



**CONSULTATION UNDER THE TOWN AND COUNTRY PLANNING
(DEVELOPMENT MANAGEMENT PROCEDURE ENGLAND) ORDER 2010**

Applicant: UK Oil and Gas Investments PLC
Planning Application Reference: SDNP/16/04679/CM
Proposal: Appraisal and production of oil incorporating the drilling of one side track well from the existing well (for appraisal), three new hydrocarbon wells and one water injection well, and to allow the production of hydrocarbons from all four wells for a 20 year period.
Location: Markwell's Wood-I Well Site South Holt Farm Dean Lane End Forestside Rowlands Castle West Sussex
Grid Ref: Eastings: 475857, Northings: 113323

This proposal is within the South Downs National Park.

<http://planningpublicaccess.southdowns.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=ODSXV0TU02R00>

Portsmouth Water Response

Thank you for consulting Portsmouth Water on this planning application for the continued development of the oil and gas site at Markwell's Wood.

Based on the groundwater sensitivity and the nature of the proposed works, Portsmouth Water would object to this application until the Groundwater Risk Assessment and Environmental Statement (Section 9.0 - Ground Condition & Groundwater) are revised to include the information below, at which point the company will review its position.

Portsmouth Water is concerned that the application in its current format does not identify all potentially significant effects that the proposed works may have on groundwater or, how adverse effects will be mitigated.

No site specific data is incorporated in the risk assessment and there have been limited attempts to present the catchment dynamics within the Source Protection Zone 2 of the Havant and Bedhampton Springs. If the Havant and Bedhampton Springs public water supply source is impacted as a result of this application there would be significant effects on the population of the City of Portsmouth and surrounding area.

Overview

Our review of the application focused on the Groundwater Risk Assessment prepared by Hydrock as Appendix 9 of the Environmental Statement¹.

¹ Proposed Markwells Wood Development Groundwater Risk Assessment, Hydrock, Ref: 6/161482/001, September 2016.

Portsmouth Water would welcome ongoing consultation with the applicant to ensure a detailed understanding of the catchment is achieved. We have the following comments in relation to the Groundwater Risk Assessment and Environmental Statement, Section 9.0 - Ground Condition & Groundwater:

Monitoring data has not been used to prepare the groundwater report. This results in a primarily literature-based risk assessment without the benefit of site specific data. We would request that site specific data, including groundwater elevations and water quality results, are included in the groundwater risk assessment to enable a thorough understanding of the potential risks.

Portsmouth Water understand that groundwater monitoring would form part of an Environmental Permit should this development gain the appropriate permissions however, it is important to understand the baseline conditions and, in particular, the catchment dynamics. Without site specific monitoring data, potential risks cannot be understood fully. The information presented in the report, whilst useful, is dated and more recent/relevant groundwater elevation records should be used in forming the conceptual model.

The methodology of the extended well test should be clearly described along with details of how return-water will be managed, stored and treated prior to going off site.

The risk assessment does not mention that the site is located in a Source Protection Zone 2 (SPZ2) for the Havant and Bedhampton Springs public water supply source. SPZs are theoretical catchments that predict travel times of groundwater from the catchment to the source. A SPZ2 estimates that groundwater within the zone would take a maximum of 400 days to reach the drinking water source. There are known solution features (for example sink holes) in the chalk located south of the site making it a particularly sensitive location in terms of pollution risk and disturbance of the groundwater regime. Solution features in this catchment can provide very rapid transmission pathways (in some cases within hours) between water/pollution entering the features and the springs.

The presence of the SPZ2 must be referenced in the report including a section describing and assessing the potential implications of this zone.

The Conceptual Site Model (CSM) does not contain enough detail for the site or catchment to be assessed and we would wish to see additional sources, pathways and receptors considered. The CSM needs to demonstrate an understanding of potential contaminant fate and transport in the catchment. This should reflect the following scenarios and include the likely travel times and resulting concentrations in the event of:

- Catastrophic loss of crude oil from a road traffic accident;
- Loss of crude oil via liner integrity failure – various volumes and depths; and
- Loss at surface of contaminated produced water or crude oil combined with containment failure.

The report and Figure 1 refers to the Lambeth Group as the *Reading Clay*. This is misleading as the Lambeth Group consists of a range of deposits including sands, gravels, silts and clays. It is important to identify the Lambeth Group as a Secondary A Aquifer and not Unproductive Strata (Clay) when presenting the conceptual understanding of the catchment and the sources in it.

Groundwater Risk Assessment

For ease of reference the following comments relate specifically to the headings reported in the Groundwater Risk Assessment.

3.7.2 Groundwater Levels and Flow

The report makes reference to the site being located away from the groundwater flow paths identified by Day (1964). The Markwell's Wood site is located in a dry valley connected to another dry valley that runs from Finchdean to Rowlands Castle, within which the Havant Lavant stream emerges during high groundwater conditions. This is one of the theorized flows paths identified by Day (1964) and therefore should be included in the risk assessment.

4.2 Note on Site Preparation

Both the site and drainage ditches are lined to the point where water discharges off site via a Class 2 Separator. The details of the Class 2 Separator and means of discharge need clarifying. Class 2 Separators typically remove hydrocarbons down to concentrations of 100mg/L therefore some hydrocarbon will be present in the discharge that is going off site. Further information relating to this is required and detailed drawings should be incorporated into the Groundwater Risk Assessment Report.

Please provide details on the HDPE liner and how, when drilling the additional wells, the liner will be penetrated and sealed. This liner is a key mitigation tool and therefore a detailed specification and method statement should be provided.

4.3.5 Mud Programme

Full details of the mud chemistry should be made available to show that all substances in use are non-hazardous.

4.3.6 Circulation Losses

It is noted that circulation losses occurred at 131m and 231m in the Upper Chalk during the drilling of MW-1 in 2010 and that no adverse consequences were reported. It is unclear if there was any monitoring in situ or requisite surveillance during the drilling to understand any potential impacts on the aquifer as drilling progressed. If so this should be referenced and presented in the Groundwater Risk Assessment Report.

There are no design details of the three additional wells, once these become available Portsmouth Water would wish to have the opportunity to comment. Once the details are available we would also like to understand the anticipated water quality of recovered water to be reinjected and the design and methodology of doing so.

4.5.1 Drilling Works

The three additional production wells plus one injection well are proposed to have 13³/₈" steel casing installed to 100m below ground level. The toe of the casing will be installed in the top 50m of saturated Chalk based on a groundwater level of 55mAOD. The top 50m of saturated Chalk is considered to be the most transmissive and therefore we would wish to see the initial casing of 13³/₈" diameter progressed as far as feasibly possible below this level to provide protection to the most transmissive zones.

4.7 Well Abandonment

Prior to a decision being made on the scheme Portsmouth Water would request the design of the well abandonment scheme be provided and approved, in particular, the details of where plugs are proposed, what horizons they will target and how many are anticipated.

4.7.4 Material Durability

All casings and tubing should be tested to the appropriate API Series 5 (tubular goods) standards or specifications and be appropriate to the pressures and conditions under which they are to be deployed.

Portsmouth Water would encourage pressure testing in situ to understand the competence of each well as part of the monitoring schedule. This should be discussed in the mitigation section in the report.

5.0 Conceptual Risk Model

The conceptual risk model should include sources of formation water and the potential for bridging of aquifers during and after completion of the drilling works. This should form part of the risk assessment.

The likelihood of increased turbidity during drilling and operations should also be assessed in the report. It currently states that no known turbidity effects were noted during the drilling of MW-1 however it is not clear if this was monitored at that time.

An additional potential source of pollution is the overturning of lorries/tankers. We are concerned about the subsequent spillage of significant volumes of crude oil or contaminated process water. This risk has a high likelihood given the narrow, winding roads and drainage ditches associated the site; the frequency of such accidents we experience across our area of supply; and the presence of solution features potentially providing very rapid transmission pathways between the accident/pollution incident and Havant and Bedhampton Springs public water supply source. Therefore, the route away from the site should be developed so that it uses the lowest risk roads as practically possible, ideally avoiding groundwater source catchments. An assessment of the potential linkages should be included in the SPR model.

6.0 Risk Assessment and Mitigation

The risk assessment in the report is not clear as the linkages do not correspond with the sources, pathways and receptors defined in Section 5.0. We would request that turbidity and bridging of geological formations and groundwater horizons are also included in the assessment.

Further details of the casing being installed in the Chalk should be provided along with the rationale for the installation depths.

6.3 Off-Site Migration of Contaminated Runoff

Detailed drawings showing drainage and the design and placement of the Class 2 Separator should be incorporated in the Groundwater Risk Assessment Report. We cannot assess the risk without this information.

6.6.3 Production Phase

The volume and design details of the proposed tanks should be included in this section. Details of the construction and pollution prevention measures incorporated are required to assess their suitability. We cannot assess the risk without this information.

7.0 Conclusion

It is not known what provision for storage on site is proposed in the event of storm events and how the off-site discharge (potentially containing hydrocarbons) will be managed. We would ask that details of these are provided as part of the Groundwater Risk Assessment. We cannot assess the risk without this information.

Environmental Statement, Section 9.0 - Ground Condition & Groundwater

Throughout the risk assessment the magnitude of impact on groundwater has been assessed as 'negligible'. We do not agree with this given the potential adverse impact on the Havant & Bedhampton Springs public water supply source. Therefore, we do not accept the results of the risk assessment.

The additional risk identified above for inclusion in the Groundwater Risk Assessment concerning vehicle accidents/the overturning of lorries and tankers needs to be included in the risk assessment.

Portsmouth Water 13/10/2016