



Assessment report of data submitted

Project name: Wellcross Farm (BH1422/AL066)

Date submitted: 11th December 2025

A report was required due to condition 3 of the pre commencement condition.

'3 Pre-Commencement Condition: No development shall commence (except for the S278 works) until a mitigation scheme, undertaken by a suitably qualified and competent consultant, has been submitted to and been approved in writing by the Local Planning Authority that demonstrates how the water from the borehole(s) will be treated to meet the requirements of Schedule 1 of the Private Water Supplies (England) Regulations 2016 (or subsequent superseding equivalent). The mitigation scheme shall implement the recommendations detailed in the Membrane Consultancy Associated Ltd 'Review of a Water Source Proposal for Wellcross Farm Borehole' dated 17.10.23, including silica analysis of the groundwater, and shall ensure that the components of the proposed treatment system are compliant with Regulation 31 of The Water Supply (Water Quality) Regulations 2016 (or subsequent superseding equivalent) and Water Regulations Approval Scheme (or subsequent superseding equivalent). The mitigation scheme shall be implemented in full prior to first occupation of any part of the development and shall be retained and maintained at all times thereafter unless an alternative public water supply is subsequently provided that is deemed to be water neutral.'

The below report should be read in conjunction with:

1. Schedule 1 of the private water supplies
2. Water results including silica analysis
3. The Schematic drawing (BH1422-2 Schematic R3)
4. Regulation 31 of the water supply regulations
5. Membrane consultancy associated review.

This report is intended to outline the regulatory requirements and demonstrate that the proposed mitigation measures have been designed to effectively achieve compliance with those standards.

1: Schedule 1 of the private water supplies regulations.

Schedule 1 of the UK Water Supply (Water Quality) Regulations sets the legal standards for drinking water quality. It lists the maximum permissible levels for chemical, microbiological, and physical parameters to ensure water is safe and wholesome. Compliance is essential because it:

- **Protects public health** by preventing harmful substances from exceeding safe limits.
- **Ensures regulatory compliance**—any breach means the water is legally unfit for consumption.
- **Maintains consumer confidence** by guaranteeing water meets both health and aesthetic standards.

In short, Schedule 1 is the benchmark that defines whether water is legally and practically safe to drink.



As outlined in our previous submission, we have provided a detailed analysis of the raw borehole water quality and proposed a filtration design to ensure full compliance with the parameters specified in UK drinking water regulations. Extracts are provide below.

2: Water results including silica analysis.

The raw borehole results and silica results are included within this document. The commentary on how they were taken and what they fail on are listed below. Silica levels have also been assessed and found to be low, presenting no concern for compliance or water quality.

'The raw borehole water analysis was sent to BA Hydro Solutions' laboratory for testing and then analysed on 5th April 2022. The sample was taken after prolonged period of test pumping and purged prior to sending to the lab for submission as detailed in point 2 of this document. The water sample was taken by our experienced engineers.

BA Hydro Solutions is not a UCAS registered lab and as such the sample taken were not a group A and B sample. This is in line with previous communication with the Environmental Health Officer about the sampling method. It was agreed that Group A and B can be done post installation by our competent CATG certified engineer.

The raw borehole water sample fails the UK drinking limit for ammonium, chloride, fluoride, sodium, electrical conductivity, bacteria and turbidity on borehole 1 and ammonium, chloride, fluoride, sodium, bacteria and electrical conductivity on borehole 2.

All of these levels are able to be managed with filtration.

From our experience, the bacteria is likely to come from the development pump installation process rather than within the well itself. Whilst our equipment is sanitised prior to all installations, we cannot guarantee low levels of bacteria influencing the results. Regardless of the origin of the bacteria, the final installation will need to include filtration to combat potential bacteria which we will detail in the below point 4.'

3: The schematic drawing shows the detail of how the system is filtered and the description of installation highlighted below from the previous submission.

'Design

The design has changed slightly from the initial concept design following design risk assessments and consultation.

The design has been produced in line with the above sample results to enable levels to be brought back under the UK drinking limit.

You will note the flow of water through the system. The first point of note is the linking of the two boreholes into the filtration system. The boreholes are duty and standby so only one borehole will run at any time. Switchover is controlled by volume of water pumped to ensure even usage of each borehole.

The sediment filters are installed to bring down the level of sediment and to act as a pre filter for the reverse osmosis. The reverse osmosis is in place to reduce the chloride, fluoride and sodium to below the UK drinking limit. Reverse osmosis strips the water of all minerals so there is a requirement for remineralisation following this process. A central UV will kill any bacteria pre tank.

Chlorine is injected pre tank, through a mixing tube and detected post mixing tube to ensure sufficient dosage. A secondary probe is in line post tank to ensure sufficient chlorine remains.



The multistage booster set is shown and sized based on the known pumping requirements. A dual high flow sediment filter is installed which will collect any remaining sediment collected from the tank. All monitoring equipment links back to a telemetry system for remote monitoring to allow for easy diagnostics and system amendments.

We assume EHO risk assessment and a full group A and B sampling will be required before installation sign off along with water safety plan and emergency procedures which we will engage on once planning is approved and works can commence.'

4: Regulation 31 of the water supply regulations.

Regulation 31 of the UK Water Supply (Water Quality) Regulations 2016 requires that no substance or product—such as pipes, fittings, chemicals, or coatings—may be introduced into the public water supply unless it has been approved by the Drinking Water Inspectorate (DWI) or the Welsh Assembly. This approval ensures that the product will not compromise water quality, taste, or odour. All products specified in this design carry certification from DWI, WRAS, or KIWA, confirming their suitability and safety for use in potable water systems.

5: Membrane consultancy review report.

Report Conclusions

The assessment confirms the following:

1. Reverse Osmosis (RO) is an appropriate solution for this application.
2. Only two approved membrane suppliers are available: Hydranautics and Microdyn-Nadir.
3. Engagement of an experienced supplier is essential.
4. A direct-feed process should be implemented.
5. A loose RO specification is recommended, incorporating low feed pressure, low flux, and a moderate recovery rate of 60–67%.
6. Silica analysis should be conducted.
7. A suitably sized water storage tank (minimum 4 m³) is required to maximize on-stream time.
8. Waste management from the RO process must be considered.

Nicholls' Response to Environmental Health Department

1. No comment.
2. Hydranautics membranes will be used, as shown in the design.
3. Nicholls already works with experienced suppliers and ensures availability of components.
4. A direct-feed process is included in the current design.
5. While the proposed specification is conservative, the wider design incorporates a full telemetry system for real-time monitoring and rapid response to any issues.
6. Silica analysis has been completed and no concerns were identified.
7. The storage tank exceeds RO requirements and is appropriately sized for network supply.
8. RO waste will discharge to foul drainage and will be sufficiently diluted, presenting no anticipated issues.

Appendix 1

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LABORATORY REPORT - Page 1 of 2

Client:	Nicholls Boreholes	Certificate No:	23240013-1
	Brownings Barn	Order No:	BH1422
	Glass House Lane	Date Reported:	13/04/2023
	Kirdford	Site Name:	BH1422 A
	RH14 0LW	Sample Desc:	Borehole

Test	Results	Limit	Units	Comment	Sample Details
Alkalinity	482.00	-	mg/l		
Aluminium	<20.00	200	µg/l		
Ammonium	868.00	500	µg/l	*	Sampling Date: 04/04/2023
Boron	763.00	1000	µg/l		Sampling Time: -
Calcium	6.80	-	mg/l		Date Received: 05/04/2023
Chloride	605.00	250	mg/l	*	Date Tested: 05/04/2023
Copper	<100.00	2000	µg/l		
Fluoride	3470.00	1500	µg/l	*	
Dissolved Iron (Fe II)	<10.00	-	µg/l		
Total Iron (FeII+FeIII)	30.00	200	µg/l		
Lead	<2.00	10	µg/l		
Magnesium	0.49	-	mg/l		
Manganese	7.00	50	µg/l		
Nitrate	<22.00	50	mg/l		
Nitrite	<50.00	500	µg/l		
Nitrite/Nitrate	<0.46	≤1	-		
Phosphate	0.21	-	mg/l		
Potassium	<8.00	-	mg/l		
Sodium	620.00	200	mg/l	*	
Sulphate	<40.00	250	mg/l		
Electrical Conductivity	2770.00	2500	µS/cm	*	
Calcium Hardness	17.00	-	mg/l		
Total Hardness as CaCO3	19.00	-	mg/l	Soft	
Magnesium Hardness	2.00	-	mg/l		
pH	8.22	6.5-9.5	pH units		
Total Dissolved Solids	1417.00	-	mg/l		
Turbidity	5.65	4	NTU	*	

Disclaimers:

The results provided are not UKAS accredited and can only be used for non-regulatory purposes

* Denotes concentrations above UK drinking water standards

Denotes results which must be treated with caution due to sampling, transit or storage issues prior to delivery to laboratory

</> Denotes concentration found within sample below/above the equipment's detection level

↔ Indicates test has been repeated due to uncertainty or testing issues

\$ Indicates sample was tested outside of the stability period, validity of results may be affected

All analytical quality control associated with these results was satisfactory, details are available on request

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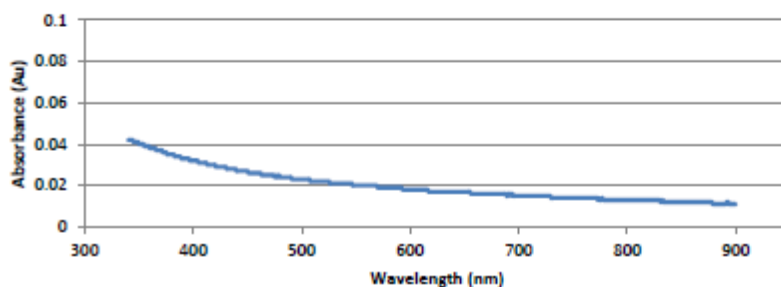


LABORATORY REPORT - Page 2 of 2

Client:	Nicholls Boreholes Brownings Barn Glass House Lane Kirdford RH14 0LW	Certificate No: 23240013-1 Order No: BH1422 Date Reported: 13/04/2023 Site Name: BH1422 A Sample Desc: Borehole
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Test	Results	Limit	Units	Comment	Sample Details
E.coli	0	0	cfu/100ml		Sampling Date: 04/04/2023
Total Coliforms	7	0	cfu/100ml	*	Sampling Time: -
Enterococci	0	0	cfu/100ml		Date Received: 05/04/2023
TVC 3 at 22°C	>300	no abnormal change	cfu/ml		Date Tested: 05/04/2023
TVC 2 at 37°C	24		cfu/ml		

Absorbance vs. Wavelength



11



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LABORATORY REPORT - Page 1 of 2

Client: Nicholls Boreholes
Brownings Barn
Glass House Lane
Kirdford
RH14 0LW

Certificate No: 23240013-2
Order No: BH1422
Date Reported: 13/04/2023
Site Name: BH1422 B
Sample Desc: Borehole

Test	Results	Limit	Units	Comment	Sample Details
Alkalinity	485.00	-	mg/l		
Aluminium	<20.00	200	µg/l		
Ammonium	753.00	500	µg/l	*	Sampling Date: 04/04/2023
Boron	804.00	1000	µg/l		Sampling Time: 13:10
Calcium	4.80	-	mg/l		Date Received: 05/04/2023
Chloride	453.00	250	mg/l	*	Date Tested: 05/04/2023
Copper	<100.00	2000	µg/l		
Fluoride	3670.00	1500	ug/l	*	
Dissolved Iron (Fe II)	<10.00	-	µg/l		
Total Iron (FeII+FeIII)	174.00	200	µg/l		
Lead	<2.00	10	µg/l		
Magnesium	0.49	-	mg/l		
Manganese	12.00	50	µg/l		
Nitrate	<22.00	50	mg/l		
Nitrite	<50.00	500	µg/l		
Nitrite/Nitrate	<0.46	≤1	-		
Phosphate	0.25	-	mg/l		
Potassium	<8.00	-	mg/l		
Sodium	540.00	200	mg/l	*	
Sulphate	<40.00	250	mg/l		
Electrical Conductivity	2360.00	2500	µS/cm		
Calcium Hardness	12.00	-	mg/l		
Total Hardness as CaCO3	14.00	-	mg/l	Soft	
Magnesium Hardness	2.00	-	mg/l		
pH	8.42	6.5-9.5	pH units		
Total Dissolved Solids	1196.00	-	mg/l		
Turbidity	2.22	4	NTU		

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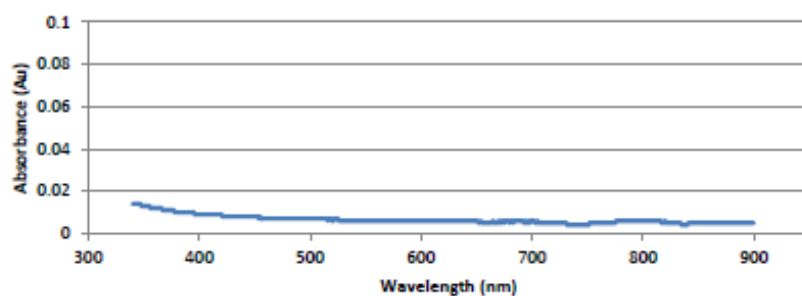


LABORATORY REPORT - Page 2 of 2

Client:	Nicholls Boreholes	Certificate No:	23240013-2
	Brownings Barn	Order No:	BH1422
	Glass House Lane	Date Reported:	13/04/2023
	Kirdford	Site Name:	BH1422 B
	RH14 0LW	Sample Desc:	Borehole

Test	Results	Limit	Units	Comment	Sample Details
E.coli	0	0	cfu/100ml		Sampling Date: 04/04/2023
Total Coliforms	4	0	cfu/100ml	*	Sampling Time: 13:10
Enterococci	0	0	cfu/100ml		Date Received: 05/04/2023
TVC 3 at 22°C	>300	no abnormal change	cfu/ml		Date Tested: 05/04/2023
TVC 2 at 37°C	75		cfu/ml		

Absorbance vs. Wavelength





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south east water
scientific services

ANALYTICAL REPORT

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NICHOLLS BOREHOLES
Brownings Barn
Glasshouse Lane
Kirdford
West Sussex
RH14 0LW
Collected From: WELLCROSS FARM
Date Received: 03/11/2023

Certificate Number: 1170588-1 Final
Order Number: BH1422
Date Reported: 04/11/2023

Lab Ref.	Sample Details	Method	Test	Result	Units	Limit	Flag
4634150	Desc: RAW BOREHOLE WATER BH1 Collect From: WELLCROSS FARM Order No: BH1422 Received Date: 03/11/2023 Tested Date: 03/11/2023 Sampling Date: 03/11/2023 09:58 Sample Type: GW : Ground Water Product: SS-MICROO	285	Silica	6.53	mg/l		

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south east water
scientific services

ANALYTICAL REPORT

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NICHOLLS BOREHOLES
Brownings Barn
Glasshouse Lane
Kirdford
West Sussex
RH14 0LW
Collected From: WELLCROSS FARM
Date Received: 03/11/2023

Certificate Number: 1170589-1 Final
Order Number: BH1422
Date Reported: 04/11/2023

Lab Ref.	Sample Details	Method	Test	Result	Units	Limit	Flag
4634152	Desc: RAW BOREHOLE WATER BH2 Collect From: WELLCROSS FARM Order No: BH1422 Received Date: 03/11/2023 Tested Date: 03/11/2023 Sampling Date: 03/11/2023 10:01 Sample Type: GW : Ground Water Product: SS-MICROO	285	Silica	6.63	mg/l		



NICHOLLS

BOREHOLES & GROUND SOURCE

General Notes

Labour Division
Unless otherwise specified in Nichols Boreholes & Ground Source work, break / back work and back filling of holes and trenches are to be priced and completed by others.

All pipe work and tanks are to be installed with plain orange to prevent damage to pipes.

Mains Power
Unless otherwise stated, mains power is to be provided to a single related switch at or near the plant room/borehole. All electrical connections to the mains supply as well as outlets are to be priced and completed by a qualified electrician. By others.

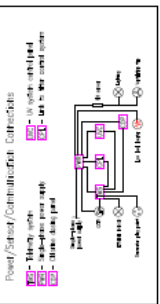
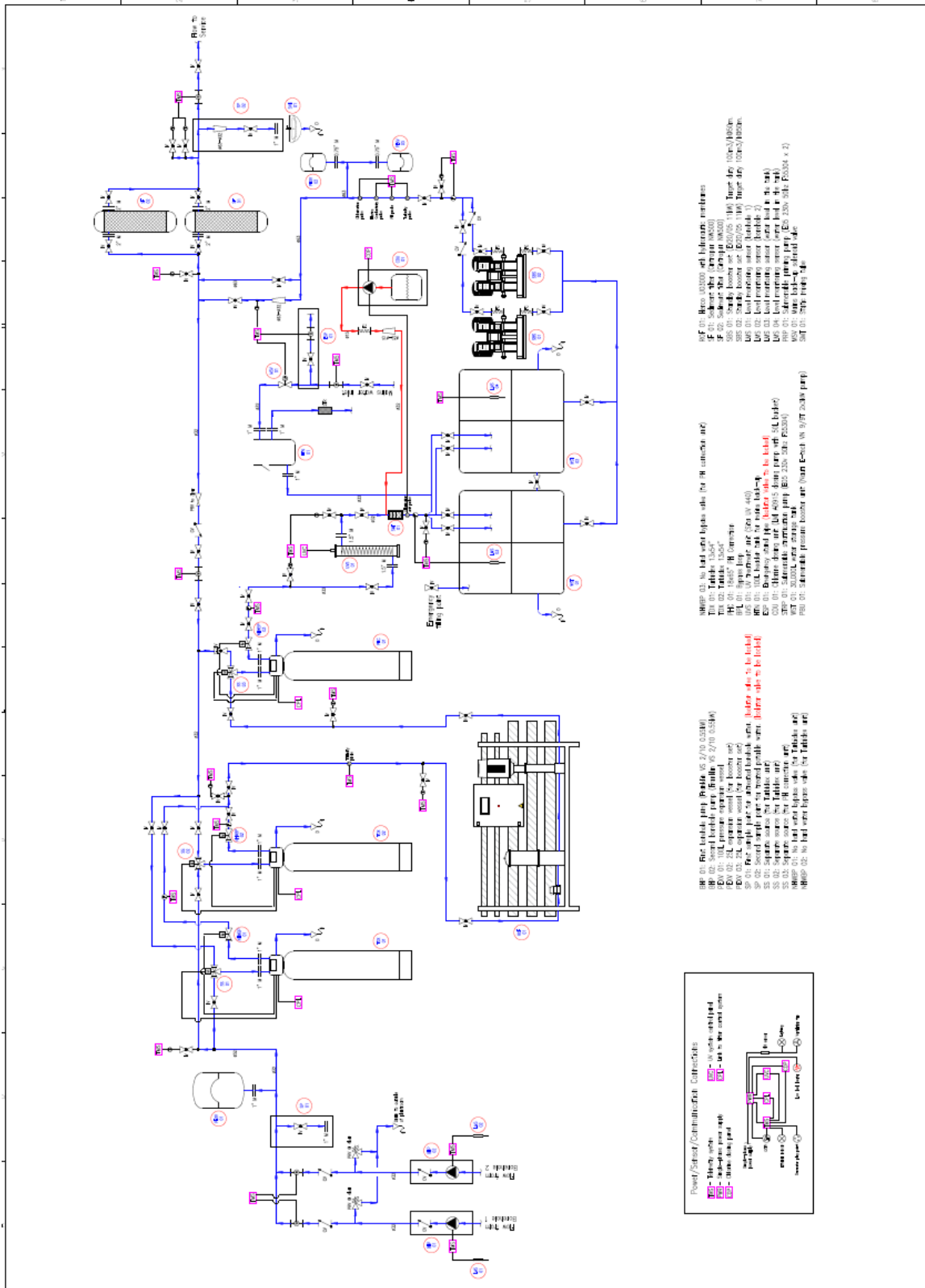
Water
Untreated borehole water is a category 5 supply and may harbour bacteria. A tank gap of 30mm is required between the incoming mains and the incoming borehole supplies.

See <http://www.wra.co.uk/> for more information.

Surface Water
Unless otherwise stated and agreed all well covers will be raised to prevent surface water from entering. In some circumstances recessed covers would be acceptable but clients will need to be made aware of the risks involved.

Contractors Responsibility
It is the responsibility of the contractors to protect from damage any and all bespoke components installed on site by Nichols.

Clients Responsibility
It is the clients responsibility to monitor usage and any filter equipment. This is to ensure there has been no damage to the equipment or the surrounding works by others. Nichols cannot be held liable for any cost incurred from damage caused by others.



HP 01: Heat exchanger (Borehole 05 2/10 03300)
HP 02: Heat exchanger (Borehole 05 2/10 03300)
HP 03: Heat exchanger (Borehole 05 2/10 03300)
HP 04: Heat exchanger (Borehole 05 2/10 03300)
HP 05: Heat exchanger (Borehole 05 2/10 03300)
HP 06: Heat exchanger (Borehole 05 2/10 03300)
HP 07: Heat exchanger (Borehole 05 2/10 03300)
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HP 09: Heat exchanger (Borehole 05 2/10 03300)
HP 10: Heat exchanger (Borehole 05 2/10 03300)

Rev001: 14/02/2024, Preliminary design	Title: BH1422 Wellcross Farm	Drawn: Mr Adam Hardman
Rev002: 28/02/2024, Amendments	Client: Inspired Villages	Checked: Mr Simon Parsons
Rev003: 28/02/2024, Amendment	Date: 28/02/2024	Indicative layout for design purposes only. Final position to be confirmed on site. Drawing is not to be scaled.
	Revision: Rev003	Sheet: 1 of 2