



Marine
Management
Organisation

Marine Licensing
Lancaster House
Hampshire Court
Newcastle upon Tyne
NE4 7YH



The Net Zero Teesside Project Case Team
Planning Inspectorate
NetZeroTeessideProject@planninginspectorate.gov.uk

(Email only)

MMO Reference: DCO/2019/00003
Planning Inspectorate Reference: EN010103

17 December 2021

Dear Sir/Madam,

Planning Act 2008: Proposed Net Zero Teesside full chain carbon capture, utilisation and storage project

This document comprises the Marine Management Organisation's ("MMO") initial comments in respect of the above Development Consent Order application ("DCO Application") in the form of a relevant representation.

This is without prejudice to any future representation the MMO may make about the DCO Application throughout the examination process. This is also without prejudice to any decision the MMO may make on any associated application for consent, permission, approval or any other type of authorisation submitted to the MMO either for the works in the marine area or for any other authorisation relevant to the proposed development.

Relevant Representation

On the 28 October 2021 the MMO received notice under Section 56 of the Planning Act 2008 ("PA 2008") that the Planning Inspectorate ("PINS") had accepted an application made by Net Zero Teesside Power Limited and Net Zero North Sea Storage Limited (the "Applicant") for a DCO Application (MMO ref: DCO/2019/00003; PINS ref: EN010103).

The DCO Application includes a draft development consent order ("DCO") and an Environmental Statement ("ES"). The draft DCO includes, at Schedule 10 and 11 a draft Deemed Consent under Part 4 (Marine Licensing) of the Marine and Coastal Access Act 2009 ("Deemed Marine Licence" (DML)).



The DCO Application seeks authorisation for the construction, operation and maintenance of Net Zero Teesside (“NZT”), comprising of a new gas-fired Electricity Generating Station with post-combustion carbon capture plan, and associated onshore and offshore infrastructure and all associated development (the “Project”).

Please find the MMO comments below.

Yours faithfully,

Nicola Wilkinson
Marine Licensing Case Officer

[Redacted signature block]

Copies provided to:

Marine Licensing Senior Case Manager – [Redacted] @marinemanagement.org.uk

Marine Licensing Case Manager – [Redacted] @marinemanagement.org.uk



Contents

1	The MMO's role in Nationally Significant Infrastructure Projects (NSIPs).....	4
2	The Proposed Development.....	4
3	General comments	5
4	Development Consent Order (DCO) and Deemed Marine Licences (DMLs).....	5
5	Other Application Documents	10
5.1	DCO 2.2 - Explanatory Memorandum - Oct 2021 Rev.2.0	10
6	Environmental Statement (ES)	10
6.1	Chapter 9 Surface Water, Flood Risk and Water Resources	10
6.2	Chapter 11 Noise and Vibration	11
6.3	Chapter 14 Marine Ecology and Nature Conservation	11
6.4	Chapter 24 Cumulative and Combined Effects.....	15
6.5	Chapter 19 Marine Heritage	16
7	Summary	17
8	References	18
9	Annex 1 . Potential impacts on marine and migratory fish from dredging and disposal of marine sediments.....	19



1 The MMO's role in Nationally Significant Infrastructure Projects (NSIPs)

The MMO was established by the Marine and Coastal Access Act 2009 (the "2009 Act") to make a contribution to sustainable development in the marine area and to promote clean, healthy, safe, productive and biologically diverse oceans and seas.

The responsibilities of the MMO include the licensing of construction works, deposits and removals in English inshore and offshore waters and for Northern Ireland offshore waters by way of a marine licence. Inshore waters include any area which is submerged at mean high water spring ("MHWS") tide. They also include the waters of every estuary, river or channel where the tide flows at MHWS tide. Waters in areas which are closed permanently or intermittently by a lock or other artificial means against the regular action of the tide are included, where seawater flows into or out from the area.

In the case of NSIPs, the Planning Act 2008 (the "2008 Act") enables DCO's for projects which affect the marine environment to include provisions which deem marine licences. As a prescribed consultee under the 2008 Act, the MMO advises developers during pre-application on those aspects of a project that may have an impact on the marine area or those who use it. In addition to considering the impacts of any construction, deposit or removal within the marine area, this also includes assessing any risks to human health, other legitimate uses of the sea and any potential impacts on the marine environment from terrestrial works.

Where a marine licence is deemed within a DCO, the MMO is the delivery body responsible for post-consent monitoring, variation, enforcement and revocation of provisions relating to the marine environment. As such, the MMO has a keen interest in ensuring that provisions drafted in a deemed marine licence ("DML") enable the MMO to fulfil these obligations.

Further information on licensable activities can be found on the MMO's website [\[redacted\]](#). Further information on the interaction between the Planning Inspectorate and the MMO can be found in our joint advice note 11 Annex B [\[redacted\]](#).

2 The Proposed Development

The DCO Application is for the development of a Low Carbon Electricity Generating Station with a gross electrical output of up to 860 megawatts (MWe), together with equipment required for the capture and compression of carbon dioxide (CO₂) emissions from the generating station and the installation of a wider industrial CO₂ Gathering Network on Teesside. The Net Zero Teesside Project will comprise the construction and operation of:

- A new gas-fired Electricity Generating Station with post-combustion carbon capture plant;
- Gas, water and electricity connections (for the generating station);
- A CO₂ pipeline network (a 'gathering network') for collecting CO₂ from a cluster of local industries on Teesside;
- A CO₂ compressor station (for the compression of the CO₂) and a CO₂ export pipeline.



The MMO's interest in this project is for the following works, as well as any impacts to the UK marine area as described in Section 42 of the 2009 Act:

- Work No. 2A - underground high pressure gas supply pipeline;
- Work No. 5A - repair and upgrade of the existing water discharge infrastructure to the Tees Bay;
- Work No. 5B - a new water discharge pipeline to the Tees Bay;
- Work No. 6 – a carbon dioxide gathering network;
- Work No. 8 – high pressure carbon dioxide export pipeline corridor

3 General comments

- 3.1 The MMO were given the opportunity to view and provide comments on the draft DML, prior to submission to PINS. The MMO note that a number of concerns raised in our response to the applicant on the 29 March 2021 have been addressed and have flagged where outstanding issues remain.
- 3.2 The MMO would like to highlight that on the 23 June 2021 the North East Marine Plan was adopted by the Secretary of State. Therefore, it is important that the applicant ensures that the information provided within the ES has been assessed against the updated Marine Plan documents for the North East.
- 3.3 As far as the MMO are aware, no direct notification was received from the applicant regarding the Section 56 notice via email or by post.

4 Development Consent Order (DCO) and Deemed Marine Licences (DMLs)

- 4.1 The MMO previously discussed the splitting of DML's and advised that it is common practice among offshore windfarm DCO's. The MMO welcome the approach and for reference unless explicitly stated, all comments within this section are relevant to both DML's in Schedule 10 and 11 of the DCO.
- 4.2 The MMO consider that the DML's currently lack detail, specifically in relation to the relevant Work Nos. The MMO suggest more detail is included so that it is clear as to what each of the Work Nos. entailed.
- 4.3 The MMO note that there is a lack of consistency in the licence conditions. Ideally each condition should be drafted in a similar style, a template has been included below of a format which could be used:
 - No licensed activity must commence until a [plan] has been submitted to and approved by the MMO in writing.
 - The plan must include but is not limited to the following details [details]
 - The [plan] must be implemented as approved
 - The plan must be submitted to the MMO in writing at least [X] months prior to the proposed commencement of the licenced activity



4.4 With regard to Part 2 (8) Benefit of the Order – No provision has been provided for notification to the MMO of request to the SoS. It is noted that in the Tilbury 2 DCO a timeframe of 10 days has been given and suggest that this would be suitable for this DCO:

‘The Company must, within 10 business days after entering into an agreement under paragraph (1) in relation to which any of the benefit of the deemed marine licence is transferred to another party, notify the PLA, the Environment Agency and the MMO in writing, and the notice must include particulars of the other party to the agreement under paragraph (1) and details of the extent, nature and scope of the functions transferred or otherwise dealt with which relate to the functions of any of those bodies.’

4.5 Part 2 6(1)(b) – The MMO note that MHWS does move over time, and this is made clear in its definition. The MMO do not consider it necessary to include a provision which addresses the potential movement over time. The MMO would like clarification from the applicant as to why they are seeking this to be included within the DML.

4.6 The MMO note that there is currently no definition of ‘office hours’ or business days/working days. The MMO note that the Draft DCO for Sizewell C currently has the following wording:

- “business day” means a day other than a Saturday or a Sunday, which is not Christmas Day, Good Friday or a bank holiday under section 1 (bank holidays) of the Banking and Financial Dealings Act 1971;
- “business hours” means the period from 09:00 until 17:00 on any business day.

4.7 With regard to Part 1 (2) “commence” means— (a) in relation to works seaward of MHWS, the first carrying out of any licensed marine activities authorised by the deemed marine licences, save for operations consisting of preconstruction monitoring surveys approved under the deemed marine licences; The MMO note that the definition for ‘commence’ does not include pre-construction monitoring surveys approved under the deemed marine licence. However, it is not clear within either DML where pre-construction monitoring surveys are required.

4.8 Part 1 (2) – In the MMO’s response to the draft DML, we recommended that the definition of ‘maintain’ is amended to remove references to ‘adjust’, and ‘improve’. The current definition is not in-line with the MMO’s interpretation of maintain/maintenance; ‘upkeep or repair an existing structure or asset wholly within its existing three-dimensional boundaries’. This has not been updated.



- 4.9 Part 2 (5)(2) – Given the interpretation of disposal under Part 1 (1) of the DML, the materials listed here do not fall under this definition, which explicitly states that disposal ‘means the deposit of dredged material at a disposal site...’. The materials listed include material which will not arise from dredging activities and so the MMO recommend that this is amended to only include materials from dredging. This was noted in our previous response to the applicant (29 March 2021, paragraph 2.2.2).
- 4.10 Part 2, Tables 9 & 10 for Schedule 10 (11 & 12 for Schedule 11) – the MMO would like to remind the applicant that it is their responsibility to ensure the coordinates are correct and reflect all the work described in the ES, and that the coordinates adequately cover all the required works.
- 4.11 The MMO request the inclusion of a provision within the DML that notification to the MMO of incorrect notification is required. The MMO suggest the following wording is included:

Should the undertaker become aware that any of the information on which the granting of this licence was based was materially false or misleading, the undertaker must notify the MMO of this fact in writing as soon as is reasonably practicable. The undertaker must explain in writing what information was materially false or misleading and must provide to the MMO the correct information. Any oil, fuel or chemical spill within the marine environment must be reported to the MMO Marine Pollution Response Team as soon as reasonably practicable, but in any event within 12 hours of being identified in accordance with the following, unless otherwise advised in writing by the MMO—

- (a) within business hours on any business days: 0300 200 2024;
(b) any other time: 07770 977 825; or
(c) at all times if other numbers are unavailable: 0845 051 8486 or dispersants@marinemangement.org.uk.

With respect to any condition which requires the licensed activities to be carried out in accordance with the plans, protocols or statements approved under this licence, the plans, protocols or statements so approved are taken to include amendments that may be approved in writing by the MMO subsequent to the first approval of those plans, protocols or statements provided it has been demonstrated to the satisfaction of the MMO that the subject matter of the relevant amendments do not give rise to any materially new or materially different environmental effects to those assessed in the environmental information.

- 4.12 Part 3, Notifications and Inspections (9) – the MMO note that there are still references to licence holder. These should be replaced with “undertaker” which is the preferred MMO wording.
- 4.13 Part 3, Notifications and Inspections (9)(ii) – The MMO note the term for ‘transport managers’ is not defined, and suggest this phrasing is either included within the definitions under Part 1 of the DML’s or is removed from the sentence.



- 4.14 The MMO welcome the inclusion of (8) within Part 3 of the DML but suggest that this wording might be better included under (7)(a) as its current placement causes confusion and contradiction with part (b).
- 4.15 Part 3 (9)(10) – The MMO request the term ‘authorised scheme’ is amended to ‘authorised development’ to fit with the definitions in Part 1(1) of the DML.
- 4.16 Part 3 (10)(2) – the MMO previously advised (29 March 2021, paragraph 2.3.8), that a time frame must be included in which sediment sampling should be provided to the MMO, and suggested the inclusion of the following wording:

‘A sediment sampling plan must be requested from the MMO at least 6 months prior to the commencement of dredging. The sediment sampling and analysis must be completed by a laboratory validated by the MMO at least 6 weeks prior to the commencement of dredging. The licensed activities must not commence until written approval is provided by the MMO’.

The MMO do not consider that the current wording meets the MMO’s criteria for a condition.

- 4.17 Part 3 (11) – the MMO welcomes the inclusion of a timeframe for the Construction Environment Management Plan (CEMP). While the MMO recommends a longer time frame of 3 months, the risk lies with the applicant if further consultation is required. The applicant may wish to provide a longer timeframe, to avoid unnecessary delays should consultation be required.
- 4.18 Part 3 (11) The MMO request that wording is provided so that the works are submitted to and approved by the MMO in writing and that the licensed activities must not commence until written approval of the CEMP is provided by the MMO.
- 4.19 Part 3 (12) – the MMO welcome the amendment of the submission timeframe from 4 weeks to 8. For the reasons noted above in paragraph 4.10, the MMO recommend a longer timeframe of 3 months to avoid unnecessary delays to the project.
- 4.20 Part 3 (12)(3) & (4) – The MMO note that there is some inconsistency in drafting language for some of the conditions, e.g. “the method statement for licensable activities” and “The marine method statement for licensable activities”. The MMO request that this is amended so that a more uniform format is used for all relevant conditions.
- 4.21 Part 3 (13) – The MMO request that further detail of the information required is included. At a minimum it should contain the following: name, address, company number where appropriate and function. The MMO consider that there should also be provision for any changes to the agents, contractors or sub-contractors to be notified to the MMO included within the DML.



- 4.22 Part 3 (15) As noted in paragraph 4.18, the MMO request that wording is provided so that the works are submitted to and approved by the MMO in writing.
- 4.23 Part 3 (16) The MMO suggest that the square brackets are removed.
- 4.24 Part 3 (16) – The MMO note that currently no definition has been provided for ‘the river’ and suggest this is included within Part 1 (1) of the DML.
- 4.25 Part 3 (19) - The MMO note that current wording states ‘vibratory or drilled ‘pin’ piling must be used as standard, with percussive piling only used if required to drive a pile to its design depth. The MMO suggest the following wording is also included at the end of the sentence’: *and drill or vibro piling has been unsuccessful.*
- 4.26 Part 3 (22)(1) – The MMO recommend the wording of this condition is amended so that it is in line with other DCO DML conditions (e.g. Sizewell C) and that the loss should be reported ‘as soon as possible and in any even within 48 hours of becoming aware’. Although the MMO recommend 24 hours is a more appropriate timeframe.
- 4.27 Part 3 (22) – The MMO considers that the undertaker should use ‘reasonable endeavours’ to locate the material and recover it. The MMO suggest the following wording is used:
- If the MMO reasonably considers such material to constitute a navigation or environmental hazard (dependent on the size and nature of the material), the MMO must notify the undertaker and the undertaker must use reasonable endeavours to locate the material and recover it. In that event, the undertaker must demonstrate to the MMO that reasonable attempts have been made to locate, remove or move any such material.*
- 4.28 Part 3 (22)(1) & (2) – the MMO note that there are still references to licence holder which should be replaced with “undertaker”, the preferred MMO wording.
- 4.29 Part 3 (23) – The MMO do not consider the provision for ‘force majeure’ is necessary. This is because defence is already included within Section 86 of the Marine and Coastal Access Act (2009). The MMO therefore suggest that this provision is removed.
- 4.30 Part 3 (25) – The MMO note that ‘works’ is not defined within Part 1 (1) of the DML.



- 4.31 With regard to Part 3 (24) – the MMO note that the Applicant is seeking to consent the detonation of unexploded ordinance (UXOs) within the DCO and DMLs. The MMO would like to reiterate our position of UXO's within DMLs as noted in our previous advice to the Applicant (29 March 2021, paragraph 2.3.17): The MMO's current position on UXO clearance is that it is a high risk activity and therefore the MMO is best placed to manage it within a separate Marine Licence. This approach would allow consideration of best available evidence and technology closer to the time that the activity is taking place, and for implementation of this as appropriate. The MMO will advise the Applicant should this process change.
- 4.32 As noted in our 29 March 2021 response (paragraph 2.3.18), if the Applicant does require the detonation of UXOs, a Wildlife Licence may be required to protect species covered under the Wildlife and Countryside Act 1981. If a Wildlife Licence is required, this will need to be sought from the MMO's Marine Conservation Team (MCT). The MMO recommend the Applicant engages early with MCT prior to seeking a Wildlife Licence, if required.

5 Other Application Documents

5.1 DCO 2.2 - Explanatory Memorandum - Oct 2021 Rev.2.0

- 5.1.1 Paragraph 3.8.83 – the MMO note that the applicant is seeking confirmation that the horizontal directional drilling for the micro-bored tunnel is exempt from requiring a marine licence, and thus inclusion within the Deemed Marine Licence (under Article 35 of the Marine Licensing (Exempted Activities) Order 2011. While the onus is on the applicant to determine if the works require a licence, the applicant may find it useful to check the MMO's interactive assistance tool to which will hopefully provide further clarity and confidence:



6 Environmental Statement (ES)

6.1 Chapter 9 Surface Water, Flood Risk and Water Resources

- 6.1.1 With regard to paragraph 9.4.68 – there appears to be a minor spelling error.
- 6.1.2 The MMO note that tidal velocities have been stated for the Tees Bay area (paragraph 9.4.30), however, the MMO were unable to find a description of the velocities within the Tees Estuary. The MMO would appreciate a signpost to these if available or recommend these are provided within the ES.



- 6.1.3 Table 9.9 provides wave height return intervals for the Tees North Wave Buoy, but the MMO were unable to find within the ES a description of the location of this wave buoy. Without this information, the return intervals lose meaning without understanding the associated location. The MMO would like to see this provided, ideally in map form.
- 6.1.4 The application appears to overlook the potential of the project to impact local sediment transport in the context of erosion and scour. Considering this application is for works extending down to the Mean Low Water Spring, the MMO consider the possibility of these impacts must be addressed (or be shown to be negligible) within the application.

6.2 Chapter 11 Noise and Vibration

- 6.2.1 The MMO note that the standard approach for the estimation of noise levels from underwater explosions is to use the methodology from Soloway and Dahl (2014), which is a relatively simple semi-empirical calculation. The MMO do not consider the approach used in the assessment to be overly clear as the report makes reference to the fact that a wave coefficient of $A=10$ has been assumed for UXO. Nevertheless, the predicted impact ranges for fish and marine mammals for the 55 kg and 100 kg charge weights look reasonable/as expected from the Soloway and Dahl methodology.
- 6.2.2 The MMO note that changes in underwater soundscape have been considered as part of the potential cumulative effects assessment. The report concludes that given the low likelihood that activities from cumulative developments would occur concurrently or consecutively, the potential for cumulative impacts is negligible and therefore the effect is Not Significant. The MMO would like to highlight that there is a lot of planned activity taking place within the Tees estuary, so it is important that activities are carefully managed to ensure that there are no detrimental effects to marine wildlife, and to migratory species.

6.3 Chapter 14 Marine Ecology and Nature Conservation

- 6.3.1 The MMO consider noise exposure criteria for fish and non-impulsive sources are limited; Popper et al. (2014) provide thresholds for recoverable injury and TTS (Temporary Threshold Shift) based on the SPLrms metric, for fish with swim bladder involved in hearing (as per Table 14-11 in Chapter 14). Based on our own experience of assessing continuous sources, such as dredging for example, we could expect to see recoverable injury close to the source (i.e. tens of metres) for a stationary receptor and 24-hour exposure, with TTS extending to greater distances (>1.5 km). This is conservative as it is unlikely that a receptor would remain within those distances of the dredger for a full 24-hour period. However, it is reasonable to expect behavioural effects and displacement, and masking from continuous sources.



- 6.3.2 With regard to Table 14-14 - the MMO assume that the source level of 232 dB (rms) has an equal level for the source 1 second SEL (Sound Exposure Level). In reality, this is likely to be conservative, as the source could be pulsed (thus the 1 s SEL could be lower than the rms level).
- 6.3.3 Table 14-14 in Chapter 14 shows the predicted effect ranges for marine mammals and impulsive geophysical survey sound sources (i.e. swathe or multi-beam echosounders, side scan sonar, and USBL). The MMO note that the 1-hour and 24-hour exposures have been considered as well as the instantaneous SPL_{peak}. However, it is not clear how the predicted effect ranges have been derived (based on the model parameters). The MMO request further explanation be included as to what approach has been used. For example, for a swathe or multibeam echosounder source level of 232 dB (rms) (which is very high), a conservative transmission loss of 15 log R, and a conservative 24-hour exposure period, we would expect to see far larger effect ranges than those presented in Table 14-14. Nevertheless, it is important to acknowledge that in reality, the source and the animal would be moving so a simple modelling approach is very conservative.
- 6.3.4 Paragraphs 14.2.13 & 14.2.14 – As noted above in paragraph 3.2, the North East Marine Plan has now been formally adopted by the Secretary of state and should be updated where required.
- 6.3.5 The MMO note that there are some inconsistencies throughout the ES report regarding the extent of drilling/piling works. For instance, Table 14-4 states that *'piling works will no longer take place in the River Tees which substantially reduces impacts on diadromous species using the River Tees'*. However, the Applicant also suggests that *'as both drilling of pin piles and dredging would be undertaken near the Tees mouth which is already characterised by a high level of marine traffic, the Applicant do not consider potential for these activities to create an acoustic barrier in the River Tees thus, not impeding migration'*. Furthermore, paragraph 14.6.95 states that *"Both the drilling of pin piles and dredging may need to be undertaken in the Tees Bay, approximately 1 km to the east of the Tees Mouth (for the existing outfall) with the replacement outfall being a further 2 km east (i.e. a total of approximately 3 km from the Tees Mouth). Therefore, there is not considered to be the potential for these activities to result in a temporary acoustic barrier in the River Tees"*. The MMO have concerns that percussive/impact piling might be necessary to drive the piles to their design depth and recommend that the Applicant provides further information on the duration and exact location of the potential impact piling activities to facilitate an accurate estimation of potential impacts on fish receptors.



- 6.3.6 The MMO do not consider the issue of noise propagation within an estuary, i.e., a small channel, compared to the open water environment, has been sufficiently addressed. In an estuarine environment, noise and vibration from all forms of piling has the potential to create an acoustic ‘barrier’ across the width of the channel, which can impede fish movement and migration and cause behavioural responses, injury and mortality in fish. Therefore, from the information provided within the ES on the location of the works (i.e., 1 km east of the Tees mouth), it is very difficult to comprehend the exact location and width of the River Tees where the proposed drilling of piles is expected to occur. The MMO request further information and a map of the locations of the proposed works that specifies the width of the river at these locations.
- 6.3.7 The MMO note that there appear to be some contradictions throughout the consultation documents regarding the extent of dredging works. In some instances, it is suggested that preparatory dredging works are no longer required, and, in case dredging works are required, they will be subject to DML conditions (e.g., sediment sampling and subsequent sample analysis following the MMO’s Sample Plan) and secured within the DML before the commencement of works. The MMO note that dredging campaign(s) facilitating the removal of material from the seabed required for the construction of works and backfill/side cast (as required) are already included within the draft DML. The MMO would appreciate further information on the timing, exact location, and quantities of material to be dredged is provided, in order to consider the likelihood of significant impacts on fish occurring as a result of dredging activity, either as a standalone activity, or in combination with piling/drilling activity.
- 6.3.8 The MMO note that the river Tees crossing works are expected to take approximately 9 months. However, the duration (i.e., estimated months and hours per day) of potential activities that generate underwater noise is not clearly stated within the documents provided. It is recommended that further information on the expected schedule of construction work is provided.
- 6.3.9 Paragraph 14.6.47 states, “*Although demersal life stages are less able to adapt to adverse levels of turbidity and deposition, many are known to be reasonably tolerant of smothering (Kjørbe et al., 1981). Overall, the sensitivity of fish and shellfish to increased SSC [Suspended Sediment Concentrations] and deposition is considered to be low*”. The MMO consider the latter statement could be easily misinterpreted as a general statement which is inaccurate. It is recommended that this statement is revised to highlight the potential risks from elevated SSC on fish receptors based on more recent evidence sources (see Annex 1 of this document). Migratory species such as salmonids, are known to exhibit avoidance reactions and move away from the vicinity of adverse sediment conditions, if refuge conditions are present (Sigler et al., 1984; Bash et al., 2001). The MMO also consider that there is a high likelihood of cumulative potential impacts to occur as result of multiple activities undertaken simultaneously within the Tees and this should be taken into consideration.



- 6.3.10 Paragraph 14.6.49 provides a description of sandeel biology supporting conclusions such as “*Although sandeel do exhibit site fidelity, this species is considered adaptable and physiologically capable of relocating to alternative adjacent habitat temporarily and recolonising suitable sediments following completion of the works*”. The MMO note that there is no mention to peer-reviewed sources to support this statement and request that appropriate sources are provided.
- 6.3.11 Paragraph 14.6.97 states that “*The fish with the highest hearing sensitivity are members of the herring family (Clupeidae) and are generally pelagic species that are highly mobile and wide ranging. Thus, for all construction activities it is unlikely that these individuals will remain within the impact zone. Thus, no injurious impacts in fish, from any continuous sound sources are anticipated*”. The MMO consider the above statement to be generalised and assumes that fish can distance themselves by fleeing the source of impact. In principle the MMO agree that mobile fish species are likely to move away from noise. However, the above statement overlooks the different swimming speeds and capabilities of fish depending on their size and developmental stage, and does not consider the biological drivers and philopatric behaviours which some fish species exhibit.
- 6.3.12 The MMO note that ‘No dig’ trenchless techniques will be used to install the gas connection and CO₂ Network, and CO₂ export pipeline across the River Tees. The MMO agree that these methods remove potential impacts on fish receptors as works will be undertaken underground.
- 6.3.13 With regard to piling works, the MMO note that good practice and design mitigation measures have been proposed in this chapter (paragraph 14.5) in accordance with industry best-practice and Joint Nature Conservation Commission (JNCC) guidance. The MMO note that percussive/impact piling might be necessary to drive the pile to its design depth. The MMO recommend that the timing, duration and exact location of the potential impact piling activities is provided, as noted in paragraph 6.3.7 above.
- 6.3.14 The MMO note that there is no longer a requirement to abstract water from the River Tees as cooling water will be supplied by Northumbrian Water. As such, potential impacts resulting from fish impingement and/or entrainment of marine organisms within the Cooling Water System is no longer considered as part of the Proposed Development. The MMO consider this to be appropriate.
- 6.3.15 Construction works, in particular, activities that generate impulsive underwater sound within the marine environment (i.e. geophysical survey works) shall not be undertaken at night. The MMO consider this will allow suitable quiet periods of ‘downtime’ for marine receptors during hours of darkness. As noted previously, the MMO have concerns that percussive/impact piling might be necessary to drive the pile to its design depth and recommend that the timing, duration and exact location of the ‘potential’ impact piling activities is provided.



6.3.16 The MMO welcome the inclusion of standard best practice prevention measures for preventing water pollution, spillage risk and the dispersion of suspended sediments.

6.3.17 With regard to 14.5.13, the MMO note that activities that generate impulsive underwater sound within the marine environment (i.e. geophysical survey works and UXO detonation) shall not be undertaken at night. The MMO would like to highlight that this mitigation may be required as a condition within the DML.

6.4 Chapter 24 Cumulative and Combined Effects

6.4.1 The MMO note that York Potash has been both scoped in (ID 2, Table 24-12) and scoped out (ID 71, Table 24-12) within the same table and would appreciate further clarification on this.

6.4.2 The MMO note that the Tees South Bank Quay project has not been included within the list of scoped in developments (Table 24-12). It is the opinion of the MMO that, due to the location and the nature of the works proposed for Tees South Bank Quay (i.e., capital dredging up to 1.8 million m³ between 2021-2023) this development should be included in the cumulative impact assessment. Alternatively, the Applicant should provide suitable justification for scoping it out.

6.4.3 The MMO note that Anglo American Harbour Facilities (DCO activities yet to commence) are not scoped in as part of the cumulative impact assessment. To the best of the MMO's knowledge, this project includes dredging up to 750,000 m³ (phase 1) and dredging up to 372,000 m³ (phase 2) from the Tees approach channel and berth pocket. Again, this development should be included in the cumulative impact assessment, unless suitable justification for scoping it out can be provided.

6.4.4 Paragraph 24.5.71 – It is noted that the Applicant has concluded that there will be no significant cumulative impacts on fish receptors due to the temporary, short-term nature of the proposed works and the low likelihood of dredging and piling operations occurring concurrently. Conversely, the MMO note that the Applicant acknowledges; i) adverse cumulative impacts are likely to occur should dredging/piling-drilling works occur at the same time at different sites (paragraphs 24.5.80 and 24.5.83), and ii) exact timeframes of each activity are currently unknown (paragraphs 24.5.73). The MMO have concerns relating to the likelihood of potential cumulative impacts occurring, should dredging/piling/drilling work from this and other nearby developments occur simultaneously. For example, the following developments are proposed within the River Tees and Estuary with overlapping construction works:

- York Potash Harbour facilities - includes capital dredging of approx. 1 million m³ on the southern bank of the river Tees. Construction underway with all works scheduled for completion by 2024.



- Sembcorp Utilities (UK) Limited – Tees. The project will utilise existing Gas and National Grid connections. Construction period from 2019-2022 with potential for further construction works until 2030.
- Northern Gateway Container Terminal is proposing a 5-day cycle for piling (percussive/impact) 20min+ durations and drilling (auguring) techniques over 7-8 hrs for approx. 120 weeks until 2028 with additional dredging works of up to 4.8 million m³ to be carried out 24 hours per day.
- Tees South Bank Quay and Anglo-American Harbour Facilities works (as described in points 44-45 respectively), will add additional pressure in the river Tees channel and Estuary between 2021-2023.
- Ongoing maintenance dredging at Hartlepool and in the Tees estuary for an average of ca. 1 million m³ per year.
- Dawsons No 2 (quay 1 and 2) proposed dredging and piling works for a duration of 2 years (unknown timing of works).

6.4.5 Considering the sensitivities of marine receptors in the Tees, the potential for an acoustic 'barrier' to impede fish migration, and the strong likelihood for potential overlapping of multiple construction activities from multiple developments within the Tees occurring during sensitive migratory season for salmonids (i.e., May-August), the MMO consider that a regional and collaborative approach to impact assessment is required. For example, each developer should be able to provide an accurate estimation of the proposed timing of their construction activities. The information should be shared as a collaborative exercise so that each developer is able to determine the likelihood of their works overlapping with those of other projects in the Tees. Such a document might help to avoid disagreement between the Applicants' conclusions and the opinions of consultees. For example, based on the number of developments in the planning and consented stage within the River Tees (as per list above), it is the MMO's opinion is that the likelihood of works occurring simultaneously is high whereas the Applicant thinks it is rather low. The MMO recommend the Applicant engages with the MMO and Applicants of other projects in the Tees to keep track of when works are scheduled to occur at each project location using a 'works tracker' document which details the type (e.g., dredging, piling, drilling, number of piles etc) and timing of work at each Tees project site. This will enable all developers to track progress and provide more accurate information for consideration in cumulative impact assessments.

6.5 Chapter 19 Marine Heritage

6.5.1 Paragraph 19.2.3 – As noted above in paragraph 3.2 and 6.3.4, the North East Marine Plan has now been formally adopted by the Secretary of state and should be updated where required.



7 Summary

7.1.1 The MMO have outstanding concerns regarding potential effects resulting from cumulative and in-combination impacts resulting from multiple activities being undertaken simultaneously within the Tees.

7.1.2 We strongly recommend that the Applicant engage with the MMO throughout the process in order to ensure the assessment is as smooth as possible and agreements can be reached through a Statement of Common Ground.

Yours faithfully,

Nicola Wilkinson
Marine Licensing Case Officer

[Redacted signature area]



8 References

Appleby, J.P. and Scarratt, D.J. (1989). Physical effects of suspended solids on marine an estuarine fish and shellfish with special reference to ocean dumping: a literature review. Canadian Technical Report of Fisheries and Aquatic Science No.1681.

Berg, L. (1982). The effect of exposure to short-term pulses of suspended sediment on the behaviour of juvenile salmonids. In: Hartman, G.F. (Ed). Proceedings of the Carnation Creek workshop: a ten-year review. Department of Fisheries and Oceans, Pacific Biological Station, Nanaimo, Canada;

Berli, B.I. et al. (2014). Acute exposure to a common suspended sediment affects the swimming performance and physiology of juvenile salmonids. *Comparative Biochemistry and Physiology Part A: Molecular & Integrative Physiology*, 176: 1–10
Henley *et al.* (2000)

Popper A.N., Hawkins A.D., Fay R.R., Man, D.A., Barto, S., Carlson T.J., Coomb, S., Ellison W.T., Gentry R.L., Halvorsen M.L., Løkkeborg S., Rogers P.H., Southall B.L., Zeddies D.G., and Tavalga W.N., 2014. ASA S3/SC1.4 TR-2014. Sound Exposure Guidelines for Fishes and Sea Turtles: A Technical Report prepared by ANSI-Accredited Standards Committee S3/SC1 and registered with ANSI. January 2014.

Redding, J.M., Schreck, C.B. (1982). Mount St. Helens Ash Causes Sublethal Stress Responses in Steelhead Trout, Mount St. Helens: Effects on Water Resources. Washington State University, Washington Water Research Center, Pullman, pp.300 – 307 (Report 41)

Salmon & Trout Conservation (2017). The impact of excess fine sediment on invertebrates and fish in riverine systems. Available at: [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Schleiger, S.L. (2000). Use of an index of biotic integrity to detect effects of land use on stream fish communities in wet-central Georgia. *Trans. Am. Fish. Soc.* 129: 1118-1183

Sigler, J.W., Bjornn, T.C. and Everest, F.H. (1984). Effects of chronic turbidity on density and growth of steelheads and coho salmon. *Transactions of the American Fisheries Society* 113: 142-150



9 Annex 1 . Potential impacts on marine and migratory fish from dredging and disposal of marine sediments

Elevated concentrations of suspended sediment can have the following physical effects on all life stage of fish, particularly salmonids (Salmon & Trout Conservation, 2017) by:

- i. Damage to gills as a result of erosion of the mucus coating and abrasion of tissue (Redding and Schreck, 1982). The extent of damage depends on size and shape of particles, suspended sediment concentration, water velocity and gill dimensions (Appleby and Scarratt, 1989). Fish species have been found with increasing levels of deformities, eroded fins, lesions, tumours, gill flaring and 'coughing', all related to increasing SS in the water column (Berg, 1982; Schleiger, 2000).
- ii. Disruption of gaseous exchange by fine particles which bind with the gill epithelium and clog gill rakers and filaments.
- iii. A reduction in feeding and foraging effort by visual predators as a result of increased turbidity (Henley *et al.* (2000)).
- iv. An increase in respiration and heart rate (Redding and Schreck,1982) and altered blood physiology (Salmon & Trout Conservation, 2017).
- v. An increase in energy expenditure and reserves resulting from the above impacts is likely to inhibit migration activities for species such as sea trout and river lamprey as they attempt to negotiate estuarine environments on their upstream migrations.
- vi. Entrainment of demersal and benthic fish, fish eggs and larvae taken up through the drag head of the dredger.
- vii. Potential disturbance caused by underwater noise from the dredging process.
- viii. Reduction in suitable spawning habitat and declines in egg/early life stage success (Salmon & Trout Conservation, 2017).
- ix. Decrease in swimming performance as turbidity increases due to impairment in the ability of the fish to utilise anaerobic metabolic pathways in high sediment environments (Berli *et al.*, 2014).

