

Appendix 16

Water Resources

Proposal

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 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. 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 a nearby 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 765³m³ per day to 600³m³ 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 .

With regards to water supply to the site, UU have 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 765m³ 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.

UU have no objection, subject to the following condition:

Prior to the commencement of the development, a method statement must be submitted to the Local Planning Authority and approved in writing detailing the measures to protect our assets during:

- the site investigation work;
- the construction and decommissioning phases; and

the future day to day operation and maintenance of the scheme. This must include proposals for reinforcements of any crossing points to ensure our assets are protected from heavy loads. The approved method statement shall be in line with United Utilities' document 'Standard Conditions for works adjacent to pipelines'

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

following:

The surface water drainage arrangements are acceptable in principle but it is not clear how surface water run-off will be conveyed between the drill pad and Nigget Brook. A condition is proposed preventing the commencement of development until such time as a scheme to dispose of surface water has been submitted to, and approved in writing by, the local planning authority. The scheme shall include full details of the proposed separator and isolation valve and shall subsequently be implemented as approved.

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 EA 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).

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.

Medlar-with-Wesham Parish Council and Kirkham Town Council: Objects to the proposal for a number of reason 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.

Roseacre Wharles and Treales Parish Council: Objects to the proposal for a number of reasons including the potential impacts on water resources and which are summarised as follows:

- Not sustainable development due to....water supply issues, permanent waste repository and lack of suitable waste treatment
- Contrary to Policy **CL1** which requires minimal potable mains water in new developments with a need to recycle and conserve water resources.
- Potential water supply problems water required is higher than estimates.
- If tankered water is required, it will increase traffic and emissions.
- Water supply route re-zoning infers potential impact to Roseacre and Wharles
- Contrary to Policy EP25, treatment facilities are inadequate/ not available as there are no authorised treatment sites in the Northwest and proposed sites have insufficient capacity. Waste should not be transported great distances.
- Contrary to Policy CS9 as fracking fluids will create permanent waste on site
- Flowback fluid calculations are disputed. Higher rates and no suitable disposal could result in risk of breach of the well pad containment area.

- Contrary to Policies EP10, EP23, EP24, EP30 and CS5 as the development will not protect ponds, watercourses, groundwater or natural resources and will increase surface run off, resulting in poorer air and water quality.
- Any spills, well blowouts, accidents or releases into local drainage ditches (and wider watercourse system) poses could contaminate surface and groundwater. Monitoring will not mitigate due to lead times for test results.
- Risk of imperfectly sealed wells leaking into groundwater.
- Storm weather could increase surface water drainage volumes with risks to site containment and potential discharge of contaminated surface run-off.

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:

Water Resources

- Information is inaccurate and ambiguous making assessment difficult.
- When compared to Preese Hall data, the information seems inaccurate.
- Development will need more water than supplied by United Utilities so further supplies will be required by tanker, with impacts on local community.
- Existing water pressure issues, water supply to residents may be restricted.
- If goes to full production, where will additional water come from?

Waste Management

- Surface water drainage into Nigget Brook could contaminate Thistleton Brook which flows into River Wyre and Morecambe Bay.
- Accidental spillages from the site or vehicles could impact on water and land with impacts on local wells used by livestock and groundwater contamination
- Storm impacts have not been taken into account, with risk of flooding.
- Insufficient evidence that fracking fluid will not leak into local water sources through existing faults. Flow back fluid estimates do not cover worst scenario.
- Wastewater treatment sites do not have capacity to treat all the flow back fluid, including radioactive waste resulting in storage concerns.
- Concern regarding content and quantity of chemicals in fracking fluid.
- Huge amounts of waste will be produced and could lead to significant traffic removing hazardous and toxic waste products.
- Applicant not demonstrated how they would reuse/recycle/treat flowback fluid.

Roseacre Awareness Group: Objects to the proposal for a number of reasons including the potential impacts on water resources and which are summarised as follows:

- Information is inaccurate and ambiguous making assessment difficult.
- When compared to Preese Hall data, the information seems inaccurate.
- Development will need more water than supplied by United Utilities so further supplies will be required by tanker, with impacts on local community.
- Existing water pressure issues, water supply to residents may be restricted.
- If goes to full production, where will additional water come from?

- Surface water drainage into Nigget Brook could contaminate Thistleton Brook which flows into River Wyre and Morecambe Bay.
- Accidental spillages from the site or vehicles could impact on water and land with impacts on local wells used by livestock and groundwater contamination
- Storm impacts have not been taken into account, with risk of flooding.
- Insufficient evidence that fracking fluid will not leak into local water sources through existing faults. Flow back fluid estimates do not cover worst scenario.
- Wastewater treatment sites do not have capacity to treat all the flow back fluid, including radioactive waste resulting in storage concerns.
- Concern regarding content and quantity of chemicals in fracking fluid.
- Huge amounts of waste will be produced and could lead to significant traffic removing hazardous and toxic waste products.
- Applicant not demonstrated how they would reuse/recycle/treat flowback fluid.

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

- Creation of toxic wastewater.
- Each well will produce 2.5million gallons of flow back.
- Lack of information and research on how the massive amounts of waste water will be disposed of and treated.
- Inadequate measures are in place to treat and dispose of vast quantities of waste water. No adequate disposal solution has been presented.
- There is no adequate treatment facilities that have insufficient capacity for huge volumes of hazardous and wastewater waste.
- Insufficient information in the Waste Management Plan regarding drill cuttings storage and disposal and dust implications.
- What will happen to flowback water and its treatment?
- No guarantee of safe disposal of chemical waste and drilling muds.
- Manchester Ship Canal cannot take anymore waste.
- Cuadrilla have dumped two million/thousands of gallons of radioactive/contaminated waste water into Manchester Ship Canal (from Barton Moss) and were allowed to get away with it. The EA cannot guarantee that this will not happen again.
- Contrary to CL1, vast quantities of water out of the hydrological cycle forever.
- Unsustainable use of water.
- Not enough water available for this use, where will it come from?
- Public drinking water must be preserved at all costs.
- Vast amounts of water should not be utilized / wasted for gas drilling, especially given water shortages in recent years.
- Recent droughts have resulted in water shortages and severely affected pressure and fracking will make the impact worse.
- United Utilities may not have adequate resources to protect drinking water.

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)
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Fylde Borough Local Plan

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

Assessment of Impacts

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 main below Roseacre Road 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 a local field drain to the east of the site. 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 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 measures 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 within 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. 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.