



The Sizewell C Project

9.65 Outline Vessel Management Plan - Clean Version

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1 INTRODUCTION

- 1.1.1 This Outline Vessel Management Plan (OVMP) provides details of the proposed approach to managing deliveries to the Permanent and Temporary BLF at the SZC site via the marine route over the period of construction and operation.
- 1.1.2 The OVMP will be supplemented during the detailed planning and construction stages by specific Vessel Management Plans prepared by the contractors to accord with the principles in this OVMP.
- 1.1.3 The OVMP outlines the vessel movements and routes and provides the strategy for planning the vessel movements to protect the Outer Thames Estuary Special Protection Area (SPA). The OVMP gives direction on choice of routes and monitoring of vessel movements to facilitate the minimum disturbance to existing sensitive habitats and species and in particular to wintering red-throated divers. The OVMP also provides a summary of the approach to monitoring of red-throated divers, the governance around this monitoring, the setting of disturbance thresholds and approach which will be taken in relation to directing vessels to use alternative routes.
- 1.1.4 This Plan excludes detailed consideration of the following families of vessel movement:
- Tug movements and marine works for outfall/intake tunnels: these movements would be concentrated around the SZC site area and are not expected to impinge significantly on the wider SPA area compared to the import of AIL's and of bulk aggregate import
 - Delivery of rock armour for Hard Coastal Defence Feature: these movements will follow the same protocols and routings as those presented in the OVMP, depending on the origin of the rock armour. An estimate of these movements is, however, included in Table 3.1.
 - Shingle import/ recharge for Soft Coastal Defence Feature: these movements will follow the same protocols and routings as those presented in the OVMP. Initial shingle import would ideally be completed during the fair weather periods which are more prevalent in summer months. Shingle recharge is expected to be infrequent (typically 10-year intervals) during the operational and decommissioning phases of SZC. An estimate of these movements is, however, included in Table 3.1.
- 1.1.5 For the purposes of this plan the SZC construction period is 2025 to 2032 and the SZC operational and decommissioning period is 2032 to 2140. The

arrangements set out in this outline plan, however, will extend to cover and variation in these dates.

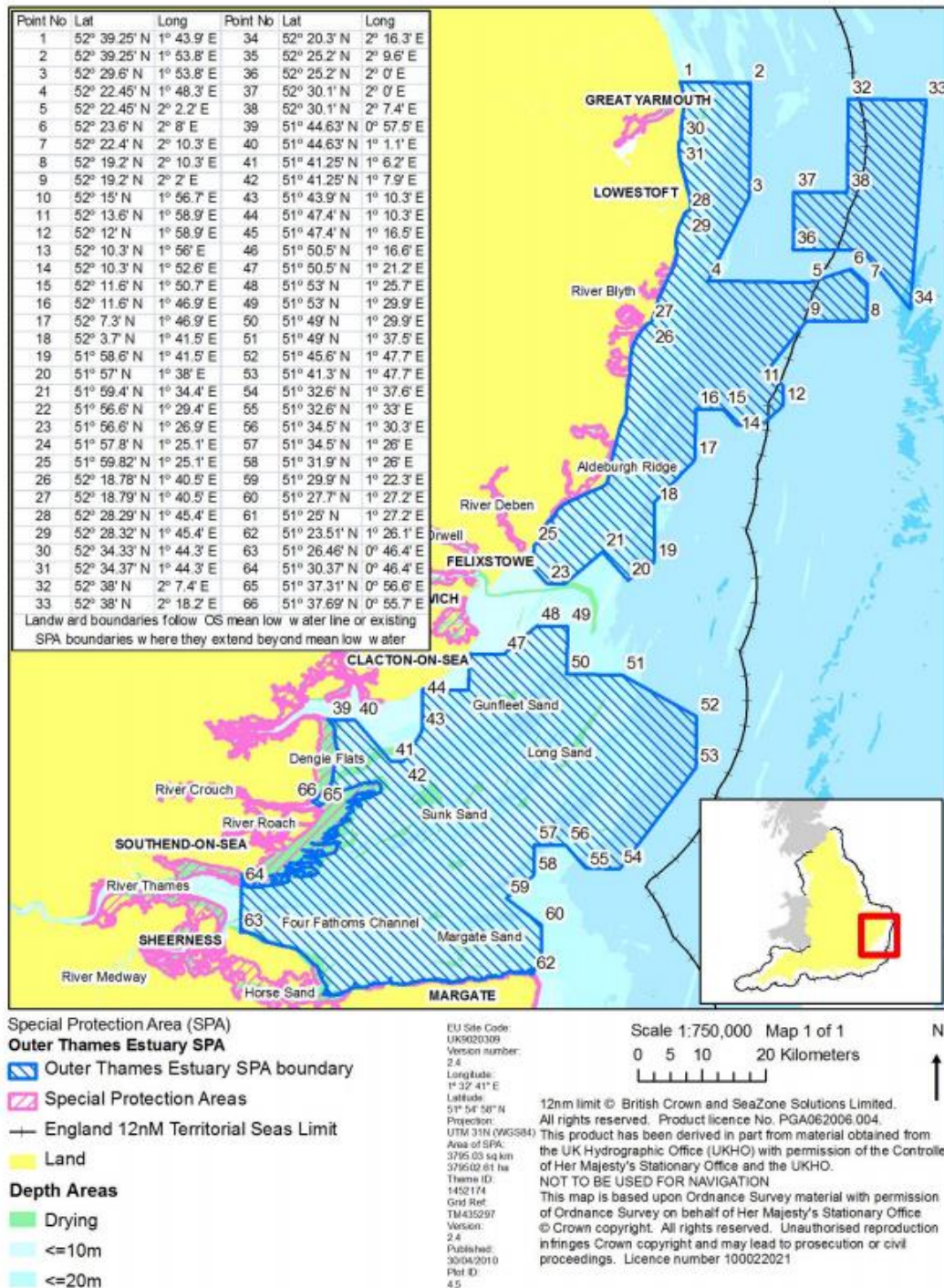
- 1.1.6 The vessel count presented in this plan includes both the inbound and outbound legs of the journey, i.e. each vessel will have an inbound and outbound leg.

1.2 Spatial Extents of Plan

- 1.2.1 This plan applies to vessel movements, servicing Sizewell C, when they operate within the Outer Thames Estuary SPA only and from the point at which a vessel enters the SPA until that point at which it exits the SPA, other than when the vessel is at anchor at Sizewell C. The extent of the SPA is shown on Plate 1.1 below and on Figure A1 in Appendix A.

- 1.2.2 The OVMP is therefore applicable to any vessel leaving London ports and traversing the southern sector of the SPA and traversing the northern sector to Sizewell C. It is also applicable to any vessel departing the ports of Harwich or Felixstowe and entering the northern sector of the SPA at its southern extent offshore of the Deben Estuary. Similarly, it is applicable to any vessel departing Lowestoft for the entirety of the journey, in the northern sector of the SPA, to Sizewell C. The plan is also applicable to any international movements. These are likely to enter the northern sector(s) of the SPA from the east and traverse the sector in a westerly direction to Sizewell C.

Plate 1.1: Extent of SPA



2 VESSEL MOVEMENTS AND REQUIREMENTS

2.1.1 Four families of delivery mechanisms are considered, each with different vessel types, supporting infrastructure and operational characteristics. The four types are:

- Permanent BLF – Beach Landing Facility – import and possible export of Abnormal Indivisible Loads (AILs) during construction and operational phases of SZC. Served by North Sea Barge with tug.
- Temporary BLF, also referred to as MBIF (Marine Bulk Import Facility) - import of bulk aggregate during SZC construction phase. Served by self-discharging coaster vessels. It may be possible to delivery other cargos to the temporary BLF once bulk aggregate import is complete.
- General site access for dredging and harbour
- Offshore Head Construction and Access

2.2 Permanent BLF

2.2.1 The Permanent BLF is a NAABSA (Not Always Afloat But Safely Aground) type docking facility used for the transport and handling of Abnormal Indivisible Loads (AILs). Vessels arrive at the facility in the deep water on a high tide and working with the receding tide are ballasted to rest securely on the seabed (and support grillage during construction years). AILs are typically physically unusual, expensive or unique and the grounded vessel provides a stable platform for safe offloading. The Permanent BLF features a permanent sub-structure and de-mountable deck designed to be used in daylight only during the annual season April to October.

2.2.2 While some variety can be accommodated, the Permanent BLF design is optimised for a particular size of North Sea Barge (NSB) which, when ballasted correctly, provides a smooth graded transition to the land via the in-built roll-on / roll-off mechanism.

2.2.3 The NSB is unpowered and is towed and manoeuvred using a tug power unit. Due to low draft, specific shallow water vessels are expected to be necessary, at least for parts of the berthing/ offload/ departure process (e.g. Shoalbuster tugs). Details of typical vessels and a grounded landing operation are provided in Plates 2.1 to 2.3 below:

Plate 2.1: North Sea Barge

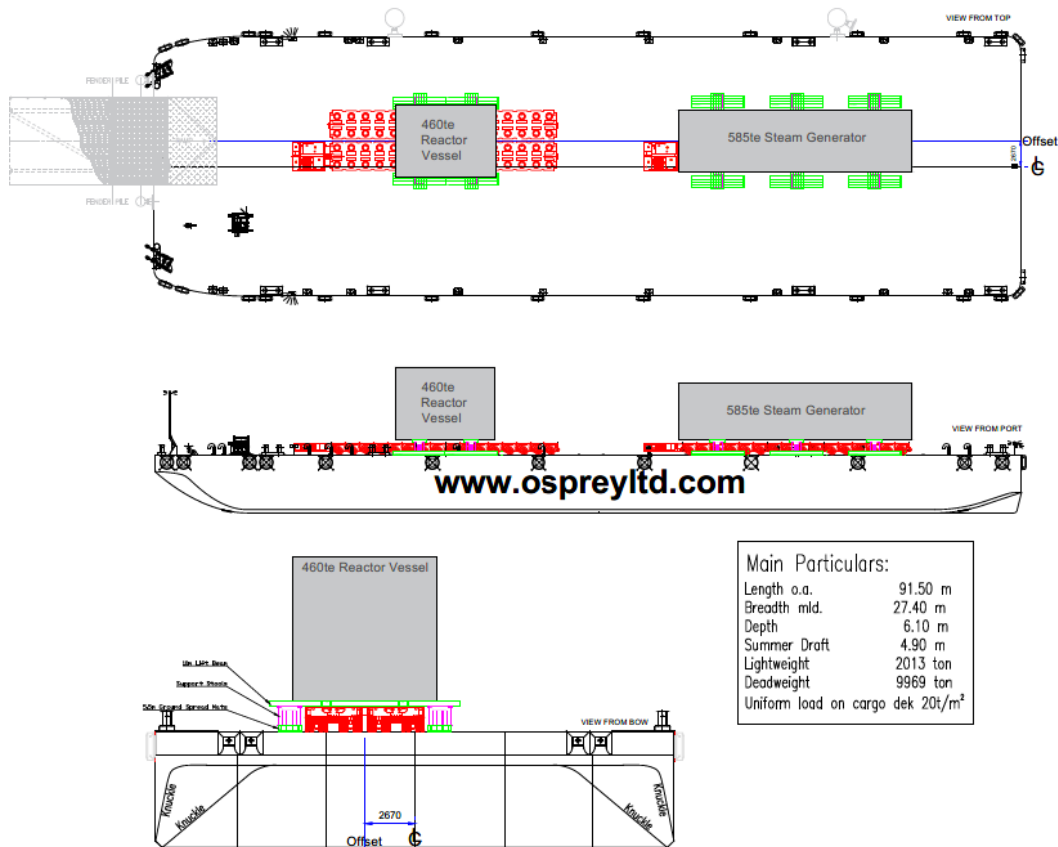


Plate 2.2: Shoalbuster Tug Power Unit

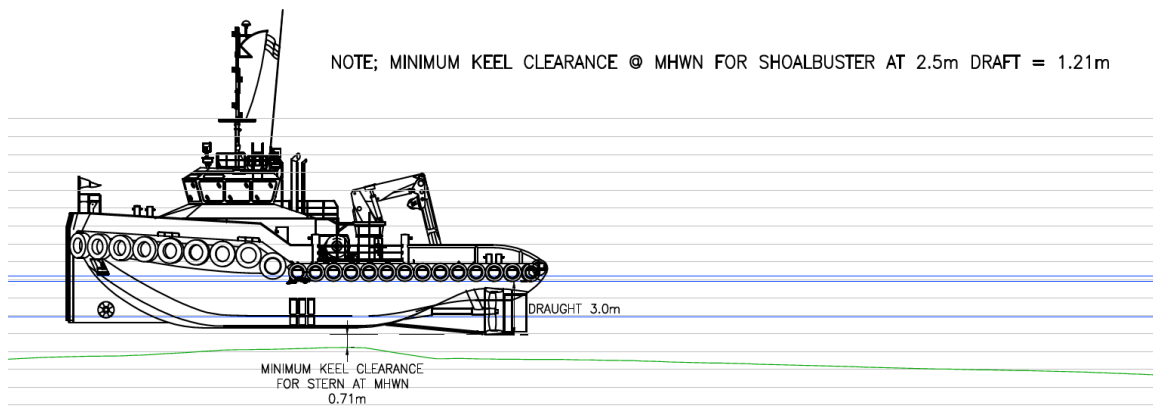
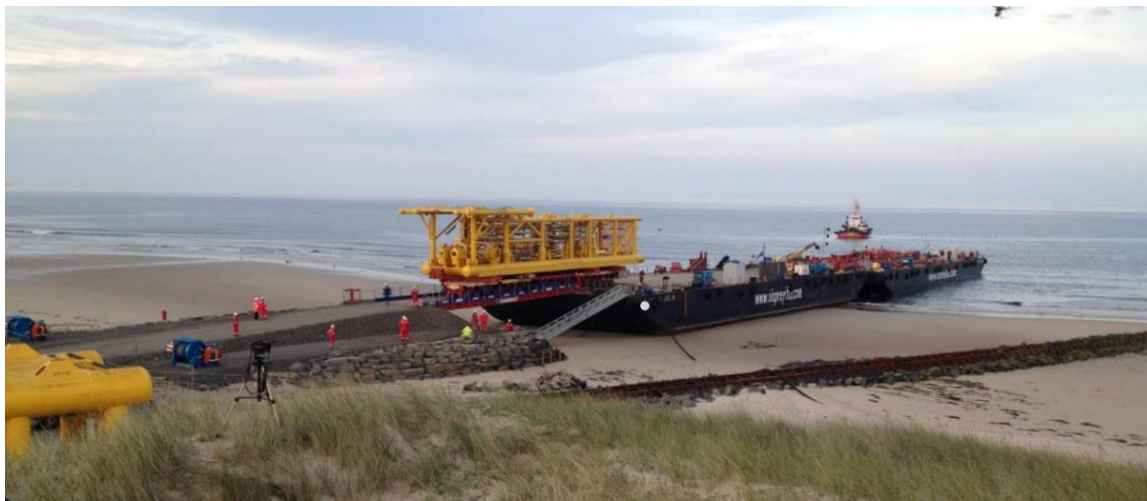


Plate 2.3: Typical NAABSA landing



2.3 Temporary BLF (MBIF)

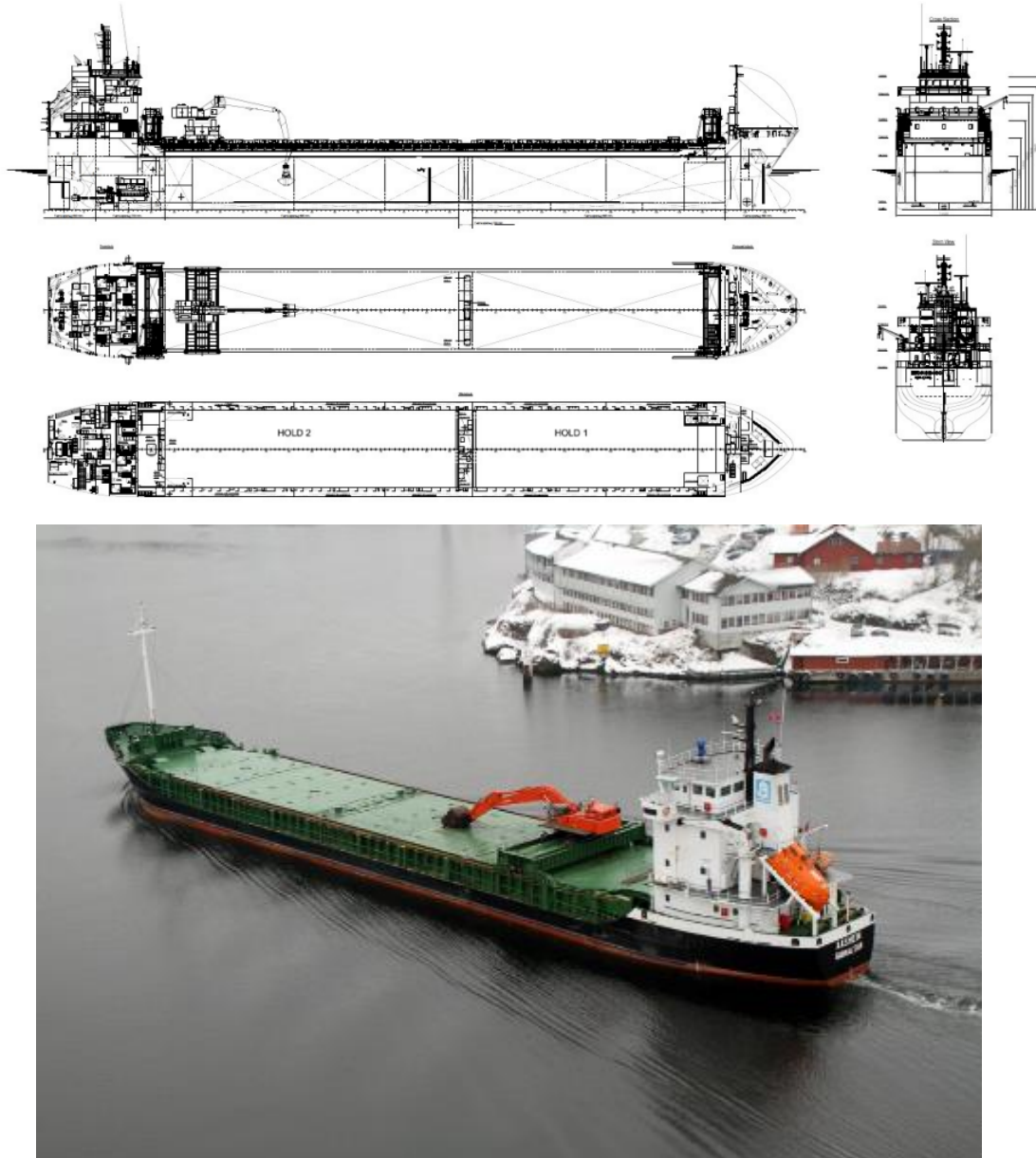
2.3.1 The Temporary BLF, also referred to as the Marine Bulk Import facility (MBIF) is provided for the import of bulk materials, specifically dry or semi dry aggregates for subsequent blending with site-won material and binder to form engineered backfill material.

2.3.2 The Temporary BLF is a temporary structure and will be removed before the completion of construction (assumed operating life 8 years). It includes a travelling reception hopper and conveyor system for materials handling and transport from the head back to the shore. Landings at this facility are designed to make maximum use of the relatively shallow water depth available close to shore and laden vessels will arrive and be unloaded over the high tide to depart from the berth before the next delivery arrives.

2.3.3 The design of the facility is optimised for a typical coastal cruiser in the 6 – 7000 tonne class, nominally loaded to 4500 tonnes as permitted by the draft available at the landing position. All vessels are self-powered and rigged for self-unloading into the receiving hopper.

2.3.4 Details of a typical vessel are provided below in Plate 2.4:

Plate 2.4: Indicative Bulk Carrier Vessel



2.4 General Access for Dredging, Harbour and Offshore Head

- 2.4.1 Within the movements an allowance has been made for the use of the routes for Dredging and Offshore Head construction vessels. These will be ad-hoc as required for Dredging and Offshore Construction and sit within the stated movements. The vessels for Harbour and Offshore Construction will be smaller. The use of a Plough Dredger is proposed.

3 VESSEL MOVEMENTS

- 3.1.1 Table 3.1 presents a summary of the anticipated vessel movements associated with the permanent BLF and the temporary BLF (MBIF in the table).
- 3.1.2 The “Maximum Availability of Cargo Landings” is the maximum seasonal number of landings for which consent has been sought in the DCO process:
- Permanent BLF availability: 100 during summer (April – October), daylight operations only
 - Temporary BLF (MBIF) availability: 400 during summer (April – October), 200 in winter (November – March), 24 hour working permitted
- 3.1.3 The “Inshore Support Vessels per Landing” column indicates the number of ancillary vessels required in attendance at each landing. Thus, for a single Permanent BLF landing, the (barge & tug) combination which makes the seagoing journey would be attended by two local support vessels, a shallow-draft tug and the harbourmaster’s craft. For a Temporary BLF delivery, the self-propelled vessel making the seagoing journey would be attended by one local support vessel, the harbourmaster’s craft. The inshore support vessels may remain on station pending subsequent deliveries or may return to a local base for fuelling, maintenance, crew change, etc. Mooring facilities for support vessels remaining on station are incorporated in the design of the BLFs.
- 3.1.4 The figures in the body of Table 3.1 represent the current estimate of the number of landings of each type in each year, thus 7 AIL deliveries to Permanent BLF in 2027, 28 deliveries in 2028, etc. These represent current estimates only, and are expected to vary to reflect factors such as the achievable degree of consolidation of AIL’s on individual barges, compensation for weather-related delays, changes to quantities for import, etc.
- 3.1.5 Each Landing would comprise two journeys, one inbound and one return journey.

Table 3.1: Maximum seasonal capacity and anticipated deliveries

Cargo deliveries SZC Marine Facilities											
Summer Season											
Facility			Season								
			2025	2026	2027	2028	2029	2030	2031	2032	2042-2142 (10 yearly)
	Maximum availability of Cargo deliveries	Inshore support vessels per landing	Current assessment								
BLF (AIL, Sea Defence)	100	2	0	0	7	28	28	20	1	100	30
MBIF	400	1*	160	160	0	0	0	0	0	40	0
Total	500		160	160	7	28	28	20	1	140	30
Winter Season											
Facility			Season								
			2025	2026	2027	2028	2029	2030	2031	2032	2042-2142 (10 yearly)
	Maximum availability of Cargo Landings	Inshore support vessels per landing	Current assessment								
BLF	0	2	0	0	Facility unavailable						
MBIF	200	1*	0	0	Retained for resilience						Decommissioned
Total	200		0	0	0	0	0	0	0	0	0

3.1.6 Support vessels at or near the shore will be required to attend each cargo delivery as follows

- Permanent BLF: the towed barge and tug power unit operating as a joined pair are counted as a single vessel combination.
- For Permanent BLF, each cargo will be attended by an additional shallow water tug on standby at the dock for additional control during mooring.
- For Temporary BLF operations, a tug is not normally required to be in attendance. A vessel which is unable to manoeuvre from the berth would continue to discharge and then to ride out the low tide on station. It would then be repaired and depart under its own power or would be towed and moored offshore using the marine works tug and wait for a larger tug from a local port to take it back to a port for repair.
- A vessel which is unable to discharge would self-manoeuvre off station under its own power. Should tug towage be required (in case of a concurrent discharge and propulsion failure on a fully laden vessel), the Marine Works Tug may be called off station from the marine heads location to manoeuvre a crippled vessel into deeper water. Where no Marine Works tug is available, a bespoke tug will be provided.

-
- For all manoeuvres at the marine facilities the Harbour Master's vessel may be in attendance
 - Winter availability of the Temporary BLF is not currently expected but the potential for availability is retained for resilience at present and, therefore, included in this OVMP.

4 VESSEL ROUTING

- 4.1.1 Vessel routes have been developed which provide alternatives to ‘preferred routes’ in the event that vessel movements along the preferred routes are shown to be causing disturbance to red-throated divers.
- 4.1.2 This section defines the preferred routes from the north (Lowestoft) and the south (Ipswich/ Harwich, Lowestoft, Isle of Grain) and proposed alternative routings. The preferred routes are typically more direct whereas the alternatives involve some level of diversion making them slightly longer.
- 4.1.3 Plate 4-1 shows candidate locations for the sources and destinations of material supplies to the SZC project. Table 4.1 describes the materials and their likely source / destinations.

Plate 4.1: Source – Destination Map



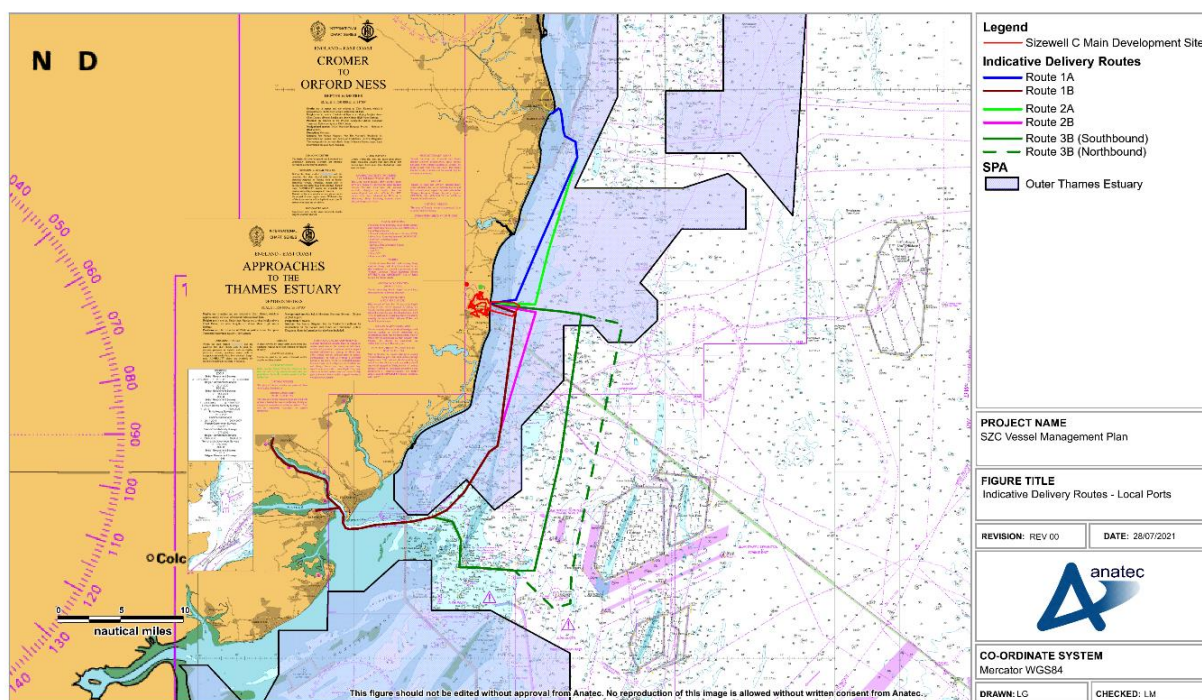
Table 4.1: Source-Destination Table

Description	Source		Destination	
	Ref	Location	Ref	Location
AILs	2	Lowestoft	SZC	Permanent BLF
Bulk Aggregates for blending	1	Ipswich/ Harwich/ Isle of Grain	SZC	Temporary BLF (MBIF)
	2	Lowestoft		

- 4.1.4 Although it is noted that indicative alternative delivery routes are required for the purposes of mitigating impacts on marine mammal and ornithological receptors, the requirements for delivery vessels to comply with the Convention on the International Regulations for Preventing Collisions at Sea (1972) (COLREGS) (Ref 0) shall remain the key navigational priority.
- 4.1.5 Indicative alternative delivery routes have been defined taking into consideration a number of factors, including shallow waters, existing routing, navigational features and existing offshore developments or areas to be avoided.
- 4.1.6 The focus is on routes taken by vessels delivering AILs to the permanent BLF and bulk aggregates for blending to the temporary BLF. The ports of Lowestoft, Ipswich, Harwich and the Isle of Grain have been identified as the most likely source of these materials.
- 4.1.7 For the local ports of Lowestoft, Ipswich and Harwich, indicative families of routes are presented in Plate 4.2.:
- Route family 1 – direct route from local ports. There are no existing movements on this route as Sizewell is not a marine destination.
 - Route family 2 – alternative route from local ports using existing coastal route. 172 existing vessel movements per year approximated.
 - Route family 3 – alternative route which aims to minimise any interaction with the SPA, but is lower preference due to the additional time and fuel required to transit to and from the BLF (and potential increase in navigational safety associated with this). 3285 existing vessel movements per year approximated.

- 4.1.8 Route 1A and 2A show the routes from Lowestoft, while routes 1B, 2B and 3B show the routes from Ipswich/Harwich. The alternative routes enable a choice to be made based on the outcome of monitoring the effects of vessel movements on bird populations (see section 5).
- 4.1.9 It is noted that there is no route 3B alternative from Lowestoft as there is no reasonable route for vessels to take that would avoid the SPA without significantly increasing the safety risk to the vessels from increased journey time, increased interaction with other vessels and less favourable weather conditions experienced further offshore, particularly in the case of barges being towed. In addition, any route 3 alternative would significantly increase the emissions associated with the deliveries.

Plate 4.2: Indicative Delivery Routes – Local Ports



- 4.1.10 Based on the approximate number of vessels on the existing shipping routes 2 and 3, Table 4.2 presents the maximum percentage increase in vessel movements for these routes, above the existing baseline levels, for the maximum capacity of cargo landings per season, as described in Table 3.1 (i.e. 100 for the Permanent BLF in summer, 400 for the Temporary BLF (MBIF) in Summer and 200 for Temporary BLF (MBIF) in winter, noting that each landing represents 2 movements).
- 4.1.11 Although the maximum number of winter movements for the Temporary BLF (MBIF) would be 200, the currently anticipated number of deliveries is 0. Table 4.3 presents the percentage increase for the highest number of

currently anticipated deliveries in any one season (i.e. 100 for the Permanent BLF in summer, 160 for the MBIF in Summer and 0 for the MBIF in winter).

Table 4.2: Percentage Increased Vessel Movements (Maximum Capacity)

Route	BLF (summer)	MBIF (Summer)	BLF (winter)	MBIF (winter)
1 (from local ports) ¹	N/A	N/A	N/A	N/A
2 (from local ports)	199%	797%	0%	558%
3 (from major shipping lane)	10%	42%	0%	29%

Table 4.3: Percentage Increased Vessel Movements (Anticipated Deliveries)

Route	BLF (summer)	MBIF (Summer)	BLF (winter)	MBIF (winter)
1 (from local ports) ¹	N/A	N/A	N/A	N/A
2 (from local ports)	199%	319%	0%	0%
3 (from major shipping lane)	10%	17%	0%	0%

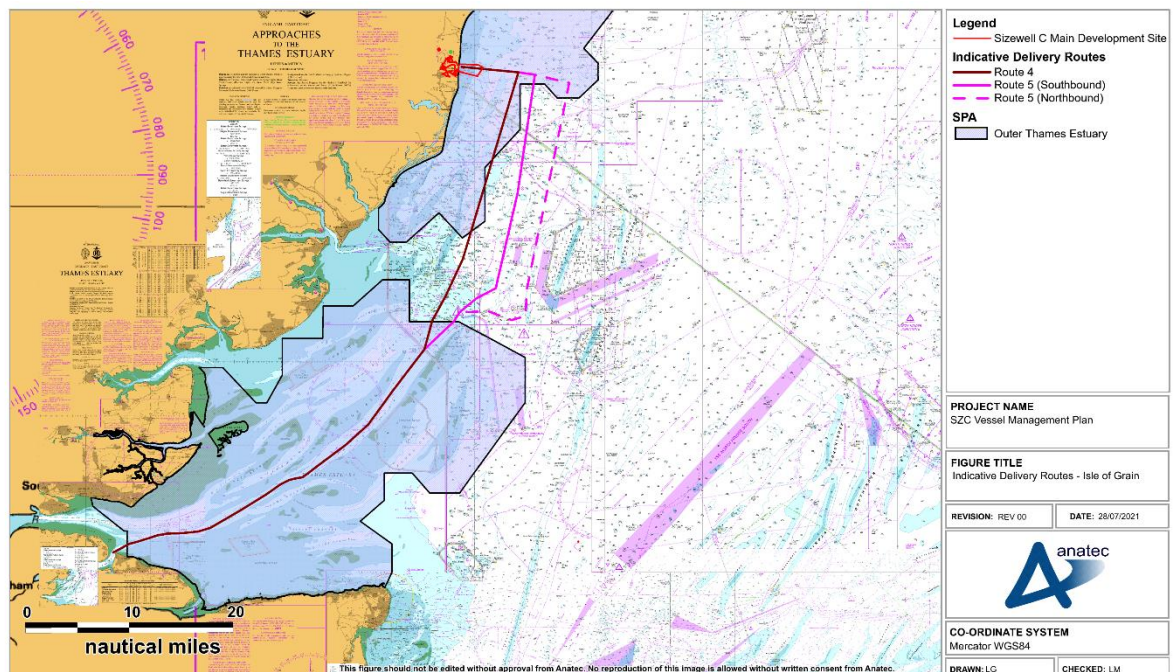
4.1.12 In the event that the currently anticipated number of deliveries during winter (October to April), of zero, is realised, there would be no disturbance impacts to red-throated divers.

4.1.13 Two indicative delivery routes from the Isle of Grain are presented in Plate 4.3:

- Route 4 – direct route using existing shipping routes
- Route 5 – alternative route using chartered routeing measures

¹ Route 1 would be a new route directly to the BLF / MBIF from the local ports and therefore a percentage increase is not applicable

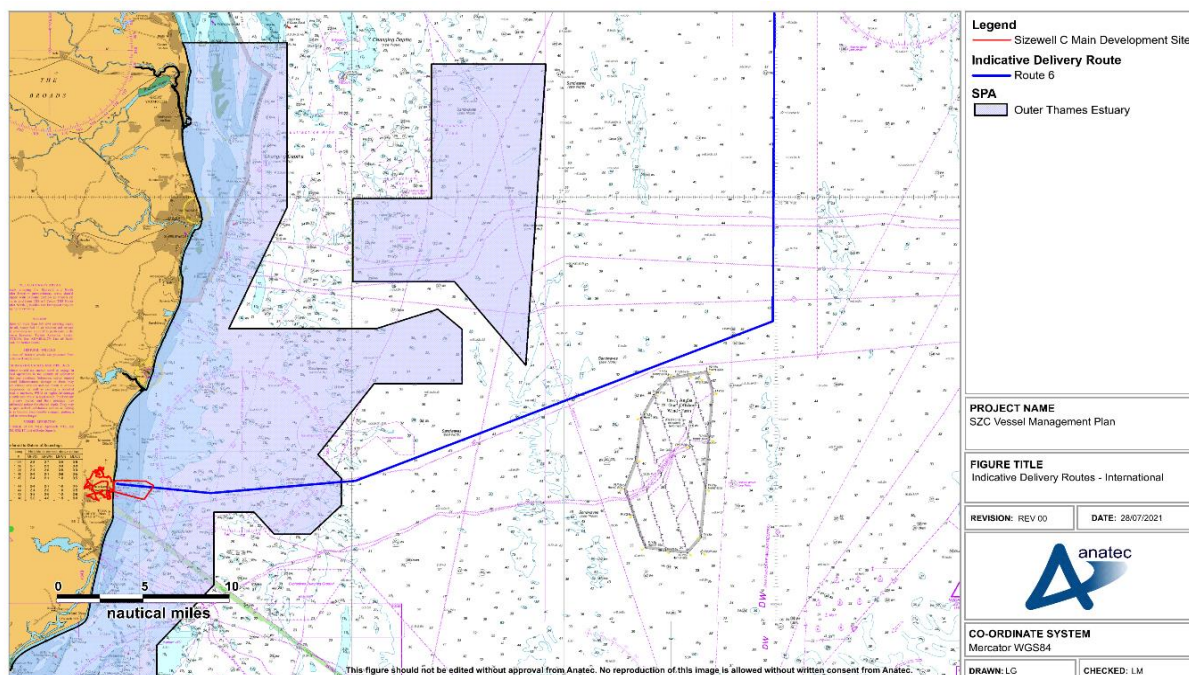
Plate 4.3: Indicative Delivery Routes – Isle of Grain



- 4.1.14 It is noted that vessels transiting to the BLFs from further south would be expected to join the Sunk Traffic Separation Scheme (TSS)² from the south and then follow a similar route as Route 5 above.
- 4.1.15 An indicative route for vessels travelling from international ports to the north and east is presented in Plate 4.4. It is noted that routing may be required to change depending on the approval and construction of offshore wind farms in the area. This route is predominantly for vessels expected from international ports further afield to supply specific AILs and materials.

² Traffic Separation Schemes are areas in the sea where navigation of ships is highly regulated and designed to create *lanes* in the water with ships in a specific lane all travelling in (roughly) the same direction. The Sunk TSS is TSS for the approaches to the Thames Estuary.

Plate 4.4: Indicative Delivery Routes - International



- 4.1.16 The Applicant commits to implementing the use of alternative routes where considered necessary, dependent on the outcome of monitoring the effects of vessel movements on bird populations (see section 5).
- 4.1.17 It should be noted that indicative routes are corridors and are not intended to be prescriptive for the purposes of navigation and will not be followed precisely by every vessel. All vessels shall passage plan as per the International Regulations for the Safety of Life at Sea (SOLAS) (Ref 0).
- 4.1.18 Vessels may deviate from these indicative routes for a variety of health and safety reasons at the discretion of the vessel's Master, including:
- Compliance with COLREGS or SOLAS;
 - Traffic density;
 - Prevailing weather, tidal or sea state conditions;
 - Navigational hazards as indicated on charts or notified through Notices to Mariners or other such sources;
 - Due to a vessel originating from or being bound for a destination not indicated by the transit routes;
 - Such other reasons as the Master of a vessel may deem relevant for the purposes of ensuring the safety of his vessel or another vessel.

5 MONITORING, MANAGEMENT AND MITIGATION

5.1 Background

- 5.1.1 Red-throated divers are only present in the Outer Thames Estuary SPA in the winter period, this being defined for this species as from October-April inclusive. There are therefore no constraints to vessel movements, in relation to this species during May to September.

5.2 Vessel Monitoring

- 5.2.1 In the event that vessel movements are used during October-April, the vessel movements will be monitored to confirm the delivery routes used. This will be done via Automatic Identification System (AIS) monitoring or a suitable alternative.

5.3 Ecological Monitoring

- 5.3.1 In the event that vessel movements are used during October-April, monitoring of wintering red-throated divers will be undertaken. Monitoring will be undertaken during each year of vessel movements, if any movements are undertaken during the October-April period.
- 5.3.2 The approach to monitoring will require the approval of the Ecology Working Group³ (EWG). The surveys of vessel-based disturbance to red-throated divers will include either (i) observers aboard vessels undertaking deliveries to Sizewell C or (ii) the use of drone surveys flown advance of the vessels; (or a combination of these approaches). If field observers are used, these observers will be experienced in sea-bird surveys, with at least 100 days of experience of vessel based monitoring.
- 5.3.3 The survey methodology will be deployed on a trial basis for the first ten vessel movements in the first winter of vessel use. These trials will be used to refine the survey approach to maximise the extent to which divers are detected and the methodology will then be finalised and submitted for the approval of the EWG.
- 5.3.4 The objective of the methodology deployed will to record the presence of divers both on the sea and in flight and particularly divers which take flight in the presence of the vessel. A working assumption will be made that divers which take flight in the presence of the vessel have been disturbed by the vessel.

³ Ecology Working Group, as defined in Schedule 11 of the Deed of Obligation

- 5.3.5 Thresholds for the number of birds disturbed by vessel movements and which constitute disturbance of the population will be developed in the context of the SPA population and the thresholds will require the approval of the EWG. The thresholds will include ‘acute’ and ‘chronic’ disturbance and the thresholds will include one which relates to the number of divers displaced (or apparently displaced) per vessel km.
- 5.3.6 The objective of monitoring and any resultant changes to vessel movements is to ensure that red-throated diver populations are not adversely impacted by Sizewell C vessel movements, through substantive disturbance of feeding or resting birds and this will be ensured by using the thresholds described above and deploying alternative vessel routes to ensure the thresholds are observed.
- 5.3.7 The monitoring results would be shared with the SZC Co ecologist and the Ecological Clerk of Works (EcOW) on a daily basis and with the EWG monthly for any month during October-April during which vessel movements are being undertaken.
- 5.3.8 In the event that large numbers of divers are detected as being displaced by a single vessel movement (‘acute disturbance’), the SZC Co ecologist and / or the ECoW will have the authority to direct subsequent vessels to an alternative route for a period of a week. In this period the extent of displacement would be discussed with the EWG and a decision taken as to whether the alternative routing should be maintained for an extended period.
- 5.3.9 In relation to lower levels of disturbance (‘chronic disturbance’), the EWG would determine whether the monitoring over longer periods indicates that substantive disturbance to red-throated divers is occurring based on the thresholds described, on one or more of the preferred vessel routes being used see section 4.1.8, such that this disturbance could lead to an adverse effect on integrity of the SPA. If the EWG conclude that this is the case, the Environmental Review Group⁴ would be advised and a decision taken to direct the vessels to use a pre-defined alternative vessel route (see plate 4.2), subject to the considerations defined in section 4.1, so far as these considerations relate to vessel safety and / or COLREGS or SOLAS.

5.4 Vessel Disturbance Mitigation

- 5.4.1 The following measures to minimise vessel disturbance will also be implemented, where relevant:

⁴ Environmental Review Group, as defined in Schedule 11 of the Deed of Obligation

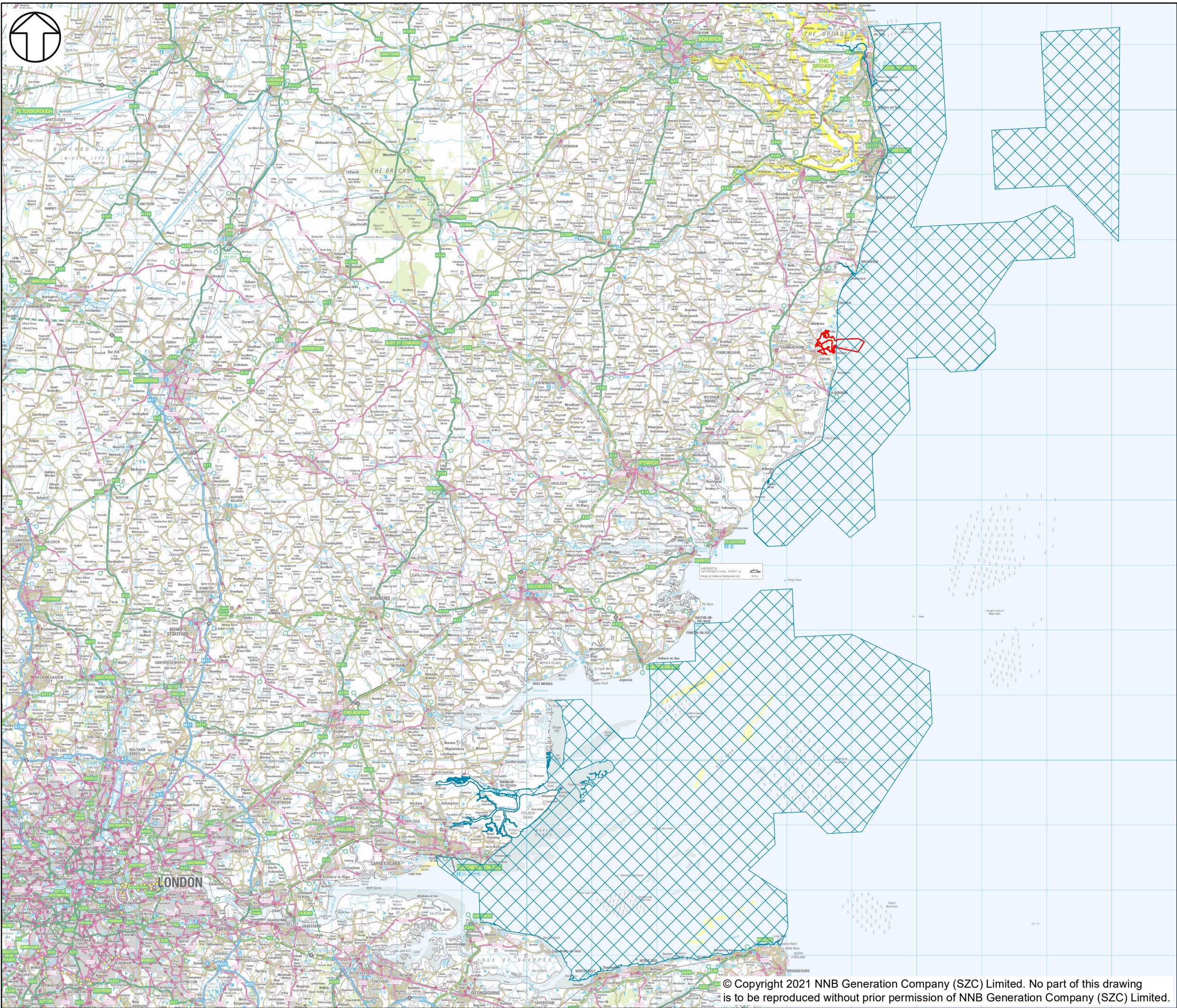
- Avoid and minimise vessel traffic, where possible, during the most sensitive time period for red-throated diver between November and March.
- Restrict vessel movements where possible to existing navigation routes (where the densities of divers are typically relatively low).
- Where it is necessary to go outside of established navigational routes, avoid rafting birds and where possible avoid disturbance to areas with consistently high diver density.
- Avoid over-revving of engines to minimise noise disturbance.
- Brief the vessel crew on the purpose and implications of these vessel management practices (through, for example, tool-box talks).

6 REFERENCES

- Ref 1. IMO (1972), *COLREGS*, IMO, London.
- Ref 2. IMO (1974). *SOLAS*, IMO, London.

APPENDIX A: ADDITIONAL FIGURES

A.1. Figure showing Outer Thames Estuary SPA



NOTES

KEY

- SIZEWELL C MAIN DEVELOPMENT SITE BOUNDARY
- DEMARCATION LINE
- OUTER THAMES ESTUARY SPA

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DOCUMENT:
SIZEWELL C PROJECT OUTLINE VESSEL MANAGEMENT PLAN

DRAWING TITLE:
LOCATION OF THE OUTER THAMES ESTUARY SPA

DRAWING NO:
FIGURE A1

DATE: JULY 2021 **DRAWN:** R.C. **SCALE:** 1:550,000 @A3 **REV:** 01



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