



**Offshore Petroleum Regulator
for Environment & Decommissioning**

**Corallian Energy Limited
Colter (98/11-E) Appraisal Well
Environmental Statement Summary**

To: Jonathan Ward

From: Victoria Crossland

Date: 18 September 2018

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| ES Title: | Colter (98/11-E) Appraisal Well |
| Developer: | Corallian Energy Limited |
| Consultants: | Orbis Energy Limited |
| OGA Field Group: | Exploration |
| ES Report No: | W/4207/2017 |
| ES Submission Date: | 22 December 2017 |
| Block No: | 98/11 |
| Development Type: | Appraisal well |

Project Description

Corallian Energy Limited (Corallian) submitted an Environment Statement (ES) to support an application to drill an offshore appraisal well in Block 98/11 in the English Channel. The proposed well is located in Poole Bay, approximately 6 kilometres (km) south of Bournemouth and east-northeast of Studland on the Dorset coast, and is within UK territorial waters.

The proposed well (98/11-E) is an appraisal of the 98/11-3 Colter prospect discovery drilled by British Gas and BP in 1986. The intention is to drill a vertical well from an offshore location to target two horizons where oil was detected during previous drilling operations in the area, located between 1,100 and 1,640 metres (m) below the seabed. It is not technically feasible to drill the required well from an onshore location.

A jack-up mobile drilling unit (MoDU) will be used to drill the well, with operations planned to commence in early November 2018. It is anticipated that the MoDU will be on location for up to 45 days. The well will not be flow tested (i.e. no reservoir hydrocarbons will be flowed to the surface), but a check-shot seismic survey will be undertaken to provide further information about the potential reservoir. Following completion of the proposed operations the well will be permanently plugged and abandoned leaving no infrastructure on the seabed.

Regardless of the outcome of the appraisal, Corallian has no plan to return to the offshore location. If economically viable quantities of oil are discovered, Corallian would propose to develop the field via extended reach drilling from onshore facilities. Although unsuitable for appraisal, a horizontal section drilled through a reservoir produces oil more efficiently than

several vertical wells and would therefore be the best development option.

Any future development of the prospect would be the subject of a separate consent and is not assessed within the ES.

Key Environmental Impacts

The ES identified and discussed the following key issues as having the potential to result in an environmental impact:

- Physical presence of the drilling rig and support vessels, including seabed disturbance relating to the footprint of the MoDU;
- Landscape, seascape and visual effects;
- Marine discharges, including MoDU stabilisation materials, drill cuttings, water-based drilling mud and cement;
- Atmospheric emissions;
- Underwater noise relating to the drilling operations, the check-shot seismic survey and vessel movements; and
- In air noise relating to well operations, vessel operations and helicopter flights.

Key Environmental Sensitivities

The ES identified the following key environmental sensitivities:

Fish: The proposed well location is within a spawning ground for cod, Dover sole, lemon sole, sea bass, sandeels, sprat, thornback ray, undulate ray and common cuttlefish. Black sea-bream are also known to move into the eastern Channel in spring (from offshore waters in the western Channel) to spawn and spend the summer months in coastal feeding grounds. In addition, the area is a nursery ground for black sea-bream, dab, lemon sole, plaice, sea bass, sole, horse mackerel, mackerel, tope shark, thornback ray, undulate ray and common cuttlefish, and juveniles of these species are therefore likely to be present in the area. However, the spawning and nursery areas are extensive, and the proposed operations are therefore unlikely to have any significant impact on any of these species. There are also resident populations of both short-snouted and long-snouted seahorses found in seagrasses in sheltered areas such as Poole Harbour and the Solent, and Studland Bay is known to be an important site. Whilst the short-snouted seahorse may utilise a variety of other habitats and have been observed moving across open silt and sand, the long-snouted seahorse is noted to need cover (whether by weed or rock) and is seldom found in open water. However, neither species is recorded further offshore and no adverse effects on the populations are anticipated. Scheduling the drilling operations during the winter months will also minimise impacts on migratory fish.

Seabirds: The English Channel is important for foraging and migrating seabirds, and the proposed well location is within the boundary of the Solent and Dorset Coast potential

Special Protected Area (pSPA), which is being considered for designation because of internationally important populations (more than 1% of the UK breeding population) of common tern, Sandwich tern and little tern. The other main seabirds found in the area are gulls and fulmars (present throughout the year), auks (most likely guillemots and razorbills, with highest numbers in winter and spring) and gannets (highest numbers in summer). Notwithstanding the presence of these species, seabird sensitivity to oil pollution within the vicinity of the proposed well is assessed to be low throughout the year, and appropriate mitigation measures will be put in place to prevent accidental spills that could have a significant impact on seabirds. An approved Oil Pollution Emergency Plan (OPEP) detailing those measures will be required for the proposed drilling operations.

Protected habitats: In total, there are 58 marine and coastal protected areas within the Portland to Solent area, made up of 11 Special Conservation Areas (SACs), five (5) Special Protected Areas (SPAs) and one (1) potential SPA (pSPA), three (3) Marine Conservation Zones (MCZ) and three (3) recommended MCZs (rMCZ), three (3) Ramsar sites and 32 Sites of Special Scientific Interest (SSSIs). The proposed well is located within the boundary of the Solent and Dorset Coast potential Special Protected Area (pSPA), is approximately 8.5 km from the River Avon SAC (designated for sea lamprey and Atlantic salmon) and 44 km from the River Itchen SAC (also designated for Atlantic salmon). A Habitats Regulations Assessment (HRA) was therefore undertaken by BEIS OPRED, as the competent authority, which concluded that the proposed well would not have a significant effect on the qualifying species or habitats, either alone or in-combination with other plans or projects, and that the proposed operations would not have an adverse effect on the integrity of the relevant sites.

Protected species: Coastal waters from Cornwall to Dorset support a discrete resident population of bottlenose dolphins, with year-round sightings, and research suggests that this may be an important feeding and nursery area for this species. Other cetaceans recorded and likely to be present in this area include the common dolphin, harbour porpoise, long-finned pilot whale and minke whale. Local biodiversity records also indicate that fin whales, killer whales, northern bottlenose whales and Risso's dolphin have been recorded in the area, but only in very low numbers. Although both harbour and grey seals are sighted along the Dorset coast throughout the year, there are no major colonies present and there is very little usage of the area by either species. Seals are therefore only likely to be infrequent visitors to the proposed well location. It is concluded that the proposed operations are unlikely to result in any significant disturbance or any other adverse impacts on marine mammals.

Landscape, seascape and visual receptors: Relevant landscape planning designations within the Zone of Theoretical Visibility (ZTV), within both the core 20 km landscape and seascape visual impact assessment study area and an extended 35 km study area (where appropriate), include the New Forest National Park, the Dorset Areas of Outstanding Natural Beauty (AONB), the Isle of Wight AONB, the Cranborne Chase and West Wiltshire Downs AONB, the Dorset and East Devon Coast World Heritage Site, the Purbeck Heritage Coast, the Tennyson Heritage Coast, the Hamstead Heritage Coast and seven (7) Registered Historic Parks and Gardens. A number of visual receptor groups were also identified within the core 20 km study area, including residents of and visitors to coastal settlements, the users of coastal and long-distance footpaths, visitors to tourist attractions and the users of

recreational watercraft and commercial vessels. Although the MoDU will be located in an area where there are a number of relevant designations the effects on the landscape and seascape and are not considered to be significant due to a combination of factors, namely the timing of the proposed operations, the small area occupied by the MoDU and the short-term nature of the deployment.

Other users of the sea: The majority of fishing vessels operating in this area are under 10 m in length. They are likely to use both static gears (including potting and netting) and mobile gears (including trawls and dredges), and landings are dominated by shellfish species. Automatic Identification System (AIS) data indicates moderate fishing vessel activity in the area with some vessels actively fishing and others steaming on passage. Chartered angling vessels are also known to be active within Poole Bay. Major ports in the vicinity of the proposed well location include Southampton, approximately 41 km to the northeast, and Portsmouth, approximately 56 km to the northeast. A number of smaller harbours and bays serving recreational vessels are also situated along the coastline adjacent to the proposed well location. A significant number of recreational vessels are likely to pass in close proximity to the proposed well location, and Poole Bay is a popular area for racing events, particularly during the Easter and summer periods. Appropriate navigational controls will be in place, including a 500 m exclusion zone around the MoDU, notifications will be issued to local fishermen, marinas and recreational clubs, and a Fisheries Liaison Officer (FLO) will be appointed for the project, and it is not anticipated that there will be any significant impact on other users of the sea.

In-combination, cumulative and transboundary effects: No significant in-combination, cumulative or transboundary effects are anticipated.

Consultation

The Joint Nature Conservation Committee (JNCC), Natural England (NE), Historic England (HE), the Marine Management Organisation (MMO), the Environment Agency (EA), the Maritime and Coastguard Agency (MCA), Trinity House (TH), the Centre for Environment, Fisheries and Aquaculture Science (Cefas) and relevant Local Authorities (LAs) were consulted on the proposals. The Health and Safety Executive (HSE) was also notified of the proposals. The ES was also subject to public notice.

JNCC: Raised concerns regarding the noise modelling undertaken to assess the potential impacts of the check-shot survey.

NE: Requested further information in relation to the noise modelling undertaken to assess the potential impacts of the check-shot survey and the modelling undertaken to assess the potential impacts of the drill cuttings discharge. They also suggested that most of the risks to sensitive species could be reduced if operations were carried out between September and December.

HE: Noted that there were no wrecks identified within the baseline survey area but recommended that any further survey data should be assessed by an accredited maritime archaeologist.

MMO: Requested that consideration should be given to the timing of operations to avoid the spring sole fishery, and that the MoDU navigation routes and proposed drilling location should be cleared of any static fishing gear in advance of the proposed operations. They also recommended that an experienced Fisheries Liaison Officer (FLO) should be employed.

EA: Raised significant concerns relating to the potential impact of underwater noise from the check-shot survey on migratory fish.

MCA: Raised concerns about the high volume of recreational vessels in the area between April and September, especially considering the number of vessels without an Automatic Identification System (AIS).

TH: Required that the MoDU should comply with standard navigational marking requirements.

Cefas: Confirmed that they were content with the information provided on the use and discharge and chemicals but would expect to receive more detailed information at the offshore chemicals permitting stage.

HSE: Did not raise any objections.

A large number of comments were received from the Local Authorities and from the general public in response to the public notice, raising concerns relating to the visual impact; the potential impact on tourism and leisure activities; the potential impact on commercial and recreational fishing, including impacts on migratory fish species; the potential impact on local seahorse populations; and the potential impact of a major oil spill.

Further Information

Corallian was requested to provide additional information to address issues raised during the consultation and the internal BEIS OPRED review. This included:

- Clarification of technical issues, including the basis for the vertical appraisal well, the proposals for cuttings containment during drilling of the reservoir section of the well and the justification for the check-shot survey;
- Additional noise modelling;
- Additional information relating to the cuttings discharge modelling
- Additional information relating to potential water quality effects;
- Additional information relating to the seahorse populations distribution; and
- Additional information relating to oil spill response measures.

Corallian was also requested to update the Mitigation Measures and Commitments Register included in the ES, to add the key mitigation measures agreed with BEIS OPRED during the ES review.

The additional information received from Corallian on 17 August and 4 September 2018 satisfactorily addressed all the outstanding issues raised during the consultation and the internal BEIS OPRED review. Corallian also provided an updated Mitigation Measures and Commitments Register and a copy is appended to this document.

Key Mitigation Measures (including Environmental or Monitoring Conditions)

Corallian originally hoped to undertake the drilling operations during spring, and there were significant concerns in relation to both landscape and seascape impacts and potential effects on migratory fish. Rescheduling the proposed operations until late autumn (see agreed Commitment 1a) has significantly addressed these concerns.

Corallian originally planned to discharge all the drill cuttings generated during the drilling operations, and there was a significant concern in relation to discharging the cuttings from the reservoir section as they could be contaminated with reservoir hydrocarbons. Agreement to contain the contaminated cuttings generated whilst drilling through the reservoir section and shipping them onshore for treatment and disposal (see agreed Commitment 5e) has addressed this concern.


All activities will be undertaken in accordance with the measures and commitments detailed in the Mitigation Measures and Commitments Register and following best industry practice. The measures and commitments are considered sufficient to negate the requirement to attach conditions to the acceptance of the ES but, where appropriate, they could be enforced in relevant permit conditions.

Determination

Following consideration of the ES, the responses received from consultees and the general public and the additional information provided by Corallian, BEIS OPRED is satisfied that the proposals will not have a significant adverse impact on the receiving environment or the living resources it supports, or on any protected habitats or species or other users of the sea.

Recommendation

BEIS OPRED is content that there are no valid grounds for objecting to the proposals and agrees to the issue of the necessary consent by the Oil and Gas Authority (OGA). This agreement is not subject to the inclusion of any specific environmental conditions in the OGA consent.


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Jonathan Ward
Director, Environmental Operations
BEIS OPRED

23/10/18
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Date

Table 1: Mitigation Measures and Commitments Register

| Ref | Theme | Mitigation Measure / Commitment |
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| 1 | Physical Presence | <ul style="list-style-type: none"> a. The proposed drilling operations will be scheduled during the winter, with a target spud date of 1st November 2018. b. The crew of the ERRV will be experienced in traffic monitoring duties and will be briefed on the shipping and recreational vessel levels in the area. Additional watchkeeper(s) will be on ERRV to monitor vessel traffic to assist regular crew; c. The ERRV will broadcast on a regular basis the details of the drilling operation and location of the MODU to inform passing vessels before they encounter the MODU. This will allow vessels to alter course with minimal effect on navigation; d. The MODU will be fitted with an AIS transceiver in order for vessels to observe the MODU and nature of its activity on their AIS; e. The main operators of ships passing in proximity to the proposed 98/11-E well location will be provided with advanced notice of the drilling operation; f. A collision risk management plan will be developed for the proposed drilling operations to record the pre-planning measures taken to minimise the risk of vessel collision, and to define the guarding role of the ERRV whilst on location; g. Reporting of the rig move will take place in line with the requirements of Part 4a of the Energy Act and HSE Operations Notice 6 guidance. This includes informing the MOD Hydrographer and Maritime and Coastguard Agency. This will ensure details of the MODU location are distributed via Notices to Mariners, Navtex and NAVAREA warnings, as well as to the appropriate Maritime Rescue Co-ordination Centre (MRCC). Local Notices to Mariners are issued by the Poole Harbour, details of the operation can be added to Local Notices which can then be issued by the Harbour to local stakeholders; h. Notification of the drilling operation will be made to Kingfisher Information Services two weeks prior to the drilling operations commencing to allow time for details of the operation to be issued to fishing vessels in the area; i. Recreational clubs and marinas in the area will be given advance notification (local notices/posters) of the proposed drilling operations to help ensure their users are aware and can plan their routing and activities accordingly. Appropriate online notifications will also be explored; j. Real time data (AIS and Radar) will be recorded whilst the MODU is on location to provide evidence in event of near miss or incident; k. The Southern IFCA will be kept informed as well planning progresses; l. An onshore FLO will be appointed to maintain good communication with local fisheries and co-ordinate activities throughout the proposed drilling operations; m. Standard lighting on MODU and support vessels will be kept to a minimum, as far as practicable, to minimise the impact of artificial lighting on birds, with considerations for marine navigation and health and safety of offshore workers. |
| 2 | Seabed Disturbance | <ul style="list-style-type: none"> a. Cuttings / mud cleaning equipment will be utilised to ensure optimal cuttings cleaning prior to discharge; b. Recovered WBM will be reused / re-circulated where practical; c. Cuttings generated whilst drilling through the payzone will be contained, subject to oil shows being recorded through reservoir objectives. d. When selecting the final well location the <i>S. spinulosa</i> aggregations located in the southeast the Colter survey area will be avoided so that the MODU spud cans and, if required, any stabilisation material is not deposited on top of these features; e. Any stabilisation material deposited will be made up from inert rock/gravel; f. The mass and size of any stabilisation material deposited will kept to the minimum necessary in order to achieve the required MODU stabilisation. |

| Ref | Theme | Mitigation Measure / Commitment |
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| 3 | Noise | <ul style="list-style-type: none"> a. Follow JNCC protocol for minimising the risk of injury to marine mammals from geophysical surveys (August 2017), e.g. use of MMOs; b. The proposed drilling operations will be scheduled to be undertaken during the winter, with a target spud date of 1st November 2018, thereby avoiding the period during which the number of terns within the Solent and Dorset coast pSPA is at its highest; c. Recreational diving clubs and businesses in the area will be given advance notification of the proposed check shot survey to help ensure their users are aware and can plan their activities accordingly; d. All helicopter trips will be carried out in accordance with the requirements of the Basic Aviation Risk Standard, Offshore Helicopter Operations Safety Performance Requirements (Flight Safety Foundation, 2016); thereby ensuring appropriate clearance from areas of known bird activity and, as far as possible, existing flight paths from Southampton Airport will be used to minimise the disturbance corridor for onshore/coastal bird species. |
| 4 | Atmospheric Emissions | <ul style="list-style-type: none"> e. Use of fuel oil with a sulphur content of no more than 0.1% in accordance with MARPOL and UK regulatory requirements; f. Vessels and contractors will have UK/International Air Pollution Prevention (UKAPP/IAPP) Certificates; g. As part of the contractor selection processes, the MODU and vessel contractors will be required to demonstrate that they have control processes in place to minimise the environmental impacts (i.e. maintain equipment); h. All combustion equipment will have a maintenance programme and will be tested regularly; i. All refrigeration and air-conditioning systems, heat pumps and fire-protection equipment will have a maintenance programme and will be tested regularly. This program will aim to prevent leaks of controlled substances (i.e. halons, CFCs, HCFCs and F-gases) and adequate repairs of detectable leakages will be undertaken as soon as possible. |
| 5 | Marine Discharges | <ul style="list-style-type: none"> a. As required under the Offshore Chemicals Regulations 2002 (as amended), the well operator will undertake a full CHARM assessment of the proposed chemicals to be used and discharged during the proposed drilling operations, which will be fully detailed within the chemical permit application submitted to OPRED in advance of the proposed drilling operations (refer to Section 2). As part of chemical selection and assessment process, less hazardous alternatives will be sought in preference for any chemicals identified to be high risk (e.g. those with substitution warnings); b. The use of cuttings / mud cleaning equipment will ensure optimal cuttings cleaning prior to discharge; c. Recovered WBM will be reused / re-circulated where practical; d. WBM will be mixed offshore to ensure that only what is required is used; e. Cuttings generated whilst drilling through the payzone will be contained, subject to oil shows being recorded through reservoir objectives. f. Black (sewage) and grey water will be collected on board the MODU and treated using an approved sewage treatment plant to meet the requirements of the MARPOL Convention before discharge to sea; g. The MODU and vessels will be fitted with closed drainage containment and monitoring systems in all environmentally critical areas as part of their specification; h. Good housekeeping standards will be maintained on the MODU and vessels. |
| 6 | Accidental Releases | <ul style="list-style-type: none"> a. Liquid storage areas and areas that might be contaminated with oil will be segregated from other deck areas; b. Permanent drip trays will be located under process plant, pumps and vessels (on grated decks); c. Bunding or additional containment will be provided around plated areas beneath equipment with significant hydrocarbon inventories; |

| Ref | Theme | Mitigation Measure / Commitment |
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| | | <p>d. Chemicals will be stored in bunded areas where any spillages can be routed to the closed drainage system;</p> <p>e. Chemical, utility and fuel storage tanks will be equipped with alarm systems and procedure will be in place to minimise and prevent spills overflowing these storage tanks;</p> <p>f. Small spill kits will be on board the MODU to clean up deck spills and prevent spilt hydrocarbons and chemicals from reaching the sea;</p> <p>g. Non-return valves will be installed on transfer hoses and hoses to be tested and inspected as a part of a regular maintenance programme;</p> <p>h. Bunkering procedures will be put in place to include measures such as transfer operations to be supervised at all times from both the supply vessel and MODU;</p> <p>i. Crews will be adequately trained, supervised and regular exercises held to contain and clean-up deck spills;</p> <p>j. Routine equipment maintenance programme will be in place with specific emphasis on environmentally critical equipment;</p> <p>k. Chemical will be effectively managed to endeavour to reduce the volumes required and therefore the frequency of bunkering;</p> <p>l. Floating hoses will be used;</p> <p>m. Where feasible, bunkering operations will be undertaken in daylight and in good weather conditions.</p> <p>n. Shallow gas survey to be undertaken prior to drilling operations commencing;</p> <p>o. Crews will be adequately experienced, trained in well control techniques and supervised;</p> <p>p. Weighted drilling fluids will provide the primary barrier and the downhole pressures will be carefully controlled and monitored;</p> <p>q. The secondary barrier will be the BOP which will be regularly maintained and tested;</p> <p>r. Well design and construction will be reviewed by an independent well examiner;</p> <p>s. Safety and Environmental critical elements related to drilling operations will be identified, and a suitable maintenance and testing schedule applied to each;</p> <p>t. Emergency drills will be held regularly;</p> <p>u. Emergency response plans and equipment will be in place;</p> <p>v. FWM will review spill mitigation measures of all contractors as part of the contractor selection process;</p> <p>w. A Tier 1 vessel dispersant application package will be available on the ERRV;</p> <p>x. A Tier 1 containment and recovery package will be pre-positioned at Poole Harbour throughout the drilling operations.</p> <p>y. Tier 2 / 3 response services including aerial surveillance service and aerial dispersant capability will be provided by Oil Spill Response Limited (OSRL)</p> <p>z. Tier 2 shoreline response equipment and personnel will be provided by Adler and Allan. Equipment on a trailer will be pre-positioned at Hamble with a dedicated stand-by team on call.</p> |
| 7 | Solid Waste | <p>a. Solid waste will be appropriately stored on the MODU and returned to shore for handling in accordance with the Waste Management Hierarchy. Food waste will be returned to shore for disposal in accordance with the requirements of MARPOL Annex V and UK Regulations.</p> |

