

Staffordshire Moorlands District Council

Risk Assessment:

Private Water Supplies (England) Regulations 2016

**Royal Cottage, Upper Hulme Private Water
Supply**

(Ref: 10010605030)

**Royal Cottage
Buxton Road
Upper Hulme
ST13 8UH**

3rd April 2017

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1 EXECUTIVE SUMMARY

The risk assessment carried on 3rd April 2017 concluded that the water supply is of Very High Risk Characterisation according to the DWI Risk Assessment Toolkit. As a result of this a series of remedial actions needed to improve the supply can be found below in Table 1. These actions must be followed to reduce the overall risks to the wholesomeness of the water supply and to human health.

The supply is a commercial supply according to DWI guidance and is therefore classified as a Regulation 9 supply.

Sampling

In accordance with the Regulations routine sampling is required at least once every year. Please see Section 6 for the sampling programme, along with the parameters to be monitored for.

Table 1: Remedial Actions Required to Improve the Supply

No.	Remedial Actions Required to Improve Supply	Target Date for Completion of Actions
1	<p>There is a Water Safety Plan for this private water supply. It appears to be a generic plan and it is obvious from the inspection that some of the requirements by the identified personnel (e.g. weekly checks by tenant and annual checks by Peak District National Park Authority) are not being carried out.</p> <p>Also, the details need further specific information e.g. description of the source is “spring/borehole” - it is not a borehole and the details of the maintenance contractor are not filled in. The WSP needs further details adding in so that it explains every part of the system– descriptions of the filters (pore size of sediment filter, flow rate of UV filter), pipe work materials, etc.</p> <p>Implement a method of logging all service and maintenance of equipment and structures and all site inspections, including those of the tenant and the PDNPA.</p>	<p><u>Recommendation</u></p>
2	<p>This is a spring supply. The source could not be located by the owners. The assumption must therefore be that the water will get contaminated from time to time as it is collected. It is piped to a grit chamber at the rear of the property, on the other side of the road to the spring.</p>	

No.	Remedial Actions Required to Improve Supply	Target Date for Completion of Actions
	<p>It has been suggested in the past that the following is carried out:</p> <p><i>Provide a sheep-proof fence around the spring source. It should be approximately 4 m away all around (recommended).</i></p> <p><i>A diversion ditch should be provided so that any overland flow rainwater will be diverted around the source collection point (recommended).</i></p> <p>The owners decided that they would stop sheep grazing on the field where the spring is. They have done that ever since and it is therefore difficult to justify insisting on the two recommended actions above. Providing a fence and diversion ditch would not reduce contamination by very much. Should this non-grazing policy change however, then the source would have to be located and the fence and ditch would have to be provided.</p>	
3	<p>The land surrounding the grit chamber should be dug back (or the walls of the chamber raised) so that the top of the chamber is at least 300 mm above ground level all around.</p> <p>Provide a water-tight cover and lid to the grit chamber. The lid should be lockable.</p> <p>Ensure the walls and floor of the grit chamber are water-tight.</p> <p>Provide a suitable grille to the outlet pipe.</p> <p>Provide a sloping circular concrete surround to the chamber, sloping away from the top to a distance of at least 1m.</p> <p>Clean out and chlorinate the grit chamber. This process should be carried out at least annually. Ensure chlorination water is run to waste prior to the tank being reused.</p>	<u>3 months</u>
4	<p>After the grit chamber is a storage tank.</p> <p>Although the land surrounding the grit chamber should be dug back (or the walls of the chamber raised) so that the top of the chamber is at least 300 mm above ground level all around, the nature of the ground is such that this would be very difficult to achieve. Therefore, the access chamber lid, rather than the whole tank, should be raised so that it is at least 150mm above the top of the tank and sitting on a water-proof up-stand.</p> <p>Provide a water-tight lockable access cover to the storage tank</p> <p>Ensure the walls and floor of the storage tank are water-tight.</p>	<u>3 months</u>

No.	Remedial Actions Required to Improve Supply	Target Date for Completion of Actions
	<p>Provide a rodent and insect proof grille to the overflow pipe.</p> <p>Clean out and chlorinate the storage tank. This process should be carried out at least annually. Ensure chlorination water is run to waste prior to the tank being reused.</p>	
5	<p>Include the drinking water treatment area to the pest control contract.</p>	<p><u>3 months</u></p>
6	<p>Provide a 5-micron or 1-micron sediment pre-filter just prior to the UV lamp.</p> <p>Ensure the UV treatment system 'fails safe' thus preventing untreated or partially treated (unsafe) water being supplied and consumed. This can be achieved by the provision of an alarm or cut-off switch in case of lamp failure.</p>	<p><u>3 months</u></p>

The Private Water Supplies (England) Regulations 2016 require local authorities to carry out a risk assessment of all private water supplies in their area at least every five years. These Regulations are made under powers in the Water Industry Act 1991.

The risk assessment is a condition check of your private water supply. It involves looking at the source of the supply and the surrounding area to see if contamination of the supply is possible. It also involves checking any storage tanks, treatment systems and the pipework on the supply distribution system. This risk assessment will identify actual or potential hazards on the supply that may affect the health of those drinking the water so that suitable actions can be taken to ensure the water is wholesome and safe to drink.

The quality of the water provided by a private supply is also determined by monitoring (sampling and analysis), which is also required by the Regulations. However, monitoring is carried out relatively infrequently and hence the quality of water provided by the supply is unknown for most of the time. Many private water supplies can be badly affected at times of heavy rainfall and if sampling does not coincide with this rainfall, contamination events will be missed. As monitoring alone cannot provide assurance about the safety of a private water supply, risk assessment is a proactive approach to identifying the risks (potential unwholesomeness and risks to human health) and to take action to control those risks through a multi-barrier approach (i.e. through source protection, treatment of the source water and management of the distribution network to prevent contaminants entering the supply system).

This report contains an analysis of the risk assessment and identifies the actions required to ensure a multi-barrier approach is implemented, including the design of a monitoring programme to check the wholesomeness of the supply.

This report is provided in good faith, but it must be stated that the information it contains is based on what was seen at the time and subject to answers to questions by persons on site being correct and interpretation of those answers. It is never possible to see every bit of a private water supply, so some recommendations are based on a best-guess and are opinions. By their nature, private water supplies are subject to variations in quality and quantity and sampling results need to be interpreted accordingly. This report is not statutory guidance, nor does it take away from the local authority the need to make final decisions in all these areas, particularly where statutory action is being considered.

3 SUPPLY DESCRIPTION

SITE LOCATION

Royal Cottage
Buxton Road
Upper Hulme
ST13 8UH

Grid reference: 402758, 364066

RELEVANT PERSONS AND CONTACT INFORMATION

For the purposes of the Regulations the supply is under the joint control of the owners and tenants, subject to deeds and rental agreements. All of them are “relevant persons”. The owner of the land containing the spring is also a “relevant person” as per Regulation 2 of the Regulations.

The supply is owned by Peak District National Park Authority and provides water to Royal Cottage which is used for tenanted accommodation and is used as a public house.

Contact details for PDNPA is Estate Manager: Chris Manby. Aldern House, Baslow Road, Bakewell, Derbyshire, DE45 1AE

Tel 01629 816348, 07890274667

chris.manby@peakdistrict.gov.uk

The tenant is Mr Clifford Grindey 01538 300117

PREMISES SUPPLIED BY THE PRIVATE SUPPLY

The Royal Cottage Public House

Supply Source and Treatment of the Supply

The private water supply is reported to be a spring supply. Its exact location could not be pointed out. It lies in an area of boggy ground and may therefore be an infiltration system or a land drain system. The underlying geology is a series of sandstone grit beds running approximately north to south.

The water is collected, piped and runs under gravity down the field (which is no longer used for grazing), under the road and into a grit chamber located in a small walled field area at the rear of Royal Cottage. The top of the grit chamber is at ground level and the lid and walls are not water tight. Therefore, water from the area surrounding the chamber can get into it. The chamber needs cleaning and chlorinating.

From here the water runs into a larger storage tank at the rear of the property. This tank is in better condition than the grit chamber. Its top is at ground level in some parts, but the access point could be raised with an up-stand and a water tight lid put on it, rather than lowering the ground level or raising the whole lid.

The water is then treated with pH balance and iron and manganese removal. It is then pumped up to a storage tank in the roof space and runs under gravity from there down to a UV lamp in the treatment area. There is no sediment pre-filter – this will adversely affect the efficiency of the UV lamp. There is also a lead removal activated carbon filter on site. This is not connected.

POTENTIAL RISKS TO THE SUPPLY INCLUDING CURRENT AND HISTORIC LAND USE

Supplies of this type are often contaminated with faecal material at times during the year, usually following heavy rain. This is because they are taking rainwater from the surrounding land that will wash faeces from sheep and wild animals into the water. Therefore, the source collection system should be designed and maintained to keep out as much contamination as possible and UV or other disinfection provided so as to remove the faecal bacteria and viruses that may be found in the water. At present, if the UV system fails, it will fail to danger and allow bacteria and viruses into the system.

There is no known lead piping or storage tanks without close fitting lids in the properties on this supply.

The nearest landfill site to the supply is at Bareleg Hill, Longnor and ceased to be used in December 1966. It will not pose a risk to this water supply.

There are no nearby pollution incidents noted on the Environment Agency's "What's in Your Backyard" website.

The supply is in a surface water Nitrate Vulnerable Zone.

The <http://www.ukradon.org/information/ukmaps> website is used to identify the risk of radon in the water. Radon will not be an issue for this private water supply according to the Public Health England UK Radon website as it is classed as a no risk area. Plus, this is a shallow spring surface derived supply so the water will not have been in contact with radon containing geology.

For a full list of the parameters of concern which it is planned to monitor for, please see Section 6.

SAMPLING RESULTS

There have been a number of water samples taken from this source over the years. Previous sampling has shown severe failures for iron and E coli, plus failures for manganese, aluminium, copper, pH and total coliforms. It was also recorded as having lead above the present-day standard back in 2008. The water is aggressive and will dissolve pipework. Recent, post installation of treatment, samples have proved satisfactory. However, should the treatment system fail at any point, it will fail to danger. Because of the proximity of the mains water system and the nature of this water supply, thought should be given to connecting the property to the nearby mains water supply.

If future sampling results show microbiological or chemical failures, the provision of further treatment may be required.

4 THE RISK ASSESSMENT PROCEDURE

The risk assessment process comprises three stages; (1) pre-site visit desk top assessment, (2) site based risk assessment, and (3) post-visit desk top assessment.

The site based risk assessment looks at factors that can affect the quality of the supply. Surveys are undertaken on the source, water storage (prior to treatment), treatment plant, the distribution network, water storage (post-treatment), the premises supplied and management of the system.

The council utilises the Drinking Water Inspectorate's Risk Assessment Toolkit, which looks at a list of potential hazards whose presence may be identified during the inspection. Mr Clapham was asked to use the DWI toolkit by Jenny Weston of the Local Authority prior to the risk assessment in April 2017. Each hazard is given a Risk Characterisation score that can be one of four values (very high, high, medium or low) and is based on the evidence available.

Where a hazard has been identified, it is given a likelihood score. This is the degree to which the hazard is likely to result in risk (i.e. how likely it is that contamination will occur). Pre-set scores have been identified for each hazard indicator. The risk score is then produced by multiplying the likelihood score by its severity score. This gives the following risk categories:

- 1-5 low risk
- 6-10 medium risk
- 11-15 high risk
- 16-25 very high risk

It should be noted that the DWI toolkit usually gives a 'very high risk' score for the vast majority of private water supplies in this country.

Reducing the overall risk category will reduce the potential risks to users of the supply, furthermore potentially reducing the number of parameters required to be sampled, hence reducing the cost of future sampling and potential the frequency of the monitoring visits required.

Section 6 sets out the list of the parameters which the Council proposes to test for at the supply, in addition to the rationale for their inclusion in the sampling programme.

RISK ASSESSMENT SURVEYS

A number of Very High and High Risks were found as a result of the risk assessment.

Photographs are included in Appendix 1.

5 ACTIONS REQUIRED FOLLOWING RISK ASSESSMENT

Works required to deal with the hazards that scored Very High or High Risk are listed in Table 1 above. Completing the actions will not only reduce the risks associated with the supply, but possibly reduce the list of parameters which need to be sampled for and their frequency. These actions are self-explanatory, but where further clarification is needed, please contact the Council.

With regards to improvements, any product or substance used in a private water supply must not adversely affect the quality of the water either by promoting bacterial growth or leaching chemicals into the water. A list of Approved Products is available from the Drinking Water Inspectorate at:

<http://dwi.defra.gov.uk/drinking-water-products/approved-products/index.htm>

The Water Regulations Advisory Service (WRAS) also produce lists of approved products. Your plumber or water treatment specialist should be aware of the use of approved products.

Sampling Parameters

Listed below are the parameters that the Council needs to sample the supply for. Mandatory parameters are specified in the Regulations. Additional parameters have been determined from the risk assessment.

Check Monitoring

Table 2 lists the Check Monitoring parameters, which must be sampled for on the supply.

Table 2: Check Monitoring Parameters

Parameter	
1	Ammonium
2	Coliform Bacteria
3	Colony Counts
4	Colour
5	Conductivity
6	E. coli
7	Hydrogen ion concentration (pH)
8	Odour
9	Taste
10	Turbidity
11	Aluminium
12	Iron
13	Manganese
14	Clostridium perfringens (including spores)

Audit Monitoring

These parameters are listed in the Private Water Supplies (England) Regulations 2016 and any other parameter that the Council are concerned about. The Council has to decide which parameters to include from the Audit Monitoring list in the regulations, based on the risk assessment.

Table 3 lists the Audit Monitoring parameters that have been identified as requiring monitoring.

Table 3: Audit Monitoring Parameters

Parameter		Justification
1	Antimony	Possible from domestic plumbing fittings
2	Cadmium	Leaching from galvanised pipes and some domestic plumbing fittings (e.g. plated taps)
3	Chromium	Present naturally in some ground waters
4	Copper	Leaching from pipes and plumbing fittings
5	Enterococci	Contamination of raw waters from sewage, sewage effluents and animal waste.
6	Lead	Present naturally in some ground waters
7	Nickel	Present naturally in some ground waters
8	Nitrate	Contamination of surface and ground waters from fertilisers, animal wastes or sewage effluents
9	Arsenic	Present naturally in some ground waters

NB – Radon is very unlikely to be present on this supply and there are no nearby sources of tritium. Therefore, no sampling should be carried out for the radioactivity parameters listed in the regulations as per Regulation 11. The local authority should inform the DWI that they do not intend to sample for these parameters.

I would recommend that the samples are collected from different taps on the supply on different sampling occasions, to ensure that all parts of the distribution system are checked. I would also recommend that sampling visits are carried out after heavy rain as a worst-case indication.

Sampling Frequency

In accordance with Schedule 2 of the Private Water Supplies (England) Regulations 2016, the Council require the supply to be sampled once per year for Check Monitoring parameters and once per year for Audit Monitoring parameters. However, Audit and Check monitoring can be carried out at the same time.

If there are any concerns regarding the wholesomeness of the supply, this frequency can be increased or altered upon discussion with the Council.

The next sampling visit for the supply is to be carried out in November 17. If there are any concerns regarding the water supply prior to this date, please do not hesitate to contact the Environmental Health Team of the Council for advice.

7 DISCLAIMER

This report has been prepared by the Council using all reasonable skills, care and diligence. The analysis with which this risk assessment report has been carried out is in accordance with the guidelines set out in the Drinking Water Inspectorate's Risk Assessment Tool.

In order to prepare this report, the Council has also made use of any available evidence supplied by relevant persons including landowners/occupiers, British Geological Survey and Environment Agency. This has been both physical e.g. documentation such as reports, drawings, plans, correspondence, etc. and anecdotal e.g. verbally reported information from meetings, etc. The Council's liability is strictly limited to the provision of assessment services against criteria set out by the DWI Risk Assessment Tool. The Council accepts no responsibility for misinformation or inaccurate information supplied by any third party as part of this assessment.

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If you disagree with any statement or find any information contained in this report to be inaccurate, the Council asks that you let us know as soon as possible, so we can correct the report.

8 REFERENCES

British Geological Survey (2017) Geology of Britain Map Viewer

<http://www.bgs.ac.uk/data/boreholescans/home.html>

Drinking Water Inspectorate (2016) DWI Risk Assessment Toolkit and guidance on private water supplies <http://www.dwi.gov.uk/private-water-supply/index.htm>

Environment Agency (2017) What's in Your Backyard Website <http://apps.environment-agency.gov.uk/wiyby/>

The Private Water Supplies (England) Regulations (2016) HMSO

<http://www.legislation.gov.uk/ukxi/2016/618/contents/made>

Radon UK map data website (2017) <http://www.ukradon.org/information/ukmaps>