Tees Maintenance Dredging Annual Review 2020

Client: PD Ports

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Royal HaskoningDHV
Enhancing Society Together

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Royal HaskoningDHV

Table of Contents

1 INTRODUCTION

1.1 Background

Maintenance Dredging and the Habitats Regulations 1994, A Conservation Assessment Protocol for England (referred to as 'the Protocol' hereafter) was published by the Department for Environment, Food and Rural Affairs (Defra) in 2007 and followed the draft Protocol issued in 2003 for pilot studies at three trial sites on the Humber, Medina and Fal/Helford. The Protocol set out an approach for operators and regulators to provide a 'Maintenance Dredge Protocol (MDP) Baseline Document' to present existing and readily available information to describe the current and historical patterns of dredging in relation to the conservation objectives of a European site[1].

Where maintenance dredging is found likely to have, or be having, a significant effect on the national site network, a port authorising or undertaking licensed, contracted or otherwise permitted maintenance dredging operations (including disposal) must exercise its functions in compliance with the requirements of The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. The Protocol provides assistance to operators and regulators seeking, or giving, approval for maintenance dredging activities that could potentially affect the national site network. Following this process enables issues associated with The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 to be dealt with in a streamlined and proportionate manner, assisting harbour and port authorities in fulfilling their statutory obligations, and minimising the delay and cost to port and marine operators in obtaining consents.

The presumption in assessing any potential consequences of dredging activity is that maintenance dredging will continue in line with the established practice (described herein). The Baseline Document also presumes that existing practice is part of the functioning of the existing system.

The requirements of the Water Framework Directive (2000/60/EC) (WFD) extend further than The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, to consider the entire aquatic environment, rather than specific designated sites within the national site network. However, aiming to achieve Good Ecological Potential / Status, which is required under the WFD, is also a key requirement for maintaining the designated sites in, or restoring them to, favourable condition; hence the requirements of the WFD and The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 overlap.

The original Baseline Document was produced in 2005 (ABPmer, 2005). Royal Haskoning subsequently produced an updated Baseline Document in February 2008 (Royal Haskoning, 2008) which incorporated information which is relevant to the integrity of the European and Ramsar sites in the Tees estuary. Annual reviews and updates to the 2008 Baseline Document have been undertaken during:

- November 2009 (Royal Haskoning, 2009).
- February 2011 (Royal Haskoning, 2012a).
- March 2012 (Royal Haskoning, 2012b).
- February 2013 (Royal HaskoningDHV, 2013).
- May 2014 (Royal HaskoningDHV, 2014).
- February 2015 (Royal HaskoningDHV, 2015a).
- January 2016 (Royal HaskoningDHV, 2016).

[1] *The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 makes changes to the Conservation of Species and Habitats Regulations 2017, following the UK's exit from the European Union.*

- September 2017 (Royal HaskoningDHV, 2017).
- August 2018 (Royal HaskoningDHV, 2018).
- December 2019 (Royal HaskoningDHV, 2019).
- July 2020 (Royal HaskoningDHV, 2020).

1.2 Purpose of this document

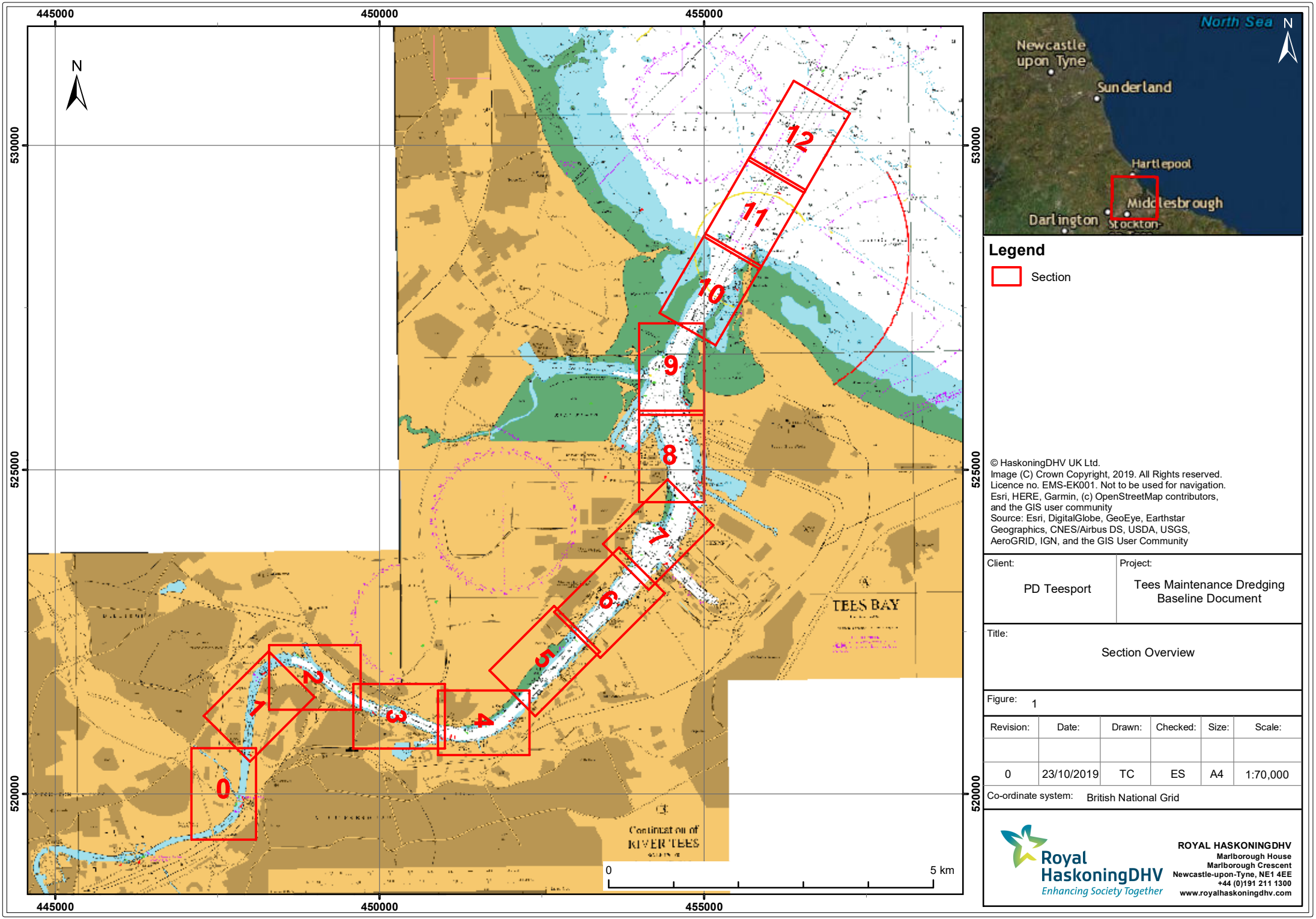
PD Teesport (PDT) has commissioned Royal HaskoningDHV to undertake a review of the 2019 MDP Baseline Document (Royal HaskoningDHV, 2020) to assess the impacts of maintenance dredging on national site network and to ensure that maintenance dredging remains in compliance with The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. The findings of the review are presented in this report.

As a WFD compliance assessment was undertaken as part of the 2017 MDP Baseline Document update, an additional assessment has not been undertaken. However, a review of the previous WFD compliance assessment has been undertaken as part of this update.

As noted above, annual reviews and updates to the 2008 Baseline Document have been undertaken. It should be noted that the annual updates are on the reviews themselves, rather than the initial Baseline Document. The main headings of the review are self-explanatory; however, the sub-headings are intended to cover the various aspects of the Baseline Document that could potentially change. Any changes to conclusions and recommendations provided within the last annual update (as a result of any new information) are also presented.

1.3 Study area

The study area is defined as the area within which maintenance dredging is undertaken by PDT; that is, the area commencing 185m down-estuary of the Tees Barrage at Blue House Point to the seaward limit of the Port Authority Area. This area effectively includes all river frontage and facilities within the estuary commencing near the Tees Barrage (see Figure 1). The port facilities within Hartlepool Bay are also included in the study area. As shown on Figure 1, the study area in the Tees is subdivided into 13 sectors (Sector 0 to 12).



Legend

Section

Client:	Project:
PD Teesport	Tees Maintenance Dredging Baseline Document

Title: Section Overview

Figure: 1

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
0	23/10/2019	TC	ES	A4	1:70,000

Co-ordinate system: British National Grid

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2 EXISTING MAINTENANCE DREDGING REGIME

PDT has a statutory duty to maintain navigation within the Tees estuary and into the Hartlepool docks. As part of this responsibility, PDT must maintain the advertised dredge depths within the defined areas (hereafter referred to as “the maintained areas”). In order to achieve this, PDT carries out maintenance dredging in the reaches of the river shown in Figure 1, as well as at Hartlepool.

2.1 Dredge and disposal methods

Most dredging occurs in the approach channel and low-middle estuary in order to maintain access to berth pockets and impounded docks. Trailing Suction Hopper Dredgers (TSHD) are currently used for the majority of the dredging and are supported by plough dredging where required. PDT employs two TSHDs of 1,500m³ hopper volume to maintain depths within the navigable channel and berths within the Tees estuary and at Hartlepool. Both dredgers have active bottom door offloading systems.

PDT operates its own 11m plough to supplement ongoing suction dredging operations through the removal of isolated high spots on the riverbed, primarily in frontages or confined areas. Plough dredging has also been utilised to move recently deposited accumulations of sediment to adjacent scour spots within the river, thus maintaining sediment within the estuarine system and reducing the overall volumes of dredgings requiring disposal to sea. Based on the above, contracted vessels are no longer required for maintenance dredging by PDT.

PDT operates its vessels under the requirements of the International Safety Management Code for the Safe Operation of Ships and for Pollution Prevention (the ‘ISM’ code) which is then externally audited by the Maritime and Coastguard Agency. PDT’s operational activities are undertaken in compliance with an Environmental Management System (EMS) meeting ISO14001 requirements and the PDT Group Environmental Policy Statement (provided below).

The hopper dredger *Heortnesse* has been subject to a £2.5 million refurbishment which will extend its lifespan, improve dredge management and reduce emissions. Such dredge management and emission reduction systems are already utilised on other dredge vessels operated by PDT.

Dredging practices have remained unchanged during the period 2005 to 2020.

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PD PORTS

GROUP ENVIRONMENTAL POLICY STATEMENT

PD Ports is an established ports and logistics business offering marine and port operations, warehousing, transport, forwarding and chartering throughout the UK.
We recognise environmental protection as one of our guiding principles and a key component of sound business performance; as such we have made the following commitments.

We will:

- Maintain our certification to ISO 14001 and operate as a minimum in compliance with all relevant legal requirements applicable to our business.
- Incorporate the consideration of potential environmental issues into our decision making and operations, including purchasing activities.
- Train, educate and inform our employees about environmental issues that may affect their work and promote environmental awareness to all those working on our sites.
- Ensure there are adequately trained personnel and suitable equipment available to respond immediately to any environmental / pollution incident and to regularly exercise contingency plans.
- Promote efficient use of resources and reduction of waste throughout our operations including electricity, fuel, raw materials, water and other resources, particularly those that are non-renewable, thereby reducing our carbon footprint.
- Work with our customers and suppliers to assess opportunities for the use of renewable and alternative energy sources.
- When dealing with any substances especially hazardous substances take all reasonable steps to prevent pollution during handling, transportation, storage and disposal, including developing procedures for dealing with emergencies and spill response in consultation with our neighbours and tenants as appropriate.
- To plan for changing environmental conditions through, amongst other measures, the development of a Climate Change Mitigation and Adaption Plan.
- Aim and work to minimise the impact of our activities on the local community and communicate proactively on the environment with interested parties, including customers, tenants, local residents and public authorities.
- Aim and work to minimise our impact on the ecology and the surrounding environment through the terrestrial and marine planning process.
- Undertake and regulate marine movements to minimise the impact on the surrounding environment and on other stakeholders
- Strive to continually improve our environmental performance by periodically reviewing our environmental objectives and targets in the light of new legislation and future plans.

Signature:

[redacted] PD Ports, Jan 2018

Issue: Final – Revision 2

Date: 16th July 2014 (DJ)

Revised: April 2017 (DJ)

STRETCH

2.2 Dredge volumes

A summary of dredged volumes (m³) from each reach from 2001 to 2020 is provided in Table 1. Data on dredging were obtained from PDT and extend the time series presented in Royal Haskoning (2008) from 2001 to 2020. As with previous years, no dredging has occurred in Reach 0 (Figure 1, and Figure A in Appendix 1) during the reporting period.

2.3 Disposal volumes

Table 1 and Figure 2 provide a summary of the total volume of dredged material (m³) disposed of to the Tees Bay offshore disposal site from each reach of the river shown in Figures A to M in Appendix 1. Other areas including Tees Berths, Hartlepool and the Seaton Channel are also shown in Table 1.

The total volume of maintenance dredged material disposal has decreased from 0.54 million m³ in 2019 to 0.35 million m³ in 2020. This is less than the average annual volume of maintenance dredged material disposal from the period 2001 to 2020, which equates to approximately 1.05 million m³ per annum. Weather conditions led to a reduction in volume of material requiring disposal offshore during 2020.

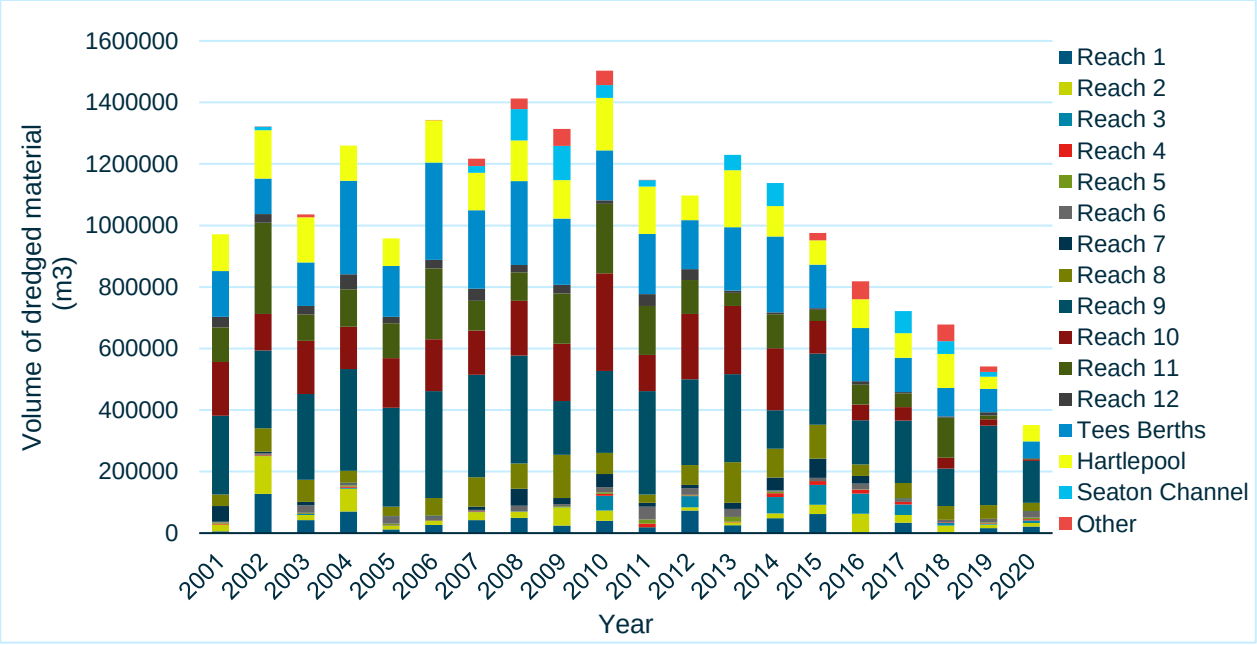

Figure 2 Summary of volumes (m³) dredged and deposited offshore during the period 2001 to 2020

Royal HaskoningDHV

Table 1 Summary of the total volume of dredged material disposal (m^3) from each reach of the River Tees (and Hartlepool) from 2001 to 2020

Reach	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1	5,911	127,827	42,384	70,856	12,361	27,075	42,701	49,701	24,159	40,237	19,066	73,544	25,674	48,268	62,094	1,500	33,972	2,165	16,509	21,429
2	21,768	122,381	16,470	73,210	11,649	12,982	26,028	19,805	60,118	32,817	371	9,814	8,863	15,894	29,830	61,722	25,133	22,508	11,379	11,307
3	0	1,366	4,176	3,205	412	412	1,925	735	1,772	48,532	0	37,429	0	52,857	64,998	65,468	33,698	8,501	1,693	8,418
4	3,131	1,666	127	4,468	676	282	1,514	0	274	6,056	11,386	1,500	2,996	12,504	11,770	12,884	8,771	1,879	2,605	3,699
5	4,621	1,634	2,751	3,815	5,997	1,339	764	0	1,336	4,745	13,496	2,541	15,018	5,370	471	951	0	0	3,270	5,622
6	1,625	5,282	24,645	4,859	23,640	12,092	3,088	18,906	7,037	17,009	41,303	21,755	26,210	3,630	10,534	18,383	8,242	8,624	10,618	18,762
7	51,303	4,804	10,765	3,297	1,243	2,642	9,841	55,084	19,322	43,157	12,502	10,160	19,746	42,200	61,866	25,041	3,339	0	0	2,080
8	37,075	76,297	72,261	39,251	30,172	56,926	96,160	82,531	140,839	68,357	27,102	64,468	131,948	93,188	111,145	37,485	50,317	44,138	44,965	26,931
9	256,158	252,715	279,054	330,835	321,316	347,365	332,679	349,982	174,009	266,187	336,050	278,883	286,441	124,821	230,316	143,677	202,051	121,796	258,315	136,566
10	174,248	118,613	171,950	137,022	161,349	168,733	143,089	178,819	186,336	317,961	117,635	211,799	221,176	201,953	106,326	51,239	44,053	36,072	21,132	5,229
11	112,437	296,471	85,385	121,807	113,304	230,099	97,682	92,427	163,910	225,143	159,529	110,787	43,032	110,777	36,893	64,146	44,546	129,283	12,204	2,702
12	34,747	28,437	28,156	48,707	21,307	28,262	39,441	23,548	27,937	12,133	38,877	35,415	7,662	5,954	4898	11,168	4,796	4,471	10,170	575
Tees berths	148,837	115,219	141,880	303,869	164,664	316,696	254,458	272,520	215,702	162,053	195,482	159,067	205,141	246,486	141,160	173,396	111,221	92,351	75,427	55,129
Hartlepool	119,847	157,329	146,457	114,104	89,811	137,606	121,605	132,041	125,032	170,170	154,025	80,410	186,229	99,068	79,818	92,781	79,936	110,448	39,943	52,907
Seaton Channel	0	10,900	0	0	0	0	22,279	102,463	111,424	42,110	21,060	0	49,598	74,652	0	0	71,803	41,712	15,951	0
Other	0	245	9,809	0	0	312	23,366	34,605	54,610	46,725	461	0	0	0	23,972	58,842	0	53,880	17,183	0
Total (x 10^6)	**0.972**	**1.32**	**1.03**	**1.259**	**0.958**	**1.343**	**1.217**	**1.413**	**1.314**	**1.503**	**1.148**	**1.098**	**1.230**	**1.13**	**0.97**	**0.81**	**0.71**	**0.67**	**0.54**	**0.35**

2.3.1 Dredge depths

PDT is required to publish dredge depths by the Tees and Hartlepool Port Authority Act 1966; the published Admiralty Charts show the maximum licensed depths for the channel and berths. The safe depths for navigation are published periodically by the Harbour Master. Some areas within the channels or berths may be deeper than the maximum listed depth due to natural scour processes, for example. Any proposed increase in the maximum dredged depth will require consent from the Marine Management Organisation (MMO) and where appropriate a dredge/works license from the Harbour Master. A summary of the dredge depths is provided below.

The main channel in the Tees has a declared depth of 15.4m below Chart Datum (bCD) in the approach channel (i.e. in Tees Bay), 14.1m bCD to upstream of Redcar Ore Terminal, 10.4m bCD up to Teesport and then progressively less depth up to 4.5m bCD in Billingham Reach.

Parts of the channel now declared at 14.1m bCD were originally dredged to a deeper depth. The declared depth of berths and docks varies depending on the location and the vessels which require access. The berth pocket within Tees Dock has been dredged to a depth of 14.5m bCD, with the general dock area dredged to 10.9m bCD.

The approach channel to Hartlepool Docks is currently maintained to 5.2m bCD. Victoria Dock is maintained to 6.8m bCD and the deep-water berths within the docks are maintained to 9.5m bCD.

Declared depths are required for navigational purposes, however actual dredge depths may be commonly up to 0.5m greater in depth given the tolerances associated with dredging practices.

PDT is proposing to deepen the Tees navigation channel and turning circle to a maximum depth of 14.5m bCD for the Northern Gateway Container Terminal (NGCT) project (detailed further in Section 5.1). PDT also has consent to deepen, widen and realign the approach channel to Hartlepool Docks to a depth of 7.5m bCD (Section 5.3).

PDT is proposing to undertake a dredge of the navigation channel within the Tees estuary to locally deepen the channel from a depth of an advertised 5.1m bCD to a maximum depth of 5.7m bCD. The total dredge volume would be up to 100,000m^3 (with up to 50,000m^3 of material to be disposed offshore and 50,000m^3 of plough dredging). The dredge would be undertaken within the Chart 2 area, shown on Figure 1. As the licensed disposal quantity on the marine licence (L/2015/00427/5) would not be exceeded by the proposed disposal, in addition to the fact that the marine licence does not specify a maximum dredge depth and PDT does not require any other consents, the marine licence does not need to be varied. However, PDT submitted a marine licence variation request to the MMO in September 2020 in the interests of openness to ensure that the MMO was aware of the proposed maintenance activity and the consequent change to the advertised dredged depth as shown on the Admiralty Chart. The MMO issued a varied marine licence in April 2021 (reference L/2015/00427/6).

3 EXISTING DISPOSAL STRATEGY

3.1 Disposal protocol

The volume of dredged material requiring disposal from maintenance dredging operations must be recorded and provided to the MMO and Cefas as a condition of the marine licence (L/2015/00427/6). It is often recommended that a disposal protocol be developed to manage this process. However, PDT considers that this document adequately addresses the requirement of any such protocol and consequently PDT has not developed a separate protocol for this purpose. All relevant information regarding disposal procedures and practices (including any beneficial uses) is provided in the following sections.

3.2 Disposal locations and quantities

No changes have occurred to the location of the offshore disposal sites during the reporting period. The active disposal sites present in Tees Bay are summarised in Table 2. In general, Tees Bay A (TY160) is used for the disposal of maintenance dredge arisings while Tees Bay C (TY150) is used for capital dredge arisings (Figure 3). Tees Bay B (TY110) and Tees Bay Foreshore (TY170) are closed.

Table 2 Active disposal sites present in Tees Bay

Disposal site	Status	Description	Comment
Tees Bay A (TY160) Within the area bounded by joining the points: 54 40.800 N 01 03.500 W 54 41.500 N 01 02.200 W 54 41.000 N 01 00.300 W 54 40.200 N 01 01.500 W 54 40.800 N 01 03.500 W	Active	Active site for soft non-cohesive maintenance material	DEFRA records show volume fluctuating from 0.3 million to 2.4 million wet tonnes over a 15 year period. Volumes drop off post-1996. The largest volume deposited since 1996 was 1.8 million wet tonnes.
Tees Bay C (TY150) Within the area bounded by joining the points: 54 42.600N 00 58.600W 54 41.900N 00 57.400W 54 41.400N 00 58.700W 54 42.300N 00 59.900W 54 42.600N 00 58.600W	Active	Predominantly used for capital dredged material. Some maintenance dredging has been disposed of at this site.	DEFRA records show small-scale usage. The peak volume deposited was 1.9 million wet tonnes in 1999, associated with the construction of the downstream Ro-Ro berths. The typical annual volume is 0.1 million wet tonnes. Some years show no usage at all.

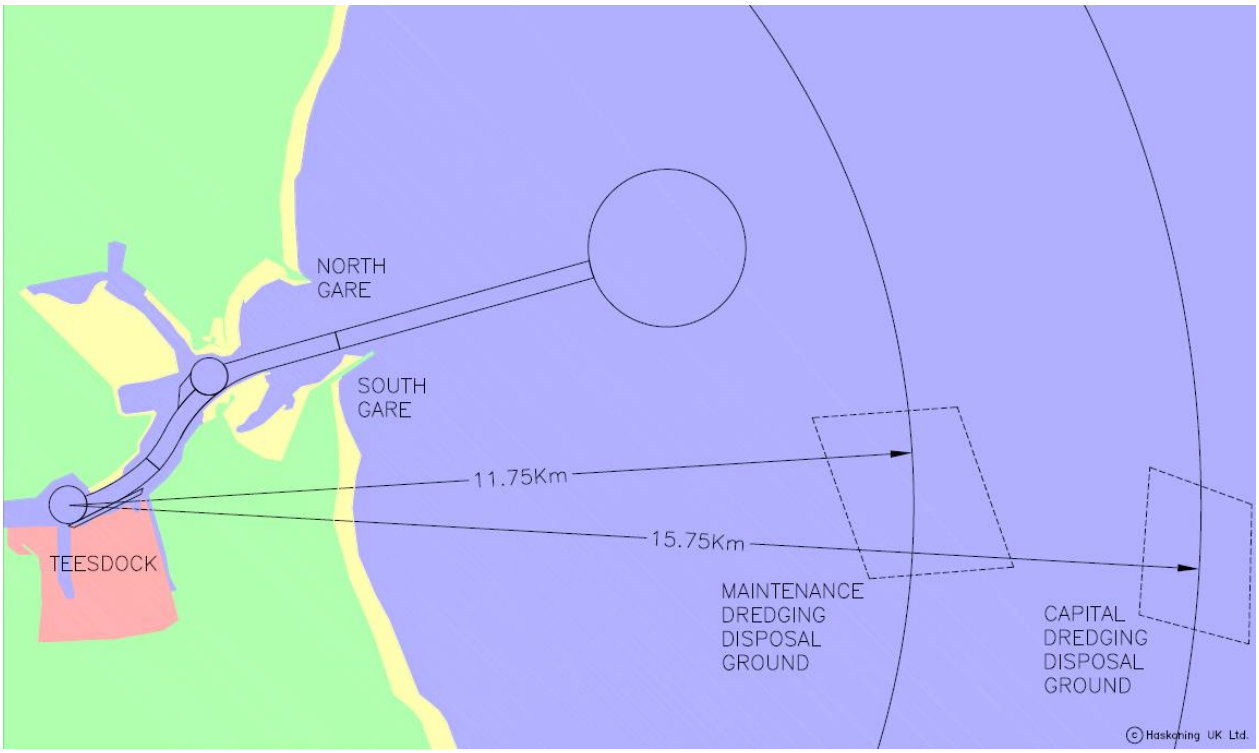

Figure 3 The location of dredging disposal grounds TY160 (maintenance material) and TY150 (capital material) and their distance (km) offshore from Tees Dock

3.3 Beneficial use of dredged material

Where suitable, a proportion of dredged arisings are proposed for alternative (beneficial) use within the estuary (alternative use considerations are a legal requirement of the marine licensing process for disposal of dredged material under the Waste Framework Directive).

Beneficial use measures are detailed below; these have been split into works which have been considered by PDT but not implemented, and works either detailed on consents or included as proposed works within marine licence applications.

3.3.1 Measures considered by PDT but not implemented to date

The use of geo-textiles for the construction of 'bird islands' at Bran Sands to replace those lost over the past few years has been considered by PDT and remains a possible beneficial use scheme. Such proposals are still being investigated at a high-level and would be subject to consultation and regulatory approval prior to implementation.

A 'Mitigation and Beneficial Use' plan is being developed by PDT in conjunction with Natural England to consider and incorporate these and other potential beneficial uses within the estuary. Beneficial use and mitigation will be part of the Tees Estuary Partnership's remit which is addressing these items on a port-wide basis. There is the potential for the development of a 'habitat banking' system to be developed, which would identify possible mitigation or beneficial use options within and around the Tees estuary, which developers could adopt (if required) to offset habitat loss. The enhancements may be funded through capital project mitigation/compensation but any provision of silts which these schemes may require could be sourced from ongoing maintenance dredging. This Baseline Document will be updated to reflect the findings of these discussions as and when they are available.

3.3.2 Measures detailed within consents and included within marine licence applications

Anglo American Harbour facilities

The Anglo American Harbour facilities scheme includes a number of habitat enhancement measures within Bran Sands lagoon, designed to provide shallow water areas with intertidal fringes. The creation of this habitat would involve the placement of uncontaminated fine sediment (i.e. silt) from normal maintenance dredging operations on top of sands and gravels from capital dredging undertaken as part of the Anglo American scheme. This Baseline Document will be updated to reflect the actual works which are undertaken following progression of the construction works for this scheme.

Northern Gateway Container Terminal

The Tees River Trust (TRT) is considering potential habitat improvement opportunities to areas of currently degraded intertidal in the Newport Bridge area of the Tees. At a strategic level, the TRT is hoping to develop a habitat banking system that would enable various developers to utilise areas of habitat around Newport Bridge.

At a project level, PDT has held discussions with the TRT regarding beneficial use of maintenance dredged material as part of habitat enhancement works within the Tees estuary in connection with the NGCT project. These works to enhance habitat at Newport Bridge, summarised below, have been included within the NGCT marine licence application.

The TRT has identified that there are opportunities to enhance currently degraded areas of intertidal on the east bank of the Tees, downstream of Newport Bridge, located approximately 10km upstream of the NGCT footprint. The TRT is investigating the feasibility of habitat enhancement in a number of areas; the area included within the NGCT marine licence application has a footprint of approximately 0.5ha, covering approximately 265m of intertidal.

The works proposed comprise the installation of a ‘green-wall’ in front of the existing retaining wall. The foreshore would be reprofiled and geotextile bags would be placed at the boundary of the existing intertidal. Maintenance dredged material, supplied by PDT, would then be pumped onto the intertidal.

The NGCT marine licence states that should the timing align, PDT will supply 6,000m^3 of maintenance dredged material to the TRT to allow habitat enhancement works to be undertaken. The marine licence for the NGCT was issued by the MMO in 2022.

In addition to the above, the regeneration of the North Tees mudflat using maintenance dredged material is proposed to offset the loss of intertidal as a result of the NGCT project. Such work is to be implemented by the Environment Agency in partnership with PDT under a separate marine licence to the NGCT application. It is likely that the works will comprise some form of retraining structure along the lower edge of the mudflat opposite Tees Commerce Park, with maintenance dredged material pumped behind to raise the existing bed levels to create new areas of intertidal.

This Baseline Document will be updated in the future to reflect any progress on these beneficial use opportunities.

3.4 Mechanism of disposal

The mechanism for disposal during the reporting period has been for the dredger to steam out to Tees Bay A (TY160) and to release the dredged arisings over the disposal site via bottom door release (capital arisings from operations on the Tees are disposed of via a split hopper into site TY150).

Tees Bay A comprises 12 areas, as shown on Figure 4. These areas each receive dredged material during a certain month of the year, with the volume of disposed material varying during each month. PDT has undertaken bathymetric surveys which demonstrate the success of the managed disposal within each of the 12 areas. The current plan will be retained without changing areas and once CEFAS has carried out its survey of the area (e.g. for contamination), PDT may act on that data and amend the disposal plan.

Table 3 reports the average monthly disposal quantities from 2006 to 2020 and shows that the disposal of material is distributed throughout the disposal site, thus avoiding mounding of material at one location within the disposal site boundary.

Table 3 Average disposal quantity per month from 2006 to 2020

Month	Average disposal quantity (m^3)	Month	Average disposal quantity (m^3)
January	89,245	July	93,888
February	84,211	August	76,884
March	90,701	September	89,429
April	95,867	October	89,658
May	85,976	November	83,836
June	83,383	December	55,092

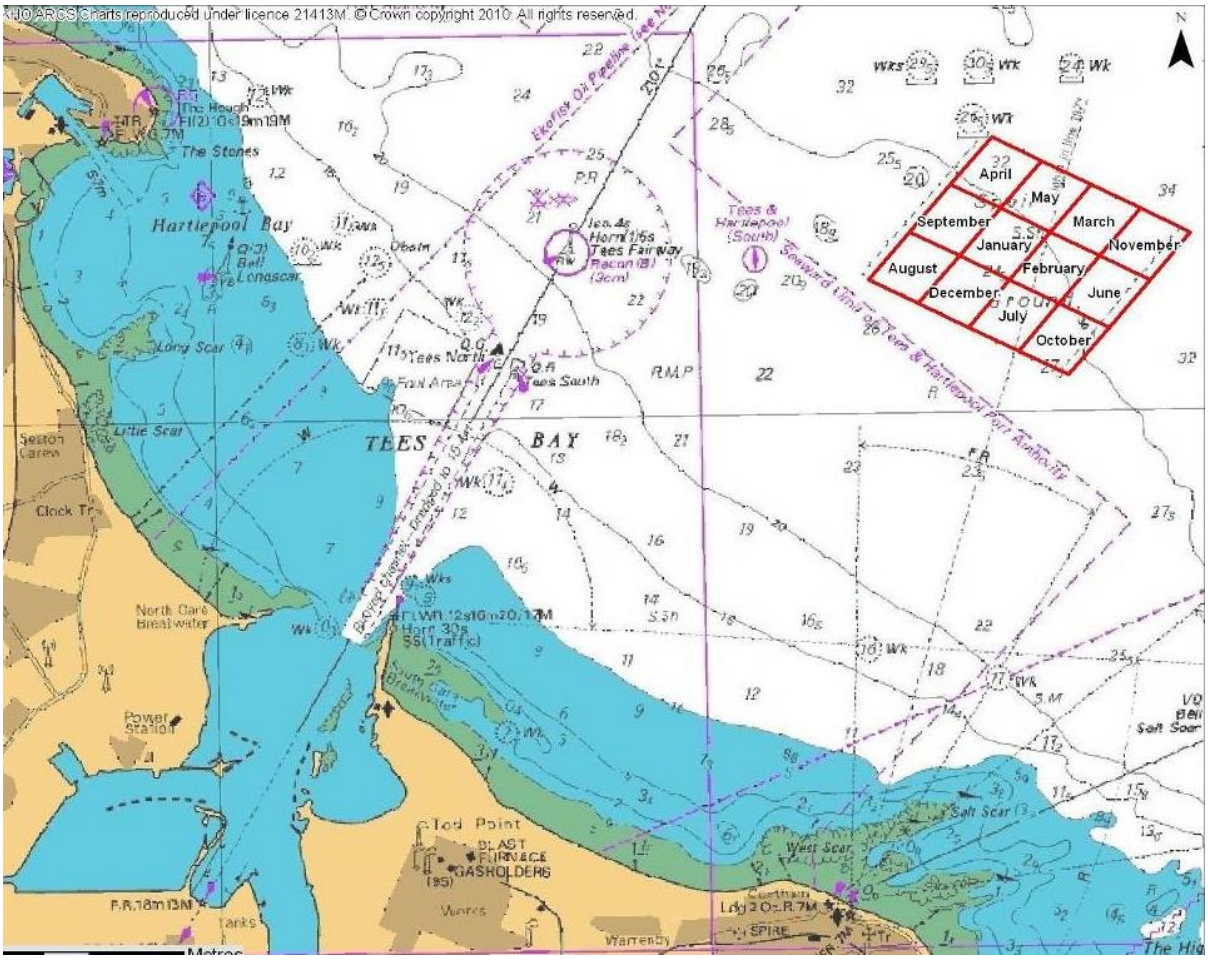

Figure 4 Tees Bay A disposal ground identifying disposal location by month

4 CONSENTS AND LICENCES

4.1 Marine licences

Part 4 of the Marine and Coastal Access Act 2009 (MCAA) provides a framework for the licensing of activities below the level of Mean High Water Spring (MHWS) tides. The 'marine licensing' system has been in force since 6 April 2011. The MMO is the regulator for marine licensing in English inshore and offshore waters.

Since the Baseline Document was first produced, a number of licences have been issued under the marine licensing system and its predecessors (the 10-year marine licence held by PDT for the disposal to sea of maintenance dredgings (L/2015/00427/6) is of particular relevance to this document).

Marine licences which have been issued following the production of the Baseline Document are outlined below. The licences have been split into projects which have been completed and those which are currently uncompleted or have not started.

4.1.1 Completed projects

The following projects are considered complete as either the licence end date has expired or the works are known to have been completed. If any aspects of the project works were not complete, a new licence would be required given that it is not possible to extend an expired licence.

- Licence 33195/06/0 granted 05/09/06 – 04/09/08 for 19,800 tonnes (Dawson`s North Sea Supply Base (completed 2009) and Teesside Cast Products (TCP) Heavy Lift Quay (completed 2008)). An application was submitted in 2011 to dredge to 8.5m below CD. This development is now complete with limited dredge works remaining.

- Licence 32880/06/01 granted 14/09/06 – 14/04/09 for 88,000 tonnes (Billingham Reach Wharf, Tees Dock Turning Circle, Tees Dock Water Area and Corporation Dock). This operation is now complete.

- Licence 32717/08/0 granted 21/05/2008 – 20/05/2009 for the disposal of up to 1,934,836 tonnes of capital dredgings from Seaton Channel, the Holding Basin and Quays 10/11 of the Able (UK) yard was made by Able (UK) Ltd. on 2 December 2004. The licence was approved in May 2008 for disposal at Tees Bay A (TY160) and Seaton Channel was dredged in October 2010.

- Licence 34371/10/0 granted 4 June 2010 for works commencing between 5 June 2010 and 31 October 2010 for the reconstruction of an approximately 150m length of half tide embankment in the River Tees. The reconstruction used 45m long sections of geotube filled with suitable dredged material. This work was completed in November 2010.

- Licence L/2011/00052/3 granted 1 June 2011 for works commencing between 1 June 2011 and 30 September 2012 for the disposal of dredged material (licensed quantity of 2,804,000 tonnes) from River Tees Channel, Berths and Frontages; Hartlepool Channel and docks and water area; and Seaton Channel basin and berths. The approved disposal site is Tees Bay A (TY160). This operation is now complete.

- Licence L/2011/00335/1 granted 21 December 2011 for works commencing between 1 January 2012 and 31 March 2013 for the placement of a rock mattress to support the spud legs from jack-up barges as part of the loading facilities for offshore wind construction in Hartlepool Docks. This work has been completed.

- Licence L/2014/00014 granted 29 January 2014 for works commencing between 1 April 2014 and 31 October 2014 to undertake refurbishment works to an existing jetty at Simon Storage. No dredging was required as part of the scheme. The work commenced and was completed during 2014.

- Licence L/2013/00217 granted 10 July 2013 for works commencing between 10 July 2013 and 31 March 2018 to undertake capital dredging and construction to improve the Tees Dock No.1 Quay. Work started in April 2014 and has been completed.

- The MMO approved a variation request to licence L/2013/00217 on 26 January 2017(L/2013/00217/7), for the dredging and disposal of an additional 15,000m^3 (33,000 wet tonnes) of material from within Tees Dock. The additional material to be removed is clay (geological material). As with the previous versions of the licence, the material will be disposed of within Tees Bay. This version of the licence supersedes all earlier version of this licence. The work has been completed.

- Licence L/2014/00227 Completion of Replacement Quay dredging- The aim of the project was to deepen the quay to allow larger vessels to berth. The end date on the licence is 3rd August 2015

- Licence L/2012/00361/3 Tees Transporter Bridge Enhancements - Stockton and Middlesbrough Councils are proposing various works to turn the Tees Transporter Bridge into a sub-regional and national visitor centre and tourist attraction. The application covers installation of permanent piles and pile cap. The end date of the licence is 31st December 2014.

- Licence L/2017/00066 Port Clarence Erosion Protection Works, Environment Agency. This project is needed to stabilise a river bank at Port Clarence, which has become subjected to erosion. This project is required to ensure the effectiveness of the recent flood protection scheme that was constructed at the site in 2015. The end date of the licence is 30th September 2017.

- Licence L/2017/00202 Middlehaven Dock Bridge Construction. Middlesbrough Council applied for a licence to install a three-lane vehicular bridge to replace the pedestrian footbridge at Middlehaven Dock. The licence end date was 30th September 2018.

- Licence L/2013/00155 Able Middlesbrough Port Berth 1 & 2, Able UK Ltd. The licence was to return the depth to previous level from average 6.3 metres to 7 metres. The end date on the licence was 14th May 2016.

- Licence L/2015/00233/2 Teesside Renewables Energy Plant – Surface Water Outfall, ECO2 Ltd As part of the Teesside Renewable Energy Plant at Port Clarence, Teesside, a new drainage outfall to the River Tees is required. The end date on the licence was 9th January 2016.

- Licence L/2017/00259 Installation of two piles and a pontoon at Normanby Wharf, Dockside Road Middlesbrough. The end date of the licence is 30th September 2019.

- Licence L/2017/00395 Sabic Dolphin Walkways 3 and 5 Maintenance of existing work, Sabic UK Petrochemicals Ltd. Dolphin structures 3 and 7 (at SABIC North Tees facility) require repair and general remediation. This will include the replacement of a gangway and the sleeving of 3 piles together with general maintenance. The licence end date is 19th October 2018.

- Licence L/2017/00395 Sabic Dolphin Walkways 3 and 7, Sabic UK Petrochemicals Ltd. Repair and general remediation of dolphin structures 3 and 7. Licence end date 19th October 2018.

- Licence L/2017/00194 Demolition and Site clearance of No 1 Jetty at Sabic Petrochemicals UK, North Tees Site, Sabic UK Petrochemicals Ltd. Demolition of SABIC North Tees No. 1 Jetty 1, which is no longer required for operational use at SABIC Quay. Licence end date is 31 December 2017.

- Licence L/2014/00166/3 Dismantling, Demolition of Redundant No. 1 Jetty at Sabic Petrochemicals UK . Jetty 1 is no longer required in order to undertake operations at SABIC quay, therefore this licence is for demolition of Jetty 1. The Licence end date is 31st August 2016.

- Licence L/2018/00179 North Tees Jetty 1A Replacement Ethylene Loading Arm Maintenance of existing works, Sabic Global ltd. The licence end date is 24th April 2019.

- Licence L/2013/00332/1 North Tees Site Jetty 2 embankment repair, Sabic UK Petrochemicals Ltd. The intention of this project is to arrest the decay of the embankment around the loading jetty and partially reprofile it. The licence end date is 14th December 2013.

- Licence L/2012/00094/1 SABIC Quay Marine Licence Application Jetty 3, Sabic UK Petrochemicals Ltd. Maintenance of two jetties at SABIC Quay and demolishment of Jetty 1. The licence end date is 29th March 2013.

- Licence L/2015/00226 Sabic Works at No.3 Jett North Tees, Sabic UK Petrochemicals Ltd. Works include upgraded fire protection system, dismantling and removal of jetty control buildings and construction of jetty impounding basin. The licence end date it 30th September 2016.

- Licence L/2013/00172/1 Tees Overhead Line Removal, National Grid Electricity Transmission PLC. The licence is for removal of the existing overhead line as a new line is required. The licence end date is 31st July 2016.

- Licence L/2013/00082 Environment Agency Intertidal Grab Sampling for Benthic Inverts and Contaminant, Environment Agency. A survey to assess the ecological status of the marine environment under the Water Framework Directive. The licence end date is 7th March 2014.

- Licence L/2013/00217 for the installation of a 30m floating pontoon to the newly refurbished Tees Dock No.1 Quay. The MMO approved a variation request to licence L/2013/00217 on 28 March 2018 (L/2013/00217/8), The MMO also granted permission to extend the expiry date of the licence from 31 March 2018 to 1 September 2018, to allow the pontoon installation works to take place.

- Licences 34376/09/0 and 34377/09/0 were both granted on 26 October 2009 for works commencing no sooner than 1 January 2010 to the end of the day of 31 December 2013, for deposits in the sea in connection with marine construction works associated with the proposed QEII berth development; and for the deposit of 42,000 tonnes (21,000m³) of capital dredged material (Mercia Mudstone constituent only) from the QEII berth, at disposal site Tees Bay C (TY150). A variation to extend both licences was requested on 20 November 2013, which was issued on 31 December 2013, and therefore licence L/2013/00403 now supersedes Licence 34376/09/0; and Licence L/2013/00404 now supersedes Licence 34377/09/0. Both licences have an end date of 31 December 2016. A subsequent change was then required to transfer the licence holder from PDT to MGT Teesside Limited. These varied licences were issued on 24 December 2014 (L/2013/00403/3 and L/2013/00404/3) (with an expiry date of 31 December 2016). Licence L/2013/00404/5 was granted on 27 May 2015 and expired on 31 December 2018.

- Licence 34963/11/0 granted 28 January 2011 for works commencing between 28 January 2011 and 27 January 2012 for the disposal of dredged material (licensed quantity of 3,496 tonnes) from South Bank, Wharves (TATA) on the River Tees. The approved disposal site is Tees Bay A (TY160). This work has not commenced.

- L/2019/00341 South Bank Wharf Site Investigation – Sampling, Able UK Ltd. A programme of sediment sampling was undertaken during 2019 to inform the environmental consenting process for a proposed new port facility at South Bank wharf. The licence end date is 31st December 2019.

4.1.2 Extant marine licences

The following marine licences are for works that are either incomplete, ongoing or which have not yet started:

- Licence L/2012/00366 granted 28 September 2012 for works commencing between 1 October 2012 and 31 May 2015 for the disposal of dredged material (licensed quantity 2,889,700 tonnes) from River Tees Channel, Berths and Frontages; Hartlepool Channel and docks and water area; and Seaton Channel basin and berths. The approved disposal site is Tees Bay A (TY160). This marine licence has now been superseded by Licence L2015/00427/1. Licence L/2015/00427/1 was granted 30 December 2015 for maintenance dredging disposal and has been varied a number of times; the latest licence reference is L/2015/00427/6. This is a 10-year licence commencing from 1 January 2016.

- A deemed marine licence was included within The York Potash Harbour Facilities Order 2016, issued by the Secretary of State (the scheme is now known as the Anglo American Harbour facilities project). The Order permits Anglo American to carry out construction of a new quay, capital dredging and disposal and enhancement works in Bran Sands lagoon.

- L/2012/00116 Tees Crossing Overhead Power Line Scheme, National Grid Electricity Transmission PLC. The licence is for refurbishment the overhead line across the River Tees. A new overhead line route alignment was proposed. The licence end date is 15th April 2052.

- L/2019/00220 Inter Terminals – Jetty 1 upgrade, Inter Terminals Seal Sands Ltd. Top-side works to the existing infrastructure at Jetty 1 and Dolphin D, and a dredge of the riverbed (with associated disposal of dredged material) to extend the existing berth pocket downstream. The licence end date is 31st December 2022.

- L/2017/00012/4 Able Seaton Port Berths, Holding Basin and Channel – this licence replaced licence L/2012/00160/8. The objective of the works authorised by the licence (dredging to 6.5m CD with offshore disposal) is to improve access into Able Seaton Port. The licence end date is 1 March 2026.

- L/2019/00328/1 Hartlepool approach channel. PDT has a marine licence to undertake a programme of works within and adjacent to the existing approach channel into Victoria Harbour, located to the immediate south of Hartlepool Headland. The consented works comprise offshore disposal of capital dredged material (required to deepen, realign, widen and extend the length of the existing approach channel), as well as the construction of an underwater retaining wall adjacent to Middleton Breakwater. The marine licence end date is 15th September 2026.

- L/2020/00353/1 Teesside Gas Port. PDT has a marine licence to dispose of up to 92,000m^3 of capital dredged material from the Tees estuary to the Tees Bay C offshore disposal site. The marine licence end date is 28th February 2024.

- L/2021/00048/2 Exolum Seal Sands Ltd revetment maintenance and deck works. Exolum Seal Sands Ltd has a marine licence to undertake a programme of maintenance works to its existing revetment, as well as works to locally wide the deck of Jetty 2. No dredging is required as part of the works. The marine licence end date is 31st December 2024.

- L/2021/00354 Northern Gateway Container Terminal. PDT has a marine licence to undertake construction of a container terminal, disposal of dredged material offshore, removal of infrastructure within the NGCT footprint, reclamation (if required) and habitat enhancement using maintenance dredged material. The marine licence end date is 31 December 2029.

- L/2021/00333 and L/2021/00433 South Bank Quay. South Tees Development Limited hold two marine licences for the South Bank Quay project (one for Phase 1 and another for Phase 2). These licences permit capital dredging, offshore disposal, demolition and placement of rock.

4.2 Harbour Revision Orders

4.2.1 The Teesport Harbour Revision Order 2008

PDT obtained a Harbour Revision Order (HRO) for the NGCT in April 2008. The HRO, which came into force on 8 May 2008 for a period of 10 years, gave powers to dredge for the construction and maintenance of the NGCT development (see Section 4.1). PDT submitted an application to the MMO in January 2018 to extend the end date of the 2008 HRO for an addition 10 years. The MMO granted the extension and, therefore, the expiry date of the HRO is 7 May 2028.

A marine licence is required for the NGCT construction works and the disposal of dredged material to offshore disposal sites. PDT submitted a marine licence application for the proposed NGCT in February 2020; the application is currently being determined.

4.2.2 Harbour Revision Order to vary the boundary of PDT jurisdiction

PDT is proposing to submit an application to the MMO to vary the boundary of its jurisdiction as a result of the proposed South Bank Quay development (detailed in Section 5.4). An application for a ‘non-works HRO’ is required to extend PDT’s jurisdiction to cover the proposed South Bank Quay footprint (for pilotage purposes and to enable maintenance dredging).

5 UPDATE ON MAJOR PROPOSED PROJECTS IN THE TEES ESTUARY AND AT HARTLEPOOL

This section updates the current status of the major consented and proposed projects in the maintained areas of the Tees estuary and at Hartlepool. Detail regarding the marine licences for each project is included in Section 4.

5.1 Northern Gateway Container Terminal

In April 2008, PDT applied for and received an HRO and outline planning permission for the NGCT scheme, which comprises:

- Capital dredging of the approach channel to the proposed NGCT as well as creation of a new berth pocket (equating to dredging of up to 4.8 million m^3 of material).
- Realignment of the existing approach channel in the vicinity of the proposed terminal and deepening of the two existing turning circles (Tees Dock turning circle and Seaton Channel turning circle) in the Tees estuary (with the Tees Dock turning circle also being widened).
- Disposal of dredged material (through a combination of beneficial re-use (localised reclamation and raising land levels within the proposed terminal site) and offshore disposal).
- Construction of a container terminal facility.
- Construction of various landside elements (buildings, rail terminal, road access, lighting, drainage and a pumping station).

The planning permission issued by Redcar and Cleveland Borough Council (RCBC) has been implemented.

The HRO gave PDT the power to dredge for the purposes of 'construction and maintaining the works and affording access to the works by vessels from time to time to deepen, dredge, scour, cleanse, alter and improve the river bed, shores and channels in the vicinity of NGCT operations'. The marine elements of the NGCT project have not yet been implemented, however PDT now has a marine licence which was issued in 2022.

The EIA Report for the NGCT considered whether there would be a significant implication on the existing maintenance dredging activities following construction of the NGCT project (and following completion of the capital dredge).

The EIA Report (Royal HaskoningDHV, 2020) predicted that there will not be a requirement to adjust the maintenance dredging strategy during the operational phase of NGCT (e.g. the annual maintenance dredge volume is not predicted to change significantly beyond the existing variability already managed by the port); this has been established through the hydraulic and sedimentary studies that were undertaken as part of the 2006 EIA (which supported the original HRO application).

5.2 Anglo American Harbour facilities

A Development Consent Order (DCO) for the Anglo American Harbour facilities was granted in 2016. The scheme, designed to export polyhalite bulk fertiliser, will comprise the following elements:

- A port terminal on the southern bank of the Tees estuary (with a quay and deepening (dredging) of a section of the approach channel and to create a berth pocket).

- A conveyor system to transfer product to the port terminal from a Materials Handling Facility (MHF) at Wilton.
- Product storage facilities (surge bins) adjacent to the quay and ship loaders on the quay.
- Staff welfare and office facilities.
- Habitat enhancement measures in Bran Sands lagoon.

The scheme is to be implemented in two phases, with an increased volume of product to be exported during Phase 2.

The dredging required for the scheme will generate silts, sands, gravels, clay and rock. Some of the (uncontaminated) sand and gravel from the capital dredging during Phase 1 of the scheme will be used within Bran Sands lagoon as part of the habitat enhancement proposals. This will comprise the placement of dredged material within the lagoon to raise the bed level and provide a feeding habitat for waterbirds. A proportion of the capital dredged clay and mudstone will be used to create a series of islands in the lagoon to provide nesting and roosting areas for waterbirds.

The programme of works as presented within the DCO application stated that the minimum construction period for both Phase 1 and Phase 2 is 17 months. Phase 2 works are programmed to commence within six years of completion of Phase 1. Construction works for the Harbour facilities have not yet commenced and the commencement date is currently unknown.

The EIA undertaken in support of the DCO application considered the implications of the proposed scheme on the maintenance dredging strategy. .Given that the proposed dredging does not include any changes to the outer sections of the approach channel, the proposed scheme does not have the potential to have a significant effect on the amount of sediment imported to the Tees from offshore (identified to be the largest sediment input). Furthermore, no changes to sediment transport in the predominantly sandy areas around Teesmouth are expected and so no effect on sand transport is anticipated.

The Environmental Statement (ES) (Royal HaskoningDHV, 2015b) states that average infill rates into the deepened areas (created due to dredging for the Anglo American scheme) are predicted to be up to 5,900m^3 per year. However, this would not represent an additional 5,900m^3 of deposition a year (because there would be no effect on sediment transport into the estuary). The effect of the scheme will be a localised redistribution of (existing) sediment deposition, in response to predicted changes in current speeds. It is predicted that this very small change in the overall fine sediment regime will not alter the present frequency of, or methodology used for maintenance dredging and no effect on sediment supply to intertidal areas throughout the Tees estuary will occur.

No change in the supply of fine sediment from offshore is predicted and the predicted accumulation of sediment within the berth pocket and the section of the approach channel to be dredged represents a redistribution of material that currently settles within the lower estuary only. As a result, no effect on the overall sedimentary regime of the Tees estuary is predicted following construction of the Anglo American Harbour facility, and no alteration to the present frequency of maintenance dredging is anticipated.

5.3 Hartlepool approach channel

As noted in Section 4.1.2, PDT has a marine licence to undertake works to the Hartlepool approach channel, located to the immediate south of Hartlepool Headland. The consented scheme comprises realignment, widening, deepening and extending the length of the approach channel, to accommodate the needs of both the offshore wind industry and other existing customers. An underwater retaining wall is also proposed to be constructed adjacent to Middleton Breakwater. Works have not yet commenced on this project.

The EIA undertaken in support of the marine licence application considered potential implications on the maintenance dredge requirement at Hartlepool during the operational phase. The information presented below summarises the assessment from the EIA Report.

The long term annual average volume of maintenance dredging at Hartlepool has been 122,000m^3 (between 2001 and 2017). On a pro rata basis, it is estimated that there may be an increase in annual maintenance dredging requirement to around 175,000m^3. It is therefore concluded that there would likely be an increased volume of material that would need to be removed during the operational phase of the proposed scheme compared to the present day maintenance volumes.

Currently, PDT undertakes maintenance dredging on a daily basis in spring, autumn and winter, with a weekly / bi-weekly maintenance dredge in the summer. Although there is predicted to be an increased volume of material deposited within the channel during operation, it is envisaged that this will be able to be managed within the existing maintenance dredge regime by extending the duration of dredging on each campaign (i.e. increasing dredging hours on a particular day) rather than increasing frequency of maintenance dredging in the summer.

5.4 South Bank Quay

A new port for the renewable energy sector is proposed within the Tees estuary at South Bank wharf. The South Bank Quay scheme comprises the following activities:

- Demolition of the dilapidated wharf, three jetties downstream of the wharf (including the conveyor at the extreme downstream end jetty), a live electrical substation and pipework which previously abstracted water from the Tees estuary associated with the pumping station.
- Construction of a new solid piled quay structure up to 30m wide and 1,230m in length (with an approximate 1,050m of usable quay for berthing), set back into the riverbank. Although the useable surface of the quay itself would be up to 30m wide, the overall footprint of the quay would be up to 50m wide due to the proposals to construct an anchor structure further inland of the quay deck.
- Excavation and re-use of approximately 275,000m^3 of soils behind the proposed quay wall to install tie rods to the anchor wall. Excavation and re-use of a further approximately 1,140,000m^3 of soils in front of the proposed quay wall to create the berth pocket.
- Capital dredging of approximately 1,800,000m^3 of marine sediments with offshore disposal into the Tees Bay C disposal site. It is proposed that dredging is undertaken using a trailing suction hopper dredger (TSHD) and a backhoe dredger.
- Installation of approximately 200,000m^3 of rock within the berth pocket to form a rock blanket.

Planning permission for the landside elements of the scheme has been granted by RCBC and the MMO has issued marine licences for the marine elements.

The EIA Report for the South Bank Quay assessed the potential impacts on maintenance dredging during the operational phase. The EIA Report (Royal HaskoningDHV, 2020) states that the modelled reductions in current speeds in the reach of the channel local to the South Bank Quay, combined with the creation of a new berth pocket at the quay, may lead to a small increase in deposition rates and hence a requirement for more material to be removed from this reach annually. Recognising this, the EIA Report states that a 10% increase in annual maintenance dredging requirement may be a reasonable assumption recognising the low baseline suspended sediment concentrations in this reach. Even under this scenario, the maintenance dredging from the reach local to the South Bank Quay will still yield a very low overall contribution to the net annual maintenance dredging requirements from the estuary as a whole. Therefore the potential increase in maintenance dredging requirement is not expected to be significant and could easily

be managed within existing maintenance dredging and offshore disposal regimes (i.e. no change in the existing maintenance dredging strategy is envisaged).

5.5 Net Zero Teesside

Net Zero Teesside is a Carbon Capture, Utilisation and Storage (CCUS) project which aims to decarbonise a cluster of carbon-intensive businesses by 2030. An application for a DCO has been submitted and the application was accepted for examination in August 2021.

In summary, the scheme comprises the following:

- A new build low carbon gas-fired power station with integrated carbon capture unit, low pressure CO_2 compression and associated utilities and buildings.
- Natural gas pipeline to supply the power station.
- Electrical power export lines from the Low-Carbon Electricity Generating Station to the national grid system.
- Water connections including:
    - A connection corridor to public utility raw water supply infrastructure, for the provision of water for the proposed scheme.
    - An existing or replacement outfall and associated pipework for the discharge of treated effluent and surface water to Tees Bay (including a potential pipeline connection for transportation of process water to Bran Sands Waste Water Treatment Plant and return for discharge).
- CO_2 gathering network connecting various industrial installations across the Tees Valley.
- High pressure CO_2 compression facilities.
- High pressure CO_2 export pipeline.
- Temporary construction and laydown areas.
- Access and highway improvements

From a review of the EIA documentation submitted in support of the DCO application, the proposed scheme does not appear to have any implications on the maintenance dredging strategy within the Tees estuary or at Hartlepool.

6 NEW ENVIRONMENTAL INFORMATION

6.1 Designated sites

6.1.1 Teesmouth and Cleveland Coast SPA and Ramsar site

The 2018 update presented details of the amendments that were, at the time of that update, proposed to the boundaries and interest features of the Teesmouth and Cleveland Coast SPA and Ramsar site (i.e. the 2018 update detailed the boundary and interest features of the Teesmouth and Cleveland Coast potential SPA (pSPA) and Ramsar site). The proposed changes to these sites were classified on 16 January 2020. As the changes to the boundaries and interest features of these sites were fully documented within the 2018 update and there have not been subsequent changes, it is not considered necessary to repeat the information within this update.

6.1.2 Sites of Special Scientific Interest

As well as detailing proposed amendments to the Teesmouth and Cleveland Coast SPA and Ramsar site, the 2018 update presented details of notified amendments to the existing SSSIs around the Teesmouth and Cleveland Coast. As the changes to the SSSIs were fully reported in the 2018 update, it is not considered necessary to repeat the information within this update.

6.1.3 Memorandum of Understanding for the Teesmouth and Cleveland Coast Special Protection Area and proposed extension

The Tees Estuary Partnership (TEP) was formed in 2016, and is made up of businesses, industry, regulators, local government and environmental organisations. One of the aspirations of the TEP was for regulators to set out a 'Memorandum of Understanding' (MoU) for the Tees estuary.

The MoU (principles document) was produced in October 2017, and has been signed by the MMO, Environment Agency and Natural England. As well as protecting and enhancing the nature conservation sites along the Teesmouth and Cleveland coast, the MoU is intended to make it easier for developers and businesses to navigate through the regulatory framework in a number of ways, including:

- Providing a single point of entry – pointing applicants to other bodies as relevant and in some cases proactively informing other MoU signatories or consenting bodies that an application or an advice request has been received.
- One lead authority – aiming to reduce the duplication of evidence requirements and to streamline regulatory processes around Environmental Impact Assessments and Habitats Regulations Assessments.
- Dispensing with, or deferring regulatory responsibilities – exploring the legal options available for streamlining within the regulatory process.
- Certainty on evidence requirements – identifying common evidence needs, enabling parallel tracking of work to satisfy evidence requirements, and assessing the level of support that could be provided to proactively fill strategic gaps in evidence.
- Co-ordination of advice – providing coordinated advice between organisations within agreed timescales.

The second part of the TEP's vision for the Tees seeks ambitious outcomes for nature conservation, exploring the development of a habitat banking system which will facilitate a wide range of environmental projects and simultaneously enable future developments on the estuary.

6.2 Sediment quality data

The 2018 update presented sediment quality data from a number of surveys undertaken in the Tees estuary and at Hartlepool since the 2017 update, namely:

- Sampling to comply with the mid-licence conditions on the maintenance dredge disposal licence from Hartlepool and the Tees estuary.
- NGCT (Tees estuary).
- Teesside GasPort (Tees estuary).
- Hartlepool approach channel (Hartlepool).
- Inter Terminals Jetty 1 refurbishment (Tees estuary).

Able UK carried out a sediment quality survey within the Tees estuary during 2019 for the proposed South Bank wharf scheme; however, the data are not publicly available and therefore are not available for inclusion within this report. It should be noted that the Able UK scheme did not progress and is not the same proposal that is reported in Section 6.2.1.

A number of other sediment quality surveys have been undertaken in the Tees estuary since production of the 2018 update, the results of which are presented below.

6.2.1 South Bank Quay sediment quality data

A sediment quality survey was undertaken between 30th November and the 7th December 2020 for the South Bank Quay project. As directed by the MMO in its sampling plan (reference SAM/2020/00026), sediment samples were recovered from 25 sampling stations across the proposed dredge footprint. Samples were analysed for metals, polychlorinated biphenyl (PCBs), polyaromatic hydrocarbons (PAHs), organotins and polybrominated diphenyl ethers (PBDEs).

As prescribed by the MMO in SAM/2020/00026, samples were recovered at the surface (0m) and at 1m intervals to the maximum proposed dredge depth. Where the maximum proposed dredge depth exceeded the depth at which mudstone was encountered, in accordance with the sampling plan, samples were recovered to the depth at which mudstone was present (i.e. the MMO did not request samples of the mudstone to be recovered given the low risk of contamination in this geological material). However, six samples of geological mudstone were recovered from six boreholes within the navigation channel which were drilled for geotechnical purposes. These samples were analysed for the same suite of analysis as detailed above. These samples were additional to the sampling requirements defined by the MMO in SAM/2020/00026, and were recovered to validate the previously agreed assumption that geological mudstone is highly unlikely to contain elevated concentrations of contaminants. A summary of the results is provided below.

Metals

All samples contained metal concentrations below Action Level 2, with the exception of samples recovered at depth from borehole (BH) 34, located within the proposed berth pocket. Concentrations of mercury, cadmium and zinc were particularly elevated above Action Level 2 at BH34, with chromium, copper and lead also present above Action Level 2. The concentrations of contaminants in BH34 indicates that material removed from this location would likely be deemed unsuitable for disposal at sea; Cefas confirmed this was the case following an interim review of the sediment quality data in April 2021.

For the rest of the samples, some exceedances of Action Level 1 were identified, specifically for nickel which is elevated across the proposed dredge footprint, but the majority of exceedances are marginal only.

The samples of geological mudstone (BH08-BH13) show marginal exceedances of Action Level 1 for nickel and copper, the latter only in one sample. The concentrations of all other metals in the geological mudstone were below Action Level 1.

Organotins
Minor exceedances of Action Level 1 were recorded in material from the surface at BH31 and BH34 which are both located in the South Bank Quay berth pocket. However, the remaining data indicate that the majority of organotin concentrations across the proposed dredge footprint do not exceed Action Level 1 (with many results below the limit of detection).

All samples of geological mudstone recorded organotins in concentrations of less than the limit of detection.

Polyaromatic hydrocarbons (PAHs)
The results from BH34 show significant PAH concentrations throughout all depths, consistent with the metal concentrations (well in exceedance of Action Level 1). There are also significant concentrations of many PAHs in vibrocore (VC) 01, VC05, VC09, VC10, VC11 (particularly for naphthalene, fluoranthene, fluorene, pyrene and phenanthrene). Similarly, total hydrocarbon concentrations are elevated.

The concentrations of PAH compounds in the geological mudstone were generally all below Action Level 1. The only exceedance of Action Level 1 was recorded in the sample from BH12 which was marginal.

Polychlorinated biphenyl (PCBs)
Sediment from BH34 contained elevated concentrations of ICES7 (sum of seven congeners) and ICES25 (sum of 25 congeners) above Action Level 1, however there were no Action Level 2 exceedances for ICES 25 (ICES 7 does not have an Action Level 2 concentration). Action Level 1 exceedances were also identified locally in other samples from across the proposed dredge footprint (although none were present within the samples of geological mudstone). The exceedances of Action Level 1 were however, largely marginal.

Polybrominated diphenyl ethers (PBDEs)
There are no Action Levels for PBDEs and therefore an assessment against sediment quality guidelines is not possible. VC14 recorded the highest concentration of parameter BDE209 at 0.25300mg/kg at the surface, but many samples recorded levels below the detection limit. All samples were below the limit of detection in the mudstone samples.

The data reported above confirm the assumption that the geological mudstone material does not contain elevated concentrations of contaminants.

Given the concentrations of contaminants present, the MMO has defined an exclusion zone around BH34 within which certain material is prohibited from being disposed to sea. The MMO has also confirmed that an enclosed bucket removal method should be used until consolidated material, mudstone or glacial till is reached. South Tees Development Corporation (STDC) has undertaken a further sediment sampling analysis around BH34 in an attempt to minimise the size of the exclusion zone; the results from that sampling are not yet publicly available and will be included in the subsequent updates to this Baseline Document.

6.2.2 Ro-Ro 2

Tees Dock Number 2 Ro-Ro (Ro-Ro 2) is a pontoon linkspan located within the landward end of Tees Dock. The pontoon linkspan provides Ro-Ro facilities for the importation and exportation of goods between the UK and Europe. Ro-Ro 2 is an ageing structure and is nearing the end of its operational life. In addition, the vessels used for the importation and exportation of goods have increased in size to improve efficiencies in the volume and cost of goods transported. Ro-Ro 2 will be unable to accommodate the larger vessels

expected to call at Teesport in the near future and therefore is requires redevelopment with a new larger pontoon linkspan. There is also a requirement for capital dredging to remove approximately 15,300m^3 of material.

Sediment samples were recovered from four stations within the proposed dredge footprint for Ro-Ro 2. Samples were recovered at the surface, mid-point and maximum depth of each core (with the maximum depth being the point of refusal of the equipment within the deposits). Samples were analysed for heavy metals, organotins, PAHs, PCBs, organochlorine phosphates (OCPs), total organic carbon (TOC) and particle size analysis (PSA). A summary of the results is provided below.

Metals and organotins
The samples contained metal concentrations which were generally all marginally above Action Level 1. However, some samples contained metal concentrations at the upper end of Action Level 1, with exceedances of Action Level 2 detected for mercury, zinc, nickel and cadmium in three samples. Organotins (tributyltin (TBT) and dibutyltin (DBT)) were found to marginally exceed Action Level 1 in one sample.

PCBs
The majority of samples contained PCBs in excess of Action Level 1. No exceedances of Action Level 2 were recorded.

PAHs
The majority of samples were found to contain levels of PAHs above Action Level 1. There is no Action Level 2 for PAHs, however there are multiple samples were the Action Level 1 value was exceeded by more than an order of magnitude, and three occasions where concentrations were three orders of magnitude greater than Action Level 1. However, total hydrocarbons (THC) did not exceed Action Level 1 in half of the samples.

Based on the sediment quality results, the Ro-Ro 2 scheme proposes to remove soft sediments using an environmental grab. Material would then be loaded into a sealed barge for transport to shore from where it would be placed in a suitable treatment/stockpiling location. Once the unconsolidated material has been removed, the underlying clay and Mercia mudstone layers will be dredged using a backhoe dredger.

6.2.3 Riverside Ro-Ro

The Riverside Ro-Ro is located on the southern bank of the Tees estuary, immediately upstream of Dabholm Gut. PDT is proposing a scheme to upgrade the existing facility to provide the flexibility to operate a wider range of vessels at the berth. In summary, the proposed scheme requires construction of a new fixed ramp landing platform immediately adjacent to the existing linkspan, removal of an existing mooring dolphin, installation of two mooring dolphins, minor highway works within the PDT estate, dredging and offshore disposal of dredged material.

PDT is proposing to deepen the berth area to a maintained depth of 10.4m bCD resulting in a dredge volume of approximately 40,000m^3. The existing berth is currently maintained to a depth of approximately 8.8m bCD.

A sediment quality survey was undertaken in 2021 with samples recovered from six locations within the proposed dredge footprint. Samples were recovered from the surface, middle and maximum depth of each core (with the maximum depth being the point of refusal of the equipment within the deposits). A total of 18 samples were analysed for heavy metals, organotins, PAHs, PCBs, OCPs and PSA, with 12 samples (from the middle and bottom of each core) analysed for PBDEs. A summary of the results is provided below.

Metals and organotins
All of the samples contained heavy metals in concentrations exceeding Action Level 1. No exceedances of Action Level 2 were recorded. The samples taken from the maximum depth of the cores show the least contamination with levels of arsenic, cadmium, chromium, mercury, lead and zinc found in concentrations below Action Level 1. Only two minor exceedances of Action Level 1 were recorded for organotins, specifically dibutyltin (DBT).

PAH
Elevated concentrations of PAHs were present within the sediment, with the majority of samples containing concentrations of PAH compounds exceeding Action Level 1.

Polychlorinated biphenyls
The Action Level 1 for the sum of the ICES 25 PCBs was exceeded in only one sample.

PBDE
Concentrations of PBDEs were highly variable and ranged from 0.000056mg/kg to 0.0111mg/kg (not including BDE209). This is considered to follow, to some extent the levels expected within the marine environment for each BDE congener. BDE209 was found at concentrations between 0.0228mg/kg and 0.0512mg/kg.

6.2.4 Tees channel dredge

PDT submitted a variation request to the maintenance dredge disposal licence in August 2020; the variation request was submitted to allow PDT to locally deepen the channel from an advertised depth of 5.1m bCD to 5.7m bCD. As agreed with the MMO, the variation request was supported by sediment quality samples from within the dredge area. Eight sediment samples were recovered from a depth of 5.7m bCD within the proposed dredge footprint and were analysed for metals, organotins, PAH, PCB and PBDEs.

The MMO issued the varied marine licence in April 2021 on review of the sediment quality data (i.e. there were no concerns with the sediment quality results).

6.2.5 Mid-licence sampling

The marine licence held by PDT for the disposal of maintenance dredged material at sea requires interim sediment sampling and laboratory analysis to confirm that the material remains suitable for offshore disposal. The marine licence requires submission of sediment quality data by the end of 2021. A programme of sediment quality sampling and analysis has been agreed with the MMO.

Twenty surface samples were recovered by PDT and analysed for metals, organotins and PAHs. The samples were analysed in October 2021. There were no exceedances of Action Level 2.

7 ASSESSMENT OF IMPACTS IN RELATION TO DESIGNATED SITES

An assessment of the potential effects of PDT's existing maintenance dredge regime on designated sites was undertaken as part of the 2018 update. This was undertaken to determine whether PDT is fulfilling its statutory obligations with regard to the Protocol, specifically to determine if the maintenance dredging activity is causing a significant effect on designated sites (namely the (at the time) Teesmouth and Cleveland Coast pSPA and Ramsar site). The assessment detailed in the 2018 update concluded that:

"Existing maintenance dredging activity does not appear to be having, or has historically had, an impact on the existing designated sites. If existing practices are continued, maintenance dredging activities will not affect the current and proposed designated sites, as the maintenance dredging forms a long-established part of the overall existing estuary regime. A significant change from present dredging practice would, however, warrant a review of this conclusion because of the potential for this to represent a change from the present situation."

There has been no changes to the designated sites since the 2018 update, other than to formalise the proposed changes which have been previously documented and assessed (in the 2018 update).

There have been a number of sediment quality surveys undertaken within the Tees estuary since the 2018 and 2019 updates. The surveys indicate that there are localised areas of contamination within the Tees where material is not suitable for offshore disposal. However, appropriate dredging techniques are to be adopted to remove such contaminated material from the estuary for disposal onto land, permanently removing the contaminated sediment from the system.

There have been no material changes to the dredging and disposal practices within the Tees estuary since the 2019 update.

There are a number of major planned and consented projects within the Tees estuary.. As noted in Section 5, none of the proposed schemes are predicted to require an amendment to the maintenance dredging strategy with the Tees or at Hartlepool.

Based on the above, it is concluded that there is no reason to amend the conclusion made within the 2018 update (that maintenance dredging does not appear to be having, or has historically had, an impact on designated sites).

8 CHANGES TO PREVIOUS RECOMMENDATIONS

The assessment of potential effects of maintenance dredging on the Teesmouth and Cleveland Coast SPA and Ramsar site was originally presented in Section 5 of the Baseline Document (Royal Haskoning, 2008). The 2008 Baseline Document concluded that the existing maintenance dredging activity being undertaken in the study area does not appear to be having, or has historically had, an impact on the European sites which would alter their condition. No mitigation measures were relied on within the 2008 Baseline Document to come to the conclusions made.

The 2018 update presented the findings of further impact assessment undertaken to assess the potential effects of maintenance dredging on the (at the time of writing the 2018 update) Teesmouth and Cleveland Coast pSPA and Ramsar site, and the Teesmouth and Cleveland Coast SSSI. The assessment was undertaken using the most recent maintenance dredging information and sediment quality data. The updated impact assessment in the 2018 report indicated that the conclusions reached in the 2008 Baseline Document remain valid.

The 2008 Baseline Document recommended that the conclusions must be reviewed if a significant change in maintenance dredging practice should occur as a result of new developments. As noted in Section 5 and 7, there have been no material changes to the existing environment since production of the 2019 annual review (Royal HaskoningDHV, 2020).

Additional sediment quality surveys have been undertaken within the estuary since 2019, which illustrate that, generally speaking, sediment within the Tees estuary is suitable for offshore disposal. There have been isolated areas of contaminated sediment identified which is not suitable for offshore disposal, however such material is to be removed from the estuary using environmental grabs and disposed to land. There have been no material changes to the dredging or disposal practices since 2019. There have been no significant schemes within the Tees estuary or Hartlepool which have been implemented since the 2019 update which could impact on the ongoing maintenance dredge practices. On this basis, the conclusions of the 2019 update remain valid.

As there has been no material changes to the quality of maintenance dredged sediment within the Tees, it is concluded that the outcomes of the WFD compliance assessment conducted in the 2017 update remain valid (i.e. that maintenance dredging is not causing a reduction in status or jeopardising the WFD water bodies screened into the assessment from meeting their objectives).

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Appendix 1

Dredge areas and volumes

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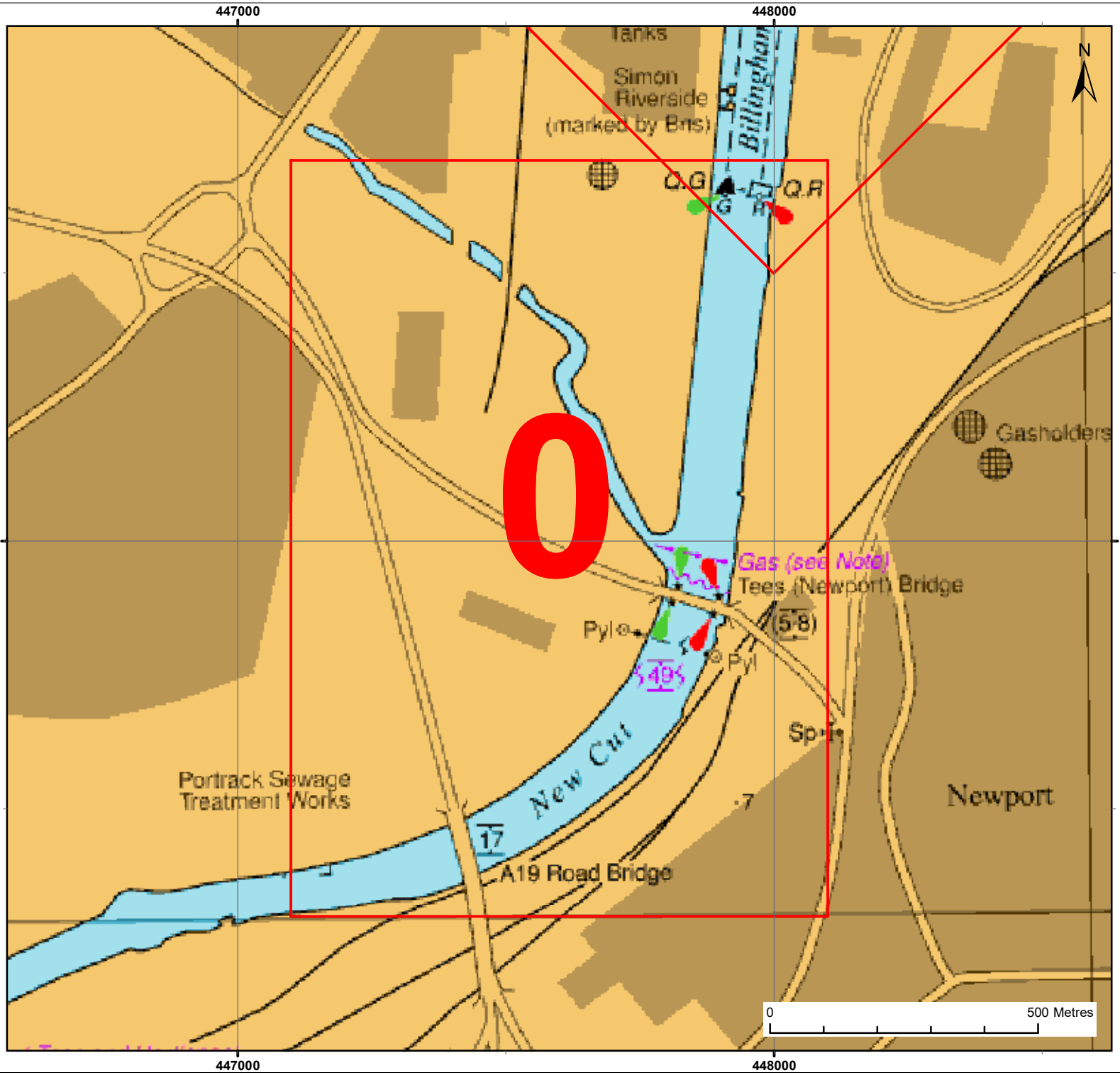

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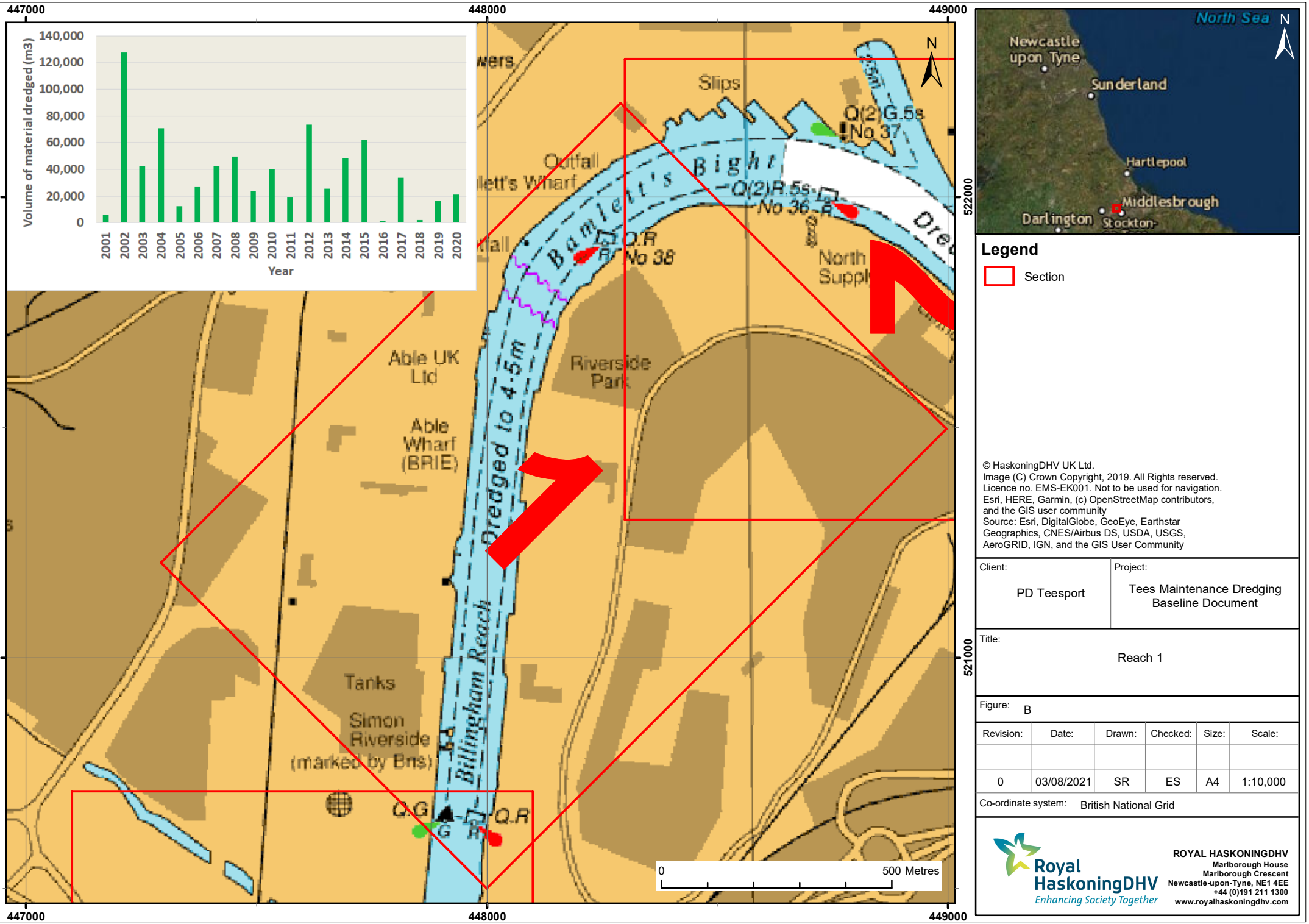

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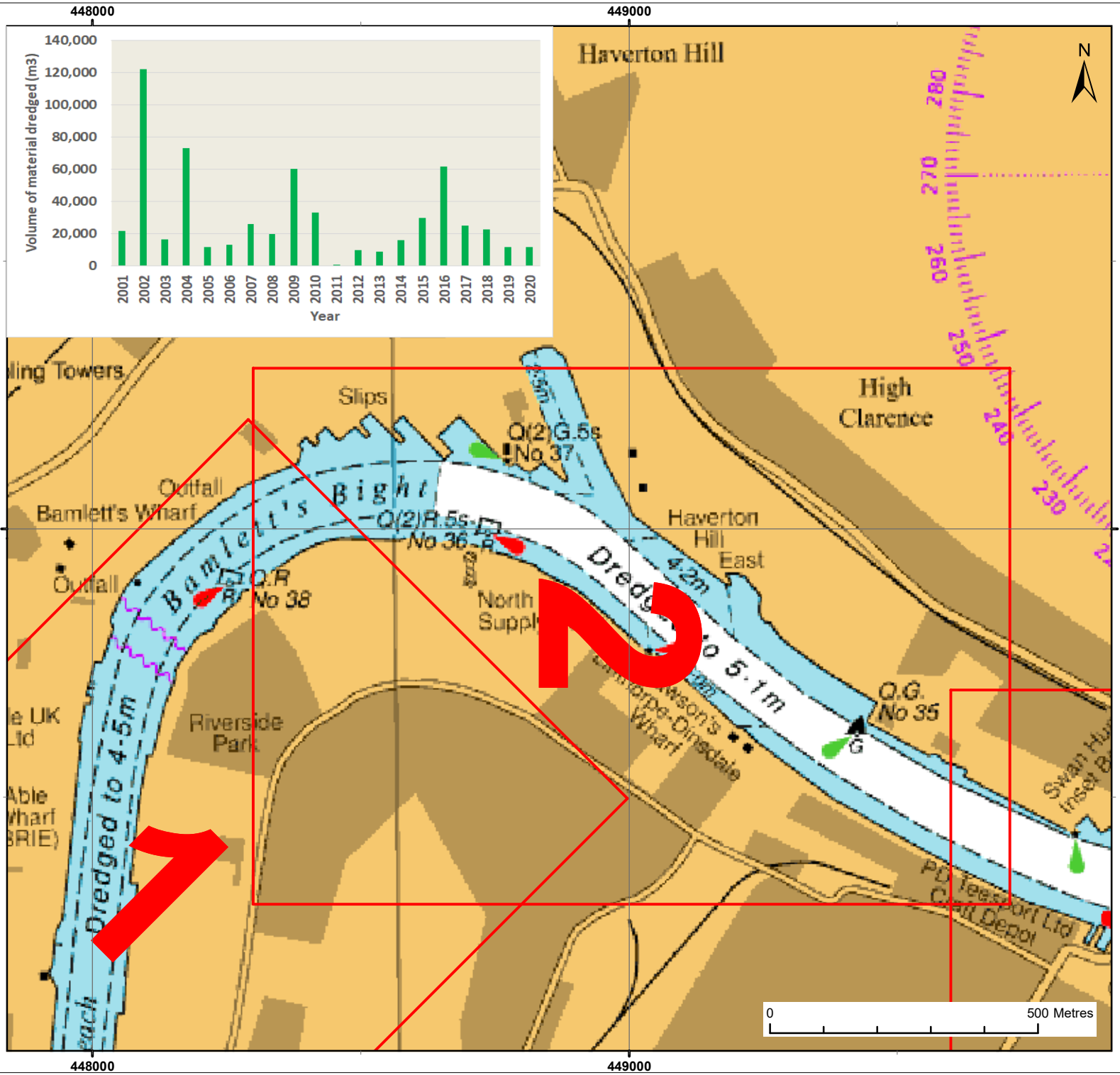

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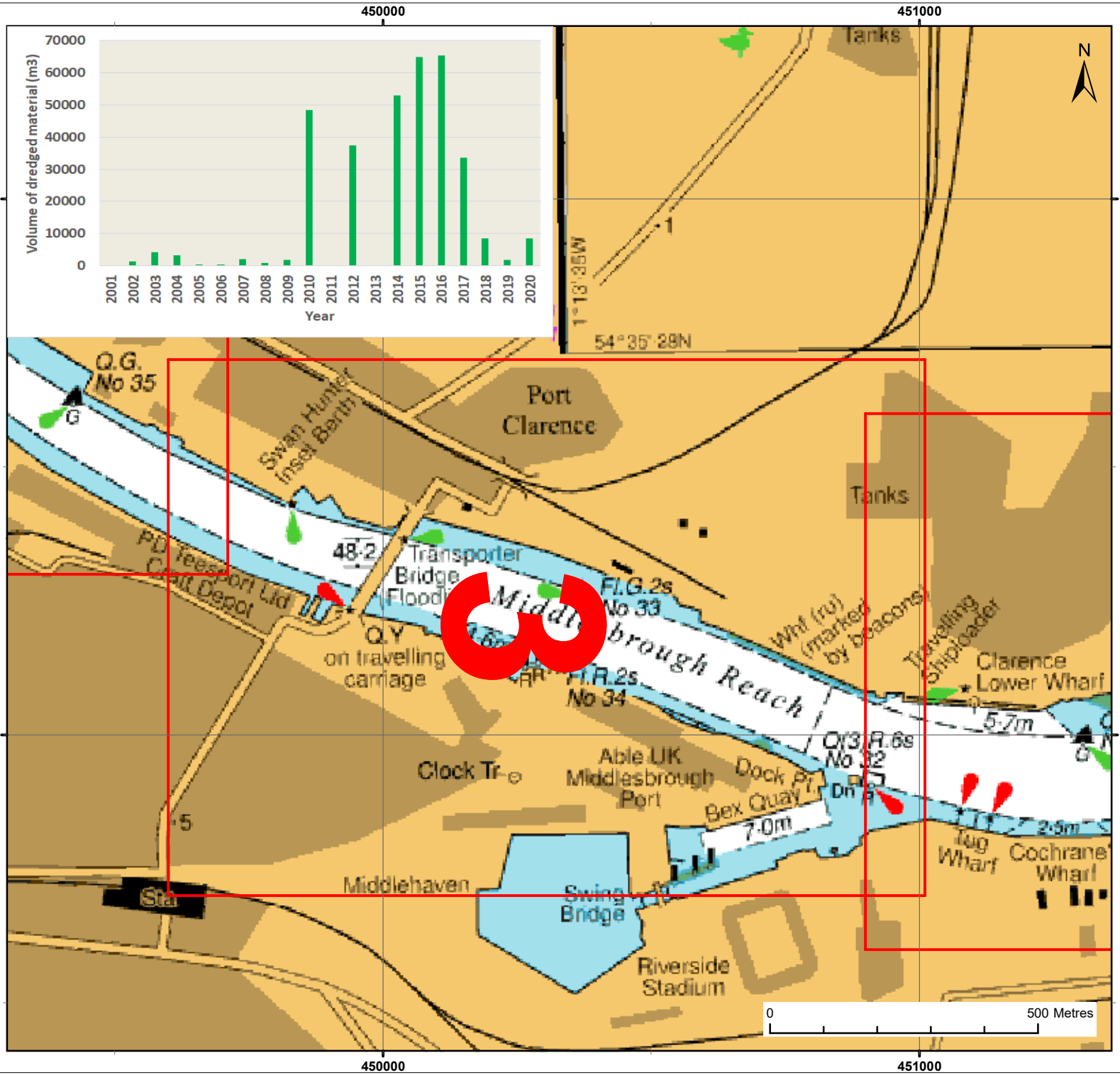

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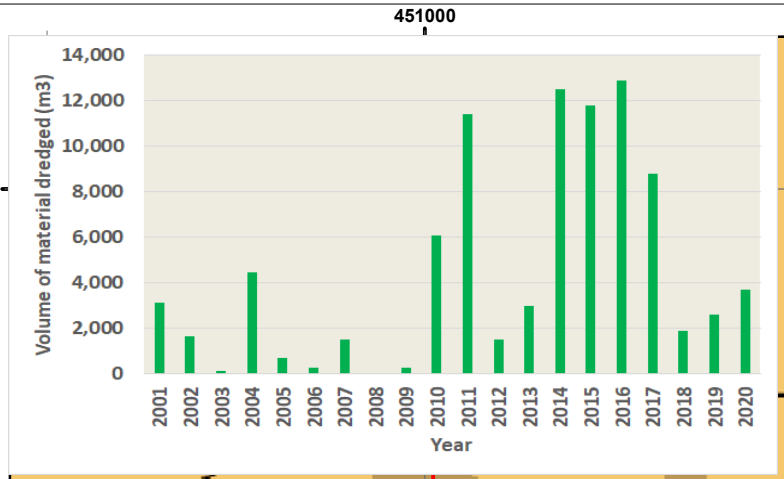

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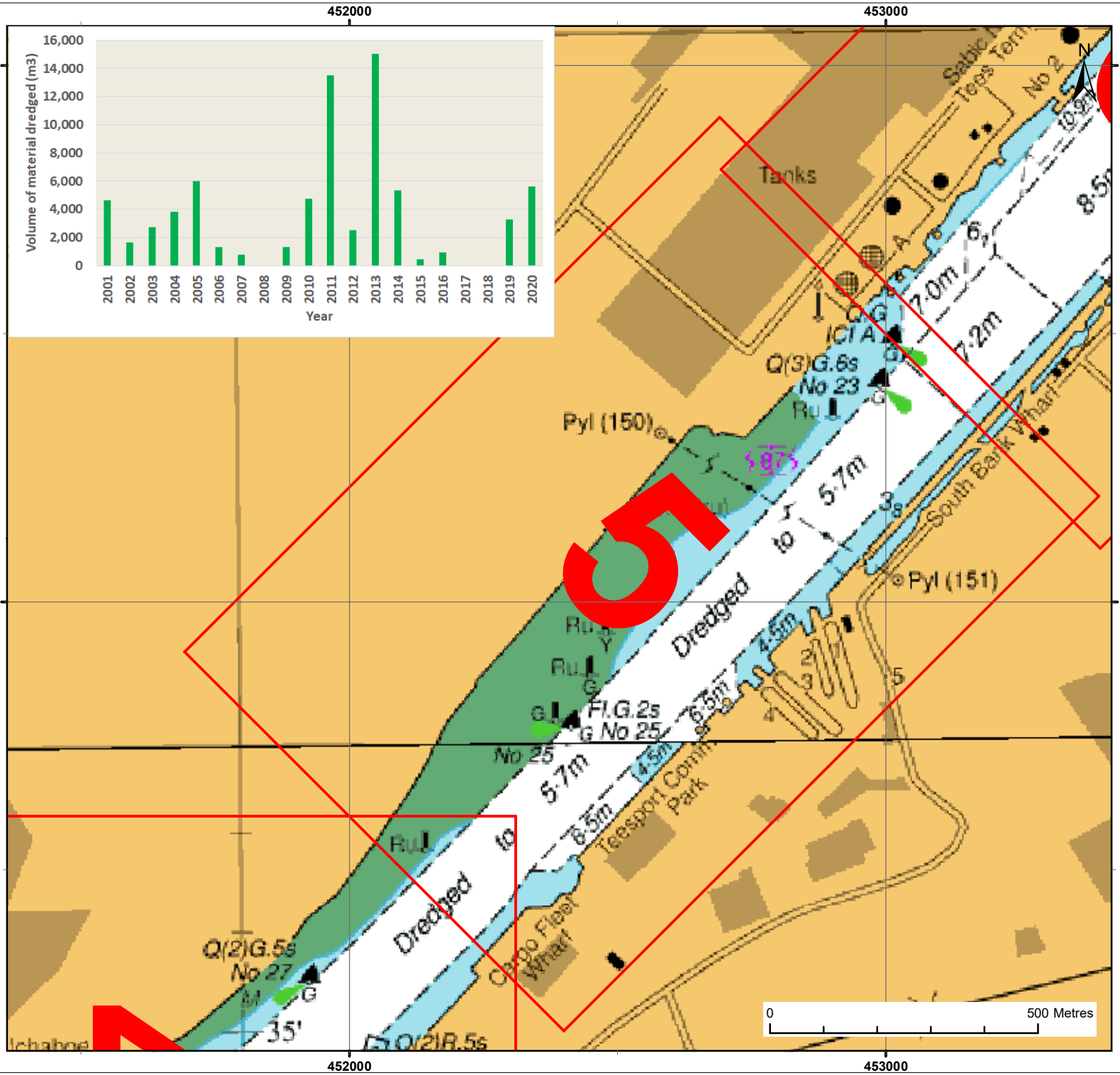

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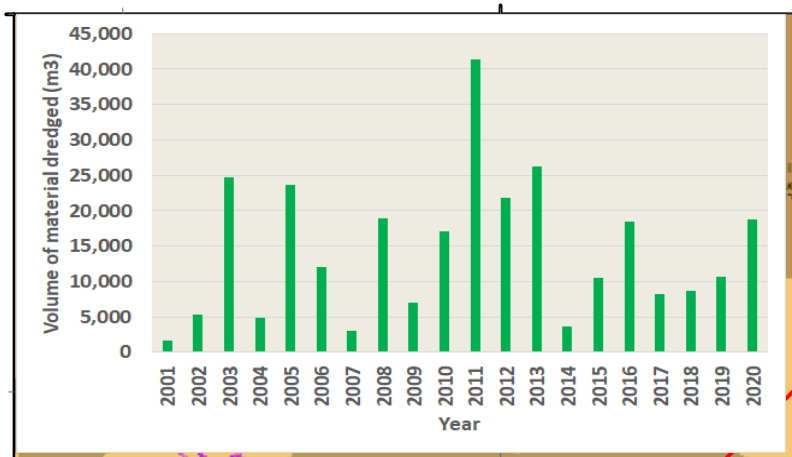

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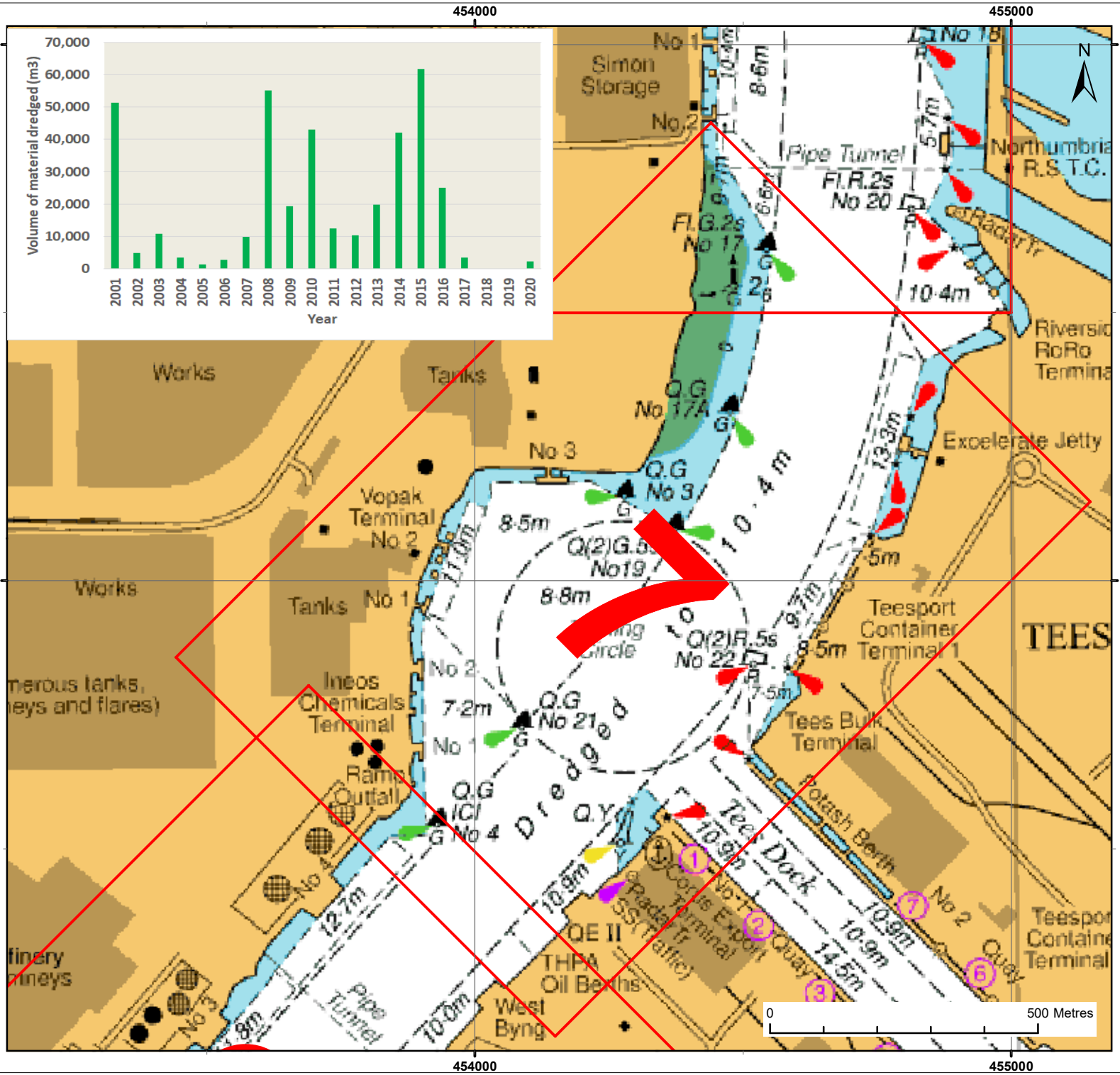

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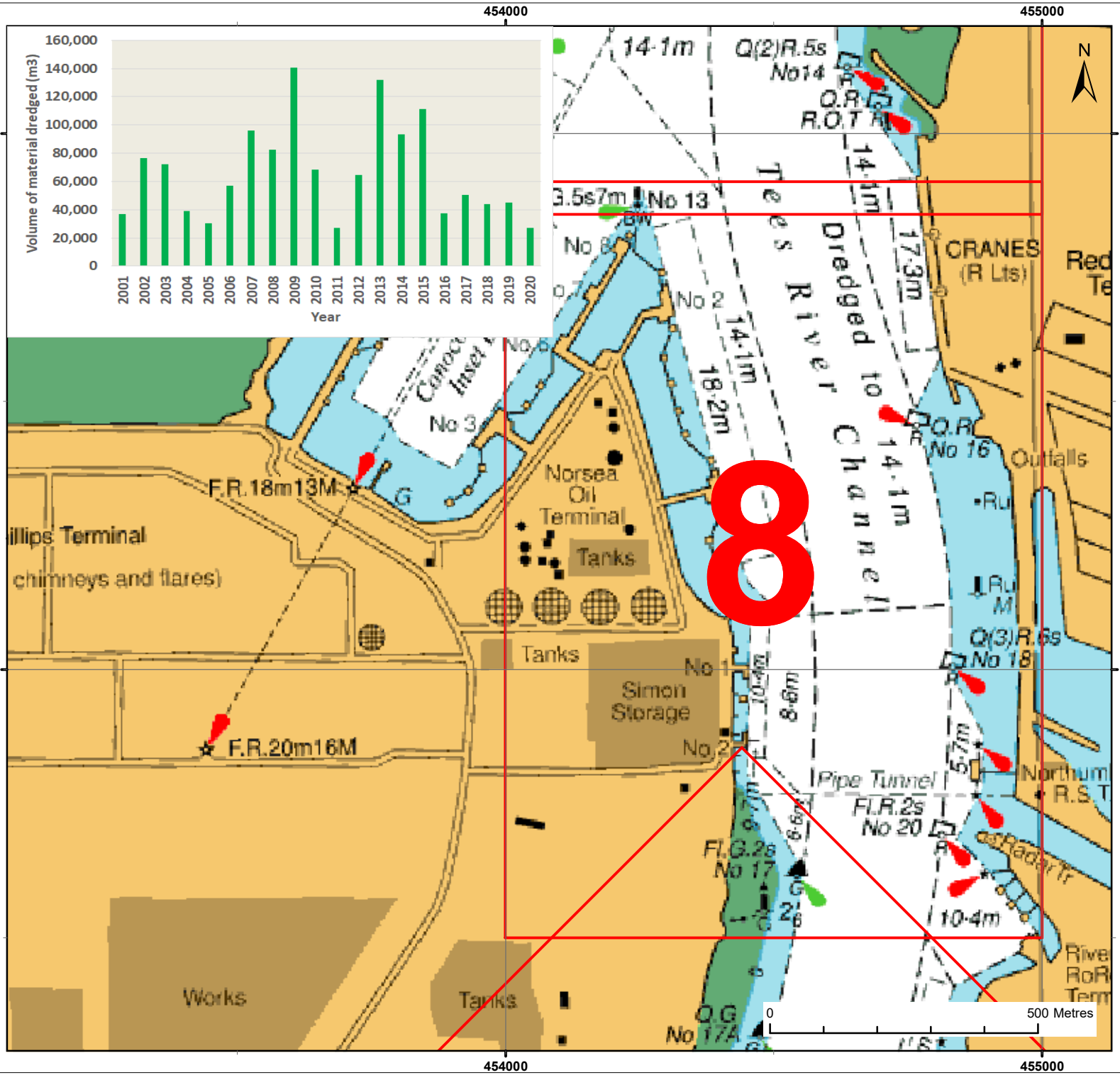

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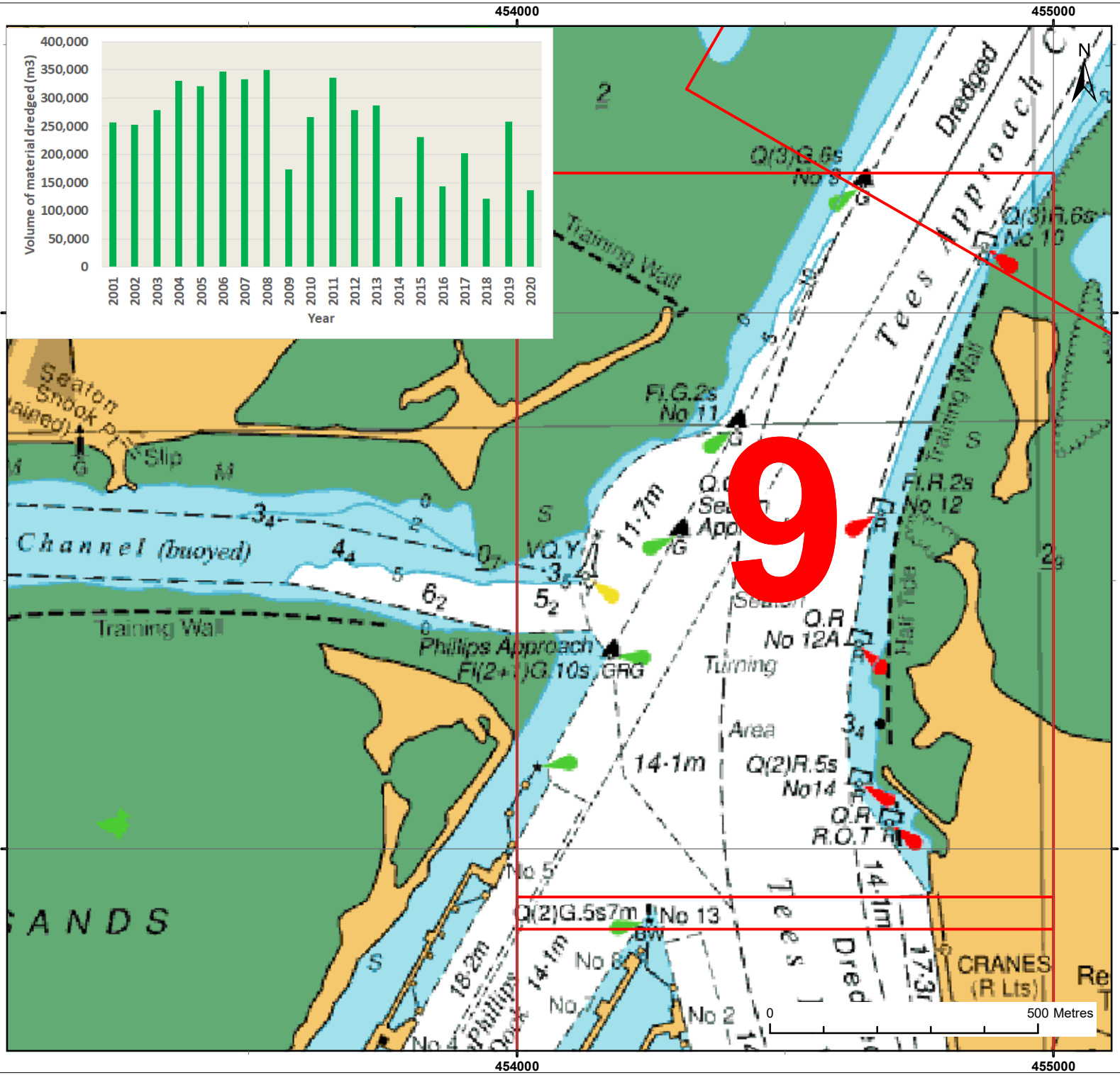

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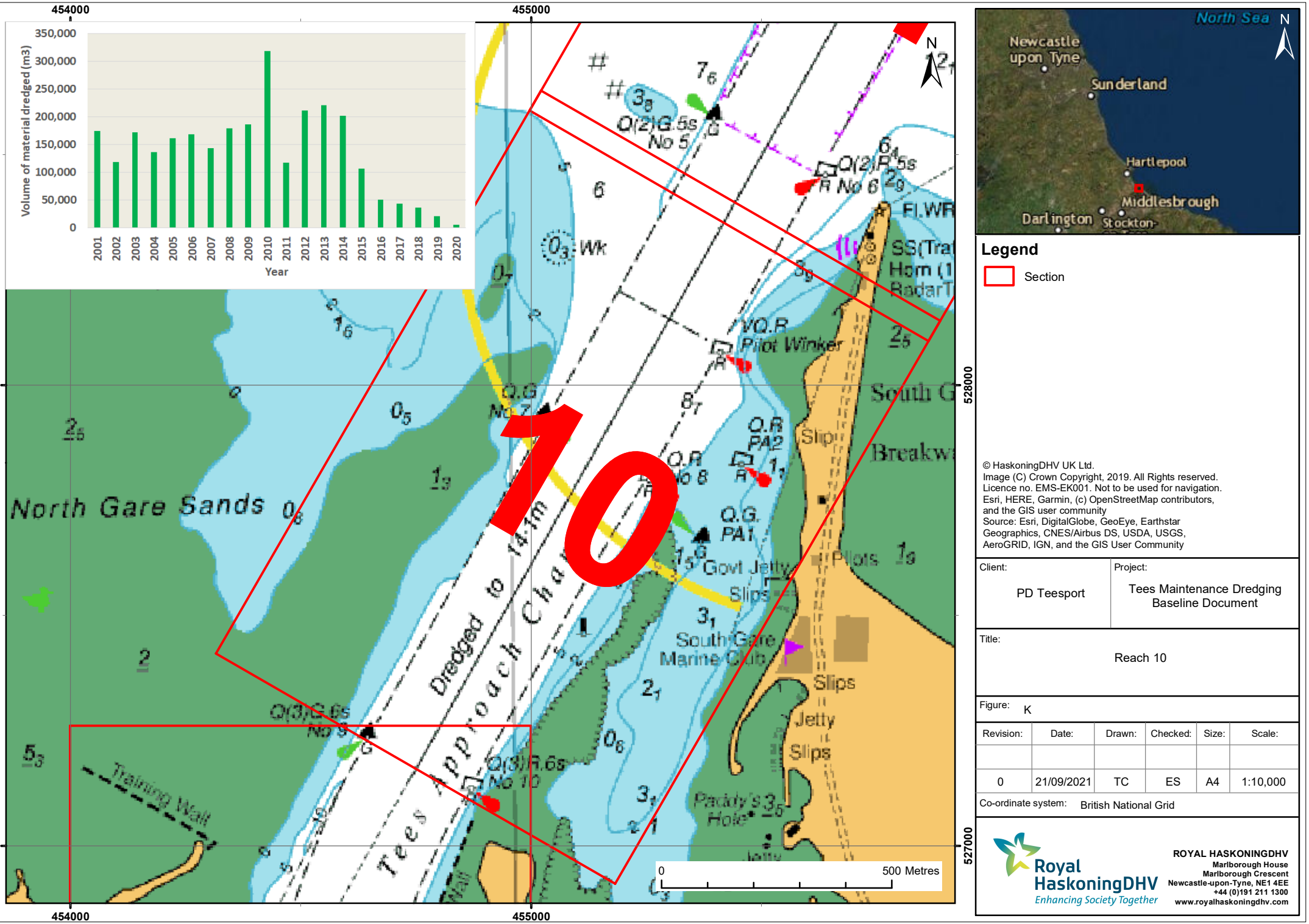

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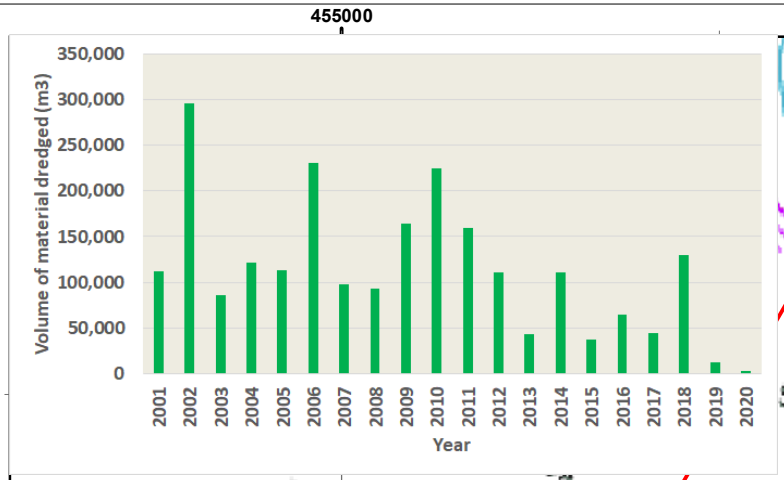

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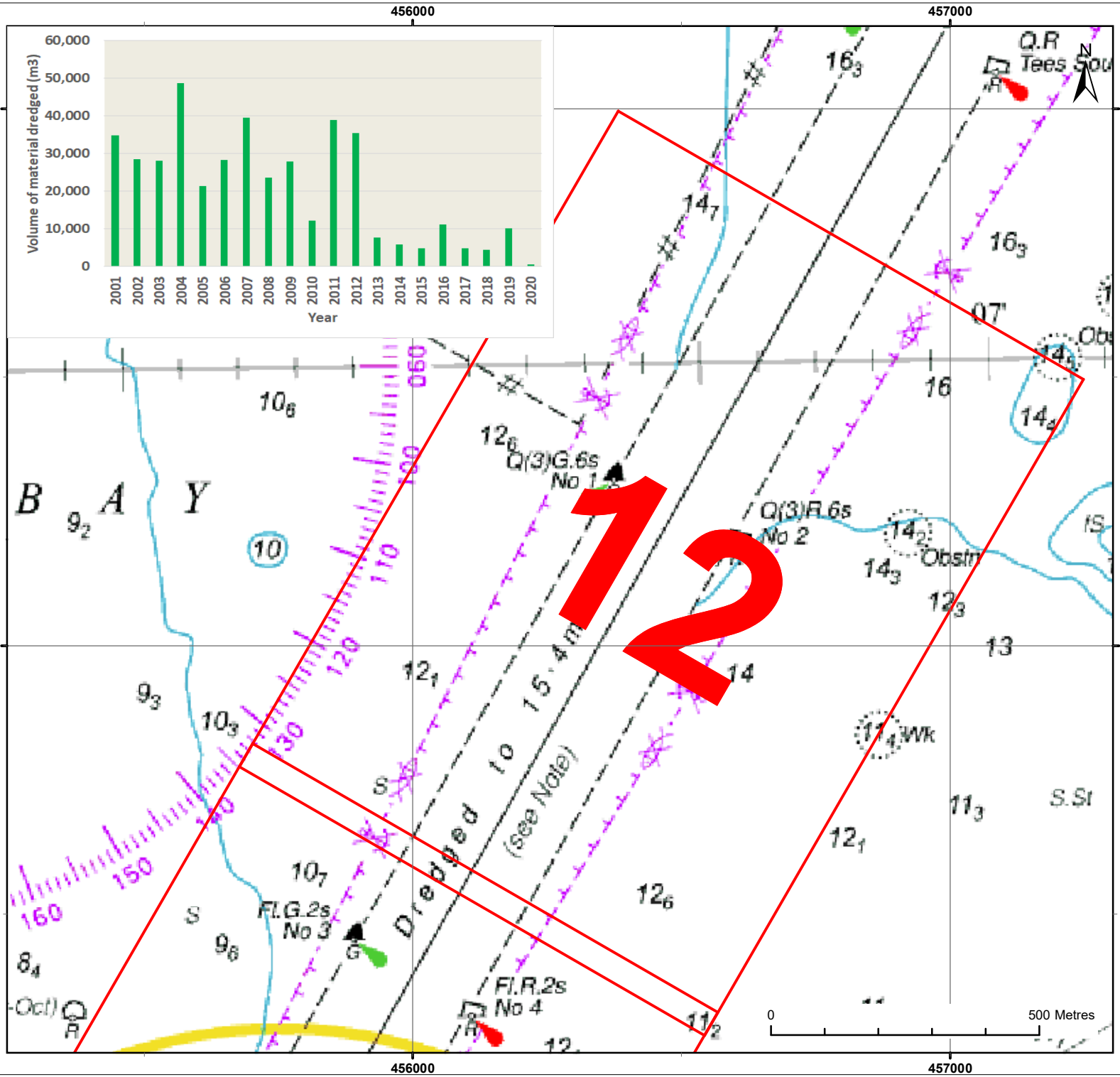

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