Stephen Buss
Environmental Consulting Ltd

Water Neutrality Statement, New Barn Nursery, West Chiltington

Version control log

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2024-100-005-001	5 August 2024	Steve Buss	Client	First draft

Client: Mr P. A'Barrow

Dated: August 2024

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The findings do not purport to include any manner of legal advice or opinion. New information or changes in conditions and regulatory requirements may occur in future, which will change the conclusions presented here.

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Appendices

1. Introduction

The site is New Barn Nursery, Broadford Bridge Road, West Chiltington, West Sussex, RH20 2LF. As part of a proposed development of one new residential dwelling, and to allay issues regarding water neutrality, part of the water supply is to be provided by one on-site borehole. ABMH Civil Engineers estimated using the Building Regulations Part G calculator that based on a daily consumption of 80 litres per day and an average occupancy rate of 2.47, total water consumption for the dwelling will be 198 litres per day.

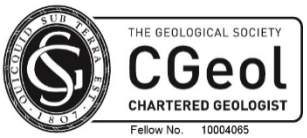
Natural England (2022) believes that groundwater abstraction in the Sussex North water supply zone (WSZ) has a detrimental impact on the Arun Valley SAC, SPA and Ramsar site. The development site, like the whole of Horsham District, is in the SNWSZ. Hence to prevent further deterioration of the SAC, SPA and Ramsar site, Natural England insists that:

> "For every new development, total water use in the Sussex North Water Supply Zone after the development must be equal to or less than the total water-use in the region before the new development."

Hence each new development will need to demonstrate how that development will achieve no net increase in water consumption, by water efficiency measures, offsetting or, in the case of this proposal, not being reliant on groundwater resources that are used for public water supply in the WSZ.

For the desired rate of 198 litres per day an abstraction licence is not needed from the Environment Agency. Therefore, this note has been prepared according to the Horsham District Council (HDC) guidance[1] to demonstrate that the borehole is a suitable solution for water neutrality at the development.

This report has been prepared by Dr Stephen Buss MA MSc CGeol. Dr Buss is a UK-based independent hydrogeologist with more than 25 years' consulting experience in solving groundwater issues for the Environment Agency, water companies and other private sector organisations. Dr Buss's CV and publications list is available at www.hydro-geology.co.uk.



[1] https://www.horsham.gov.uk/planning/water-neutrality-in-horsham-district/water-neutrality-and-planning-applications

2. Physical Background

2.1 Topography and Hydrology

The site is located in the Low Weald, about 2.7 km north of West Chiltington and 4 km south of Billingshurst. The national grid coordinate of the borehole is TQ 09660 21086.

Ground elevation at the borehole is about 26 m above Ordnance Datum (AOD) according to Environment Agency LIDAR data. The site is on a north-facing slope which turns into the shallow valley of a tributary of the River Adur. The tributary flows north, then east, to come to confluence with the River Adur near Coolham. A ditch beside Broadford Bridge Road feeds into the tributary.

There are no designated conservation sites within 1 km of the site. The site is not within a source protection zone.

2.2 Geology

Local bedrock is the Weald Clay Formation which comprises thinly-bedded mudstones with subordinate siltstones, and fine- to medium-grained sandstones. The borehole has been drilled to exploit groundwater from within the Weald Clay Formation.

According to the British Geological Survey sheets 317 & 332 (Chichester & Bognor), the geological strata here dip gently to the south-west (Figure 2.1). Outcrop geology beneath the site comprises Weald Clay mudstones, with thin mapped sandstone units cropping out to the south and north-east. Given the shallow dip of strata, the sandstone outcrop to the north-east may pass beneath the site to be intercepted by the borehole. There are no superficial deposits at or near the site.

The site borehole was drilled by Sussex Boreholes between 11 and 15 September 2023. The log (Appendix A) indicates that the Weald Clay comprises mostly clay with layers of sandstone to 23 m depth, then sand with layers of sandstone to 48 m depth. A schematic borehole log is shown in Figure 2.2.

There are a few other water supply boreholes to the east and west of the site. All of them penetrate only the Weald Clay Formation, which is usually described as a sequence of different coloured clays, with sandstone or mudstone layers. Notably, two of the surrounding boreholes have known yields.

- Sproutes Farm borehole[2] TQ12SW2/B is about 940 m east of the site. There are no geological details, other than its depth of 45 m, but is recorded to have yielded 0.45 m^3/day.
- Broomers End borehole[3] TQ12SW1 is about 3 km east of site. The borehole was 38 m deep and yielded 1.75 m^3/day.

2.3 Hydrogeology

Clays of the Weald Clay Formation are classified as non-productive strata, but where there are outcrops of sandstones these are classed as a Secondary A aquifer. The silty clay sections are likely to have low permeability, but the sand/sandstone and silt/siltstone bands will be more permeable. This leads to a significant anisotropy in the bulk unit, with moderate permeability in the horizontal direction, but low permeability in the vertical direction.

The New Barn Nursery borehole was tested successfully at 3 m^3/hour (72 m^3/day) with a drawdown of 14.15 m after four hours.

[2] https://api.bgs.ac.uk/sobi-scans/v1/borehole/scans/items/578441
[3] https://api.bgs.ac.uk/sobi-scans/v1/borehole/scans/items/578439

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Figure 2.1: Bedrock geology

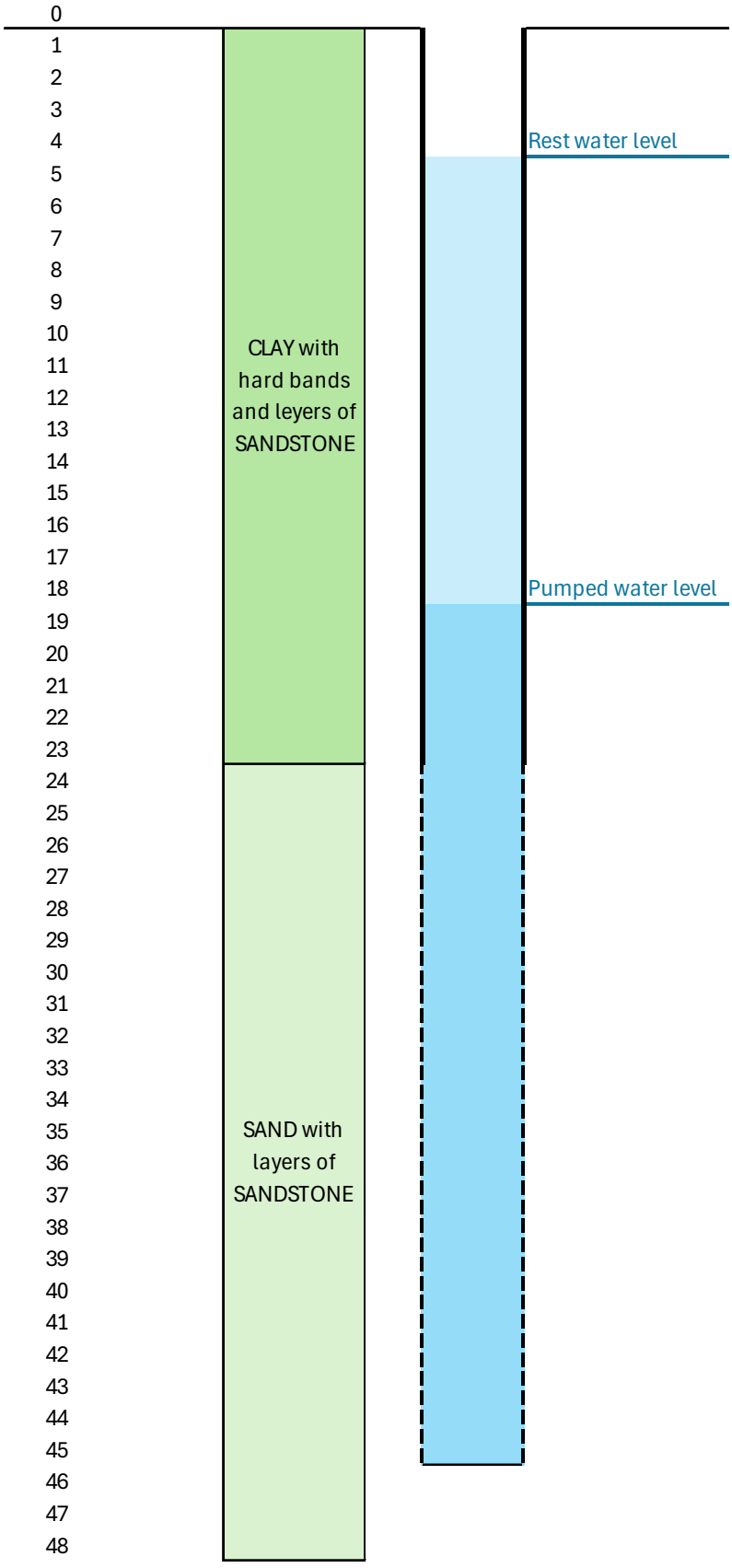

Figure 2.2: Schematic borehole log

3. Appraisal

3.1 Groundwater Resources

The site borehole has been sited to draw the water supply for the site from the Weald Clay: a source that is not hydrologically connected to the Folkestone Formation aquifer that provides yield to the Sussex North WSZ. Geological strata here dip towards the south-east so the outcrop of the sand/sandstone band that is providing groundwater to the borehole is up-dip, to the north-east and away from the Folkestone Formation aquifer. The Hardham abstraction, which supplies the Sussex North WSZ, is about 7 km south-east of the site.

The site is also not in the catchment of the River Arun, which provides hydrological support to the Arun Valley SAC, SPA and Ramsar site. There are no conservation sites local to the site.

All water to be abstracted is for potable use, at a rate of about 198 litres per day (0.2 m^3/day). This is much less than the rate that the borehole has been proved to be capable of: the borehole sustained a rate of 3.0 m^3/day shortly after drilling in September 2023, which is when groundwater levels will have been at their lowest for the year. Other, neighbouring, boreholes have also been proven to be capable of higher rates (Section 2.2).

3.2 Groundwater Quality

Groundwater quality is discussed in full in the updated report by Invicta Water Treatment (Appendix B).

Water from the borehole was tested in March 2024 by an accredited UKAS PWS Sampler, Stefan Massingham. Lab testing showed that there were exceedances of several water quality parameters (turbidity, iron, manganese, aluminium, sodium, chloride, boron and *Enterococci* bacteria).

A design for appropriate water treatment is presented in Appendix B, which also references similar schemes that have recently been accepted by HDC. The designed treatment scheme will be capable of treating 500 litres per day: more than the anticipated demand at the site.

The proposed sampling and testing regime will be undertaken in accordance with Private Water Supplies (England) Regulations 2016, and will likely take into account the contaminants listed above: turbidity, iron, manganese, aluminium, sodium, chloride, boron and *Enterococci* bacteria.

An Operations and Maintenance manual will be provided on commissioning the treatment system that will include detail on the maintenance, servicing and cleaning of the tanks, water treatment equipment, pumps, all pipework etc for the lifetime of the development along with regularity of servicing/maintenance and clarification what steps will be taken in the event of equipment failure to ensure continuity of supply. The manual will also cover reporting.

3.3 Source Protection

Development of a water supply borehole leads to the creation of a default 50 m radius source protection zone (SPZ). Figure 3.1 shows the 50 m radius over Google Earth imagery from March 2022 (more recent imagery is available from July 2022 but this is much less clear than that from March 2022). This image shows that the area is mostly grass and hedges, except:

- The future proposed house in white. Sewage effluent from the new house is to be treated in an on-site package treatment plant and then discharged to the ditch running northwards alongside the Broadford Bridge Road.
- Parking for the nursery is marked in yellow. This is comprised of hardcore.
- A rectangular pond is marked in aqua. This is lined to prevent the pond leaking.

Apart from the road and the small sliver of agricultural land west of the road, all of the land is owned by Paul A'Barrow, the client.

Activities that are prohibited within a SPZ1 are potentially very polluting such as landfilling, construction of filling stations or chemical works etc. none of which are anticipated in this environment. Normal domestic activities are not prohibited within a SPZ1. The construction of soakaways is not prohibited, though unless they are for rainwater only a risk assessment should be submitted to the Environment Agency.

Full details of the activities that are and are not permitted are contained within the Environment Agency's groundwater protection position statements (www.gov.uk/government/publications/groundwater-protection-position-statements) and are frequently updated. These restrictions will be included in the O&M manual for the treatment works.

Figure 3.1: 50 m radius source protection zone around the borehole, with land uses

White: future outline of proposed house // yellow: nursery parking // aqua: pond

4. References

Natural England, 2022. Natural England's Advice Note regarding Water Neutrality within the Sussex North Water Supply Zone: February 2022 V2

Borehole record form

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Environment Agency

Water Resources Act 1991 (as amended by the Water Act 2003)

A Site details

Borehole drilled for [redacted]

Location: New Barn Nurseries Broadford Bridge Road W Chiltington W sussex RH20 2LE

NGR (ten digits): TQ 09660 21086 Please attach site plan

Ground level (if known): 27 metres Above Ordnance Datum

Drilling company: SussexBoreholes

Date drilling commenced: 11/09/2023 (DD/MM/YYYY) Completed: 15/09/2023 (DD/MM/YYYY)

B Construction details

Borehole datum (if not ground level) _____ metres (m). Please tick if this is above ☐ or below ☐ ground level.
(point from which all measurements of depth are taken, for example, flange, edge of chamber)

Borehole drilled diameter 225 mm from 0 to 48 m/depth
_____ mm from _____ to _____ m/depth
_____ mm from _____ to _____ m/depth
_____ mm from _____ to _____ m/depth

Casing material: upvc diameter: 125 mm from 0 to 45 m/depth
and type (for example, if plain steel, plastic slotted). Please record permanent casing details, not temporary casing.
Casing material: plain diameter: 125 mm from 0 to 23 m/depth
Casing material: slotted diameter: 125 mm from 24 to 45 m/depth
Casing material: _____ diameter: _____ mm from _____ to _____ m/depth

Grouting details: gravel pack, bentonite pellets at 14-10 meters and cement groute to surface

Water struck at 1. 23 m (depth below datum – mbd) 2. _____ m (mbd)
3. _____ m (mbd) 4. _____ m (mbd)

C Test pumping summary (Please supply full details on form WR39)

Test pumping datum _____ m. Please tick if this is above ☐ or below ☐ ground level.
(if different from borehole datum)

Pump suction depth _____ mbd

Water level (start of test) 3.65 mbd

Water level (end of test) _____ mbd

Type of test (for example, bailer, step, constant rate)
electic pump

Pumping rate 3 m^3/hour ☑ or litres/second ☐. Please tick as appropriate.
for _____ days, 4 hours, _____ mins

Recovery to _____ mbd in _____ days, _____ hours, _____ mins
(from end of pumping)

Date(s) of measurements Pump started 15/09/2023 (DD/MM/YYYY)
Pump stopped _____ (DD/MM/YYYY)

Please supply chemical analysis if available. If you have included this please tick this box ☐

D Strata log

Geological classification (BGS only)	Description of strata	Thickness m	Depth (to base of strata) m
	sandy yellow clay with sandstone	3	3
	blue clay with hard bands and layers of sandstone	20	23
	grey sand with layers of sandstone	25	48
	(continue on separate page if necessary)		
	Other comments (for example, gas encountered, saline water intercepted)		

E Completing this form

How long did it take you to fill in this form? ⌊_____⌋

For Official use only

Date received (DD/MM/YYYY) ⌊_____⌋	File ⌊_____⌋	Consent number ⌊_____⌋	BGS reference number ⌊_____⌋
Accession number ⌊_____⌋	Wellmaster number ⌊_____⌋	SOBI number ⌊_____⌋	NGR ⌊_____⌋
LIC NO ⌊_____⌋	Purpose ⌊_____⌋		EA reference number ⌊_____⌋
Copy number ⌊_____⌋	Entered by ⌊_____⌋		

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Paul a'Barrow
Timberlands
Storrington Sawmills
West Chiltington
West Sussex
By email:
05/08/24

Dear Mr a'Barrow,

Re: Private Water Supply at Storrington Sawmills Site, New Barn Nurseries, RH20 2LE – Raw Borehole Water Analyses (to date and inferences); Proposed Design and Compliance with PWS Regs 2016 Amended 2018; Sampling, Maintenance, Recording – Rev B

Rev B – As requested by Stephen Buss regarding Headings 3,4,5 in HDC Water Neutrality Compliance requirements. Please note 3 and 4 will be detailed at contract phase in the O&M manual. The manual will also cover recording. We have other applications/systems passed based on the same wording as in this report. With regard to recording: the designated maintenance contractor/owner/agent looking after the system will take necessary samples and record in the site log book, which forms part of the O&M manual. Until the system is commissioned, we cannot say which determinands need to be tracked but it is highly likely it is those which have failed and highlighted below. Specific SOPs, contained in the O&M, will be written once the system has been commissioned and will cover inspection, cleaning and maintenance. We will comply with PWS Regs 2016 amended 2018, as referred to in our original report.

The Remainder of the Document Remain Unaltered
Further to the request that a raw borehole sample was taken by an accredited UKAS PWS Sampler, I can confirm that this was performed on 15/03/24 by Stefan Massingham. The borehole was pumped for some 2 hours prior to sampling on the day and had been pumped for several days before hand.

The samples were taken in accordance with DWI requirements (based on Group A & B Schedules PWS Regs 2016), with the correct bottles supplied by the UKAS Accredited lab, SE Water Scientific Services (SEWSS) and then duly transported to the lab thereafter, at the required transit temperatures (between 2^{o}C and 8^{o}C). Additional determinands were tested as requested by HDC for use in RO projections. In addition, we test for UV transmission and also aluminium, once filtered through 0.45 um filter to simulate ultrafiltration if deemed necessary.

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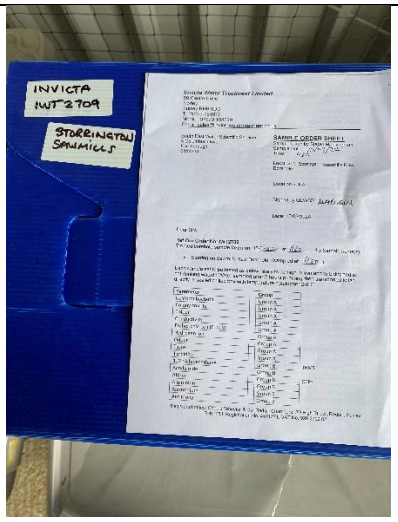

Signed acceptance of IWT Order by SEWSS

Determinands to Date	**Sample Number 1224740-3 Final (sampled 15/03/24 11:20)**
Alkalinity, mg/l	454.0
Ammonium (Ammonia and Ammonium ions), mg/l	0.568
Chloride, mg/l	251.27
Nitrate, mg/l	<0.9
Nitrite, mg/l	<0.004
Nitrite/nitrate, mg/l	0.000
Sulphate, mg/l	46.8
Total Hardness, mg/l	12.1
Odour – Qualitative	Stagnant
Odour – Quantitative	1
Colony Count 3 days at 22°C, cfu/ml	>300
Colony Count 2 days at 37°C, cfu/ml	232
E coli, mpn/100 ml	0
Total Coliforms, mpn/100 ml	2
Pseudomonas aeruginosa, cfu/100 ml	Competing growth, indicative count 0
Clostridium perfringens (including spore), cfu/100 ml	0
Enterococci, cfu/100 ml	25
Colour, mg/l Pt/Co	2
Conductivity, uS/cm	1,367
Hydrogen ion, pH	8.6
Turbidity, NTU	56.400
Bromate, ug/l	Not tested
Antimony, ug/l	<0.2
Arsenic, ug/l	7.0

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Selenium, ug/l	<0.8
Boron, mg/l	1.331
Calcium, mg/l	3.1
Magnesium, mg/l	0.6
Sodium, mg/l	357.6
Fluoride, mg/l	1.208
Benzo(a)pyrene, ug/l	<0.003
Benzo(1,12)perylene, ug/l	<0.003
Benzo(11,12)fluoranthene, ug/l	<0.003
Benzo(3,4)fluoranthene, ug/l	0.004
Indeno(1,2,3-cd)pyrene, ug/l	<0.003
PAH Total, ug/l	**0.000**
1,1,1 Trichloroethane, ug/l	<0.60
1,2-Dichloroethane, ug/l	<0.12
Benzene, ug/l	<0.02
Dibromochloromethane, ug/l	<0.50
Dichlorobromomethane, ug/l	<0.43
Tetrachloroethene	<0.15
Tetrachloroethen/Trichloroethene- SUM, ug/l	**0.00**
Tetrachloromethane, ug/l	<0.11
Total Trihalomethane, ug/l	**0.00**
Tribromomethane, ug/l	<0.60
Trichloroethene, ug/l	<0.10
Trichloromethane, ug/l	<0.50
Aluminium, ug/l	1,268.3
Copper, mg/l	<0.009
Iron, ug/l	2,484.8
Iron (free), ug/l	19.2
Lead, mg/l	1.3
Manganese, ug/l	64.7
Nickel, ug/l	2.1
Cadmium, ug/l	<0.12
Chromium, ug/l	3.6
First Draw Copper, mg/l	<0.009
First Draw Lead, mg/l	<0.9
First Draw Nickel, mg/l	1.1
Calc Pesticides – Total Substances	0.000
Aldrin, ug/l	<0.007
Dichlobenil, ug/l	<0.006
Gamma-HCH (Lindane), ug/l	<0.005
Heptachlor, ug/l	<0.008
Heptachlor Epoxide, ug/l	<0.005
Propyzamide, ug/l	<0.005

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Tri-allate, ug/l	<0.005
2,4,5-T, ug/l	<0.007
2,4-D, ug/l	<0.007
Bentazone, ug/l	<0.007
Bromoxynil, ug/l	<0.007
Dicamba, ug/l	<0.020
Dichlorprop, ug/l	<0.003
Fluroxypyr, ug/l	<0.008
MCPA, ug/l	<0.008
MCPB, ug/l	<0.008
Mecoprop(MCPP), ug/l	<0.005
Triclopyr, ug/l	<0.015
Atrazine, ug/l	<0.002
Carbendazim, ug/l	<0.001
Carbetamide, ug/l	<0.002
Chlorotoluron, ug/l	<0.003
Diuron, ug/l	<0.004
Epoxiconazole, ug/l	<0.003
Flutriafol, ug/l	<0.003
Isoproturon, ug/l	<0.003
Linuron, ug/l	<0.003
Oxadixyl, ug/l	<0.003
Pendimethalin, ug/l	<0.007
Prometryn, ug/l	<0.002
Simazine, ug/l	<0.003
Terbutryn, ug/l	<0.002
Trietazine, ug/l	<0.004
% transmission	97.5
UV Abs (10 mm) @ 254 nm unfiltered	0.011 abs_unit
Bicarbonate Alkalinity, mg/l	459.47
Total Phosphate, ug/l	303
Total Organic Carbon, mg/l	0.6
Silica, mg/l	9.95
Suspended Solids, mg/l	12.0
Aluminium (free), mg/l (after filtering through 0.45 um filter paper giving 0.88 NTU filtrate)	61.3
Total Organic Carbon, mg/l	1.1

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Treatment Prognosis
Based on the failures to date, the water treatment system will need to remove excess:

- Turbidity (56.400 NTU, maximum 1.000 NTU leaving works)
- iron (2,484.8 ug/l, maximum 200.0 ug/l)
- manganese (64.7 ug/l, maximum 50.0 ug/l)
- aluminium (1,268.3 ug/l, maximum 200.0 ug/l)
- sodium (357.6 mg/l, maximum 200.0 mg/l)
- chloride (251.27 mg/l, maximum 250.00 mg/l)
- boron (1.331 mg/l, maximum 1.000 mg/l)
- Bacteria (see above)

The recommended treatment will be extensive particle filtration followed by softening prior to a 350 lph (approximate) RO unit (see emailed attachment for full RO design calculations) with remineralisation thereafter of the permeate. The balanced permeate will be disinfected by UV and stored in a tank. The water is then boosted into supply through a second filter and UV. All backwash and regen waters will use treated water to ensure filters are kept in the best possible condition. The treatment train will be similar to that for the Brook Hill Development, recently accepted by HDC and reported on by HDC consultant Dr. G. Pearce. Please also refer to correspondence for Limekiln Farm Copsale, as the design is very similar indeed and where I have addressed several issues that will be relevant to this site as well.

The filtration equipment is modular in nature and so upgrades are quite straight forward.

The treated water will meet the PWS Regs requirements. The system can supply sufficient drinking water for the proposed 4 person property (c. 500 litres per day drinking water consumption). We have not seen any Water Neutrality documents to make any further comment at this stage.

Ongoing Maintenance & Sampling
The water treatment system will require maintenance. We will provide a bespoke O&M manual for your system along with the manufacturer's documentation. We will issue a line drawing of the water treatment process and provide hands-on training during the commissioning phase. Critical spares will be left on site and these are: spare UV lamp, quartz sleeve and sediment filters.

Sampling the raw borehole as well as the treated water is important to understand how the ground water is changing over time and how it reacts to weather events. We will only test pertinent process determinands and those required under the Schedules (see PWS Regs). If the council requires regulatory samples, we assume we will be instructed accordingly.

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Integrated Membranes Solutions Design Software

Created on: 25/04/2024 02:28:04

Nitto HYDRANAUTICS Nitto Group Company

Permeate Throttling (Variable), Concentrate Recirculation

Project name	Storrington Sawmills	Permeate flow/train	0.35 m3/h
Calculated by	Stefan Massingham	Raw water flow/train	0.50 m3/h
HP Pump flow	2.50 m3/h	Permeate recovery	14.00 %
Feed pressure	6.6 bar	Total system recovery	70.00 %
Feed temperature	10.0 °C(50.0°F)	Element age	0.0 years
Concentrate recirculation	2.00 m3/h	Flux decline %, per year	7.0
Feed water pH	8.60	Fouling factor	1.00
Chem dose, mg/l, -	None	SP increase, per year	7.0 %
Specific energy	1.63 kwh/m3		
Pass NDP	3.6 bar		
Average flux rate	15.7 lmh		

Feed type: Brackish Well High Fouling

Pass - Stage	Perm. Flow m3/h	Flow / Vessel Feed m3/h	Flow / Vessel Conc m3/h	Flux lmh	DP bar	Flux Max lmh	Beta	Stagewise Pressure Perm. bar	Stagewise Pressure Boost bar	Stagewise Pressure Conc bar	Perm. TDS mg/l	Element Type	Element Quantity	PV# x Elem #
1-1	0.4	0.8	0.7	15.6	0.1	15.6	1.15	1	0	6.5	80.2	ESPA4-LD-4040	3	3 x 1M

Ion (mg/l)	Raw Water	Feed Water	Permeate Water	Concentrate 1
Hardness, as CaCO3	0.00	0.00	0.000	0.0
Ca	0.00	0.00	0.000	0.0
Mg	0.00	0.00	0.000	0.0
Na	359.06	971.57	30.857	1124.7
K	0.00	0.00	0.000	0.0
NH4	0.57	1.09	0.056	1.3
Ba	0.000	0.000	0.000	0.0
Sr	0.000	0.000	0.000	0.0
Al+3	1.268	3.632	0.002	4.2
H	0.00	0.00	0.000	0.0
CO3	0.00	0.04	0.000	0.0
HCO3	0.20	0.52	0.017	0.6
SO4	46.80	133.39	0.443	155.0
Cl	522.16	1410.88	46.806	1633.0
F	1.21	2.96	0.275	3.4
NO3	0.08	0.18	0.029	0.2
PO4	0.30	0.86	0.001	1.0
OH	0.02	0.05	0.002	0.1
SiO2	9.95	27.77	0.407	32.2
B	1.33	1.44	1.273	1.5
CO2	0.00	0.00	0.00	0.00
NH3	0.04	0.19	0.19	0.19
TDS	**842.93**	**2554.32**	**80.17**	**2957.17**
pH	**8.60**	**8.99**	**7.57**	**9.04**

Saturations	Raw Water	Feed Water	Concentrate	Limits
CaSO4 / ksp * 100, %	0	0	0	400
SrSO4 / ksp * 100, %	0	0	0	1200
BaSO4 / ksp * 100, %	0	0	0	10000
SiO2 saturation, %	8	17	19	140
CaF2 / ksp * 100, %	0	0	0	50000
Ca3(PO4)2 saturation index	0.0	0.0	0.0	2.4
CCPP, mg/l	0.00	0.00	0.00	850
Langelier saturation index	0.00	0.00	0.00	2.8
Ionic strength	0.02	0.04	0.05	
Osmotic pressure, bar	0.7	1.8	2.1	

RO Design Calculations (see email attachment for full set)

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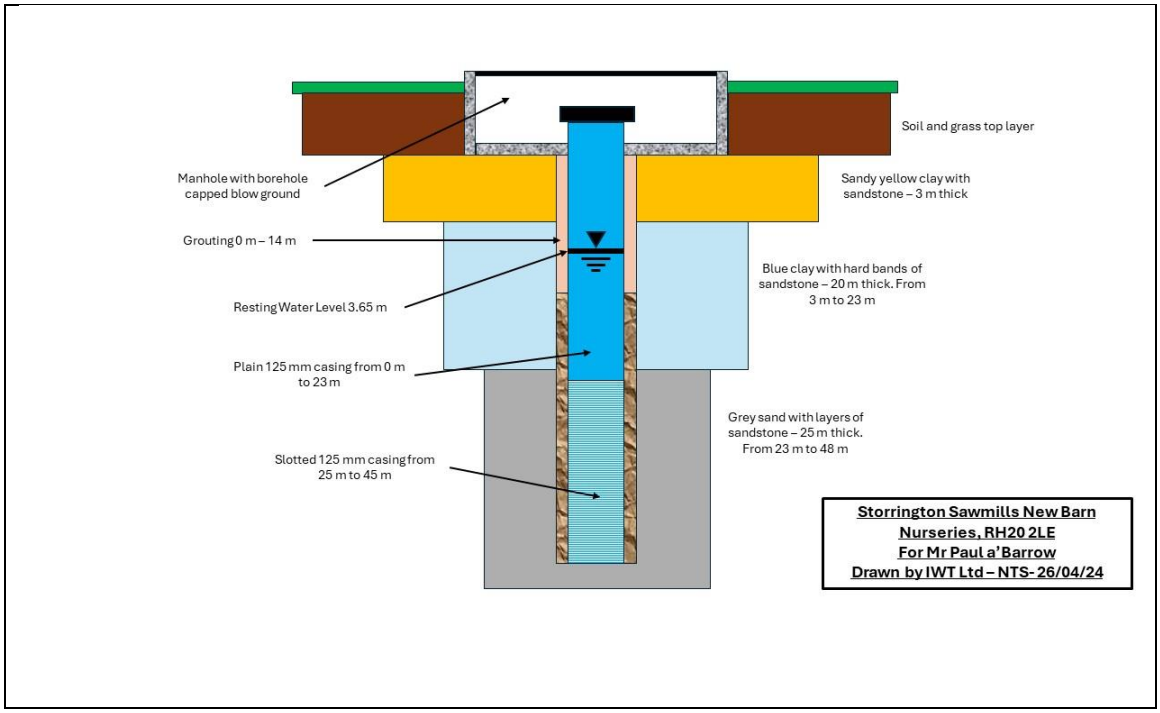
Compliance
With reference to the PWS Regs 2016 and amended 2018, this supply will be classified as Reg 9. We have allowed for a DWI risk assessment on the completed system by David Clapham (RIAMS independent consultant) along with the required sampling by a UKAS accredited sampler. We understand, under PWS Regs section 6 & 7, the duties of the council. We look for the council to provide clarity on this.

Borehole Design As Drilled On Site by Sussex Boreholes



We do not have a hydrogeological report to cross-reference with.

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Borehole Record Form

WR38: Borehole record form

Borehole record form

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Environment Agency

Water Resources Act 1991 (as amended by the Water Act 2003)

A Site details

Borehole drilled for: Mr Paul A'Barrow

Location: New Barn Nurseries Broadford Bridge Road W Chiltington W sussex RH20 2LE

NGR (ten digits): TQ 09660 21086 Please attach site plan

Ground level (if known): 27 metres Above Ordnance Datum

Drilling company: SussexBoreholes

Date drilling commenced: 11/09/2023 (DD/MM/YYYY) Completed: 15/09/2023 (DD/MM/YYYY)

B Construction details

Borehole datum (if not ground level) _____ metres (m). Please tick if this is above ☐ or below ☐ ground level.
(point from which all measurements of depth are taken, for example, flange, edge of chamber)

Borehole drilled diameter	225	mm from	0	to	48 m/depth
		mm from		to	m/depth
		mm from		to	m/depth
		mm from		to	m/depth

Casing material (and type (for example, if plain steel, plastic slotted). Please record permanent casing details, not temporary casing.)	upvc	diameter	125	mm from	0	to	45 m/depth
Casing material	plain	diameter	125	mm from	0	to	23 m/depth
Casing material	slotted	diameter	125	mm from	24	to	45 m/depth
Casing material		diameter		mm from		to	m/depth

Grouting details: gravel pack, bentonite pellets at 14-10 meters and cement groute to surface

Water struck at 1. 23 m (depth below datum – mbd) 2. _____ m (mbd)
3. _____ m (mbd) 4. _____ m (mbd)

C Test pumping summary (Please supply full details on form WR39)

Test pumping datum (if different from borehole datum) _____ m. Please tick if this is above ☐ or below ☐ ground level.

Pump suction depth _____ mbd

Water level (start of test) 3.65 mbd

Water level (end of test) _____ mbd

Type of test (for example, bailer, step, constant rate): electic pump

Pumping rate 3 m^3/hour ☑ or litres/second ☐. Please tick as appropriate.
for _____ days, 4 hours, _____ mins

Recovery to _____ mbd in _____ days, _____ hours, _____ mins
(from end of pumping)

Date(s) of measurements Pump started 15/09/2023 (DD/MM/YYYY)
Pump stopped _____ (DD/MM/YYYY)

Please supply chemical analysis if available. If you have included this please tick this box ☐

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Page 1 of 3 – see email attachments for full document

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Summary
We trust that there is enough information herein for HDC. Please keep us informed of your progress. HDC can contact me directly if they wish.

Please feel free to call on 07970 154529 if you need any parts of the report clarifying.

Regards

Stefan Massingham BSc (Hons Chem.) MSc (Cran) MWMSoc
Director - Invicta Water Treatment Limited
Qualified UKAS Private Water Supply Sampler

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