

Oil & Gas Developments

Introduction

This Guidance Note is aimed at anyone proposing to develop or run an oil and/or gas facility in Portsmouth Water's groundwater catchments. In the context of this guidance note an oil and gas development refers to any development that includes the exploration of, production, resale, storage or use of oil and gas products on a commercial scale.

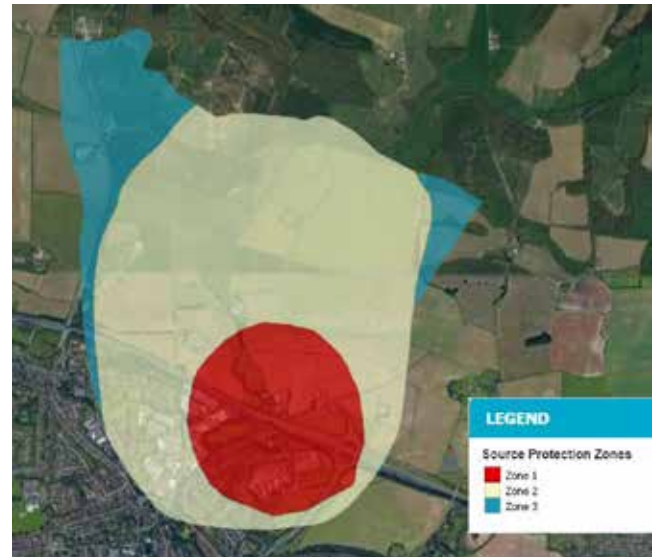
Construction and operational processes can pose significant risks to the environment and this note identifies our key areas of concern in relation to groundwater protection and mitigation.

Information relating to water supply and connection to the Portsmouth Water network can be obtained from our website.

Portsmouth Water

Portsmouth Water has been supplying water to Portsmouth and the surrounding area since 1857. Our customers include a domestic population exceeding 698,000.

Our area of supply extends through South East Hampshire and West Sussex from the River Meon in the west to the River Arun in the east. All our public water sources are reliant on the chalk aquifer of the South Downs, with approximately 85% of our water being directly sourced from boreholes or springs and 15% derived from the River Itchen which itself is groundwater fed.



Our Groundwater Catchments

The groundwater catchments that Portsmouth Water utilise are particularly sensitive to pollution and activities that pose a risk to groundwater quantity and quality. Parts of the catchment are prone to solution features, resulting in rapid travel times for groundwater moving from its source to our abstractions.

Solution features are formed over time in the Chalk as water passes through and dissolves it, forming underground cavities, sinkholes, sinking streams and large springs. Changes in ground or surface water flow can flush out existing sediment-filled fissures and sinkholes, causing the formation of circular cylindrical or conical depressions at the ground surface. These zones have a higher permeability than the surrounding geology and therefore rapidly transmit groundwater and contaminants through them.

Due to the sensitivity of the catchments, Portsmouth Water needs to carefully manage the risks posed by new and existing developments and operations. These risks include the adverse impact on groundwater from fugitive emissions, drainage, importation and recovery of soils, brownfield development and poor environmental management practices on site.

Planning and Permitting

West Sussex County Council and Hampshire County Council are the Mineral Planning Authorities (MPAs) for the areas of land outside the South Downs National Park. The South Downs National Park Authority is the MPA for the National Park. As the MPA they are responsible for determining planning applications for oil and gas developments or 'onshore hydrocarbon extraction'. When the development relates to the boring for or getting of oil and natural gas from shale Portsmouth Water are a statutory consultee in the planning process.

General planning applications relating to oil and gas that require planning permission are determined by the Local Planning Authority within a District or Borough Council.

The oil and gas industry is regulated by several statutory bodies including the Environment Agency (EA), the Health and Safety Executive (HSE) and the Department for Business, Energy and Industrial Strategy (BEIS).

Environmental permits are often required for the development and operation of a site under the Environmental Permitting Regulations 2016 in addition to regulatory approval issued by the HSE and Local Authority. Applicants and operators are encouraged to get environmental advice on their proposals through consultation with the Mineral Planning Authority, Local Planning Authority, the Environment Agency and Natural England prior to commencement.



KEY RISKS

An overview of the 'Key Risks' is presented and should be taken into account at an early stage and understood in the context of a detailed Conceptual Site Model (CSM) and risk assessment. This work may be qualitative or quantitative, depending on the significance and nature of the identified risk and proposed development. At sensitive locations Portsmouth Water will seek assurances that the groundwater catchment and their public water supplies are not at risk from the development/operation and may require site-specific investigations.

A Construction Environmental Management Plan (CEMP) may be required to outline the key environmental processes proposed on site during construction and information on what to do in the event of an incident in line with the applicant's Environmental Management Systems (EMS) policy.

Fugitive Emissions & Environmental Management Systems

On site, during construction and operation, there is the potential for polluting materials to enter the environment as leaks, spills or pollution incidents.

Good housekeeping and a robust EMS will reduce this risk and regular maintenance of plant and machinery on site will ensure best practices are followed.

Bulk storage of chemicals and hydrocarbons (oils) should be carried out in line with any environmental permit conditions where relevant and on impermeable, bunded surfaces in accordance with British Standards.

Pollution prevention measures can include bunding, secondary containment where feasible and an incident response plan including spill kits on site and the training of staff on how to use them. This information should be presented in the EMS and can also form part of any CEMP required under planning.

During operation prevention of fugitive emissions may be addressed by an Environmental Permit; in addition Portsmouth Water would insist on a low permeability engineered barrier to underlie the site with pollution prevention and mitigation measures on all drainage systems.

Fire prevention plans form an important role in mitigating the risks associated with contaminated runoff during fire-fighting. Fire prevention plans are often required under the Environmental Permitting Regulations 2016 and we welcome their inclusion in all oil and gas applications.

The means of conveyance to and from the proposed site as well as the methodology of handling hydrocarbons should form part of the EMS to reduce the threat of collisions and spills.

Ground and surface water monitoring programmes must consider the location and type of Portsmouth Water's supply infrastructure nearby to ensure the programme is protective of our assets. Planning permission and/or permit conditions are likely to require ongoing monitoring of ground and surface waters. We would request, where relevant, that our supply infrastructure is considered in the design stage of any monitoring programme.

These risks should all be considered in the context of the presence of solution features and potentially rapid travel times (Hours) from the site to a Portsmouth Water source.

Drainage & Sustainable Urban Drainage Systems (SUDS)

It is essential to present the proposed drainage methodology of a new oil and gas site early on in the planning application process. There are significant risks to groundwater associated with new surface and foul water drainage systems and the drainage strategy should take into account the specific environmental risks posed by the development and operation.

If site drainage is not controlled under an environmental permit the following should be considered:

Portsmouth Water has a presumption against the discharge of foul and surface water into ground where adequate pollution prevention measures are not in place.

There are areas in the catchment where Portsmouth Water would object in principal to discharging surface/foul water due to the risk of contamination. These locations are in Source Protection Zones (SPZs - see the Government's groundwater protection guides), areas close to our abstractions and areas known to have solution features present.

Portsmouth Water has a presumption against the use of deep bore soakaways for all oil and gas developments. All applications for the construction and installation of deep bore soakaways should be accompanied by an adequate risk assessment demonstrating how the risk to groundwater would be mitigated in the proposed design.

For foul drainage in SPZ1 we require the use of the highest specification pipework and designs for schemes to minimise leakage.

Where SUDS are proposed in sensitive areas to manage surface water, we would welcome being consulted to advise what measures would be appropriate to protect groundwater quality. This may include settlement chambers, separators, syphon heads and regular maintenance and monitoring.

Drainage plans may take the form of Surface Water Management Plans (SWMPs) and these are encouraged to ensure a suitable and reliable drainage strategy is adopted early on and, in particular, during the construction phase of the scheme.



Importation & Recovery/Use of Soils

The sustainable use of soils is influenced by legislation related to waste, national recycling objectives and incentives and UK regulation on waste. The Environment Agency is responsible for enforcing waste management legislation in England and Wales and regulation is currently discharged under the terms of the EU Waste Framework Directive.

The transportation of contaminated soils into the catchment is a concern due to the potential for contaminants to leach into groundwater. Advice should be sought from the Environment Agency on the requirements for importing and using soils on site for changing levels and landscaping.

Brownfield Development & Conceptual Site Modelling

Development of land that is contaminated poses significant risks to groundwater if not carried out correctly. Portsmouth Water considers a phased approach appropriate by starting with a desk study and literature review identifying all potential source, pathway and receptor linkages. The desk study should also include a site walkover and preliminary assessment for the potential presence of solution features.

Based on the findings of this review, an intrusive investigation may be required. In addition to chemical, geological and geotechnical characterisation, the investigation must aim to identify the presence of solution features that act as rapid pathways for pollutants. A risk assessment should be completed incorporating the hydrogeological setting and any contamination identified. This phase is typically followed by an options appraisal and, following approval, remediation and validation testing.

The fundamental basis for all this work is the construction of a CSM.

The CSM should be a dynamic model that acquires more detail as the project evolves. It represents the anticipated site conditions and the interactions between different processes, both natural and man-made. For example the CSM should include what anthropogenic materials will be introduced to the sub surface and assess how these will interact with the natural environment. Site-specific details are likely to be required to inform the CSM for sites in sensitive locations within our catchments.

The CSM is a vital tool to understand the potential risks associated with land contamination and the risks to our water supply from development and operation.

Portsmouth Water may request monitoring as part of a planning permission and will require assurances that the development of land is being carried out in a way that protects groundwater quality.

Without an appropriate, risk-based and approved desk study, site investigation, conceptual site model and risk assessment, Portsmouth Water would object to developments on land that could pose a risk to groundwater.



Useful Guidance

You can read the following guidance and further information by clicking on the links below:

Containment Systems for the Prevention of Pollution

Environmental Permitting Regulations and Guidance

Environmental risk assessment for shale gas exploratory operations in England

Groundwater protection guides covering: requirements, permissions, risk assessments and controls

Groundwater Risk Assessment for an Environmental Permit

Guidance for developments requiring planning permission and environmental permits

Guidelines on the Oil & Gas UK Website

How Safe is your Heating Oil Storage Tank?

Land Contamination: Risk Management

Onshore Oil & Gas Sector Guidance, Version 1

Petrol Filling Stations Guidance on Managing The Risks Of Fire & Explosion (The Red Guide)

Pollution Prevention Guideline 22 Incident Response – Dealing with spills - DRAFT

Pollution Prevention Guideline 3 Use & Design of Oil Separators in Surface Water Drainage Systems

Safety and Environmental Standards for Fuel Storage Sites, Process Safety Leadership Group Final Report

The Borehole Site and Operations Regulations 1995 (BSOR)

The groundwater protection code of practice on how to prevent pollution from petrol, diesel and other fuel tanks.

The SUDS Manual 2015 CIRIA 753 (including the handbook for the construction of SUDS: CIRIA 698)

Acknowledgements

Portsmouth Water would like to acknowledge West Sussex County Council and the Environment Agency for the provision of photographs for this guidance document.

Further Information

Other Portsmouth Water Guidance Notes in this series:

- **Agricultural Developments**
- **Commercial Development**
- **Housing Developments**
- **Minerals and Waste Developments**

For further information please contact Portsmouth Water:

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