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|---|---|
| **From:** | Opel, Laura (MMO) |
| **To:** | Hornsea Project Three |
| **Cc:** | West, Richard (MMO); Stephenson, Paul (MMO) |
| **Subject:** | EN010080 - Hornsea Project 3 Deadline 3 submission |
| **Date:** | 14 December 2018 12:22:06 |
| **Attachments:** | EN010080 - Annex A - MMO guidance on MCZ assessments.pdf<br>EN010080 - Annex B - MMO comments on In Principle Monitoring Plan.pdf<br>EN010080 - Annex C -MMO comments on Herring Noise Contours.pdf<br>EN010080 - Example MMO MCZ screening document.pdf<br>EN010080 - Example MMO MCZ Stage 1 Assessment.pdf<br>EN010080 - Hornsea Project Three - Deadline 3 - MMO Post Hearing Submission.pdf |

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Good afternoon,

Identification Number: 20010662

Please find attached the MMOs Deadline 3 submission for Hornsea Project 3. The following documents have been attached:

- Post hearing submission including written submission of oral cases and comments on the revised draft DCO
- Annex A – MMO guidance on MCZ assessment
- Annex B – MMO comments on In Principle Monitoring Plan
- Annex c – MMO comments on Herring Noise Contours
- Example MCZ screening document
- Example MCZ Stage 1 assessment

Please let me know if you have any questions.

Kind regards,
Laura

Laura Opel BSc. (Hons), MSc., PIEMA **I** Marine Licensing Case Officer **I** Her Majesty's Government – Marine Management Organisation.
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Marine Management Organisation

# The Marine and Coastal Access Act (MCAA) (2009): Section 126

## Marine Conservation Zone (MCZ) Stage 1 Assessment

**Title:** Thanckes Oil Fuel Depot Loading Facility and Tank Farm Fire Fighting Upgrade.

**Applicant:** Defence Infrastructure Organisation.
**Reference No:** MLA/2015/00215.
**Address of applicant:**

1st Floor,
Zone 1,
Ramillies Bldg,
Marlborough Lines,
Monxton Rd,
Andover
SP11 8HJ

**Table 1: Activity details**

| | |
|---|---|
| **Type of Activity:** | Construction of a new jetty head and approach structure, the decommissioning of the existing jetty, and the capital dredge of a new berth and approach channel at Thanckes Oil Fuel Depot (OFD).<br><br>Capital disposal of dredged material at Rame Head South disposal site (PL031) - 57,600 wet tonnes of silt and 10,400 wet tonnes of cobble. |
| **MMO reference no:** | MLA/2015/00215 |
| **National grid reference or WGS co-ordinates:** | **Site coordinates**<br>50°22.9209'N 04°11.8692'W<br>50°22.9372'N 04°11.7214'W<br>50°22.8808'N 04°11.6783'W<br>50°22.8815'N 04°11.5855'W<br>50°23.1268'N 04°11.6872'W<br>50°23.0796'N 04°11.7854'W<br>50°23.0241'N 04°11.7516'W<br>50°23.0000'N 04°11.9404'W<br>50°22.9209'N 04°11.8692'W |

### Marine Conservation Zone (MCZ) Stage 1 Assessment

The Marine and Coastal Access Act 2009, Section 126, sets out the duties of public authorities in relation to decisions made on acts capable of affecting MCZs.

In line with Section 126(6), this document assesses whether "*there is no significant risk of the act hindering the achievement of the conservation objectives stated for the MCZ*".

In accordance with Natural England's (NE) guidance for using Conservation Advice Packages the following steps were taken with regard to Conservation Advice for Marine Conservation Zone: Tamar Estuary Sites (FS27).

- Using the "Advice on Operations" (AoO) document to determine pressures associated with the activities (Capital dredging, Construction of port and harbour structures, and Piling) that could harm the designated habitat and/or species features of the site.

- Screening the identified pressures of the activities in or out of further assessment.

- Using the conservation objectives and the supplementary advice tables of the Tamar Estuary Sites MCZ supplementary advice document to assess the impacts of the remaining pressures on the important[1] attributes of each feature at the site.

The documents referenced above can found using the following links:

https://www.gov.uk/government/publications/conservation-advice-for-marine-conservation-zone-tamar-estuary-sites-fs27/tamar-estuary-sites-mcz-site-information-draft

**Table 2: Details of MCZ**

| **Name and legal Status of site(s):** | **Name of site(s)** | **Legal status** |
|---|---|---|
| | Tamar Estuary Sites | MCZ |

**Table 3: Features list**

| **Features** | **Conservation Objectives** | **The application has associated hazards to which features are sensitive?** | **Details of Operation** |
|---|---|---|---|
| **Tamar Estuary Sites MCZ** | | | |
| Intertidal biogenic reefs | Maintain in favourable condition | Yes | Capital dredging.<br>Construction of port and harbour structures.<br>Piling. |
| Intertidal coarse sediment | Maintain in favourable condition | Yes | Capital dredging.<br>Construction of port and harbour structures.<br>Piling. |
| Blue mussel *Mytilus edulis* beds | Maintain in favourable condition | Yes | Capital dredging.<br>Construction of port and harbour structures.<br>Piling. |
| Native oyster *Ostrea edulis* | Recover to favourable condition | Yes | Capital dredging.<br>Construction of port and harbour structures.<br>Piling. |
| Smelt *Osmerus eperlanus* | Recover to favourable condition | Yes | Capital dredging.<br>Construction of port and harbour |

[1]Only those that will most efficiently and directly help to define condition, these attributes should be clearly capable of identifying a change in condition.

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| | | | structures.<br>Piling. |

## Screening

Pathways between features and all pressures, identified in the AoO section of Conservation advice for the MCZ: Conservation Advice for Marine Conservation Zone: Tamar Estuary Sites (FS27), were assessed for all activities. Where there was a pathway for disturbance between the pressure and the feature the sensitivity of the feature to that pressure was assessed to ascertain which pressure/feature interactions would require further assessment under Stage 1.

Where an impact cannot be ruled out the pressure/feature interaction has been taken forward to the Stage 1 assessment.

**Table 4: Screening of pressure/feature interactions by activity to be taken forward into Stage 1 assessment. Grey interactions have been screened out and red interactions have been taken forward.**

| Activity – Capital dredging | | | | | |
|---|---|---|---|---|---|
| **Pressure** | **BMB** | **IBR** | **ICS** | **NO** | **Sm** |
| Abrasion/disturbance of the substrate on the surface of the seabed | S | S | | S | S |
| Barrier to species movement | | | | | S |
| Changes in suspended solids (water clarity) | NS | NS | | NS | S |
| Emergence regime changes, including tidal level change considerations | S | S | | S | NR |
| Habitat structure changes - removal of substratum (extraction) | S | S | | S | S |
| Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion | S | S | | S | NR |
| Physical change (to another seabed type) | NR | NR | | S | NR |
| Physical change (to another sediment type) | NS | NS | | S | NR |
| Removal of non-target species | S | S | | NS | S |
| Smothering and siltation rate changes (Heavy) | S | S | | S | S |
| Smothering and siltation rate changes (Light) | S | S | | S | S |
| Water flow (tidal current) changes, including sediment transport considerations | S | S | | NS | NS |
| Collision BELOW water with static or moving objects not naturally found in the marine environment | | | | | |
| Deoxygenation | | | | | |
| Hydrocarbon & PAH contamination | | | | | |
| Introduction of light | | | | | |
| Introduction of other substances (solid, liquid or gas) | | | | | |
| Introduction or spread of invasive non-indigenous species (INIS) | | | | | |
| Nutrient enrichment | | | | | |
| Radionuclide contamination | | | | | |
| Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals) | | | | | |
| Transition elements & organo-metal (e.g. TBT) contamination | | | | | |
| Underwater noise changes | | | | | |
| Vibration | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Visual disturbance | | | | | |
| Wave exposure changes | | | | | |
| **Activity – Construction of port and harbour structures** | | | | | |
| **Pressure** | **BMB** | **IBR** | **ICS** | **NO** | **Sm** |
| Abrasion/disturbance of the substrate on the surface of the seabed | S | S | | S | S |
| Barrier to species movement | | | | | S |
| Changes in suspended solids (water clarity) | NS | NS | | NS | S |
| Emergence regime changes, including tidal level change considerations | S | S | | S | NR |
| Habitat structure changes - removal of substratum (extraction) | S | S | | S | S |
| Introduction of light | | | | | NR |
| Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion | S | S | | S | NR |
| Physical change (to another seabed type) | NR | NR | | S | NR |
| Physical change (to another sediment type) | NS | NS | | S | NR |
| Physical loss (to land or freshwater habitat) | S | S | | S | NR |
| Removal of non-target species | S | S | | NS | S |
| Smothering and siltation rate changes (Heavy) | S | S | | S | S |
| Smothering and siltation rate changes (Light) | S | S | | S | S |
| Underwater noise changes | | | | | S |
| Vibration | | | | | S |
| Visual disturbance | | | | | IE |
| Water flow (tidal current) changes, including sediment transport considerations | S | S | | NS | NS |
| Wave exposure changes | S | S | | S | NR |
| Collision BELOW water with static or moving objects not naturally found in the marine environment | | | | | |
| Deoxygenation | | | | | |
| Hydrocarbon & PAH contamination | | | | | |
| Introduction of other substances (solid, liquid or gas) | | | | | |
| Introduction or spread of invasive non-indigenous species (INIS) | | | | | |
| Nutrient enrichment | | | | | |
| Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals) | | | | | |
| Transition elements & organo-metal (e.g. TBT) contamination | | | | | |
| **Activity – Piling** | | | | | |
| **Pressure** | **BMB** | **IBR** | **ICS** | **NO** | **Sm** |
| Abrasion/disturbance of the substrate on the surface of the seabed | S | S | | S | S |
| Barrier to species movement | | | | | S |
| Changes in suspended solids (water clarity) | NS | NS | | NS | S |
| Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion | S | S | | S | NR |
| Physical loss (to land or freshwater habitat) | S | S | | S | NR |
| Smothering and siltation rate changes (Light) | S | S | | S | S |
| Underwater noise changes | | | | | S |
| Vibration | | | | | S |
| Visual disturbance | | | | | IE |
| Collision BELOW water with static or moving objects not naturally found in the marine environment | | | | | |
| Hydrocarbon & PAH contamination | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Introduction of light | | | | | | |
| Introduction of other substances (solid, liquid or gas) | | | | | | |
| Introduction or spread of invasive non-indigenous species (INIS) | | | | | | |
| Physical change (to another seabed type) | | | | | | |
| Physical change (to another sediment type) | | | | | | |
| Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals) | | | | | | |
| Transition elements & organo-metal (e.g. TBT) contamination | | | | | | |
| Water flow (tidal current) changes, including sediment transport considerations | | | | | | |
| Wave exposure changes | | | | | | |

Legend: BMB – Blue Mussel (Mytilus edulis) beds, IBR – Intertidal Biogenic Reefs, ICS – Intertidal Coarse Sediment, NO – Native Oyster (Ostrea edulis), Sm - Smelt (Osmerus eperlanus), S – Sensitive, NS – Not Sensitive, IE – Insufficient Evidence, NR – Not Relevant.

**Rationale for screening**

Both features and pressures were screened out in bulk where possible.

One feature was screened out of requiring consideration for all activities under Stage 1 as there is no realistic pathway between the feature and proposed activities due to the distance between the activities and the feature. See table 5 for further detail.

**Table 5: Features not taken forward to Stage 1 assessment as there is no realistic pathway at the reported distance.**

| Feature | Approximate Distance |
|---|---|
| Intertidal Coarse Sediment | 10km |

Pressures were screened out of requiring further consideration when all of the features are not sensitive to these pressures. The sensitivity to pressures is provided in the AoO section of Conservation advice for the MCZ: Conservation Advice for the Marine Conservation Zone: Tamar Estuary (FS27).

Natural England categorizes pressures as either ‘High to Medium Risk’ or ‘Low Risk’. The recommendation for Low Risk pressures is ‘Unless there are evidence based case or site specific factors that increase the risk, or uncertainty on the level of pressure on a receptor, this pressure generally does not occur at a level of concern and should not require consideration as part of an assessment.’

The following pressures are Low Risk and have therefore been assessed against the project and screened out.

Capital dredging:

- Collision BELOW water with static or moving objects not naturally found in the marine environment
- Deoxygenation
- Hydrocarbon & PAH contamination
- Introduction of light
- Introduction of other substances (solid, liquid or gas)
- Introduction or spread of invasive non-indigenous species (INIS)

- Nutrient enrichment
- Radionuclide contamination
- Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals)
- Transition elements & organo-metal (e.g. TBT) contamination
- Underwater noise changes
- Vibration
- Visual disturbance
- Wave exposure changes

Construction of port and harbour structures:

- Collision BELOW water with static or moving objects not naturally found in the marine environment
- Deoxygenation
- Hydrocarbon & PAH contamination
- Introduction of other substances (solid, liquid or gas)
- Introduction or spread of invasive non-indigenous species (INIS)
- Nutrient enrichment
- Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals)
- Transition elements & organo-metal (e.g. TBT) contamination

Piling:

- Collision BELOW water with static or moving objects not naturally found in the marine environment
- Hydrocarbon & PAH contamination
- Introduction of light
- Introduction of other substances (solid, liquid or gas)
- Introduction or spread of invasive non-indigenous species (INIS)
- Physical change (to another seabed type)
- Physical change (to another sediment type)
- Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals)
- Transition elements & organo-metal (e.g. TBT) contamination
- Water flow (tidal current) changes, including sediment transport considerations
- Wave exposure changes

For all activities, pressures were then screened out of requiring consideration under Stage 1 for some designated features but not all. See table 6 for further detail.

**Table 6: Pressures not taken forward to Stage 1 assessment as some features of the site are not sensitive to the pressure for all activities.**

| Pressure | Feature/s screened out | Justification |
|---|---|---|
| Barrier to species movement | Blue Mussel (*Mytilus edulis*) beds; Intertidal Biogenic Reefs; and Native Oyster (*Ostrea edulis*). | The features listed do not move. Given the distance of the site from the dredge area, and that the river is naturally turbid the MMO does not consider that this feature/pressure interactions require further assessment. |
| Underwater noise | Blue Mussel (*Mytilus edulis*) beds; | These features are not vulnerable |

| | | |
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| | Intertidal Biogenic Reefs; and<br>Native Oyster (*Ostrea edulis*). | to this pressure at the probable intensity of noise at the distance of c2km away on the opposite bank of the River Tamar. |
| Vibration | Blue Mussel (*Mytilus edulis*) beds;<br>Intertidal Biogenic Reefs; and<br>Native Oyster (*Ostrea edulis*). | These features are not vulnerable to this pressure at the probable intensity of vibration at the distance of c2km away on the opposite bank of the River Tamar. |
| Visual Disturbance | Blue Mussel (*Mytilus edulis*) beds;<br>Intertidal Biogenic Reefs; and<br>Native Oyster (*Ostrea edulis*). | These features are not vulnerable to the pressure. |
| Introduction of light | Blue Mussel (*Mytilus edulis*) beds;<br>Intertidal Biogenic Reefs; and<br>Native Oyster (*Ostrea edulis*). | These features are not vulnerable to this pressure at the probable intensity of light at the distance of c2km away on the opposite bank of the River Tamar. |

For the remaining pressure/feature interactions, the sensitivity of the feature to the remaining pressures was obtained from the AoO document within the draft Conservation Advice Package.

For the remaining pressure/feature interactions there were four possible outcomes:

1. The individual pressure/feature interactions that were assessed as Not Sensitive at the benchmark were then screened out of requiring consideration under Stage 1. The MMO considers that the impacts on these features as a result of the activities will be less than the benchmarks specified for these pressure/feature interactions. A full list of pressure/feature interaction benchmarks can be found at: https://www.gov.uk/government/publications/conservation-advice-for-marine-protected-areas-pressure-benchmarks

2. Features that were deemed sensitive to individual pressures for both direct and indirect pathways were screened into Stage 1 assessment.

**Stage 1 Assessment**

The pressure/feature interactions that fell under the scope of item 2 above are assessed in the below section. In accordance with NE advice, the draft Conservation Advice Package was used to obtain important targets within the Supplementary Advice Tables to inform decision making. For pressures where potential impacts to features are of a similar nature, those pressures have been bulked to save repetition during this assessment.

**Table 6: MCZ Stage 1 assessment**

| Pressure | Favourable condition target for relevant attribute based on conservation objectives | Contribution of attribute to ecological structure and function of site | Capable of effecting either the protected features of the MCZ, or any ecological or geomorphological process on which the conservation of any protected feature of the MCZ is (wholly or in part) dependant? | Will there be impacts in combination with other plans or projects, on attribute and /or feature? | Can impacts be mitigated for beyond what has been suggested in the application? | Will the conservation objective be hindered? |
|---|---|---|---|---|---|---|
| **Blue Mussel (*Mytilus edulis*) Beds** | | | | | | |
| Abrasion/disturbance of the substrate on the surface of the seabed;<br><br>And/or<br><br>Habitat structure changes - removal of substratum (extraction);<br><br>And/or<br><br>Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion;<br><br>And/or<br><br>Physical loss (to land or freshwater habitat) | Maintain the total extent and spatial distribution of mussel beds. | The distribution will influence the component communities present, and also help increase the health and resilience of the feature. | No.<br><br>This feature is c2km upstream of the proposed works.<br><br><u>Capital Dredging</u><br>The footprint of the dredge is outside of the MCZ boundary.<br><br>This feature is not vulnerable to this pressure due to the characteristics of the sediment which would be susceptible to transport and could potentially be transported upstream.<br><br>As such, the MMO is content that capital dredging will not hinder the conservation objectives of this feature.<br><br><u>Construction of port and harbour structures</u><br>Activities associated with the construction of the new jetty and the decommissioning of the current jetty will not result in this pressure as there will be no significant direct or indirect interaction with the seabed. | No.<br><br>Please see in combination assessment below. | No adverse impacts predicted – no further mitigation required. | No adverse effect on site integrity. |

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| | | | Piling has been considered separately below.<br><br>As such, the MMO considers that construction of ports and harbours structures will not hinder the conservation objectives of this feature.<br><br><u>Piling</u><br>The piling activity is outside of the MCZ boundary.<br><br>This feature is not vulnerable to this pressure due to the characteristics of the sediment which would be susceptible to transport and could potentially be transported upstream.<br><br>As such, the MMO is content that piling will not hinder the conservation objectives of this feature.<br><br>As such, the MMO is content that the activities associated with the proposed works will not hinder the conservation objectives of the site. | | | |
| | When mussel beds develop within the site, their extent and persistence should not be compromised by human activities, accepting that, due to the naturally dynamic nature of this feature, their extent will | The distribution will influence the component communities present, and also help increase the health and resilience of the feature. | As above. | As above. | As above. | As above. |

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| | change over time. | | | | | |
| | Maintain the area of habitat that is likely to support the feature, allowing for natural change and the dynamic nature of the habitat. | Mussel reefs are completely reliant on the supporting habitat they colonise. | As above. | As above. | As above. | As above. |
| Emergence regime changes, including tidal level change considerations;<br><br>And/or<br><br>Water flow (tidal current) changes, including sediment transport considerations;<br><br>And/or<br><br>Wave exposure changes | Maintain the environmental conditions in those locations that are known, or which become known, to be important for mussel bed formation. | Mussel beds are reliant on the physical and biological process that allow reef to form. | No.<br><br>This feature is c2km upstream of the proposed works.<br><br><u>Capital Dredging</u><br>The dredge depth is to 1.0 to 1.5m below the existing channel depth and the capital dredge is outside of the main river channel over an area of 1.36ha (the Northern Approach channel).<br><br>The proposed dredge area partly overlaps the current maintenance dredge areas, which will not be maintained once the new fuel jetty becomes operational and so it is unlikely there will be a significant change from what is already in place.<br><br>As such, the MMO considers that capital dredging will not hinder the conservation objectives of this feature.<br><br><u>Construction of port and harbour structures (excluding piling)</u> | No.<br><br>Please see in combination assessment below. | No adverse impacts predicted – no further mitigation required. | No adverse effect on site integrity. |

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| | | | The new jetty head and approach lie outside of the main river channel flows and as the new jetty does not interrupt the flow to any greater degree than the existing jetty the proposed works will not increase any restrictions to flows outside of the present conditions.<br><br>A change in pile design (circular rather than angular/square) is expected to have less drag on the tidal flow than is currently the case, but this is unlikely to cause any significant effects.<br><br>As such, the MMO considers that construction of ports and harbours structures will not hinder the conservation objectives of this feature.<br><br>As such, the MMO is content that the activities associated with the proposed works will not hinder the conservation objectives of the site. | | | |
| | Maintain the natural water flow velocity to the intertidal mussel beds, to provide high levels of oxygen and food and prevent 'mussel mud' forming. | Water movement needs to be maintained in order to provide the resources and support the various life processes of an intertidal mussel bed. | As above. | As above. | As above. | As above. |
| | Maintain the natural water flow velocity to | Water movement needs to be | As above. | As above. | As above. | As above. |

| | | | | | | |
|---|---|---|---|---|---|---|
| | the subtidal mussel beds, to provide high levels of oxygen and food and prevent 'mussel mud' forming. | maintained in order to provide the resources and support the various life processes of an intertidal mussel bed. | | | | |
| Removal of non-target species | Maintain the total extent and spatial distribution of mussel beds. | The distribution will influence the component communities present, and also help increase the health and resilience of the feature. | No.<br><br>This feature is c2km upstream of the proposed works.<br><br><u>Capital Dredging</u><br>The footprint of the dredge is outside of the MCZ boundary.<br><br>This feature is not vulnerable to this pressure due to the characteristics of the sediment which would be susceptible to transport and could potentially be transported upstream.<br><br>As such, the MMO is content that capital dredging will not hinder the conservation objectives of this feature.<br><br><u>Construction of port and harbour structures</u><br>Activities associated with the construction of the new jetty and the decommissioning of the current jetty will not result in this pressure as there will be no significant direct or indirect interaction with the seabed.<br><br>As such, the MMO considers that construction of ports and harbours structures will not | No.<br><br>Please see in combination assessment below. | No adverse impacts predicted – no further mitigation required. | No adverse effect on site integrity. |

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| | | | hinder the conservation objectives of this feature.<br><br>As such, the MMO is content that the activities associated with the proposed works will not hinder the conservation objectives of the site. | | | |
| | [Maintain OR Recover OR Restore] the abundance of listed species, to enable each of them to be a viable component of the habitat. | Natural England has included an attribute for the abundance of key structural and influential species for habitat features. | As above. | As above. | As above. | As above. |
| | Maintain the species composition of the mussel bed community. | Species composition could be altered by human activities without changing the overall community type. | As above. | As above. | As above. | As above. |
| Smothering and siltation rate changes (Heavy);<br><br>And/or<br><br>Smothering and siltation rate changes (Light) | Maintain the natural rate of sediment deposition. | An excessive accumulation of sediment can be detrimental to mussels. | No.<br><br>This feature is c2km upstream of the proposed works.<br><br><u>Capital Dredging</u><br>Capital dredging can potentially increase the levels of local siltation rates.<br><br>However, the Tamar is naturally turbid area with 5,000$m^3$ of sediment (approximately 8,300 wet tonnes) suspended due to tidal action each day, seasonally (summer/winter) this is 164,000$m^3$ (27,300 wet | No.<br><br>Please see in combination assessment below. | No adverse impacts predicted – no further mitigation required. | No adverse effect on site integrity. |

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| | | | tonnes). At the mouth of the estuary, silt content of the water column is at 80% (See Baseline Document for Maintenance Dredging in Plymouth Sound and Estuaries European Marine Site).<br><br>Considering the probable daily volumes of sediment that could be introduced into the system, it is unlikely that the combined daily increase will be greater than that of the rivers natural variation.<br><br>As such, the MMO is content that capital dredging will not hinder the conservation objectives of this feature.<br><br><u>Construction of port and harbour structures</u><br>Activities associated with the construction of the new jetty and the decommissioning of the current jetty will not result in this pressure as there will be no significant direct or indirect interaction with the seabed.<br><br>As such, the MMO considers that construction of ports and harbours structures will not hinder the conservation objectives of this feature.<br><br><u>Piling</u><br>The total estimated sediment piling arisings is 3,450m$^3$, of | | | |

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| | | | which only 250m3 will be side cast (those at the subtidal locations) and free to enter the estuary system.<br><br>The rest will be collected and disposed of, or treated, on land due to the contaminant levels associated. Multiple methods will be employed to prevent the release of these sediments into the system including the use of a suction dredging plant and flush containment and collection during piling.<br><br>However, the Tamar is naturally turbid area with 5,000$m^3$ of sediment (approximately 8,300 wet tonnes) suspended due to tidal action each day, seasonally (summer/winter) this is 164,000$m^3$ (27,300 wet tonnes). At the mouth of the estuary, silt content of the water column is at 80% (See Baseline Document for Maintenance Dredging in Plymouth Sound and Estuaries European Marine Site).<br><br>Considering the probable daily volumes of sediment that could be introduced into the system, it is unlikely that the combined daily increase will be greater than that of the rivers natural variation. | | | |

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| | | | As such, the MMO is content that piling will not hinder the conservation objectives of this feature.<br><br>As such, the MMO is content that the activities associated with the proposed works will not hinder the conservation objectives of the site. | | | |
| **Intertidal Biogenic Reefs** | | | | | | |
| Abrasion/disturbance of the substrate on the surface of the seabed;<br><br>And/or<br><br>Habitat structure changes - removal of substratum (extraction);<br><br>And/or<br><br>Penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion;<br><br>And/or<br><br>Physical loss (to land or freshwater habitat) | Maintain the total extent and spatial distribution of mussel beds. | The distribution will influence the component communities present, and also help increase the health and resilience of the feature. | No.<br><br>This feature is c2km upstream of the proposed works.<br><br><u>Capital Dredging</u><br>The footprint of the dredge is outside of the MCZ boundary.<br><br>This feature is not vulnerable to this pressure due to the characteristics of the sediment which would be susceptible to transport and could potentially be transported upstream.<br><br>As such, the MMO is content that capital dredging will not hinder the conservation objectives of this feature.<br><br><u>Construction of port and harbour structures</u><br>Activities associated with the construction of the new jetty and the decommissioning of the current jetty will not result in this pressure as there will be no significant direct or indirect | No.<br><br>Please see in combination assessment below. | No adverse impacts predicted – no further mitigation required. | No adverse effect on site integrity. |

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| | | | interaction with the seabed. Piling has been considered separately below.<br><br>As such, the MMO considers that construction of ports and harbours structures will not hinder the conservation objectives of this feature.<br><br><u>Piling</u><br>The piling activity is outside of the MCZ boundary.<br><br>This feature is not vulnerable to this pressure due to the characteristics of the sediment which would be susceptible to transport and could potentially be transported upstream.<br><br>As such, the MMO is content that piling will not hinder the conservation objectives of this feature.<br><br>As such, the MMO is content that the activities associated with the proposed works will not hinder the conservation objectives of the site. | | | |
| | Maintain the area of habitat which is likely to support the feature, allowing for natural change and the dynamic nature of the habitat. | Mussel reefs are completely reliant on the supporting habitat they colonise. | As above. | As above. | As above. | As above. |
| Emergence regime changes, including tidal | Maintain the natural water flow velocity to | Water movement needs to be | No. | No. | No adverse impacts predicted | No adverse effect on site |

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| level change considerations;<br><br>And/or<br><br>Water flow (tidal current) changes, including sediment transport considerations;<br><br>And/or<br><br>Wave exposure changes | the intertidal mussel beds, to provide high levels of oxygen and food and prevent 'mussel mud' forming. | maintained in order to provide the resources and support the various life processes of an intertidal mussel bed. | This feature is c2km upstream of the proposed works.<br><br><u>Capital Dredging</u><br>The dredge depth is to 1.0 to 1.5m below the existing channel depth and the capital dredge is outside of the main river channel over an area of 1.36ha (the Northern Approach channel).<br><br>The proposed dredge area partly overlaps the current maintenance dredge areas, which will not be maintained once the new fuel jetty becomes operational and so it is unlikely there will be a significant change from what is already in place.<br><br>As such, the MMO considers that capital dredging will not hinder the conservation objectives of this feature.<br><br><u>Construction of port and harbour structures (excluding piling)</u><br>The new jetty head and approach lie outside of the main river channel flows and as the new jetty does not interrupt the flow to any greater degree than the existing jetty the proposed works will not increase any restrictions to flows outside of the present conditions. | Please see in combination assessment below. | – no further mitigation required. | integrity. |

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| | | | A change in pile design (circular rather than angular/square) is expected to have less drag on the tidal flow than is currently the case, but this is unlikely to cause any significant effects.<br><br>As such, the MMO considers that construction of ports and harbours structures will not hinder the conservation objectives of this feature.<br><br>As such, the MMO is content that the activities associated with the proposed works will not hinder the conservation objectives of the site. | | | |
| Removal of non-target species | Maintain the total extent and spatial distribution of mussel beds. | The distribution will influence the component communities present, and also help increase the health and resilience of the feature. | No.<br><br>This feature is c2km upstream of the proposed works.<br><br><u>Capital Dredging</u><br>The footprint of the dredge is outside of the MCZ boundary.<br><br>This feature is not vulnerable to this pressure due to the characteristics of the sediment which would be susceptible to transport and could potentially be transported upstream.<br><br>As such, the MMO is content that capital dredging will not hinder the conservation objectives of this feature. | No.<br><br>Please see in combination assessment below. | No adverse impacts predicted – no further mitigation required. | No adverse effect on site integrity. |

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| | | | <u>Construction of port and harbour structures</u><br>Activities associated with the construction of the new jetty and the decommissioning of the current jetty will not result in this pressure as there will be no significant direct or indirect interaction with the seabed.<br><br>As such, the MMO considers that construction of ports and harbours structures will not hinder the conservation objectives of this feature.<br><br>As such, the MMO is content that the activities associated with the proposed works will not hinder the conservation objectives of the site. | | | |
| | [Maintain OR Recover OR Restore] the abundance of listed species, to enable each of them to be a viable component of the habitat. | Natural England has included an attribute for the abundance of key structural and influential species for habitat features. | As above. | As above. | As above. | As above. |
| | Maintain the species composition of the mussel bed community. | Species composition could be altered by human activities without changing the overall community type. | As above. | As above. | As above. | As above. |
| Smothering and siltation rate changes (Heavy); | Maintain the natural rate of sediment deposition. | An excessive accumulation of sediment can be detrimental to | No.<br><br>This feature is c2km upstream of the proposed works. | No.<br><br>Please see in combination | No adverse impacts predicted – no further mitigation | No adverse effect on site integrity. |

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| And/or<br><br>Smothering and siltation rate changes (Light) | | mussels. | <u>Capital Dredging</u><br>Capital dredging can potentially increase the levels of local siltation rates.<br><br>However, the Tamar is naturally turbid area with 5,000m$^3$ of sediment (approximately 8,300 wet tonnes) suspended due to tidal action each day, seasonally (summer/winter) this is 164,000m$^3$ (27,300 wet tonnes). At the mouth of the estuary, silt content of the water column is at 80% (See Baseline Document for Maintenance Dredging in Plymouth Sound and Estuaries European Marine Site).<br><br>Considering the probable daily volumes of sediment that could be introduced into the system, it is unlikely that the combined daily increase will be greater than that of the rivers natural variation.<br><br>As such, the MMO is content that capital dredging will not hinder the conservation objectives of this feature.<br><br><u>Construction of port and harbour structures</u><br>Activities associated with the construction of the new jetty and the decommissioning of | assessment below. | required. | |

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| | | | the current jetty will not result in this pressure as there will be no significant direct or indirect interaction with the seabed.<br><br>As such, the MMO considers that construction of ports and harbours structures will not hinder the conservation objectives of this feature.<br><br><u>Piling</u><br>The total estimated sediment piling arisings is 3,450m$^3$, of which only 250m3 will be side cast (those at the subtidal locations) and free to enter the estuary system.<br><br>The rest will be collected and disposed of, or treated, on land due to the contaminant levels associated. Multiple methods will be employed to prevent the release of these sediments into the system including the use of a suction dredging plant and flush containment and collection during piling.<br><br>However, the Tamar is naturally turbid area with 5,000m$^3$ of sediment (approximately 8,300 wet tonnes) suspended due to tidal action each day, seasonally (summer/winter) this is 164,000m$^3$ (27,300 wet tonnes). At the mouth of the estuary, silt content of the | | | |

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| | | | water column is at 80% (See Baseline Document for Maintenance Dredging in Plymouth Sound and Estuaries European Marine Site).<br><br>Considering the probable daily volumes of sediment that could be introduced into the system, it is unlikely that the combined daily increase will be greater than that of the rivers natural variation.<br><br>As such, the MMO is content that piling will not hinder the conservation objectives of this feature.<br><br>As such, the MMO is content that the activities associated with the proposed works will not hinder the conservation objectives of the site. | | | |
| **Native Oyster (*Ostrea edulis*)** | | | | | | |
| Abrasion/disturbance of the substrate on the surface of the seabed;<br><br>And/or<br><br>Habitat structure changes - removal of substratum (extraction);<br><br>And/or<br><br>Penetration and/or disturbance of the substratum below the | Recover the presence and spatial distribution of the species. | Disturbance caused by human activities should not adversely affect the species. | No.<br><br>This feature is c2km upstream of the proposed works.<br><br><u>Capital Dredging</u><br>The footprint of the dredge is outside of the MCZ boundary.<br><br>This feature is not vulnerable to this pressure due to the characteristics of the sediment which would be susceptible to transport and could potentially be transported upstream. | No.<br><br>Please see in combination assessment below. | No adverse impacts predicted – no further mitigation required. | No adverse effect on site integrity. |

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| surface of the seabed, including abrasion;<br><br>And/or<br><br>Physical loss (to land or freshwater habitat) | | | As such, the MMO is content that capital dredging will not hinder the conservation objectives of this feature.<br><br><u>Construction of port and harbour structures</u><br>Activities associated with the construction of the new jetty and the decommissioning of the current jetty will not result in this pressure as there will be no significant direct or indirect interaction with the seabed. Piling has been considered separately below.<br><br>As such, the MMO considers that construction of ports and harbours structures will not hinder the conservation objectives of this feature.<br><br><u>Piling</u><br>The piling activity is outside of the MCZ boundary.<br><br>This feature is not vulnerable to this pressure due to the characteristics of the sediment which would be susceptible to transport and could potentially be transported upstream.<br><br>As such, the MMO is content that piling will not hinder the conservation objectives of this feature. | | | |

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| | | | As such, the MMO is content that the activities associated with the proposed works will not hinder the conservation objectives of the site. | | | |
| | Maintain the extent and spatial distribution of the following supporting habitats: mussel beds, intertidal rock, intertidal sediment, subtidal rock and subtidal sediment. | The extent of supporting habitats captures the presence and area of the habitats that the species relies on. | As above. | As above. | As above. | As above. |
| Emergence regime changes, including tidal level change considerations;<br><br>And/or<br><br>Wave exposure changes | Maintain all hydrodynamic and physical conditions such that natural water flow and sediment movement is not significantly altered or constrained. | Hydrodynamic conditions include the speed and direction of wave and tidal currents, seabed shear stress and wave exposure. Alterations to these processes could affect the presence and distribution of species. | No.<br><br>This feature is c2km upstream of the proposed works.<br><br><u>Capital Dredging</u><br>The dredge depth is to 1.0 to 1.5m below the existing channel depth and the capital dredge is outside of the main river channel over an area of 1.36ha (the Northern Approach channel).<br><br>The proposed dredge area partly overlaps the current maintenance dredge areas, which will not be maintained once the new fuel jetty becomes operational and so it is unlikely there will be a significant change from what is already in place.<br><br>As such, the MMO considers that capital dredging will not | No.<br><br>Please see in combination assessment below. | No adverse impacts predicted – no further mitigation required. | No adverse effect on site integrity. |

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| | | | hinder the conservation objectives of this feature.<br><br><u>Construction of port and harbour structures (excluding piling)</u><br>The new jetty head and approach lie outside of the main river channel flows and as the new jetty does not interrupt the flow to any greater degree than the existing jetty the proposed works will not increase any restrictions to flows outside of the present conditions.<br><br>A change in pile design (circular rather than angular/square) is expected to have less drag on the tidal flow than is currently the case, but this is unlikely to cause any significant effects.<br><br>As such, the MMO considers that construction of ports and harbours structures will not hinder the conservation objectives of this feature.<br><br>As such, the MMO is content that the activities associated with the proposed works will not hinder the conservation objectives of the site. | | | |
| Smothering and siltation rate changes (Heavy); | Maintain the extent and spatial distribution of the following supporting | The extent of supporting habitats captures the presence and area of | No.<br><br>This feature is c2km upstream of the proposed works. | No.<br><br>Please see in combination | No adverse impacts predicted – no further mitigation | No adverse effect on site integrity. |

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| And/or<br><br>Smothering and siltation rate changes (Light) | habitats: mussel beds, intertidal rock, intertidal sediment, subtidal rock and subtidal sediment. | the habitats that the species relies on. | <u>Capital Dredging</u><br>Capital dredging can potentially increase the levels of local siltation rates.<br><br>However, the Tamar is naturally turbid area with 5,000m$^3$ of sediment (approximately 8,300 wet tonnes) suspended due to tidal action each day, seasonally (summer/winter) this is 164,000m$^3$ (27,300 wet tonnes). At the mouth of the estuary, silt content of the water column is at 80% (See Baseline Document for Maintenance Dredging in Plymouth Sound and Estuaries European Marine Site).<br><br>Considering the probable daily volumes of sediment that could be introduced into the system, it is unlikely that the combined daily increase will be greater than that of the rivers natural variation.<br><br>As such, the MMO is content that capital dredging will not hinder the conservation objectives of this feature.<br><br><u>Construction of port and harbour structures</u><br>Activities associated with the construction of the new jetty and the decommissioning of | assessment below. | required. | |

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| | | | the current jetty will not result in this pressure as there will be no significant direct or indirect interaction with the seabed.<br><br>As such, the MMO considers that construction of ports and harbours structures will not hinder the conservation objectives of this feature.<br><br><u>Piling</u><br>The total estimated sediment piling arisings is 3,450m$^3$, of which only 250m3 will be side cast (those at the subtidal locations) and free to enter the estuary system.<br><br>The rest will be collected and disposed of, or treated, on land due to the contaminant levels associated. Multiple methods will be employed to prevent the release of these sediments into the system including the use of a suction dredging plant and flush containment and collection during piling.<br><br>However, the Tamar is naturally turbid area with 5,000m$^3$ of sediment (approximately 8,300 wet tonnes) suspended due to tidal action each day, seasonally (summer/winter) this is 164,000m$^3$ (27,300 wet tonnes). At the mouth of the estuary, silt content of the | | | |

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| | | | water column is at 80% (See Baseline Document for Maintenance Dredging in Plymouth Sound and Estuaries European Marine Site).<br><br>Considering the probable daily volumes of sediment that could be introduced into the system, it is unlikely that the combined daily increase will be greater than that of the rivers natural variation.<br><br>As such, the MMO is content that piling will not hinder the conservation objectives of this feature.<br><br>As such, the MMO is content that the activities associated with the proposed works will not hinder the conservation objectives of the site. | | | |
| **Smelt (*Osmerus eperlanus*)** | | | | | | |
| Abrasion/disturbance of the substrate on the surface of the seabed;<br><br>And/or<br><br>Habitat structure changes - removal of substratum (extraction); | Maintain the extent and spatial distribution of the following supporting habitats: estuaries, saltmarsh, subtidal mixed sediments and subtidal coarse sediments. | The distribution of supporting habitat will partially govern the distribution of the species, and maintaining or recovering the distribution of supporting habitats will help ensure the stability of this species. | No.<br><br>Smelt are known to accumulate in the Tamar during February and March prior to spawning. Best available evidence suggests smelt accumulate further up the Tamar and not near Thanckes Oil Fuel Depot.<br><br><u>Capital Dredging</u><br>The footprint of the dredge is outside of the MCZ boundary.<br><br>This feature is not vulnerable to | No.<br><br>Please see in combination assessment below. | No adverse impacts predicted – no further mitigation required. | No adverse effect on site integrity. |

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| | | | this pressure due to the characteristics of the sediment which would be susceptible to transport and could potentially be transported upstream.<br><br>As such, the MMO is content that capital dredging will not hinder the conservation objectives of this feature.<br><br><u>Construction of port and harbour structures</u><br>Activities associated with the construction of the new jetty and the decommissioning of the current jetty will not result in this pressure as there will be no significant direct or indirect interaction with the seabed. Piling has been considered separately below.<br><br>As such, the MMO considers that construction of ports and harbours structures will not hinder the conservation objectives of this feature.<br><br><u>Piling</u><br>The piling activity is outside of the MCZ boundary.<br><br>This feature is not vulnerable to this pressure due to the characteristics of the sediment which would be susceptible to transport and could potentially be transported upstream. | | | |

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| | | | As such, the MMO is content that piling will not hinder the conservation objectives of this feature.<br><br>As such, the MMO is content that the activities associated with the proposed works will not hinder the conservation objectives of the site.<br><br>The MMO understands that this is a “Recover” Conservation objective. Currently there is no published information on the smelt population size or health within the Tamar Estuary Sites MCZ, the recover conservation objective was set nationally for this species. This reflects a significant national decline where the species has been lost from a number of sites (Colclough & Coates, 2013). Professor Paul Dando (2013, pers. Comm. with Natural England) a leading smelt expert from the Marine Biological Association (MBA), who recorded the colonisation of the site in 1968 and has collected most of the data since that date, has stated that they have found no significant evidence of a decline in the Tamar smelt population. | | | |
| Barrier to species movement | Recover the population size within the site. | Densities of smelt may be affected by changes to the physical, chemical or | No.<br><br>Smelt are known to accumulate in the Tamar during February | No.<br><br>Please see in combination | Piling and dredging conditions to be added to licence | No adverse effect on site integrity. |

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| | | hydrological coherence of the site, and by potential exploitation in freshwater or marine and coastal waters. | and March prior to spawning. Best available evidence suggests smelt accumulate further up the Tamar and not near Thanckes Oil Fuel Depot.<br><br><u>Capital Dredging</u><br>The expected increases in vessel movement, noise and vibration are unlikely to increase past the present levels of the surrounding area. The Tamar has a high density of military, industrial and recreational activities.<br><br>As a precautionary measure dredging will be restricted in the main channel areas during key migratory windows (April to November) to ensure that the dredge plume does not cause any barrier to fish migration. Restricting dredging to within the 50m limit will allow a clear migration path along the western extent of the channel for migrating species such as smelt. If a positive determination is made, this condition will be added to the licence.<br><br>As such, the MMO considers that capital dredging will not have an adverse effect on this feature relating to these pressures.<br><br><u>Construction of port and</u> | assessment below. | conditions should a positive determination be made. See Annex 1 for these conditions. | |

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| | | | harbour structures<br>The construction activities of the new jetty head and approach, along with the decommissioning of the current jetty, could potentially increase the noise and disturbance levels. Piling has been considered separately in the section below.<br><br>The expected increases in noise and volume are unlikely to increase past the present levels of the surrounding area. The Tamar has a high density of military, industrial and recreational activities.<br><br>As such, the MMO considers that construction of port and harbour structures will not have an adverse effect on this feature relating to these pressures.<br><br>Piling<br>The greatest levels of underwater noise generated by the proposed piling works are likely to be during percussive piling. Subacoustech Environmental Ltd undertook an assessment of the potential impact of underwater noise from activities associated with the proposed development; however, it was not possible to establish an appropriate noise threshold for percussive piling | | | |

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| | | | given the uncertainty in the current evidence base.<br><br>As such, percussive piling will not be carried out during the core sensitive period of 1st April until 31st August.<br><br>Vibro-piling, pile case oscillation and auguring/drilling typically generate significantly lower noise levels in comparison with percussive piling, and Natural England and Cefas are in agreement that these construction methods can be carried out at any time of year.<br><br>In order to validate the Subacoustech predictions and to provide additional reassurance regarding the noise levels associated with these activities at this specific site, in-situ monitoring of the noise levels generated by each of the different vibro-piling, pile case oscillation and auguring/drilling activities at the beginning of the work, and outside the core sensitive period of April to August, will be undertaken. This will involve monitoring the noise levels produced by these activities for the first four piling events and comparing these to the predicted levels, before carrying out these activities | | | |

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| | | | during the 1st April to 31st August period.<br><br>All piling equipment will operate from floating plant during daylight hours to reduce any impact on migratory species.<br><br>As such, the MMO considers that construction of ports and harbours structures and piling will not have an adverse effect on this feature relating to these pressures.<br><br>As such, the MMO is content that the activities associated with the proposed works will not hinder the conservation objectives of the site.<br><br>The MMO understands that this is a “Recover” Conservation objective. Currently there is no published information on the smelt population size or health within the Tamar Estuary Sites MCZ, the recover conservation objective was set nationally for this species. This reflects a significant national decline where the species has been lost from a number of sites (Colclough & Coates, 2013). Professor Paul Dando (2013, pers. Comm. with Natural England) a leading smelt expert from the Marine Biological Association (MBA), who recorded the colonisation of the | | | |

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| | | | site in 1968 and has collected most of the data since that date, has stated that they have found no significant evidence of a decline in the Tamar smelt population. | | | |
| | Recover the reproductive and recruitment capability of the species. | A reduction in the availability of individuals able to successfully reproduce, and survival rates, may impact the overall size and age-structure of the population. | As above. | As above. | As above. | As above. |
| | Recover biological connectivity between the estuary and the spawning and nursery grounds. | All migratory fish are very susceptible to obstacles during their spawning run. | As above. | As above. | As above. | As above. |
| Changes in suspended solids (water clarity) | Maintain natural levels of turbidity (eg suspended concentrations of sediment, plankton and other material) in areas where this species is, or could be present. | Prolonged increases in turbidity could impact the ability of the species to feed and respire. | No.<br><br>Smelt are known to accumulate in the Tamar during February and March prior to spawning. Best available evidence suggests smelt accumulate further up the Tamar and not near Thanckes Oil Fuel Depot.<br><br><u>Capital Dredging</u><br>Capital dredging can potentially increase the levels of local siltation rates.<br><br>However, the Tamar is naturally turbid area with 5,000m$^3$ of sediment (approximately 8,300 wet | No.<br><br>Please see in combination assessment below. | No adverse impacts predicted – no further mitigation required. | No adverse effect on site integrity. |

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| | | | tonnes) suspended due to tidal action each day, seasonally (summer/winter) this is 164,000m$^3$ (27,300 wet tonnes). At the mouth of the estuary, silt content of the water column is at 80% (See Baseline Document for Maintenance Dredging in Plymouth Sound and Estuaries European Marine Site).<br><br>Considering the probable daily volumes of sediment that could be introduced into the system, it is unlikely that the combined daily increase will be greater than that of the rivers natural variation.<br><br>As such, the MMO is content that capital dredging will not hinder the conservation objectives of this feature.<br><br><u>Construction of port and harbour structures</u><br>Activities associated with the construction of the new jetty and the decommissioning of the current jetty will not result in this pressure as there will be no significant direct or indirect interaction with the seabed.<br><br>As such, the MMO considers that construction of ports and harbours structures will not hinder the conservation objectives of this feature. | | | |

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| | | | <u>Piling</u><br>The total estimated sediment piling arisings is 3,450m$^3$, of which only 250m3 will be side cast (those at the subtidal locations) and free to enter the estuary system.<br><br>The rest will be collected and disposed of, or treated, on land due to the contaminant levels associated. Multiple methods will be employed to prevent the release of these sediments into the system including the use of a suction dredging plant and flush containment and collection during piling.<br><br>However, the Tamar is naturally turbid area with 5,000m$^3$ of sediment (approximately 8,300 wet tonnes) suspended due to tidal action each day, seasonally (summer/winter) this is 164,000m$^3$ (27,300 wet tonnes). At the mouth of the estuary, silt content of the water column is at 80% (See Baseline Document for Maintenance Dredging in Plymouth Sound and Estuaries European Marine Site).<br><br>Considering the probable daily volumes of sediment that could be introduced into the system, it is unlikely that the combined | | | |

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| | | | daily increase will be greater than that of the rivers natural variation.<br><br>As such, the MMO is content that piling will not hinder the conservation objectives of this feature.<br><br>As such, the MMO is content that the activities associated with the proposed works will not hinder the conservation objectives of the site.<br><br>The MMO understands that this is a “Recover” Conservation objective. Currently there is no published information on the smelt population size or health within the Tamar Estuary Sites MCZ, the recover conservation objective was set nationally for this species. This reflects a significant national decline where the species has been lost from a number of sites (Colclough & Coates, 2013). Professor Paul Dando (2013, pers. Comm. with Natural England) a leading smelt expert from the Marine Biological Association (MBA), who recorded the colonisation of the site in 1968 and has collected most of the data since that date, has stated that they have found no significant evidence of a decline in the Tamar smelt population. | | | |

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| Removal of non-target species | Recover the population size within the site. | Densities of smelt may be affected by changes to the physical, chemical or hydrological coherence of the site, and by potential exploitation in freshwater or marine and coastal waters. | No.<br><br>Smelt are known to accumulate in the Tamar during February and March prior to spawning. Best available evidence suggests smelt accumulate further up the Tamar and not near Thanckes Oil Fuel Depot.<br><br><u>Capital Dredging</u><br>The footprint of the dredge is outside of the MCZ boundary.<br><br>This feature is not vulnerable to this pressure due to the characteristics of the sediment which would be susceptible to transport and could potentially be transported upstream.<br><br>As such, the MMO is content that capital dredging will not hinder the conservation objectives of this feature.<br><br><u>Construction of port and harbour structures</u><br>Activities associated with the construction of the new jetty and the decommissioning of the current jetty will not result in this pressure as there will be no significant direct or indirect interaction with the seabed.<br><br>As such, the MMO considers that construction of ports and harbours structures will not hinder the conservation | No.<br><br>Please see in combination assessment below. | No adverse impacts predicted – no further mitigation required. | No adverse effect on site integrity. |

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| | | | objectives of this feature.<br><br>As such, the MMO is content that the activities associated with the proposed works will not hinder the conservation objectives of the site.<br><br>The MMO understands that this is a “Recover” Conservation objective. Currently there is no published information on the smelt population size or health within the Tamar Estuary Sites MCZ, the recover conservation objective was set nationally for this species. This reflects a significant national decline where the species has been lost from a number of sites (Colclough & Coates, 2013). Professor Paul Dando (2013, pers. Comm. with Natural England) a leading smelt expert from the Marine Biological Association (MBA), who recorded the colonisation of the site in 1968 and has collected most of the data since that date, has stated that they have found no significant evidence of a decline in the Tamar smelt population. | | | |
| | Maintain the extent and spatial distribution of the following supporting habitats: estuaries, saltmarsh, subtidal mixed sediments and | The distribution of supporting habitat will partially govern the distribution of the species, and maintaining or recovering the | As above. | As above. | As above. | As above. |

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| | subtidal coarse sediments. | distribution of supporting habitats will help ensure the stability of this species. | | | | |
| Smothering and siltation rate changes (Heavy);<br><br>And/or<br><br>Smothering and siltation rate changes (Light) | Maintain all hydrodynamic and physical conditions such that natural water flow and sediment movement is not significantly altered or constrained. | Hydrodynamic conditions include the speed and direction of wave and tidal currents, seabed shear stress and wave exposure. Alterations to these processes could affect the presence and distribution of species. | No.<br><br>Smelt are known to accumulate in the Tamar during February and March prior to spawning. Best available evidence suggests smelt accumulate further up the Tamar and not near Thanckes Oil Fuel Depot.<br><br><u>Capital Dredging</u><br>Capital dredging can potentially increase the levels of local siltation rates.<br><br>However, the Tamar is naturally turbid area with 5,000$m^3$ of sediment (approximately 8,300 wet tonnes) suspended due to tidal action each day, seasonally (summer/winter) this is 164,000$m^3$ (27,300 wet tonnes). At the mouth of the estuary, silt content of the water column is at 80% (See Baseline Document for Maintenance Dredging in Plymouth Sound and Estuaries European Marine Site).<br><br>Considering the probable daily volumes of sediment that could be introduced into the system, it is unlikely that the combined | No.<br><br>Please see in combination assessment below. | No adverse impacts predicted – no further mitigation required. | No adverse effect on site integrity. |

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| | | | daily increase will be greater than that of the rivers natural variation.<br><br>As such, the MMO is content that capital dredging will not hinder the conservation objectives of this feature.<br><br><u>Construction of port and harbour structures</u><br>Activities associated with the construction of the new jetty and the decommissioning of the current jetty will not result in this pressure as there will be no significant direct or indirect interaction with the seabed.<br><br>As such, the MMO considers that construction of ports and harbours structures will not hinder the conservation objectives of this feature.<br><br><u>Piling</u><br>The total estimated sediment piling arisings is 3,450m$^3$, of which only 250m3 will be side cast (those at the subtidal locations) and free to enter the estuary system.<br><br>The rest will be collected and disposed of, or treated, on land due to the contaminant levels associated. Multiple methods will be employed to prevent the release of these sediments into the system including the use of | | | |

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| | | | a suction dredging plant and flush containment and collection during piling.<br><br>However, the Tamar is naturally turbid area with 5,000m$^3$ of sediment (approximately 8,300 wet tonnes) suspended due to tidal action each day, seasonally (summer/winter) this is 164,000m$^3$ (27,300 wet tonnes). At the mouth of the estuary, silt content of the water column is at 80% (See Baseline Document for Maintenance Dredging in Plymouth Sound and Estuaries European Marine Site).<br><br>Considering the probable daily volumes of sediment that could be introduced into the system, it is unlikely that the combined daily increase will be greater than that of the rivers natural variation.<br><br>As such, the MMO is content that piling will not hinder the conservation objectives of this feature.<br><br>As such, the MMO is content that the activities associated with the proposed works will not hinder the conservation objectives of the site.<br><br>The MMO understands that this | | | |

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| | | | is a “Recover” Conservation objective. Currently there is no published information on the smelt population size or health within the Tamar Estuary Sites MCZ, the recover conservation objective was set nationally for this species. This reflects a significant national decline where the species has been lost from a number of sites (Colclough & Coates, 2013). Professor Paul Dando (2013, pers. Comm. with Natural England) a leading smelt expert from the Marine Biological Association (MBA), who recorded the colonisation of the site in 1968 and has collected most of the data since that date, has stated that they have found no significant evidence of a decline in the Tamar smelt population. | | | |
| Underwater noise changes | Recover the reproductive and recruitment capability of the species. | A reduction in the availability of individuals able to successfully reproduce, and survival rates, may impact the overall size and age-structure of the population. | No.<br><br>Smelt are known to accumulate in the Tamar during February and March prior to spawning. Best available evidence suggests smelt accumulate further up the Tamar and not near Thanckes Oil Fuel Depot.<br><br><u>Capital Dredging</u><br>The expected increases in vessel movement, noise and vibration are unlikely to increase past the present levels of the surrounding area. The | No.<br><br>Please see in combination assessment below. | Piling and dredging conditions to be added to licence conditions should a positive determination be made. See Annex 1 for these conditions. | No adverse effect on site integrity. |

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| | | | Tamar has a high density of military, industrial and recreational activities.<br><br>As a precautionary measure dredging will be restricted in the main channel areas during key migratory windows (April to November) to ensure that the dredge plume does not cause any barrier to fish migration. Restricting dredging to within the 50m limit will allow a clear migration path along the western extent of the channel for migrating species such as smelt. If a positive determination is made, this condition will be added to the licence.<br><br>As such, the MMO considers that capital dredging will not have an adverse effect on this feature relating to these pressures.<br><br><u>Construction of port and harbour structures</u><br>The construction activities of the new jetty head and approach, along with the decommissioning of the current jetty, could potentially increase the noise and disturbance levels. Piling has been considered separately in the section below.<br><br>The expected increases in | | | |

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| | | | noise and volume are unlikely to increase past the present levels of the surrounding area. The Tamar has a high density of military, industrial and recreational activities.<br><br>As such, the MMO considers that construction of port and harbour structures will not have an adverse effect on this feature relating to these pressures.<br><br><u>Piling</u><br>The greatest levels of underwater noise generated by the proposed piling works are likely to be during percussive piling. Subacoustech Environmental Ltd undertook an assessment of the potential impact of underwater noise from activities associated with the proposed development; however, it was not possible to establish an appropriate noise threshold for percussive piling given the uncertainty in the current evidence base.<br><br>As such, percussive piling will not be carried out during the core sensitive period of 1st April until 31st August.<br><br>Vibro-piling, pile case oscillation and auguring/drilling typically generate significantly lower noise levels in | | | |

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| | | | comparison with percussive piling, and Natural England and Cefas are in agreement that these construction methods can be carried out at any time of year.<br><br>In order to validate the Subacoustech predictions and to provide additional reassurance regarding the noise levels associated with these activities at this specific site, in-situ monitoring of the noise levels generated by each of the different vibro-piling, pile case oscillation and auguring/drilling activities at the beginning of the work, and outside the core sensitive period of April to August, will be undertaken. This will involve monitoring the noise levels produced by these activities for the first four piling events and comparing these to the predicted levels, before carrying out these activities during the 1st April to 31st August period.<br><br>All piling equipment will operate from floating plant during daylight hours to reduce any impact on migratory species.<br><br>As such, the MMO considers that construction of ports and harbours structures and piling will not have an adverse effect | | | |

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| | | | on this feature relating to these pressures.<br><br>As such, the MMO is content that the activities associated with the proposed works will not hinder the conservation objectives of the site.<br><br>As such, the MMO is content that the activities associated with the proposed works will not hinder the conservation objectives of the site.<br><br>The MMO understands that this is a “Recover” Conservation objective. Currently there is no published information on the smelt population size or health within the Tamar Estuary Sites MCZ, the recover conservation objective was set nationally for this species. This reflects a significant national decline where the species has been lost from a number of sites (Colclough & Coates, 2013). Professor Paul Dando (2013, pers. Comm. with Natural England) a leading smelt expert from the Marine Biological Association (MBA), who recorded the colonisation of the site in 1968 and has collected most of the data since that date, has stated that they have found no significant evidence of a decline in the Tamar smelt population. | | | |

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| | Recover the presence and spatial distribution of the species and their ability to undertake key life cycle stages and behaviours. | Disturbance caused by human activities should not adversely affect the species. | As above. | As above. | As above. | As above. |
| | Recover biological connectivity between the estuary and the spawning and nursery grounds. | All migratory fish are very susceptible to obstacles during their spawning run. | As above. | As above. | As above. | As above. |
| Vibration | Recover the reproductive and recruitment capability of the species. | A reduction in the availability of individuals able to successfully reproduce, and survival rates, may impact the overall size and age-structure of the population. | No.<br><br>Smelt are known to accumulate in the Tamar during February and March prior to spawning. Best available evidence suggests smelt accumulate further up the Tamar and not near Thanckes Oil Fuel Depot.<br><br><u>Capital Dredging</u><br>The expected increases in vessel movement, noise and vibration are unlikely to increase past the present levels of the surrounding area. The Tamar has a high density of military, industrial and recreational activities.<br><br>As a precautionary measure dredging will be restricted in the main channel areas during key migratory windows (April to November) to ensure that the dredge plume does not cause any barrier to fish migration. Restricting dredging to within | No.<br><br>Please see in combination assessment below. | Piling and dredging conditions to be added to licence conditions should a positive determination be made. See Annex 1 for these conditions. | No adverse effect on site integrity. |

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| | | | the 50m limit will allow a clear migration path along the western extent of the channel for migrating species such as smelt. If a positive determination is made, this condition will be added to the licence.<br><br>As such, the MMO considers that capital dredging will not have an adverse effect on this feature relating to these pressures.<br><br><u>Construction of port and harbour structures</u><br>The construction activities of the new jetty head and approach, along with the decommissioning of the current jetty, could potentially increase the noise and disturbance levels. Piling has been considered separately in the section below.<br><br>The expected increases in noise and volume are unlikely to increase past the present levels of the surrounding area. The Tamar has a high density of military, industrial and recreational activities.<br><br>As such, the MMO considers that construction of port and harbour structures will not have an adverse effect on this feature relating to these | | | |

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| | | | pressures.<br><br><u>Piling</u><br>The greatest levels of underwater noise generated by the proposed piling works are likely to be during percussive piling. Subacoustech Environmental Ltd undertook an assessment of the potential impact of underwater noise from activities associated with the proposed development; however, it was not possible to establish an appropriate noise threshold for percussive piling given the uncertainty in the current evidence base.<br><br>As such, percussive piling will not be carried out during the core sensitive period of 1st April until 31st August.<br><br>Vibro-piling, pile case oscillation and auguring/drilling typically generate significantly lower noise levels in comparison with percussive piling, and Natural England and Cefas are in agreement that these construction methods can be carried out at any time of year.<br><br>In order to validate the Subacoustech predictions and to provide additional reassurance regarding the noise levels associated with | | | |

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| | | | these activities at this specific site, in-situ monitoring of the noise levels generated by each of the different vibro-piling, pile case oscillation and auguring/drilling activities at the beginning of the work, and outside the core sensitive period of April to August, will be undertaken. This will involve monitoring the noise levels produced by these activities for the first four piling events and comparing these to the predicted levels, before carrying out these activities during the 1st April to 31st August period.<br><br>All piling equipment will operate from floating plant during daylight hours to reduce any impact on migratory species.<br><br>As such, the MMO considers that construction of ports and harbours structures and piling will not have an adverse effect on this feature relating to these pressures.<br><br>As such, the MMO is content that the activities associated with the proposed works will not hinder the conservation objectives of the site.<br><br>As such, the MMO is content that the activities associated with the proposed works will | | | |

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| | | | not hinder the conservation objectives of the site.<br><br>The MMO understands that this is a “Recover” Conservation objective. Currently there is no published information on the smelt population size or health within the Tamar Estuary Sites MCZ, the recover conservation objective was set nationally for this species. This reflects a significant national decline where the species has been lost from a number of sites (Colclough & Coates, 2013). Professor Paul Dando (2013, pers. Comm. with Natural England) a leading smelt expert from the Marine Biological Association (MBA), who recorded the colonisation of the site in 1968 and has collected most of the data since that date, has stated that they have found no significant evidence of a decline in the Tamar smelt population. | | | |
| | Recover the presence and spatial distribution of the species and their ability to undertake key life cycle stages and behaviours. | Disturbance caused by human activities should not adversely affect the species. | As above. | As above. | As above. | As above. |
| | Recover biological connectivity between the estuary and the spawning and nursery grounds. | All migratory fish are very susceptible to obstacles during their spawning run. | As above. | As above. | As above. | As above. |

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| Visual disturbance | Recover the reproductive and recruitment capability of the species. | A reduction in the availability of individuals able to successfully reproduce, and survival rates, may impact the overall size and age-structure of the population. | No.<br><br>Smelt are known to accumulate in the Tamar during February and March prior to spawning. Best available evidence suggests smelt accumulate further up the Tamar and not near Thanckes Oil Fuel Depot.<br><br><u>Capital Dredging</u><br>The expected increases in vessel movement, noise and vibration are unlikely to increase past the present levels of the surrounding area. The Tamar has a high density of military, industrial and recreational activities.<br><br>As a precautionary measure dredging will be restricted in the main channel areas during key migratory windows (April to November) to ensure that the dredge plume does not cause any barrier to fish migration. Restricting dredging to within the 50m limit will allow a clear migration path along the western extent of the channel for migrating species such as smelt. If a positive determination is made, this condition will be added to the licence.<br><br>As such, the MMO considers that capital dredging will not have an adverse effect on this | No.<br><br>Please see in combination assessment below. | Piling and dredging conditions to be added to licence conditions should a positive determination be made. See Annex 1 for these conditions. | No adverse effect on site integrity. |

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| | | | feature relating to these pressures.<br><br><u>Construction of port and harbour structures</u><br>The construction activities of the new jetty head and approach, along with the decommissioning of the current jetty, could potentially increase the noise and disturbance levels. Piling has been considered separately in the section below.<br><br>The expected increases in noise and volume are unlikely to increase past the present levels of the surrounding area. The Tamar has a high density of military, industrial and recreational activities.<br><br>As such, the MMO considers that construction of port and harbour structures will not have an adverse effect on this feature relating to these pressures.<br><br><u>Piling</u><br>The greatest levels of underwater noise generated by the proposed piling works are likely to be during percussive piling. Subacoustech Environmental Ltd undertook an assessment of the potential impact of underwater noise from activities associated with | | | |

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| | | | the proposed development; however, it was not possible to establish an appropriate noise threshold for percussive piling given the uncertainty in the current evidence base.<br><br>As such, percussive piling will not be carried out during the core sensitive period of 1st April until 31st August.<br><br>Vibro-piling, pile case oscillation and auguring/drilling typically generate significantly lower noise levels in comparison with percussive piling, and Natural England and Cefas are in agreement that these construction methods can be carried out at any time of year.<br><br>In order to validate the Subacoustech predictions and to provide additional reassurance regarding the noise levels associated with these activities at this specific site, in-situ monitoring of the noise levels generated by each of the different vibro-piling, pile case oscillation and auguring/drilling activities at the beginning of the work, and outside the core sensitive period of April to August, will be undertaken. This will involve monitoring the noise levels produced by these activities for | | | |

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| | | | the first four piling events and comparing these to the predicted levels, before carrying out these activities during the 1st April to 31st August period.<br><br>All piling equipment will operate from floating plant during daylight hours to reduce any impact on migratory species.<br><br>As such, the MMO considers that construction of ports and harbours structures and piling will not have an adverse effect on this feature relating to these pressures.<br><br>As such, the MMO is content that the activities associated with the proposed works will not hinder the conservation objectives of the site.<br><br>As such, the MMO is content that the activities associated with the proposed works will not hinder the conservation objectives of the site.<br><br>The MMO understands that this is a “Recover” Conservation objective. Currently there is no published information on the smelt population size or health within the Tamar Estuary Sites MCZ, the recover conservation objective was set nationally for this species. This reflects a | | | |

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| | | | significant national decline where the species has been lost from a number of sites (Colclough & Coates, 2013). Professor Paul Dando (2013, pers. Comm. with Natural England) a leading smelt expert from the Marine Biological Association (MBA), who recorded the colonisation of the site in 1968 and has collected most of the data since that date, has stated that they have found no significant evidence of a decline in the Tamar smelt population. | | | |
| | Recover the presence and spatial distribution of the species and their ability to undertake key life cycle stages and behaviours. | Disturbance caused by human activities should not adversely affect the species. | As above. | As above. | As above. | As above. |
| | Recover biological connectivity between the estuary and the spawning and nursery grounds. | All migratory fish are very susceptible to obstacles during their spawning run. | As above. | As above. | As above. | As above. |

**In combination impacts of other known or potential activities**

The MMO must assess potential in combination effects with other plans or projects.

The Defence Infrastructure Organisation (DIO) has applied for the construction of a new jetty head and approach structure, the decommissioning of the existing jetty, and the capital dredge of 68,000 wet tonnes for a new berth and approach channel at Thanckes Oil Fuel Depot (OFD) (MLA/2015/00215).

In addition the following activities that may cause in-combination impacts are known to be in or adjacent to the Tamar Estuary Sites MCZ:

- The DIO has a marine licence for the dredging of 230,300 wet tonnes from Her Majesty's Naval Base (HMNB) Devonport (L/2016/00063).
- Teignmouth Maritime Services Ltd has a marine licence for the dredging of 900 wet tonnes from Torpoint Yacht Harbour to be disposed of in the Tamar (L/2016/00223).
- The DIO has applied for a marine licence for plough dredging at HMVB Devonport (MLA/2017/00049).
- Turnchapel Wharf Limited has applied for a marine licence for the capital dredging of 5,800 wet tonnes at Turnchapel Wharf (MLA/2017/00052).
- Plymouth Yacht Haven Limited has applied for a marine licence for the maintenance dredging of 36,300 wet tonnes at Plymouth Yacht Haven (MLA/2016/00334).
- Yacht Haven Quay Limited has applied for a marine licence for the maintenance dredging of 8,300 wet tonnes at Yacht Haven Quay (MLA/2016/00335).

The MMO is not aware of any other potential activities within the vicinity of Tamar Estuary Sites MCZ.

**Assessment**

Potential impacts of the works from this application with potential activities at Turnchapel Wharf, Plymouth Yacht Haven and Yacht Haven Quay will not form further part of this assessment. This is based on two factors:

- The distance of c7.6km between these sites and Thanckes; and
- The direction of water flow from Plymouth Sound.

As such there is no significant pathway for activities at Thanckes and these proposed works to impact in combination on the features of the site.

**Siltation**

**Bulk features (all features not including smelt).**

There is the potential for increased suspended sediment levels and associated pressures due to dredge activities for Thanckes and Devonport and disposal in the Tamar at Torpoint.

Real time monitoring buoy data (MLA/2015/00336 marine licence application – Appendix C – Technical Note Plough Dredge Assessment) indicated that any changes in turbidity associated with plough dredging operations are generally within the levels of natural variation associated with this part of the estuary. Additionally the volumes to be dredged from Devonport are greater than those from Thanckes, and given the natural turbidity (approximately 8300 wet tonnes per day) of the area, it can be inferred that even if dredging were to take place at the same time, which is unlikely as outlined above, there would not be a significant increase in turbidity above the background levels.

The Tamar is a naturally turbid area with 5,000$m^3$ of sediment (approximately 8,300 wet tonnes) suspended due to tidal action each day, seasonally (summer/winter) this is 164,000$m^3$ (27,300 wet tonnes). At the mouth of the estuary, silt content of the water column is at 80% (See Baseline Document for Maintenance Dredging in Plymouth Sound and Estuaries European Marine Site).

Considering the probable daily volumes of sediment that could be introduced into the system, it is unlikely that the combined daily increase will be greater than that of the rivers natural variation.

Furthermore as the activities are taking place c3km downstream from the MCZ boundary, the MMO concludes that due to the limited pathway between the activity and the features, the following features:

- blue mussel beds;
- intertidal biogenic reef;
- intertidal coarse sediment; and
- native oyster

will not be impacted as a result of dredging at Thanckes and Devonport and disposal in the Tamar at Torpoint.

**Smelt**

As smelt migrate from the English Channel up river to the MCZ, there is potential for smelt to migrate through the proposed dredge area. Therefore impacts to smelt must be considered.

Smelt are known to spawn in the upper reaches of the Tamar between February and April with adults accumulating in the lower estuary from October onwards ascending the estuary in spring. Therefore should this species be present in this part of the estuary the works have the potential to disturb their movement up and down the estuary, particularly during migration.

Siltation impacts have been discussed above, and even without the c3km distance from the activity to the feature, the MMO do not consider that there will be in combination impacts. Although various dredging activities have been documented for at least the last 25 years the MMO understands that the conservation objective for smelt is to “Recover”. Currently there is no published information on the smelt population size or health within the

Tamar Estuary Sites MCZ. The recover conservation objective was set nationally for this species. This reflects a significant national decline where the species has been lost from a number of sites (Colclough & Coates, 2013). Professor Paul Dando (2013, *pers. Comm*. with Natural England) a leading smelt expert from the Marine Biological Association (MBA), who recorded the colonisation of the site in 1968 and has collected most of the data since that date, has stated that they have found no significant evidence of a decline in the Tamar smelt population. Should a marine licence be granted the MMO consider that potential in combination impacts can be mitigated for (see mitigation section below).

Therefore in combination effects of siltation from the proposed works at Thanckes, Devonport and Torpoint are not likely to impact smelt migration.

From this point on the MMO will only consider in combination effects from Thanckes and Devonport as the MMO consider it appropriate to screen out the in combination impacts regarding the Torpoint application as the scale of this project would not significantly increase in combination effects outside of siltation.

The activities from the Thanckes marine licence application that are to be considered in combination with the Devonport application are:

- Construction of a new fuel jetty;
- Decommissioning of the existing jetty; and
- Capital dredge (68,000 wet tonnes) of a new berth and approach channel.

The main in interactions that are to be assessed are:

- The dredging activity at Thanckes and the dredging activity at Devonport; and
- The piling activity at Thanckes and the dredging activity at Devonport.

**The dredging activity at Thanckes and the dredging activity at Devonport**

**Smelt**

Vibration, noise and visual disturbance from both the dredging activities and the vessels used to undertake the activity have the potential to impact on migration of smelt.

It is understood that the area is an established port area and there is a high level of activity with an array of vessel and activity types. Additionally, and as stated above, dredging activity has occurred in this area for a significant period of time.

However, dredging on opposite banks, at the same time and place on the Tamar, have the potential to create a barrier to migration. To prevent this, a restriction should be put in place to ensure that, where possible, dredging at Thanckes and dredging at Devonport occurs at different times, so not to increase the disturbance window to smelt. This can be added as a licence condition to the Thanckes licence, if a positive determination is made, and, if required, could also be added to the Devonport licence within a licence variation. This would be considered when a more detailed construction programme was produced.

Therefore in combination effects of vibration, noise and visual disturbance from dredging at both Thanckes and Devonport are not likely to increase risk to smelt migration.

**The piling activity at Thanckes and the dredging activity at Devonport**

**Smelt**

Vibration, noise and visual disturbance from both the dredging activities and the vessels used to undertake the activity at Devonport and the piling at Thanckes may have the potential to impact on migration of smelt.

As discussed above there is the potential for smelt migration to be impacted. Piling is thought to provide a barrier to species movement in its own right.

There should be sufficient temporal restrictions to ensure that there are times when smelt can safely pass through the area to their spawning grounds. Although unknown for this site it can be inferred from other sites that smelt are thought to migrate at night. It is proposed that piling works at Thanckes will only take place during daylight hours, which can be added as a condition to the marine licence if a positive determination is made.

To prevent an extension of a barrier to movement outside of these daylight hours a restriction could be imposed to ensure that, where possible, piling at Thanckes and dredging at Devonport occurs at the same time if these activities are to be undertaken within the same timeframe. This could ensure that the disturbance window for smelt was minimised. This could be added as a licence condition to the Thanckes licence, if a positive determination is made, and, if required, could also be added to the Devonport licence within a licence variation.

Therefore in combination effects of vibration, noise and visual disturbance from piling at Thanckes and Devonport are not likely to increase risk to smelt migration.

**Proposed Mitigation for in-combination Effects**

Actions will be taken for the Thanckes licence (if granted) to ensure that, if piling is to be carried out at Thanckes within a similar timeframe as dredging at Devonport, these activities must be completed at the same time. This may be secured via conditions on a (potential) marine licence for Thanckes. This may also be secured via conditions on a variation of the (potential) marine licence for Devonport.

Actions will be taken for the Thanckes licence (if granted) to ensure dredging is not carried out at the same time as dredging at Devonport. This may be secured via conditions on a (potential) marine licence for Thanckes. This may also be secured via conditions on a variation of the marine licence for Devonport if required.

**Conclusion**

**Is the authority satisfied there is no significant risk of the activity hindering the conservation objectives stated for the MCZ?**

Having regard to best available evidence and through consultation with the MMOs advisors, the MMO conclude that, providing the above mitigation measures are secured, there is no significant risk of the act hindering the achievement of the conservation objectives stated for the MCZ.

**References**

Black and Veatch. (2010). Baseline Document for Maintenance. Debut in partnership with Defence Estates.

COLCLOUGH, S. & COATES, S. 2013. A review of the status of Smelt *Osmerus eperlanus* (L.) in England and Wales. Environment Agency.

## Annex 1

| Condition | Reason |
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| Soft-start procedures must be used to ensure incremental increase in percussive pile power over a set time period until full operational power is achieved. The soft-start duration must be a period of not less than 20 minutes. Should piling cease for a period greater than 10 minutes, then the soft start procedure must be repeated. | To allow mobile sensitive receptors to move away from the source of acoustic disturbance in order to reduce the risk of injury. |
| Dredging to the east of the jetty head must only be undertaken between 1 December and 31 March each year inclusive. | To protect migratory fish species during the core sensitive period. |
| Percussive piling must not be undertaken during the period of between 1 April and 31 August each year inclusive. | To reduce the risk of injury and disturbance to Allis shad, Atlantic salmon, Smelt and Sea Trout during the core sensitive period of their migration. |
| Percussive piling must only take place between 1 September and 31 March each year inclusive and must only be undertaken between 08:00 and 18:00. The piling must adhere to the following seasonal restrictions:<br><br>Between 1 September and 30 September each year inclusive:<br>- Percussive piling must only be undertaken outside of subtidal areas;<br>Or<br>- Percussive piling must only be undertaken for a total of six hours per day during daylight hours.<br><br>Between 1 November and 31 December each year inclusive:<br>- Only one piling rig must be used;<br>Or<br>- Percussive piling must only be undertaken for a total of six hours per day during daylight hours. Multiple piling rigs can be used during this period.<br><br>The six hour period begins at the point of the first impact and runs continuously, the striking of piles must cease each day once this uninterrupted 6 hour period has elapsed. Any activities associated with the piling, excluding the striking of piles, such as mobilisation, demobilisation, handling and placement of piles, may continue to take place outside this 6 hour period. | To reduce the risk of injury and disturbance to Smelt and other migratory fish species during the core sensitive period of their migration. |
| In-situ monitoring of the noise levels produced by non-percussive piling methods (Vibro-piling, pile case oscillation and auguring/drilling) is to be undertaken for the first four piling events. This monitoring must be carried out as soon as reasonably possible, at the start of non-percussive piling and outside the core sensitive period of 1 April and 31 August each year inclusive.<br><br>If noise levels exceed the predicted levels within the core sensitive period of 1 April and 31 August each year inclusive of the Subacoustech predictions as detailed in [Licence Schedule Number to be Confirmed], the MMO must be notified and non-percussive piling is not to be undertaken until written agreement is provided by the MMO, in consultation with Natural England, the Environment Agency and Cefas. | This is to validate the Subacoustech predictions and to provide additional reassurance around the noise levels of these activities at this specific site to ensure the protection of migratory fish. |