

# EXECUTIVE COUNCIL

## RESTRICTED

**Title of Report:** Review of the Environmental Impact Statement produced by BHP Billiton Petroleum (Falklands) Corporation for offshore drilling

**Paper No:** 19/10

**Date:** 28 January 2010

**Report of:** Environmental Planning Officer

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### **1.0 Purpose**

1.1 To recommend approval procedures for an Environmental Impact Statement (EIS) submitted by BHP Billiton.

### **2.0 Recommendation**

(a) That HE the Governor approves the EIS for exploration drilling prepared by BHP Billiton, subject to submission of an Operational Addendum to include details of the drilling contractor, drilling unit, location and number of wells to be drilled, and proposed dates of operation.

(b) To request that the Operational Addendum revisit the Oil Spill Modelling section with specific regard to potential risks to Sea Lion island and Beauchene Island from the Toroa well.

(c) That the Addendum to the EIS is published in the Gazette and be approved by the Mineral Resources Committee.

(d) That the external review undertaken by the Scottish Association for Marine Science and the submission from Falklands Conservation be made available to the public, together with BHP Billiton's response.

### **3.0 Summary of Financial Implications**

3.1 None.

### **4.0 Background**

4.1 In 2007 BHP Billiton Petroleum (Falklands) Corporation acquired an interest in 14 exploration and production licences offshore of the Falkland Islands after signing contracts with Falkland Oil and Gas Limited. BHP Billiton plans to

drill two exploration wells (Loligo and Toroa) in the PL028 and PL015 licence areas. The proposed wells lie to the east and south-east of the Falkland Islands at a distance of 215 kms (Loligo) and 107 kms (Toroa) from the nearest landfall.

- 4.2 Towards the end of 2009 the Corporation submitted an Environmental Impact Statement (EIS) which provides an assessment of the potential environmental impacts associated with the proposed drilling, together with mitigation and management measures and a description of any residual impacts to the environment. The assessment utilises a study of the baseline environment, together with a description of the proposed operations, in order to assess the risk of impacts occurring.

## **5.0 Summary of the EIS**

- 5.1 It is likely that the proposed exploration wells will be drilled using a semi-submersible drilling rig with anchors. Start dates for drilling the wells will be determined when a suitable rig has been secured. Operations at the well sites are expected to last up to 75 days and water-based muds will be used to drill the wells. Following drilling and evaluation, the wells will be plugged and abandoned.
- 5.2 All chemicals to be used during the drilling have been selected to minimise the potential environmental impacts as much as possible. The vast majority (by volume) of planned chemicals are naturally occurring products (e.g. barite) that are either biologically inert or readily dispersible or biodegradable. Other chemicals are selected based on drilling performance and environment acceptability to ensure low toxicity and high biodegradability.
- 5.3 The macrofauna and benthic environment of the proposed drill areas are considered to be relatively homogeneous with no habitats of significance found during surveys.
- 5.4 While there are some significant fisheries interests on the landward side of the licence area, the proposed drilling locations do not contain interest for the key commercial target species. Similarly, the area is not considered to be of high sensitivity for cetaceans or of major significance for any of the recorded seabird species, although both may migrate through the area.
- 5.5 The results of the environmental impact assessment of the drilling programme indicate that there are potential impacts which relate to waste management.
- 5.6 The source of potential impacts include drill cutting disposal, the risk of large offshore and near-shore oil spills, international transfer of solid and hazardous wastes and use of resources (i.e. fuel and potable water) should they be sourced from the Falklands. All other sources of potential impacts were deemed to be of low significance.
- 5.7 The EIS tests three spill modelling scenarios for each well applying different metrological and ocean conditions:

- Constant 16 knot on-shore wind
  - Typical weather conditions with prevailing current
  - Typical weather conditions with atypical currents.
- 5.8 With a constant 16 knot on-shore wind the spill plume would make contact with the south coast of the Falkland Islands in about 80 hours (Toroa) or 160 hours (Loligo). However, data analysis suggests that it is very unlikely that the wind would blow in the required direction for anything like the required time. Under the other two scenarios the oil would disperse offshore and there would be a zero percent chance of the spill beaching. This scenario also discounts the prevailing ocean currents which move in a broadly north easterly direction, away from the Falkland Islands.
- 5.9 The EIS therefore concludes that it is not expected that a spill from either well would beach on the Falkland Islands or on any of the landmasses in the general area.
- 5.10 The potential impacts of the proposed drilling activity will be mitigated in a number of ways, including:
- Maintaining a spirit of openness and ongoing consultation with the Government, the public and key stakeholders.
  - Applying international best practice and established UK standards to operations, particularly in offshore chemical use and emissions reporting (Environmental Emissions Monitoring System, EEMS).
  - Using water based drilling muds and low toxicity chemicals approved under the UK Offshore Chemical Notification Scheme.
  - Implementing a high level of environmental management offshore and applying environmental procedures for potentially impacting operations (chemical storage, bunkering, waste handling, maintenance programmes, seafloor surveys etc.).
  - Establishing and implementing a project specific Oil Spill Contingency Plan and carrying out training of key personnel in spill response. BHP Billiton is a member of Oil Spill Response Ltd which provide outside assistance in the case of a major spill.
  - Implementing a waste management plan to minimise the quantity of waste going to landfill, prevent unsuitable disposal of waste, maximise the re-use of materials and establish the Best Practicable Environmental Option for storage, treatment, transfer and disposal of waste materials.
  - Collecting and sharing environmental data wherever possible, for example, in offshore sightings, seabed surveys and meteorological and oceanographic conditions.

5.11 The EIS concludes that, despite the high sensitivity and international importance of the Falkland Islands' waters, there is clear dedication to carrying out these operations to a high environmental standard. It goes on to state that "given the current operational commitments and proposed mitigation measures, it is considered that the proposed operations can be undertaken without significant impacts to the Falkland Islands' environment".

## **6.0 Review of EIS**

6.1 In order to enable me to assess the quality of the EIS I decided to engage an external reviewer. Previous reviews undertaken in 2009 were undertaken by the Institute of Environmental Management and Assessment (IEMA) in the UK. This time, however, IEMA informed me that, due to staffing levels and other commitments, it would be unable to meet the timetable for completing the work. Instead, the Scottish Association for Marine Science (SAMS) was engaged. SAMS undertook similar reviews associated with the 1998 offshore drilling round.

6.2 SAMS submitted its review just before Christmas 2009 and a copy was duly sent to BHP Billiton. The consultants acting on behalf of BHP Billiton have made a full response to all the points raised by SAMS, and also by others who have commented on the EIS.

6.3 In its review SAMS has made a number of comments which it believes, if accepted, would significantly improve the EIS. Some of these concern typos and other corrections, including the use of correct scientific names and geographical features, and examples in which the EIS could be improved. The majority of these comments have been accepted by BHP Billiton and will be corrected in future EIS submissions.

6.4 BHP Billiton has also taken the opportunity in its response to undertake further research and put more information into the public domain to address specific points raised by SAMS. The Corporation also acknowledges that, prior to any oil and gas development, further research may be required to expand the limited knowledge base in some areas. It believes that this additional information is not required at present due to the limited duration of the exploration drilling programme.

6.5 The following section highlights the key areas commented upon by SAMS, and the response by BHP Billiton.

### **Well Clean-up, Testing and Completion**

6.6 SAMS considers that the section on plugging the well before abandonment is inadequate, given the importance of this topic to the overall risks posed by the operation. The report should clearly explain the process for sealing the well. A diagram would be useful and a detailed consideration of the risks and problems should be given.

- 6.7 In its response BHP Billiton does not agree that a detailed plugging description should be provided nor with the statement referring to the level of “overall risk” posed by plugging design and operation. It is only after the formations been evaluated for hydrocarbons potential that a proper plugging design can be formulated. However, the Corporation then goes on to provide an example of plugging which may be appropriate for the Toroa well, including a diagram.

### **Marine Mammals**

- 6.8 SAMS considers that, in its current form, the text on marine mammal occurrence around the target exploration/drilling area contains insufficient information to allow proper conclusions to be drawn on the environmental impacts of any drilling operations. Even where there are few data on distribution in and around the development sites, little is drawn from the known behavioural ecology of marine animals to identify which species are (and are not) likely to make use of this area.
- 6.9 In addition, there are many technical inaccuracies that do not inspire confidence on assessing how sensitive the area is for cetaceans. One example given is the use of sightings from active seismic ships without mentioning the inherent negative biases in sight rates for acoustically sensitive species – which are coincidentally those most likely to be disturbed by the anthropogenic activities at the site. In this regard the SAMS reviewer makes specific mention of Southern Bottlenose Whales at the Loligo site.
- 6.10 In its response BHP Billiton concedes that little is known about the populations, distributions and habitats of marine mammals in the waters of the Falkland Islands. It then goes on to provide additional data on species distribution. With regard to seismic surveys, the Corporation states that marine mammal observations and mitigation measures were employed in accordance with guidance published by the JNCC and accepted as best practice in UK waters and elsewhere. The conclusion is that overall the licence areas are not considered to be of high sensitivity for marine mammals.

### **Seabird Vulnerability**

- 6.11 SAMS notes that the EIS draws heavily on published data, notably a study by White et al. in 2002. This study relied on the use of Falklands fishery patrols vessels as bases for observers but, as SAMS point out, the location of transects are skewed both spatially and temporally towards the western and southern areas of the Falklands EEZ. This is because most of the fishing takes place in this region. The result of this is that much of the area proposed for exploration has had very little survey work carried out.
- 6.12 SAMS also point out that, in relation to penguin information, at-sea survey observations are very difficult due to the short time they spend on the surface when foraging and the difficulty of observing birds in even a moderate sea state. Therefore this should not be seen as a comprehensive method of distribution assessment for penguins.

- 6.13 In its response BHP Billiton notes the short-comings of the data sources used in the EIS. Due to the short drilling time and low spill risk associated with this project, it considers that impacts arising as a result of the exploration will be short-term and will ultimately have a negligible impact on the environmental characteristics of the area. It also points out that an addendum to the EIS will be produced detailing the impacts relating to the proposed drilling months for the exploration wells.

### **Satellite Telemetry and Geolocation Studies**

- 6.14 SAMS report that the EIS has not taken into account any satellite telemetry or geolocation studies that have been conducted on seabirds that breed in the Falkland Islands (such as King Penguin, Rockhopper Penguin, Black-browed Albatross and Falkland Skua). A pooled assessment of observation and satellite data would give the maps in section 5.3.10 considerably more validity.
- 6.15 In its response BHP Billiton has conducted and submitted an additional review of relevant literature. Where possible within the EIS Addendum, data on seabird vulnerability will be supplemented with available data from the various satellite and geolocation tracking devices that have been undertaken in the Falkland Islands.

### **Social and Economic Environment**

- 6.16 SAMs has drawn attention to the distribution of fish catches for *Loligo gahi* and *Micromesistius australis* which show a clear boundary along an axis adjacent to the licence area. It speculates that this might relate to a number of factors such as bathymetry, an oceanographic front or be a feature of the fisheries themselves e.g. the distance that is economically viable for fishers to travel to fishing grounds. Unfortunately the catch maps are not overlaid with bathymetric or any other data which might explain this.
- 6.17 In its response BHP Billiton conclude that the boundary shown adjacent to the licence area for *Loligo* catch is due to water depth, although also influenced by the 'Loligo box' fishing restriction introduced by FIG.

### **Anchoring**

- 6.18 The EIS states that "... the benthic survey results show a homogenous environment with no habitats of conservation value". While SAMS accepts that this may be justified for the Toroa area, it takes issue with this being applied to *Loligo*, an area which it believes is far from homogenous and may hold some species of conservation value.
- 6.19 In its response BHP Billiton have provided revised text to clarify the impact of the anchoring pattern at the *Loligo* site.

### **Deposition of drill cuttings**

- 6.20 SAMS considers that the modelling of the drill cuttings is simplistic and gives little confidence and believes that, due to turbulence, a more realistic scenario would likely spread the cuttings over a wider area.
- 6.21 In its response BHP Billiton acknowledge that a tidal database could have been constructed, which would have created a background tidal curve characteristic of the area, but believes that it would have limited value and would likely not reveal results vastly different from those already presented in the EIS.

### **Noise and Vibration**

- 6.22 SAMS challenges the conclusion that there would be negligible impacts from noise and vibration due to the lack of data on fish spawning in the licence area.
- 6.23 In its response BHP Billiton state that both well sites are outside of the Loligo nursery areas and are too deep for southern blue whiting. The Corporation acknowledges the lack of data regarding where other fish species might spawn in relation to the license sites and states that, should a development scenario occur in the future, further research will be considered. It considers, however, that the impacts to fish spawning from the proposed drilling programme will be negligible given the type of disturbance that may be experienced.

### **Waste**

- 6.24 SAMS has said that sewage is not discussed in the relevant section and should be.
- 6.25 BHP Billiton response is that a marine sanitation device will be on the rig to treat sewage effluent which will be discharged to sea. All discharges will be treated and discharged according to the MARPOL Convention. The EIS also states (as with previous statements) that a tailored project waste management plan will be developed and implemented.

### **Drilling Operations**

- 6.26 In its response BHP Billiton has re-written a section on the effects of oil pollution to address the points made by SAMS on fish. The Corporation makes the point that the likelihood of a spill during the exploration programme is highly unlikely.

## **6.0 Public Consultation**

- 6.1 The EIS was placed on deposit for 42 days during November and December 2009. Only two comment were received – one from Falklands Conservation (FC) and one from a private individual. The latter did not raise any specific issue regarding the EIS.
- 6.2 The points made by FC are:

- Generally the EIS is well structured and many thematic areas have been well scoped and adequately addressed. However, several key sections remain incomplete, making it difficult to assess the potential project impact, particularly as it relates to birds.
- A through assessment is not possible until the timings of the operation are known, as the associated risks to bird populations will vary considerably by season. FC also notes that the Oil Pollution Emergency Plan (OPEP) and Emergency Response Plan (ERP) have yet to be finalised.
- Without the Addendum to the EIS specifying the timing of the project, plus the OPEP and ERP being submitted, FC does not believe that the EIS fulfils the obligations regarding EIAs in accordance with the Offshore Minerals Ordinance 1994.
- Analysis of impacts – looking at the JNCC maps with spill plume modelling suggests that, at least for the Toroa site, sensitive times of the year may include the much longer period July – February.
- FC would wish to see a single map showing the location of the drill sites, the sensitivity maps and the spill modelling in order to more easily visually gauge the potential environmental risks.
- Mitigation measures – as a crude spill event would potentially have the most serious impacts on seabirds and the marine environment, the Addendum to the EIS should articulate how these measures and plans will remove or reduce this risk to an acceptable level.
- Cumulative impact – once the timing of operations is decided, a more robust cumulative assessment should be included in the Addendum, as it does not currently evaluate the risk of spill events from more than one project occurring simultaneously. Two such events could overlap spatially and lead to cumulative effects.

6.3 By way of reply, BHP Billiton has referred back to its response made to SAMS where similar issues were raised, and also re-stated its commitment to produce an Addendum to the EIS once more detail about the drilling programme is known.

6.4 With regard to the final point made by FC (cumulative impact assessment) the Corporation has said that the current timing of the proposed drilling campaign is such that a single rig will be brought out to the Falkland Islands resulting in only one well being drilled at any one time. Given this, and the distance between the various wells which may be drilled in 2010, cumulative impacts are anticipated to be negligible. If, however, there was a possibility that drilling activities for the various wells overlapped (e.g. a second rig was deployed) cumulative impacts would be fully addressed within the EIS Addendum.

## **7. Review Conclusion**

- 7.1 Unlike the reviews undertaken by IMEA reviews, SAMS has not graded the individual sections of the EIS to provide the reader with an indication of the quality of the documentation. A direct comparison with other EIS's is not therefore possible. Overall SAMS commented that in general it was disappointed with the standard of the EIS. This conclusion is not dissimilar from the earlier assessments from IEMA for the Desire and Rockhopper EIS's which had been considered to lie between being "Satisfactory despite omissions and inadequacies" and "Parts well attempted but must as a whole be considered unsatisfactory because of omissions and/or inadequacies".
- 7.2 SAMS identified a number of deficiencies in the EIS which the Corporation has sought to deal with by way of a very detailed and comprehensive response, coupled with a commitment to produce an Addendum to flesh out outstanding details, such as the type of rig to be procured, the time of year that the activity will take place and the number and location of wells proposed.. These two actions should raise the document above acceptable minimum standards.
- 7.3 I have one specific additional issue to raise in connection with the oil spill modelling undertaken within the EIS. There seems to be a weakness in the analysis for the Toroa well which appears to take the south coast of East Falkland as being the closest land mass, when in fact both Sea Lion Island and Beauchene Island are closer. Both have significant wildlife interest and, although it remains unlikely that either would be affected by a spill, I recommend that, given their importance, BHP Billiton should be asked to review its modelling assumptions in the Addendum to confirm that this is indeed the case.
- 7.4 The key overall question is whether the external review undertaken by SAMS or comments received from third parties have identified any critical concerns that should preclude the proposed drilling from going ahead at the present time. Although there are gaps in the environmental baseline data I have seen nothing to indicate that the immediate environment around the proposed drilling locations, the wildlife present in these areas or passing through or indeed the wider environment (e.g. the Falkland Islands) is under any particular threats arising from the proposed drilling operations. On this basis, and subject to the production of a satisfactory Addendum, I recommend that the EIS be approved.

## **8. Mineral Resources Committee**

- 8.1 At its meeting on 14 January 2010 the Minerals Resources Committee considered the EIS, public comments received and the external review undertaken by SAMS.
- 8.2 Members were broadly content with both the Review and response from BHP Billiton, recognising that the Operational Addendum should address any outstanding issues.

**9. Next steps**

9.1 I recommend that HE the Governor approves the EIS for exploration drilling prepared by BHP Billiton, subject to submission of an Operational Addendum. The Addendum to the EIS should be published in the Gazette and be approved by the Mineral Resources Committee.

9.2 It is also appropriate the review undertaken by SAMS and BHP Billiton's response to it both be made available to the public. Falklands Conservation is also content for its comments and response from the Corporation to be made public.

**10. Financial Implications - None**

**11. Legal Implications - None**

**12. Human Resources Implications - None**