



Offshore Petroleum Regulator
for Environment & Decommissioning

**The Offshore Oil and Gas Exploration, Production, Unloading and Storage
(Environmental Impact Assessment) Regulations 2020**

**Regulation 14(3)
Secretary of State Decision**

BP Exploration Operating Company Limited (BPEOC)

Murlach Field Development

To: [REDACTED], OPRED

Decision Recommendation:

That you agree, on behalf of the Secretary of State, to the grant of consent by the Oil and Gas Authority (OGA)¹.

As set out further below, taking into account the relevant considerations, I have concluded that the project will not have any significant effects on the environment.

From: [REDACTED]
[REDACTED]

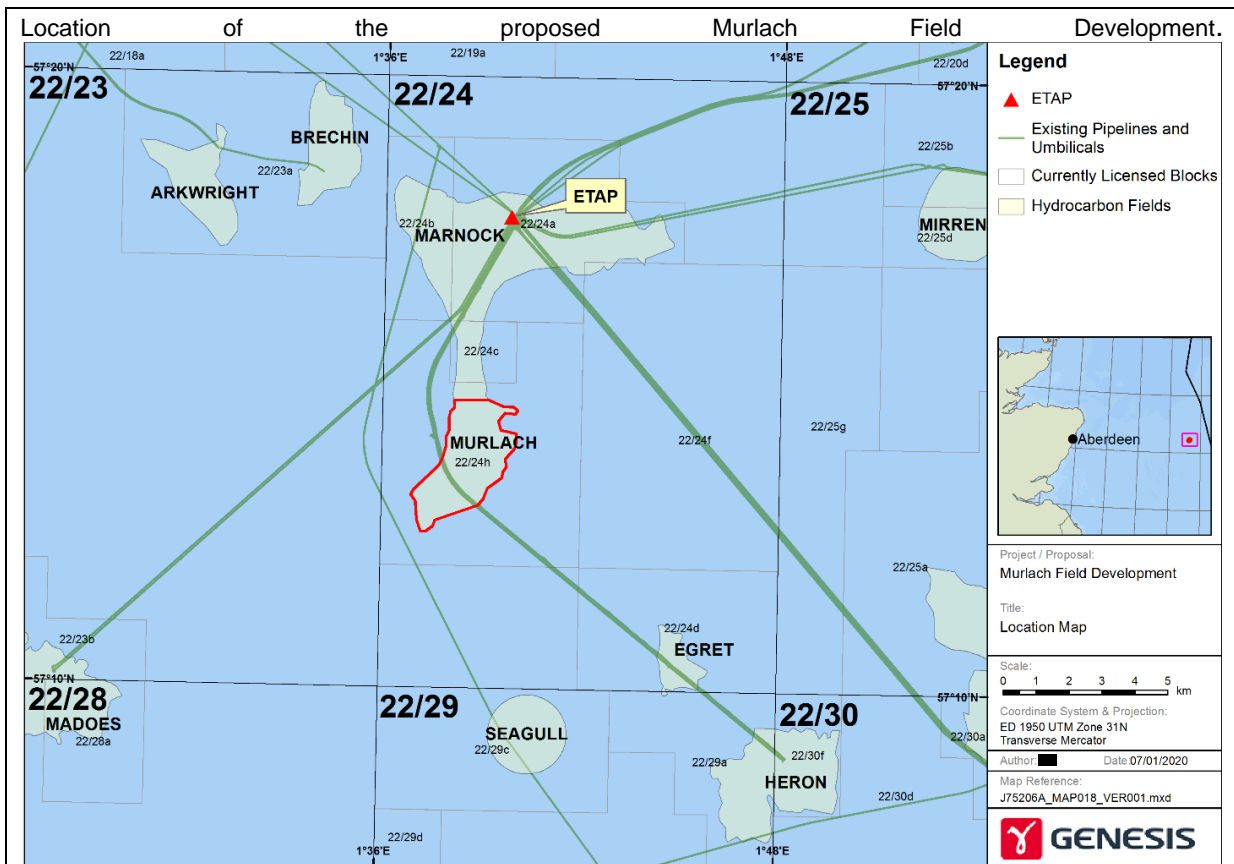
Date: 22 August 2023

ES Title:	Murlach Field Development
Developer:	BP Exploration Operating Company Limited (BPEOC)
Consultants:	Genesis Energies
OGA Field Group:	Central North Sea (CNS)
ES Report No:	ES/2022/002
ES Submission Date:	8 th April 2022
Block No/s:	22/24
Project Type:	Field development
OGA Reference No:	PCON: 6558/0

Project Description

The Murlach Field Development will be a redevelopment of the Murlach Field (part. of Marnock-Skua), located in the Central North Sea, approximately 203 km from the Aberdeenshire coastline and 27 km from the UK/Norway median line. The field is in water depths ranging between 93 to 95 m.

¹ The Oil and Gas Authority now operates under the business name of the North Sea Transition Authority (NSTA).



The Murlach Field development proposal consists of two production wells and a subsea tie-back to the Eastern Trough Area Project (ETAP) installation. The Murlach project will share existing infrastructure already present around the Murlach Field, including the Heron A production pipeline to transport production fluids, the Heron wash water pipeline and the Seagull control umbilical. The project also includes the installation of a new manifold, together with tie-ins and a new gas lift pipeline from the ETAP platform.

Modifications will be required to the ETAP topside arrival facilities and separation for overpressure and temperature protection together with metering/instrumentation requirements. The reception and separation facilities have been out of service, and a fit for service assessment will be undertaken to determine the requirements to replace or refurbish existing equipment and instrumentation. Gas and oil will be comingled with existing ETAP fluids and gas will be exported via the Central Area Transmission System (CATS) and oil exported via Forties Pipeline System. Activities are due to commence in Q3 2023, with the ETAP topside modifications and first oil is expected in Q2 2025.

Key Environmental Impacts

The ES identified and discussed the following as having the potential to cause an environmental impact:

- Effects on users of the sea (e.g., commercial fishing and shipping) from the physical presence of vessels, temporary and permanent infrastructure, and the construction phase of the project.
- Effects on the sediments, seabed habitats, fauna and flora from seabed disturbance from the physical presence of temporary and permanent infrastructure;
- Effects on water quality from discharges to sea;

- Effects from underwater noise caused by piling of the manifold, drilling operations and associated vessels;
- Effects on local air quality and climate from the atmospheric emissions generated by the project;
- Effects of waste generation;
- Effects on water quality, protected species and habitats, fauna and flora from an accidental event resulting in an oil release;

Key Environmental Sensitivities

The ES identified the following environmental sensitivities:

- **Fish and shellfish:** The project area lies within numerous nursery and spawning areas of fish species. Scottish Priority Marine Features (PMFs) such as anglerfish, blue whiting, cod, ling, mackerel, Norway pout, sandeels, and whiting may be found in the project area. Cod and spurdog are also listed on the OSPAR list of threatened and/or declining species. Sandeels are known to have a particularly important ecological function as a prey item for other fish, seabirds and marine mammals. There is evidence that sandeels avoid areas with greater than 10% of silt/clay or very fine sand. The sediments in the project area are described as silty sands (4 µm to 2 mm particle size) with occasional patches of shell and gravels with cobbles (2 mm to 64 mm particle size).
- **Seabirds:** Multiple species of seabirds could be present at the project area in various levels of abundance. The highest abundance of species is attributed to the Northern fulmar, common guillemot, and Atlantic puffin. The abundance of these species is moderate (between 5-10 individuals per km²) for Atlantic puffin and high (between 10-20 individuals per km²). Sensitivity of seabirds in the project area is low throughout the year for block 22/24 and the surrounding blocks.
- **European Protected Species and pinnipeds:** Cetaceans such as harbour porpoise, minke whale, white beaked dolphin and white-sided dolphin are likely to occur in the project area predominantly during the months from April to November in low densities. Moderate densities for white-beaked dolphin are expected in May and high densities in November. Pinnipeds such as the grey seal and the harbour seal may occur in the project area in very low densities but are far more common close to shore.
- **Protected habitats and species:** There are no Special Areas of Conservation within 40 km of the project area. The East of Gannet and Montrose Field Nature Conservation Marine Protected Area (NCMPA) is approximately 3.7 km from the project area and is designated for Offshore deep-sea muds and ocean quahog. Analysis of grab samples from site specific surveys showed evidence of ocean quahog in the area. Evidence of Sea Pens and Burrowing Megafauna Communities was also found in the project area. However, these were not considered to be representative of the OSPAR listed threatened and/or declining habitat Sea pens and burrowing megafauna communities. Other sites in the area are the Fulmar Marine Conservation Zone (MCZ) and the Norwegian Boundary Sediment Plain NCMPA approximately 70.5 km and 84 km, respectively, away from the project area.
- **Other users of the sea:** Commercial fishing effort in the project area has been assessed as “low” representing less than 0.1% of the total UK (United Kingdom) fishing effort. The majority of fishing effort in the project area is focussed on the summer months. Demersal fishing is most prevalent in the project area. Shipping density in the area is very low. The project area sits within a well-established location for offshore oil

and gas infrastructure. The closest platform is the ETAP installation, situated approximately 7 km to the northeast. The project area is not used for military exercises. There are several wrecks located in the project area, with the closest being 4 km away. The nearest finfish and shellfish farms are 215 km away.

- **In-combination, cumulative and transboundary sensitivities:** The project area is located 27 km from the Norway / UK median line. The installation of infrastructure (as listed under Project Description above), will add to an already well-established area for oil and gas. This will increase the footprint of the infrastructure in the area including the footprint of rock. This has been minimised where possible e.g., by using existing infrastructure where possible, including sharing the Seagull control umbilical and surface laying the jumpers and spools. Impacts from the drilling rig, additional vessel movements and piling will contribute to underwater sound, however activities are short term. The project will not add to produced water discharges as this will be re-injected at the ETAP. There will be a minor increase in emissions from the vessels used and at ETAP during production. No other oil and gas installation activities are planned in the project area at the time installation and commissioning of the Murlach project takes place. There may be a risk of transboundary impacts in the event of an accidental event such as a well blowout.

Further Information

Further information was requested on 31st August 2022, 30th November 2022 and 23rd May 2023. Responses to the further information requests were received on 21st October 2022, 19th April 2023 and 25th May 2023. It was concluded that the information provided clarified and confirmed the information previously presented in the ES and did not meet the test in Regulation 12(3)(b) of the 2020 Regulations to require a further public consultation. In addition, on the 14th April 2023, the developer also provided updated modelling results relating to worst-case blowout scenarios. The updated modelling results did not alter the conclusions of the original assessment and therefore did not meet the test in Regulation 12(3)(b) to require a further public consultation.

Public Consultation(s)

The ES and the application for consent was subject to Public Notice, which was published on 29th April 2022 and ended on 30th May 2022. There were no public representations received.

Consultation with Other Authorities

The Joint Nature Conservation Committee (JNCC), Ministry of Defence (MoD), Northern Lighthouse Board (NLB), Marine Scotland Science (MSS), and Maritime Coastal Agency (MCA) were consulted on the ES submission. All the consultees submitted responses and none of consultees had objections to the environmental impact assessment.

Consultation with other Countries

Given the location of the project proposal, Norway was contacted to offer the opportunity to participate in the EIA process. However, no response was received and therefore they did not participate in the EIA process.

Conclusion on the significant effect of the project on the environment

I have reviewed the following:

- The ES;
- The further information obtained under Regulation 12 as summarised above;
- The representations received from other authorities as summarised above; and

Taking those matters into account, I have concluded on behalf of the Secretary of State that this project will not have any significant effects on the environment:

- **Physical presence of vessels and temporary and permanent infrastructure:** Different vessels will be required for drilling and installation activities, however, there is no significant impact anticipated from the navigational hazards to other users of the sea given the low levels of shipping in the area. The project is in proximity to a well-developed oil and gas area, therefore the increase in vessel traffic required for the drilling and installation activities is not anticipated to result in a significant change to existing levels. All drilling activities will be within an existing 500m safety zone. Apart from the gas lift pipeline, all other subsea infrastructure will be within an existing 500m safety zone. There are different options being considered for the installation of the gas lift pipeline, all of which will be laid in such a way to minimise any snagging risks.

I agree with the assessment that the impacts resulting from the physical presence of drilling rigs, vessels and associated infrastructure are not likely to have a significant impact on the environment.

- **Seabed disturbance:** There is expected to be seabed impacts from the drilling rig anchors and mooring lines, Water Based Mud drill cuttings, cement discharges, subsea infrastructure, and protection material. The worst-case permanent area of impact to the seabed is expected to be 0.05470 km².

Four different options are being considered for the installation of the gas lift flowline. Option 1 is surface laid and left exposed on the seabed with spot rock cover, Option 2 is surface laid, and rock dumped for the full length, Option 3 is surface laid, alongside an existing rock berm and rock dumped for the full length and Option 4 is trenched and buried with spot rock cover and will also require. The maximum area of permanent disturbance is associated with Option 2, due to the rock cover. The largest area of temporary impact is associated with Option 4, due to the potential requirement for trawl sweeps to mitigate against clay berms produced.

Mattresses and grout bags will be used to protect the tie in spools and at any crossings. Rock cover will be required for all options, either along the full length or as spot rock cover to mitigate upheaval buckling. As a worst case, 280 mattresses, 3000 grout bags (25kg) and 150,000 tonnes rock cover is anticipated to be required. However, the use of stabilisation material will be minimised through optimal project design.

It is expected that a jack-up drilling rig will be used to drill the Murlach wells, however as a worst case it has been assumed a semi-submersible rig will be used. The installation of the anchors associated with the semi-submersible drilling rig is likely to cause some scars on the seabed, however impacts are temporary, and the seabed is expected to recover from the disturbance.

The discharge of drill cuttings is expected to result in a very localised temporary reduction in water quality in the lower part of the water column (approximately 10 m above the seabed), primarily due to an increase in suspended solids (barite). On the seabed, discharged cuttings will change the grain size in the immediate vicinity of the

wells and is expected to result in a burial thickness that could be a risk to some of the animals in the area. In addition, some benthic animals may be impacted by chemical concentrations and oxygen depletion. It is expected that following cessation of drilling, the area of risk will be small and will primarily be associated with burial and changes in grain size. However, given that the area is known to comprise sandy mud/muddy sand, shell fragments with occasional pebbles, cobbles and boulders, the addition of the cuttings is not expected to significantly change the composition of the seabed sediments in the area. Modelling studies carried out to support other environmental statements predict that following completion of drilling, the area where the combined risk to more than 5% of the most sensitive species in the sediment reduces rapidly over time due to re-colonisation by opportunistic species. Clarification was provided by the developer on the area of impact from the drill cuttings. This is expected to be temporary.

The physical disturbance resulting from the drilling rig's anchors, the installation of the subsea infrastructure and the placement of rock cover, mattresses and grout bags can cause mortality or displacement of motile benthic species in the impacted area, direct mortality of sessile seabed organisms that cannot move away from the contact area and direct loss of habitat. In addition, disturbance from sediment re-suspension will occur in the immediate area when the structures are initially positioned. However, as the activities are short term, have a small footprint and are not in a sensitive area, any changes to the receptors impacted are not considered significant. Receptors, such as *Artica islandica* (ocean quahog) and *Nephrops norvegicus* are expected to be impacted at an individual level rather than a population level. Once drilling and installation activities are completed, recovery of the ecosystem is expected to commence such that the magnitude of effect of disturbance to the seabed from all activities is minimal and any environmental impacts are considered to be negligible.

I agree with the assessment that while there will be impacts to the seabed, these are not likely to have a significant effect on the environment given the ability of the environment to recover from temporary disturbance and the small footprint of the disturbed area.

- **Discharges to sea:** There will be discharges to sea from the drilling of the top-hole sections of the wells (drill cuttings, drilling mud, wellbore clean up fluids, chemicals, and cement) and installation of the pipeline and tie ins. Lower sections of the wells will be drilled with Low Toxicity Oil Based Mud (OBM), which will be skipped and shipped. There will be no discharges of produced water at ETAP as produced water is reinjected. Water quality and marine organisms were identified as key receptors. Given that the impacts are likely to be localised and short term, the chemicals selected are expected to be of minimal risk to the environment and the sensitivity in the area is low, the impact is assessed as not significant. No cumulative or transboundary impacts are anticipated.

I agree with the assessment that the impact to water quality and marine organisms from discharges to sea are not likely to have a significant impact, given the dilution and dispersion expected in the marine environment.

Atmospheric emissions: Local air quality and global climate change were the primary receptors considered in relation to atmospheric emissions from the project. The developer states that the development aligns with the NSTA's expectations of the offshore industry to support the UK's transition to Net Zero by producing hydrocarbon products with significantly lower Greenhouse Gas intensity than the average across the UK Continental Shelf, and that this, in turn, will help the sector to achieve the emissions reduction targets set out in the North Sea Transition Deal. The developer

provided clarification on the incremental atmospheric emissions from the Murlach project and the resultant emissions at ETAP and clarified that total atmospheric emissions associated with the project would be less than originally assessed in the ES.

The main sources of atmospheric emissions will be from the use of vessels (including the drilling rig), well completion and clean-up (including flaring), commissioning and the production of hydrocarbons. The base case is for the clean-up fluids from the drilling of the wells to be routed to ETAP where the extent of flaring can be minimised. However, as a worst-case, atmospheric emissions resulting from clean-up and testing has been calculated assuming a rig-based clean up.

Emissions from each source were estimated and their global warming potential assessed across the anticipated life of the Murlach field. Total quantities of greenhouse gas emissions associated with the project are very small compared to those of the wider industry and the UK in general. The impact from the installation of subsea infrastructure, drilling, completions, and start-up activities on air quality will be localised, short term and will mainly occur more than 200 km from the nearest shoreline. The significance of impact to the local ecological receptors is therefore considered to be low. Over its field life, the overall GHG intensity of the development is very favourable compared to that of average UKCS oil and gas production, of average global oil production and of imported gas to the UK. Production of this low GHG intensity field will thereby contribute to an overall reduction in the GHG intensity of the basin.

The Murlach project could result in an increase in emissions of exhaust gases such as NO_x and CO from ETAP. However, the total emission levels from ETAP are projected to remain significantly lower than levels that have previously been modelled that show environmental impact to be low. The significance of impact on air quality over the life of field for Murlach is therefore considered to be low.

Given the distance from the UK/Norway median line and the localised nature and low level of air quality impacts expected, no transboundary impacts are anticipated.

I agree with the assessment undertaken and conclusion that while there may be a small increase in emissions at ETAP attributed to the Murlach project, the overall significance of the impact of energy use and atmospheric emissions is considered to be low. The developer has a number of mitigation measures in place to minimise impacts and therefore there is not likely to be a significant impact on the environment.

- **Underwater noise:** There are several noise sources associated with the project, including noise during drilling activities, vessel operations and piling. The primary source of noise during the project results from the piling of the manifold in the Murlach field. The piles required for installation of the Murlach manifold are expected to be up to 24" in diameter and up to 30 m in length. A maximum of four piles will be required to install the manifold. It is expected that each pile will take a maximum of 8.3 hours (503 minutes) and all piles will be installed within 2 to 3 days. The estimated maximum hammer energy required to install all piles is 150 kJ.

Marine Mammals and fish are the main receptors to underwater noise. Modelling of the noise generated by the piling activity was undertaken in order to assess the impact to these receptors. The predicted sound levels from the piling were compared to the sound pressure levels and sound exposure levels of the cetaceans known to frequent the area. The modelling concluded that the noise levels generated due to the piling activities could disturb marine mammals up to a distance of 15 km with the disturbance to fish considered to be negligible. The developer has stated that JNCC mitigation

guidelines will be followed during the piling operations, which includes the use of soft starts. Given that the piling is short term and are therefore temporary in nature, and the use of standard noise mitigation measures, the impact to marine mammals and fish are not expected to be significant. The contribution to the noise from drilling activities and vessel presence were considered negligible.

I agree with the results of the noise assessment that there is not likely to be significant effects on the environment from the noise generated by the project.

- **Accidental events:** Potential accidental events were identified as a subsea well blow out, loss of fuel inventory from the drilling rig, accidental releases of contaminated discharges and spillage of mud or diesel during bunkering operations. The worst-case accidental event is a well blowout, leading to an uncontrolled release of hydrocarbons after the pressure control systems have failed. This could occur during the drilling of the wells.

Oil spill modelling of this potential release was undertaken using the Oil Spill Contingency and Response (OSCAR) model, developed by Sintef. The results showed that, overall, hydrocarbons released as a result of a well blowout from the Murlach field extend across a wide area of the North Sea and could have a significant impact on offshore and onshore protected areas, coastal areas and could impact on Denmark, Germany, the Netherlands, Norway and Sweden's waters. While a large portion of hydrocarbons evaporate or are biodegraded, significant amounts of hydrocarbons would be deposited on the seabed and remain entrained in the water column. The modelling results show that a number of environmental receptors could be impacted in the event of a well blowout. Plankton, due its nature of drifting with the currents can be vulnerable to oil pollution. Filter feeders such as sea pens and ocean quahog, both of which have been identified in surveys, are also vulnerable to oil pollution due to the ingestion of oil when feeding. It is expected that fish actively avoid the oil spill areas, however fish spawning areas, which have been identified in the area, could be impacted by an oil spill. Seabirds are sensitive to the effect of surface oil pollution which affects their plumage and digestion systems. Marine mammals tend to be highly mobile and can swim away from an oil spill area, however resident populations may not leave the area, and feeding marine mammals can be particularly affected through the ingestion of oil and for contaminants to be passed through the mother's milk. It is expected that the impact on benthos, fish, marine mammals and seabirds would be significant in a well blowout scenario. Such a release was also identified to qualify as a Major Environmental Incident (MEI) if it were to occur.

It was concluded that an accidental event, in this case a well blowout, has the potential to have a significant effect on the environment. However, the probability of such an event occurring is low and the developer has a number of mitigation measures in place to mitigate against a well blowout. This includes; having an approved Oil Pollution Emergency Plan (OPEP), a relief well plan and primary and secondary barriers in place.

I agree with the assessment of environmental effects once control and mitigation measures from the unlikely event are accounted for.

- **Waste Generation:** Waste is generated throughout the life of the project from the vessels used, drilling, installation and commissioning, production and decommissioning. Any waste is transferred and processed onshore. The minimisation of waste is a factor considered at every stage of the project and the developer has a

number of mitigation measures in place to achieve this, such that any impacts are negligible.

I agree that there are not likely to be any significant effects on the environment from waste generation.

Features of the project or measures envisaged to avoid, prevent, reduce or offset significant effects.

As discussed above, the only impact identified as potentially having a significant effect on the environment is an accidental event, which in this case is a well blowout. The following key measures of the project are envisaged to avoid, prevent, reduce or offset any significant adverse effect on the environment from accidental events.

The developer has a number of measures in place to ensure that the risk of a well blow-out occurring is minimised. These preventative measures are:

- a) Primary Well Barrier: the developer will use appropriate drilling fluids to maintain well control and provide sufficient hydrostatic pressure;
- b) Secondary Well Barrier: the developer will utilise a blowout preventor (BOP) which is used for the initial stages of secondary well control should a blowout occur;
- c) Operations will be carried out in accordance with a well plan to ensure well control is maintained;
- d) Oil Pollution Emergency Plan which sets out arrangements for responding to incidents that may cause oil pollution;
- e) The developer has access to the oil spill response provider Oil Spill Response Limited (OSRL);
- f) Well Procedures and equipment to control the well in the event of a blowout, including a capping device or the drilling of a relief well; and
- g) The developer is party to the oil pollution compensation scheme the Offshore Pollution Liability (OPOL) Agreement.

Although a significant effect to the environment would be expected in the case of an unplanned, accidental well blow-out from a Murlach well, the mitigation measures and commitments in place above, will seek to avoid and/or reduce the unlikely impact as far as possible.

I therefore agree with the conclusion that a well blowout does have the potential to significantly effect the environment, however, mitigation measures and commitments will be in place to reduce the risk of a well blowout occurring, to as low a risk as possible.

Decision on Conditions to the agreement of the grant of consent

No conditions should be attached to the agreement to the grant of consent.

Recommendation

I have set out above my conclusion on the significant effects of the project on the environment and the conditions that should be attached to the grant of consent.

I recommend that the Secretary of State should agree to the grant of consent for this project because there are no significant effects on the environment.

[Redacted signature]

Date 22 August 2023

Offshore Petroleum Regulator for Environment and Decommissioning
For and on behalf of the Secretary of State for Energy Security and Net Zero

Agreement decision

I accept the recommendation for the reasons given.

On behalf of the Secretary of State, I therefore agree to the grant of consent.

[Redacted signature]

Date 22 August 2023

Offshore Petroleum Regulator for Environment and Decommissioning
For and on behalf of the Secretary of State for Energy Security and Net Zero.