

## Appendix 16

### Water Resources

#### Proposal Outline

The applicant has undertaken an assessment of the impact of the proposal on water supplies and surface water runoff or drainage and the consequent impact on flood risk. As a result there are no existing hard surfaces that could impede rainwater from entering the soil or exacerbate surface water flooding. The Site is not located within an area prone to flooding from rivers (the nearest watercourse to the Site is Carr Bridge Brook which is located 250m north).

The construction of the well pad would include the installation of an impermeable plastic membrane to be laid to prevent infiltration from the well pad through the underlying soils and water bodies. A min 300mm thick layer of crushed and compacted stone would be laid on top of the membrane. Ditches would be constructed around the perimeter of the well pad with the outer edge of the ditch raised 50mm above the well pad surface. The ditches would provide the means to collect storm water. The void space in the granular fill, ditches and the 50mm "air freeboard" would provide a storage volume to attenuate drainage flows from the site.

An isolation valve would be fitted to the discharge pipe from the site. During drilling and hydraulic fracturing operations, the valve would be closed preventing storm water from leaving the site. During these periods storm water would be removed by tanker to a licenced wastewater treatment works. At other times when the water quality in the ditch system meets the requirements of EA the site would drain freely to Carr Bridge Brook. An interceptor installed at the outfall would provide further security that discharges to watercourses would meet quality criteria.

The water requirements for the Project would be provided by a pipe connection to an adjacent United Utilities (UU) water main. Cuadrilla has consulted with UU to confirm that they could provide the quantity and flow rate of water needed for the Project. UU have confirmed that this supply would not affect their current customers (including residential properties). The use of mains water negates the need to transport water to the site by tanker to reduce transport impacts. Estimated daily water use during hydraulic fracturing activities has been reduced from 765<sup>3</sup>m per day to 600<sup>3</sup>m per day by reducing the proposed number of hydraulic fracturing stages and reusing flow back water to make up part of the fracturing fluid for the subsequent fracturing stages. Flowback fluid would be subject to physical treatment using ultra violet disinfection to control bacterial growth. If possible collected storm water would also be used to make up part of the fracturing fluid volume.

The assessment concludes that subject to such measures the proposed development would not have a significant effect on surface water runoff, drainage or water supplies.

## **Summary of consultee comments and representations**

**United Utilities PLC (UU):** No objection subject to the inclusion of a specific worded condition to protect assets in Preston New Road from HGV movements.

With regards to water supply to the site, UU has advised that the principal water demand would be during the hydraulic fracturing operations. During other times, water would be required to support the drilling operation, site cleaning and welfare operations. The water demand during hydraulic fracturing operations is anticipated to be approximately 765m<sup>3</sup> of water per day (a maximum of one hydraulic fracturing stage will be carried out in a single day). This water would be supplied from the United Utilities (UU) potable water network.

UU have confirmed that the 15" trunk main to the western corner of the site has the capacity to supply the site without restrictions (see Appendix 5 of the application ES for confirmation). UU have reported that the main has a history of bursts so installation of a pressure management valve (PMV) and flow meter would be required in order to reduce the burst risk. UU have also stated it may be possible to re-zone their network so the site would be the only user of the main.

To meet the current and future water quality needs of their customers across the Fylde, as well as fulfilling their obligations to their quality regulator (the DWI), a circa £13 million scheme to clean and upgrade the Lytham pipeline, which runs from Singleton into Blackpool is currently being planned. To allow for this work to take place a new 630mm water supply main section is being installed; the main will be completed in 2015. Consequently a new water supply point of connection has been identified on the new stretch of water main.

To facilitate the water supply needs of the temporary shale gas exploration scheme, and maintain the integrity of the new main an additional connection point is to be installed (at the Applicant's expense) while the main is being laid. A separate metered supply to each unit will be required at the Applicant's expense and all internal pipe work must comply with current Water Supply (Water Fittings) Regulations 1999

**Medlar-with-Wesham Parish Council and Kirkham Town Council:** Objects to the proposal for a number of reasons including the potential impact on resident's water supplies; potential well failure and the huge potential for land contamination, particularly to aquifers and agricultural land; and potential flow back water site leakages and spillage during disposal and transportation.

**Westby-with- Plumptons Parish Council:** Objects to the proposal for a number of reasons including the potential impacts on the natural drainage system and potential damage to any asbestos in the underground system; and concerns regarding water contamination and the disposal of contaminated water.

**Public Health England (PHE):** Has raised no objection subject to the local planning authority being satisfied on a number of issues including the proposed definition of significant variation for other determinants regarding.....and surface water and ground water potential contaminants.

**Environment Agency (EA):** No objection in principle and recommends the following:

- A scheme to dispose of surface water between the drill pad and Carr Bridge Brook to be submitted to ensure the proposed development does not increase the risk of pollution to Carr Bridge Brook.
- Routine monitoring of on-site surface water quality and maintenance, and inspection of surface water drains, valves and interceptors to ensure correct and efficient operation.
- Surface water run-off retained on site during operations to be tankered away for off-site disposal and to not be discharged to the watercourse.
- To consider whether the Control of Pollution (Oil Storage) (England) Regulations 2001 apply. If not any facilities, above ground, for the storage of oils, fuels or chemicals to be sited on impervious bases and surrounded by impervious bund walls.

With regard to flood risk the EA confirmed that the proposed development is located in Flood Zone 1 which is defined as having a low probability of flooding in the National Planning Practice Guidance. The Agency has reviewed the Flood Risk Assessment submitted with the application and is satisfied that the development would not be at risk of flooding or increased flood risk off-site.

With regard to radon release during the flaring of gas, the Environment Agency confirmed that radon is exempt from their permitting by the Natural Gas Exemption Order 2002 and from regulation under the Environmental Permitting Regulations 2010. This is on the basis of its low risk, widespread use and that it was not amenable to regulation. Discharges of radon in natural gas, being flared or vented at gas sites is not subject to regulation under radioactive substances regulation (RSR).

**Friends of the Earth:** have raised objection on a number of issues including the impact of the proposal on groundwater, flooding and water resources for the following summarised reasons:

- Potential groundwater contamination as a result of mechanical failure of equipment, well integrity issues, membrane defects, well degradation, geological faults, and increased run off leaving the site.
- Watercourses could be conduits transferring contamination to other areas.
- Where there is a risk of significant adverse impact on surface water quality then the development is only acceptable in terms of the Water Development Framework in the circumstances set out in the River Basin Management Plan for the North West.
- Risk of flooding to Carr Bridge Residential Park and Moss House Lane properties.
- The EIA does not consider impacts on water circulation from polluted water and the unsustainable use of water, given the large amounts of water required
- Risks to the availability of water supplies and water pressure problems for nearby residents.

Representations include objections relating to water resources, drainage and flooding for the following summarised reasons:

- Excessive amounts of a scarce resource, fresh water, will be used.
- Existing water suppliers and handlers may struggle to cope.
- Public drinking water must be preserved at all costs and not depleted particularly in times of drought.
- Vast amounts of water should not be utilized for gas drilling, especially given water shortages in recent years
- Water usage is unsustainable, it should be safeguarded
- Why not use saline water?
- The mains water supply in the area has a history of bursts and poor water pressure and fracking will deteriorate if further.
- The negotiations and works by United Utilities are not clear or complete.
- Drinking water is more important resource than gas. Risk of contaminating water supply is too big a risk.
- Need more work to establish the safety of the process in relation to ground water contamination.
- Need baseline and continuous groundwater monitoring with work suspended if contamination / adverse effects are found.
- Monitoring wells for groundwater quality and gas concentrations should be mandatory.
- Even if tightly regulated an unforeseen accidental discharge could contaminate groundwater and the damage cannot be rectified.
- Millions of litres of polluted / toxic water will be left to drift underground, approximately 30miles around each well with long term damage.
- Faults can act as conduits and enable fracking fluids to migrate to water sources.
- Excessive rain could impact on the containment capacity of the well pad. Land adjacent to Carr Brook and Moss House Lane already prone to flooding.
- Proposed site is on a hill and any polluted waste water will leach into dykes and waterways including Carr Brook, and into farm land and out into the River Ribble.
- Preese Hall well was damaged and toxic waste water could be leaking into dykes and streams feeding into the River Wyre.
- The Water Framework Directive requires that a development should not go ahead unless it is proven that there is no risk to groundwater.
- Contrary to FBLP Policy EP24 as water quality will be affected by leaking wells.

## **Policy**

### **National Planning Policy Framework (NPPF)**

Paragraphs 11-14	Requirement for Sustainable Development
Paragraph 17	Core Planning Principles
Paragraphs 100	Flood Risk
Paragraph 103	Requirement for Flood Risk Sequential Test

## **Technical Guidance to the NPPF: Flood Risk and Minerals Policy**

Paragraphs 5	Flood Risk
Paragraphs 20-51	Minerals Policy

## **National Planning Policy Guidance (NPPG)**

Flood Risk and Coastal Change	Flood Risk Assessment
Water supply, wastewater, water quality	Quality and infrastructure

## **Joint Lancashire Minerals and Waste Local Plan – Site Allocation and Development Management Policies – Part One (LMWLP)**

Policy NPPF 1	Presumption in favour of sustainable development
Policy DM2	Development Management

## **Joint Lancashire Minerals and Waste Supplementary Planning Guidance**

SPD	Oil and gas exploration, production and distribution (draft)
-----	--

## **Fylde Borough Local Plan**

Policy EP23	Pollution of Surface Water
Policy EP24	Pollution of Ground Water

## **Assessment**

An assessment of the potential impacts of the proposal on water supplies and surface water runoff or drainage and the consequent impact on flood risk has been carried out. UU has confirmed that the water required for the hydraulic fracking process would be sourced from a 15" trunk main located to the western corner of the site which has the capacity to supply the site without restrictions to their potable water network. The applicant has also confirmed that flow back water would be reused in the next hydraulic fracturing event. The direct source of water from the mains would reduce the amount of HGV movements to and from the site and the reuse of flow back water would reduce the amount of water required.

The site would be constructed on an impermeable membrane laid to prevent infiltration from the well pad through the underlying soils and water bodies. Ditches would be constructed around the perimeter of the well pad with the outer edge of the ditch raised 50mm above the well pad surface. The ditches would provide the means to collect storm water. The void space in the granular fill, ditches and the 50mm "air freeboard" would provide a storage volume to attenuate drainage flows from the site.

An isolation valve fitted to the discharge pipe from the site would prevent storm water from leaving the site during drilling and fracking operations. During these periods storm water would be removed by tanker to a licenced wastewater treatment works. At other times when the water quality in the ditch system meets the requirements of EA the site would drain freely to Carr Bridge Brook. An interceptor installed at the

outfall would provide further security that discharges to watercourses would meet quality criteria.

The EA has raised no objection in principle subject to conditions requiring a scheme to dispose of surface water between the drill pad and Carr Bridge Brook to ensure the proposed development does not increase the risk of pollution to Carr Bridge Brook; routine monitoring of on-site surface water quality and maintenance, and inspection of surface water drains, valves and interceptors to ensure correct and efficient operation; surface water run-off retained on site during operations to be tankered away for off-site disposal and to not be discharged to the watercourse; and facilities, above ground, for the storage of oils, fuels or chemicals to be sited on impervious bases and surrounded by impervious bund walls.

With regard to flood risk the EA confirmed that the proposed development is located in Flood Zone 1 which is defined as having a low probability of flooding in the National Planning Practice Guidance. The EA has reviewed the Flood Risk Assessment submitted with the application and is satisfied that the development would not be at risk of flooding or increased flood risk off-site.

With regard to representations received measure would be in place to contain the site and prevent increased run off leaving the site thereby preventing the risk of contamination to ground and surface water and the nearest watercourses. The site falls with a Flood Zone 1 which is defined as having a low probability of flooding in the National Planning Practice Guidance. The EA is satisfied that the development would not be at risk of flooding or increased flood risk off-site. There would therefore be no risk of flooding to Carr Bridge Residential Park and Moss House Lane properties. UU has confirmed that the proposal would have no impact on potable water supply or the supply of water to residential properties and for which upgrades to the current system are currently being put in place. Flow back water will be reused to minimise the use of potable water. The aquifer is saline and not used for potable water. The reasons for objecting to the proposal on the potential impacts on water supplies and surface water runoff or drainage and the consequent impact on flood risk cannot be supported.

## **Conclusion**

It is concluded that the proposal would have no adverse effect on potable water supply and would not be an unacceptable use of potable water. Flow back water would be reused resulting in lower quantities of potable water being required. Water will be supplied direct to the site thereby reducing the number of HGVs travelling to and from the site.

The site would be contained and managed to ensure the protection of surface and ground water and nearby water courses. The site is in a Flood Zone 1 which is defined as having a low probability of flooding. The EA has reviewed the Flood Risk Assessment submitted with the application and is satisfied that the development would not be at risk of flooding or increased flood risk off-site.

The development is therefore considered to comply with the national guidance and policies and the policies of the development plan.