,372
Common Tern	Annex I species, BoCC Amber	42
Dunlin	SPA / Ramsar species, BoCC Red	1,575
Gadwall	SPA qualifying species, Ramsar species, BoCC Amber	3
Golden Plover	Annex 1 species	2
Grey Plover	SPA / Ramsar species, BoCC Amber	56
Knot	SPA / Ramsar species, BoCC Amber	21
Lapwing	SPA / Ramsar species, BoCC Red	130
Lesser black-backed Gull	BoCC Amber	1
Little Egret	Annex 1 species, Ramsar species	8
Little Grebe	SPA species	1
Pochard	BoCC Red	1
Redshank	SPA / Ramsar species, BoCC Amber	122
Ringed Plover	SPA / Ramsar species, BoCC Red	162
Ruff	Annex I species, SPA / Ramsar species, BoCC Red	2
Shelduck	SPA qualifying species, Ramsar species, BoCC Amber	129
Shoveler	SPA qualifying species, Ramsar species, BoCC Amber	11
Whimbrel	SPA qualifying species, BoCC Red	10

Source: Lower Thames Crossing 6.3 Environmental Statement Appendices Appendix 8.7 – Ornithology

Notes on Tables 5: SPA / Ramsar species - species listed on the citations for Thames Estuary and Marshes SPA / Ramsar (either qualifying or noteworthy species). BoCC – species listed on the Red or Amber lists of Birds of Conservation Concern 5.

4.4 Field Survey

4.4.1 This section presents the results of field surveys undertaken by AECOM between October 2022 and September 2023.

Intertidal surveys for waterbirds

4.4.2 Thirty-three waterbird species were recorded using the intertidal survey area between October 2022 and September 2023. Additionally, Marsh Harrier was recorded flying over the Tilbury Site intertidal Survey Area and 65 unidentified terns were recorded flying mid-channel along the River Thames. Individually, 28 waterbird species were recorded using the intertidal area of the Tilbury Site (and Marsh Harrier); and 23 waterbird species were recorded using the intertidal area of the Gravesend Site. Details of these are presented in Table 7 alongside their peak counts. Given the location of the Site and its proximity to designated sites of international importance, it is appropriate to consider the importance of the Site to birds recorded in the survey area in the context of the waterbird assemblages of these designated sites.

³⁶ <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010032/TR010032-001425-6.3%20Environmental%20Statement%20Appendix%208.7%20-%20Ornithology.pdf>

4.4.3 Table 7 therefore summarises the maximum counts recorded for species recorded during the intertidal surveys, with those species included as a component species of the Thames Estuary and Marshes SPA / Ramsar, included in bold. Data are also provided for the International and Great Britain 1% threshold criteria (used to assess the importance of wetlands) and the SPA / Ramsar citation.

4.4.4 Spatial distribution figures for species cited on the Thames Estuary and Marshes SPA / Ramsar or noted on the designation for the South Thames Estuary and Marshes SSSI are presented for both high and low water periods (see Figures 1.1-1.19, Annex C). These maps have been plotted using the raw species counts occurring in each of the grid squares from the surveys. Therefore, they do not represent a total of individuals across the Site but the peak usage of each 50 m x 50 m grid square by the target species. The maps show the spatial distribution of the individual target species. They highlight those areas that are important to the target species over the low and high water periods.

Table 7: Species peak counts recorded during surveys of the intertidal area at high and low tide

Species	Relevant Conservation Status (where applicable)	Peak Count				Site Peak Count
		Tilbury Site		Gravesend Site		
		Low Tide	High Tide	Low Tide	High Tide	
Canada Goose	-	38	-	-	-	38
Mute Swan	-	-	2	2	-	2
Shelduck	SPA (4.2) / Ramsar species, BoCC Amber	7	-	-	-	7
Gadwall	SPA (4.2) / Ramsar species, BoCC Amber	16	53	17	13	53
Wigeon	BoCC Amber	-	-	34	27	34
Mallard	BoCC Amber	34	42	22	18	42
Teal	BoCC Amber	63	220	14	-	220
Grey Heron	-	1	1	-	-	1
Little Egret	Annex I species, Ramsar species	3	1	-	-	3
Cormorant	-	12	1	2	5	12
Marsh Harrier	Annex I species, BoCC Amber	-	1	-	-	1
Oystercatcher	BoCC Amber	6	2	2	-	6
Avocet	Annex I species, SPA/Ramsar / SSSI species, BoCC Amber	18	7	-	-	18
Lapwing	SPA (4.2) species, BoCC Red	10	10	3	2	10
Grey Plover	SPA / Ramsar species, BoCC Amber	-	1	1	-	1
Ringed Plover	SPA / Ramsar / SSSI species, BoCC Red	-	-	2	-	2
Whimbrel	SPA (4.2) species, BoCC Red	1	-	1	-	1
Curlew	BoCC Red	8	2	1	-	8

Species	Relevant Conservation Status (where applicable)	Peak Count				Site Peak Count
		Tilbury Site		Gravesend Site		
		Low Tide	High Tide	Low Tide	High Tide	
Black-tailed Godwit	SPA / Ramsar species, BoCC Red	51	15	-	-	51
Bar-tailed Godwit	BoCC Amber	1	-	-	-	1
Turnstone	BoCC Amber	2	-	-	-	2
Dunlin	SPA / Ramsar / SSSI species	250	4	5	36	250
Snipe	BoCC Amber	-	-	1	3	3
Common Sandpiper	BoCC Amber	-	-	-	4	4
Green Sandpiper	BoCC Amber	1	-	-	-	1
Redshank	SPA / Ramsar / SSSI	10	20	1	-	20
Black-headed Gull	BoCC Amber	270	392	89	142	392
Mediterranean Gull	Annex I species, BoCC Amber	-	-	5	-	5
Common Gull	BoCC Amber	1	6	2	4	6
Great Black-backed Gull	BoCC Amber	1	1	1	2	2
Herring Gull	BoCC Red	7	9	9	14	14
Yellow-legged Gull	BoCC Amber	1	-	-	1	1
Lesser Black-backed Gull	BoCC Amber	-	1	-	1	1
Common Tern	Annex I species, BoCC Amber	1	-	-	-	1
Unidentified Tern (Common / Arctic)	-	-	-	-	65	65

Non-breeding birds

- 4.4.5 A total of 28 species (including Black Redstart which was recorded on one of the jetties to the immediate west, but >100m from, the Tilbury Site Survey Area) were recorded during the surveys of terrestrial areas for non-breeding birds undertaken between October 2022 and March 2023. Of the 28 species recorded, 22 species were recorded in the Tilbury Site Survey Area (including Black Redstart) and 17 species were recorded in the Gravesend Site Survey Area.
- 4.4.6 For species which are widespread throughout the Survey Area (e.g. Blue Tit *Cyanistes caeruleus*), are common within Kent, Essex and the UK and are not of conservation concern (i.e. not listed on one or more of the lists of conservation concern as detailed in this report), the number of individuals of these species have not been calculated and these are referred to in Table 8 as being present (P).
- 4.4.7 The location of Annex 1 species, Priority species and/ or BoCC Red / Amber-listed bird species are presented in Figure 2 in Annex C.

Table 8: Peak count data and conservation status of non-breeding bird species

Species	Relevant Conservation Status (where applicable)	Peak Count	
		Tilbury Site	Gravesend Site
Canada Goose	-	-	2
Stock Dove	BoCC Amber	4	-

Species	Relevant Conservation Status (where applicable)	Peak Count	
		Tilbury Site	Gravesend Site
Woodpigeon	BoCC Amber	1	5
Kestrel	BoCC Amber	-	1
Magpie	-	P	P
Jackdaw	-	-	P
Rook	BoCC Amber	-	8
Carrion Crow	-	P	P
Blue Tit	-	P	P
Great Tit	-	P	P
Cetti's Warbler	-	2	-
Long-tailed Tit	-	P	-
Wren	BoCC Amber	1	3
Starling	Priority Species, BoCC Red	18	9
Blackbird	-	P	P
Song Thrush	Priority Species, BoCC Amber	1	-
Redwing	BoCC Amber	1	-
Black Redstart*	BoCC Amber	1	-
Robin	-	P	P
Dunnock	Priority Species, BoCC Amber	2	3
Grey Wagtail	BoCC Red	1	-
Pied Wagtail	-	1	-
Meadow Pipit	BoCC Amber	1	-
Rock Pipit	-	2	-
Chaffinch	-	1	8
Linnet	Priority Species, BoCC Red	2	-
Goldfinch	-	P	P
Reed Bunting	Priority Species, BoCC Amber	-	1

Breeding birds

- 4.4.8 A total of 37 species were recorded within the Survey Area during the surveys for breeding birds undertaken between June and July 2023. Of the 37 species recorded, 24 species were recorded in the Tilbury Site Survey Area and 32 species were recorded in the Gravesend Site Survey Area.
- 4.4.9 Of the 37 species recorded within the Survey Area, the breeding assemblage (derived from confirmed and probable / possible territories) was 24 species. The breeding assemblage of the Tilbury Site was 21 species, and the Gravesend Site breeding assemblage is 22 species. Records relating to the remaining 13 species were of non-breeding bird species.
- 4.4.10 A summary of the breeding status, number of breeding territories held, where relevant, and the conservation status of the 37 species recorded within the Survey Area is provided in Table 9.
- 4.4.11 The locations of territories for WCA Schedule 1 species, Priority Species and BoCC Red-listed species are presented in Figures 3.1 and 3.2 in Annex C.

Table 9: Breeding status, number of territories and conservation status of birds recorded within the Survey Area

Species	Relevant Conservation Status (where applicable)	Breeding territory status / Number of territories recorded (where applicable)	
		Tilbury Site	Gravesend Site
Mallard	BoCC Amber	-	Non-breeding
Pheasant	-	Probable (1)	-
Moorhen	BoCC Amber	Probable (1)	Probable (1)
Coot	-	-	Non-breeding
Black-headed Gull	BoCC Amber	Non-breeding	-
Herring Gull	Priority Species, BoCC Red	Non-breeding	-
Stock Dove	BoCC Amber	Non-breeding	-
Woodpigeon	BoCC Amber	Confirmed (4)	Confirmed (4)
Collared Dove	-	-	Confirmed (P)
Swift	BoCC Red	-	Non-breeding
Great Spotted Woodpecker	-	-	Non-breeding
Kestrel	BoCC Amber	-	Confirmed (1)
Carrion Crow	-	Possible (1)	Possible (1)
Blue Tit	-	Confirmed (P)	Confirmed (P)
Great Tit	-	Confirmed (P)	Confirmed (P)
Skylark	Priority Species, BoCC Red	Confirmed (1)	Possible (1)
Cetti's Warbler	WCA Schedule 1	Confirmed (1-2)	Confirmed (1)
Long-tailed Tit	-	-	Confirmed (P)
Chiffchaff	-	Confirmed (P)	Confirmed (P)
Sedge Warbler	BoCC Amber	-	Non-breeding
Reed Warbler	-	Confirmed (P)	Confirmed (P)
Blackcap	-	Confirmed (P)	Confirmed (P)
Lesser Whitethroat	-	Confirmed (P)	-
Whitethroat	BoCC Amber	Confirmed (3-4)	Confirmed (2-3)
Wren	BoCC Amber	Confirmed (4)	Confirmed (1-2)
Starling	Priority Species, BoCC Red	-	Non-breeding
Blackbird	-	Confirmed (P)	Confirmed (P)
Song Thrush	Priority Species, BoCC Amber	Confirmed (2)	Possible (1)
Robin	-	Confirmed (P)	Confirmed (P)
House Sparrow	Priority Species, BoCC Red	-	Non-breeding
Dunnock	Priority Species, BoCC Amber	Confirmed (2-3)	Confirmed (1)
Grey Wagtail	BoCC Red	-	Non-breeding
Chaffinch	-	-	Non-breeding
Greenfinch	BoCC Red	Confirmed (1-2)	Possible (1)
Linnet	Priority Species, BoCC Red	Confirmed (4-5)	Confirmed (2-3)
Goldfinch	-	Confirmed (P)	Confirmed (2-3)
Reed Bunting	Priority Species, BoCC Amber	-	Non-breeding
Number of species	-	24	32
Breeding assemblage	-	21	22

5 Evaluation

5.1 Intertidal birds

5.1.1 The survey data, collected between October 2022 and September 2023 (as presented in Table 7) was evaluated for its importance in the context of the waterbird assemblages of the Thames Estuary and Marshes SPA and Ramsar site and for the most recent data collected by WeBS. Therefore, Table 10 presents the peak counts of waterbird species recorded (in any season and tidal state) within the Survey Area and the percentage of the SPA, Ramsar and most recent WeBS data. Data are also provided for the International and Great Britain (GB) 1% threshold criteria³⁷ which is used to assess the importance of wetlands.

Table 10: Species peak counts and comparison with original Thames Estuary SPA citation figures; alongside current 1% thresholds for national and international importance

Species (English name and scientific name)	Peak Count in any season / tidal state		% of SPA citation (where relevant)		% of Ramsar citation (where relevant)		% of WeBS data for Thames Estuary (where relevant)		GB 1% non-breeding threshold	International 1% threshold
	Tilbury Site	Gravesend Site	Tilbury Site	Gravesend Site	Tilbury Site	Gravesend Site	Tilbury Site	Gravesend Site		
Canada Goose	38	-	-	-	-	-	-	-	-	-
Mute Swan	2	2	-	-	-	-	-	-	500	90
Shelduck	7	-	-	-	0.6	0.0	0.4	0.0	470	2,500
Gadwall	53	13	-	-	14.8	3.6	10.7	2.6	310	1,200
Wigeon	-	34	-	-	-	-	-	-	4,500	14,000
Mallard	42	22	-	-	-	-	-	-	6,700	20,000
Teal	220	14	-	-	-	-	-	-	4,300	5,000
Grey Heron	1	-	-	-	-	-	-	-	450	5,000
Little Egret	3	-	-	-	5.6	0.0	0.7	0.0	110	1,100
Cormorant	12	5	-	-	-	-	-	-	620	1,200
Marsh Harrier	1	-	-	-	-	-	-	-	-	-
Oystercatcher	6	2	-	-	-	-	-	-	2,900	8,200
Avocet	18	-	6.4	0.0	3.0	0.0	0.5	0.0	87	940
Lapwing	10	3	-	-	-	-	0.2	<0.1	6,200	20,000
Grey Plover	1	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	330	2,000
Ringed Plover	-	2	0.0	0.2	0.0	0.3	0.0	0.3	420	540
Whimbrel	1	1	-	-	-	-	1.6	1.6	1*	6,700
Curlew	8	1	-	-	-	-	-	-	1,200	7,600
Black-tailed Godwit	51	-	3.0	0.0	3.1	0.0	0.8	0.0	390	1,100
Bar-tailed Godwit	1	-	-	-	-	-	-	-	500	1,500
Turnstone	2	-	-	-	-	-	-	-	400	1,400
Dunlin	250	36	0.8	0.1	1.6	0.2	1.1	0.2	3,400	13,300
Snipe	-	3	-	-	-	-	-	-	1,000	20,000
Common Sandpiper	-	4	-	-	-	-	-	-	1*	12,000

³⁷ <https://britishbirds.co.uk/wp-content/uploads/2019/07/Brit.-Birds-112-130-145.pdf>

Species (English name and scientific name)	Peak Count in any season / tidal state		% of SPA citation (where relevant)		% of Ramsar citation (where relevant)		% of WeBS data for Thames Estuary (where relevant)		GB 1% non-breeding threshold	International 1% threshold
	Tilbury Site	Gravesend Site	Tilbury Site	Gravesend Site	Tilbury Site	Gravesend Site	Tilbury Site	Gravesend Site		
Green Sandpiper	1	-	-	-	-	-	-	-	3*	20,000
Redshank	20	1	0.6	<0.1	1.7	<0.1	0.9	<0.1	940	2,400
Black-headed Gull	392	142	-	-	-	-	-	-	22,000	20,000
Mediterranean Gull	-	5	-	-	-	-	-	-	40*	2,400
Common Gull	6	4	-	-	-	-	-	-	7,000	16,400
Lesser Black-backed Gull	1	1	-	-	-	-	-	-	1,200	5,500
Yellow-legged Gull	1	1	-	-	-	-	-	-	8	13,900
Herring Gull	9	14	-	-	-	-	-	-	7,300	10,200
Great Black-backed Gull	1	2	-	-	-	-	-	-	760	3,600
Common Tern	1	-	-	-	-	-	-	-	-	1,800

Notes: * - when the 1% threshold is below 50 birds, 50 is normally used as the minimum qualifying threshold for the designation of sites of importance (Stroud, 2001) The UK SPA Network: its scope and context. JNCC

The importance of the Survey Area as a discrete wetland for supporting internationally and nationally important waterbird populations

- 5.1.2 No waterbird species recorded within the Survey Area in 2022/2023 represented 1% or more of the international or national population estimates used for assessing populations.

The importance of the Survey Area in the context of the Thames Estuary and Marshes Ramsar and SPA

- 5.1.3 The following six species, all recorded within the Tilbury Site Survey Area in 2022/2023, had peak counts exceeding 1% of the Thames Estuary and Marshes Ramsar or SPA populations:
- Gadwall – 14.8% of the cited Ramsar population, but 10.7% of the recent WeBS data;
 - Little Egret – 5.6% of the cited Ramsar population, but 0.7% of the recent WeBS data;
 - Avocet – 6.4 of the cited SPA population, 3.0% of the cited Ramsar population, but 0.5% of the recent WeBS data;
 - Black-tailed Godwit – 3.0% of the cited SPA population, 3.1% of the cited Ramsar population but 0.8% of the recent WeBS data;
 - Dunlin - 1.6% of the cited Ramsar population but 1.1% of the recent WeBS data; and
 - Redshank - 1.7% of the cited Ramsar population but 0.7% of the recent WeBS data.
- 5.1.4 Furthermore, one species recorded within the Gravesend Site Survey Area in 2022/2023, had a peak count exceeding 1% of the Thames Estuary and Marshes Ramsar population:
- Gadwall – 3.6% of the cited Ramsar population, but 2.6% of the recent WeBS data.
- 5.1.5 Whilst six species had peak counts exceeding 1% of the Thames Estuary and Marshes Ramsar or SPA populations, the importance of the Tilbury Site Survey Area was evaluated by reviewing the

number of times each species' peak exceeded the 1% threshold per survey and these data are presented in Table 11.

Table 11: Species recorded during surveys in 2022/2023 which exceeded 1% of the SPA/Ramsar populations and overall context of Site usage

Species	Oct	Nov	Dec	Jan	Feb	Mar	Jun	Jul	Aug	Sep	No. of surveys recorded	No. of surveys peak exceeded 1% of SPA/Ramsar
Gadwall	-	-	-	53	-	16	-	-	-	-	2	2
Little Egret	1	1	1	-	-	-	3	-	-	3	6	6
Avocet	-	-	18	7	-	-	-	-	-	-	2	2
Black-tailed Godwit	-	51	24	12	-	-	-	1	-	-	4	2
Dunlin	-	-	250	4	-	6	-	-	-	-	3	1
Redshank	-	-	9	16	-	4	-	-	-	-	3	1

- 5.1.6 At the Gravesend Site, Gadwall was recorded twice and the peak count exceeded the 1% threshold on two occasions, with peaks of 17 birds in December 2022 and 13 in January 2023.
- 5.1.7 The WeBS Alert system (see section 3.4.3) evaluated seven species for the Thames Estuary and Marshes SPA, with alerts triggered for four species in relation to the SPA.
- 5.1.8 Of the seven species evaluated for WeBS Alerts, four species were recorded within the Tilbury Site intertidal survey area in numbers exceeding 1% of the SPA populations as presented in Table 11. These were: Avocet, Black-tailed Godwit, Dunlin and Redshank.
- 5.1.9 WeBS alerts indicates that Avocet and Black-tailed Godwit have both increased in numbers on the SPA in the short, medium and long-term (both species increasing by >600% over the long-term); Dunlin has also increased in the SPA in the short, medium and long-term (with a 55% increase over the long-term); whilst Redshank has declined by 61% over the long-term, triggering a high-alert.
- 5.1.10 In consideration of the population changes, as indicated by WeBS Alerts, the population of Redshank that was recorded within the Tilbury Site Survey Area may be more vulnerable to any potential impacts arising from the Proposed Development, although the peak count of 16 birds, exceeding the 1% threshold, was only recorded on a single occasion.
- 5.1.11 Gadwall and Little Egret, whilst not evaluated by WeBS Alerts, are both species that have seen increases in their wintering populations³⁸³⁹, which is likely to account for their upturn in population size within the Site.

The importance of the Site in the context of temporal and spatial distribution within the last ten years

- 5.1.12 In the context of the wider Thames Estuary, species for which peak counts have exceeded the 1% threshold of the Thames Estuary and Marshes Ramsar or SPA populations (see section 5.1.3 of this report) have been evaluated in Table 12 for their historical (through previous survey data of the Site) temporal and spatial distribution within the Site and in the context of the wider Thames Estuary (from surveys undertaken for LTC to the east of the Site).

³⁸ <https://www.bto.org/understanding-birds/birdfacts/gadwall>

³⁹ <https://www.bto.org/understanding-birds/birdfacts/little-egret>

Table 12: Species recorded during surveys in 2022/2023 which exceeded 1% of the SPA/Ramsar populations and context in the Site and wider area

SPA / Ramsar Species	Relevant Peak Counts				Temporal and spatial distribution relevant to the Proposed Development
	T2	TFGP	AECOM	LTC	
Gadwall	29	11	53	3	Observations of Gadwall indicate no regular occurrence or distribution within the Site, with sporadic numbers presumed (as is the case with surveys undertaken in 2022/2023) to relate to roaming flocks of birds across the Thames Estuary.
Little Egret	2	0	3	-8	Three Little Egret were recorded by AECOM during field surveys undertaken between October 2022 and September 2023. Two birds were recorded during surveys as part of the Tilbury 2 project in 2016/2017, but not during TFGP surveys in 2019/2020. VP surveys, as part of the LTC project, recorded a peak of eight Little Egret but with sporadic distribution and no noticeable favoured areas for this species.
Avocet	0	49	18	830	A peak of 18 Avocet were recorded by AECOM during field surveys undertaken between October 2022 and September 2023. This species was not recorded during surveys as part of the Tilbury 2 project in 2016/2017. However, a peak count of 49 birds was recorded within the Tilbury Site as part of the TFGP project in 2019/2020. Furthermore, surveys undertaken as part of the LTC project, to the east of the Site, identified a peak count of 830 birds with the majority of Avocet recorded around Coalhouse Fort, c2.0km east of the Tilbury Site.
Black-tailed Godwit	4	2	51	1,372	The peak count of Black-tailed Godwit has increased within the Site, since surveys in 2016/2017 to 51 birds, however, this is considerably lower than 1,372 birds recorded for the LTC project where this species was recorded favouring intertidal areas

SPA / Ramsar Species	Relevant Peak Counts				Temporal and spatial distribution relevant to the Proposed Development
	T2	TFGP	AECOM	LTC	
					around Coalhouse Fort, c 2.0km east of the Site.
Dunlin	33	124	250	1,575	As with Black-tailed Godwit, the peak count of Dunlin has increased within the Site, since surveys in 2016/2017 to 250 birds, however, this is considerably lower than 1,575 birds recorded for the LTC project where this species was recorded favouring intertidal areas around Coalhouse Fort, c 2.0km east of the Site.
Redshank	12	5	16	122	Low (<20) numbers of Redshank have been recorded within the Site during surveys undertaken since 2016/2017, with noticeable higher concentrations of this species to the east of the Site, as demonstrated by the increased numbers recorded as part of the LTC project (122 birds). Distribution maps for LTC present favoured areas for this species around Coalhouse Fort and Shornmead Fort, both c.2.0km east of the Site.

5.1.13 As presented in Table 12, the peak counts of six waterbird species within the Tilbury Site and one species within the Gravesend Site exceeded 1% of the SPA/ Ramsar populations, however in the context of the wider Thames Estuary, the Site Survey Areas are only occasionally used by these species and do not appear as important for waterbirds as intertidal habitats towards the mouth of the River Thames.

5.2 Non-breeding birds

5.2.1 Twenty-eight species were recorded within the Site Survey Areas during surveys for non-breeding birds between October 2022 and March 2023, with 22 species recorded in the Tilbury Site Survey Area and 17 species recorded in the Gravesend Site Survey Area. Of these 28 species, 14 species meet at least one of a range of criteria relating to conservation importance, as listed in section 2 of this report.

5.2.2 From the 28 non-breeding bird species recorded within the Survey Area:

- no species are listed on Annex 1 of the EU Birds Directive;
- five species (Starling, Song Thrush, Dunnock, Linnet and Reed Bunting) are listed as a Priority Species in the UK. Song Thrush and Dunnock were recorded in the Tilbury Site only and Reed Bunting was recorded in the Gravesend Site only;
- three species (Starling, Grey Wagtail and Linnet) are included on the BoCC Red List – Grey Wagtail and Linnet were recorded in the Tilbury Site only; and
- eleven species (Stock Dove, Woodpigeon, Kestrel, Rook, Wren, Song Thrush, Redwing, Black Redstart, Dunnock, Meadow Pipit and Reed Bunting) are included on the BoCC Amber List –

Stock Dove, Song Thrush, Redwing, Black Redstart and Meadow Pipit were recorded in the Tilbury Site only and Kestrel, Rook and Reed Bunting were recorded in the Gravesend Site only.

- 5.2.3 Species numbers were very low and no species are present within the Survey Area in numbers of national significance, i.e., 1% or more of the UK non-breeding population, when compared to national population estimates as presented in Woodward et al. Current county population estimates for some of the species afforded special statutory protection and, or, of conservation importance are not available. However, whilst some of the species of conservation importance that were recorded within the Site are declining in the UK, most remain widespread. With the relatively low numbers of species recorded, using professional judgement, these are evaluated as being of no more than Local importance across the Site and within the individual Sites.

5.3 Breeding birds

- 5.3.1 A breeding assemblage of 24 species was confirmed within the Survey Area during surveys for breeding birds in 2023.

From the breeding assemblage of 24 species recorded within the Survey Area:

- no species are listed on Annex 1 of the EU Birds Directive;
- one species (Cetti's Warbler) is listed on Schedule 1 of the Wildlife and Countryside Act, 1981 (as amended) – this species was recorded in both the Tilbury Site and Gravesend Site;
- four species (Skylark, Song Thrush, Dunnock and Linnet) are listed as a Priority Species in the UK – all four species were recorded in both the Tilbury Site and Gravesend Site;
- three species (Skylark, Greenfinch and Linnet) are included on the BoCC Red List – all three species were recorded in both the Tilbury Site and Gravesend Site; and
- seven species (Moorhen, Woodpigeon, Kestrel, Whitethroat, Wren, Song Thrush and Dunnock) are included on the BoCC Amber List – with the exception of Kestrel (recorded in the Gravesend Site only), six species were recorded in both the Tilbury Site and Gravesend Site.

- 5.3.2 No species are present within the Survey Area in numbers of national significance, i.e., 1% or more of the UK population, when compared to national population estimates as presented in Woodward et al.

- 5.3.3 Current county population estimates for some of the species afforded special statutory protection and, or, of conservation importance are not available. However, whilst the majority of species of conservation importance that were recorded within the Site are declining in the UK, most remain widespread and with the relatively low numbers of territories of species recorded, none are likely to be present within the Site in numbers of county significance.

- 5.3.4 Species diversity (24 species) was measured against breeding species diversity criteria developed by Fuller⁴⁰, which provides a method for assessing the ornithological interest of sites for conservation during the bird breeding season, based on the number of species present. Whilst Fuller's analysis was developed in the 1970s and, since then, species diversity has declined significantly the thresholds presented are, in most circumstances, too high for today's breeding bird populations. However, it is not considered that the differences would be sufficient to increase the geographical scale at which the assemblages are considered to have value. Taking this into consideration, the breeding assemblage of 24 species is of less than Local importance (for which Fuller presents a range of between 25-49 species). However, in consideration of the limited number of surveys for breeding birds and acknowledgement that individual species may have been missed during the early part of the breeding season, species diversity is evaluated as being of Local Importance for breeding birds as it is unlikely to exceed the threshold of between 25 and 49 species. This is further supported by the surveys undertaken by Natural England, with their survey areas G2, Transect 7 and Area F overlapping the Tilbury Site and recording a similar number of species within these areas.

⁴⁰ Fuller, R.J (1980). A method for assessing the ornithological interest of sites for conservation. British Trust for Ornithology, Beech Grove, Tring, Hertfordshire, Great Britain

Annex A Survey Metadata

Survey dates, tidal state, tide height and tide time for surveys of intertidal birds

Survey Date	Site	High / Low tide	Tide height (metres (m))	Tide time
20/10/2022	Gravesend Site	Low	1.67m	15:52
27/10/2022	Gravesend Site	High	6.58m	14:50
22/11/2022	Gravesend Site	High	6.07m	11:19
24/11/2022	Gravesend Site	Low	0.94m	06:58
14/12/2022	Gravesend Site	High	5.61m	16:27
15/12/2022	Gravesend Site	Low	1.06m	10:52
17/01/2023	Gravesend Site	Low	1.18m	13:46
18/01/2023	Gravesend Site	High	5.46m	08:57
22/02/2023	Gravesend Site	High	6.85m	14:31
23/02/2023	Gravesend Site	Low	-0.01m	09:37
13/03/2023	Gravesend Site	High	5.74m	16:23
15/03/2023	Gravesend Site	Low	1.20m	11:12
24/06/2023	Gravesend Site	Low	1.29m	11:11
17/07/2023	Gravesend Site	Low	1.14m	07:30
27/07/2023	Gravesend Site	High	5.33m	07:50
03/08/2023	Gravesend Site	Low	0.80m	09:08
09/08/2023	Gravesend Site	High	5.73m	07:24
08/09/2023	Gravesend Site	High	5.14m	07:29
22/09/2023	Gravesend Site	Low	1.47m	11:33
19/10/2022	Tilbury Site	Low	1.87m	14:11
21/10/2022	Tilbury Site	High	5.18	10:45
22/11/2022	Tilbury Site	High	6.14m	11:27
24/11/2022	Tilbury Site	Low	0.97m	07:05
14/12/2022	Tilbury Site	High	5.70m	16:35
16/12/2022	Tilbury Site	Low	1.24m	11:45
17/01/2023	Tilbury Site	Low	1.23m	13:51
18/01/2023	Tilbury Site	High	5.59m	09:06
14/02/2023	Tilbury Site	Low	1.09m	11:50
15/02/2023	Tilbury Site	High	5.54m	07:04
21/03/2023	Tilbury Site	High	6.66m	12:54
22/03/2023	Tilbury Site	Low	0.05m	08:00
23/06/2023	Tilbury Site	Low	1.22m	10:41
18/07/2023	Tilbury Site	Low	1.17m	08:20
28/07/2023	Tilbury Site	High	5.33m	09:05
04/08/2023	Tilbury Site	Low	0.74m	10:07
11/08/2023	Tilbury Site	High	5.31m	09:36
15/09/2023	Tilbury Site	Low	1.17m	08:24
25/09/2023	Tilbury Site	High	5.03m	09:19

Survey dates for surveys of non-breeding birds

Survey Visit	Date	Weather conditions
1	4 th November 2022	Clear, light breeze, recent rain, excellent visibility, c 8°C
2	15 th December 2022	Partly cloudy, light breeze, dry, excellent visibility, c 0°C
3	17 th January 2023	Clear, light air, dry, excellent visibility c -4°C
4	23 rd February 2023	Overcast, moderate breeze, dry, good visibility, c 9°C
5	15 th March 2023	Overcast, moderate breeze, dry, good visibility c 7°C

Survey dates for surveys of breeding birds

Visit Number	Survey Date	Site	Weather conditions
1	24 th June 2023	Tilbury Site	Dry, no cloud, light breeze, c 17°C
1	25 th June 2023	Gravesend Site	Dry, no cloud, light breeze, c 18°C
2	17 th July 2023	Gravesend Site	Dry, no cloud, no wind, c 18°C
2	18 th July 2023	Tilbury Site	Dry, no cloud, no wind, c 18°C
3	27 th July 2023	Gravesend Site	Dry, cloud 8/8, wind F2 SW, 17°C
3	28 th July 2023	Tilbury Site	Dry, cloud 8/8, wind F2 SW, 18°C

Annex B Intertidal Survey Data

Gravesend Site

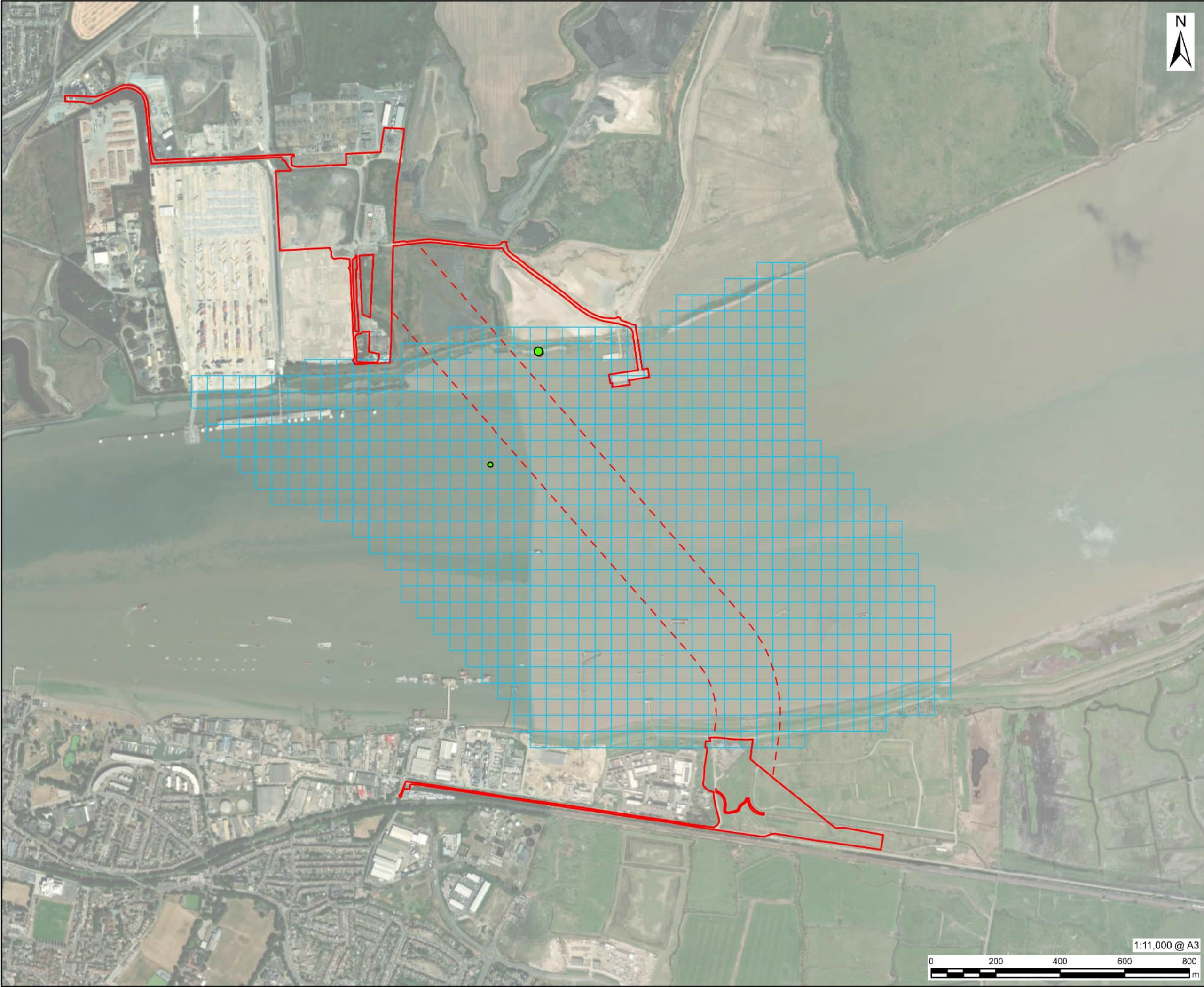
Species	10	10	11	11	12	12	01	01	02	02	03	03	06	07	07	08	08	09	09
	HT	LT	HT	LT	HT	LT	HT	LT	HT	LT	HT	LT	LT	HT	LT	HT	LT	HT	LT
Mute Swan						2													
Wigeon			2			34	27												
Gadwall						17	13												
Teal						14													
Mallard					18	22	18												
Cormorant		1		1	5		1	1	1	2	1	1	1						
Oystercatcher													1		2				
Grey Plover						1													
Ringed Plover						1		2											
Lapwing					2	3		2											
Whimbrel															1				
Curlew															1				
Dunlin	36					5													
Common Sandpiper																		4	
Redshank						1				1		1							
Snipe									3	1									
Black-headed Gull	142	82	84	23	57	56	103	53	69	54	64	28	22	22	8	6	59	77	89
Mediterranean Gull															5				
Common Gull		2															4		
Lesser Black-backed Gull																		1	
Herring Gull	10	2	1	9	3	1	2	4	4	2	6	3	1			1	4	14	
Yellow-legged Gull																		1	
Great Black-backed Gull		1	1	1		1	1	1	1		1					1		2	
Unidentified Tern																		65	

Tilbury Site

Species	10	10	11	11	12	12	01	01	02	02	03	03	06	07	07	08	08	09	09
	HT	LT	H T	L T	H T	L T	HT	L T	H T	L T	H T	L T	LT	HT	L T	HT	LT	HT	LT
Mute Swan									2										
Canada Goose															38				
Shelduck													7				3		
Gadwall							53					16							
Teal	1					31	22	0	35		32	36	63						
Mallard	5						6				6	22		10		42	34	5	24

Species	10	10	11	11	12	12	01	01	02	02	03	03	06	07	07	08	08	09	09
	HT	LT	H T	LT	H T	LT	HT	L T	H T	L T	H T	LT	LT	HT	L T	HT	LT	HT	LT
Cormorant	1	12			1		1	1	1			2	1			1			
Little Egret	1	1		1	1								3						3
Grey Heron	1							1					1						
Marsh Harrier							1												
Avocet						18	7												
Oystercatcher		1							2	6	2		3	1	2	2	1		1
Grey Plover					1														
Lapwing					10	10													
Whimbrel																	1		
Curlew	2	3		7			2		2	8		2			2			2	5
Black-tailed Godwit		12		51	12	24	15	12				1			1				
Bar-tailed Godwit		1																	
Turnstone		2																	
Dunlin						250	4					6							
Green Sandpiper						1													
Redshank						10	20					4							
Common Tern																	1		
Black-headed Gull	178	158	88	170	63	6	392	82	22	92	6	135	128	185	20	191	186	120	270
Common Gull	1		2				6										1		1
Lesser Black-backed Gull									1										
Herring Gull	9	5					2	6				7	1				2		7
Yellow-legged Gull																			1
Great Black-backed Gull	1	1	1																

Annex C Figures



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LEGEND

- Red Line Boundary (Above Ground)
- Tunnel Section
- Intertidal Survey Area

Number of Birds

- upto 5
- 6 to 35

NOTES

Aerial image credit: Maxar, Microsoft

ISSUE PURPOSE

FINAL

PROJECT NUMBER

60677311

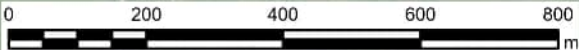
FIGURE TITLE

Distribution of Waterbirds Cited on the
Thames Estuary and Marshes SPA /
Ramsar and Recorded During High and
Low-Water Intertidal Surveys.
Peak Count Shelduck, Low Tide

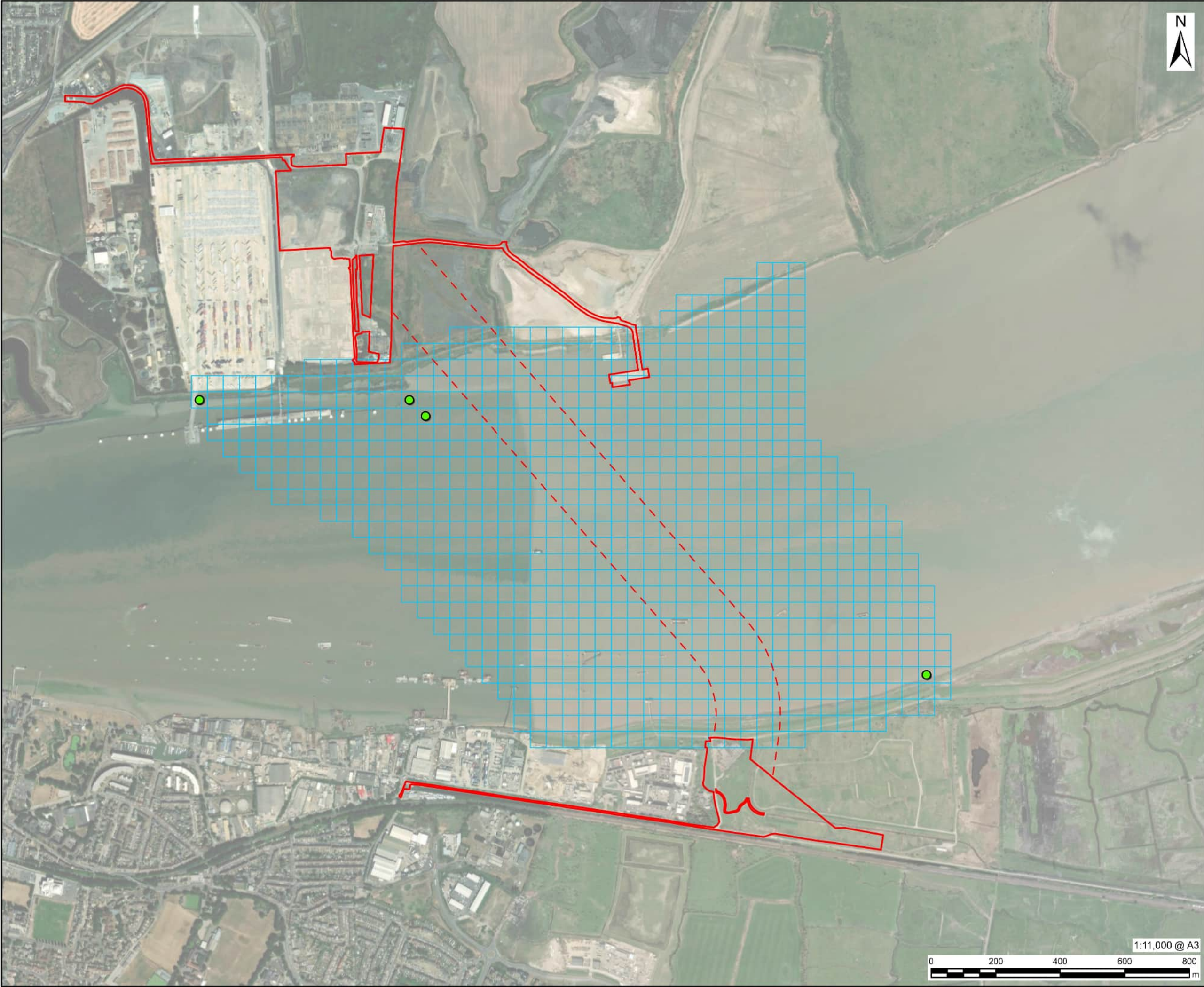
FIGURE NUMBER

Figure 1.1

1:11,000 @ A3



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LEGEND

- Red Line Boundary (Above Ground)
- Tunnel Section
- Intertidal Survey Area
- Number of Birds
 - 6 to 35

NOTES

Aerial image credit: Maxar, Microsoft

ISSUE PURPOSE

FINAL

PROJECT NUMBER

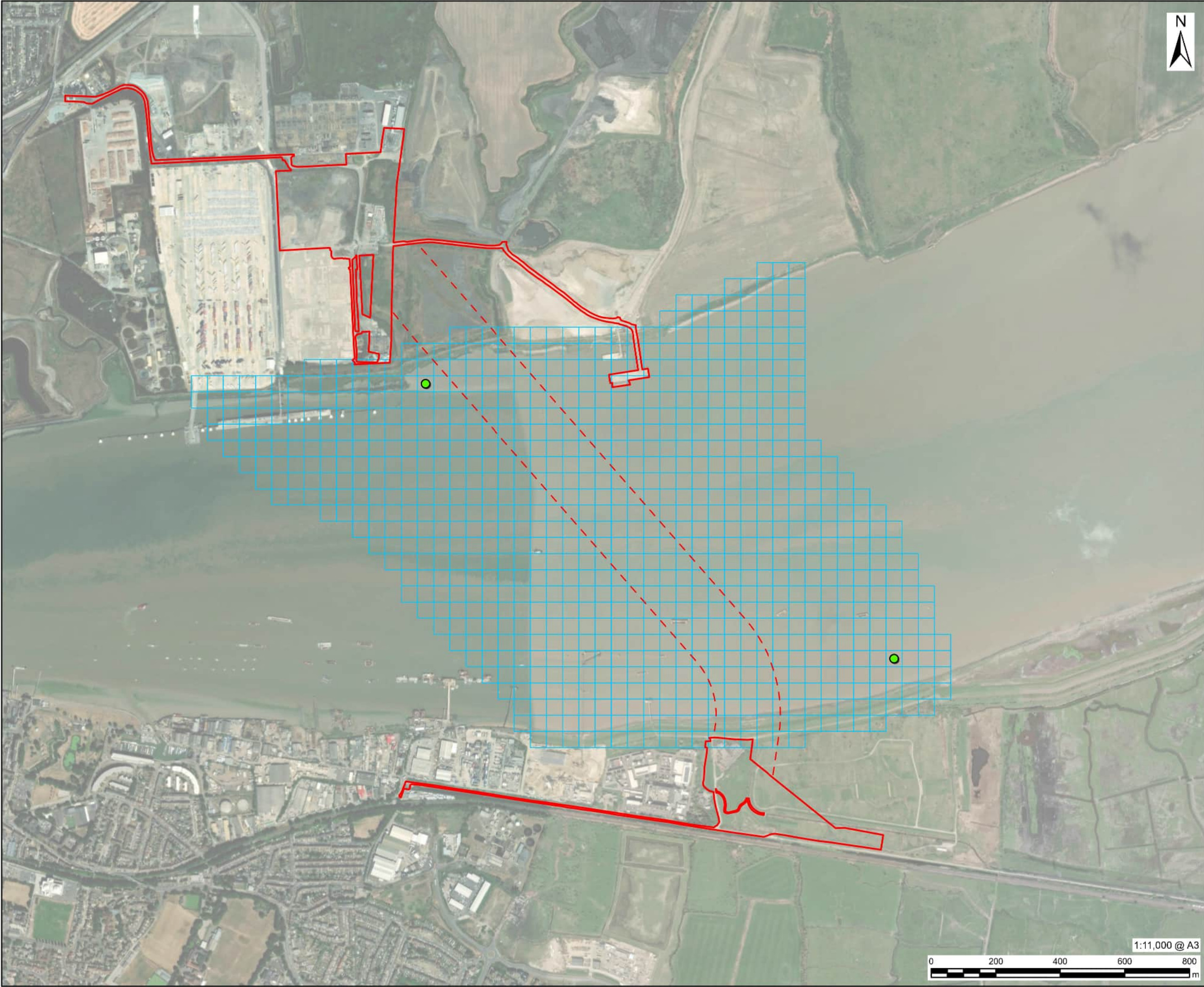
60677311

FIGURE TITLE

Distribution of Waterbirds Cited on the
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Ramsar and Recorded During High and
Low-Water Intertidal Surveys.
Peak Count - Gadwall, High Tide

FIGURE NUMBER

Figure 1.2



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LEGEND

- Red Line Boundary (Above Ground)
- Tunnel Section
- Intertidal Survey Area
- Number of Birds
 - 6 to 35

NOTES

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ISSUE PURPOSE

FINAL

PROJECT NUMBER

60677311

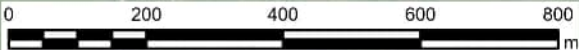
FIGURE TITLE

Distribution of Waterbirds Cited on the
Thames Estuary and Marshes SPA /
Ramsar and Recorded During High and
Low-Water Intertidal Surveys.
Peak Count - Gadwall, Low Tide

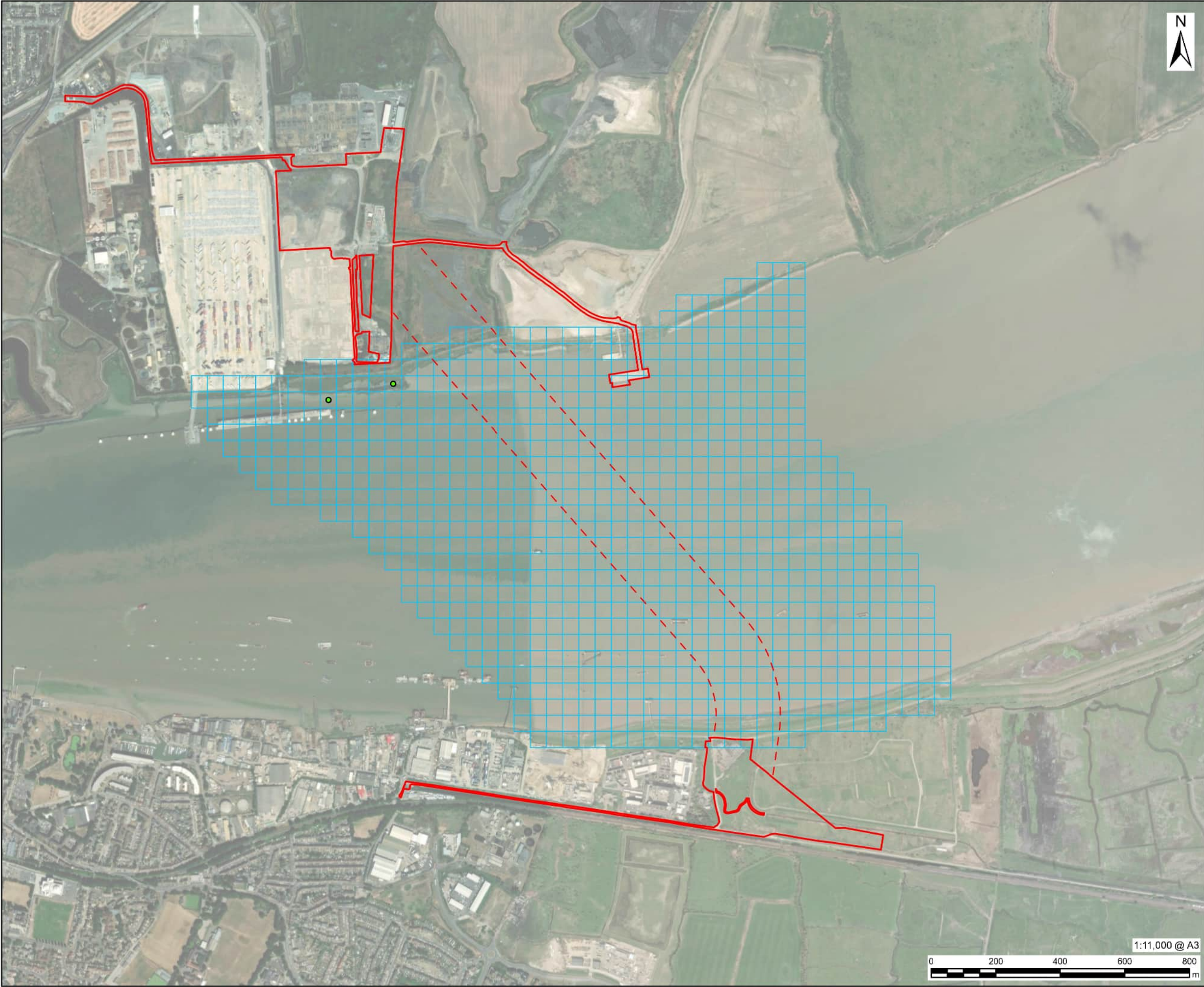
FIGURE NUMBER

Figure 1.3

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LEGEND

- Red Line Boundary (Above Ground)
- Tunnel Section
- Intertidal Survey Area
- Number of Birds
 - upto 5

NOTES

Aerial image credit: Maxar, Microsoft

ISSUE PURPOSE

FINAL

PROJECT NUMBER

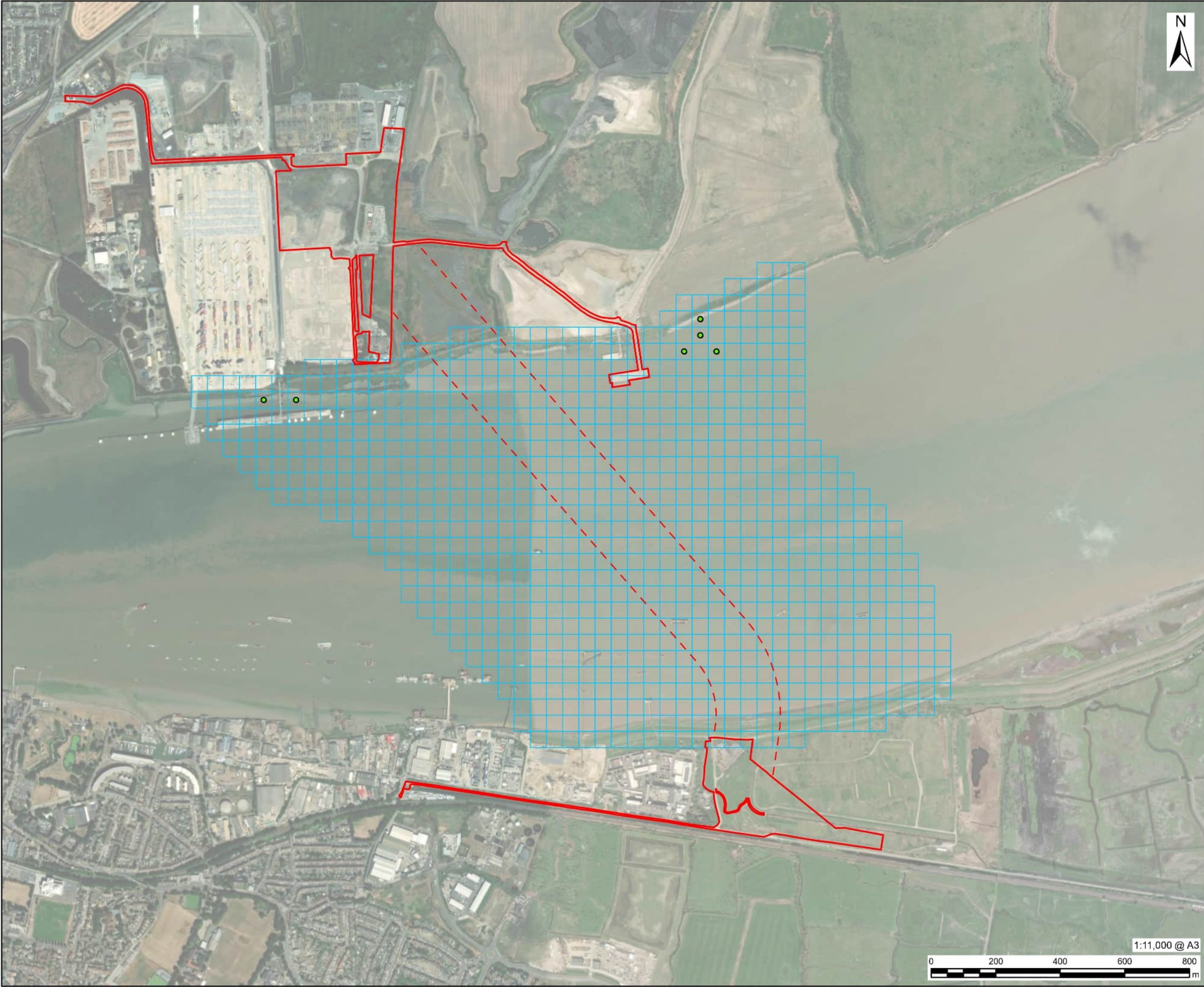
60677311

FIGURE TITLE

Distribution of Waterbirds Cited on the
Thames Estuary and Marshes SPA /
Ramsar and Recorded During High and
Low-Water Intertidal Surveys.
Peak Count - Little Egret, High Tide

FIGURE NUMBER

Figure 1.4



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LEGEND

- Red Line Boundary (Above Ground)
- Tunnel Section
- Intertidal Survey Area
- Number of Birds
 - upto 5

NOTES

Aerial image credit: Maxar, Microsoft

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60677311

FIGURE TITLE

Distribution of Waterbirds Cited on the
Thames Estuary and Marshes SPA /
Ramsar and Recorded During High and
Low-Water Intertidal Surveys.
Peak Count - Little Egret, Low Tide

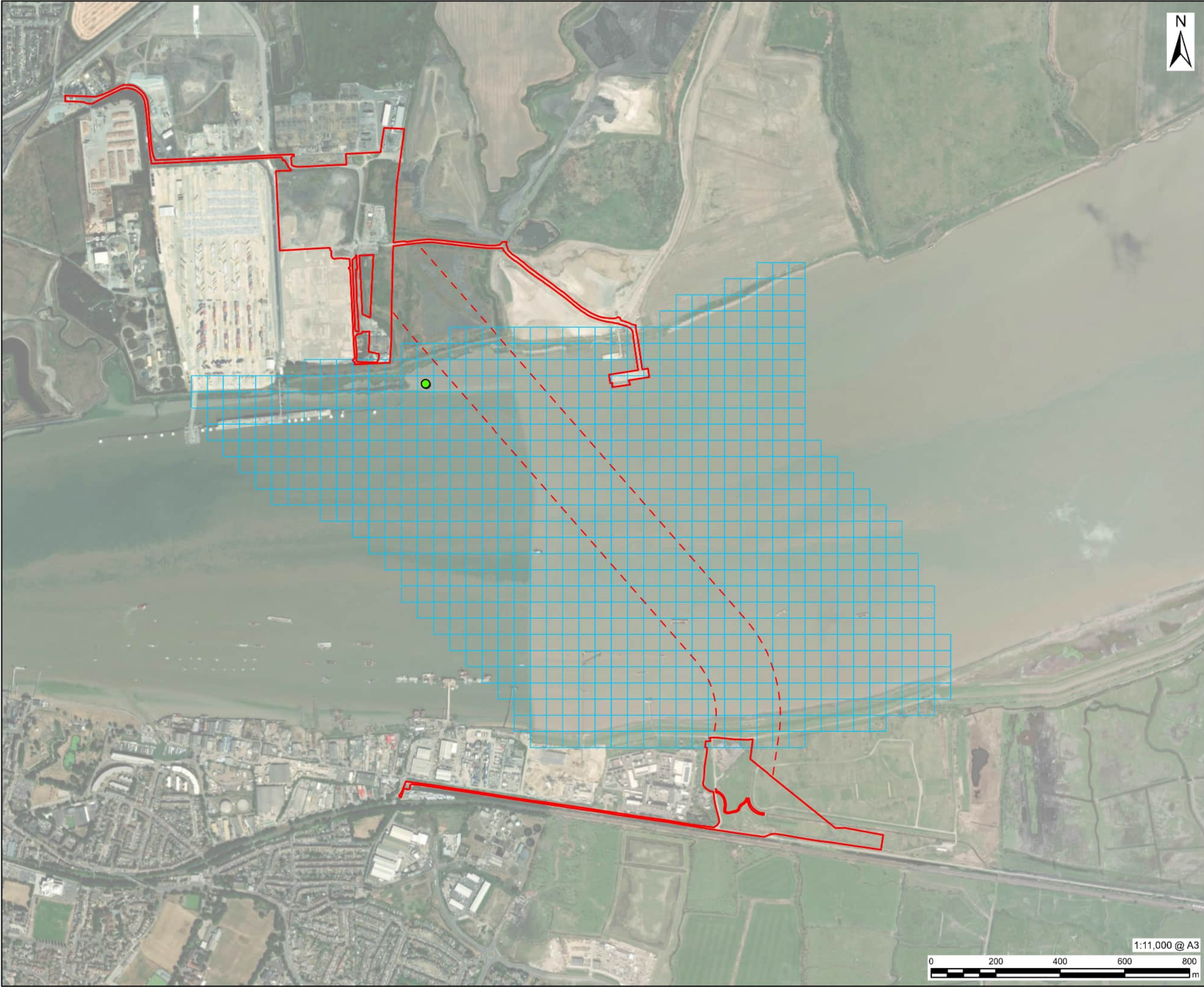
FIGURE NUMBER

Figure 1.5

1:11,000 @ A3

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m

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LEGEND

- Red Line Boundary (Above Ground)
- Tunnel Section
- Intertidal Survey Area
- Number of Birds
 - 6 to 35

NOTES

Aerial image credit: Maxar, Microsoft

ISSUE PURPOSE

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PROJECT NUMBER

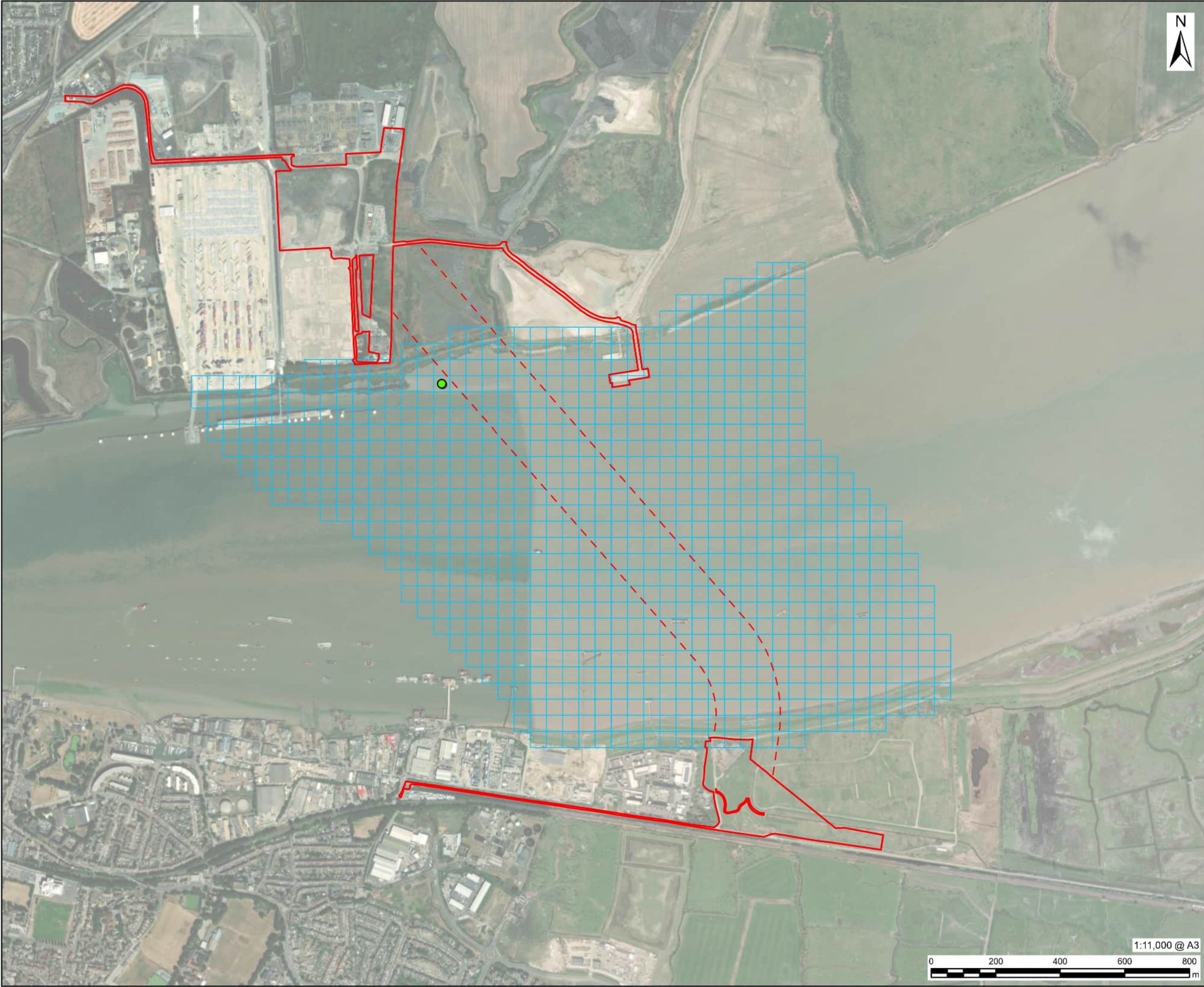
60677311

FIGURE TITLE

Distribution of Waterbirds Cited on the
Thames Estuary and Marshes SPA /
Ramsar and Recorded During High and
Low-Water Intertidal Surveys.
Peak Count - Avocet, High Tide

FIGURE NUMBER

Figure 1.6



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LEGEND

- Red Line Boundary (Above Ground)
- Tunnel Section
- Intertidal Survey Area
- Number of Birds
 - 6 to 35

NOTES

Aerial image credit: Maxar, Microsoft

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PROJECT NUMBER

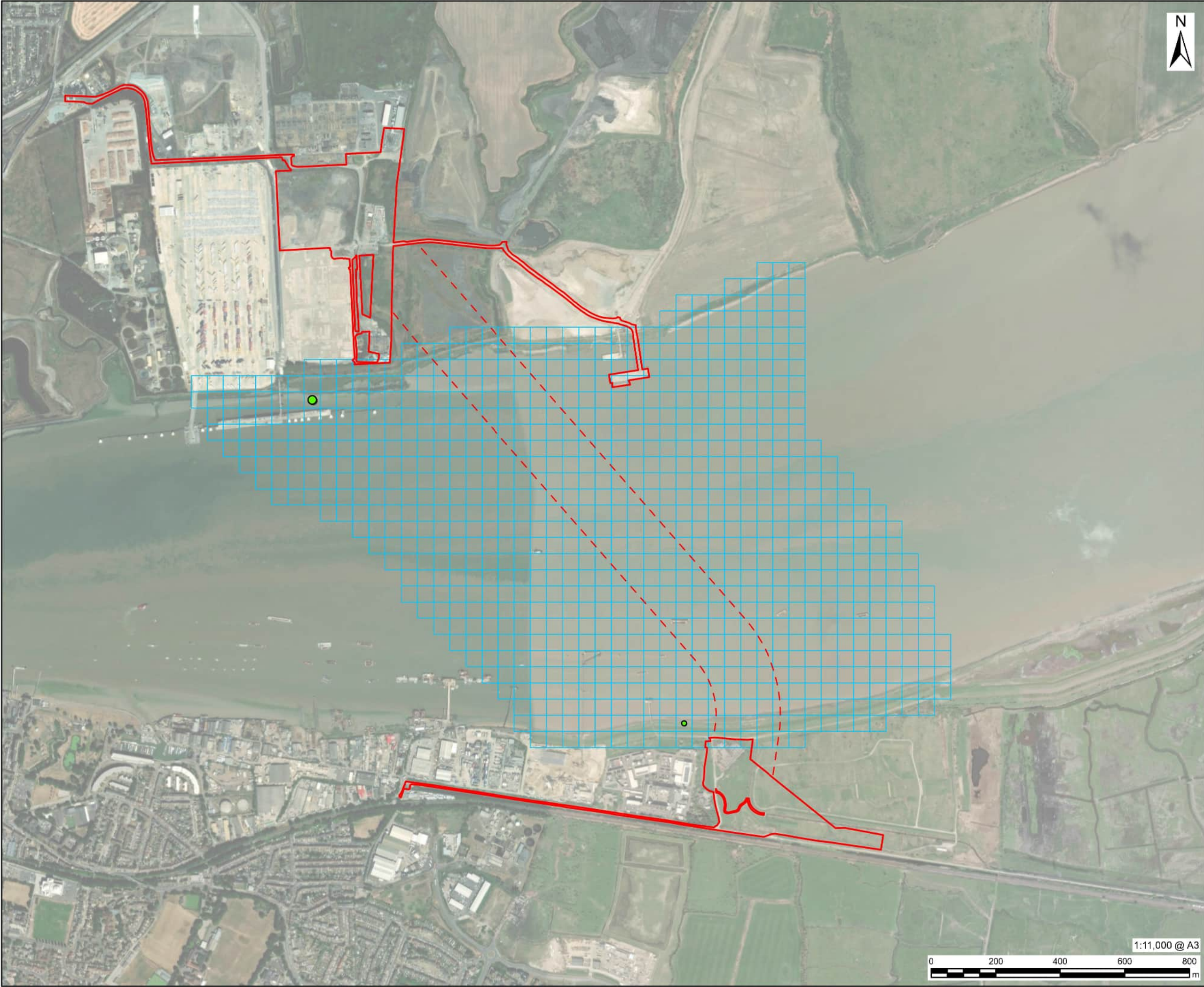
60677311

FIGURE TITLE

Distribution of Waterbirds Cited on the
Thames Estuary and Marshes SPA /
Ramsar and Recorded During High and
Low-Water Intertidal Surveys.
Peak Count - Avocet, Low Tide

FIGURE NUMBER

Figure 1.7



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LEGEND

- Red Line Boundary (Above Ground)
- Tunnel Section
- Intertidal Survey Area

Number of Birds

- upto 5
- 6 to 35

NOTES

Aerial image credit: Maxar, Microsoft

ISSUE PURPOSE

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PROJECT NUMBER

60677311

FIGURE TITLE

Distribution of Waterbirds Cited on the
Thames Estuary and Marshes SPA /
Ramsar and Recorded During High and
Low-Water Intertidal Surveys.
Peak Count - Lapwing, High Tide

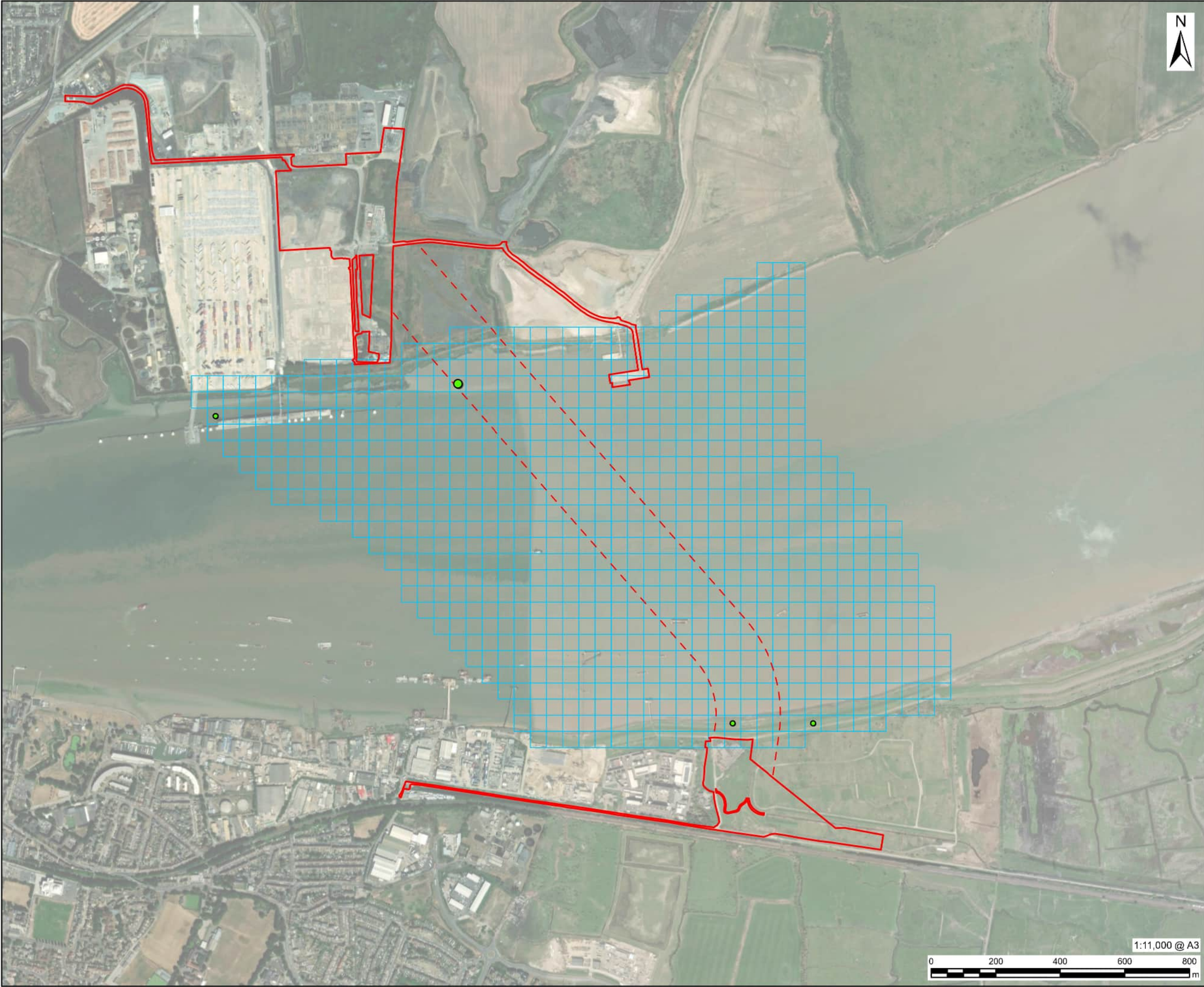
FIGURE NUMBER

Figure 1.8

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LEGEND

- Red Line Boundary (Above Ground)
- Tunnel Section
- Intertidal Survey Area

Number of Birds

- upto 5
- 6 to 35

NOTES

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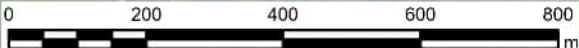
FIGURE TITLE

Distribution of Waterbirds Cited on the
Thames Estuary and Marshes SPA /
Ramsar and Recorded During High and
Low-Water Intertidal Surveys.
Peak Count - Lapwing, Low Tide

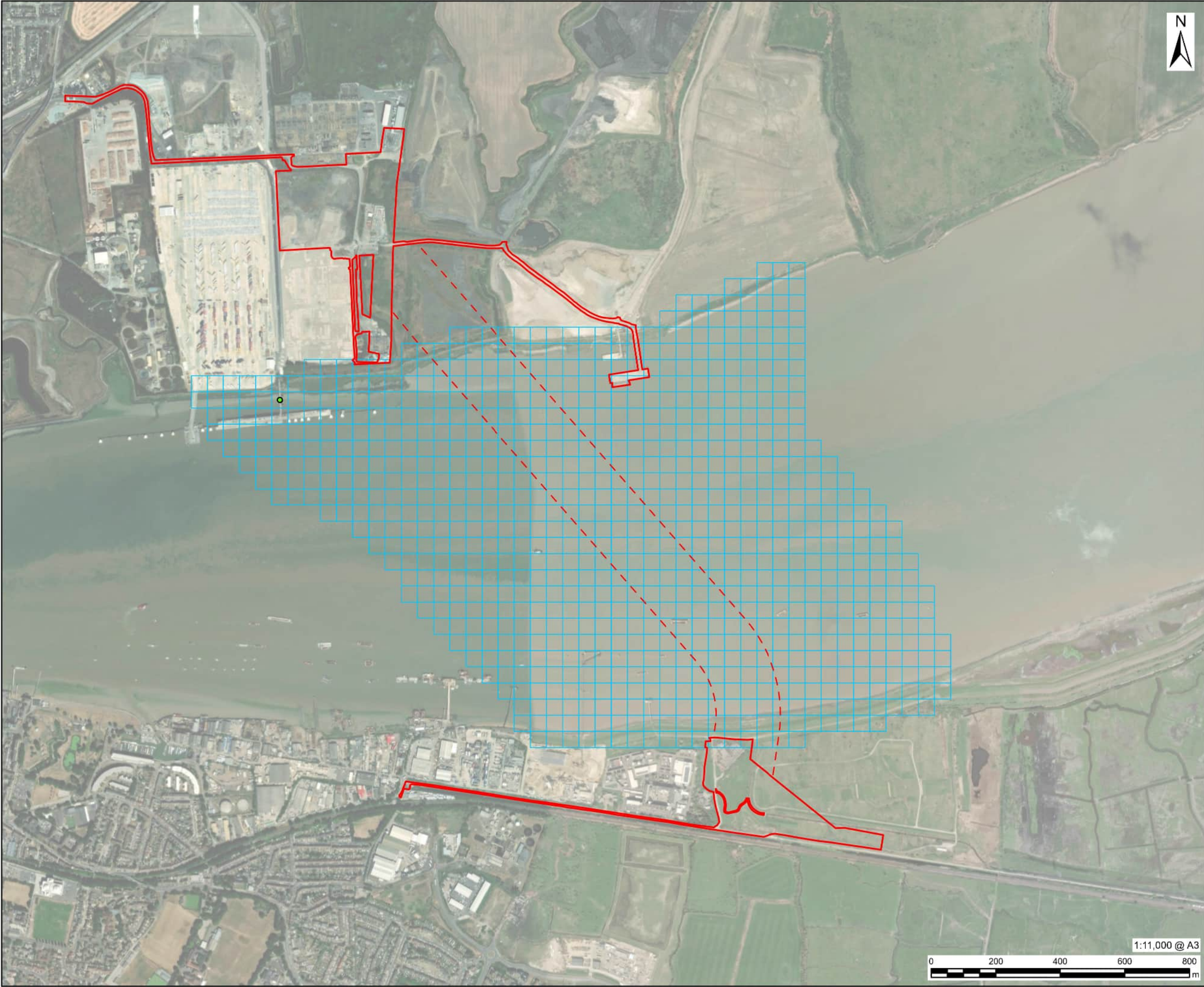
FIGURE NUMBER

Figure 1.9

1:11,000 @ A3



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LEGEND

- Red Line Boundary (Above Ground)
 - Tunnel Section
 - Intertidal Survey Area
- Number of Birds
- upto 5

NOTES

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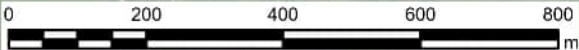
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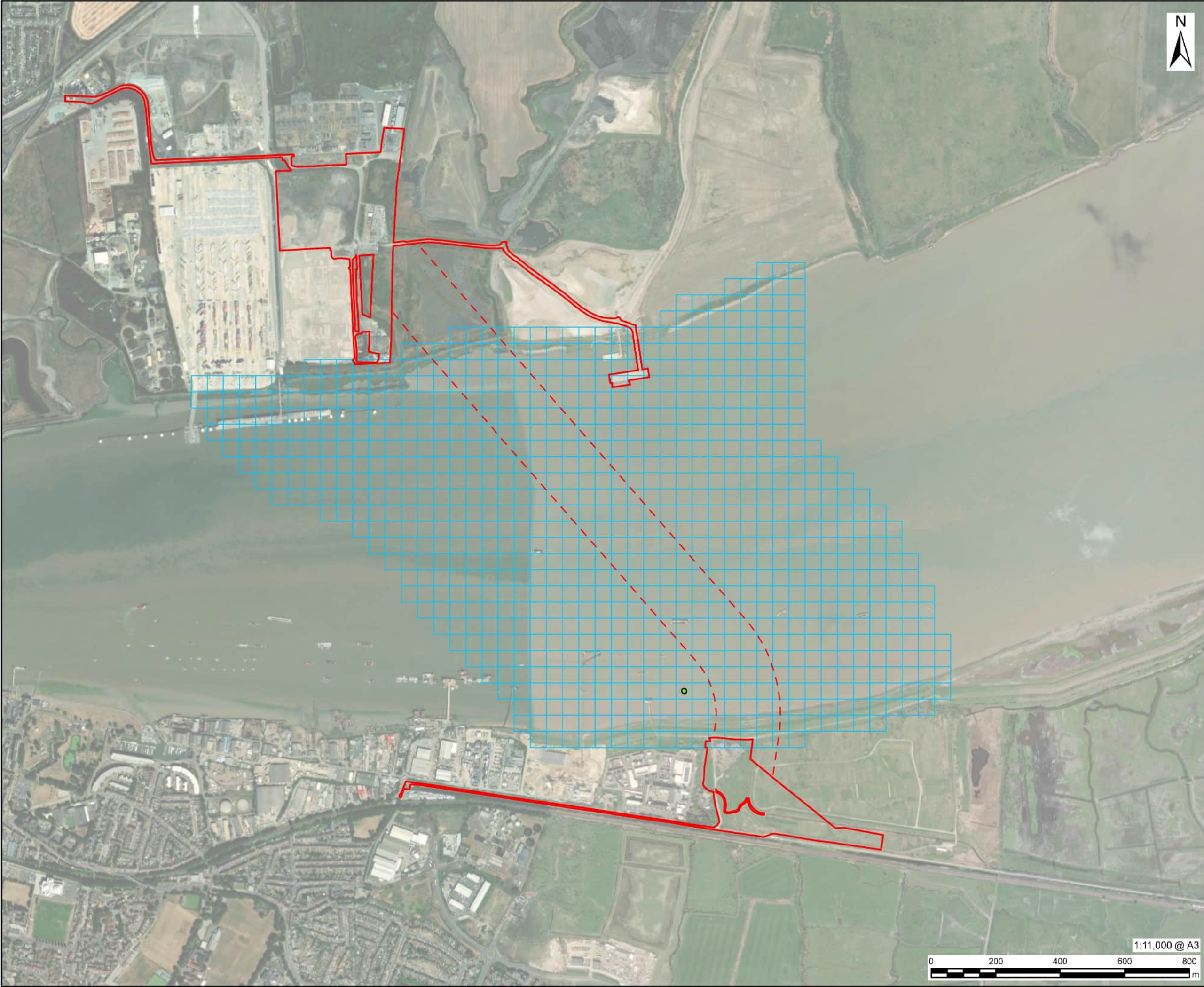
Distribution of Waterbirds Cited on the
Thames Estuary and Marshes SPA /
Ramsar and Recorded During High and
Low-Water Intertidal Surveys.
Peak Count - Grey Plover, High Tide

FIGURE NUMBER

Figure 1.10

1:11,000 @ A3





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LEGEND

- Red Line Boundary (Above Ground)
- Tunnel Section
- Intertidal Survey Area
- Number of Birds
 - upto 5

NOTES

Aerial image credit: Maxar, Microsoft

ISSUE PURPOSE

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PROJECT NUMBER

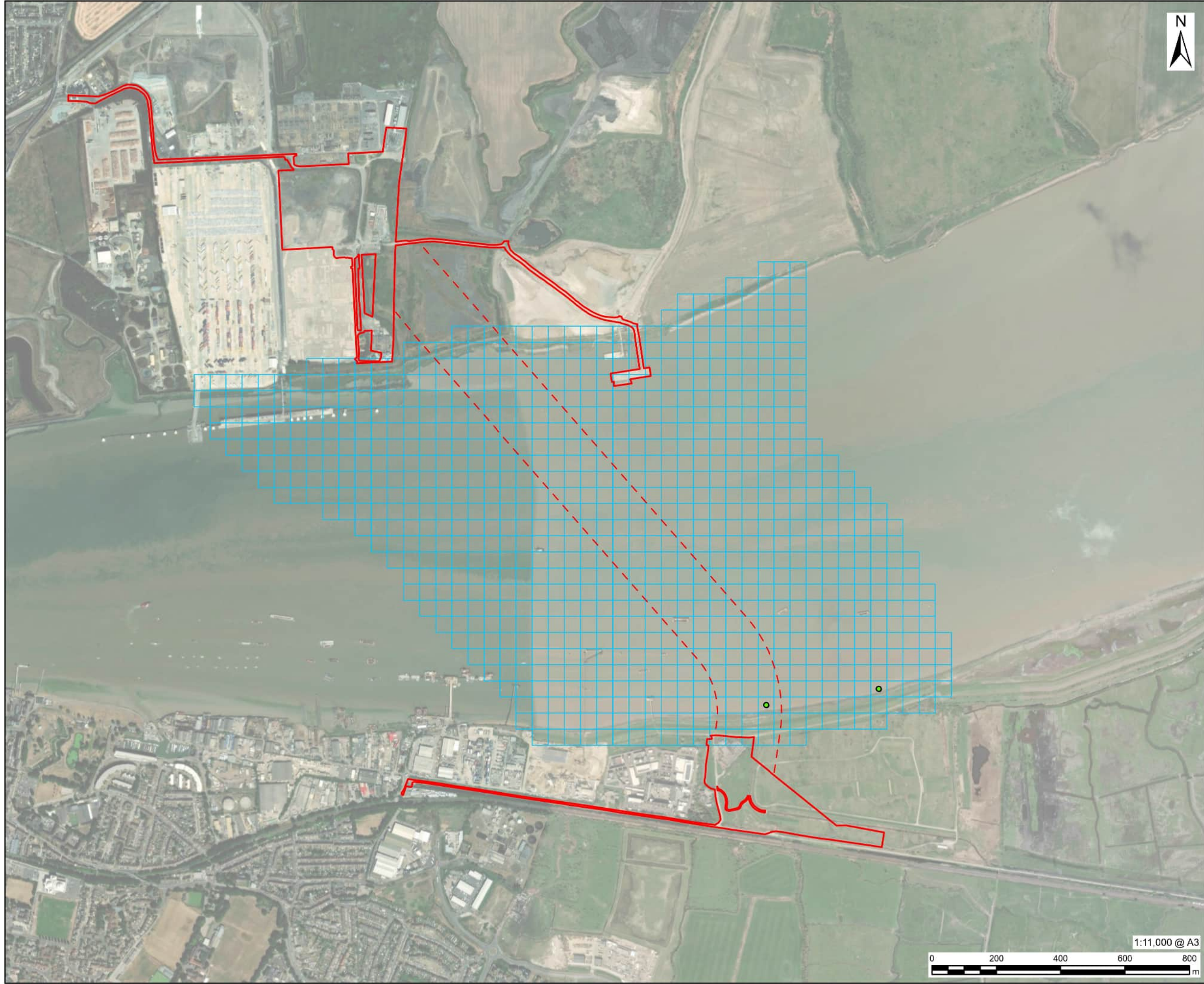
60677311

FIGURE TITLE

Distribution of Waterbirds Cited on the
Thames Estuary and Marshes SPA /
Ramsar and Recorded During High and
Low-Water Intertidal Surveys.
Peak Count - Grey Plover, Low Tide

FIGURE NUMBER

Figure 1.11



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LEGEND

- Red Line Boundary (Above Ground)
- Tunnel Section
- Intertidal Survey Area
- Number of Birds
 - upto 5

NOTES

Aerial image credit: Maxar, Microsoft

ISSUE PURPOSE

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PROJECT NUMBER

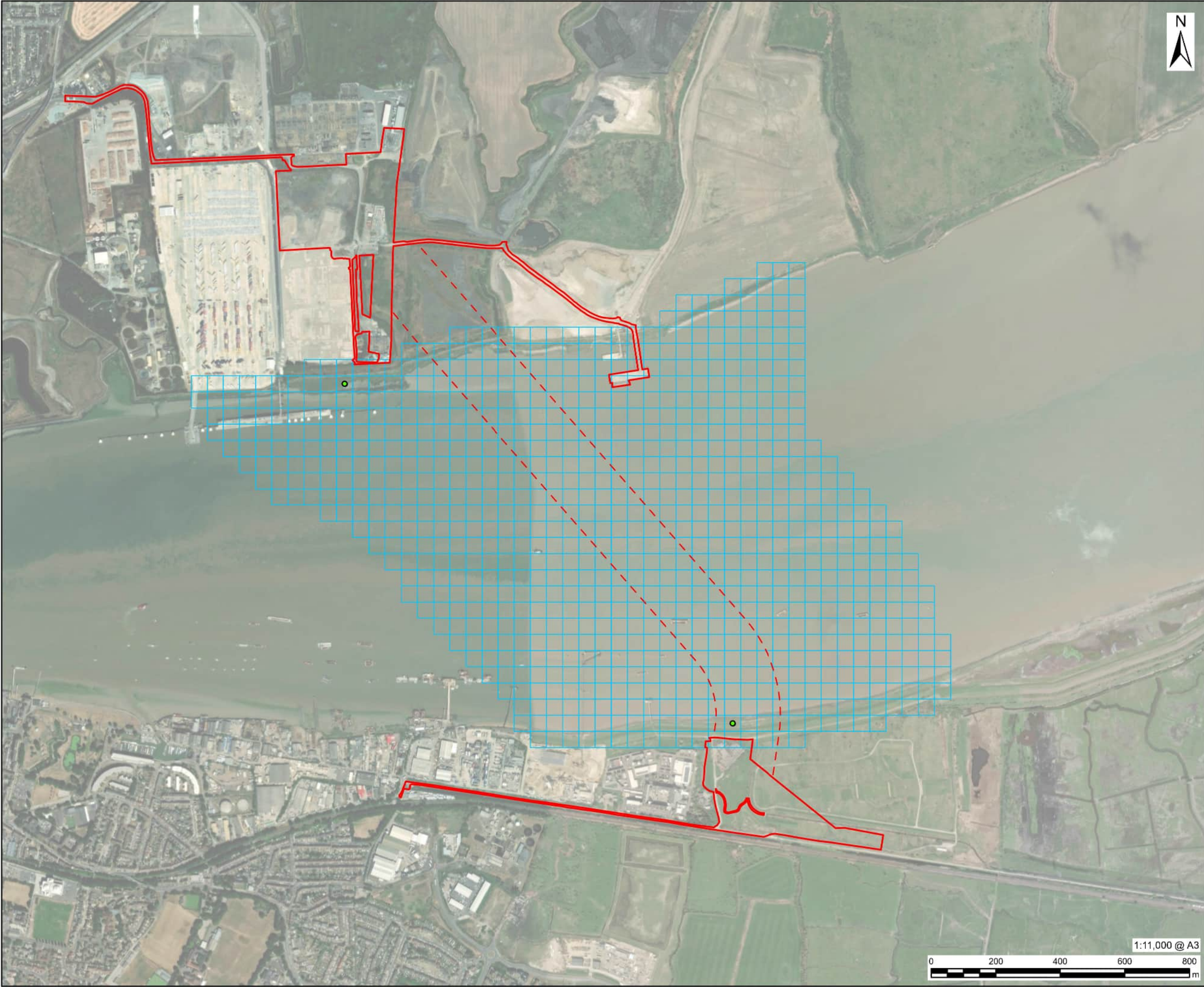
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FIGURE TITLE

Distribution of Waterbirds Cited on the
Thames Estuary and Marshes SPA /
Ramsar and Recorded During High and
Low-Water Intertidal Surveys.
Peak Count - Ringed Plover, Low Tide

FIGURE NUMBER

Figure 1.12



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LEGEND

- Red Line Boundary (Above Ground)
- Tunnel Section
- Intertidal Survey Area
- Number of Birds
 - upto 5

NOTES

Aerial image credit: Maxar, Microsoft

ISSUE PURPOSE

FINAL

PROJECT NUMBER

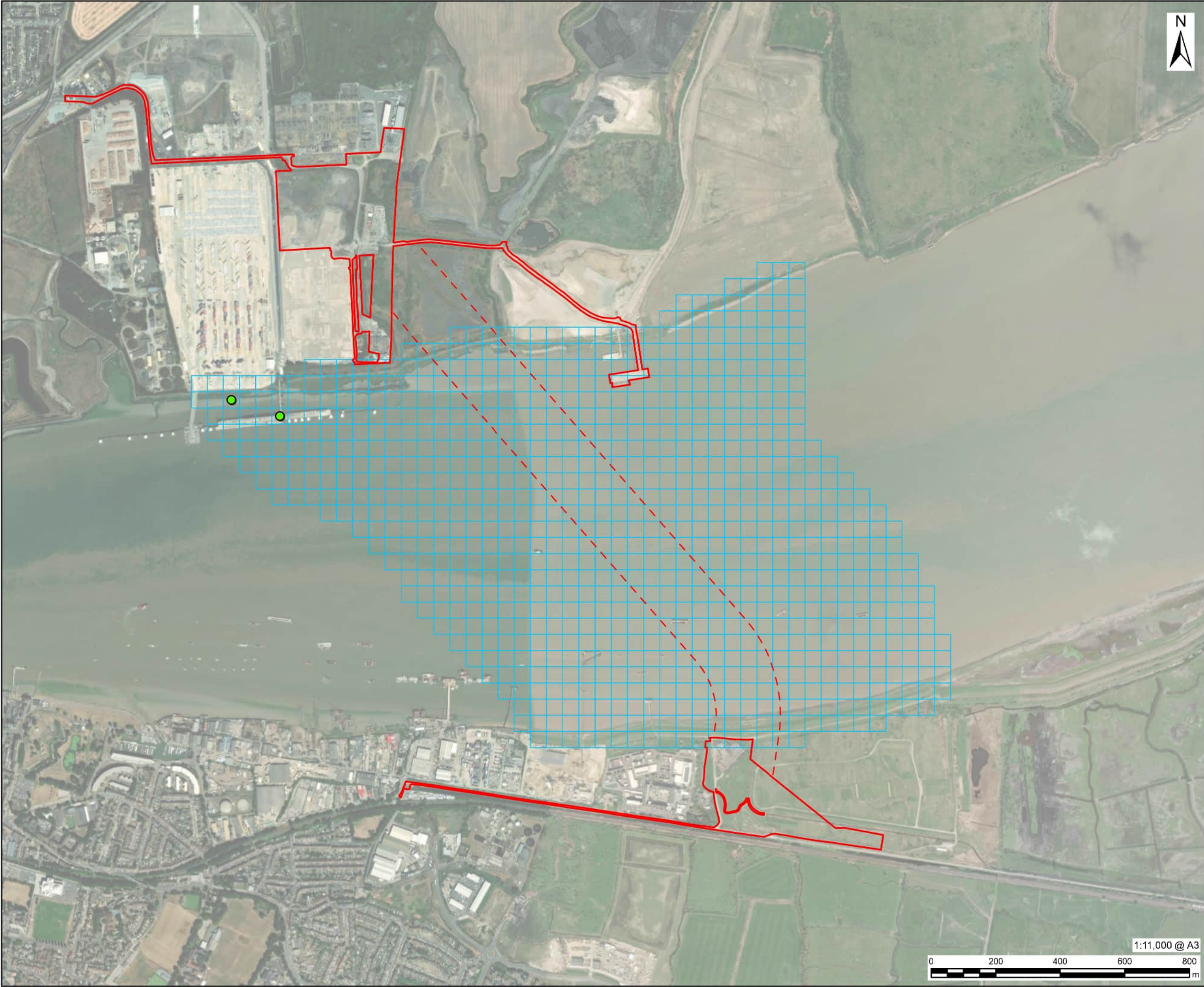
60677311

FIGURE TITLE

Distribution of Waterbirds Cited on the
Thames Estuary and Marshes SPA /
Ramsar and Recorded During High and
Low-Water Intertidal Surveys.
Peak Count - Whimbrel, Low Tide

FIGURE NUMBER

Figure 1.13



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LEGEND

- Red Line Boundary (Above Ground)
- Tunnel Section
- Intertidal Survey Area
- Number of Birds
 - 6 to 35

NOTES

Aerial image credit: Maxar, Microsoft

ISSUE PURPOSE

FINAL

PROJECT NUMBER

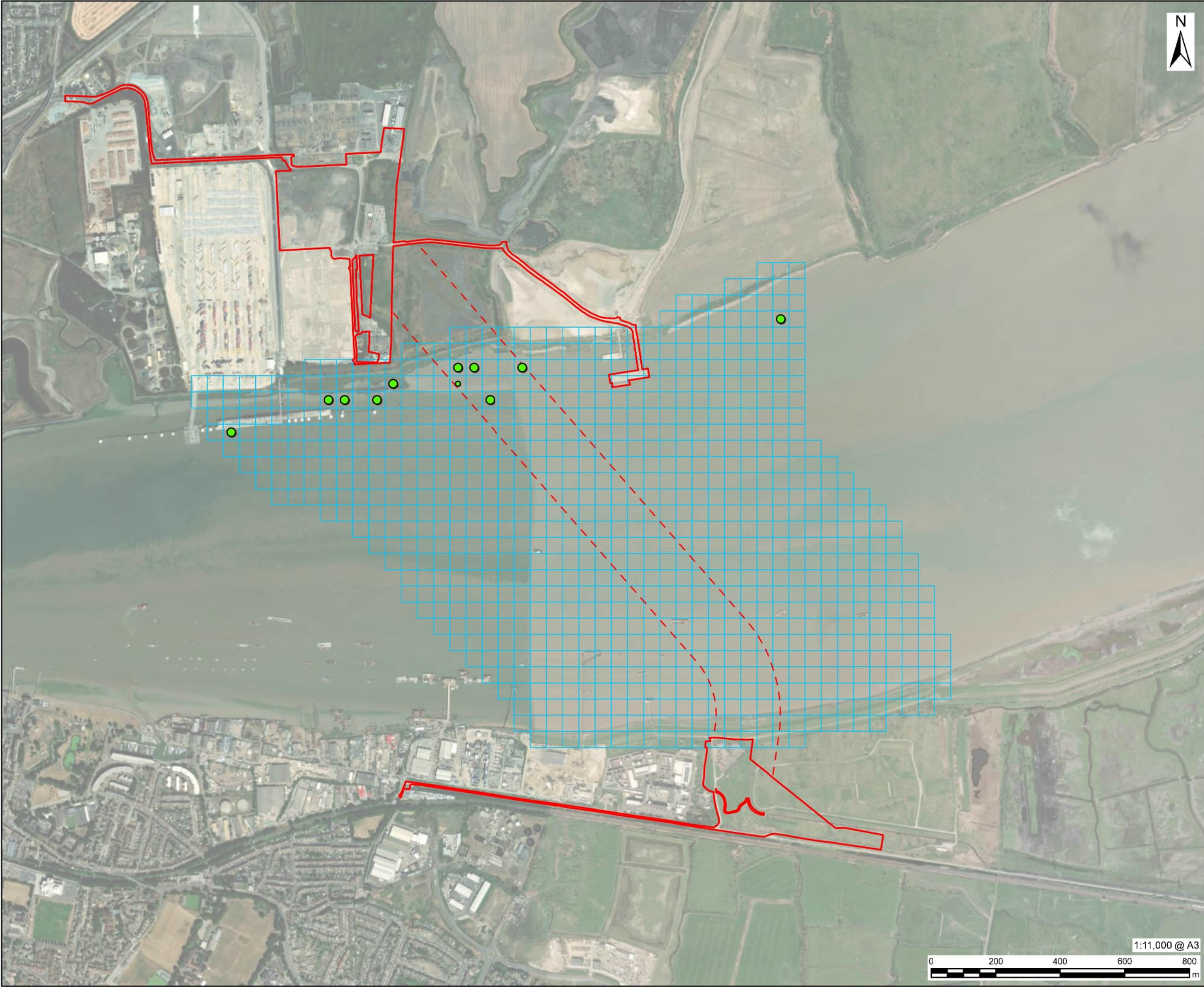
60677311

FIGURE TITLE

Distribution of Waterbirds Cited on the
Thames Estuary and Marshes SPA /
Ramsar and Recorded During High and
Low-Water Intertidal Surveys.
Peak Count - Black-tailed Godwit, High
Tide

FIGURE NUMBER

Figure 1.14



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LEGEND

- Red Line Boundary (Above Ground)
- Tunnel Section
- Intertidal Survey Area
- Number of Birds
 - upto 5
 - 6 to 35

NOTES

Aerial image credit: Maxar, Microsoft

ISSUE PURPOSE

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PROJECT NUMBER

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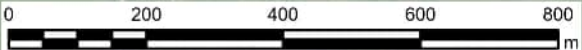
FIGURE TITLE

Distribution of Waterbirds Cited on the
Thames Estuary and Marshes SPA /
Ramsar and Recorded During High and
Low-Water Intertidal Surveys.
Peak Count - Black-tailed Godwit, Low
Tide

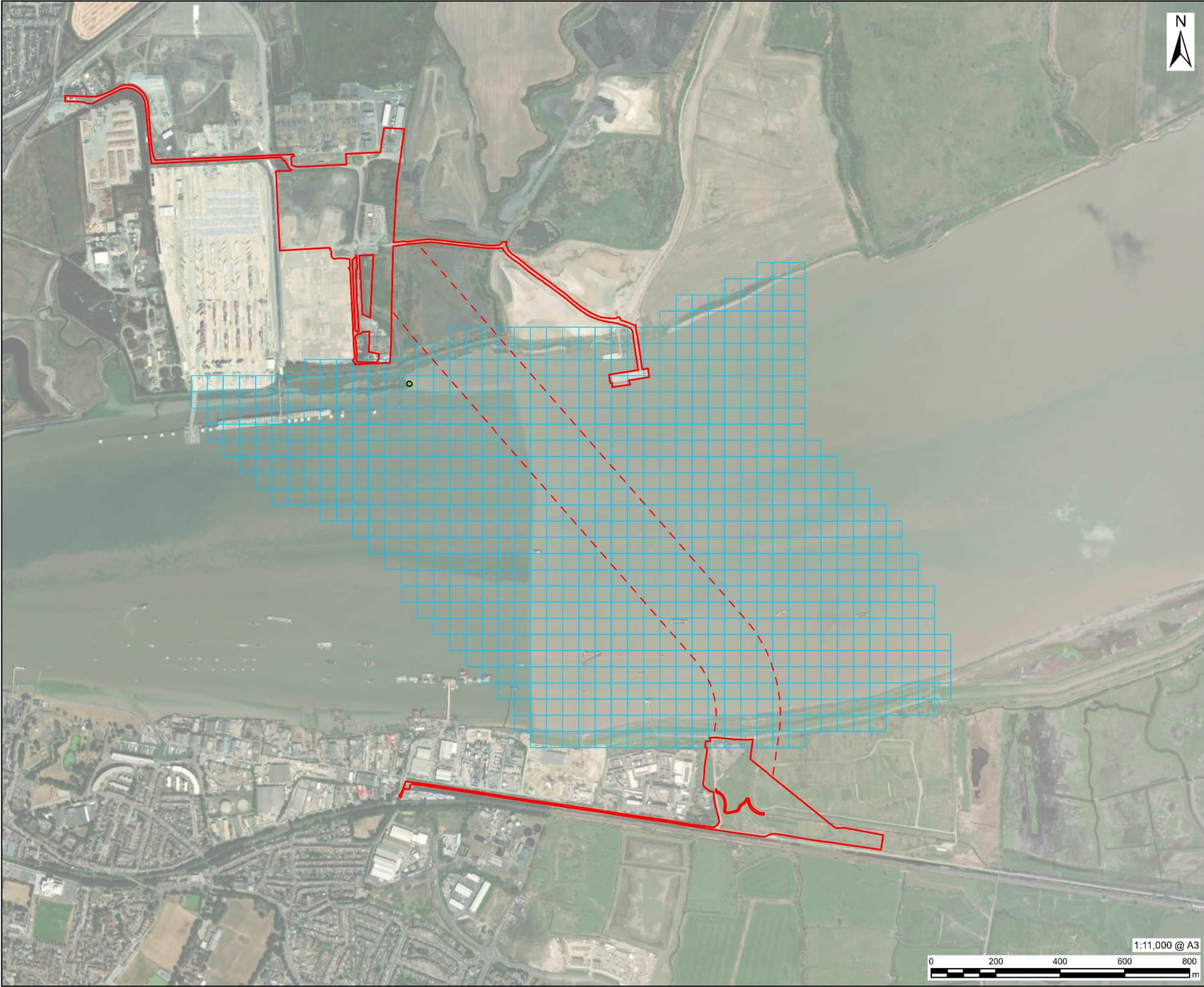
FIGURE NUMBER

Figure 1.15

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LEGEND

- Red Line Boundary (Above Ground)
- Tunnel Section
- Intertidal Survey Area
- Number of Birds
 - upto 5

NOTES

Aerial image credit: Maxar, Microsoft

ISSUE PURPOSE

FINAL

PROJECT NUMBER

60677311

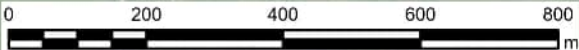
FIGURE TITLE

Distribution of Waterbirds Cited on the
Thames Estuary and Marshes SPA /
Ramsar and Recorded During High and
Low-Water Intertidal Surveys.
Peak Count - Dunlin, High Tide

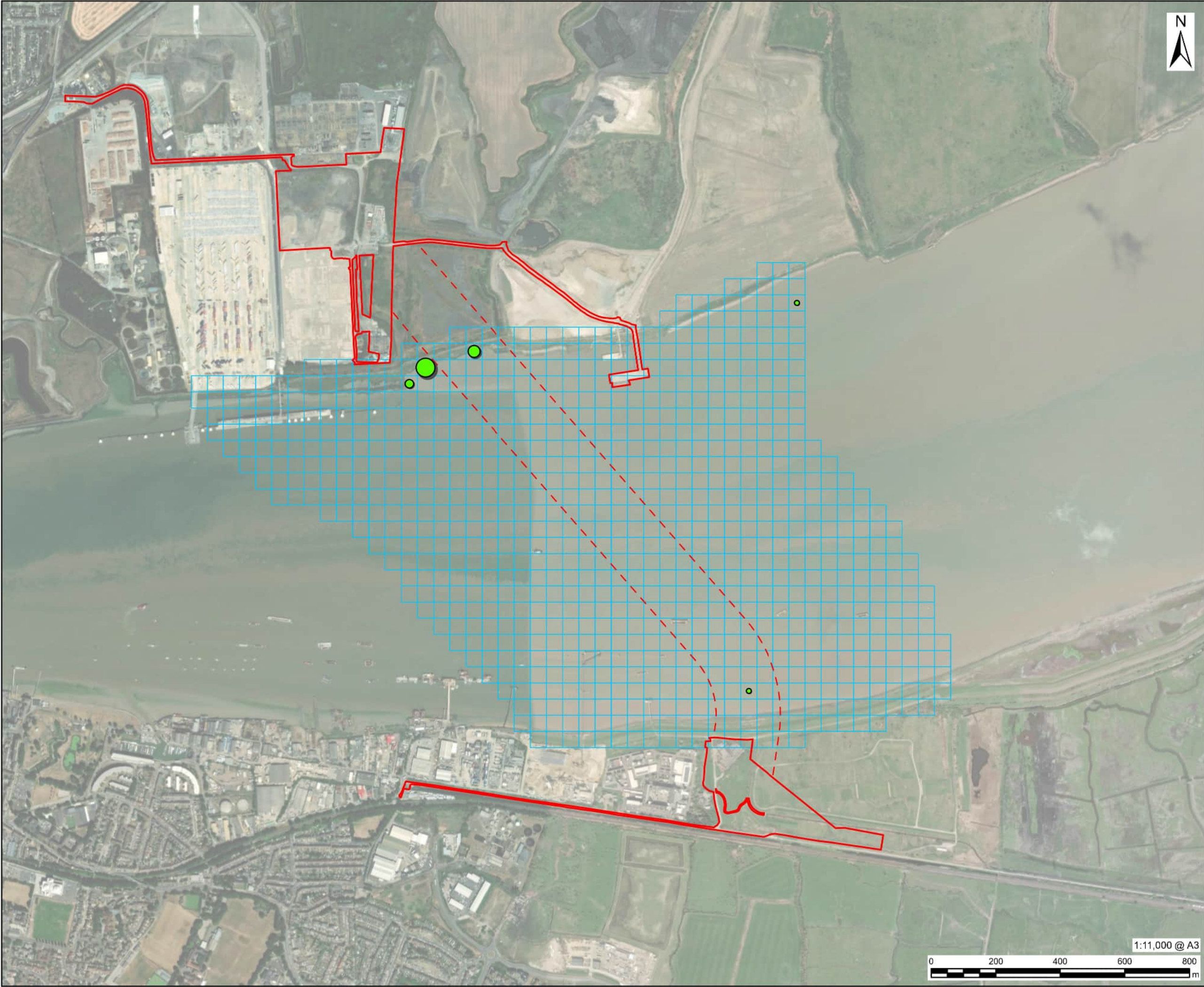
FIGURE NUMBER

Figure 1.16

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LEGEND

- Red Line Boundary (Above Ground)
- Tunnel Section
- Intertidal Survey Area

Number of Birds

- upto 5
- 6 to 35
- 36 to 75
- 76 to 175

NOTES

Aerial image credit: Maxar, Microsoft

ISSUE PURPOSE

FINAL

PROJECT NUMBER

60677311

FIGURE TITLE

Distribution of Waterbirds Cited on the
Thames Estuary and Marshes SPA /
Ramsar and Recorded During High and
Low-Water Intertidal Surveys.
Peak Count - Dunlin, Low Tide

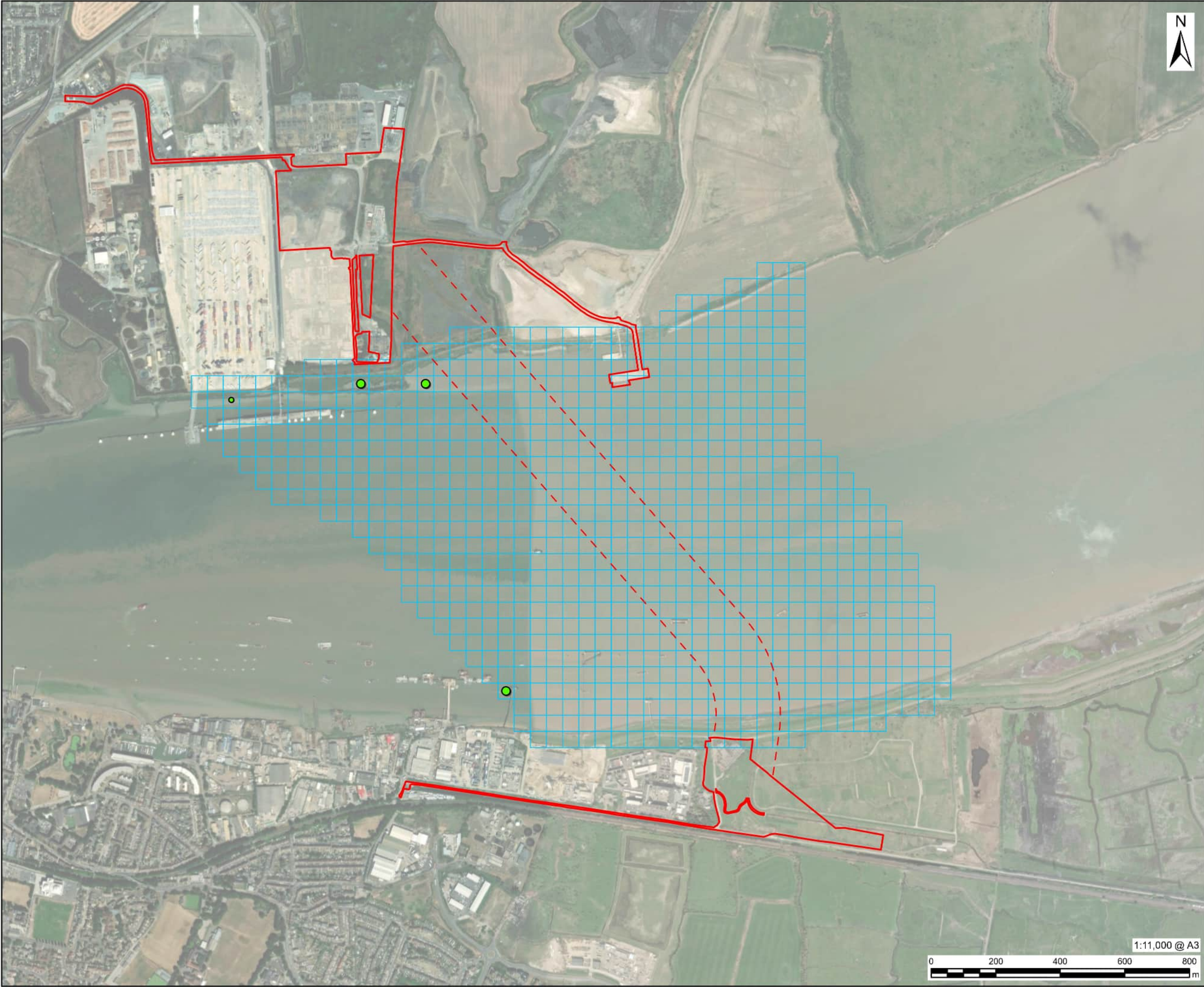
FIGURE NUMBER

Figure 1.17

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m

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LEGEND

- Red Line Boundary (Above Ground)
- Tunnel Section
- Intertidal Survey Area

Number of Birds

- upto 5
- 6 to 35

NOTES

Aerial image credit: Maxar, Microsoft

ISSUE PURPOSE

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FIGURE TITLE

Distribution of Waterbirds Cited on the
Thames Estuary and Marshes SPA /
Ramsar and Recorded During High and
Low-Water Intertidal Surveys.
Peak Count - Redshank, High Tide

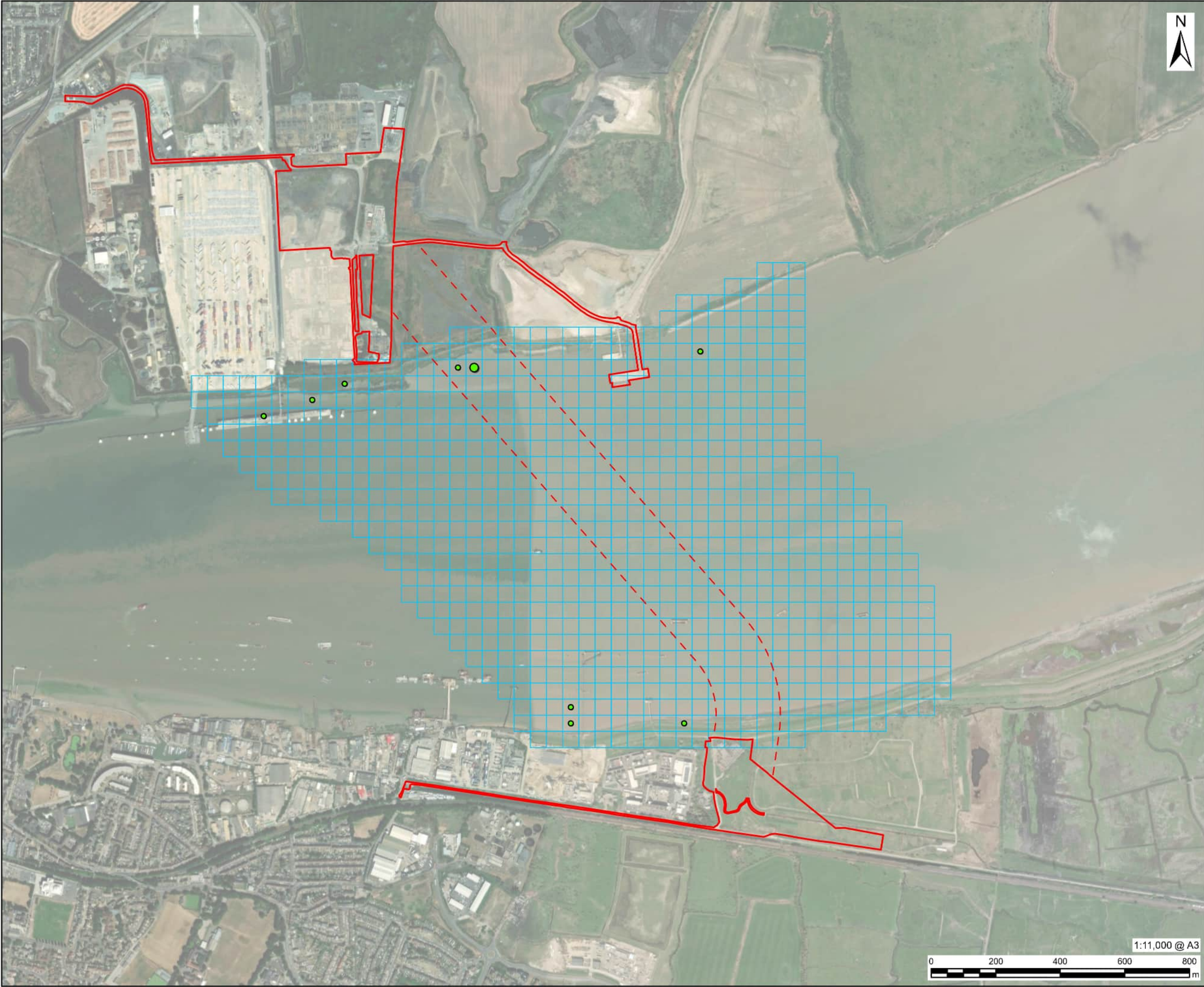
FIGURE NUMBER

Figure 1.18

1:11,000 @ A3

0 200 400 600 800
m

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LEGEND

- Red Line Boundary (Above Ground)
- Tunnel Section
- Intertidal Survey Area

Number of Birds

- upto 5
- 6 to 35

NOTES

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PROJECT NUMBER

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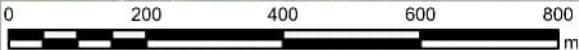
FIGURE TITLE

Distribution of Waterbirds Cited on the
Thames Estuary and Marshes SPA /
Ramsar and Recorded During High and
Low-Water Intertidal Surveys.
Peak Count - Redshank, Low Tide

FIGURE NUMBER

Figure 1.19

1:11,000 @ A3





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LEGEND

Red Line Boundary (Above Ground)
Tunnel Section

Survey Record for Species of Conservation concern

- Priority Species
- BoCC Red List
- BoCC Amber List

Flight Record

Species List

- D - Dunnoek
- GL - Grey Wagtail
- K - Kestrel
- LI - Linnet
- MP - Meadow Pipit
- RB - Reed Bunting
- RE - Redwing
- RO - Rook
- SD - Stock Dove
- SG - Starling
- ST - Song Thrush
- WP - Woodpigeon
- WR - Wren

NOTES

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FIGURE TITLE
Distribution of Species of Conservation Concern

FIGURE NUMBER
Figure 2



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- LEGEND**
- Red Line Boundary (Above Ground)
Tunnel Section
- Breeding Bird Territories
- Moorhen (MH) [1 terr.]
 - Woodpigeon (WP) [4 terr.]
 - Skylark (S) [1 terr.]
 - Cetti's Warbler (CW) [1 terr.]
 - Whitethroat (WH) [4 terr.]
 - Wren (WR) [4 terr.]
 - Song Thrush (ST) [2 terr.]
 - Dunnock (D) [3 terr.]
 - Greenfinch (GR) [2 terr.]
 - Linnet (LI) [5 terr.]

NOTES
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FIGURE TITLE
Breeding Bird Territories
Tilbury Site

FIGURE NUMBER
Figure 3.1



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- LEGEND**
- Red Line Boundary (Above Ground)
Tunnel Section
- Breeding Bird Territories
- Moorhen (MH) [1 terr.]
 - Woodpigeon (WP) [4 terr.]
 - Kestrel (K) [1 terr.]
 - Skylark (S) [1 terr.]
 - Cetti's Warbler (CW) [1 terr.]
 - Whitethroat (WH) [2 terr.]
 - Wren (WR) [2 terr.]
 - Dunnock (D) [1 terr.]
 - Greenfinch (GR) [1 terr.]
 - Linnet (LI) [3 terr.]

NOTES
Aerial image credit: Maxar, Microsoft

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FIGURE TITLE

Breeding Bird Territories
Gravesend Site

FIGURE NUMBER

Figure 3.2

