WATER OFFSETTING SCHEME AT SUMNERS POND FOR BUILDING TO THE WEST OF LITTLE MILLFIELDS, ROWHOOK ROAD, ROWHOOK, HORSHAM, WEST SUSSEX RH12 3PZ (JONKAS REAL ESTATE 2 LTD

This statement has been prepared by Nicholls Water Credits Ltd who are providing a water offsetting scheme at Sumners Pond, Chapel Road Barns Green, RH13 0PR ("The Site"). The statement forms part of the Developer's Water Neutrality Statement and sets out the offsetting measures proposed in that statement. It provides the following details.

1. List of scheme participants at date of publication.
2. Description of the Site, actual meter readings and an assessment of existing consumption
3. Proposed offsetting scheme at the Site.
4. EA Abstraction Licence, Hydrologist's assessment of the hydrogeology, impact on the protected areas, borehole design, yield, sustainability and water quality.
5. Implementation specifications, maintenance regime and water quality assurance.

This report replaces all previously issued reports.

1 DEVELOPER WATER CREDIT ALLOCATION

Jonkas Real Estate 2 Ltd ("The Developer") is participating in the scheme alongside other developers and has been allocated a maximum of 237 credits in the scheme based on their offsetting requirement for this application and or others. The water offsetting requirement for each application is set out in the relevant Water Neutrality Statement. One credit is equivalent to offsetting 1 litre of water per day. The table below lists the developers currently participating in this scheme and their allocation together with any planning reference to which the credits have been applied.

Developer	Planning Reference if Available	Credits
Wates Developments Limited	HDC - DC/24/1581	10,671
Jonkas Real Estate 2 Ltd	**HDC - DC/25/0124**	**237**
	TOTAL CREDITS IN SCHEME	19,999
	TOTAL CURRENTLY ALLOCATED	10,908
	REMAINING CREDITS (CURRENT SURPLUS)	9,091

2 OVERVIEW OF OFFSETTING PROPOSAL

A borehole was drilled and tested at the Site in October and November 2023. Subsequently an EA Abstraction Licence (number SO/041/0023/005) was issued on 14 June 2024 (see Appendix D) allowing the abstraction of up to 30 m3/day. Currently the borehole is not in use. This proposal will bring the borehole supply into use and provide a potable supply to all but a small section of the site and generate a daily mains water saving of 19,999 litres/day which will be available to offset the demand of housing development in the Sussex North Water Supply Zone (SNWSZ).

3 OFFSETTING SITE DESCRIPTION

3.1 Existing Supply & Consumption

The Site is a working farm, tourist and leisure facility with water currently supplied from six existing mains supplies. The Site is located within the SNWSZ (see location map in Appendix A) and all six supplies are metered mains supplies.

Under planning reference DC/21/2697 it was established that the site had an average daily consumption of 26,900 (please see Daedalus WNS in Appendix B). Water saving measures & offsetting of 6,691 litres/day were agreed under DC/21/2697 (see s106 Appendix I). These measures have been implemented at the Site leaving a residual consumption of 20,209 litres/day.

The Daedalus WNS established the existing use for each of the six meters (all statutory undertakers) and readings are shown in the following abstract from that WNS:

Meter Location	Customer Meter Ref No.	Meter Address	Avg. Daily Usage (m3)	Yearly Avg. (m3)
Bullbrook, Crossing	2766961	C/T Flds 1308 2400, 2695 3008 05, Valewood Lane, Horsham, RH13 0QJ	1.42	519
North of Sumners Ponds Entrance	2731624	Sumner Ponds Fishery, And Campsite, Chapel Road, Horsham, RH13 0PR	9.68	3533
Main Site Entrance	2747004	Sumner Ponds Fishery, And Campsite, Chapel Road, Horsham, RH13 0PR	14.78	5394
Residence Entrance	10246372	Sumners Cottage, Chapel Road, Horsham, RH13 0PR	0.18	65
Corner by Owlers	11149778	Munthum Drive, Slaughterford Farm, Barns Green, RH13 0PR	0.63	230
Bullbrook, Tunnel	11179743	Bullbrook, Slaughterford Farm, Valewood Lane, Horsham, RH13 0PR	0.21	77
		TOTAL	26.90	9,818

Table 1: Table 5 abstracted from Daedalus WNS

The table below shows the water consumption since the readings provided in the Daedalus WNS. The water saving measures set out in the Daedalus WNS were put in place in November/December 2023. Current readings show similar consumption levels to the Daedalus WNS allowing for some impact in the period due to the water reduction measures installed under DC/21/2697.

Meter Number	Date from	Date to	Start Reading	End Reading	Volume m3	Days	m3/d	l/d
2766961 - Bulbrook, Crossing (No longer in use)								
2731624 - North of S.Ponds Entrance	03/12/2021	03/07/2024	32,094	41,893	9,799	943	10.4	10,391
2747004 - Main Site Entrance	06/05/2022	03/07/2024	532	7,197	6,665	789	8.4	8,447
10246372 - Residence Entrance	05/10/2021	03/07/2024	2,636	5,095	2,459	1,002	2.5	2,454
11149778 - Corner by Owlers	10/03/2022	03/07/2024	6,946	7,505	559	846	0.7	661
11179743 - Bulbrook, Tunnel	10/03/2022	03/07/2024	2,035	3,054	1,019	846	1.2	1,204
TOTAL							23.2	23,158

Table 2: Further Meter readings Following on from the Daedalus WNS Readings

For consistency and so that figures can be tracked across different planning consents utilising Sumners Pond to offset we will continue to use the Daedalus WNS figures. Therefore, the figures in Table 2 are for illustrative purposes only.

Two further applications have been approved which involve water neutrality measures effecting the Site.

DC/22/1977	A worker's lodge utilising 252 litres/per day to be offset through the installation of a RWH for water cattle
DC/23/0242	A dog walking area requiring 438 litres per day utilising water from the above RWH to provide water for the dogs.

Table 3: Additional Planning Applications Affecting the Site

DC/22/1977 will be connected to the new borehole supply so does not affect the net water credit calculation as while it previously relied on the RWH system reducing mains demand to meet its offsetting requirement it is now being removed from the mains thereby removing the original offsetting requirement. The Site owner will agree a s106 obligation to connect the lodge to the new borehole supply.

DC/23/0242 has no effect on the net water credit calculation as its water requirements are to be met by the RWH system which has been implemented.

It is not practical to connect meter 11179743 - Bulbrook Tunnel to the proposed borehole supply (due to an intervening railway line) so its consumption in the Daedalus WNS should be removed from the net water credit calculation.

NET WATER CREDIT CALCULATION	**Litres/day**
Licenced BH Capacity	30,000
Existing Metered usage as per DC/21/2697 WNS	26,900
Deduct meter 11179743 - Bulbrook Tunnel	210
DC/21/2697 as per s106	6,691
AMOUNT AVAILABLE FOR CREDITS	**19,999**
DC/22/1977 - replace mains supply to Workers Lodge	252
Supply Required to meet current needs	20,251
Surplus BH Capacity (Capacity - Credits amount)	9,749

Table 4: Net Water Credit Calculation

19,999 litres/day converts to 19,999 water credits available for offsetting.

In addition to the borehole water being allocated to offsetting and water credits, a further amount of 9,749 litres per day (after deducting the amount required for DC/221977) is available from the borehole supply. The additional capacity will be used for backwashing, future expansion of the farm, tourism and leisure facilities or to replace the water saving measures installed under DC/21/2697. It also provides a significant buffer.

3.2 Existing Water Uses

The Site is a working farm and leisure facility. Principle water uses are as follows:

- agricultural uses and farm buildings, including watering of cattle
- camping and caravanning pitches, with associated washing, shower and sanitary blocks

- holiday lodges and other similar facilities
- café/restaurant
- other dwellings on site for holiday rentals and/or accommodation for on-site staff

The number of livestock to be accommodated in the barn are as follows:

- 30 ewes
- 1 ram
- Up to 40 lambs (depending on lambing success)
- Up to 60 cows
- 1 bull
- Up to 60 calves (depending on calving success)

The overwhelming proportion of existing demand, however, comes from the camping and caravanning operation, with 47,271 nights stayed in a single year.

3.3 Description of Boreholes

A borehole (BH) was drilled at the Site between the 2nd and 5th of October 2023 to 54 m depth and into a Horsham Stone Member. The BH's location is shown in Figure 1 and drill log provided in of Stephen Buss's Hydrogeological Impact Assessment (Appendix B) which is included in Appendix C of this report.

An Environment Agency Abstraction Licence has been granted to allow the abstraction of up to 30m3 per day and this is included in Appendix D. Full details of the local hydrogeology, borehole design, testing and impacts are provided in Stephen Buss's Hydrogeological Impact Assessment which supported the EA Licence application and is included in Appendix C.

3.4 Assessment of Impact on Protected Areas

A senior hydrologist (Stephen Buss) examined whether the BH's could have an adverse effect on the integrity of Arun Valley Special Protection Area (SPA), Special Area of Conservation (SAC) and Ramsar sites and his report is provided in Appendix E. The impact statement in his report clearly shows there would be no adverse impact, stating:

> *"the net effect of the proposed abstraction on the water balance of the River Arun catchment, upstream of the Arun Valley SAC, SPA and Ramsar site will be zero. There is no interaction between the abstraction and groundwater in the "Wealden Greensand semi-confined aquifer"*

3.5 Water Quality

Water quality is deemed treatable for the purposes of potable water and is discussed in detail in the Water Quality & Treatment section later in this report.

3.6 Borehole Yield and Sustainability Assessment

Full details of the yield and sustainability testing undertaken are provided in Stephen Buss's Hydrogeological Impact Assessment which is included in Appendix C. The borehole is considered capable of providing a sustainable supply of 30m3 per day and this is evidenced by the grant of the EA Abstraction Licence for that amount.

3.7 Existing Supply & Distribution Network

Figure 1 below shows the existing supply network. The mains supplies are connected to the local supplier's distribution network in Muntham Drive and Chapel Road. The distribution network feeding off the various mains supplies is not currently interconnected within the Site. The existing meters and distribution network is shown in Figure 1.

4 PROPOSED OFFSETTING SCHEME

4.1 Overview

The borehole is not currently connected to the distribution network within the Site and water is not currently filtered or treated. The borehole has a proven, licenced yield of 30 m3/day without any effect on the protected sites.

As illustrated above, the offsetting scheme will provide up to 30 m3/day for potable use within the area shown in Figures 2 and 3. This will allow a reduction in mains demand within the SNWSZ of 19.999 m3/day and allow that amount to be used to offset the future demands of new development. This will be facilitated through the Nicholls water credit scheme.

The offsetting scheme will connect the borehole to a new treatment plant designed to provide a potable supply. This will be connected to the Site via a new potable water storage tank. Figures 2 and 3 show how the scheme will be laid out. The work will include:

1. Installation of appropriate potable water storage tanks, pumps, filtration, and treatment systems in a self-contained ISO container (see specification at Appendix F).
2. Water treatment design and quality testing to WHO standards and/or the standards set by the local authority's Environmental Health Officer (EHO).
3. Environmental Health Officer (EHO) sign-off and approval.
4. Connection of the treated water supply from the new storage tank to the Site as set out in Figure 2 or by equivalent means.
5. Disconnection of superfluous mains supplies and interconnection of the existing distribution networks within the Site.
6. A telematics system will be installed to remotely monitor the borehole and record the amount of water supplied 24/7.

During the implementation of planning reference DC/21/2697 meters 2731624 and 2747004 will be replaced by a single new meter at the approximate position shown in Figure 3 at which point all existing meters will be disconnected. This is not scheduled for several months so in the event that the new meter has not been installed prior to the implementation of the measures described in this document all meters other than 2747004 will be disconnected as shown in Figure 2

A batch meter will ensure that the borehole does not abstract more than the licenced limit (30 m3/day). A single mains supply (as shown in Figures 2 and 3) will continue to provide a backup water in the event of a temporary failure of the borehole system. As the 30m3/day provided by the borehole is a significant oversupply over the required supply of 20,251 m3/day any temporary use of the mains supply will be more than offset by the oversupply.

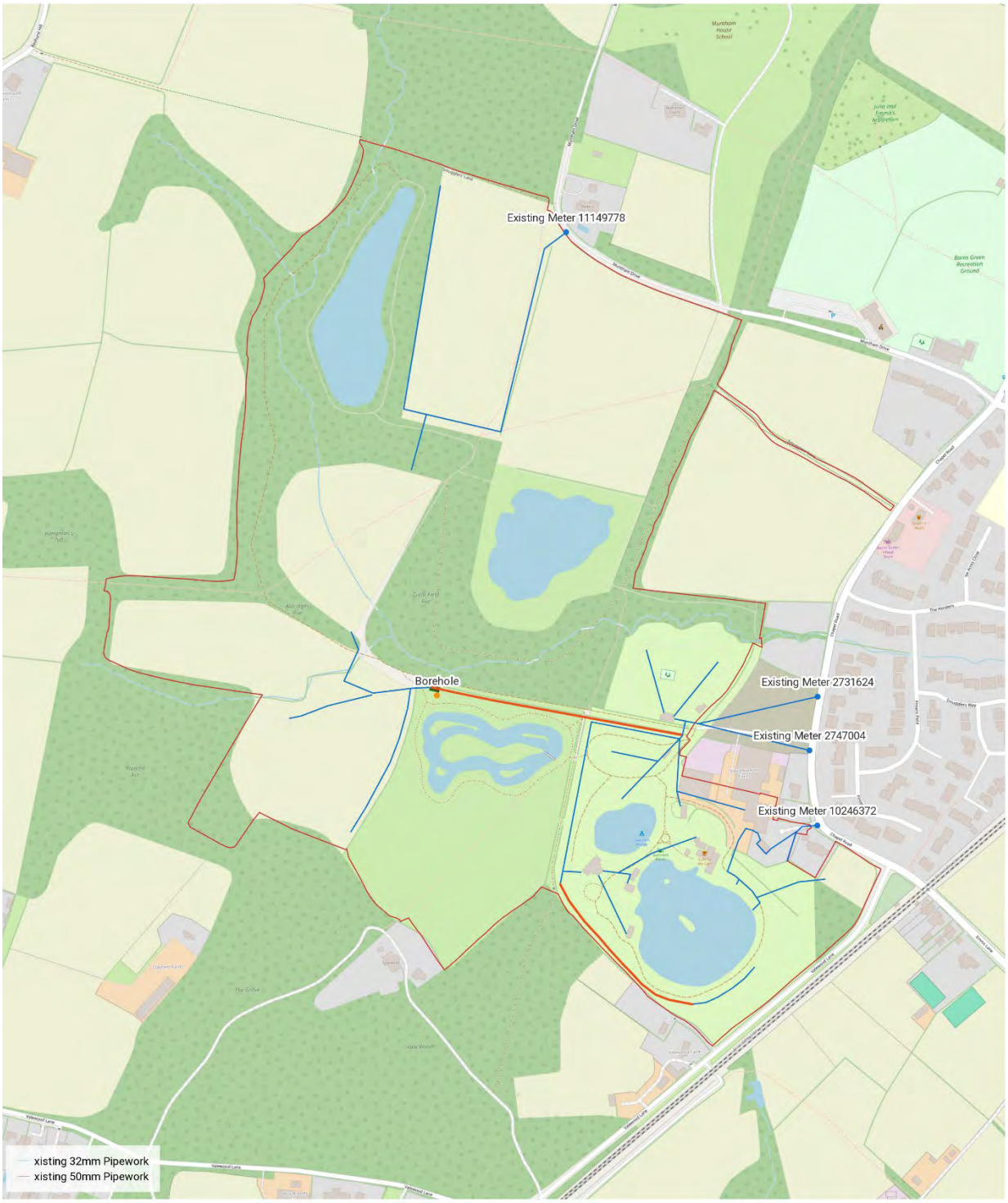


Figure 1 – Existing Supply Network (pipe runs and meter locations are indicative).

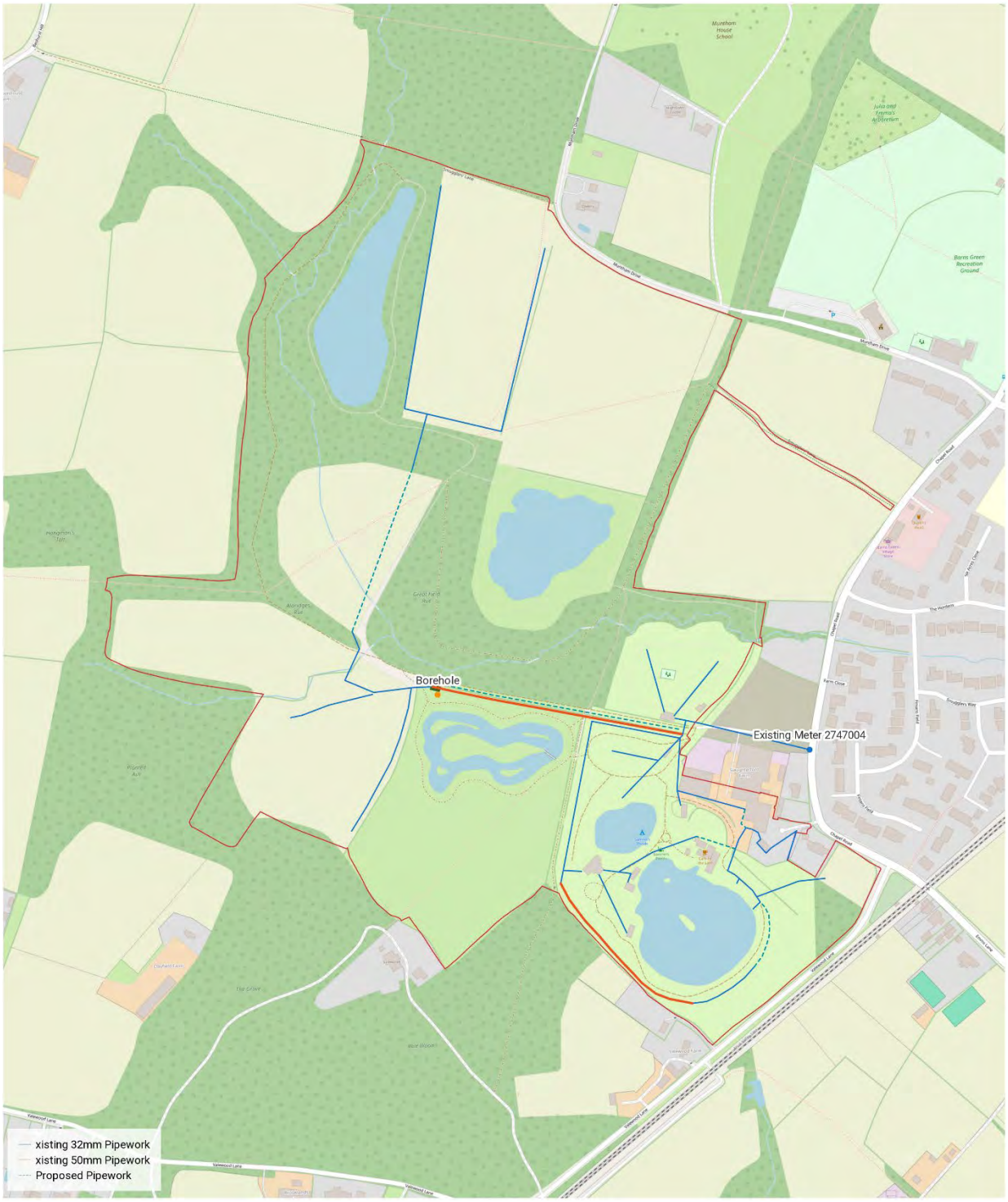


Figure 2 – Proposed Supply Network pre–New Meter (pipe runs are indicative)

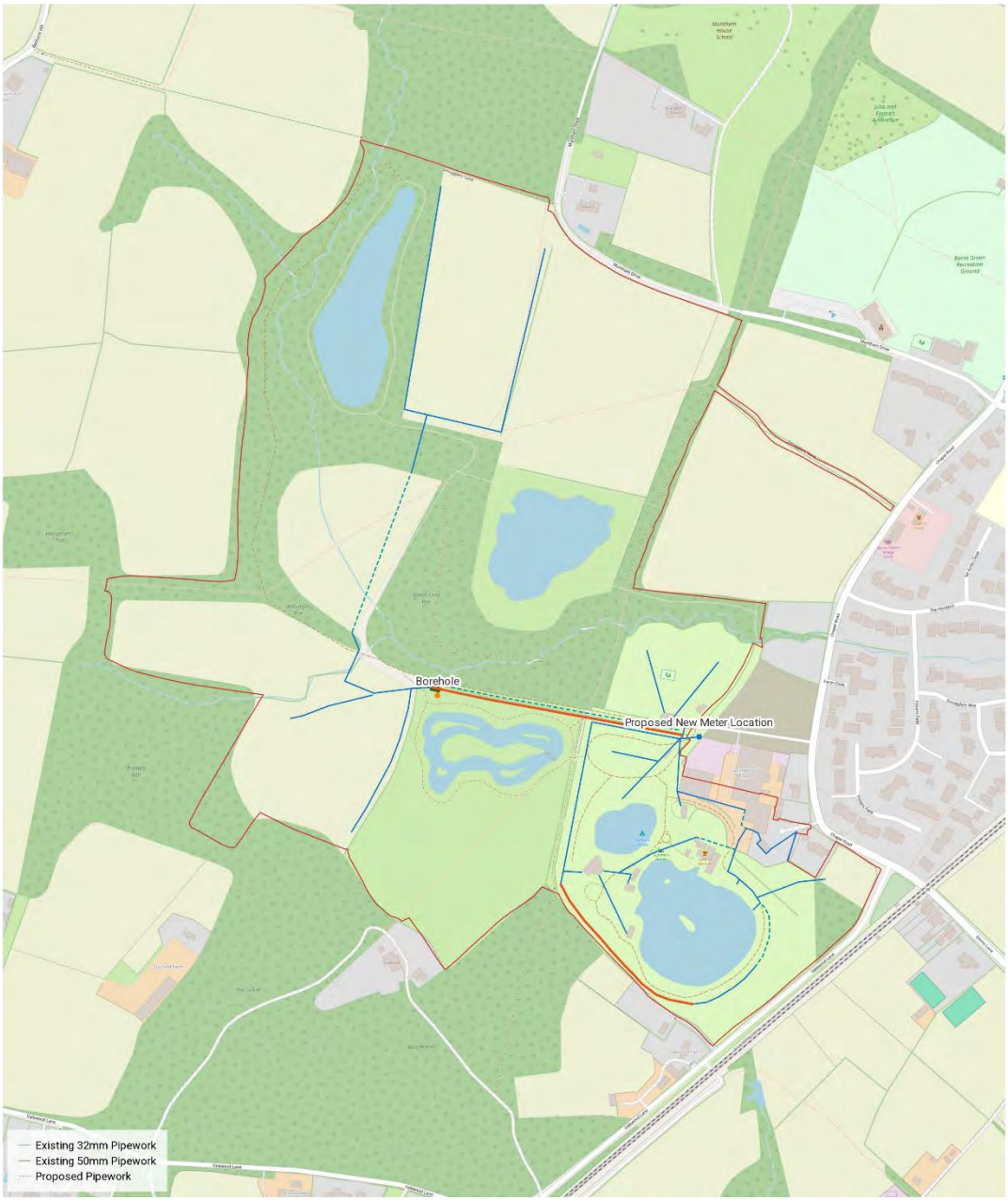


Figure 3 – Proposed Supply Network New Meter Installed (pipe runs are indicative)

4.2 Water Quality & Treatment

Appendix F- Groundwater Investigation Report provides a detailed assessment of the groundwater quality and proposed treatment. In addition to that report the physical features to be installed to protect the borehole from contamination are set out below.

The borehole will include the following protection measures.

- 2 external locks – to prevent unauthorised access.
- Twin skin GRP enclosure – to prevent changes in temperature and seal the area directly around the borehole to prevent ingress from the surface.
- Raised Plinth – to prevent external contaminants or surface flows entering the borehole.
- Bolt Down Well Head – to prevent unauthorised access and secure the borehole from the ingress of external contaminates.
- Grouting – to prevent ingress of surface flows or contaminants from the surface and any made up ground.
- Linings – to prevent ingress from geologies not targeted by design.

Kevin Beer raised a number of queries regarding the Groundwater Investigation Report during his assessment of application reference DC/24/1581 and these are addressed in correspondence from Stephen Buss, Nicholls Boreholes and the RO manufacturer in Appendix J.

4.3 Ongoing Maintenance

A telemetric system will be installed which will allow the system to be remotely monitored by the Nicholls's servicing team 24/7 using an active alert system. Ongoing maintenance and water quality assurance routines are set out in Appendices F and G. Water quality will be sampled at a minimum on a biannual basis and should the EHO require a more frequent testing regime this will be implemented.

Further details regarding the water quality assurance and testing regime are set out in Appendix F - Groundwater Investigation Report.

5 Implementation of Measures, Planning Consents & Section 106 Agreements

The measures will be implemented and maintained at the site under the titles set out in Table 5 below. Appropriate s106 obligations should be tied to this land. A red edge plan will be provided on request. Separate planning obligations agreements will be entered into with each developer. Suggested s106 obligations on the Site owner and developer are provided in Appendix H.

Title Number	Description	Proprietors
SX63564	Slaughterford Farm, Chapel Road, Barns Green, Horsham West Sussex RH13 0PR	Mr Simon Philip Smith
SX61374	Sumners Cottage, Slaughterford Farm, Barns Green, West Sussex RH13 0PR	Simon Philip Smith
WSX337854	Sumners Cottage, Chapel Road, Barns Green, Horsham RH13 0PR	Simon Philip Smith
WSX337849	Sumners Cottage, Chapel Road, Barns Green, Horsham RH13 0PR	Simon Philip Smith
WSX122294	Sumners Cottage, Slaughterford Farm, Barns Green, Horsham, W Sussex RH13 7PR	Simon Philip Smith
WSX337852	Sumners Cottage, Slaughterford Farm, Barns Green, West Sussex RH13 0PR	Simon Smith

Table 5: Titles Comprising the Site

Sufficient credits have been sold at time of publication with signed contracts in place to provide for the cost of implementing the measures and securing the ongoing maintenance.

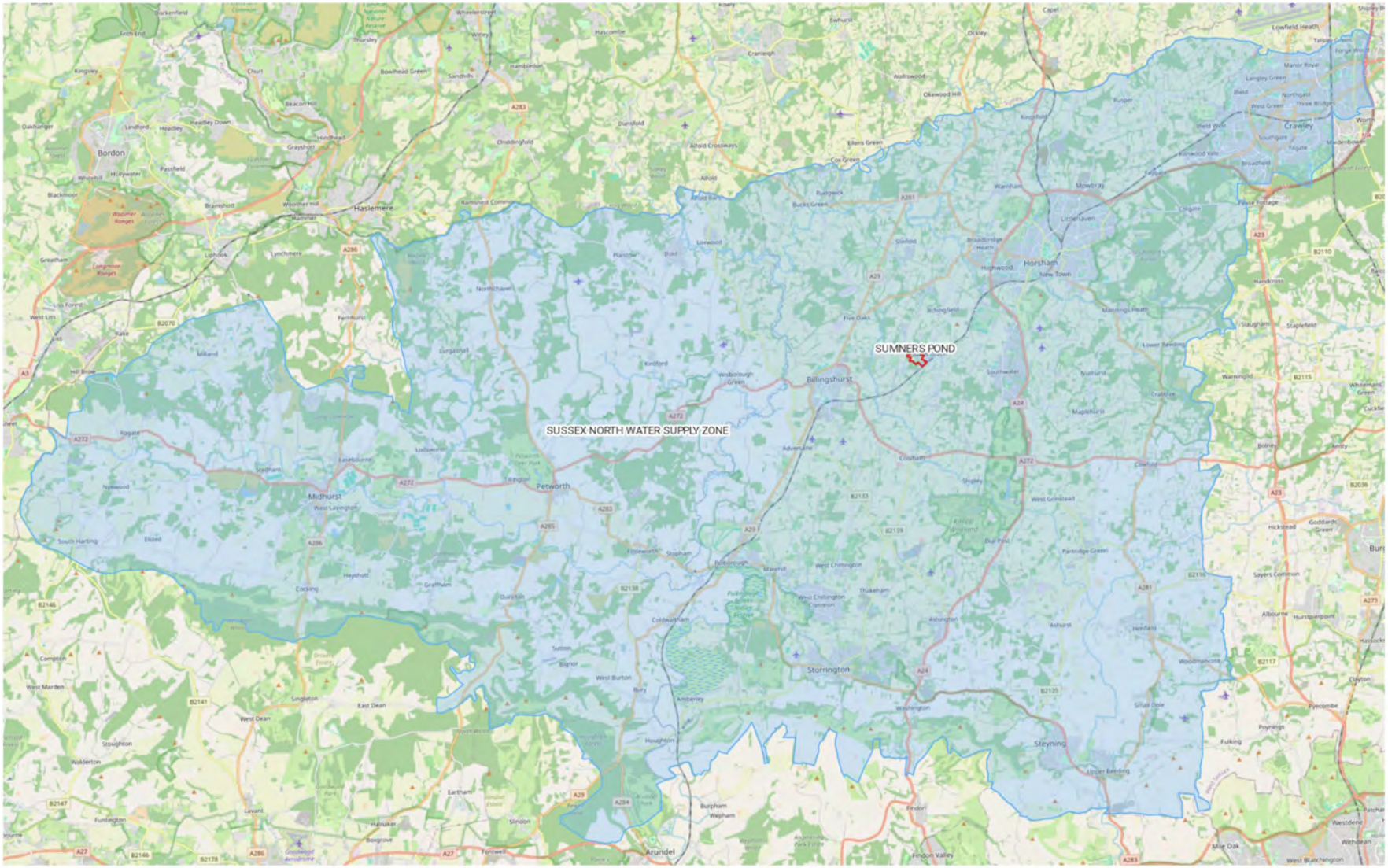
The plant treatment room will be housed in a purpose-built ISO container as set out above. This does not require planning permission as it is a temporary structure.

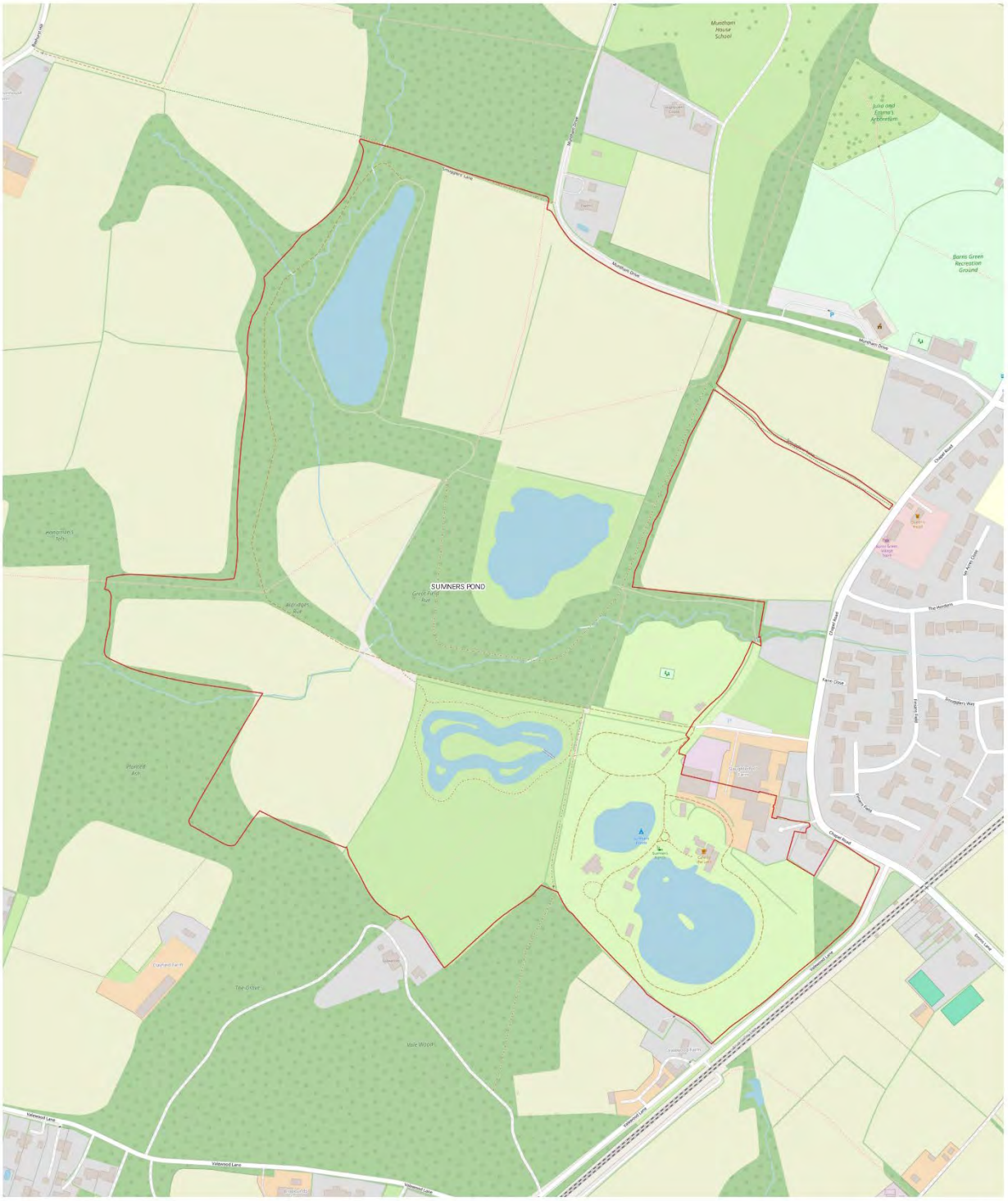
6 Summary

The proposed offsetting scheme is based at a site in the Sussex North Water Supply Zone with a proven average consumption available for offsetting of 19.999 m3/day.

The scheme utilises an existing licenced borehole with a proven yield 30 m3 per day and this has been assessed as having no effect on the protected areas.

APPENDIX A – SITE LOCATION AND LOCATION PLAN





Produced on Land App, Feb 5, 2025.
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50 m
Scale 1:2500 (at A2)

N

APPENDIX B – DC/21/2697 DAEDALUS WNS INCLUDING EVIDENCE OF USAGE

DAEDALUS
ENVIRONMENTAL

Sumners Ponds
Chapel Road, Barns Green

Water Neutrality Statement

June 2022

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Contents

1 Introduction 4

1.1 This Statement 4

1.2 The Issue of Water Neutrality 5

1.3 Site Description 6

1.4 The Proposals 6

2 Water Demand in the New Development 8

2.1 Approach to Water Efficiency 8

2.2 Proposal Demand 13

3 Offsetting 15

3.1 Background and Reasoning 15

3.2 Existing Water Demand 15

3.3 Primary Offsetting Option: On Site Water Efficiency Improvements 17

3.4 Back-Up Option: A New Borehole Supply 19

4 Conclusions and Recommendations 21

5 Appendices 22

5.1 Appendix A – Map of the Affected Area 22

5.2 Appendix B – Fixture and Fittings Flow Data 23

5.3 Appendix C – Site Meter Readings Summary 27

5.4 Appendix D – Attendance/Booking Records 27

5.5 Appendix E – RPS Report for Borehole Option 27

1 Introduction

1.1 This Statement

1.1.1 This Water Neutrality Statement supports the full planning application for the proposed mixed-use development on land at Sumners Ponds, Chapel Road, Barns Green within Horsham district. It has been commissioned by The Hunter Group (the Applicant).

1.1.2 The Statement sets out how the development proposals for 32 dwellings, 6 commercial units and 1 reception unit are aiming to proactively address the issue of sustainable water use. It describes how the proposals responds to the requirement for water neutrality in line with Natural England's Position Statement (2021) (see section 1.2).

1.1.3 Strategic options for achieving water neutrality in new developments continue to evolve and a structured offsetting mechanism administered by the authority is still to be confirmed. The development proposals for Sumners Ponds are therefore designed to adhere to the agreed interim approach as currently described in the Position Statement and expanded upon on the Horsham Borough Council website, and will develop as the planning and design process progresses.

1.1.4 This Statement describes the proposed performance standard for water fixtures and fittings in the new dwellings, calculates the expected water use for the site as a whole (the 'water budget') and the resulting indicative offset requirement. It also discusses two robust options for offsetting the residual water use which have been assessed and explored in detail and will be confirmed later in the planning process.

1.1.5 In respect of one of these options – related to the introduction of a new borehole to feed non-potable water use on the development, an accompanying geotechnical report has been compiled by RPS to explain the technical viability and validity of this option, including an explanation of why such a borehole would not affect the Sussex North Water Supply Zone. The reader should therefore consult that report in conjunction with this document for a fuller picture of that potential solution.

1.2 The Issue of Water Neutrality

Natural England's Position Statement for Applications within the Sussex North Water Supply Zone (September 2021 Interim Approach)

1.2.1 Natural England's Position Statement has been produced following concerns over the adverse effects of existing groundwater abstraction on the integrity of Arun Valley, specifically Arun Valley Special Conservation Area, Arun Valley Special Protection Area and Arun Valley Ramsar site, and the potential impacts of further development on these areas.

1.2.2 To ensure that new developments do not exacerbate this situation, Natural England has advised that all new development proposals within the Sussex North Water Supply Zone (see Appendix A) must demonstrate water neutrality. Natural England define water neutrality as follows:

For every new development, total water use in the region after the development must be equal to or less than the total water use in the region before the new development.

1.2.3 The local authorities in the area are working with Natural England to secure water neutrality through a water neutrality strategy. In the interim, Natural England have advised the following approach:

Minimising water use of new builds.

- Complete a water budget (based on occupancy)
- All new builds to demonstrate that they can achieve strict water targets (e.g., 85L/pp/day*)

This can be achieved by measures such as:

- Grey water recycling (advantage of being reliable in hot dry weather);
- Rainwater harvesting;
- Water efficient fixings (such as shower aerators) to demonstrably reduce demand-this would need to be suitably certain.

In addition, water offsetting is required

- One way to achieve this is retrofitting of council owned properties/commercial buildings-located within Sussex North. Examples include:
- Grey water recycling- (for example there are clear opportunities for commercial properties).
- Rainwater harvesting of commercial settings;
- Installation of water reduction fittings in Council-owned buildings.

These measures need to be implemented until such time as a more sustainable water supply has been secured. It will also need to be ensured that measures are not already proposed (for example in Southern Water's Management Plan) to avoid double-counting. Any mitigation must be suitably certain in order to comply with the Habitats Regulations and Caselaw.

Water Neutrality in Horsham District (www.horsham.gov.uk)

1.2.4 As a result of the issue identified by Natural England, Horsham District Council now requires development applications to be accompanied by a statement setting out the strategy for achieving water neutrality, including through significant water efficiency measures and by providing offsetting solutions where required.

1.2.5 The Horsham District Council website includes a proposed method for dealing with the water neutrality issue and this Statement has been designed to align with this advice.

1.3 Site Description

1.3.1 The proposed site is situated in the village of Barns Green within Horsham district. It forms part of 'Sumners Ponds' which is a large commercial site used for fishing, camping and for livestock farming.

1.3.2 The development site itself is a 1.9ha portion of the overall Sumners Ponds site and it comprises a field currently used for storage, a car park, farm buildings used for cattle accommodation and storage and light industrial units.

1.3.3 Dense hedgerows and trees form a boundary around the north, east and west of the northern portion of the site. Chapel Road and a converted barn dwelling adjoin the site to the east while the Grade II Listed house, Little Slaughterford, sits to the north. To the west is the Sumners Ponds campsite, Farm Pond and Ribbon Lake. The southern parcel is occupied by commercial units and is bordered by Sumners Lake and café.

1.3.4 The site is proposed to be allocated within the Itchingfield Neighbourhood Plan, which has gone through independent examination.

1.4 The Proposals

1.4.1 The full planning application (ref DC/21/2697) was submitted to Horsham District Council on 30 November 2021 and seeks permission for: "*the provision of 32 no. residential dwellings including 35% affordable housing; 6no. commercial units and 1no. reception building; access and circulation routes, parking hard and soft landscaping together with sustainable drainage system*".

1.4.2 Figure 1 below shows the proposed site plan:



Figure 1: Proposed Site Plan (ECE Architecture)

2 Water Demand in the New Development

2.1 Approach to Water Efficiency

2.1.1 The management of water in the proposed development will follow the principles of the Water Hierarchy, prioritising a reduction in demand for water, specifying efficient fittings and employing rainwater harvesting:

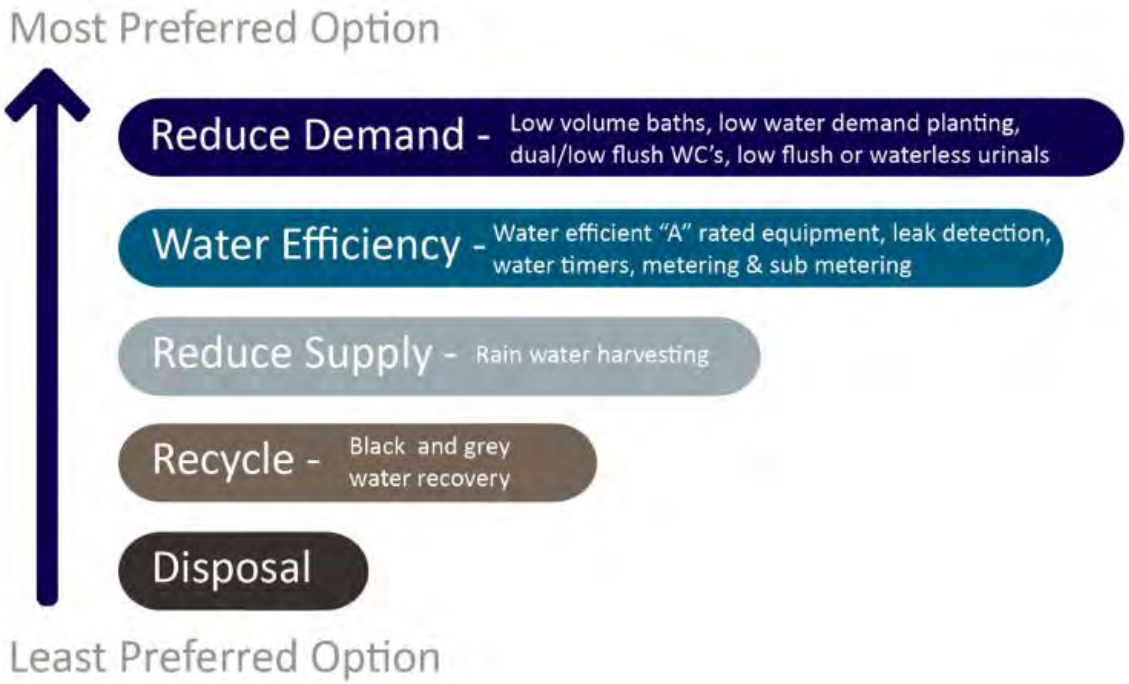


Figure 2: The Water Hierarchy

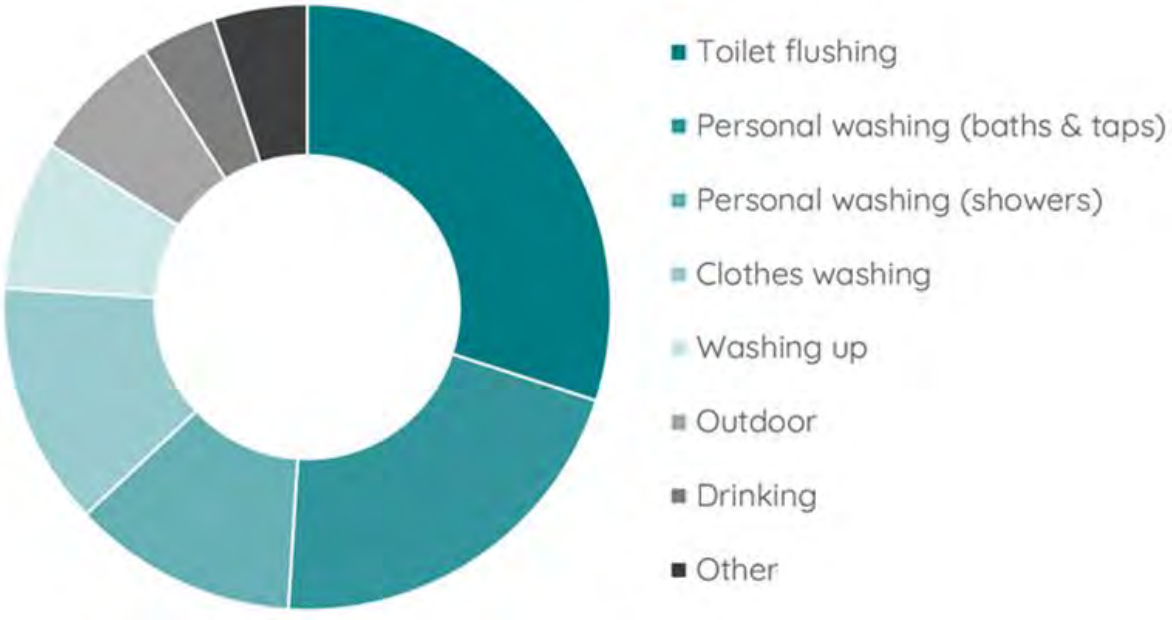


Figure 3: Domestic Water Consumption by End Use

Residential Development

2.1.2 The Natural England Position Statement advises a domestic water consumption target of 85 litres per person per day (l/p/d) for this location, well below the local average of 135 l/p/d (www.horsham.gov.uk).

2.1.3 The Applicant is committed to achieving this ambitious target as the first step to achieving water neutrality and has applied the principles of the Water Hierarchy to design a suitable approach.

Water Efficient Fixtures and Fittings

2.1.4 The Applicant will reduce demand for water by specifying water efficient fixtures, fittings and appliances for all 32 residential dwellings on the development as shown in Table 1.

2.1.5 The accredited calculation methodology for Part G of the Water Regulations has been used to demonstrate that this proposed specification, alongside rainwater recycling as described below, will exceed the daily water use target, achieving 84.07 l/p/d. An extract from the Water Calculator is given in figure 5.

2.1.6 The final specification to be used on the site to achieve the daily water use target will be confirmed later in the design process:

Measure	Water Use	Example Product
Showers (l/min)	9	Bristan Heritage
Aerated taps (l/min)	4	Bristan CAP 1/2 E4 C
Kitchen sink taps (l/min)	5	VitrA Flo S
Bath (l capacity)	140	Armitage Shanks Sandringham 21 S1832
Low / dual flush WC (l)	4/2.6	Armitage Shanks Sandringham 21 ASPK010
Washing machine (l/kg dry load)	8.17	Part G fixed usage figures
Dishwasher (l/place setting)	1.25	Part G fixed usage figures

Table 1: Proposed Water Efficiency Fixtures and Fittings Performance Standards (Residential)

Rainwater Recycling

2.1.7 Achieving the water usage figure of below 85 l/p/d through efficient fixtures and fittings alone typically leads to a poor 'water experience' for residents, particularly in relation to shower use, increasing the risk of fixtures immediately being replaced with units with higher flow rates.

2.1.8 To avoid this scenario, the Applicant will install a rainwater recycling system to each property to supply water for some non-potable uses including WC flushing and clothes washing. With the domestic sector consuming a large proportion of potable water in non-potable situations, this will significantly help maximise efficiency on the development without relying solely on internal fixtures and fittings.

2.1.9 The rainwater harvesting systems to be installed will capture rainwater from the building roofs and store this within a rainwater tank which is typically buried in the garden (in the case of houses)

or within the curtilage of the property (in the case of flats). The tanks are sized so that, over the course of a year, they will be able to provide the required average daily rainwater contribution. A secondary plumbing system then enables the collected water to be used.

2.1.10 The Water Calculator has been used to size an indicative rainwater harvesting system such that, when combined with the efficiency measures, it reduces mains water use to below the 85 l/p/d target. The specification for this indicative system is shown in figure 4.

2.1.11 Many variations on system design and configuration are available. The actual systems to be employed at this site and their final specifications will be confirmed at the detailed design stage.

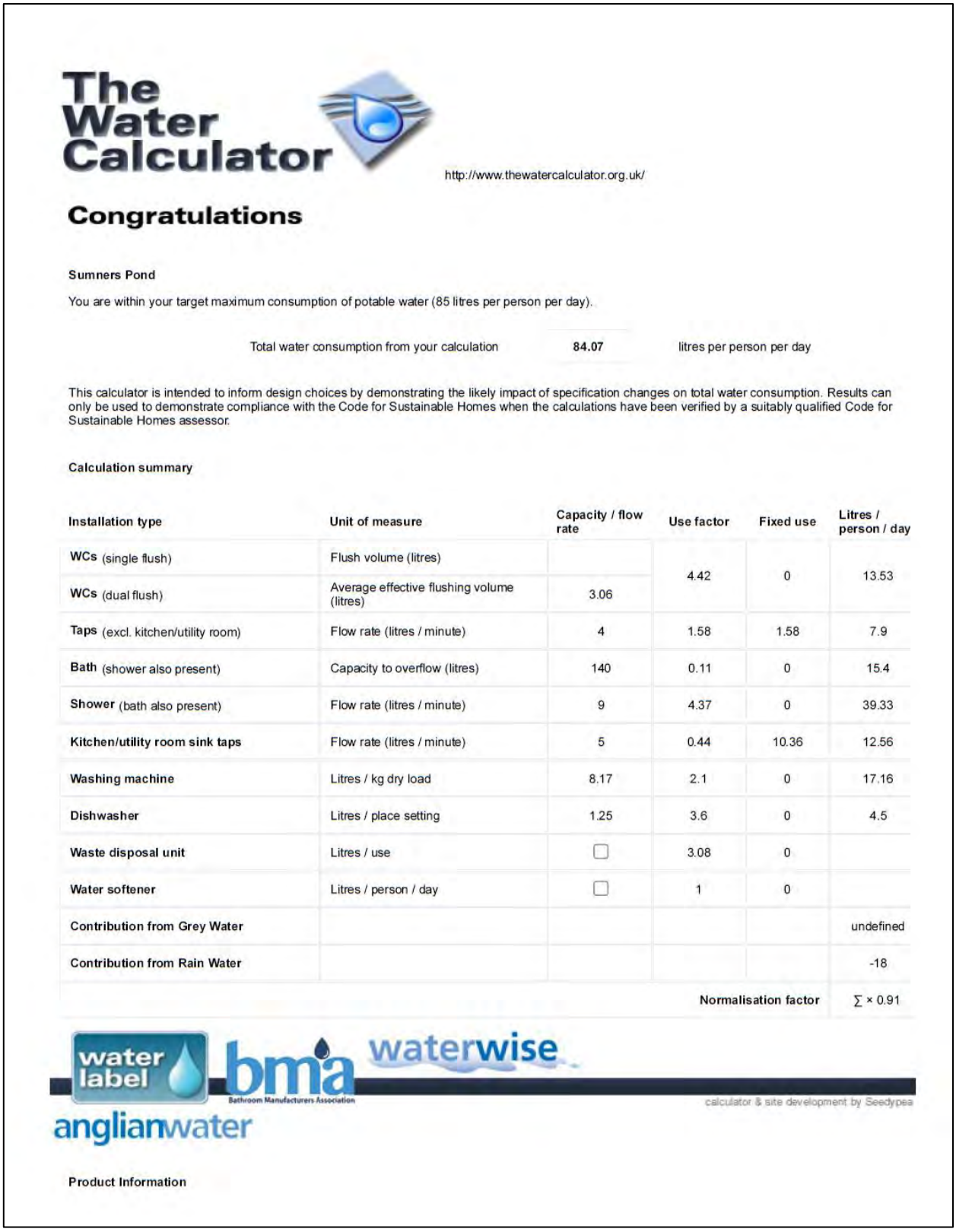
Contribution from Rain Water *

Collection area (m^2)	45	a	
Yield co-efficient and hydraulic efficiency	0.8	b	
Rainfall (average mm/year)	900	c	
Daily rainwater collection (litres)	88.77	d	(a × b × c) ÷ 365
Percentage collected (%)	60	e	
Number of occupants	2.4	f	
Daily rainwater per person (litres)	22.19	g	(d × e ÷ 100) ÷ f
Rainwater demand (litres/person/day)	18	h	
Rainwater savings (litres/person/day)	18	i	min {g, h}

* BS 8515 intermediate approach.

* These calculations assume 900ml annual rainfall in this location and, for this sample property calculation, a collection area of 45m^2.

Figure 4: Indicative Rainwater System (The Water Calculator)



The Water Calculator

http://www.thewatercalculator.org.uk/

Congratulations

Sumners Pond

You are within your target maximum consumption of potable water (85 litres per person per day).

Total water consumption from your calculation **84.07** litres per person per day

This calculator is intended to inform design choices by demonstrating the likely impact of specification changes on total water consumption. Results can only be used to demonstrate compliance with the Code for Sustainable Homes when the calculations have been verified by a suitably qualified Code for Sustainable Homes assessor.

Calculation summary

Installation type	Unit of measure	Capacity / flow rate	Use factor	Fixed use	Litres / person / day
WCs (single flush)	Flush volume (litres)		4.42	0	13.53
WCs (dual flush)	Average effective flushing volume (litres)	3.06			
Taps (excl. kitchen/utility room)	Flow rate (litres / minute)	4	1.58	1.58	7.9
Bath (shower also present)	Capacity to overflow (litres)	140	0.11	0	15.4
Shower (bath also present)	Flow rate (litres / minute)	9	4.37	0	39.33
Kitchen/utility room sink taps	Flow rate (litres / minute)	5	0.44	10.36	12.56
Washing machine	Litres / kg dry load	8.17	2.1	0	17.16
Dishwasher	Litres / place setting	1.25	3.6	0	4.5
Waste disposal unit	Litres / use	☐	3.08	0	
Water softener	Litres / person / day	☐	1	0	
Contribution from Grey Water					undefined
Contribution from Rain Water					-18
				Normalisation factor	∑ × 0.91

water label · bma Bathroom Manufacturers Association · waterwise · calculator & site development by Seedypea · anglianwater

Product Information

* These calculations assume 900ml annual rainfall in this location and, for this sample property calculation, a collection area of 45m^2.

Figure 5: Indicative Part G Accredited Water Calculator Results (The Water Calculator)

Commercial Development

2.1.12 The proposals for the site include seven commercial units comprising one reception building associated with the campsite and six further units for light industrial/commercial use. Each of the six light industrial/commercial units include a kitchen and three WCs with handwashing facilities as shown in the image below.

2.1.13 The Applicant will apply the principles of the Water Hierarchy to reduce demand for water from these premises, in line with the approach described for the residential element of the proposals.

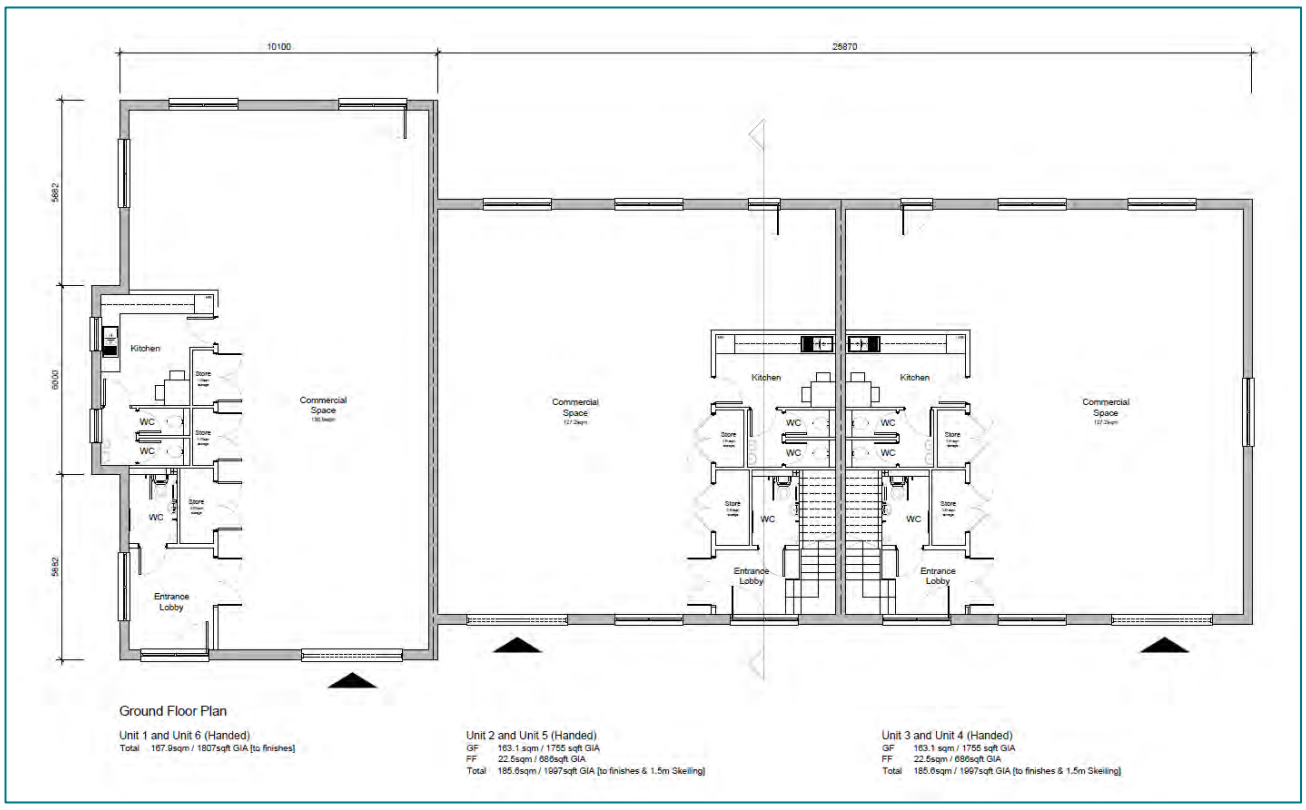


Figure 6: Proposed Commercial Units: Floor Plan (ECE Architecture)

Water Efficient Fixtures and Fittings

2.1.14 Appropriate water efficient fixtures and fittings will be specified throughout using a specification similar to that designed for the residential properties (aerated taps, low/dual flush cisterns) and with the addition of automatic, sensor-enabled tap controls.

Measure	Water Use	Example Product
Aerated taps (l/min)	3.7	Armitage Shanks Sensorflow 21 Suite
Kitchen sink taps (l/min)	5	VitrA Flo S
Low / dual flush WC (l)	4/2.6	Armitage Shanks Sandringham 21

Table 2: Proposed Water Efficiency Fixtures and Fittings Performance Standards (Commercial)

2.1.15 As recommended in the *Water Neutrality and Planning Applications* section of the Horsham District Council website, the BREEAM Wat 1 Calculator has been used to estimate the water used during the course of each unit's operation. This takes into account a building's end use, its floor area and the internal fixtures and fittings specifications.

2.1.16 The results are shown in Table 3 and suggest a water use figure of 18.59 l/p/d.

2.2 Proposal Demand

2.2.1 This section combines the water consumption data calculated above and the accommodation schedule and occupancy rates to calculate the total water demand for the proposed development.

Residential

2.2.2 The illustrative schedule of accommodation produced for the proposed development has been combined with extrapolated 2011 census data on average occupancy in Horsham District (as recommended in the *Water Neutrality and Planning Applications* section of the Horsham District Council website) to estimate a residential population of 74 people once the site is fully occupied.

Housetype	Quantity	Occupancy	Total Residents (indicative)
1 bedroom	6	1.32	7.92
2 bedroom	4	1.88	7.52
3 bedroom	13	2.47	32.11
4 bedroom	9	2.86	25.74
Total	**32**		**73.29**

Table 2: Residential Occupancy

2.2.3 On this basis, the total estimated daily water use for the residential element of this development would be approximately:

84.07 litres per person per day x 74 residents = 6,221.18 litres per day

Commercial

2.2.4 The BREEAM Wat 1 Calculator has been used to estimate the average occupancy rate for each building and the results have been combined with estimated water use per person to predict the total daily water use as a result of the commercial development:

Commercial Units		Total Floor Area	Commercial Space	Office Space	Kitchen, WC, Storage Areas	BREEAM Results		
		(sqm)	(sqm)	(sqm)	(sqm)	Predicted Occupancy	Predicted Daily Water Use (l/p/d)	Total Daily Water Use (l)
Unit C1	Single storey	167.9	130.9	None	37.0	2.93216	18.59	54.5
Unit C2	1.5 storey	185.6	127.2	20.1	38.3	4.84722	18.59	90.1
Unit C3	1.5 storey	185.6	127.2	20.1	38.3	4.84722	18.59	90.1
Unit C4	1.5 storey	185.6	127.2	20.1	38.3	4.84722	18.59	90.1
Unit C5	1.5 storey	185.6	127.2	20.1	38.3	4.84722	18.59	90.1
Unit C6	Single storey	167.9	130.9	None	37.0	2.93216	18.59	54.5
Reception Unit	Single storey	95.7	95.7	None	0.0	0	0	0
Total Daily Water Use								**469.5**

Table 3: Commercial water demands

Total Proposal Demand

2.2.5 The total estimated daily water use from the combination of uses is therefore:

6,221.18 litres + 469.5 litres = 6,690.68 litres per day

2.2.6 This is the equivalent of 2,442 m3 per annum.

3 Offsetting

3.1 Background and Reasoning

3.1.1 The additional water demand as a result of the new development is 6,691l/day, which is the equivalent of 2,443m^3 per annum. The Applicant has two viable options for offsetting this requirement within the guidelines on water neutrality provided by Horsham:

1. To implement a broad range of water efficiency measures on the wider, existing Sumners Ponds site
2. To install a borehole and extract groundwater for use on the wider Sumners Pond site

3.1.2 In both cases this will reduce the water drawn from the public water network and enable the new development to be water neutral. Both options have been examined in detail.

3.1.3 The reason why these two solutions are viable is because the wider Sumners Pond site already includes buildings and other uses which consume considerable amounts of potable water from the public network. The site includes:

- agricultural uses and farm buildings, including watering of cattle
- camping and caravanning pitches, with associated washing, shower and sanitary blocks
- holiday lodges and other similar facilities
- café/restaurant
- other dwellings on site for holiday rentals and/or accommodation for on-site staff

3.1.4 The overwhelming proportion of existing demand, however, comes from the camping and caravanning operation, with 47,271 nights stayed in a single year based on the most recent data available (provided at length in the spreadsheet Appendix D).

3.1.5 This site occupancy data covers the period from 1st April 21 through to 31st March 22, and is drawn directly from the site's booking systems. Clearly there will be fluctuations year on year depending on demand, but even during the pandemic in 2020 there were over 39,000 nights stayed.

3.1.6 The total amount of water offset from the public water main will therefore change year on year, but we can be confident that the approach to offset using water efficiency will, even in the lowest occupancy years like 2020, exceed the requirement of 6,691 litres per day.

3.2 Existing Water Demand

3.2.1 The site contains 6 separate water meters covering a range of different uses, and we have collected data from these meters to establish an estimate of the annual water use from the public network. Clearly the nature of the site means this will fluctuate annually depending on demand from holiday makers but the water meter data secured and the park visitor data provides a robust basis on which to assess demand.

3.2.2 The available meter data for the site has been collated into the following tables and shows that in a typical year the water demand for the existing site equates to around 9,936m^3 per annum (or 27m^3 per day):

Customer Meter Ref No.	Date of 1st Meter Reading	Figure of 1st Meter Reading	Date of 2nd Meter Reading	Figure of 2nd Meter Reading	Usage over time period m3	Days between Readings	Avg. Daily Use (m3)
2766961	26/09/2017	254	14/12/2021	2444	2190	1540	1.42
2731624	01/04/2017	15572	03/12/2021	32094	16522	1707	9.68
2747004	31/03/2022	0	06/05/2022	532	532	36	14.78
10246372	15/05/2018	2415	05/10/2021	2636	221	1239	0.178
11149778	20/08/2013	4978	10/03/2022	6946	1968	3124	0.63
11179743	09/08/2013	1373	10/03/2022	2035	662	3135	0.21

Table 4: Associated meter data (evidence provided in Appendix C)

Meter Location	Customer Meter Ref No.	Meter Address	Avg. Daily Usage (m3)	Yearly Avg. (m3)
Bullbrook, Crossing	2766961	C/T Flds 1308 2400, 2695 3008 05, Valewood Lane, Horsham, RH13 0QJ	1.42	519
North of Sumners Ponds Entrance	2731624	Sumner Ponds Fishery, And Campsite, Chapel Road, Horsham, RH13 0PR	9.68	3533
Main Site Entrance	2747004	Sumner Ponds Fishery, And Campsite, Chapel Road, Horsham, RH13 0PR	14.78	5394
Residence Entrance	10246372	Sumners Cottage, Chapel Road, Horsham, RH13 0PR	0.18	65
Corner by Owlers	11149778	Munthum Drive, Slaughterford Farm, Barns Green, RH13 0PR	0.63	230
Bullbrook, Tunnel	11179743	Bullbrook, Slaughterford Farm, Valewood Lane, Horsham, RH13 0PR	0.21	77
		TOTAL	26.90	9,818

Table 5: Annual water use (existing site) by meter

3.2.3 The vast majority of water use on the site is channelled through 2 meters, and it is these meters which cover the tourist uses on the site in terms of visitor facilities. The targeting of efficiency measures is therefore focused here – as opposed to meters with minor use which include (for example) animal water troughs.

3.2.4 Meter 2747004 was replaced on the 31st March 2022, due to it being faulty. We therefore only have reliable data from that point, and this continues to be tracked over time. Early readings indicate however substantial water use, reflecting those areas it serves.

3.2.5 In addition to the above, and to support the assessment of the Primary Offsetting Option, we have visited every fixture and fitting across the site to establish existing flow rates and flush volumes from taps/showers and toilets respectively. We have undertaken, and can provide, if necessary, a full photographic record of those fixtures and fittings in situ.

3.2.6 We can therefore make a robust calculation of water use from these fixtures and fittings based on annual site occupancy, and therefore the improvement where efficiency measures are implemented. This is described further in Section 3.3, and more data on this point is provided in the Appendix.

3.3 Primary Offsetting Option: On Site Water Efficiency Improvements

3.3.1 In order to establish the opportunity for water efficiency savings on the existing site we have undertaken the following approach to assessment:

- Recorded each and every water use fixture and fitting on the Sumners Pond site serviced by the various water meters. There are, for information, 36 basins, 42 sinks, 39 toilets, 24 showers, 5 baths, 7 urinals and 57 outdoor taps.
- Manually recorded (through test use) the flow rates and flush volumes of each of those fixtures (the data is supplied in the Appendix, for information) in terms of litres per minute or litres per flush, respectively

3.3.2 The annual water use associated with each of the different types of fixtures and fittings has then been calculated based on a set of reasonable daily usage assumptions drawn from sources including Part G of the Building Regulations, or similar. Combining this with over all site visitor data then enables us to form as accurate a picture as possible of the water use break down for the site on an annual basis by end use.

3.3.3 In practice, however, there are certain aspects of the use for which we cannot 'legislate', or which are not within the control of the site owner. This includes, for example, the use of 'outside taps' by visitors and water used within sinks (which do not rely on flow rates, rather it relates to volume of the sink) for dish washing etc. Sinks could be replaced with smaller ones in principle, however in practice this would cause useability issues for visitors. On this basis there are three main types of fixtures and fittings that will have an impact on end use, and where this Primary Option would focus, specifically:

- Sink taps (primarily for hand washing and sanitary use)
- Showers
- Toilets and urinals

3.3.4 The average water use for each of these fixtures and fittings is as follows (see also data in the Appendix for a breakdown by fitting):

- Sink taps: 11 litres per minute
- Showers: 12 litres per minute
- Toilets: 7 litres per flush; Urinals: 2.5l per use

3.3.5 The assumption for the Primary Offsetting Option is that all the existing fixtures and fittings, where they exceed the enhanced performance standard in the table below (shaded orange), will be replaced with new to meet that improve standard. In each of the three cases, we have made conservative assumptions on frequency and length of use to establish the impact of their replacement (those cells in the tables highlighted green):

SHOWERS			TOILETS			URINALS			TAPS		
Existing Average Shower Flow Rate	12	l	Existing Average Total Flush Volume	7.4	l	Existing Flush Volume	2.5	l	Existing Average Flow Rate	11	l
Total Stays	47,271		Total Stays	47,271		Total Stays	23,636		Total Stays	47,271	
Total annual showers (one / day / stay)	47,271		Toilet Use / Person / Day*	4.5		Uses Per Day*	3		Uses Per Day	8	
Minutes per shower	8	min	Total Toilet Uses	212,770		Total Uses Per Year	70,907		Total Uses Per Year	378,168	
Water use per shower	96	l							Length of Use	0.4	min
Water Use Annual	4,522,259	l	Water Use Annual	1,582,633	l	Water Use Annual	177,266	l	Water Use Annual	1,617,298	l
Improved shower flow rate	9	l/min	Improved effective flush volume (dual)	3.06	l	Improved effective flush system	1.5	l	Improved flow rate	4.0	l/min
Efficient Water Use Annual	3,403,512	l	Efficient Water Use Annual	650,922	l	Efficient Water Use Annual	106,360	l	Efficient Water Use Annual	605,069	l
Saving	1,118,747	l	Saving	931,711	l	Saving	70,907	l	Saving	1,012,230	l
Saving	1,119	m^3	Saving	932	m^3	Saving	71	m^3	Saving	1,012	m^3

Saving Required (based on 6691l/day)	2,442	m^3/a
Saving Generated (showers/toilets/taps)	3,373	m^3/a
Offsetting [Shortfall (-ve) or Surplus (+ve)]	931	m^3/a

Table 6: Water Efficiency Saving Potential

* We have assumed that there is an even split of female and male visitors to site and that both female and male visitors use toilet facilities 6 times per day. However, male visitors use urinals for 3 of those visits. Given there are only 7 on the whole site this is conservative in the extreme but therefore gives even greater confidence in the approach and figures above.

3.3.6 In effect this approach to offsetting would require the replacement of every toilet, urinal, shower and basin tap within the site. As with the borehole option, we would expect that, assuming Horsham and Natural England find this approach acceptable, that the replacement installations will be secured by condition. To be clear – we are proposing the same specification (make/manufacture) of fixtures and fittings as described above for the new build development.

3.3.7 We assume also that they will need to be replaced prior to any occupation of the new buildings on the site proposed in the application, with associated evidence of installation (purchase receipts and a full photographic record to be supplied). There will also need to be a legal agreement in place that any future replacement of the new fixtures will need to align to the stated flow rates/flush volumes described herein.

3.3.8 In so doing this will maintain that water saving in perpetuity.

3.4 Back-Up Option: A New Borehole Supply

3.4.1 Work undertaken by RPS in their accompanying report and submitted as Appendix has analysed the opportunity for the introduction of a borehole on site to provide water to the Sumners Ponds site and reduce reliance on the public water network. We have extracted from the executive summary of that report the relevant text here for ease, but the detail should be consulted as required:

> To determine whether the proposed abstraction will meet the requirements of water neutrality, an assessment has been undertaken that is based on the conceptualisation of the hydrogeological and hydrological setting of the site across a large area that includes:
>
> - All key geological and hydrogeological units associated with the regional structure of the Weald Basin and South Downs that includes the Sumners Ponds Site, the protected sites of concern on the lower reaches of the Arun and southern Waters abstractions at Hardham near Pulborough.
> - The entire surface water catchment area of the River Arun, to a point downstream of the European protected sites of concern and the adjacent surface water catchment of the River Adur upon which the Site is located and the River Ouse.
>
> The assessment has shown that the proposed groundwater abstraction does meet the requirement for Water Neutrality in the Sussex North Water Supply Zone, given:
>
> - The potential hydrogeological and hydrological impact of a small abstraction from a borehole constructed in the Weald Clay Formation will be localised around that borehole.
> - The absence of any mechanism for a direct or indirect impact of the abstraction on the River Arun or its headwater streams.
> - The absence of any direct hydraulic connection between Weald Clay Formation that supports the abstraction and the aquifers that support both the Arun Valley Protected Sites and the Southern Waters Hardham supply boreholes.
> - All water reduction measures have been applied to minimise water use on the Site
>
> Furthermore, it is considered that the small groundwater yield required could be met in a borehole that targets the comparatively shallow sand and limestone beds present within the Weald Clay Formation and that groundwater is likely to be potable.
>
> (RPS, Groundwater Resource Prognosis Report, 2022)

3.4.2 Therefore, whilst further assessment of the quality of water extracted from the chosen location, and the extent of the need for treatment prior to use within the development – in toilets, shower blocks and to service the farm's existing livestock requirements, for example – needs to be established, a borehole could be introduced. Using data from the Agricultural and Horticultural Development Board ('*Water use, reduction and rainwater harvesting on beef and sheep farms*',

2011/2016), the water requirements for livestock will range from 3.3-7.5l per day for sheep, and 15-50l per day for beef cattle, depending on the time of year, feed type, and age / stage of life.

3.4.3 The farm currently has 28 sheep and 83 beef cattle, which equates to water demands between 488,000 and 1.6m litres of water annually, all of which is currently drawn from the public water supply. The existing toilet flushing requirements are in the region of 2.11m litres (see Table 6). Combined, this totals more than the increase in water demand from the new development (2.442m litres) – and therefore provides a viable route to offsetting.

3.4.4 It will not affect the North Sussex Water Supply Zone in any way, and will reduce daily water use by the required amount. It is anticipated that, assuming the council and Natural England find this acceptable, that a condition associated with the permission, requiring the developer to demonstrate:

- The location of the new borehole
- Details of the treatment plant to be installed
- Details of the uses within the Sumners Pond site to be serviced by the borehole
- Relevant calculations to show the volumes to be abstracted (and therefore offset from the public network
- The legal commitment to maintain that borehole for use in perpetuity

… will be required prior to any occupation of the new development.

4 Conclusions and Recommendations

4.1.1 This Water Neutrality Statement has been commissioned by the Hunter Group to describe the emerging approach to water efficiency and neutrality for the proposed new mixed-use development on land at Sumners Pond, Chapel Road, Barns Green within Horsham district.

4.1.2 It provides the required detail to demonstrate the emerging approach to compliance with the requirements of the Natural England Position Statement for Applications within the Sussex North Water Supply Zone 2021.

4.1.3 The information and calculations presented show that the proposed development will increase the amount of water drawn from the public network, unless mitigation / offsetting measures are put in place. Once water efficient fixtures and fittings and rainwater recycling measures for the new buildings have been factored in, it is currently calculated that the additional water use with the proposed development will be 2,442m^3/a.

4.1.4 The preferred route to offsetting is for the introduction of water efficiency measures to the existing site. A viable back-up option has also been developed in the form of a new borehole (which, as shown within the accompanying RPS report, will not affect the affected supply zone), abstracting water for use on site.

4.1.5 Both options are robust and viable, and the Applicant will pursue both pending a decision by the council on the wider application. A condition associated with water neutrality is expected and will be welcomed, allowing flexibility for either of these solutions to be implemented.

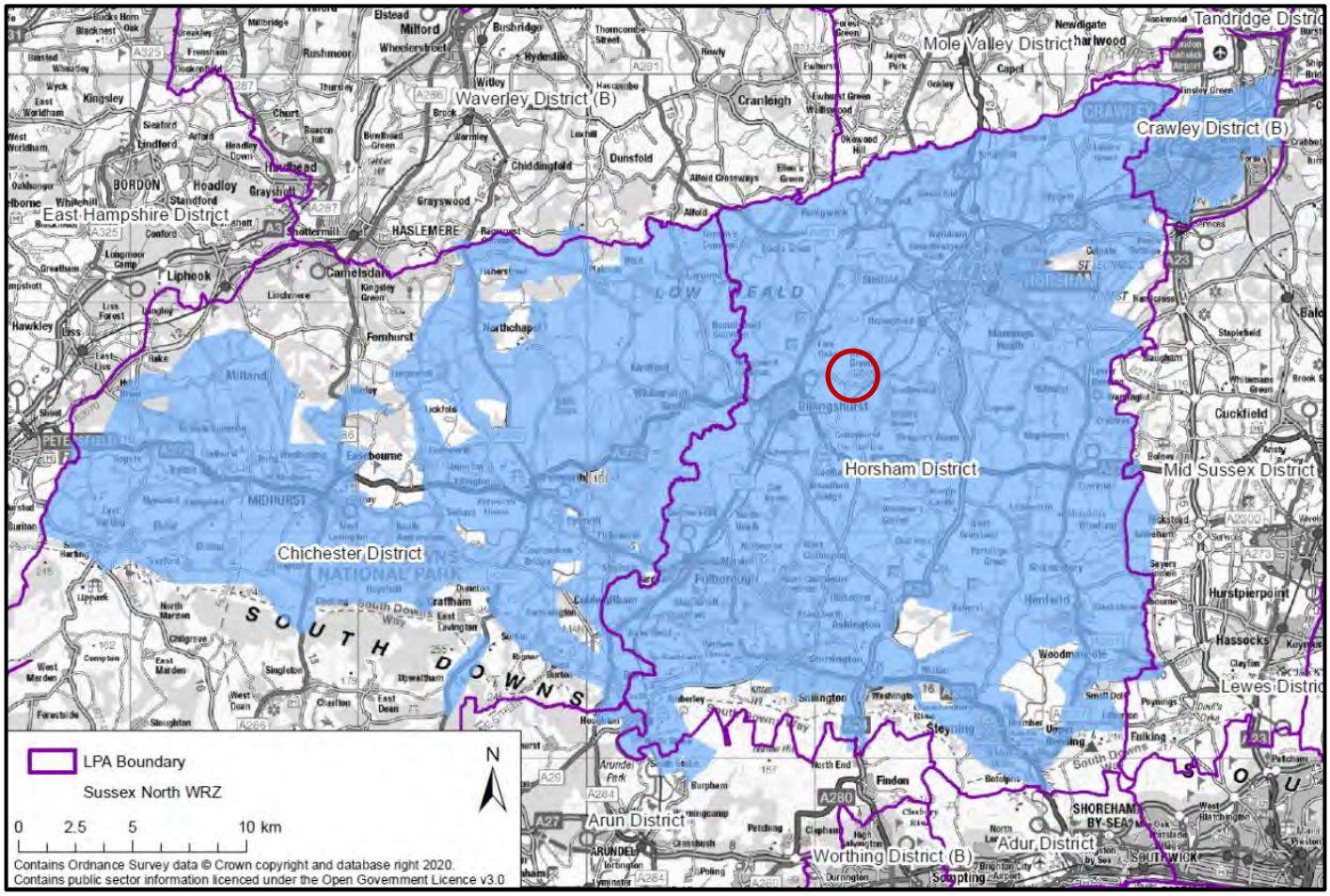
4.1.6 Furthermore, it is anticipated that a condition will be applied requiring that the final construction of the homes and non-domestic buildings will align to this Statement in terms of water efficiency with further detail / final specifications demonstrating compliance to be provided prior to occupation.

4.1.7 In committing to achieve water neutrality, the Applicant is demonstrating an understanding of the importance of this issue, one which they are working proactively to resolve. A significant amount of work has been undertaken to establish a high level of detail in terms of site water use, even down to individual fixtures and fittings, and we trust this, in combination with additional meter data submitted, is sufficient to enable permission to be granted (subject to the conditions identified).

4.1.8 Wherever necessary the Applicant would welcome continued dialogue on the proposed offsetting options over the coming weeks to ensure that the final approach will be both robust and acceptable to Horsham District Council and Natural England.

5 Appendices

5.1 Appendix A – Map of the Affected Area



5.2 Appendix B – Fixture and Fittings Flow Data

Raw Data

No	Blue Bell Touring Park	Sumners touring park	Ribbon Touring Park	Bluebell WC Block	Ribbon WC block	Family field	Café by the lake	Reception	Fishermans toilets	Iris lodge	Lily lodge	Morehen Lodge	Grebe Lodge	BB wardens lodge	Wren lodge	The loft	Sumners cottage	Farm workshop	New tent	Farmyard	Farm staff room
Basin 1				10	5	10	10	17	5	8	8	14	13	13	13	12	11				14
Basin 2				10	6	10	7		5	8	8			10			13				
Basin 3				10	5		9														
Basin 4				10	4		7														
Baisn 5					6		9														
Basin 6					5		6														
Basin 7					4																
Basin 8					4																
Sink 1				33	24	9	14			12	12	10	17	12	14	28	17	16			11
Sink 2				33	25		10			16	16						17				
Sink 3				33	25		10										5				
Sink 4				27	24		10														
Sink 5				33	25		25														
Sink 6				33	25		25														
Sink 7				27	25		29														
Sink 8				33	25		29														
Sink 9					25																
Sink 10																					
Toilet 1				7	8	5	8	8	8	8	8	8	8	8	8	7.5	6.5				5
Toilet 2				7	8	5	8		8	8	8			8			6.5				
Toilet 3				7	8		8										5				
Toilet 4				7	8		8														
Toilet 5				7	8																
Toilet 6				7	8																
Toilet 7					8																
Toilet 8					8																
Toilet 9					8																
Toilet 10					8																
Urinal 1				2.5	2.5		2.5														
Urinal 2				2.5	2.5		2.5														
Urinal 3					2.5																
Shower 1				13	13	9															
Shower 2				13	13	9				13	13	13	13	6	6	14	16				16
Shower 3				13	13					13	13			6			13				
Shower 4				13	13																
Shower 5					13																
Bath 1												23	23	20	16		16				
Outside tap 1	33	37	40		27	11	13	17	26	16	16			20	20		30		16	16	33
Outside tap 2	22	37	40				10														
Outside tap 3	27	40	40				15														
Outside tap 4	27	40	40																		

Outside tap 5	25		27																	
Outside tap 6			27																	
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Outside tap 25			10																	
Outside tap 26			10																	
Outside tap 27			10																	
Outside tap 28			10																	

Consolidated Data

Meter Reference	Meter Address	Water Use from Meter (m3/day)	Water Use from Meter (m3/a)	AVERAGE FLOW RATES & VOLUMES								
	ANNUAL TOTAL	**27.22**	**9936.25**									
2766961	C/T Flds 1308 2400, 2695 3008 05, Valewood Lane, Horsham, RH13 0QJ	1.42	519.1	Animal troughs								
2731624	Sumner Ponds Fishery, And Campsite, Chapel Road, Horsham, RH13 0PR	9.68	3533		**Ribbon**	**Sumners**	**Café**	**Morehen Lodge**	**Grebe Lodge**	**Wren Lodge**	**The Loft**	**New Tent**
				Basin Taps	4.9		8	14	13	13	12	
				Sink Taps	24.8		19	10	17	14	28	
				Toilet	8.0		8	8	8	6	8	
				Shower	13.0			13	13	6	14	
				Urinal	2.5		2.5					
				Bath Tap				23	23	16		
				Outside Tap	27		12.7			20		16.0
				Touring Park Taps	24.1	38.5						
2747004	Sumner Ponds Fishery, And Campsite, Chapel Road, Horsham, RH13 0PR	14.57	5319		**Bluebell**	**Reception**	**Fishermens Toilets**	**BB Warden's Lodge**	**Farm workshop**	**Farmyard**	**Farm staff room**	
				Basin Taps	10.0	17	5	11.5			14	
				Sink Taps	31.5			12	16		11	
				Toilet	7.0	8	8	8			5	
				Shower	13.0			6			16	
				Urinal	2.5							
				Bath Tap				20				
				Outside Tap		17	26	20		16	33	

				Touring Park Taps	26.8							
10246372	Sumners Cottage, Chapel Road, Horsham, RH13 0PR	0.71	259		**Iris Lodge**	**Lily Lodge**	**Sumners Cottage**					
				Basin Taps	8	8	12					
				Sink Taps	14	14	13					
				Toilet	8	8	5.7					
				Shower	13	13	14.5					
				Bath Tap			16					
				Outside Tap			30					
				Touring Park Taps								
11149778	Munthum Drive, Slaughterford Farm, Barns Green, RH13 0PR	0.63	230		**Family Field**							
				Basin Taps	10							
				Sink Taps	9							
				Toilet	5							
				Shower	9							
				Bath Tap								
				Outside Tap	11							
11179743	Bullbrook, Slaughterford Farm, Valewood Lane, Horsham, RH13 0PR	0.21	77	Animal Troughs								

5.3 Appendix C – Site Meter Readings Summary

Customer Ref No.	Date of 1st Meter Reading	Figure of 1st Meter Reading	Date of 2nd Meter Reading	Figure of 2nd Meter Reading	Usage over time period m3	Days between Readings	Avg. Daily Use (m3)
2766961	26/09/2017	254	14/12/2021	2,444	2,190	1,540	1.42
2731624	01/04/2017	15,572	03/12/2021	32,094	16,522	1,707	9.68
2747004	31/03/2022	0	06/05/2022	532	532	36	14.78
10246372	15/05/2018	2,415	05/10/2021	2,636	221	1,239	0.18
11149778	20/08/2013	4,978	10/03/2022	6,946	1,968	3,124	0.63
11179743	09/08/2013	1,373	10/03/2022	2,035	662	3,135	0.21

5.4 Appendix D – Attendance/Booking Records

Excel file issued separately.

5.5 Appendix E – RPS Report for Borehole Option

Report issued separately.

Stephen Buss Environmental Consulting Ltd

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Borehole at Sumners Ponds; Hydrogeological Impact Assessment

Version control log

Document number	Date	Issued by	Issued to	Comments
2023-095-014-005	21/12/23	Steve Buss	Nicholls Boreholes	Final draft with revisions
2023-095-014-004	29/11/23	Steve Buss	Nicholls Boreholes	Final draft
2023-095-014-003	27/11/23	Steve Buss	Nicholls Boreholes	First draft

Client: Nicholls Boreholes

Dated: December 2023

www.hydro-geology.co.uk

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Registered in England and Wales number 08595273

DISCLAIMER

This report has been prepared by Stephen Buss Environmental Consulting Ltd (SBEC) in its professional capacity as hydrogeologist, in a manner consistent with the level of care and skill ordinarily exercised by members of the geological and engineering professions practising at this time, within the agreed scope and terms of contract, and taking account of the manpower and resources devoted to it by agreement with its client.

The advice and opinions in this report should be read and relied on only in the context of the report as a whole. As with any environmental appraisal or investigation, the conclusions and observations are based on limited data. The risk of undiscovered environmental impairment of the property cannot be ruled out. SBEC cannot therefore warrant the actual conditions at the site and advice given is limited to those conditions for which information is held by SBEC at the time. The findings are based on the information made available to SBEC at the date of the report (and will have been assumed to be correct) and on current UK standards, codes, technology and practices as at that time.

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.

TABLE OF CONTENTS

1. Introduction 3
1.1 Background 3
1.2 This Report 3
2. Hydrogeological Conceptual Model 5
2.1 Aquifers 5
2.2 Details of Groundwater Source 6
2.3 Recharge 6
2.4 Surface Water 6
3. Pumping Test Details 11
3.1 Step Tests 11
3.2 Constant Rate Tests 11
3.3 Pumping Test Analysis 11
3.4 Water Quality 11
4. Impact Assessment 15
5. Conclusions 17
References 18

Figures

Figure 1.1: Borehole location 4
Figure 2.1: Cross-section of geology perpendicular to dip (section line shown on Figure 3) 8
Figure 2.2: Bedrock geology (Arun / Adur catchment boundary in pink) 8
Figure 2.3: Schematic borehole log with water level observations 9
Figure 2.4: Local watercourses flow southwards from the Horsham Stone Member outcrop towards the River Adur 10
Figure 3.1: Measured depth to water level, and pumping rate, November test (20.9 m^3/day) 12
Figure 3.2: Measured depth to water level, and pumping rate, December test (29.3 m^3/day) 12
Figure 3.3: Drawdown time series 13
Figure 3.4: Drawdown on a semi-log plot, prepared for Cooper-Jacob analysis 13
Figure 3.5: Residual drawdown through the recovery phase, prepared for Theis recovery analysis 14

Tables

Table 2.1: Geological formations local to Barns Green (youngest at the top) 5
Table 2.3: Indicative geological log 6
Table 2.4: Flows in the River Adur and Parson's Brook 7

Appendices

A Consent to drill and test pump a borehole
B Borehole logs
C Water features survey
D Water quality analyses

1. Introduction

1.1 Background

This is a hydrogeological impact assessment (HIA) to support an application for a groundwater abstraction licence. The site is on Chapel Road, Barns Green, West Sussex RH13 0PR. This site is close to the headwaters of an un-named tributary of the Parson's Brook which flows southwards away from the site to become a tributary of the River Adur. An overview map of the area is shown in Figure 1.1.

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. To try 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.

By removing the reliance on mains water from the WSZ at this site, and drawing water from a source that is not hydrologically connected to the WSZ, it is proposed that the amount of water saved can be credited to sites within the WSZ that do not have the ability to use groundwater.

The following abstraction rates are proposed for use, year-round.

Hourly	1.25 m^3/hour
Daily	30 m^3/day
Annually	10 950 m^3/year

The abstraction is to be from the unconfined Horsham Stone Member, part of the Weald Clay Formation, beneath the site (Section 3).

1.2 This Report

This report has been prepared according to the guidance in Environment Agency Science Report SC040020/SR2 'Hydrogeological impact appraisal for groundwater abstractions'. After this introductory section the abstraction is described in Section 2. The hydrogeological conceptual model for the site is developed in Section 3 and the pumping test data is analysed in Section 4. Finally, in Section 5 the findings of the report are brought together in the format suggested in the Executive Summary of SC040020/SR2.

This report has been written by Dr Stephen Buss MA MSc CGeol, based on the field work and preparatory work of Nicholls Licensing and Consulting. Dr Buss is a UK-based independent hydrogeologist with more than 20 years' consulting experience in solving groundwater issues for the Environment Agency, water companies, private sector organisations and individual property holders. Dr Buss's CV and publications list is available at www.hydro-geology.co.uk.

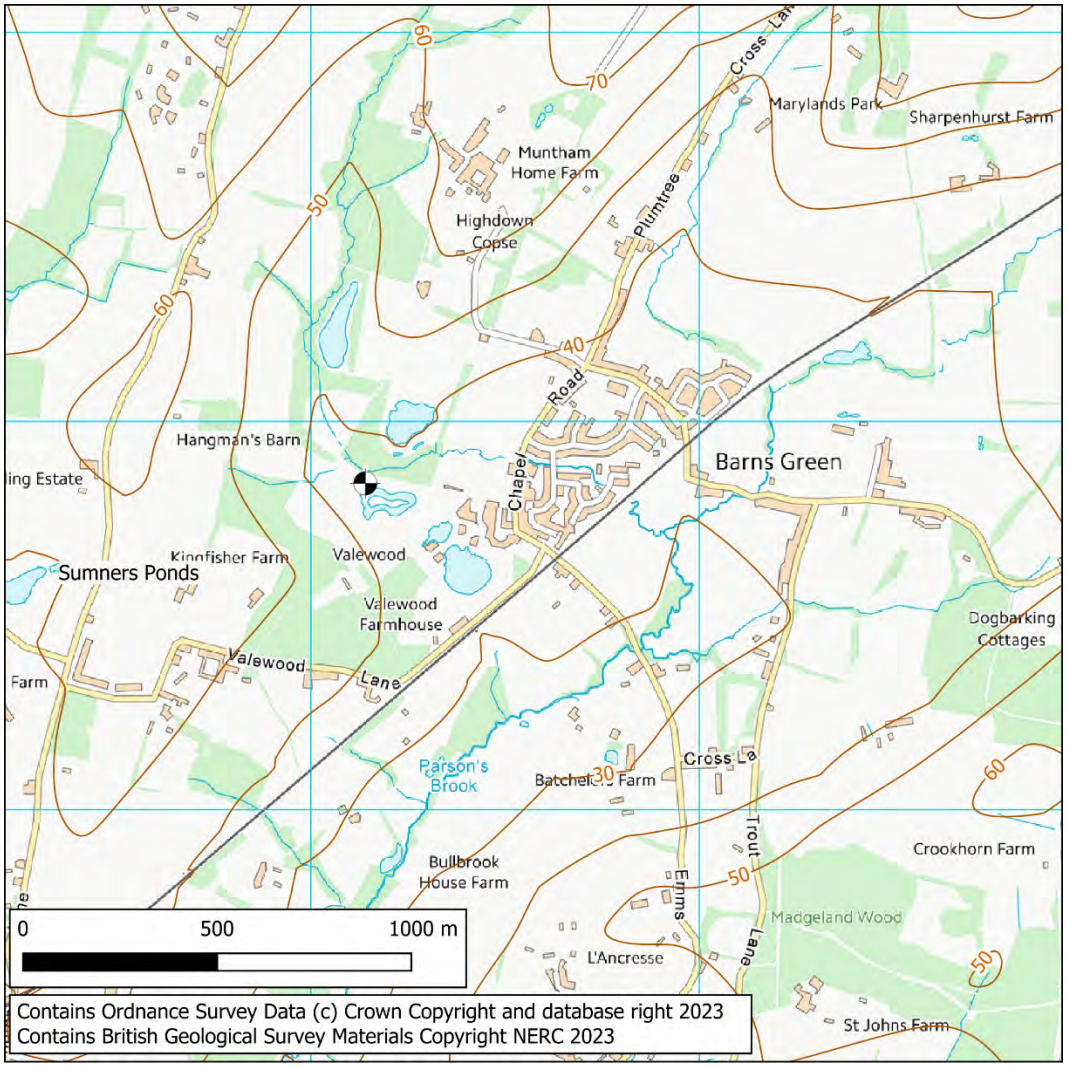


Figure 1.1: Borehole location

2. Hydrogeological Conceptual Model

2.1 Aquifers

The local geological succession is presented in Table 1, along with brief lithological descriptions. The borehole has been drilled to exploit groundwater within the Horsham Stone Member.

According to the British Geological Survey sheet 302 (Horsham), the geological strata here dip gently to the south west (Figure 2.1 and Figure 2.2). Outcrop geology beneath the site comprises Weald Clay, with a section of Horsham Stone Member to the east, with the Upper Tunbridge Wells Sand Formation further to the north east beneath Horsham. There are no superficial deposits at the site.

There are several boreholes to the south and south west of the site. The nearest existing borehole south of the development is a farm borehole[1], about 800 m south of the new borehole sites (TQ12/NW1). Here the top of the Horsham Stone Member is at about 40 m depth.

The outcrop area of Horsham Stone Member is to the north east of the site, beneath the north and to the west of Southwater. There are no source protection zones defined for the Horsham Stone Member aquifer, so there is no conflict with public water supply. The Horsham Stone Member aquifer is not part of the "Wealden Greensand semi-confined aquifer", which is the main source of water for the Sussex North WSZ.

The site is not within, or adjacent to, a source protection zone (SPZ).

Table 2.1: Geological formations local to Barns Green (youngest at the top)

Formations	Members	Lithology
Weald Clay Formation		Thinly-bedded **mudstones** with subordinate siltstones, and fine- to medium-grained sandstones. Horsham Stone Member is a thin, calcareous sandstone layer near the top of the Weald Clay sequence.
Tunbridge Wells Sand Formation	Upper Tunbridge Wells Sand	Fine to medium-grained silty **sandstone**, siltstone and silty sand rhythms with finely-bedded mudstones and thin limestones.
	Grinstead Clay Member	Very silty **mudstones** with thin beds of siltstone, nodular clay ironstone and shelly limestone.
	Lower Tunbridge Wells Sand	Fine to medium-grained **sandstone**, siltstone and silty sand rhythms with finely-bedded mudstones and thin limestones. Generally less clayey than the Lower Tunbridge Wells Sand.

[1] https://api.bgs.ac.uk/sobi-scans/v1/borehole/scans/items/578307

2.2 Details of Groundwater Source

Consent was issued to construct a borehole in September 2023 (consent number S/2023/333, Appendix A).

The borehole was drilled by Nicholls Boreholes Ltd between 2 and 5 October 2023. The drillers' log (Appendix A) reports the geological sequence in Table 3.1, and has informed the cross-section in Figure 2.1. A schematic log is shown as Figure 2.3.

Table 2.2: Indicative geological log

		Thickness (m)	Depth of base (m bgl)	Elevation (m AOD)
TOPSOIL	Topsoil	0.5	0.5	36.5
CLAY with bands of MUDSTONE	Weald Clay	34.5	35.0	2.0
Very hard STONE	Horsham Stone Member	5.0	40.0	-3.0
CLAY with stone bands	Weald Clay	14.0	54.0	-17.0

The borehole was drilled at a diameter of 250 mm, with casing diameter 125 mm. It was completed with solid uPVC casing to 10.4 m depth, then slotted uPVC casing to 50.3 m depth, and solid uPVC casing to the base at 53.15 m depth.

The borehole is at grid reference TQ 12140 26841. Ground level, estimated using Environment Agency LIDAR data, is approximately 37.0 m AOD. Elevations of the bases of the formations, using this datum, are given in Table 3.1.

2.3 Recharge

Mean potential recharge to the River Ems catchment (for example) is about 398 mm/year (Buss, 2022) and for the North Downs is about 267 mm/year (Buss and Daily, 2010). Being about halfway between the South Downs and the North Downs, it might therefore be assumed that the local potential recharge is about halfway between the two values: 332 mm/year.

If there was no runoff in the recharge area, the annual abstraction rate would be satisfied by the recharge passing through an area of 32 982 m^2, or a circle with radius 102 m. There probably is some runoff (perhaps 20% to 30%) so the catchment area and radius of the recharge circle is proportionally larger than that suggested.

2.4 Surface Water

A water features survey was conducted in August 2023 (Appendix C). There are many ponds and ditches on the site, but nothing within the search radius that is not part of the site operations.

The site is adjacent to a small watercourse that flows on eastwards though Barns Green, to join Parson's Brook, a tributary of the River Adur (Figure 2.3). The watercourse is partly spring-fed by groundwater from the Horsham Stone Member.

Stream flows are not gauged on Parson's Brook. The River Adur West Branch is gauged at Hatterell Bridge[2], near Partridge Green (Table 2.2). The Q95 flow statistic is very low in comparison to the mean flow because most of the catchment is not underlain by aquifer, and the aquifers present at outcrop are mostly thin with limited extent, so summer flows are very low. Flow statistics are pro-rated by catchment area in Table 2.2.

Table 2.3: Flows in the River Adur and Parson's Brook

	Catchment area (km^2)	Mean flow (m^3/day)	Q95 flow (m^3/day)
River Adur West Branch at Hatterell Bridge	109.1	100 224	2160
Parson's Brook u/s Coolham	9.4	8635	186

[2] https://nrfa.ceh.ac.uk/data/station/info/41010

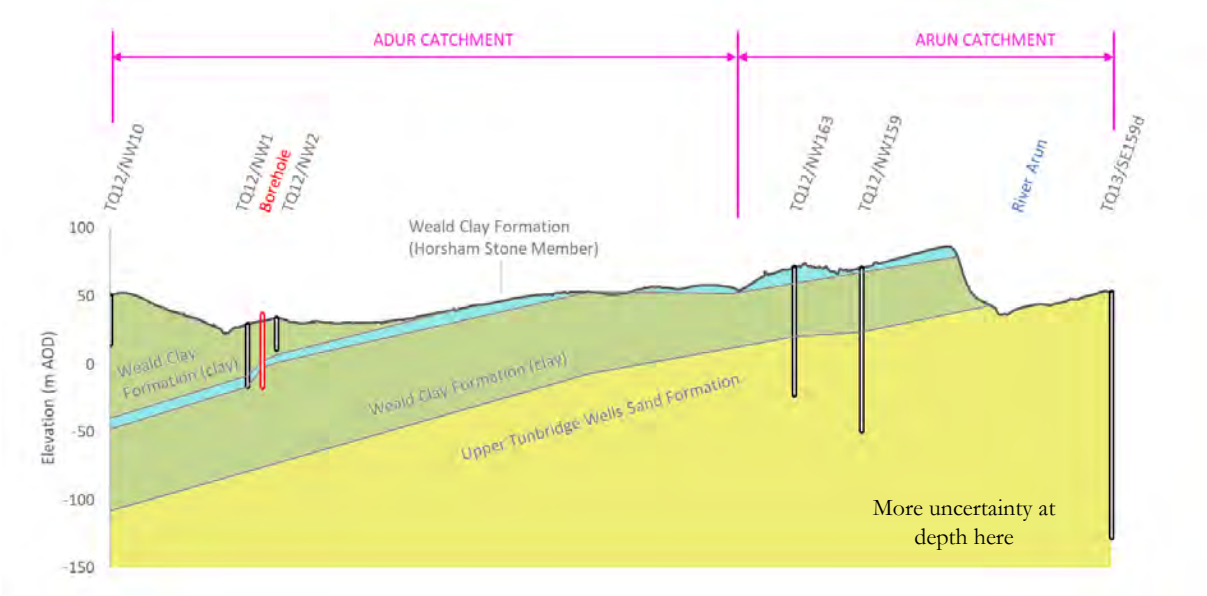


Figure 2.1: Cross-section of geology perpendicular to dip (section line shown on Figure 3)

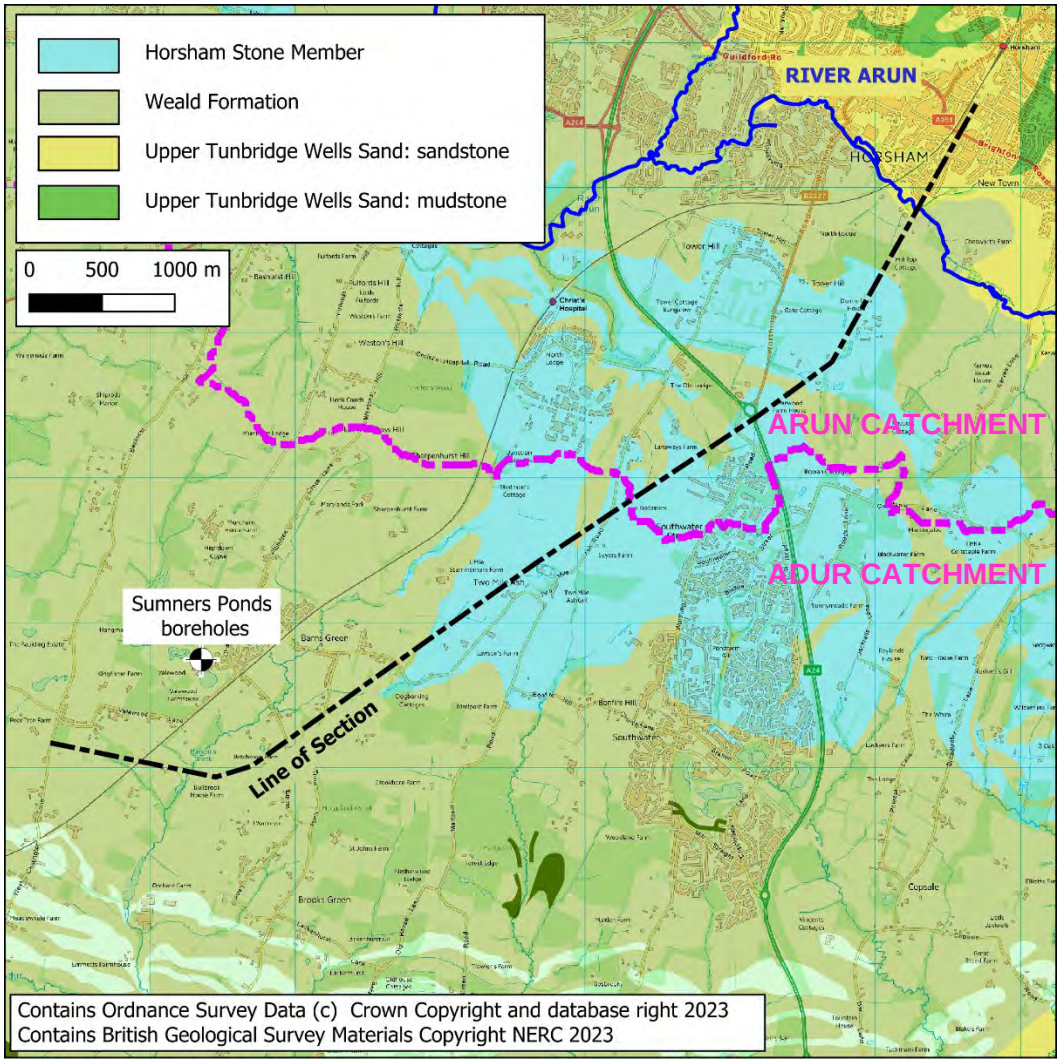


Figure 2.2: Bedrock geology (Arun / Adur catchment boundary in pink)

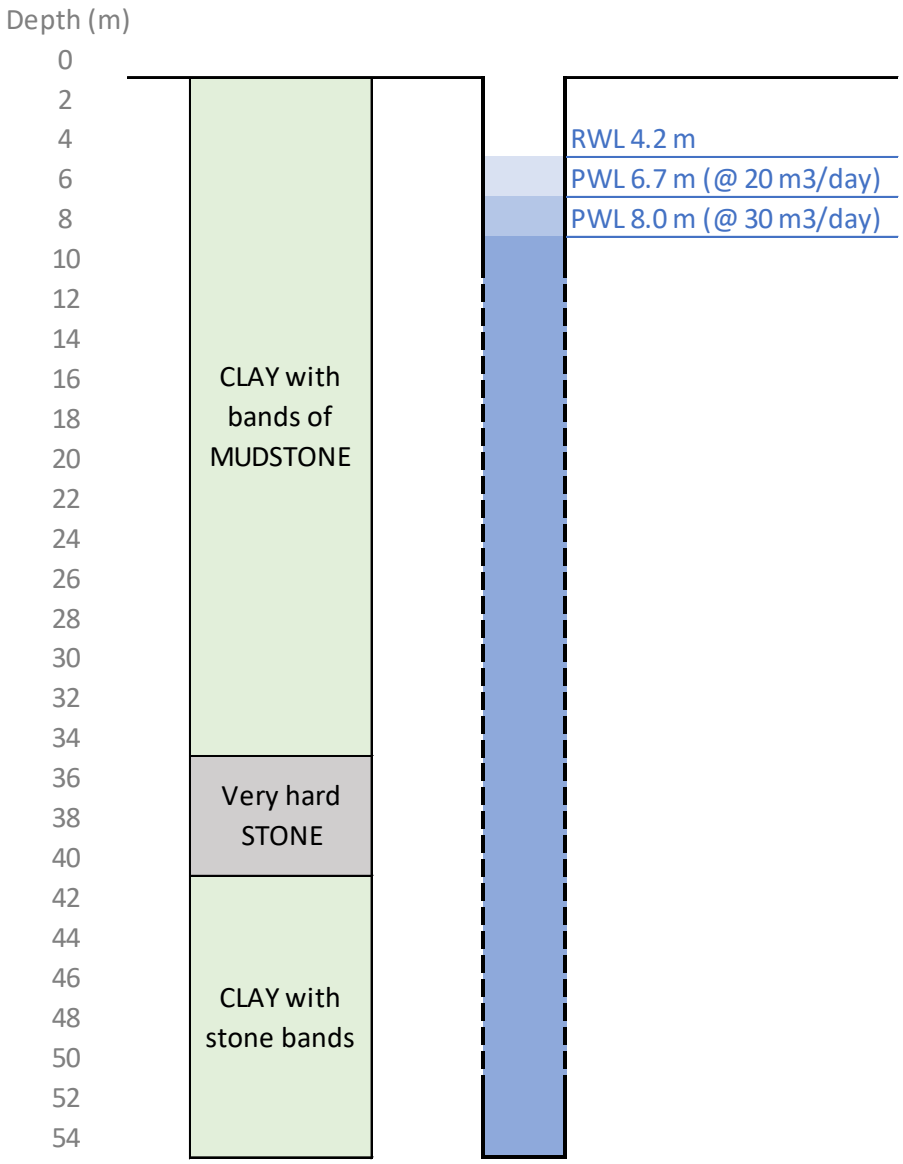


Figure 2.3: Schematic borehole log with water level observations

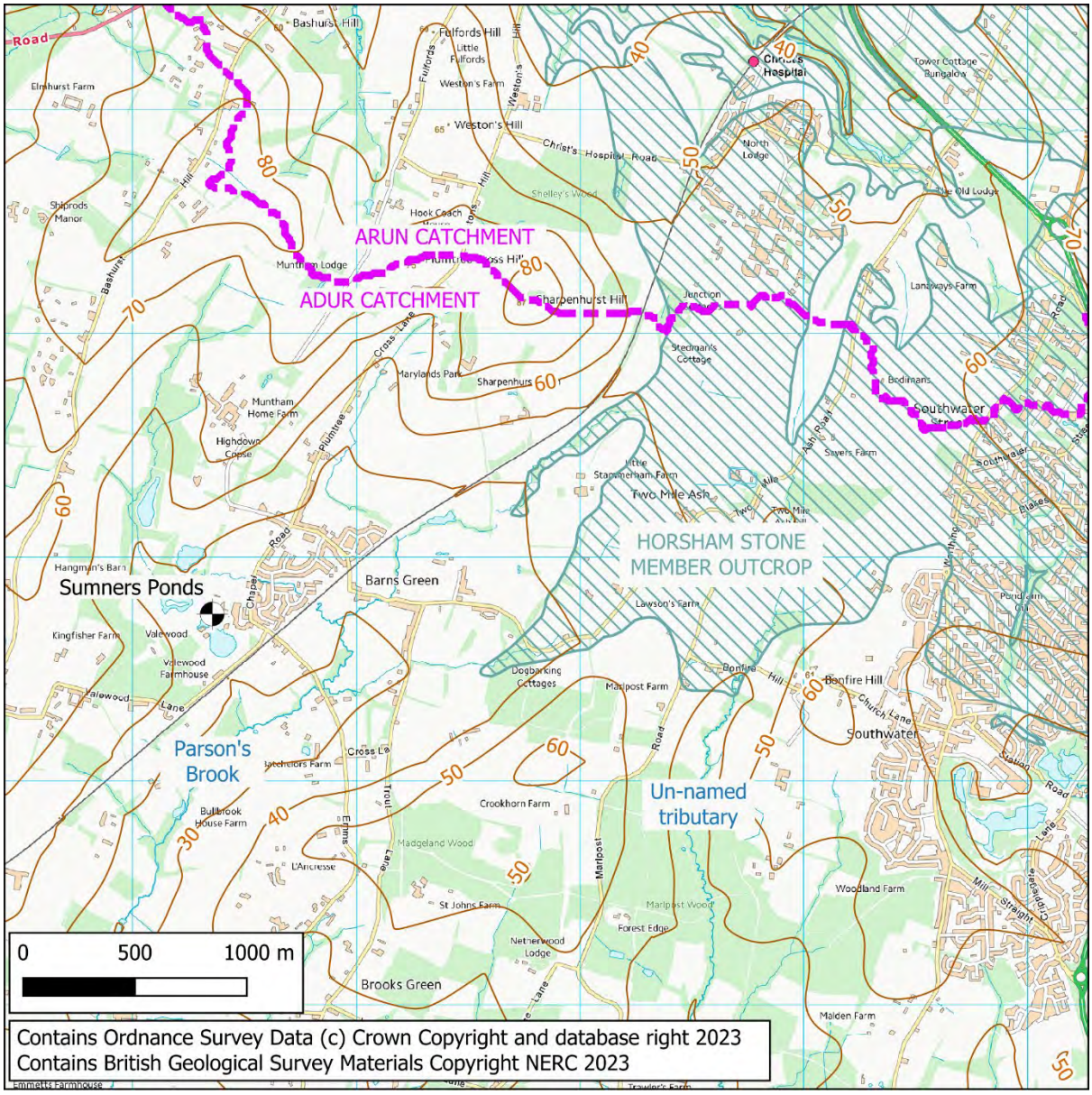


Figure 2.4: Local watercourses flow southwards from the Horsham Stone Member outcrop towards the River Adur

3. Pumping Test Details

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3.1 Step Tests

No step tests were undertaken.

3.2 Constant Rate Tests

Two constant rate pumping tests have been undertaken at the borehole.

For the first test, groundwater level monitoring was undertaken between 3 and 11 November 2023. Testing comprised a test on 6 November that was aborted after 68 minutes, then a 24-hour constant rate test starting on the 7 November. The borehole was test pumped at, on average, 0.242 L/s (20.9 m^3/day) for 24 hours from 7 to 8 November 2023, and recovery was recorded through to 11 November.

For the second test, 3 and 12 December 2023. Testing comprised a constant rate test starting on the 6 December. The borehole was test pumped at, on average, 0.34 L/s (29.3 m^3/day) for 48 hours from 6 to 8 November, and recovery was recorded through to 12 December.

Background groundwater levels during both pumping tests seem to have been relatively stable (Figure 4.1 and Figure 3.2). There is no indication of an impact from rainfall on either test.

Groundwater levels did not reach equilibrium during the tests, but did recover fully at the end of the recovery monitoring. Drawdown datasets for both tests are plotted on Figure 3.3.

3.3 Pumping Test Analysis

Cooper-Jacob analysis of the pumping test data (Figure 3.4) and Theis analysis of the recovery data (Figure 3.5) gives the following aquifer properties:

	Method	Nov test	Dec test
Transmissivity (m^2/day)	Cooper-Jacob	7.6	6.8
	Theis recovery	9.1	7.8
Storage coefficient* (-)	Cooper-Jacob	-	-

* Storage coefficient is not particularly reliable over a 1-day test, and as drawdown did not reach equilibrium in these tests the solution is not available.

Since the data points at late time plot along straight lines in the semi-log plot of Figure 4.3 there is no indication of deviation from confined conditions during the short duration of the test.

3.4 Water Quality

Abstracted water quality is fair, though hard, with exceedances of ammonium, iron and manganese, and detectable coliforms (Appendix B). These issues are amenable to treatment.

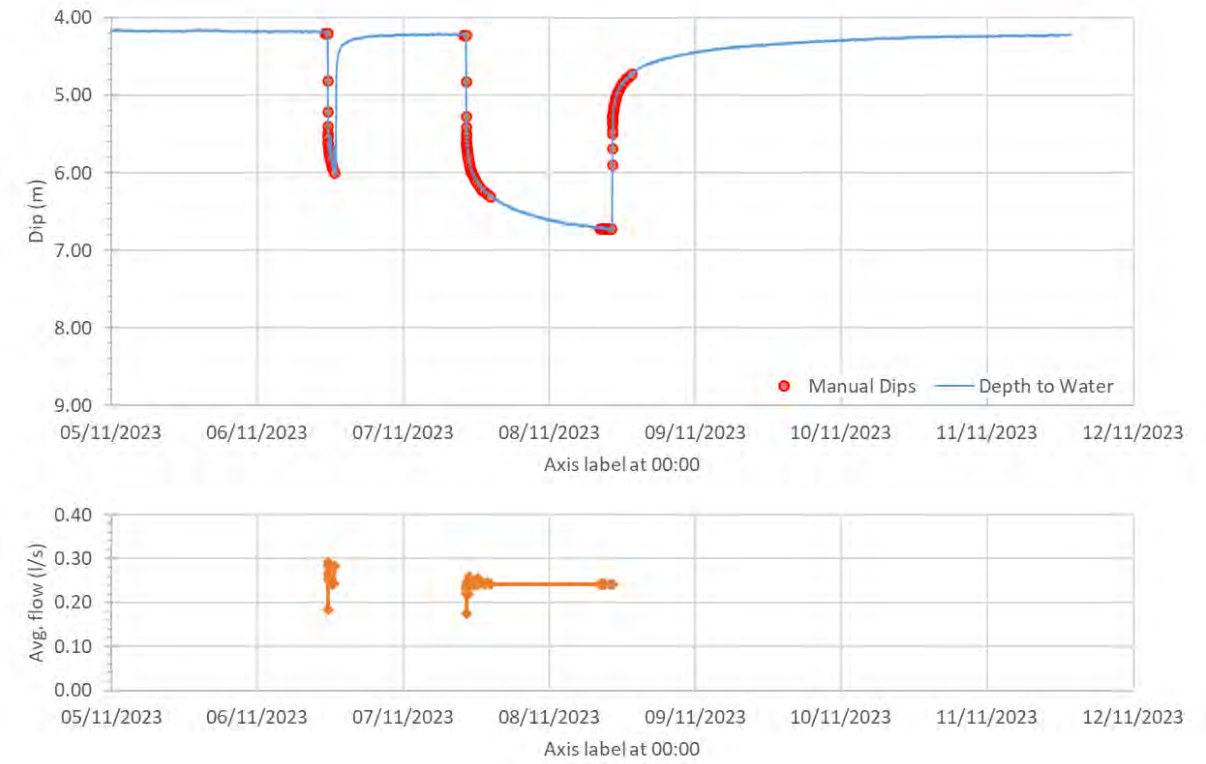


Figure 3.1: Measured depth to water level, and pumping rate, November test (20.9 m³/day)

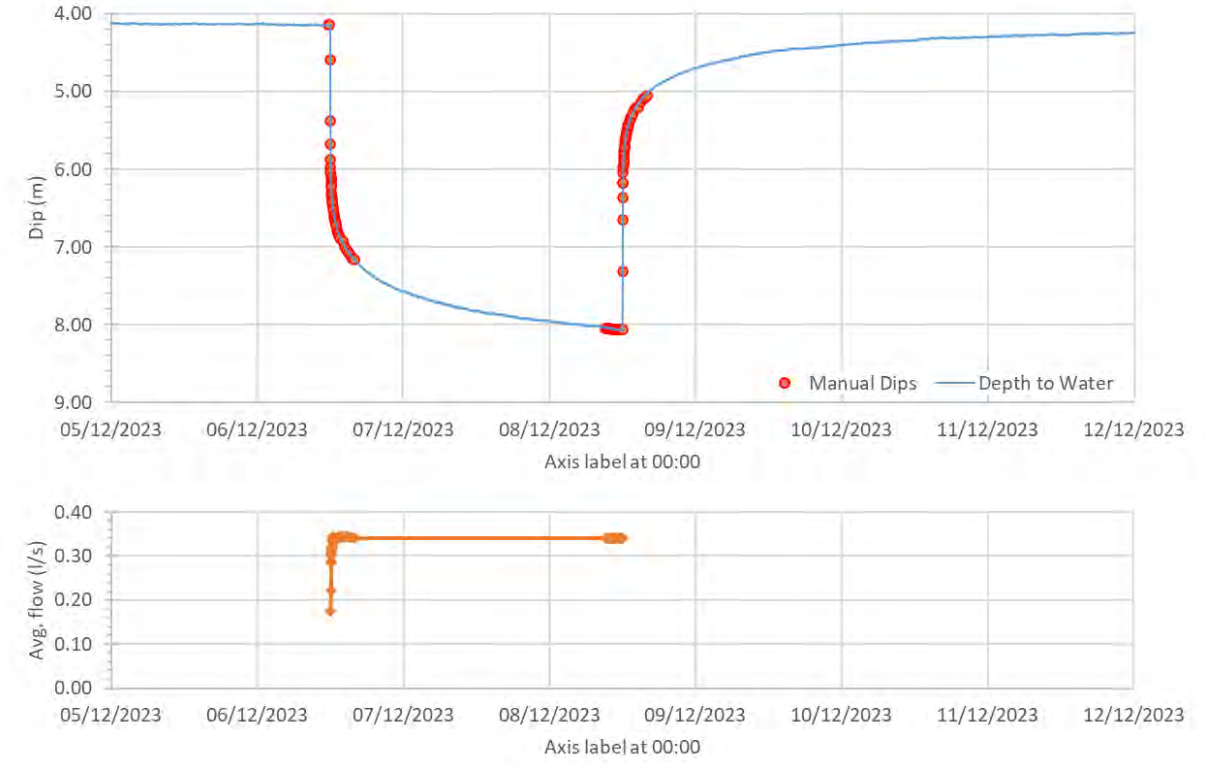


Figure 3.2: Measured depth to water level, and pumping rate, December test (29.3 m³/day)

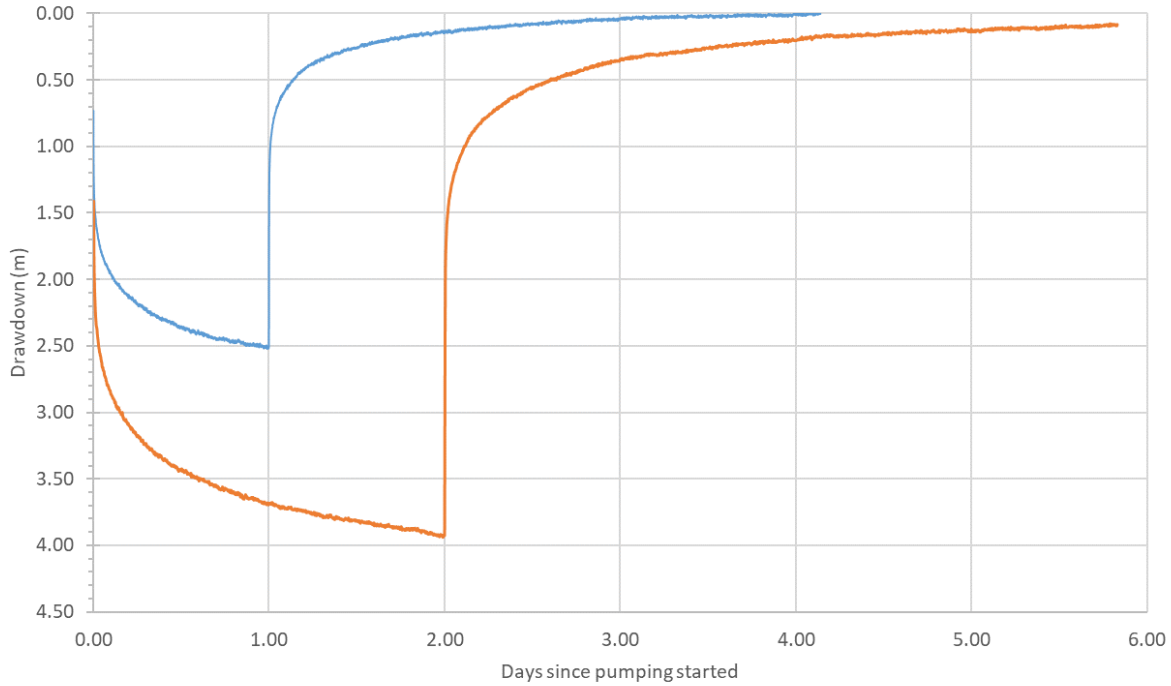


Figure 3.3: Drawdown time series

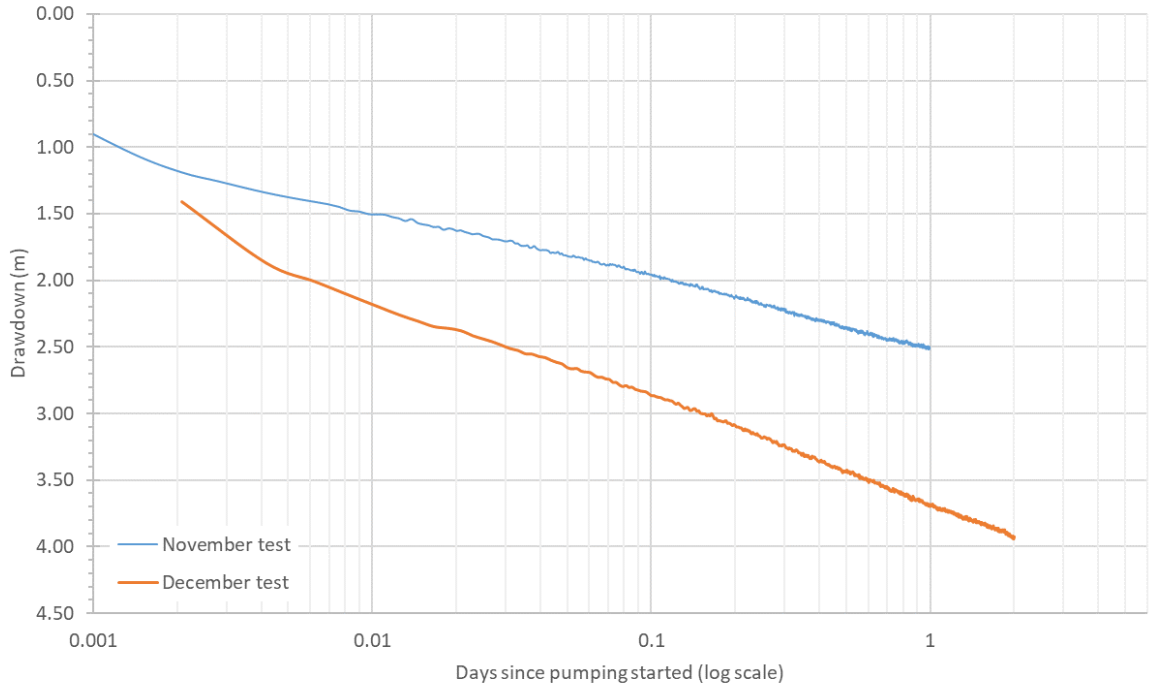


Figure 3.4: Drawdown on a semi-log plot, prepared for Cooper-Jacob analysis

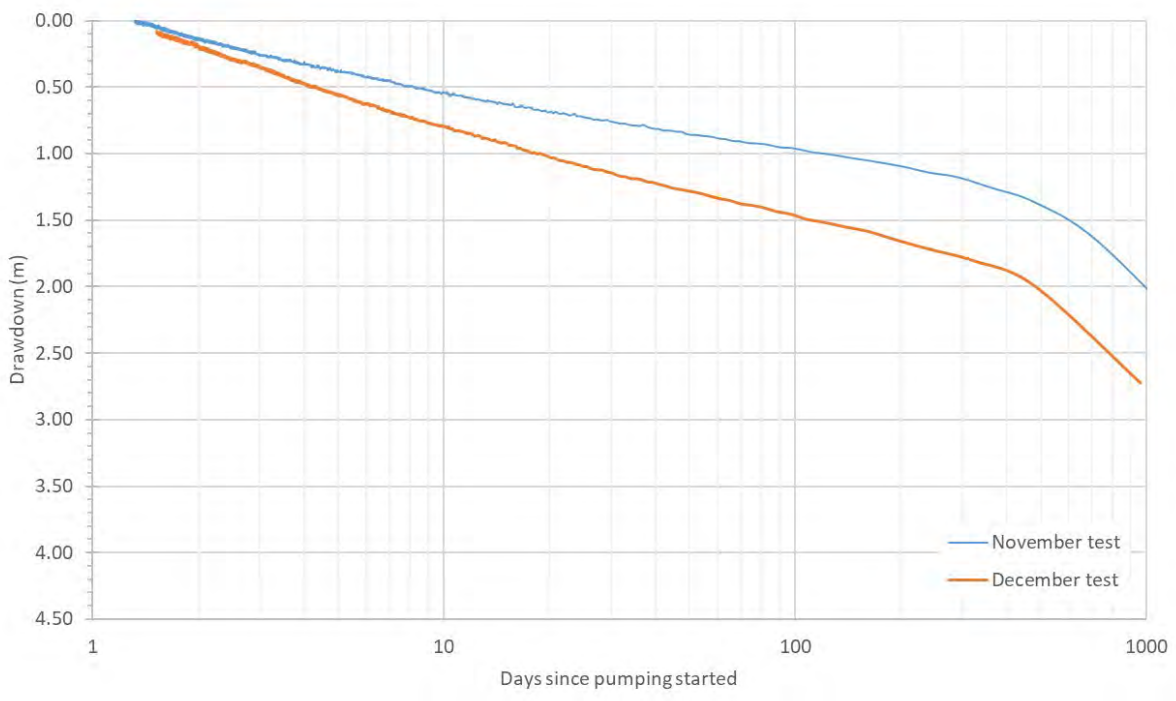


Figure 3.5: Residual drawdown through the recovery phase, prepared for Theis recovery analysis

4. Impact Assessment

The following sub-sections are headed as in the HIA methodology suggested in the Executive Summary of SC040020/SR2.

Step 1: Establish the regional water resource status.

The site lies within the Environment Agency's Adur and Ouse abstraction licensing strategy catchment area. The most recent licensing strategy was published in March 2019. The Horsham Stone Member is not designated as an aquifer so there is no indication of groundwater resource availability. Water is available from the Parson's Brook under all flow conditions.

Step 2: Develop a conceptual model for the abstraction and the surrounding area.

The hydrogeological conceptual model is described in Section 2. The source of groundwater is the Horsham Stone Member aquifer which crops out east and north-east of the site, then passes beneath the site at about 40 m depth. This aquifer also contributes flow into the catchment of the Parson's Brook, a tributary of the River Adur.

Step 3: Identify all potential water features that are susceptible to flow impacts.

Apart from the ponds on site that were identified in the water features survey, there is one surface water feature close to the site, an un-named tributary of Parson's Brook. This runs across the Weald Clay outcrop, and is therefore hydraulically isolated from changes in groundwater level in the Horsham Stone Member aquifer. There are no nearby licensed groundwater abstractions that might be affected by drawdown of the water table.

Step 4: Apportion the likely flow impacts to the water features.

Flow estimates for the Parson's Brook are presented in Table 2.2. Relative to flow in the Parson's Brook the proposed abstraction rate of 30.0 m^3/day is 16% of Q95 and 0.35% of the mean flow.

Step 5: Allow for the mitigating effects of any discharges, to arrive at net flow impacts.

Since all of the water is to be for potable use almost all of it will be sent back into the River Adur as treated sewage effluent from Barns Green wastewater treatment works (WWTW). The outfall from Barns Green WWTW is on the Parson's Brook at grid reference TQ 12625 26331, about 700 m south-east of the Sumners Ponds site.

Net flow impacts in the Parson's Brook are therefore approximately zero.

Step 6: Assess the significance of the net flow impacts.

Not required: net flow impacts in the Parson's Brook are approximately zero.

Step 7: Define the search area for drawdown impacts.

The search radius prescribed by the Science Report SC040020/SR2 (Table 4.2) for an abstraction between 20 and 100 m^3/day is 250 m.

Step 8: Identify all features in the search area that could be impacted by drawdown.

No groundwater receptors were identified in the Water Features Survey (Section 2.2).

Step 9: For all these features, predict the likely drawdown impacts.

Not required: no groundwater receptors have been identified.

Step 10: Allow for the effects of measures taken to mitigate the drawdown impacts.

Not required: no groundwater receptors have been identified.

Step 11: Assess the significance of the net drawdown impacts.

Not required: no groundwater receptors have been identified.

Step 12: Assess the water quality impacts.

Not required: no groundwater receptors have been identified.

Step 13: If necessary, redesign the mitigation measures to minimise the impacts.

Not required: no groundwater receptors have been identified.

Step 14: Develop a monitoring strategy.

Not required: no groundwater receptors have been identified.

5. Conclusions

This report describes the proposed groundwater abstraction at Sumners Ponds, Barns Green. The abstraction is proposed to be at a rate of 30 m^3/day and 10 950 m^3/year, and sourced from the Horsham Stone Member aquifer.

The abstraction will not draw surface water or groundwater from the River Arun catchment, but is entirely within the River Adur catchment. There is no interaction between the abstraction and groundwater in the "Wealden Greensand semi-confined aquifer".

A borehole was drilled in October 2023 and a pumping test was undertaken in November 2023. Results of the pumping test are analysed here.

There are no potential receptors that might be impacted by drawdown in the aquifer, and the abstraction is considered to pose no risk to the water environment around Barns Green. The abstraction is considered to be sustainable in the long term, and capable of providing potable water after treatment.

The site lies within the Environment Agency's Adur and Ouse abstraction licensing strategy catchment area. The most recent licensing strategy was published in March 2019. The Horsham Stone Member is not designated as an aquifer so there is no indication of groundwater resource availability. Water is available from the Parson's Brook under all flow conditions.

References

Buss, 2022. River Ems Flow Investigation, Phase 1 Baseline Report. Atkins report, for Portsmouth Water.

Buss, S.R. and Daily, P.J.J., 2010. London Basin Aquifer: Conceptual Model. ESI report reference 60121R1, for the Environment Agency.

Kruseman, G.P. and de Ridder, N.A., 1990. Analysis and Evaluation of Pumping Test Data Second Edition. ILRI Publication 47.

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

APPENDIX A

Consent No:	S/2023/333

CONSENT TO INVESTIGATE A GROUNDWATER SOURCE

Section 32(3) Water Resources Act 1991

This **DRILLING ONLY CONSENT** is issued by the Environment Agency ("the Agency") to:

Jeff Reid of Nicholls Boreholes ("the Consent Holder") on behalf of Sumners Ponds Ltd

This Consent authorises the Consent Holder to construct one borehole at Sumners Ponds Chapel Road, RH13 0PR

National Grid Reference:
TQ 12140 26841

subject to the conditions set out in the Schedules 1 and 2 to this Consent.

This Consent is effective from the date below and expires on 31 March 2024

Signature PG Batty	Print name **Paul Batty**
Position **Team Leader, Groundwater Hydrology & Contaminated Land**	Date **21 September 2023**

This Consent is issued by the Environment Agency, Solent & South Downs Area from its Chichester office Oving Rd, Portfield, Chichester PO20 2AG. The person whom the Consent Holder should contact during the carrying out of the works and if they have any queries is Richard Tucker (mobile: 07442 798604).

Consent No:	S/2023/333

CONSENT TO INVESTIGATE A GROUNDWATER SOURCE

Section 32(3) Water Resources Act 1991

This **TEST PUMPING CONSENT** is issued by the Environment Agency ("the Agency") to:

Jeff Reid of Nicholls Boreholes ("the Consent Holder") on behalf of Welbeck Strategic Land IV LLP

This Consent authorises the Consent Holder to test one borehole at Sumners Ponds Chapel Road, RH13 0PR

National Grid Reference:
TQ 12140 26841

subject to the conditions set out in the Schedules 1 and 2 to this Consent.

This Consent is effective from the date below and expires on 31 April 2024

Signature PG Batty	Print name **Paul Batty**
Position **Team Leader, Groundwater Hydrology & Contaminated Land**	Date **26 October**

This Consent is issued by the Environment Agency, Solent & South Downs Area from its Chichester office Oving Rd, Portfield, Chichester PO20 2AG. The person whom the Consent Holder should contact during the carrying out of the works and if they have any queries is Richard Tucker (mobile: 07442 798604).

SCHEDULE 1 - General Conditions

1 INTERPRETATION

a) "The Consent Holder" means the person (whether an individual or organisation) to whom this consent is granted. Where the Consent Holder is two or more persons (e.g. a partnership) such persons shall be jointly and severally liable for the proper fulfilment of the conditions of this consent. In this consent the expression may also include, where the context so admits, a person who is the applicant for a consent i.e. before a consent is granted.

b) "The works" means the activities authorised or required by this consent, including the survey, construction of the well, borehole, well points, catchpit, or other work, and/or test pumping of the same, as the context so requires. The expression "the works" does not include activities for which this consent is unnecessary, such as construction of ancillary buildings, access roads, pits for drill cuttings, etc.

2 CLEARANCE/DEVELOPMENT PUMPING

Clearance/development pumping to remove any products of the well drilling or well development treatment is permitted under this Consent for a period not exceeding 48 hours. Clearance/development pumping that extends beyond 48 hours must be agreed with the Agency prior to the commencement of pumping. There must be a **full recovery** of water levels before a proper test pumping commences. Condition 5 of Schedule 1 of this Consent concerning the discharge of water and potential for pollution/physical disturbance applies to any such pumping operations.

3 SURVEY

The works shall not proceed unless and until the Agency has informed the Consent Holder in writing to the effect that (i) it considers the survey of water sources and other features which may be relevant to the works as specified by the Agency has been carried out adequately and (ii) it appears unlikely that test pumping will significantly affect other water users.

4 NOTICES etc TO THE AGENCY

Unless other periods are agreed in writing with the Agency, the Consent Holder shall give written notice to the Agency as follows:-

a) 5 days' notice before first commencing construction of the works

b) 5 days' notice before commencing acidisation or other treatment of the works

c) 10 days' notice before commencing test pumping.

Notice, and other information required by the Agency, shall be sent to the office at the address shown on the front of this consent for the attention of the person named there.

5 DISCHARGE OF WATER and POTENTIAL FOR POLLUTION/ PHYSICAL DISTURBANCE

a) The Consent Holder shall construct and finish the works so that water is prevented from running to waste. Any artesian flow must be securely capped.

b) The Consent Holder shall secure any completed works so as to prevent pollution or other hazard through those works, for example by capping and locking a completed borehole.

c) The Consent Holder shall ensure that pollution of, interference with, or damage to inland freshwaters or groundwater does not occur, whether from abstracted water or from substances or materials used in connection with the works.

d) The Consent Holder shall be responsible for obtaining necessary consents in relation to structures in, over or under watercourses.

e) The Consent Holder shall be responsible for the proper disposal of wastes from the works.

f) The Consent Holder shall notify neighbouring landowners who may be affected by discharge from the works and, if applicable, the Internal Drainage Board for the area, and shall take all necessary steps to prevent flooding.

g) The Consent Holder shall ensure that all persons engaged in the works are free from, and are not carriers of, waterborne diseases, and shall ensure that they operate to a high standard of hygiene.

6 EFFECTS ON OTHER WATER SOURCES

The Consent Holder shall immediately inform the Agency if any information or complaint is received by him about the consented operation, and shall immediately consult with the Agency as to the appropriate action to be taken.

7 RECORDS

The Consent Holder shall keep such records of strata encountered, construction of the works, results of any geophysical logging, water quality analyses, and test pumping data as may be required by the Agency. The information shall be given on forms provided by the Agency, and/or on compatible computer disk in a format agreed with the Agency. These records must be returned within one month of completion of the works or with any subsequent licence application (whichever is sooner).

8 PRESENTATION OF RESULTS

The Consent Holder shall present results and analysis of test pumping in the form specified in Schedule 2 to this consent.

9 INFORMATION TO THE BRITISH GEOLOGICAL SURVEY (BGS) ON BEHALF OF THE NATURAL ENVIRONMENT RESEARCH COUNCIL

a) Where the proposed works are intended to be more than 15 metres (50 feet) deep, the Consent Holder must notify BGS before starting the works. BGS' address for the purpose is the Hydrogeology Group, British Geological Survey, Maclean Building, Crowmarsh Gifford, Wallingford, Oxon OX10 8BB.

b) The Consent Holder shall send BGS stratigraphic and test pumping information as required by section 198 Water Resources Act 1991 within one month of completing the work. By arrangement with BGS, the Agency will do this on behalf of the Consent Holder unless the Consent Holder instructs otherwise.

c) Under "The Borehole Sites and Operations Regulations 1995" HSE must be notified when drilling boreholes more than 30 metres deep into used or disused mining areas. The regulations define "mining area" as land within one kilometre in a horizontal or other direction of workings in a mine, or where a licence to mine for minerals has been granted.

10 DRILLING SAMPLES

Samples shall be taken whenever there is a change in stratum, or at 10 metre intervals, whichever is less. The samples shall be bagged or boxed and labelled with their location, depth below ground level, and date taken. The samples shall be kept available for inspection by the Agency for up to 30 days following completion of the works.

11 MEASUREMENT ACCESS

The Consent Holder shall provide an access tube of diameter adequate for measuring instruments to be lowered safely into the borehole. In the case of lagoons, the consent holder shall install a gauge board, of a design approved by the Agency, in a position in the lagoon so that at all times the full range of water levels from normal top water level to the maximum drawdown level can be safely observed. The datum level on the gauge board shall be accordingly levelled to Ordnance Datum (Newlyn).

12 ENTRY BY THE AGENCY or BGS

The Consent Holder shall allow representatives of the Agency or BGS to enter the site at all reasonable hours, to inspect the works, to inspect and take copies or extracts of documents, and to take measurements and samples, as such representatives consider appropriate.

13 STANDARDS OF WORK

Unless otherwise specified in this consent or subsequently agreed with the Agency, the Consent Holder shall carry out the works and present data fully in accordance with British Standard ISO 14686 (2003) "Hydrometric determinations – pumping tests for water wells – considerations and guidelines for design, performance and use". Copies of this are available from BSI, 389 Chiswick High Road, London, W4 4AL. Tel: (020) 89969000. http://www.bsi-global.com/. The Agency may require repetition of tests or other appropriate remedial activities should the required standards not be met.

Consent No:	S/2023/333

SCHEDULE 2 - Special Conditions

DRILLING CONSENT ONLY

This consent authorizes the Consent Holder to test pump one borehole only.

1. TEST PUMPING

Any proposed changes to the pump testing schedule must be discussed and agreed with the Environment Agency beforehand.

A meter shall be fitted to the borehole pump during abstraction to monitor the abstraction rate. Meter readings must be recorded initially every hour for the first 4hrs, and then as frequently as practicable.

No pumping tests shall commence until the Consent Holder has verified the groundwater levels have recovered fully from any previous pumping test.

a. Constant Rate Test

The Consent Holder shall pump the borehole for 48 hours at a constant rate of no greater than 2.0m^3/hour. This is based on the assumption that the borehole development showed that this rate is achievable. The Environment Agency must be consulted if the maximum sustainable yield is less than 2.0m^3/hour to discuss an alternative hourly rate for the pumping test.

If, during the Constant Rate Test, groundwater levels have not stabilised after pumping for 48 hours, the Consent Holder must contact the Environment Agency to discuss if the test needs to be extended.

b. Recovery Test

Immediately after the Constant Rate Test the Consent Holder shall carry out a Recovery Test on the pumped borehole for 48 hours or until recovery is complete, whichever is the sooner.

If the quantity and quality of the supply is sufficient for the construction of the second borehole, the full Constant Rate and Recovery test should be repeated on that second borehole. Full recovery must be achieved on the first borehole before the testing the second borehole may commence.

2. WATER LEVEL MONITORING

The Consent Holder shall measure and record water levels daily for 3 days before pumping commences. Thereafter the Consent Holder shall measure water levels as shown on the attached data sheets (WR39) from the commencement and completion of each pumping session until full recovery. Discharge rates or meter readings must be recorded at the minimum frequency during pumping.

The Consent Holder is required to monitor the groundwater level in the borehole (BH1).

Where continuous monitoring of the test source is specified, the Consent Holder shall arrange for water levels to be measured in the test source by data loggers/pressure transducers accurately levelled to borehole datum. Any transducers installed must be capable of resolving fluctuations in pressure equivalent to 0.02 metres of water or less. Data should be recorded at 5-minute intervals or less using a data logger.

In addition to data logging, manual groundwater level measurements should be undertaken within the borehole on test for the first 4 hours of the test and recovery at the intervals detailed on the WR39 test pumping form.

Prior to cessation of testing The Consent Holder will:

a. verify the groundwater level in the test borehole has reached steady state. If the groundwater level has not reached steady state, the Consent Holder must contact the Environment Agency to discuss if the test needs to be extended.
b. verify the data from the data loggers are valid. If the data is invalid the Consent Holder must contact the Environment Agency to discuss if the test needs to be repeated.

Submission of Data from Data Loggers

Where continuous monitoring of the test source and/or any observation sites has been specified, the Consent Holder shall submit monitoring data recovered from data loggers to the Agency in either ASCII text or Windows EXCEL format with hourly and summary data.

3. DISCHARGE OF WATER

The Consent Holder shall:

a. Discharge all water abstracted during development pumping and testing to the pond at TQ 12177 26823.

b. Cover the ground at the discharge point into the pond with plastic sheeting a minimum of 5m x 5m in size to buffer and disperse the discharged water to prevent scouring and deterioration of ground conditions.

c. Discharge the water via a dewatering bag or other suitable filtering method placed on the center of the plastic sheeting.

d. Ensure that the water pumped to the pond does not cause any contamination, turbidity, or sedimentation within the pond.

e. Ensure that the water pumped to the pond does not cause any localised flooding.

4. PROVISION OF INFORMATION

The Consent Holder shall present construction details and water level information on form WR-38 (Borehole Records) provided by the Environment Agency.

The Consent Holder shall present the results of test pumping in a Hydrogeological Impact Assessment (HIA), the content of which shall be agreed with the Agency before testing commences.

5. OTHER SPECIAL CONDITIONS

If water is found to be contaminated with silt or other pollutants such as oil or chemicals, this water must not be allowed to flow directly or indirectly into surface waters or groundwater without treatment. The work should stop, and the Consent Holder should contact the Environment Agency for advice.

Should there be a pollution incident you must inform the Environment Agency immediately on the Incident Hotline telephone number 0800 80 70 60.

Consent No:	S/2023/333

SCHEDULE 1 - General Conditions

1 INTERPRETATION

a) "The Consent Holder" means the person (whether an individual or organisation) to whom this consent is granted. Where the Consent Holder is two or more persons (e.g. a partnership) such persons shall be jointly and severally liable for the proper fulfilment of the conditions of this consent. In this consent the expression may also include, where the context so admits, a person who is the applicant for a consent i.e. before a consent is granted.

b) "The works" means the activities authorised or required by this consent, including the survey, construction of the well, borehole, well points, catchpit, or other work, and/or test pumping of the same, as the context so requires. The expression "the works" does not include activities for which this consent is unnecessary, such as construction of ancillary buildings, access roads, pits for drill cuttings, etc.

2 CLEARANCE/DEVELOPMENT PUMPING

Clearance/development pumping to remove any products of the well drilling or well development treatment is permitted under this Consent for a period not exceeding 48 hours. Clearance/development pumping that extends beyond 48 hours must be agreed with the Agency prior to the commencement of pumping. There must be a **full recovery** of water levels before a proper test pumping commences. Condition 5 of Schedule 1 of this Consent concerning the discharge of water and potential for pollution/physical disturbance applies to any such pumping operations.

3 SURVEY

The works shall not proceed unless and until the Agency has informed the Consent Holder in writing to the effect that (i) it considers the survey of water sources and other features which may be relevant to the works as specified by the Agency has been carried out adequately and (ii) it appears unlikely that test pumping will significantly affect other water users.

4 NOTICES etc TO THE AGENCY

Unless other periods are agreed in writing with the Agency, the Consent Holder shall give written notice to the Agency as follows:-

a) 5 days' notice before first commencing construction of the works

b) 5 days' notice before commencing acidisation or other treatment of the works

c) 10 days' notice before commencing test pumping.

Notice, and other information required by the Agency, shall be sent to the office at the address shown on the front of this consent for the attention of the person named there.

5 DISCHARGE OF WATER and POTENTIAL FOR POLLUTION/ PHYSICAL DISTURBANCE

a) The Consent Holder shall construct and finish the works so that water is prevented from running to waste. Any artesian flow must be securely capped.

b) The Consent Holder shall secure any completed works so as to prevent pollution or other hazard through those works, for example by capping and locking a completed borehole.

c) The Consent Holder shall ensure that pollution of, interference with, or damage to inland freshwaters or groundwater does not occur, whether from abstracted water or from substances or materials used in connection with the works.

d) The Consent Holder shall be responsible for obtaining necessary consents in relation to structures in, over or under watercourses.

e) The Consent Holder shall be responsible for the proper disposal of wastes from the works.

f) The Consent Holder shall notify neighbouring landowners who may be affected by discharge from the works and, if applicable, the Internal Drainage Board for the area, and shall take all necessary steps to prevent flooding.

g) The Consent Holder shall ensure that all persons engaged in the works are free from, and are not carriers of, waterborne diseases, and shall ensure that they operate to a high standard of hygiene.

6 EFFECTS ON OTHER WATER SOURCES

The Consent Holder shall immediately inform the Agency if any information or complaint is received by him about the consented operation and shall immediately consult with the Agency as to the appropriate action to be taken.

7 RECORDS

The Consent Holder shall keep such records of strata encountered, construction of the works, results of any geophysical logging, water quality analyses, and test pumping data as may be required by the Agency. The information shall be given on forms provided by the Agency, and/or on compatible computer disk in a format agreed with the Agency. These records must be returned within one month of completion of the works or with any subsequent licence application (whichever is sooner).

8 PRESENTATION OF RESULTS

The Consent Holder shall present results and analysis of test pumping in the form specified in Schedule 2 to this consent.

9 INFORMATION TO THE BRITISH GEOLOGICAL SURVEY (BGS) ON BEHALF OF THE NATURAL ENVIRONMENT RESEARCH COUNCIL

a) Where the proposed works are intended to be more than 15 metres (50 feet) deep, the Consent Holder must notify BGS before starting the works. BGS' address for the purpose is the Hydrogeology Group, British Geological Survey, Maclean Building, Crowmarsh Gifford, Wallingford, Oxon OX10 8BB.

b) The Consent Holder shall send BGS stratigraphic and test pumping information as required by section 198 Water Resources Act 1991 within one month of completing the work. By arrangement with BGS, the Agency will do this on behalf of the Consent Holder unless the Consent Holder instructs otherwise.

c) Under "The Borehole Sites and Operations Regulations 1995" HSE must be notified when drilling boreholes more than 30 metres deep into used or disused mining areas. The regulations define "mining area" as land within one kilometre in a horizontal or other direction of workings in a mine, or where a licence to mine for minerals has been granted.

10 DRILLING SAMPLES

Samples shall be taken whenever there is a change in stratum, or at 10 metre intervals, whichever is less. The samples shall be bagged or boxed and labelled with their location, depth below ground level, and date taken. The samples shall be kept available for inspection by the Agency for up to 30 days following completion of the works.

11 MEASUREMENT ACCESS

The Consent Holder shall provide an access tube of diameter adequate for measuring instruments to be lowered safely into the borehole. In the case of lagoons, the consent holder shall install a gauge board, of a design approved by the Agency, in a position in the lagoon so that at all times the full range of water levels from normal top water level to the maximum drawdown level can be safely observed. The datum level on the gauge board shall be accordingly levelled to Ordnance Datum (Newlyn).

12 ENTRY BY THE AGENCY or BGS

The Consent Holder shall allow representatives of the Agency or BGS to enter the site at all reasonable hours, to inspect the works, to inspect and take copies or extracts of documents, and to take measurements and samples, as such representatives consider appropriate.

13 STANDARDS OF WORK

Unless otherwise specified in this consent or subsequently agreed with the Agency, the Consent Holder shall carry out the works and present data fully in accordance with British Standard ISO 14686 (2003) "Hydrometric determinations – pumping tests for water wells – considerations and guidelines for design, performance and use". Copies of this are available from BSI, 389 Chiswick High Road, London, W4 4AL. Tel: (020) 89969000. http://www.bsi-global.com/. The Agency may require repetition of tests or other appropriate remedial activities should the required standards not be met.

Consent No:	S/2023/333

SCHEDULE 2 - Special Conditions

DRILLING CONSENT ONLY

This consent authorizes the Consent Holder to only construct and development pump one borehole.

1. CONSTRUCTION DETAILS

When constructing the works:

a. The maximum depth of the borehole shall be 150m or to the base of the Horsham Stone Member whichever is reached first.

b. If depth of the borehole reaches 150m and the Horsham Stone Member has not been encountered, the Consent Holder will cease construction of the borehole and contact the Environment Agency to discuss continuation of the borehole.

c. The maximum diameter of the borehole shall be 250mm.

d. The borehole casing and grouting should be constructed to specifically target just the Horsham Stone Member.

e. Solid well lining shall be installed from the surface to the top of the Horsham Stone Member.

f. Permeable well lining will be limited to within the Horsham Stone Member only.

g. Permeable well lining must not be installed within any strata underlying the Horsham Stone Member.

h. A bentonite seal and raised wellhead and cover will be installed to prevent groundwater contamination.

i. A dip tube shall be positioned in the borehole so that a cable dipper can be lowered to record the water level without fouling installed pumping equipment. The dip tube shall be at least 25mm in diameter and shall at all times extend to a depth not less than 1 meter below the minimum water level as recorded when the borehole is operating at the proposed maximum hourly rate of abstraction.

j. There should be suitable pollution prevention measures in place at the site during construction & development to prevent any sediment or polluting material entering any nearby watercourses or the groundwater.

k. If contaminated material or groundwater is found at any time during the works, the Consent Holder is required to immediately stop construction and contact the Environment Agency.

2. DISCHARGE OF WATER

The Consent Holder shall:

a. Discharge all development pumping water to the ground at TQ 12142 26659.

b. Cover the ground at the discharge point with plastic sheeting a minimum of 5m x 5m in size to buffer and disperse the discharged water to prevent scouring and deterioration of ground conditions.

c. Discharge the water via a dewatering bag or other suitable filtering method placed on the center of the plastic sheeting.

d. Ensure that the water pumped to ground does not cause any localised flooding.

3. PROVISION OF INFORMATION

The Consent Holder shall present construction details and water level information on form WR-38 (Borehole Records) provided by the Environment Agency.

4. OTHER SPECIAL CONDITIONS

There should be suitable pollution prevention measures in place at the site during construction, to prevent any sediment or polluting material entering any nearby watercourses or the groundwater.

If contaminated material or groundwater is found at any time during the works, the Consent Holder is required to immediately stop construction and contact the Environment Agency.

Should there be a pollution incident you must inform the Environment Agency immediately on the Incident Hotline telephone number 0800 80 70 60.

APPENDIX B

Borehole record form

Type text here

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

A Site details

Borehole drilled for: SUMNERS POND

Location: CHAPEL ROAD, BARNS GREEN, HORSHAM, RH13 0AR

NGR (ten digits): TQ12140 26841 Please attach site plan

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

Drilling company: NICHOLLS BOREHOLES

Date drilling commenced: 02-10-2023 (DD/MM/YYYY) Completed: 05-10-2023 (DD/MM/YYYY)

B Construction details

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

Borehole drilled diameter	250	mm from	0	to	54 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.	SOLID UPVC	diameter	125	mm from	0	to	10.4 m/depth
Casing material	SLOTTED UPVC	diameter	125	mm from	10.4	to	50.3 m/depth
Casing material	SOLID UPVC	diameter	125	mm from	50.3	to	53.15 m/depth
Casing material		diameter		mm from		to	m/depth

Grouting details: 117 BAGS OF SHINGLE, 24 BAGS OF MIKOLIT

Water struck at 1. N/A - DRILLED m (depth below datum - mbd) 2. _____ m (mbd)
3. WITH MUD 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 D or below D ground level.

Pump suction depth: _____ mbd

Water level (start of test): _____ mbd

Water level (end of test): _____ mbd

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

_____

Pumping rate: _____ m^3/hour D or litres/second D. Please tick as appropriate.

for days, _____ hours, mins _____

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

Date(s) of measurements Pump started (DD/MM/YYYY)

Pump stopped _____ (DD/MM/YYYY)

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

D Strata log

Geological classification (BGS only)	Description of strata	Thickness m	Depth (to base of strata) m
	TOP SOIL	0.5	0.5
	YELLOW CLAY + STONE	4	4.5
	GREY CLAY WITH HARD BANDS OF MUDSTONE	30.5	35
	HORSHAM STONE - VERY HARD	5	40
	STIFF PALE GREY CLAY	4	44
	STIFF GREY CLAY WITH SOME RED CLAY AND STONE THROUGHOUT	8	52
	GREY CLAY	2	54
	(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		

The British Geological Survey will use the information you

APPENDIX C

FORM WR - 36. Water Resources Act 1991 Section 32

Please read the notes (Form WR34) before completing this form. Give additional information on back of form (or separate sheet) eg details of conversation with owner, access information, site sketch, reliability of source etc.

SURVEY REPORT

Test borehole (or other works) at: Sumners Ponds Fishery & Campsite Chapel Rd, Barns Green, Horsham RH13 0PR		Nat: Grid Ref: TQ 12140 26841
Applicant: Sumners Ponds Fishery & Campsite	Application ref: No.	Consent ref No.
Survey completed by: Jamie Laker, Nicholls, 01403 820750 (Name, company and telephone number)		Date(s) of survey: 31 Aug 23

	Nat. Grid Ref. Distance from source (metres) Licence No.	Name, address and telephone number of occupier. If owner is different to occupier please give details on the line below.	Water feature: borehole, well, pond, spring- see notes with WR-34 for full listing.	Use: agricultural, disused, backfilled etc.	Alternative supplies (e.g. mains water) available (yes/no)	Pump type: Electric (submersible/ surface, hand etc. Pump suction depth (m)	Diameter (mm)	Dip reference point (datum)	Depth to bottom (m) Date of measurement	Depth to rest water level (m) Date of measurement	Depth to pump water level (m) Date of measurement
1 (C)	TQ 12400 26611	Sumners Ponds Fishery and Campsite, Chapel Road, Barns Green. Horsham, West Sussex, RH13 0PR	Sumners Lake	Man made							
2 (D)	TQ 12344 26705	Sumners Ponds Fishery and Campsite, Chapel Road, Barns Green. Horsham, West Sussex, RH13 0PR	Farm Pond	Man made							
3 (E)	TQ 12141 26766	Sumners Ponds Fishery and Campsite, Chapel Road, Barns Green. Horsham, West Sussex, RH13 0PR	Ribbon Lake	Man made							
4 (F)	TQ 12228 26912	Sumners Ponds Fishery and Campsite, Chapel Road, Barns Green. Horsham, West Sussex, RH13 0PR	Ditch	Drainage							
	TQ 12284 26941	Sumners Ponds Fishery and	Ditch	Drainage							

5 (G)		Campsite, Chapel Road, Barns Green. Horsham, West Sussex, RH13 0PR									
6 (H)	TQ 12249 27003	Sumners Ponds Fishery and Campsite, Chapel Road, Barns Green. Horsham, West Sussex, RH13 0PR	Betty's Lake	Man made							
7 (I)	TQ 12256 26889	Sumners Ponds Fishery and Campsite, Chapel Road, Barns Green. Horsham, West Sussex, RH13 0PR	Ditch	Drainage							
8 (J)	TQ 12058 27163	Sumners Ponds Fishery and Campsite, Chapel Road, Barns Green. Horsham, West Sussex, RH13 0PR	Match Lake	Man made							
9 (K)	TQ 12024 26861	Sumners Ponds Fishery and Campsite, Chapel Road, Barns Green. Horsham, West Sussex, RH13 0PR	Ditch	Drainage							
10 (L)	TQ 12480 26371	Valewood Lane, Valewood Farm, Itchingfield, Barns Green, Horsham, RH13 0NQ	Ditch	Drainage							
11 (M)	TQ 12557 26902	Sumners Ponds Fishery and Campsite, Chapel Road, Barns Green. Horsham, West Sussex, RH13 0PR	Ditch	Drainage							

Signature:

Form WR - 36 - Survey report form - additional information

Environment Agency

Site No. 1	Site No. 2	Site No. 3
Clay lined, man made lake for fishing	Clay lined, man made lake for fishing	Clay lined, man made lake for fishing
Access:	Access:	Access:
Site No.4	Site No. 5	Site No.6
Dry drainage ditch – in ancient woodland	Dry drainage ditch – in ancient woodland	Clay lined, man made lake for fishing
Access:	Access:	Access:

Signature:

Site No. 7	Site No. 8	Site No. 9
Dry drainage ditch – in ancient woodland	Clay lined, man made lake for fishing	Drainage Ditch
Access:	Access:	Access:
Site No.10	Site No. 11	Site No.
Dry drainage ditch	Dry drainage ditch	
Access:	Access:	Access:

APPENDIX D

B. A. Hydro Solutions Ltd.
3 & 4 The Sidings
Shepreth
Herts
SG8 6PZ
Telephone: **+44 1763 26 27 26**
Email: **info@bahsltd.com**
Web: **www.bahsltd.com**

LABORATORY REPORT - Page 1 of 2

Client:	Nicholls Boreholes	**Certificate No:**	23240689-1
	Brownings Barn	**Order No:**	BH1494
	Glass House Lane	**Date Reported:**	25/10/2023
	Kirdford	**Site Name:**	BH1494
	RH14 0LW	**Sample Desc:**	Borehole

Test	Results	Limit	Units	Comment	Sample Details	
Alkalinity	276	-	mg/l			
Aluminium	<20.00	200	µg/l			
Ammonium	2.11	0.5	mg/l	*	**Sampling Date:**	19/10/2023
Boron	293	1000	µg/l		**Sampling Time:**	-
Calcium	98.0	-	mg/l		**Date Received:**	20/10/2023
Chloride	77.3	250	mg/l		**Date Tested:**	20/10/2023
Copper	<100.00	2000	µg/l			
Fluoride	307	1500	ug/l			
Dissolved Iron (Fe II)	64	-	µg/l			
Total Iron (FeII+FeIII)	310	200	µg/l	*		
Lead	<2.00	10	µg/l			
Magnesium	14.82	-	mg/l			
Manganese	244	50	µg/l	*		
Nitrate	<22.00	50	mg/l			
Nitrite	<50.00	500	µg/l			
Nitrite/Nitrate	0.1	≤1	-			
Phosphate	<0.15	-	mg/l			
Potassium	6.67	-	mg/l			
Sodium	100	200	mg/l			
Sulphate	140	250	mg/l			
Electrical Conductivity	1033	2500	µS/cm			
Calcium Hardness	245	-	mg/l			
Total Hardness as CaCO3	306	-	mg/l	V Hard		
Magnesium Hardness	61	-	mg/l			
pH	7.17	6.5-9.5	pH units			
Total Dissolved Solids	509	-	mg/l			
Turbidity	2.30	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

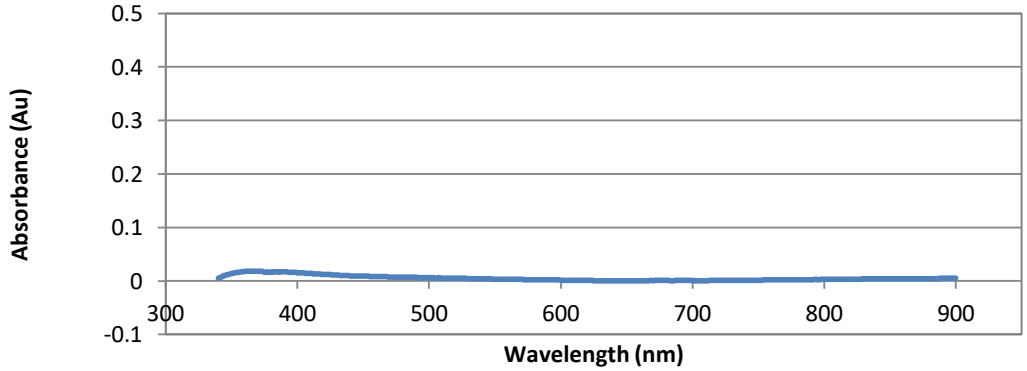
B. A. Hydro Solutions Ltd.
3 & 4 The Sidings
Shepreth
Herts
SG8 6PZ
Telephone: **+44 1763 26 27 26**
Email: **info@bahsltd.com**
Web: **www.bahsltd.com**

LABORATORY REPORT - Page 2 of 2

Client:	Nicholls Boreholes	**Certificate No:**	23240689-1
	Brownings Barn	**Order No:**	BH1494
	Glass House Lane	**Date Reported:**	25/10/2023
	Kirdford	**Site Name:**	BH1494
	RH14 0LW	**Sample Desc:**	Borehole

Test	Results	Limit	Units	Comment	Sample Details	
E.coli	0	0	cfu/100ml		Sampling Date:	19/10/2023
Total Coliforms	17	0	cfu/100ml	*	Sampling Time:	-
Enterococci	0	0	cfu/100ml		Date Received:	20/10/2023
TVC 3 at 22°C	>300	no abnormal change	cfu/ml		Date Tested:	20/10/2023
TVC 2 at 37°C	>300		cfu/ml			

Absorbance vs. Wavelength



Patrycja Malinowska
Laboratory Manager

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

APPENDIX D – ENVIRONMENT AGENCY ABSTRACTION LICENCE

Environment Agency

Water Resources
LICENCE TO
ABSTRACT
WATER

Environment Act 1995
Water Resources Act 1991 as amended by the Water Act 2003
Water Resources (Abstraction and Impounding) Regulations 2006

IMPORTANT NOTES

Need for safekeeping

This licence is an important document. The permission or right to abstract water may be valuable to your landholding. So -

- **Keep the licence safe, preferably with your deeds etc.**
- **Take careful note of the comments below about "transfer and apportionment" and "death and bankruptcy".**

This is to ensure that the permission and any rights granted by the licence continue if you need to pass it on to someone else.

If you want to:

- **revoke (cancel) the licence;**
- **notify us of the death or bankruptcy of the licence holder ;**
- **vary (change/amend) the licence in any way**
- **change the owner of the licence or**
- **change your contact address (but you continue to hold the licence).**

You can find our forms on .GOV UK or alternatively contact us for advice on how to make any changes by calling our National Customer Centre on 03708 506 506.

Transfer and apportionment (split)

If you need to pass this licence or any part of it to someone else, you must contact the Environment Agency and obtain the appropriate application forms. Temporary licences cannot be transferred or apportioned. The licence holder remains responsible for compliance with the terms of the licence and any charges payable until the licence has been transferred or apportioned.

Death or bankruptcy of the licence holder

'Vesting' is the transfer of responsibility and ownership of a licence when an existing licence holder is no longer able to hold the licence either through death or bankruptcy.

If a licence has been **'vested'** in you, as a result of the death or bankruptcy of the licence holder, please contact the Environment Agency in writing, telling us the licence number(s) and the date that the licence vested in you as a personal representative or trustee of the licence holder. This is necessary in order to enable you to subsequently transfer the licence.

You must notify us in writing within **15 months** of the date of vesting, being either death or bankruptcy of the licence holder giving the full names of all personal representatives or trustees and a contact address.

Time limits

Your licence may be subject to a time limit (where appropriate this will be shown on the front of your licence). All new abstraction licences are legally required to include a time limit. For variations to licences, time limits are added in accordance with our policy.

The duration of a time limit is determined in accordance with our time limiting policy. The time limit is linked to the next or subsequent review of water resources within the relevant Abstraction Licensing Strategy (ALS).

At the end of the time limit, we should be able to renew the licence if:

- there is no damage to the environment;
- the need for the abstraction can still be justified;
- water is being used efficiently; and
- you still meet the legal requirements for getting a licence.

If your licence is time limited and you wish to renew it when it expires, you will need to apply for a new licence to replace the existing one. You are advised to submit this application at least six months before it expires. To allow you to give early consideration to this, we will send you a reminder approximately 18 months before the expiry date.

If your licence cannot be renewed, we will endeavour to give at least six years notice. We will also endeavour to give at least six years notice where the licence is likely to be renewed on different terms and will significantly impact upon the use of the licence.

In exceptional circumstances, for example where there are other overriding statutory duties such as the Habitats Regulations, it may not be possible to provide six years notice.

Charges

Unless specifically exempted, we will levy an annual charge for water authorised to be abstracted by this licence, in accordance with our abstraction charges scheme in force at the time. To work out your charges, please refer to our Scheme of Abstraction Charges available on GOV.UK. The licence holder specified by the current issue of the licence is responsible for the payment of the annual charge until the date the licence is legally transferred to a new licence holder or the licence ends.

Quantity and quality of water

You must not abstract more than the quantity specified in the licence.
The Environment Agency does not, by issue of this licence or otherwise, in any way guarantee that the source of supply will produce the quantity of water authorised to be abstracted by this licence, nor that the water is fit for its intended use.

The quantity of water authorised for abstraction is given in cubic metres. One cubic metre is approximately 220 gallons.
(The precise conversion is 1 cubic metres = 219.969 gallons).

Source of supply and authorised point of abstraction

You may abstract from the point(s) specified in the licence and from no other points. If you want to add or change the authorised point(s) of abstraction, you must apply to us to vary the licence.

Purpose for which water is authorised to be used

You may only use the water for the purpose(s) specified in the licence. You must apply to us to vary the licence if you wish to add to or change the purpose(s).

Offences

Under the Water Resources Act 1991 it is an offence:-

- to abstract water, or cause or permit any other person to abstract water, unless the abstraction is authorised by and in accordance with an abstraction licence, or is subject to an exemption;
- to do anything to enable abstraction, or to increase abstraction, except in accordance with an abstraction licence or exemption;
- to fail to comply with the conditions of an abstraction licence.
- to interfere with a meter or other device which measures quantities of water abstracted so as to prevent it from measuring correctly;
- **Note in particular that it may be a condition of the licence to maintain the meter or other measuring device etc. and failure to do so will be an offence;**
- to fail to provide information which we have reasonably required for the purpose of carrying out any of the Environment Agency's water resources functions;
- to knowingly make false statements for the purpose of obtaining a licence or consent or in giving required information.

The requirement for a licence is subject to some exemptions, set out in the Water Resources Act 1991, as amended and the Water Abstraction and Impounding (Exemptions) Regulations 2017. If in any doubt as to whether you need a licence, contact us at the address shown at the bottom of the front page of the licence.

Right of appeal

If you are dissatisfied with our decision on your licence application, you have the right to appeal against our decision.

You should write to the Secretary of State for the Environment, Food and Rural Affairs, care of The Planning Inspectorate at:
Environment Appeals
The Planning Inspectorate
3A Eagle Wing
Temple Quay House
2 The Square
Temple Quay
Bristol
BS1 6PN

Alternatively you can obtain an on-line appeal form at:
https://www.gov.uk/government/publications/water-abstraction-and-impoundment-appeal-form

You must serve notice of appeal within 28 days of the date of receipt of this licence (although the Secretary of State has power to allow a longer period for serving notice of appeal). See Water Resources Act 1991, section 43.

Disclosure of information

Details of this licence are placed on a register, kept by the Environment Agency and open for inspection by the public. The public may also obtain further details about it by virtue of the Environmental Information Regulations 2004 (see also Disclosure of Information) except in special cases (for advice please contact us at the address shown on the front page of the licence).

Members of the public are also entitled to ask us for other "environmental information" it holds, including any activities likely to affect "the state of any water" or any "activities or other measures designed to protect it". That would include the information additional to the licence document e.g. any related agreement or abstraction returns. In certain restricted circumstances it is possible to claim that information should be kept confidential. If you require more information about keeping this information off the public register because it is confidential, please contact us by writing to the address shown on the front page of the licence within 28 days of receiving this licence.

Licence Serial No:	SO/041/0023/005

Please quote the serial number in all correspondence about this licence

Environment Agency

TRANSFER LICENCE TO ABSTRACT WATER

The Environment Agency ("the Agency") grants this licence to:-

Sumners Ponds Limited ("the Licence Holder")

Bishopstone
36 Crescent Road
Worthing
West Sussex
BN11 1RL

Company registration number 05235453

This licence authorises the Licence Holder to abstract water from the source of supply described in the Schedule of Conditions to this licence and subject to the provisions of that Schedule. The licence commences from the effective date shown below and shall remain in force until the date of expiry shown below.

Signed J. Robson

James Robson
Permitting Team Leader

Environment Agency
Permitting and Support Centre
Water Resources Team
Quadrant 2
99 Parkway Avenue
Parkway Business Park
Sheffield
S9 4WF

Date of issue ..... 14 June 2024

Date effective ..... 14 June 2024

Date of expiry ..... 31 March 2042

The licence should be kept safe and its existence disclosed on any sale of the property to which it relates. Please read the 'important notes' on the cover to this licence.

Note: References to "the map" are to the map which forms part of this licence.
References to "the Agency" are to the Environment Agency or any successor body.

Licence Serial No:	SO/041/0023/005

SCHEDULE OF CONDITIONS

1. SOURCE OF SUPPLY

1.1 Underground strata comprising of Horsham Stone Member within the Weald Clay at Barns Green, Horsham, West Sussex.

2. POINT OF ABSTRACTION

2.1 At National Grid Reference TQ 12140 26841 marked 'A' on the map.

3. MEANS OF ABSTRACTION

3.1 A borehole not exceeding 54 metres in depth and 250 millimetres in diameter with a pump.

4. PURPOSE OF ABSTRACTION

4.1 Private water undertaking to 70 properties for domestic use.

5. PERIOD OF ABSTRACTION

5.1 All year.

6. MAXIMUM QUANTITY OF WATER TO BE ABSTRACTED

6.1

2	cubic metres per hour
30	cubic metres per day
10,950	cubic metres per year

At an instantaneous rate not exceeding 0.4 litres per second.

Note: an hour means any period of 60 consecutive minutes, a day means any period of 24 consecutive hours and a year means the 12 month period beginning on 01 April and ending on 31 March.

7. MEANS OF MEASUREMENT OF WATER ABSTRACTED

7.1 (i) No abstraction shall take place unless the Licence Holder has installed a meter to measure quantities of water abstracted.

(ii) The Licence Holder shall position and install the meter in accordance with any written directions given by the Agency.

(iii) The Licence Holder shall calibrate, maintain, repair or replace the meter to ensure that accurate measurements are taken at all times.

(iv) The Licence Holder shall keep all records of meter repair or replacement including evidence of current certification and / or results of flow checking for inspection by the Agency for a period 6 years.

8. RECORDS

8.1 The Licence Holder shall take and record readings of the meter specified in condition 7.1 at the same time each month during the whole of the period during which abstraction is authorised or as otherwise approved in writing by the Agency.

8.2 The Licence Holder shall send a copy of the record to the Agency within 28 calendar days of being so directed in writing by the Agency or alternatively the Licence Holder shall send summary data from the record as specified by the Agency.

8.3 Each record shall be kept and be made available during all reasonable hours for inspection by the Agency for at least 6 years.

9. FURTHER CONDITIONS

9.1 The minimum value for the quantity of water authorised to be abstracted under this licence, as referred to in section 46(2A) Water Resources Act 1991, is 10,950 cubic metres per year.

Licence Serial No:	SO/041/0023/005

ADDITIONAL INFORMATION

Note: the following is provided for information only. It does not form part of the licence.

REASONS FOR CONDITIONS

The abstraction is required to be metered to demonstrate compliance with the terms of the licence and to provide information on actual water usage for water planning purposes.

The licence is time-limited to a date to reflect the timing of a future review of the catchment resources availability.

IMPORTANT NOTES

Abstraction Reform

We have granted this licence in line with current legal requirements and policies on managing water resources. However, Government have consulted on reforms which may affect the duration, quantities and management of licences before your current licence expires (ends), where appropriate. You should take account of this when making business decisions. If you would like to find out more, please search for 'abstraction reform' on gov.uk.

Water efficiency note

The Licence Holder should use water abstracted under the terms of this licence in an efficient manner. The Agency may refer to its guidance on water efficiency (or equivalent guidance) in determining whether water is being used efficiently and may offer advice on any measures considered necessary to meet particular recommendations.

Metering

The Agency will have regard to its Abstraction Metering Good Practice Manual (or equivalent guidance) in directing any of the following: where the meter should be located or how it should be installed; whether the meter measures accurately, and/or is properly maintained; whether it is necessary to require repair or replacement of the meter.

Note on Long term sustainability of Weald Clay abstractions in the Solent and South Downs Area

The Weald Clay formation in the Solent and South Downs area is comprised of mainly clay with limited and discontinuous bands of sandstone and limestone. Due to the low permeability and discontinuous nature of the formation, recharge rates are likely either very slow or zero. Some sandstone and limestone bands within the Weald Clay Formation may have potential to support small scale abstractions.
The British Geological Survey memoirs state that water abstraction from the Weald Clay is generally not sustainable long term and even in cases where large yields are achieved during testing, it is possible for the yield to diminish over time.

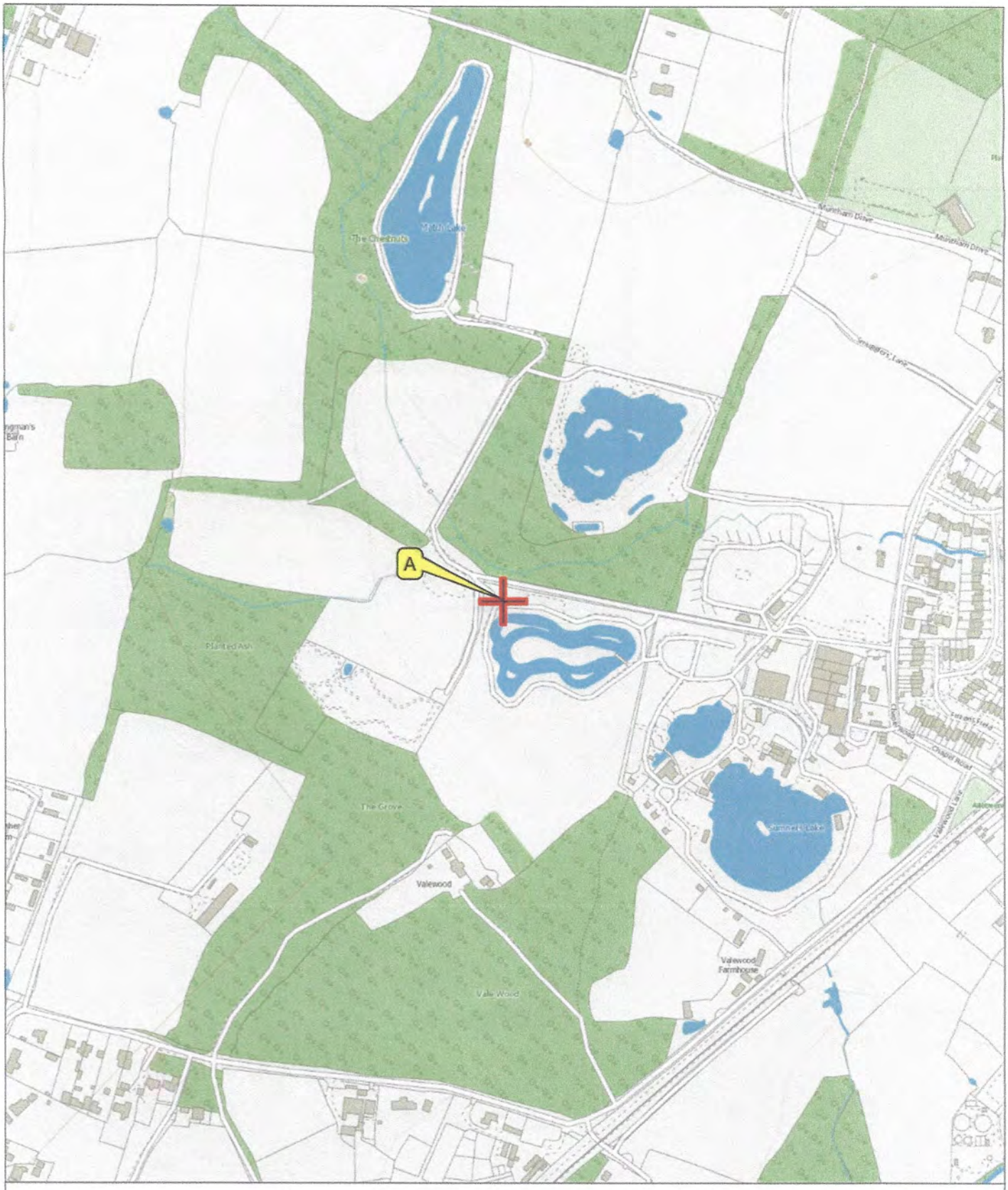
Dip tube

It is strongly advised that the dip tube installed during the construction of the borehole is retained for future monitoring for private water supply management and groundwater levels in the area.

Licence Serial No:	SO/041/0023/005

Licence History

Licence serial number	Issue date	Expiry date	Summary of changes
SO/041/0023/005	14 June 2024	31 March 2042	Original licence issued. Application Ref: NPS/WR/040486



Environment Agency

MAP ACCOMPANYING LICENCE NUMBER SO/041/0023/005

Scale 1:5,000

N
W E
S

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APPENDIX E –HYDROLOGIST'S ASSESSMENT OF IMPACT ON PROTECTED SITES

Stephen Buss Environmental Consulting Ltd

MEMORANDUM:
Hydrogeological Assessment: Water Neutrality Statement for development at Sumners Ponds, Barns Green

Document number: 2023-095-013-002 Dated: 05/09/2023

Scope and Introduction

The following document was compiled to show that that the proposed abstraction of groundwater at the Sumners Ponds development can provide water neutrality credit to sites within the Sussex North water supply zone.

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. To try 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.

By removing the reliance on mains water from the WSZ at this site, and drawing water from a source that is not hydrologically connected to the WSZ, it is proposed that the amount of water saved can be credited to sites within the WSZ that do not have the ability to use groundwater.

This report has been written by Dr Stephen Buss MA MSc CGeol, based on the field work and preparatory work of Nicholls Licensing and Consulting. Dr Buss is a UK-based independent hydrogeologist with more than 20 years' consulting experience. Dr Buss's CV and publications list is available at www.hydro-geology.co.uk.

THE GEOLOGICAL SOCIETY CGeol CHARTERED GEOLOGIST Fellow No. 10004065

Background

The site is on Chapel Road, Barns Green, in West Sussex. The postcode is RH13 0PR and the proposed borehole will be close to grid reference TQ 12355 26748 (Figure 1). This site is close to the headwaters of an un-named tributary of the Parson's Brook which flows southwards away from the site to become a tributary of the River Adur.

Two private water supply boreholes are to be constructed at the site that will eventually, in total, abstract around 30 m^3 per day from the underlying Horsham Stone Member aquifer. Initially, only 20 m^3/day will be abstracted, until an abstraction licence from the Environment Agency has been granted for a higher amount. This has been designed to draw the water supply for the site from a source that is not hydrologically connected to the Sussex North water supply zone

(WSZ). The site is also not in the hydrological catchment of the River Arun, which provides hydrological support to the Arun Valley SAC, SPA and Ramsar site.

The site has historically used 26.9 m^3/day, which has been reduced to 20.5 m^3/day with water saving measures. Nicholls Licensing and Consulting has estimated that potential future expansion at this site will likely increase the daily output to 30 m^3/day. To date all water supply has been obtained from mains water supply, sourced from the Sussex North WSZ. This is to be replaced by a borehole supply from local water resource.

The initial reduction of 20 m^3/day from the North Sussex WRZ is to be credited against developments within the North Sussex WRZ which are unable to otherwise demonstrate water neutrality. A further 0.5 m^3 per day will be available to credit in the same way once an EA licence has been granted. Future expansion of this site using up to 9.5 m^3 will remain water neutral if it utilises water from this private supply.

Geology

The local geological succession is presented in Table 1, along with brief lithological descriptions. The two boreholes drilled on site will be drilled to exploit groundwater within the Horsham Stone Member.

According to the British Geological Survey sheet 302 (Horsham), the geological strata here dip gently to the south west. Outcrop geology beneath the site comprises Weald Clay, with a section of Horsham Stone Member to the east, with the Upper Tunbridge Wells Sand Formation further to the north east beneath Horsham.

There are several boreholes to the south and south west of the site. The nearest existing borehole south of the development is a farm borehole[1], about 800 m south of the new borehole sites (TQ12/NW1). Here the top of the Horsham Stone Member is at about 40 m depth.

The outcrop area of Horsham Stone Member is to the north east of the site, beneath the north and to the west of Southwater. There are no source protection zones defined for the Horsham Stone Member aquifer, so there is no conflict with public water supply. The Horsham Stone Member aquifer is not part of the "Wealden Greensand semi-confined aquifer", which is the main source of water for the Sussex North WSZ.

Source and Quantity of Abstraction Yield

By examination of the geological map, and topography, there are two potential sources of groundwater that will contribute yield to the abstraction which is to exploit the Horsham Stone Member (Figure 2).

- By flow of recharge down-dip through the Horsham Stone Member. The Horsham Stone Member is a moderate aquifer with outcrop of the recharge zone between 40 and 60 m AOD. Comparing this to the site level of c. 38 m AOD suggests that groundwater level would be expected to be close to the surface. The borehole[2] south west of the site (TQ12/NW10), that penetrated the Horsham Stone Member, had a rest water level of about 7.5 m AOD when drilled in 1928.
- By movement of recharge vertically through the outcrop of Weald Clay Member which is beneath and surrounding the site. The log of farm borehole (TQ12/NW1) indicates that

[1] https://api.bgs.ac.uk/sobi-scans/v1/borehole/scans/items/578307
[2] https://api.bgs.ac.uk/sobi-scans/v1/borehole/scans/items/578316

the Weald Clay comprises mostly clayey strata, so will provide considerable resistance to significant groundwater recharge.

Given the clear qualitative differences in hydraulic resistance of the pathways between the potential sources of water and the proposed abstraction the dominant one will be via the sandy aquifer of the Horsham Stone Member, not via more than 40 m of clayey strata.

The outcrop area of the Horsham Stone Member closest to, and uphill from, the site is outside of the catchment of the River Arun and groundwater in that aquifer provides baseflow to the headwaters of the River Adur (Figure 3).

Borehole TQ12/NW10, which was completed in the Horsham Stone Member, yielded about 60 m^3/day with a drawdown of 16 m, so it is reasonable to believe that either one of the proposed boreholes will achieve the desired yield of 30 m^3/day.

Surface Water Catchments

Since the Horsham Stone Member aquifer is the source of the water for the proposed abstraction, the conclusion is that the water comes at the expense of spring flows and/or stream baseflows for watercourses that flow southwards from and/or over the Horsham Stone Member aquifer. Groundwater from the aquifer east of the site contributes flow into the catchment of the River Adur, via Parson's Brook and an un-named tributary to the east (Figure 4).

Domestic water used in the site will be treated at Barns Green Waste Water Treatment Works (WWTW). The outfall from Barns Green WWTW is on the Parson's Brook at grid reference TQ 12625 26331, about 500 m south east of Sumners Ponds.

Taking both of these concepts into account, i.e. that…

1) groundwater is supplied to the abstraction via the outcrop of Horsham Stone Member within the Adur catchment, and
2) any discharge of treated sewage effluent will be to the Parson's Brook and Adur catchment,

…the net effect of the proposed abstraction on the water balance of the River Arun catchment, upstream of the Arun Valley SAC, SPA and Ramsar site will be zero. There is no interaction between the abstraction and groundwater in the "Wealden Greensand semi-confined aquifer".

References

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

Table 1: Geological formations local to Barns Green (youngest at the top)

Formations	Members	Lithology
Weald Clay Formation		Thinly-bedded **mudstones** with subordinate siltstones, and fine- to medium-grained sandstones. Horsham Stone Member is a thin, calcareous sandstone layer near the top of the Weald Clay sequence.
Tunbridge Wells Sand Formation	Upper Tunbridge Wells Sand	Fine to medium-grained silty **sandstone**, siltstone and silty sand rhythms with finely-bedded mudstones and thin limestones.
	Grinstead Clay Member	Very silty **mudstones** with thin beds of siltstone, nodular clay ironstone and shelly limestone.
	Lower Tunbridge Wells Sand	Fine to medium-grained **sandstone**, siltstone and silty sand rhythms with finely-bedded mudstones and thin limestones. Generally less clayey than the Lower Tunbridge Wells Sand.
Wadhurst Clay Formation		Thinly-bedded **mudstones** with beds of siltstone, fine-grained sandstone, limestone, clay ironstone and rare pebble beds.

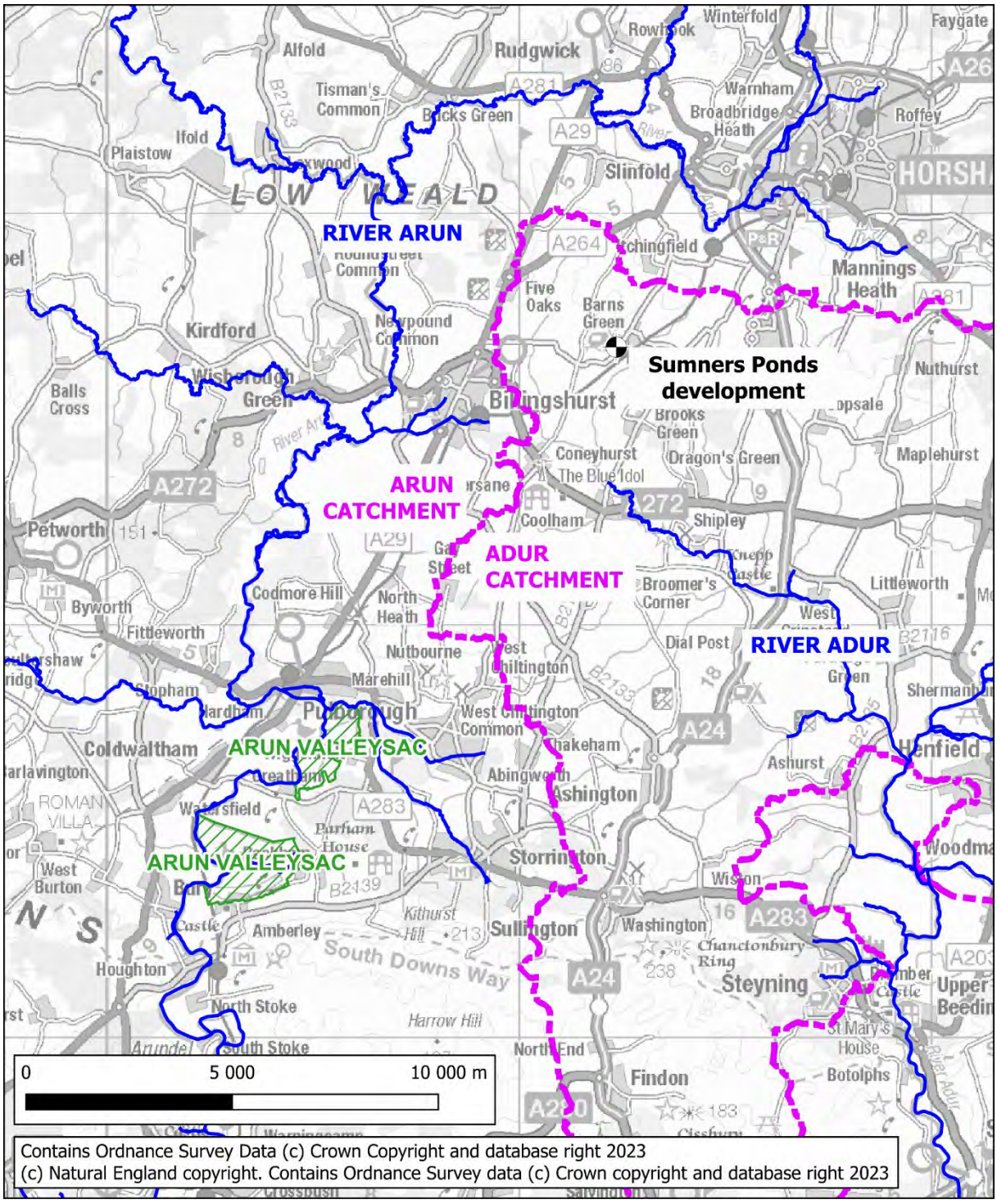


Figure 1: Location of Sumners Ponds site relative to Arun Valley SAC, SPA & Ramsar site (Arun / Adur catchment boundary in pink)

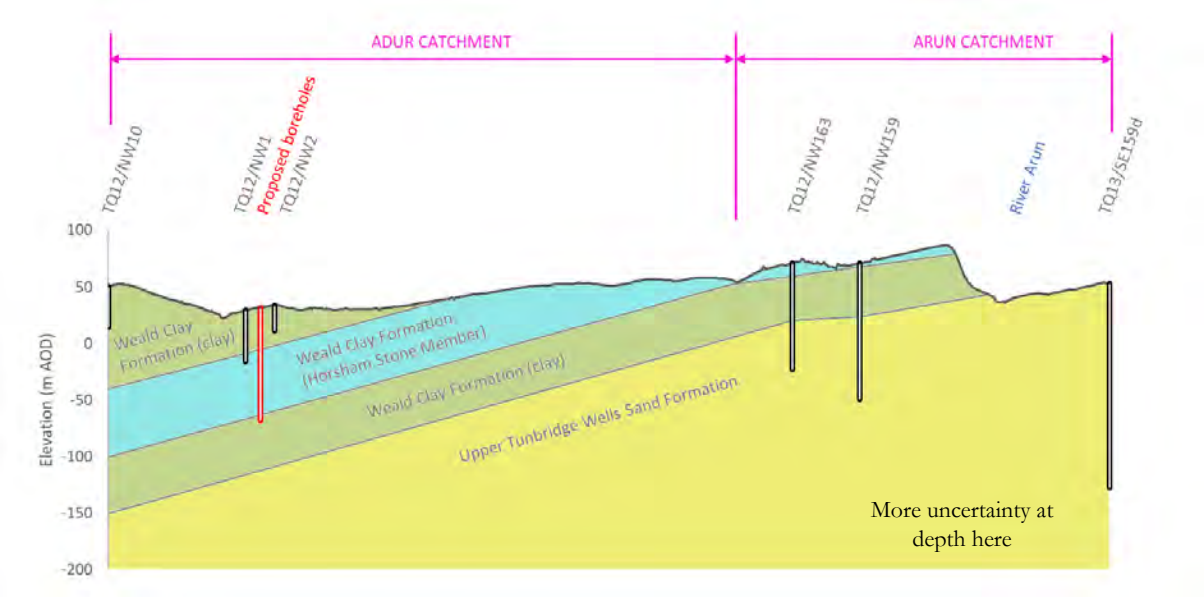


Figure 2: Cross-section of geology perpendicular to dip (section line shown on Figure 3)

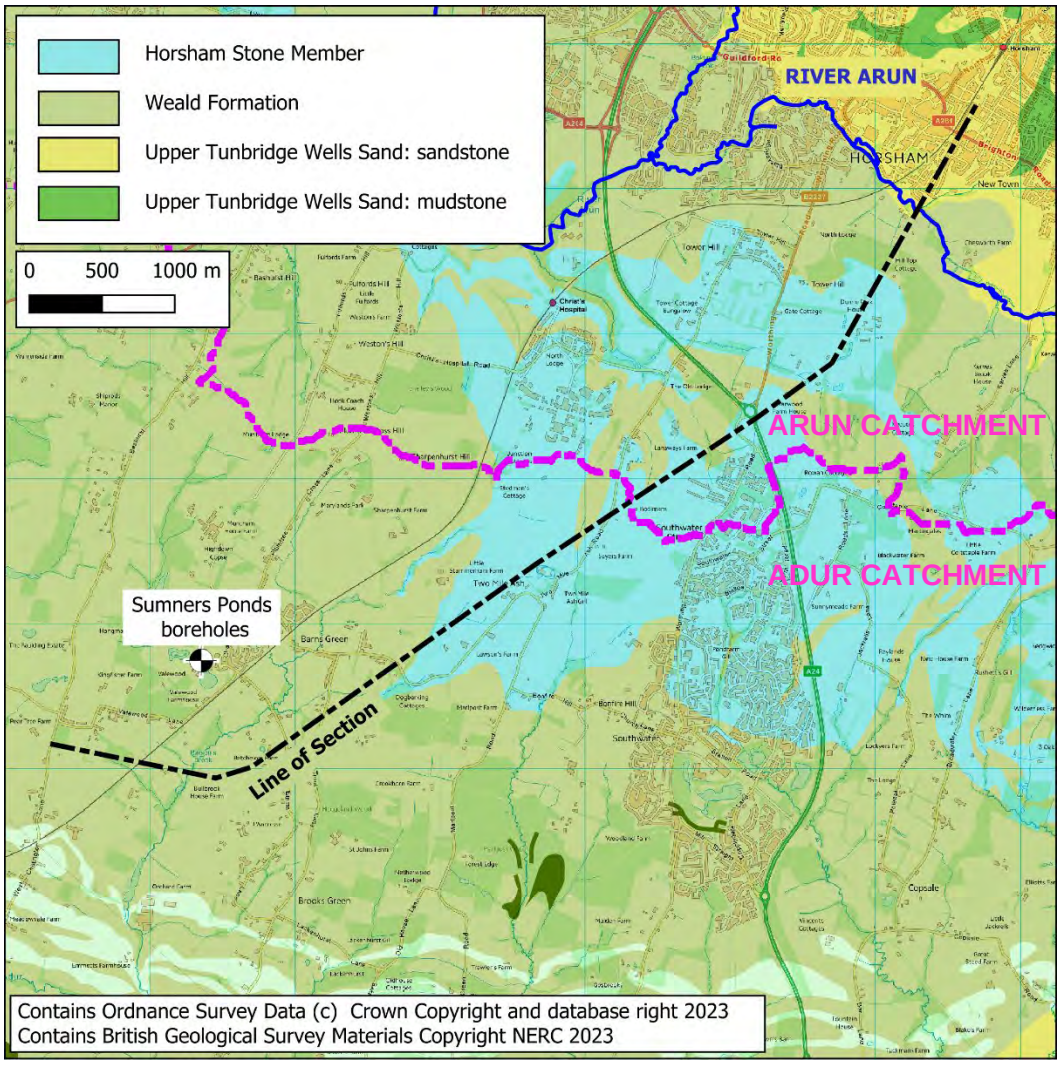


Figure 3: Bedrock geology (Arun / Adur catchment boundary in pink)

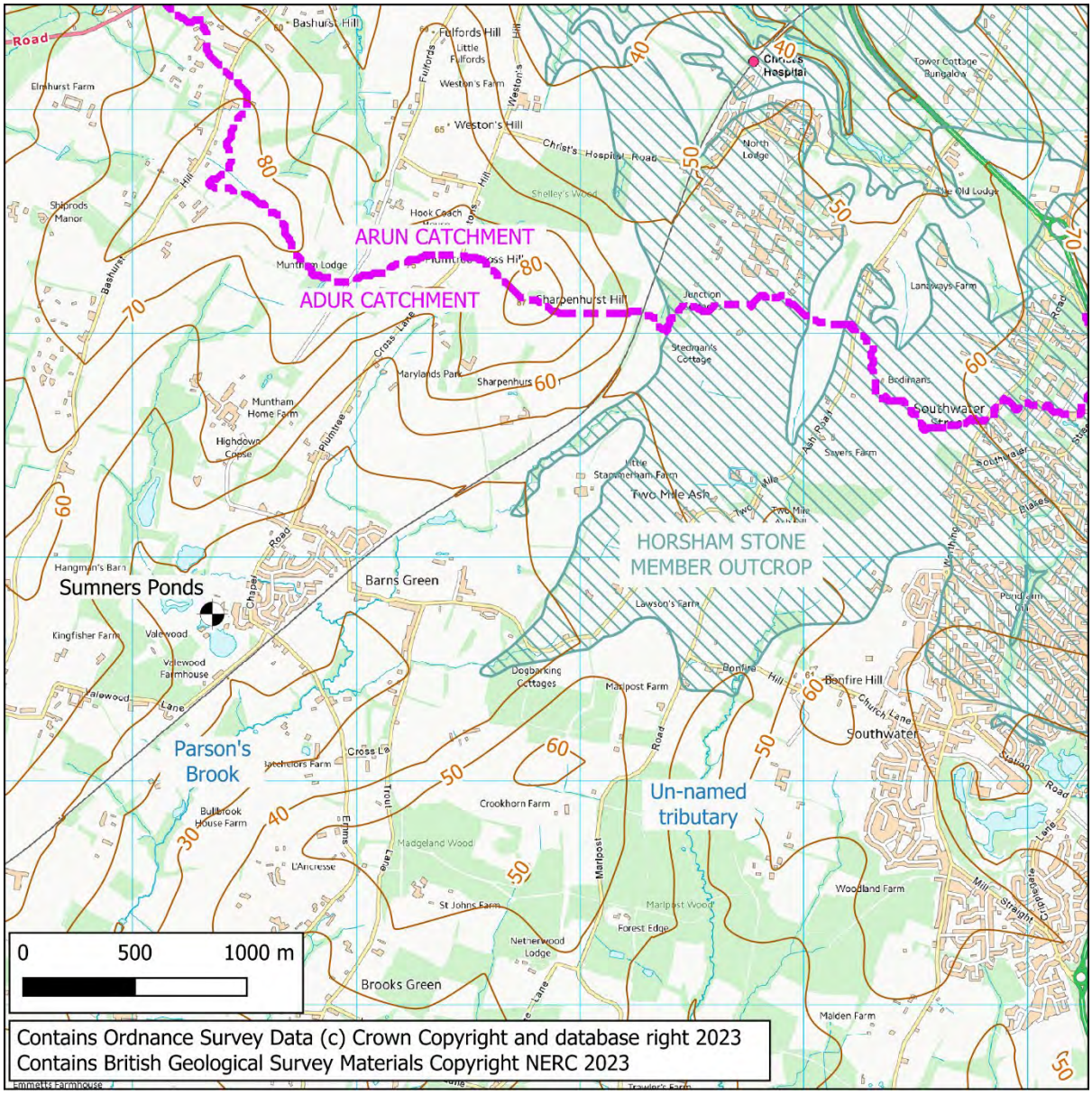


Figure 4: Local watercourses flow southwards from the Horsham Stone Member outcrop towards the River Adur

Groundwater Investigation Report

Site: Sumners Pond, Fishery and Campsite, Barns Green, RH13 0PR

Client: Sumners Pond

Report reference: BH1494 GWI Version: 3

Date: 12th May 2025

Co-author: George Parker – Project Manager Nicholls Boreholes

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Co-author: Dr Stephen Buss MA MSc FGS CGeol – Consulting Hydrogeologist

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Contents

1.0 Introduction 3
2.0 Site Investigation 3
2.1 Desktop Investigation 3
2.2 History of the Site 4
2.3 Topographical Review 5
2.4 Source Protection 5
2.5 Conclusion on Desktop Investigation 5
2.7 On Site Investigation 6
3.0 Borehole Construction 6
3.1 Methodology 6
3.2 Borehole Construction 7
3.3 Geology 7
Topsoil 8
Weald Clay 8
Horsham Stone Member 8
4.0 Pumping Tests 8
4.1 20m³ / Day Proof Test Pumping 8
4.2 Environment Agency Proof Test Pumping 9
4.3 Water Level Observations 9
5.0 Raw Borehole Water Quality Testing 9
5.1 Sampling 9
5.2 Sample Analysis Review 10
6.0 Concept Design 10
7.0 Regulatory Compliance 11
7.1 Sampling and Testing Regime 11
7.2 Maintenance and Servicing 12
7.3 Record Keeping 12

1.0 Introduction

As part of the water offsetting scheme at Sumners Pond Fishery and Campsite one borehole was required to provide a water supply to the facilities and dwellings present on site. Nicholls Boreholes constructed and tested the abstraction water well in October – December 2023, in accordance with EA consent number S/2023/333. The site has been calculated to require a daily usage of 30m3 per day.

The boundary location plan (LandApp) of the site is shown on Appendix A.

This report describes the site investigation, on-site works and includes the results of water quality testing and the initial design.

2.0 Site Investigation

While the drilling of a borehole for the purposes of providing a drinking water supply does not fall directly into the specific work referenced in BS 5930:2015, there are some relevant, generalised sections which are applicable. These relevant processes were followed and are documented within this report.

Prior to commencement of any construction, a desktop site investigation was carried out in order to satisfy the Primary Objectives of BS5930:2015 Clause 4 and subsequent Sections 2 and 3 of the same standards. The basis for investigation was to identify a suitable aquifer which has a satisfactory water quality and can provide long-term sustainability. The basis for investigation also intended to prove no hydrogeological connection to the Hardham Basin (Folkestone Beds).

2.1 Desktop Investigation

The desktop research included the review of various sources of which the findings are summarised in the below table of information.

Investigation	Findings
Expected Geology – Taken from the BGS online portal and local BGS logs	Weald Clay Formation: mostly clay, with interbedded limestones and sandstones (to an approximate depth of 180mbgl). Horsham Stone Member (cropping out to the north east of the site) is not part of the Wealden Greensand Semi-confined aquifer. Below the Weald Clay the Upper Tunbridge Wells Sandstone was expected from 180mbgl.

Stability of the Geology	The strata are expected to be stable, subject to made up ground and soil deposits above the strata.
Expected Yield and Rest Water Levels	Deemed to be suitable to accommodate the maximum required yield of 30m³/day.
Aquifer Risks	The aquifer is expected to be confined but is not deemed to present artesian conditions, as these have not been observed at local boreholes.
Locality to SPZ	Confirmation that the site is not within or adjacent to an existing SPZ.
Risks to Water Quality	Risks for potentially non-potable groundwater quality, some observations observe potentially saline or high iron levels. Records of a historical landfill between 1964 to 1970 approximately 450m South is considered low risk given the geological setting, relative location and nature of the groundwater bearing units.
SNWRZ (Sussex North Water Resource Zone)	The target aquifer is stratigraphically and hydro-geologically separated from the Hardham Basin (Sussex North Water Resource Zone) which supplies water to the Arun Valley conservation sites (SPA, SSSI and SCA).
Soil Sampling	Information available as part of application for planning for the development at Sumners Pond (DISC/23/0218) highlighted one benzo(a)pyrene exceedance in the Weald Clay from a maximum sample depth at 0.7mbgl.

References; BGS GeoIndex Onshore // Dr Stephen Buss MA MSc FGS CGeol

In addition to this a desktop survey was carried out to identify water features in the locality of the borehole. This survey shows local water features, including ponds and streams/ditches identifying them as areas which may be affected from the pumping of water from the borehole. It also confirms that there are no private water supplies within 500m of the intended borehole. These features are shown in Appendix B. This information was submitted to the EA as part of the pre-application and deemed to require no monitoring during testing.

2.2 History of the Site

Review of historical maps and records does not indicate any usage for the grassland site other than as livestock farming land. There is no previous usage for military sites and no indication that the site poses a risk for mining or quarrying. The site is considered low risk for contamination within the groundwater.

2.3 Topographical Review

Sumners Pond is in the catchment of the River Adur. Various ponds and ditches are visible on site, all of which are part of site operations. There is a small watercourse that flows on eastward through Barns Green to join Parsons Brook, a tributary of the River Adur. This is considered to be partly spring fed by groundwater from the Horsham Stone Member.

The immediate environs of the borehole is grassland and ponds with uses for fishing and camping. There is a private roadway directly North of the site along with a small cluster of residential properties along the Eastern boundary of the site. The ground around the borehole is level and well maintained.

The borehole construction was designed to case off the first 10m of geology to reduce potential impact from ground contamination and target abstraction mainly from the Weald Clay and intersecting limestone and sandstone.

2.4 Source Protection

Development of a water supply borehole leads to the creation of a default 50 m radius source protection zone (SPZ). Appendix C shows the 50 m radii over Google Earth imagery from 2024, with land ownership boundaries from February 2025.

This image shows that the area is mostly open grassland around both intended borehole, with various ponds and lakes.

The entire land within the radius of the borehole is owned by the landowner.

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 the future in this environment. Normal domestic and commercial activities are not prohibited within a SPZ1.

Full details of the activities that are and are not permitted are contained within the Environment Agency's groundwater protection position statements.

2.5 Conclusion on Desktop Investigation

The investigatory work carried out prior to the construction of the water wells identified a suitable preliminary location.

The site was deemed suitable and identified a low risk of contamination from land, mining, landfilling and quarrying.

The EA provided a consent to drill, no S/2023/333 in accordance with the Water Resource Act 1991 Section 197. This consent to drill took into consideration the factors documented in the investigatory works and dictated the design of the borehole, notably that the borehole

should be constructed to specifically target the Horsham Stone Member, part of the Weald Clay Formation. The construction of the borehole shown in Appendix D, was also considered to case off the surface geology within which the presence of benzo(a)pyrene was detected.

The water sampling parameters were designed based on the usage being a public supply. Guidance was taken from the DWI Regulation on Private Water Supplies 2016 No. 618 which sets out the parameters (Group A and B) of sampling required for water intended for human consumption. Consideration was given to the potential elevated parameters highlighted in the desktop investigation of iron and saline.

Benzo(a)pyrene exceedances flagged from near-surface Weald Clay soil sampling data fall within the UK Drinking Water Regulations testing suite and as such would be reported on, no additional analysis required.

The expected quality of the water was deemed to be suitable for filtration, which could ultimately enable its usage as a private supply.

2.7 On Site Investigation

The onsite investigation confirmed the locations of the borehole, the suitability and above ground safety of drilling along with carrying out an observational review of potential buried services as well as a CAT scan.

The locations highlighted in the water features survey were observed and the environs of the borehole were confirmed as per the desktop study.

3.0 Borehole Construction

Risk assessments were carried out following the investigation work and in accordance with BS5930:2015 Clause 5, to provide a safe system of works for the construction phase.

All the Nicholls Boreholes lead drillers have a minimum of 10 years' experience in the field of drilling, are NVQ Level 2 Land Drilling accredited, which is a nationally recognised qualification promoted and run by the British Drilling Association, as well as being SMSTS qualified and first aid trained. Nicholls is also a member of the Water Reg UK advisory body.

3.1 Methodology

A rotary drilling methodology, with a re-circulating mud flush, was selected given the expected geology. The borehole were drilled based on the considerations from the documented in section 2 of this report and the borehole schematic is shown in Appendix D. The borehole were drilled using the best practices set out in the BDA Manual for Rotary Drilling.

During the drilling process, arisings were captured by the lead driller every 10m or change in formation type (recognised by changes in drilling torque, weight on bit and confirmed by visual changes in arisings). This is in accordance with BS5930:2015, ISO 14689, Eurocode 7 and the EA consent no S/2023/333.

These types of cuttings are considered Category C as they are disturbed cuttings as described in ISO 22475-1 7.3.5.

3.2 Borehole Construction

The abstraction borehole was constructed using rotary flush technique. These were constructed in accordance with Environment Agency consent to the proposed construction, documented in consent number S/2023/333. During the drilling process the construction was adapted to not only target the Horsham Stone member but also the Weald Clay where numerous bands of hard stone were encountered. This was approved by the Environment Agency.

Abstraction Borehole 1

Location:	TQ 2140 26841
Ground level:	37.00 m AOD (from Environment Agency LIDAR data)
Drilling date:	2nd October to 5th October 2023
Construction details:	Drill to 54mbgl at a diameter of 250mm. The drilling stopped at this point when the consistency of stone within the clay notably changed. The borehole was lined with 125mm UPVC solid liner to create a sump from 53.15mbgl to 50.3mbgl, 125mm UPVC slotted liner from 50.3mbgl to 10.4mbgl and 125mm UPVC solid liner from 10.4mbgl to the surface. The annulus between the liner and borehole was filled with washed shingle to 10mbgl before the well was then airlifted to allow the shingle to settle. Additional shingle was installed to account for settlement and then mikolit pellet grout was installed from 10mbgl to the surface. Following the construction of the well, it was then airlifted again to remove any remaining drill fluids.

3.3 Geology

The strata encountered are summarised below and is shown in the borehole schematic in Appendix D

The borehole log has been written and is attached with this report under Appendix E. These have been completed using the arisings collected and analysis carried out by the Nicholls in

house qualified geologist. These logs are written in accordance with BS5930:2015, ISO 14689 and Eurocode 7.

Topsoil

Encountered c. 0.5 m of topsoil.

Weald Clay

This stratum was encountered through from 0.5m to 35m.

In general, the Weald Clay was found to comprise dominantly grey clay, containing hard bands of mudstones.

Horsham Stone Member

At 35m the Horsham Stone Member was encountered and noted as a very hard stone band with a thickness of 5m.

Weald Clay

Underlying the stone band, the Weald Clay was encountered and observed to compromise of a predominantly stiff grey clay with a band from 44-52mbgl containing some red clay and stone content throughout. The observation at 52m to 54m was that of grey clay.

4.0 Pumping Tests

Development pumping was carried to fully establish the potential yield for the well and ensure that this yield was achievable and sustainable.

Abstraction Well Yield Test Pumping –06.10.2023

The well was initially dipped to measure the rest water level (2.58mbgl). Prior to installation in the well, the borehole pumping equipment was sanitised. The borehole pump was then installed to a depth of 35mbgl. A static head pumping test was carried out for 2 hours at a maximum flow rate of 50 litres per minute where a static water level was observed at 19.6mbgl. The borehole required further development pumping to improve the clarity of the water. The borehole pump was left to develop at a reduced flow rate of 25lpm on a timer, running for 30 minutes and off for 30 minutes until such time as the water ran clear.

4.1 20m³ / Day Proof Test Pumping

Abstraction Well 20m³ Test Pumping – 7th November 2023

The 20m³ test was carried out over a period of 24 hours in order to prove that an approximate 20m³/day yield was sustainable from the abstraction well. 3 days prior to the test, monitoring equipment was installed in the well to record the groundwater levels.

Prior to the test the well was manually dipped to confirm the rest water level at 4.20mbgl. The pump was then switched on at a target flow rate of 13.8lpm for 24 hours. During the test the flow rate was recorded along with manual water level collections. After the 24-hour period, the pump was switched off and the recovery was monitored for 3 days. The monitoring equipment was then removed from the well and the data reviewed by a Hydrogeologist.

4.2 Environment Agency Proof Test Pumping

Abstraction Well EA Test Pumping – 6th December 2023

The well was tested in accordance with EA consent no. S/2023/333 at an abstraction rate of 2m³/hr for 48 hours. Prior to the test the well was dipped to confirm the rest water level of 4.14mbgl. During the testing of the borehole no water features required observation, but daily manual dip data collection was required 3 days either side of each borehole on test. The borehole was shown to be capable of maintaining this abstraction volume without impacting the local water features. On completion of the testing the data was reviewed and submitted to Stephen Buss for the generation of a HIA report which was subsequently submitted to the EA. This report contains a more detailed review of the data and conclusions. The EA reviewed the data and granted Sumners Pond with an abstraction licence in June 2024.

4.3 Water Level Observations

Groundwater level observations are tabulated below.

	Abstraction BH
Borehole datum elevation	**37.0 m AOD**
October 2023 *Development pumping*	2.35 m // *34.65 m AOD*
November 2023 *20m³ proof test pumping (prior)*	4.20 m // *32.80 m AOD*
December 2023 *EA test pumping (prior)*	4.14 m // *32.86 m AOD*

5.0 Raw Borehole Water Quality Testing

5.1 Sampling

The volume of the abstraction borehole (based on the drilled diameter and shingle, excluding the grouted annulus from 10mbgl to surface) is calculated to be 2,210 litres. The water samples were collected by a Nicholls engineer certified under the DWI certification of

persons scheme for sampling private water supplies in accordance with ISO 5667-11. This meant that during the sampling the engineer ensured that samples were not contaminated and oversaw the transportation of the samples in a temperature-controlled container for storage within a temperature controlled refrigerator at Nicholls office until the collection. The collection of the samples was done by a South East Water courier, who transferred to a temperature-controlled vehicle and transported to South East Waters laboratory within 24 hours of sampling. Water samples were analysed by South East Water Scientific Services, which is a UKAS accredited lab. These samples are shown in Appendix F.

BH1 Water samples were collected on 22nd January 2025 from the pump depth of 40mbgl. The pump was run at a flow rate of approximately 33lpm for a period of 4 continuous hours (7,920 litres pumped over 4 hours). This ensured a representative sample of water from the aquifer. The final analysis certificate was available on 19th march February and is shown in Appendix F.

5.2 Sample Analysis Review

The analysis of the sample taken concluded that Ammonium, Turbidity, Iron and Manganese were over the UK drinking limit and that no bacteria was present.

The sample analysis for the borehole included a taste and odour test of the water and the observation was recorded for both as “none”.

5.3 Review of Contamination – Benzo(a)pyrene

Nicholls were aware of soil sampling undertaken as part of an application for planning at the same site > 250m away from the abstraction borehole. This soil sampling highlighted one benzo(a)pyrene exceedances in the near-surface Weald Clay from a maximum sample depth at 0.7mbgl. The water sample results are attached in appendix F, confirm no detection of benzo(a)pyrene within the water. Additionally, the well has been designed to prevent from surface level contamination down to 10.4mbgl.

6.0 Concept Design

The filtration system as outlined below will supply the entire sites water requirement from the borehole. The availability of mains infrastructure has been designed to provide an emergency back-up of water and the switch of supply has been designed to be compliant with Category 5 regulations. This design in Appendix G is intended as the concept design only and has been prepared prior to any detailed technical design and specification. Notably the borehole and filtration system are not in use nor in place at this stage. Using the design in Appendix G you can follow the flow of water through the system with the stages below.

Stage One Iron and Manganese (Ion Exchange) – to reduce the levels of iron and manganese to a potable level and to aid the latter filtration stage of reverse osmosis.

Stage Two Turbidity filter – to reduce turbidity within the water to a potable level and to aid the latter filtration stage of reverse osmosis.

Stage Three Storage Tank – pre-treated water will be delivered here prior to reverse osmosis.

Stage Four Reverse Osmosis – to reduce the ammonium concentrations to below the UK drinking limit.

Stage Five Remineralisation – to re-introduce minerals into the water, removed via the reverse osmosis stage, in order to provide a higher mineral content.

Stage Six UV filter – to de-nature bacteria including cryptosporidium before the water enters the storage tank**.**

Stage Seven Storage tank – A chlorine dosing unit will cycle water through a separate line monitoring chlorine concentration in the water. This dosing unit will maintain a set chlorine level to denature any bacteria in the network and ensure free chlorine levels are kept to the required volume at all outlets.

Stage Eight Sediment filter – to remove any remaining particulate within the water prior to distribution to the outlets.

Stage Nine Multistage booster set – to deliver water to the site and its outlets, sized based upon peak demand.

Telemetry Within the system, telemetry will link to the filtration units and stages. This will provide offsite monitoring and allow easy diagnostics as well as provide warnings which could help pre-empt maintenance requirements and downtime. The system will also control the mains supply in case of emergency.

7.0 Regulatory Compliance

7.1 Sampling and Testing Regime

In accordance with the Private Water Supplies (England) Regulations 2016 Regulation 9, under which the site falls, monitoring of the parameters will be as listed in Part 1 of schedule 1, analysed twice per year, and monitoring of parameters in part 2 of schedule 1, analysed twice per year. Sampling over the requirements of Part 1 and 2 of Schedule 1 will additionally be carried out as outlined in the local authority risk assessment at the specified intervals. The contaminants that have already been analysed in excess of the standards (as laid out in Schedule C.1) are included within Part 1 of the schedule and as such will be sampled twice per year.

In the case of a failure to any of the parameters, the development will be supplied with emergency water deliveries through an adaptation to the existing mains infrastructure, delivered into the mains storage tank via a Category 5 compliant turret. This will ensure that the site will maintain a wholesome supply. If the mains supply has to be implemented, the site will engage with a competent organisation to carry out a full investigation into the cause of the failure and

rectification of the issues. The outcome of the investigation will dictate the additional required monitoring and potential maintenance that will be implemented on the area of the system deemed to have failed. Full details of the investigation procedure will be provided within the Water Safety Plan.

7.2 Maintenance and Servicing

Servicing will be required at quarterly intervals throughout the year to ensure the system is maintained to continue to deliver a wholesome supply at all times. In addition to the maintenance, regular visual inspections will be carried out by the appointed persons in accordance with the stipulations from the local authority and Water Safety Plan by the appointed persons. Servicing arrangements will also include any additional requirements as identified as by the local authority.

Full details of the servicing requirements are to be provided within the Water Safety Plan.

In the event of equipment failure, a stock of replacement parts will be kept within the plant room to ensure that the supply can be re-initiated as soon as possible. In the event that the supply from the borehole is interrupted, the mains backup will be implemented to ensure a wholesome supply to the development. Full details of the equipment failure procedure will be provided within the Water Safety Plan.

7.3 Record Keeping

Servicing and sampling records will be completed after each service and a hard copy of these will be kept in the plant room within the Water Safety Plan, with a digital copy being provided to the development managing agent and retained by the service provider. Full details of the required record keeping will be provided in the Water Safety Plan.

APPENDIX DOCUMENT

Groundwater Investigation Report

Site: Sumners Pond, Barns Green, Horsham



NICHOLLS
BOREHOLES & GROUND SOURCE

Contents

Appendix A – Boundary map

Appendix B – Water features map

Appendix C – SPZ radius map

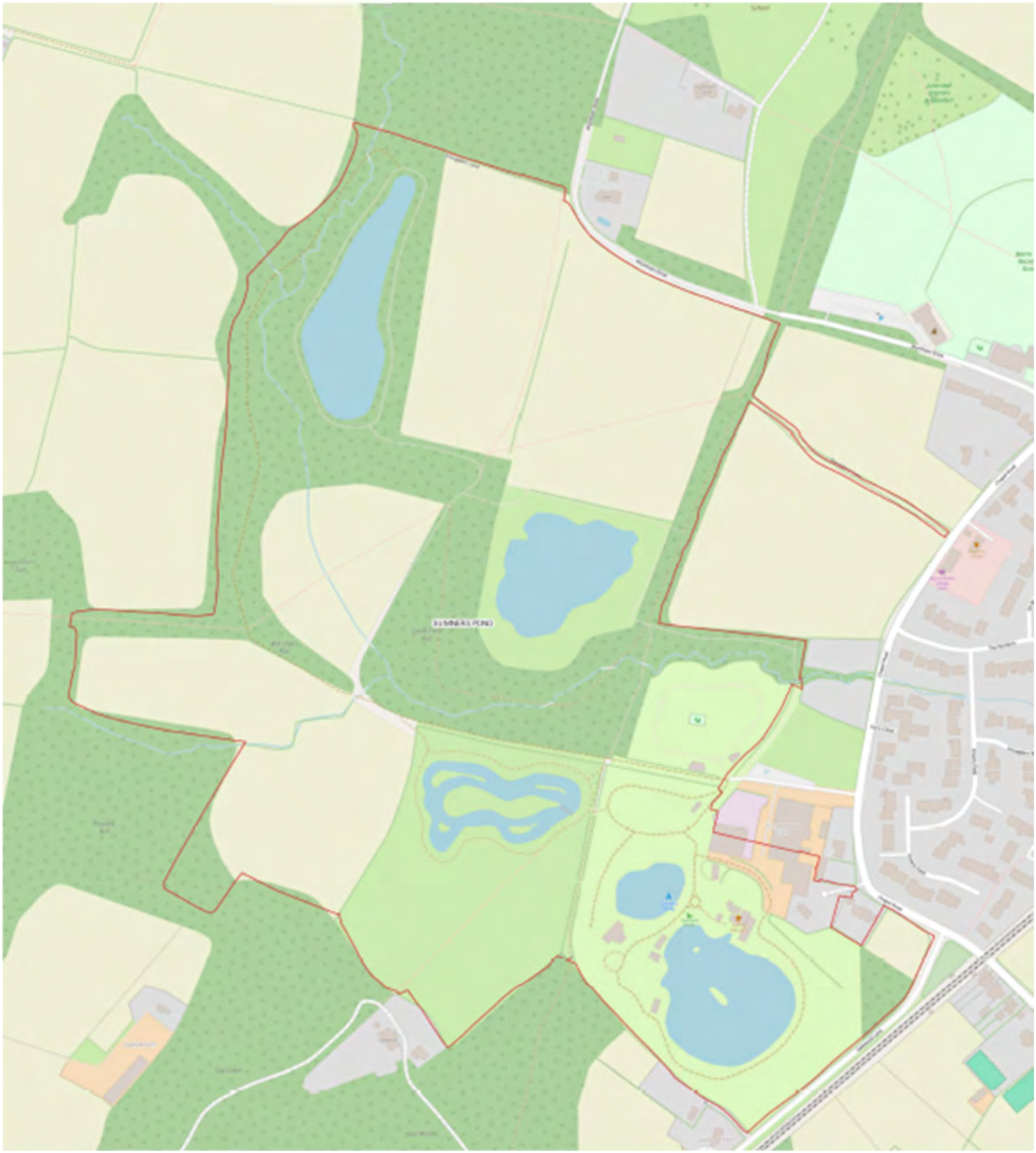
Appendix D –Borehole schematic

Appendix E – BGS log

Appendix F – BH 1 water quality results

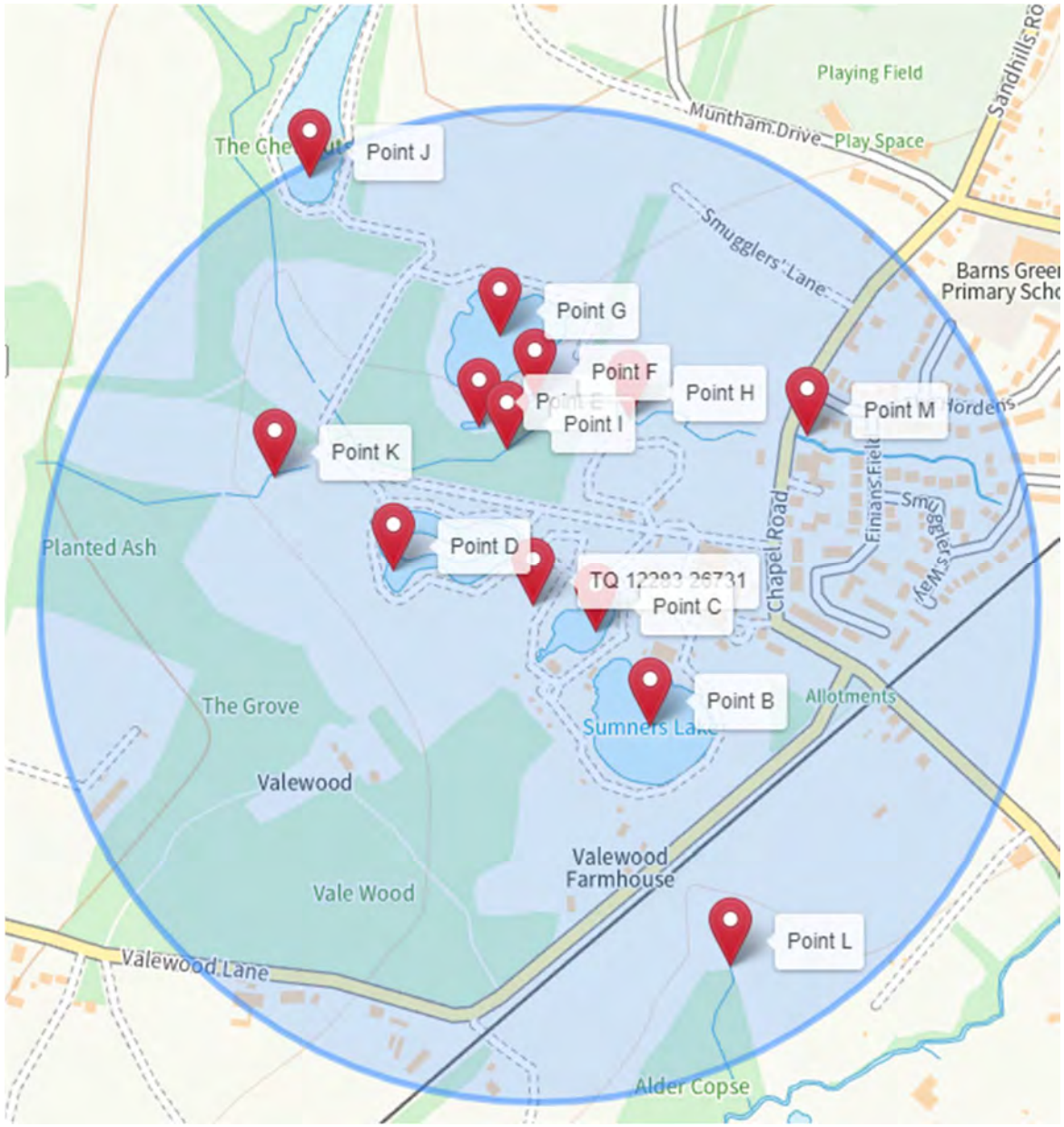
Appendix G – Concept design

APPENDIX A – Boundary map



APPENDIX B – Water Features Map

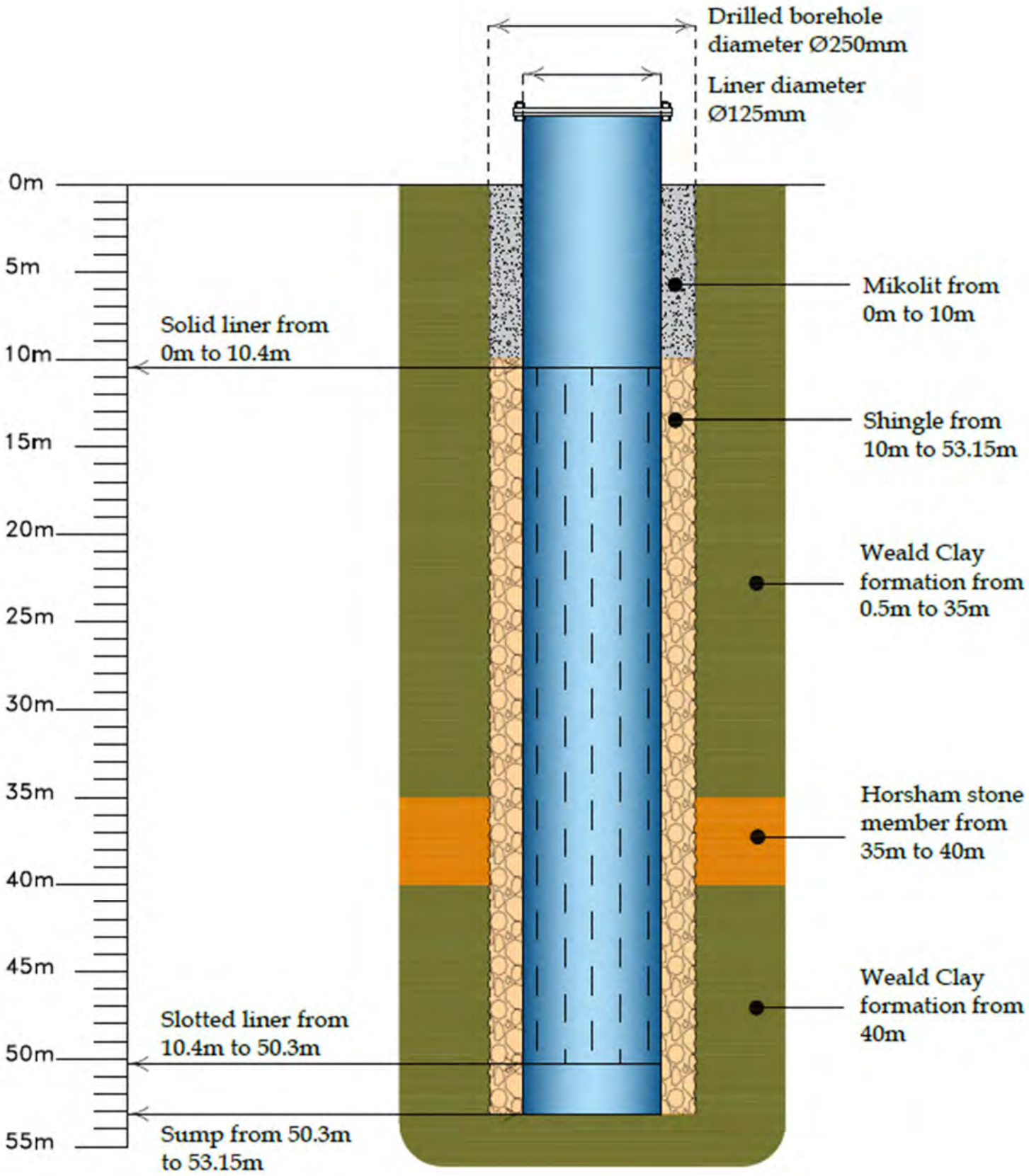
Feature	Location (NGR)	Description
Point B	TQ 12283 26731	Sumners Lake
Point C	TQ 12400 26611	Fishing Lake – Sumners Pond
Point D	TQ 12344 26705	Fishing Lake
Point E	TQ 12141 26766	Pond
Point F	TQ 12228 26912	Pond
Point G	TQ 12284 26941	Fishing Lake
Point H	TQ 12249 27003	Ditch
Point I	TQ 12256 26889	Ditch
Point J	TQ 12058 27163	Lake – The Chestnuts
Point K	TQ 12024 26861	Ditch
Point L	TQ 12480 26371	Ditch
Point M	TQ 12557 26902	Ditch



APPENDIX C – SPZ radius Map



APPENDIX D Borehole Schematic



APPENDIX E – BGS log

WR38: Borehole record form

Borehole record form

NICHOLLS BOREHOLES & GROUND SOURCE

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: Sumners Pond

Location: BH1494 - Chapel Road, Barns Green, Horsham, RH13 0PR

NGR (ten digits): TQ12140 26841 Please attach site plan

Ground level (if known): 37.0 metres Above Ordnance Datum

Drilling company: Nicholls Boreholes

Date drilling commenced: 02/10/2023 (DD/MM/YYYY) Completed: 05/10/2023 (DD/MM/YYYY)

B Construction details

Borehole datum (if not ground level): 37.0 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

250	mm from	0	to	54 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.

Solid UPVC	diameter	125	mm from	0	to	10.4 m/depth
Slotted UPVC	diameter	125	mm from	10.4	to	50.3 m/depth
Solid UPVC	diameter	125	mm from	50.3	to	53.15 m/depth
	diameter		mm from		to	m/depth

Grouting details: 117 bags of washed shingle, 24 bags of mikolit

Water struck at 1. 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) mbd

Water level (end of test) mbd

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

Pumping rate m³/hour ☐ or litres/second ☐. Please tick as appropriate.
for days, hours, mins

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

Date(s) of measurements Pump started (DD/MM/YYYY)
Pump stopped (DD/MM/YYYY)

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

APPENDIX E – BGS log cont'd

NICHOLLS
BOREHOLES & GROUND SOURCE

BOREHOLE LOG

Project			BOREHOLE No.
Sumners Pond			1
Job No BH 1494	Date 02-10-23	Ground level (m)	Co-Ordinates TQ 12140 26841
Contractor Nicholls			

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION		
0.5m						0.5	Topsoil: Brown Friable soft silty clay		
							Stiff grey clay with calcareous sandstones and clay ironstone throughout		
						53.5			
54m									

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Depth	Casing Dia mm	Water De	From	To	Hours	From	To	

All dimensions in meters	Client: Sumners Pond	Method/ Plant Used	Logged By

APPENDIX F–BH water quality results

South East Water Scientific Services
3 Columbus Drive, Farnborough
Hampshire, GU14 0NZ
E-Mail: sales@southeastwater.co.uk
Website: www.sewscientificservices.co.uk

south east water
scientific services

ANALYTICAL REPORT

NICHOLLS BOREHOLES
Brownings Barn
Glasshouse Lane
Kirdford
West Sussex
RH14 0LW

Collected From: NICHOLLS BOREHOLES
Date Received: 23/01/2025

Certificate Number: 1368213-3 Final
Supercedes report 1368213-2
Order Number: BH1494
Date Reported: 19/03/2025

Lab Ref.	Sample Details	Method	Test	Result	Units	Limit	Flag
4954137	Desc: RAW BOREHOLE Collect From: NICHOLLS BOREHOLES Order No: BH1494 Received Date: 23/01/2025 Tested Date: 23/01/2025 Sampling Date: 22/01/2025 15:00 Sample Type: GW : Ground Water Product: SS-DWREGS	255	**Ammonium (Ammonia and Ammonium Ions)**	**1.072**	**mg/l**	**<0.500**	F
		245	Nitrate	<0.9	mg/l	<50.0	
		225	Nitrite	<0.004	mg/l	<0.500	
		calc	Nitrite/Nitrate	0.000	mg/l	<1.000	*
		230	Odour - Qualitative	None			*
		230	Odour - Quantitative	0			
		230	Taste - Qualitative	None			*
		230	Taste - Quantitative	0			*
		430	Colony Count 3 Days at 22°C	184	cfu/ml		
		400	E coli	0	mpn/100ml	0	
		400	Total Coliforms	0	mpn/100ml	0	
		660	Colour	<2	mg/l Pt/Co	<20	
		660	Conductivity	1015	uS/cm		
		660	Hydrogen Ion (pH)	7.4	pH_unit	6.5 to 9.5	
		660	**Turbidity**	**7.400**	**NTU**	**<4.000**	F
		ext	Acrylamide	<0.006	µg / l	<0.100	
		ext	Epichloroydrin	<0.1	µg / l	<0.11	*
		ext	Vinyl Chloride	<0.113	µg / l	<0.500	
		3401	Bromate	<0.8	µg / l	<10.0	
		390	Enterococci	0	cfu/100ml	0	
		5413	Total Cyanide	<4.1	µg / l	<50.0	
		765	Mercury	<0.04	µg / l	<1.00	
		745	Antimony	<0.2	µg / l	<5.0	
		745	Arsenic	<1.0	µg / l	<10.0	
		745	Selenium	<0.8	µg / l	<10.0	
		740	Boron	0.285	mg/l	<1.000	
		740	Calcium	77.1	mg/l		
		740	Magnesium	22.0	mg/l		
		740	Sodium	117.6	mg/l	<200.0	
		3371	Fluoride	0.371	mg/l	<1.500	
		3545	2,4,5-T	<0.007	µg / l	<0.100	

Disclaimers:

Unless otherwise stated, all results apply to the sample as received. Information provided by the customer (includes Date, Time, Sample Matrix & Sample Description) can affect the validity of the result.
Opinions and interpretations expressed in this report are outside the scope of UKAS accreditation.
Details of Uncertainty of Measurement and Analytical Quality Control are available on request.
Where a statement of conformity to a Regulatory Standard or customer limit is provided, the uncertainty of measurement is not taken into account unless shown on the certificate.
*** - denotes non UKAS accredited test**
A result of 0 cfu denotes none found in volume analysed
F - Result Exceeds The Maximum Pcv As Defined In The Water Supply (Water Quality) (Amendment) Regulations 2018
ext - Analysis subcontracted to an external laboratory

UKAS TESTING
1579

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APPENDIX F cont'd –BH water quality results

Certificate Number: 1368213-2 Final
Supercedes report 1368213-1

Order Number: BH1494

Lab Ref.	Sample Details	Method	Test	Result	Units	Limit	Flag
4954137	Continued from Page 1	3545	2,4-D	<0.007	µg / l	<0.100	
		3545	Bentazone	<0.007	µg / l	<0.100	
		3545	Bromoxynil	<0.007	µg / l	<0.100	
		3545	Dicamba	<0.020	µg / l	<0.100	
		3545	Dichlorprop	<0.003	µg / l	<0.100	
		3545	Fluroxypyr	<0.008	µg / l	<0.100	
		3545	MCPA	<0.008	µg / l	<0.100	
		3545	MCPB	<0.008	µg / l	<0.100	
		3545	Mecoprop (MCPP)	<0.005	µg / l	<0.100	
		3545	Triclopyr	<0.015	µg / l	<0.100	
		2587	Atrazine	<0.002	µg / l	<0.100	
		2587	Carbendazim	<0.001	µg / l	<0.100	
		2587	Carbetamide	<0.002	µg / l	<0.100	
		2587	Chlortoluron	<0.003	µg / l	<0.100	
		2587	Diuron	<0.004	µg / l	<0.100	
		2587	Epoxiconazole	<0.003	µg / l	<0.100	
		2587	Flutriafol	<0.003	µg / l	<0.100	
		2587	Isoproturon	<0.003	µg / l	<0.100	
		2587	Linuron	<0.003	µg / l	<0.100	
		2587	Oxadixyl	<0.003	µg / l	<0.100	
		2587	Pendimethalin	<0.007	µg / l	<0.100	
		2587	Prometryn	<0.002	µg / l	<0.100	
		2587	Propazine	<0.002	µg / l	<0.100	
		2587	Simazine	<0.003	µg / l	<0.100	
		2587	Terbutryn	<0.002	µg / l	<0.100	
		2587	Trietazine	<0.004	µg / l	<0.100	
		480	Benzo (a) pyrene	<0.003	µg / l	<0.010	
		480	Benzo(1,12)perylene	<0.003	µg / l		
		480	Benzo(11,12)fluoranthene	<0.003	µg / l		
		480	Benzo(3,4)fluoranthene	<0.003	µg / l		
		480	Indeno(1,2,3-cd)pyrene	<0.003	µg / l		
		calc	PAH Total	0.000	ug/l	<0.100	*
		775	1,1,1 Trichloroethane	<0.60	µg / l		
		775	1,2-Dichloroethane	<0.12	µg / l	<3.00	
		775	Benzene	<0.02	µg / l	<1.00	
		775	Dibromochloromethane	<0.50	µg / l		
		775	Dichlorobromomethane	<0.43	µg / l		
		775	Tetrachloroethene	<0.15	µg / l	<10.00	
		calc	Tetrachloroethene/Trichloroethene- Sum	0.00	µg / l		*
		775	Tetrachloromethane	<0.11	µg / l	<3.00	
		calc	Total Trihalomethanes	0.00	µg / l	<100.00	*
		775	Tribromomethane	<0.60	µg / l		
		775	Trichloroethene	<0.10	µg / l	<10.00	
		775	Trichloromethane	<0.50	µg / l		
		730	Aluminium	89.1	µg / l	<200.0	

Disclaimers:

Unless otherwise stated, all results apply to the sample as received. Information provided by the customer (includes Date, Time, Sample Matrix & Sample Description) can affect the validity of the result.
Opinions and interpretations expressed in this report are outside the scope of UKAS accreditation.
Details of Uncertainty of Measurement and Analytical Quality Control are available on request.
Where a statement of conformity to a Regulatory Standard or customer limit is provided, the uncertainty of measurement is not taken into account unless shown on the certificate.
*** - denotes non UKAS accredited test**
A result of 0 cfu denotes none found in volume analysed
F - Result Exceeds The Maximum Pcv As Defined In The Water Supply (Water Quality) (Amendment) Regulations 2018
ext - Analysis subcontracted to an external laboratory

UKAS TESTING
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South East Water Ltd. Registered in England, No.2679874. Registered Office: Rocfort Road, Snodland, Kent ME6 5AH.

APPENDIX F cont'd –BH water quality results

Certificate Number: 1368213-2 Final
Supercedes report 1368213-1
Order Number: BH1494

Lab Ref.	Sample Details	Method	Test	Result	Units	Limit	Flag
4954137	Continued from Page 2	730	**Iron**	**1045.8**	**µg / l**	**<200.0**	F
		730	**Manganese**	**235.3**	**µg / l**	**<50.0**	F
		735	Cadmium	<0.12	µg / l	<5.00	
		735	Chromium	<1.0	µg / l	<50.0	
		730	First Draw Copper	<0.009	mg/l	<2.000	
		730	First Draw Lead	<0.9	µg / l	<10.0	
		730	First Draw Nickel	<0.9	µg / l	<20.0	
		360	Clostridium perfringens (including spore	0	cfu/100ml	0	
		calc	Pesticides - Total Substances	0.000	ug/l		*
		5823	Aldrin	<0.007	µg / l	<0.030	
		5823	Dichlobenil	<0.004	µg / l	<0.100	
		5823	Dieldrin	<0.006	µg / l	<0.030	
		5823	Heptachlor	<0.009	µg / l	<0.030	
		5823	Heptachlor Epoxide	<0.005	µg / l	<0.030	
		5823	Propyzamide	<0.005	µg / l	<0.100	
		5823	Tri-allate	<0.005	µg / l	<0.100	
		730	Iron (Free)	<7.3	µg / l		
		calc	Hardness (CaCO3)	327.6	mg CaCO3/l		*
		295	Gross Alpha	0.03	Bq/l	<0.10	
		295	Gross Beta	<0.28	Bq/l	<1.00	
		250	Total Organic Carbon	0.5	mg/l		
			Indicative Results	See #1 below			*
	The sample has exceeded its maximum stability time and as a result the test result(s) may be invalid.						

#1 - Due to Quality Control failures an indicative result of <0.010 µg/L for Gamma-HCH (Lindane) has been provided.



Richard D Brown
Laboratory Manager

Disclaimers:

Unless otherwise stated, all results apply to the sample as received. Information provided by the customer (includes Date, Time, Sample Matrix & Sample Description) can affect the validity of the result.
Opinions and interpretations expressed in this report are outside the scope of UKAS accreditation.
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A result of 0 cfu denotes none found in volume analysed
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APPENDIX F cont'd –BH water quality results

B. A. Hydro Solutions Ltd.
3 & 4 The Sidings
Shepreth
Herts
SG8 6PZ
Telephone: +44 1763 26 27 26
Email: info@bahsltd.com
Web: www.bahsltd.com

B. A. HYDRO Solutions
Providing Effective Surface & Groundwater Solutions

LABORATORY REPORT - Page 1 of 2

Client:	Nicholls Boreholes	**Certificate No:**	23240689-1
	Brownings Barn	**Order No:**	BH1494
	Glass House Lane	**Date Reported:**	25/10/2023
	Kirdford	**Site Name:**	BH1494
	RH14 0LW	**Sample Desc:**	Borehole

Test	Results	Limit	Units	Comment	Sample Details	
Alkalinity	276	-	mg/l			
Aluminium	<20.00	200	µg/l			
Ammonium	2.11	0.5	mg/l	*	**Sampling Date:**	19/10/2023
Boron	293	1000	µg/l		**Sampling Time:**	-
Calcium	98.0	-	mg/l		**Date Received:**	20/10/2023
Chloride	77.3	250	mg/l		**Date Tested:**	20/10/2023
Copper	<100.00	2000	µg/l			
Fluoride	307	1500	ug/l			
Dissolved Iron (Fe II)	64	-	µg/l			
Total Iron (FeII+FeIII)	310	200	µg/l	*		
Lead	<2.00	10	µg/l			
Magnesium	14.82	-	mg/l			
Manganese	244	50	µg/l	*		
Nitrate	<22.00	50	mg/l			
Nitrite	<50.00	500	µg/l			
Nitrite/Nitrate	0.1	≤1	-			
Phosphate	<0.15	-	mg/l			
Potassium	6.67	-	mg/l			
Sodium	100	200	mg/l			
Sulphate	140	250	mg/l			
Electrical Conductivity	1033	2500	µS/cm			
Calcium Hardness	245	-	mg/l			
Total Hardness as CaCO3	306	-	mg/l	V Hard		
Magnesium Hardness	61	-	mg/l			
pH	7.17	6.5-9.5	pH units			
Total Dissolved Solids	509	-	mg/l			
Turbidity	2.30	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

APPENDIX F cont'd –BH water quality results

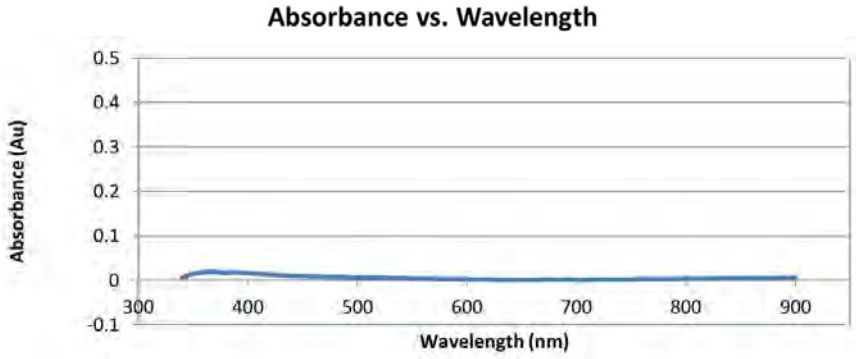
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B. A. HYDRO Solutions
Providing Effective Surface & Groundwater Solutions

LABORATORY REPORT - Page 2 of 2

Client:	Nicholls Boreholes	**Certificate No:**	23240689-1
	Brownings Barn	**Order No:**	BH1494
	Glass House Lane	**Date Reported:**	25/10/2023
	Kirdford	**Site Name:**	BH1494
	RH14 0LW	**Sample Desc:**	Borehole

Test	Results	Limit	Units	Comment	Sample Details	
E.coli	0	0	cfu/100ml		Sampling Date:	19/10/2023
Total Coliforms	17	0	cfu/100ml	*	Sampling Time:	-
Enterococci	0	0	cfu/100ml		Date Received:	20/10/2023
TVC 3 at 22°C	>300	no abnormal change	cfu/ml		Date Tested:	20/10/2023
TVC 2 at 37°C	>300		cfu/ml			



Patrycja Malinowska
Laboratory Manager

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

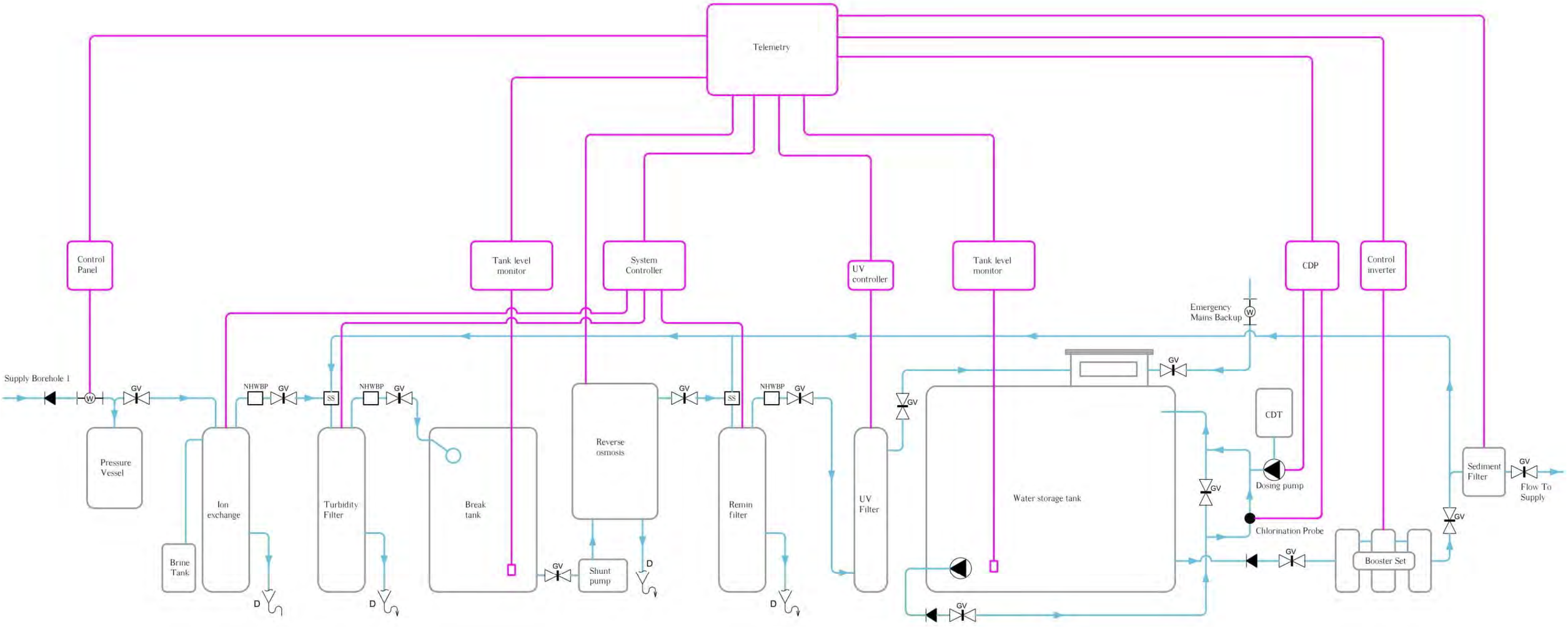
</> Denotes concentration found within sample below/above the equipment's detection level

∞ 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

APPENDIX G – Concept design



APPENDIX G – EXAMPLE MAINTENANCE ROUTINE – FULL SPECIFICATION TO FOLLOW

BH1520 Bespoke Waterwell Annual Service Programme

Service Programme MAIN SERVICE

Full day service @ 2 x engineers
Resistance & insulation testing of borehole pump motor & cable
Check well heads
Inspection of controls & adjustment where necessary
Check flowrate & pressure and adjust as necessary
Control panel
Check operation
System controller
Check operation
Pressure vessel
Check pressure vessel settings
Adjust pressure as necessary
pH correction unit
Replace separate source valve service kit
Replace No Hard Water Bypass service kit
Replace clack head service kit
Change memory back up battery
Confirm all settings and times on the head are correct
Run forced re-gen to confirm correct operation of head and valves
Top up juraperle / corosex as needed
Check and record pH levels
Aeration storage tank
Fill aeration tank and flush
Clean bubblers in tank
Compressor
Change compressor service kit
Change compressor filter
Turbidex Unit
Replace separate source valve service kit
Replace No Hard Water Bypass service kit
Replace clack head service kit
Change memory back up battery
Confirm all settings and times on the head are correct
Run forced re-gen to confirm correct operation of head and valves
Filox iron filter unit
Replace separate source valve service kit
Replace No Hard Water Bypass service kit
Change clack head service kit
Change memory back up battery
Confirm all settings and times on the head are correct
Run forced re-gen to confirm correct operation of head and valves
Sodium hypochlorite flush
Check filox media levels and replace as necessary
Filox media will need full replacement every 5-7 years
CR200 Filter
Replace No Hard Water Bypass service kit
Change clack head service kit
Change memory back up battery
Confirm all settings and times on the head are correct
Check crystal right media, top up as necessary
Full media replacement required every 7-10 years
Brine tank
Check salt levels
Top up as necessary
Carbon filter
Replace separate source valve service kit
Replace No Hard Water Bypass service kit
Replace clack head service kit
Change memory back up battery
Confirm all settings and times on the head are correct
Check levels of activated carbon, top up as necessary
Change carbon filter
Ultraviolet System
Replace UV Lamp
Replace UV Quartz
Replace UV Seal Kit
Reset hour counter

Service Programme MAIN SERVICE

DAB Ezybox Booster Set
Check and clear stored error messages
Sediment filter
Replace filters
Chlorine Dosing Unit x 2
Check chlorine levels
Replace chlorine dosing service kits
Check operation
Refill reservoirs
Water storage tank
Check and clean as necessary
Mains Emergency Supply
Check operation of purge system
Check operation of MAV and clean diaphragm
General
Check plant room to ensure it is vermin proof
Dust / wipe down all plant units and equipment
Check water meters
Check all gate valves are back in correct position
Remove all rubbish and redundant parts
Confirm the presence of the WSP and EP
Remote checking of the Telemetry system
Ensure the service and maintenance records are up to date on completion of works

During the service, if any system components are found to be functioning incorrectly, we will make you aware of this, and discuss whether a repair can be undertaken, or a replacement unit is necessary. If any additional materials required are available at time of service, the Engineer will replace as necessary, and you will be invoiced separately.

Service Programme TANK CLEAN

TANK CLEAN
1 x full day @ 3 x engineers

During the tank clean, if any system components are found to be functioning incorrectly, we will make you aware of this, and discuss whether a repair can be undertaken, or a replacement unit is necessary. If any additional materials required are available at time of service, the Engineer will replace as necessary, and you will be invoiced separately.

APPENDIX H – SUGGESTED S106 OFFSETTING SITE OWNER OBLIGATIONS

The obligations below are based on current agreements being negotiated with HDC. These are to be negotiated between:

- the LPA
- the Site Owner (i.e. the owner of the land on which the Water Off-Setting Works are to be carried out ("the Water Neutrality Land")); and
- the Developer/Applicant, the owner of the Development Site the subject of the Application

Part 1

Schedule XX - The Site Owner's Covenants Restrictions and Obligations to the Council

The Site Owner covenants with the Council so as to bind its interest in the Water Neutrality Land to ensure that the following obligations in relation to the Water Neutrality Land are delivered for the lifetime of the Development as follows:

1. Subject to paragraph 2 below:
   1.1 to implement the Water Offsetting Solution on the Water Neutrality Land and provide written and/or photographic evidence to the Council demonstrating that the Water Offsetting Solution has been implemented and is operational prior to the Occupation of any Dwellings on the Development Site. The Council will acknowledge receipt of this evidence and, providing it is satisfactory, confirm in writing to the submitting party that this obligation has been met and is thereby discharged within 20 days of receipt. The evidence will be deemed satisfactory providing it includes:
      (a) Photographs of the installed borehole, plant room, storage tank and pipework connecting the storage tank to the Site's distribution network.
      (b) Photographs of the borehole supply meter at the start and end of a five day period showing an average daily consumption equal to the amount specified in the Water Offsetting Solution.
      (c) Evidence of the Environmental Health Officer's approval that the borehole supply meets the required quality standard for potable water
   1.2 to manage and maintain and keep in good repair at all times the Water Offsetting Solution (subject to any minor amendments as may be agreed between the Site Owner and the Council in writing from time to time) for the lifetime of the implementation of the Planning Approval on the Development; and
   1.3 afford the Council (and its agent) access between the hours of 0900 and 1700 on a working day provided that the Council (or its agent) shall give the Site Owner not less than 72 hours' notice to the Site to inspect and assess whether or not the Water Offsetting Solution has been implemented on the Site and is being maintained in accordance with the Water Offsetting Solution provided always that:
      (a) the Council and its agent shall comply fully with the Site Owner's reasonable site rules and regulations applicable as at the time of access throughout the duration of such inspection and with health and safety legislation, policy and best practice; and
      (b) the Council and its agents shall at all times be accompanied by the Site Owner or its agent.
2. In the event that the Council approves in writing that the Water Offsetting Solution is no longer required to be delivered on the Site to achieve Water Neutrality then the obligations in relevant Schedule XX shall determine and cease to have legal effect and the Site shall no longer be bound by the terms of this deed.
3. To connect the dwelling constructed under DC/22/1977 to the borehole supply.

Part 2

Schedule YY - The Developer's Obligations

1. The Developer covenants with the Council so as to bind its interest in the Development Site not to permit occupation of an individual dwelling until the on-site water neutrality measures as set out in the Water Neutrality Statement have been implemented in relation to that dwelling, i.e. the subject of the relevant occupation.
2. The Developer covenants with the Council so as to bind its interest in the Development Site not to permit occupation of an individual dwelling until the off-site water neutrality measures as set out in the Water Neutrality Statement have been implemented.

APPENDIX I – DC/21/2697 s106

DATED 2nd October **2023**

HORSHAM DISTRICT COUNCIL (1)

WEST SUSSEX COUNTY COUNCIL (2)

SIMON PHILIP SMITH (3)

MATTHEW MILLER (4)

BARCLAYS SECURITY TRUSTEE LIMITED (5)

HUNTER DEVELOPMENT HOLDINGS LIMITED (6)

Agreement under section 106 of the Town and Country Planning Act 1990 relating to land at Sumners Ponds, Chapel Road, Barns Green, Horsham

Lauren Kelly Interim Head of Legal and Democratic Services
Horsham Council
Parkside
Chart Way
Horsham
West Sussex
RH12 1RL

Legal Ref: SW/2651

This Agreement is made as a deed and dated 2nd October 2023

Between:

(1) **HORSHAM DISTRICT COUNCIL** of Parkside, Chart Way, Horsham RH12 1RL ("the Council");

(2) **WEST SUSSEX COUNTY COUNCIL** of County Hall, Chichester, West Sussex PO19 1RQ ("the County Council");

(3) **SIMON PHILIP SMITH** of Sumners Cottage, Chapel Road, Barns Green, Horsham RH13 0PR ("the First Owner");

(4) **MATTHEW MILLER** of Sumners Cottage, Chapel Road, Barns Green, Horsham RH13 0PR ("the Second Owner");

(5) **BARCLAYS SECURITY TRUSTEE LIMITED** (Company Registration Number 10825314) whose registered office is 1 Churchill Place, London E14 5HP ("the Mortgagee"); and

(6) **HUNTER DEVELOPMENT HOLDINGS LIMITED** (Company Registration Number 03606898) whose registered office is Amelia House, Crescent Road, Worthing, West Sussex BN11 1QR ("the Developer").

1. BACKGROUND & RECITALS

Whereas

1.1 The First Owner is the freehold owner of the title numbers SX63564 and WSX337854 subject to mortgages in favour of the Mortgagee but otherwise free from encumbrances and which form part of the Application Site and part of the Offsetting Land.

1.2 The First Owner and the Second Owner are the freehold owners of the title number WSX337849 as trustees for Bryon Smith and the Betty Pamela Smith Deceased Deed of Variation Trust which forms part of the Application Site.

1.3 The First Owner and the Second Owner are the freehold owners of title number WSX274676 as trustees for the Smith Family Trust which forms part of the Application Site.

1.4 The First Owner is the freehold owner of title numbers SX61374 and WSX122294 which are subject to mortgages in favour of the Mortgagee but otherwise free from encumbrances and which form part of the Offsetting Land.

1.5 The Mortgagee is the registered proprietor of the charges dated 26 March 2012 referred to in entry numbers 9 and 10 of the charges register of title number SX63564, 26 March 2012 referred to in entry numbers 1 and 2 of the charges register of SX61374,16 November 2010 referred to in entry numbers 2 and 3 of the charges register of title number WSX122294 and 5 June 2023 referred to in entry numbers 4 and 5 of the charges register of title number WSX337854 and has agreed to enter into this deed to give its consent to the terms of this deed.

1.6 For the avoidance of doubt and for identification purposes only, the titles are shown indicatively on the Development Site Plan and the Offsetting Land Plan as follows:

1.6.1 Titles owned by the First Owner – edged green

1.6.2 Title owned by the First Owner and Second Owner as trustees for Bryon Smith and the Betty Pamela Smith Deceased Deed of Variation Trust– edged orange

1.6.3 Title owned by the First Owner and the Second Owner as trustees for the Smith Family Trust – edged brown

1.7 The Council is the local planning authority as defined in the Act for the area within which the Application Site and the Offsetting Land are situated for the purposes of this Agreement and for the purposes of section 106 of the Act.

1.8 The County Council is the highway authority for the area within which the Application Site and the Offsetting Land are situated for the purposes of this Agreement and for the purposes of section 106 of the Act.

1.9 The Owners and the Developer have made the Application and are proposing to carry out the Development.

1.10 The Council's Planning North Committee resolved on 6 December 2022 to grant planning permission for the Development subject to this Agreement being entered into in order to secure the necessary planning obligations.

1.11 The Council's administrative area is situated in an area of serious water stress as identified by the Environment Agency's Water Stressed Areas Classification.

1.12 The water statutory undertaker, Southern Water, supplies drinking water to the Council's administrative area from the SNWSZ.

1.13 In September 2021 Natural England released the Position Statement which requires that any new development within the SNWSZ must be Water Neutral. The Owners and the Developer have entered into this Agreement in order to secure the required planning obligations, mitigation and Offsetting Measures in order to bind the Application Site and the Offsetting Land.

1.14 The Owners and the Developer are willing to enter into, be bound by the obligations and be subject to the restrictions in this Agreement on the terms set out herein.

1.15 The parties are satisfied that the provisions of this Agreement comply with the requirements of regulation 122 of the Community Infrastructure Levy Regulations 2010 (as amended) and, accordingly, that the planning obligations contained in this Agreement are necessary to make the Development acceptable in planning terms, are directly related to the Development and fairly and reasonably relate in scale and kind to the Development.

NOW THIS AGREEMENT WITNESSES as follows:

2. INTERPRETATION

In this Agreement:

2.1 Words importing the one gender include reference to all the genders.

2.2 Words importing the singular include the plural and vice versa.

2.3 Words importing persons include companies and corporations and vice versa.

2.4 Any words following the terms including, include, in particular, for example or any similar expression shall be construed as illustrative and shall not limit the sense of the words, description, definition, phrase or term preceding those.

2.5 Wherever there is more than one person named as a party and where more than one party undertakes an obligation, all their obligations can be enforced against all of them jointly and against each individually.

2.6 Any reference to a clause, schedule, paragraph or plan is to a clause, schedule, paragraph or plan in, to or attached to this Agreement, unless expressly stated otherwise.

2.7 Any reference to a colour or letter is to a colour or letter on the plans attached to this Agreement.

2.8 In the absence of contrary provision, any reference to a statute includes any statutory modification or re-enactment of it and every statutory instrument, direction, specification made or issued under the statute or deriving validity from it.

2.9 A reference to writing or written excludes fax and email.

2.10 An obligation on a party not to do something includes an obligation not to allow that thing to be done.

2.11 References to any party to this Agreement shall include the successors in title to that party and to any person deriving title through or under that party and, in the case of the Council, the successors to their functions as local planning authority.

2.12 The headings are for reference only and shall not affect construction.

3. DEFINITIONS

It is hereby agreed between the parties set out in this Agreement that the following expressions have the following meanings:

"Act"	means the Town and Country Planning Act 1990 as amended;
"Affordable Housing"	means affordable housing at the Development comprising Rented Housing Units and/or Intermediate Housing Units (or such other forms of intermediate tenure as are defined as affordable housing under the National Planning Policy Framework as that definition may be amended from time to time) provided to eligible households whose needs are not met by the market and which should meet the needs of eligible households, including availability at a cost low enough for them to afford, determined with regard to local incomes and local house prices and shall include provision for the homes to remain at an affordable price for future eligible households or if these restrictions are lifted for the subsidy to be recycled for alternative affordable housing provision;
"Affordable Housing Tenure Mix"	means 70% (seventy percent) Rented Housing Units and 30% (thirty percent) Intermediate Housing Units or such other mix as shall have been approved in writing by the Council (such approval not to be unreasonably withheld or delayed);
"Affordable Housing Units"	means the Rented Housing Units and/or Intermediate Housing Units;
"Affordable Rented Housing Units"	means a form of Affordable Housing, involving homes being made available at a rent level of up to 80% of local market rent (inclusive of service charge and a rent charge where applicable and where local market rents are calculated using the Royal Institution of Chartered Surveyors approved valuation methods) at the time of each letting which rent may be increased annually by no more than CPI +1% or such other amount as may be prescribed by Homes England (or any successor or replacement body) and "Affordable Rented Unit" shall be construed accordingly;

"Air Quality Mitigation Contribution"	means the sum of £4,723 (four thousand seven hundred and twenty three pounds) Index Linked;
"All Requisite Consents"	means all requisite consents, orders, agreements, authorisations, licences and permissions required to implement the New Bridleway;
"Application"	means the application for full planning permission registered by the Council on 2 December 2021 under reference number DC/21/2697 for the erection of 32No. residential dwellings including 35% affordable housing, 6No. commercial units and 1No. reception building. Creation of access and circulation routes, parking, hard and soft landscaping together with a sustainable drainage system;
"Application Site"	means the land at Sumners Ponds, Chapel Road, Barns Green, Horsham shown edged red on the Development Site Plan and comprising of land contained within the following titles only SX63564, WSX337849, WSX274676 and WSX337854 the boundaries of which are identified on the Development Site Plan;
"Base Rate"	means the higher of 5% and the base rate from time to time of NatWest Bank plc;
"BCIS Index"	means the All-in Tender Price Index published by the Building Costs Information Service of the Royal Institution of Chartered Surveyors or (if such index is at the relevant time no longer published) such other comparable index or basis for indexation as the Council may specify acting reasonably;
"Commencement of Development"	means the carrying out of a material operation as defined in section 56(4) of the Act in respect of the Development but excluding (for the purposes of this Agreement and for no other purpose) any operation relating to works of investigations in respect of land contamination or remedial action in respect thereof, enabling works, demolition, site clearance works, earthworks, archaeological investigations and digs, exploratory boreholes, operations permitted by the Town and Country Planning (General Permitted Development) Order 2015, the erection of hoardings and fencing, temporary diversion of services and signage (including the formation of temporary construction accesses) and "Commence Development" shall be construed accordingly;
"Commencement Date"	means the date on which the Commencement of Development occurs;
"Commencement Notice"	means the written notice confirming the Commencement Date referred to in clause 7.1.1 and served in accordance with Clause 7.3;
"Commercial Occupier"	means any occupier of a commercial unit to be constructed as part of the Development and as shown on the Proposed Site Plan and for the avoidance of doubt

	does not include any commercial occupier of the Offsetting Land;
"Completed"	means in relation to a Dwelling practically complete save for minor snagging items such that it is reasonably fit for Occupation or use (and Completion shall not be achieved unless all the services to and from the Dwelling are connected and operating and it is accessible by both vehicles and pedestrians) and the words "Completion" and "Complete" shall be construed accordingly;
"County Council Monitoring Fee"	means the total sum of One Thousand Four Hundred and Forty Pounds (£1,440) payable to the County Council for monitoring the delivery and performance of the obligations contained in paragraph 2 of Schedule 6 of this Agreement over the lifetime of the Development;
"Deed of Nomination"	means the Council's standard nomination deed as appended at Appendix 1;
"Default Interest Rate"	means 4% above the Base Rate;
"Development"	means the development of the Application Site pursuant to the Planning Permission;
"Development Site Plan"	means the plan attached to this Agreement at Schedule 1 with drawing number 010-238 C;
"Disposal"	means a disposal of the Affordable Housing Units to a Registered Provider or other person whether by transfer of the freehold or the grant of a long lease for a term of at least 125 (one hundred and twenty five) years and "Dispose" shall be construed accordingly;
"Dwelling"	means a residential dwelling forming part of the Development and "Dwellings" shall be construed accordingly;
"Housing Register and Nominations Policy"	means the Council's Housing Register and Nominations Policy https://www.horsham.gov.uk/data/assets/pdffile/0005/58586/ Nominations-Policy-August-20121.pdf or other document which may replace it;
"Index Linked"	means increased in accordance with the following formula: Amount payable = the payment specified in this Agreement x (A/B) where: A is the BCIS Index that applied immediately preceding the date the payment is due. B is the figure for the BCIS Index that applied when the index was last published prior to this Agreement;
"Intermediate Housing Units"	means housing for sale and rent provided at a cost above social rent, but below market levels subject to the criteria in the Affordable Housing definition above, which can include shared equity (shared ownership and equity loans), other low cost homes for sale and intermediate

rent, but are not Social Rented Housing Units and "Intermediate Housing Unit" shall mean any one of them;

"Local Connection" means in relation to an individual, that such individual:

a) immediately before taking up occupation of a Social Rented Housing Unit had his only or principal home in the parish of Itchingfield for a continuous period of not less than two years; or

b) a member of his household has a parent, child, adult child, brother or sister whose only or principal home is and has been for a continuous period of not less than two years in the parish of Itchingfield and he wishes to be near that relative; or

c) is and has been permanently employed in the parish of Itchingfield for a continuous period of not less than two years

provided that where no person or insufficient persons can be identified as having a connection to the parish of Itchingfield outlined above then the district of Horsham shall be substituted for the parish of Itchingfield;

"Monitoring Fee" means the fee of £1,200 (one thousand two hundred pounds) payable to the Council for monitoring obligations in this Agreement and which is payable under the provisions of regulation 122 of the Community Infrastructure Regulations 2010, section 111 of the Local Government Act 1972 and section of the Localism Act 2011;

"Occupation" means occupation for any purpose for which the Planning Permission has been granted by the Council other than occupation for the purposes of construction or fitting out or occupation for security, marketing or display and "Occupy" and "Occupied" shall be construed accordingly;

"Occupation Date" means the date on which Occupation first occurs;

"Occupation Notice" means the written notice confirming the Occupation Date referred to in Clause 7.1.2 and served in accordance with Clause 7.3;

"Offsetting Land" means the land at Sumners Ponds, Chapel Road, Barns Green, Horsham shown indicatively and for identification purposes only edged blue on the Offsetting Land Plan and comprising of land contained within the following titles only SX63564, SX61374, WSX122294, WSX337854, and the boundaries of which are identified on the Offsetting Land Plan;

"Offsetting Land Plan" means the plan attached to this Agreement at Schedule 2 with drawing number 010-237 I;

"Offsetting Measures" means the detailed water saving measures set out in section 3.3 of the Water Neutrality Statement that are to be implemented on the Offsetting Land in order to make the Development Water Neutral, including installation of

the fixtures and fittings outlined at Table 6, paragraph 3.3.5 of the Water Neutrality Statement but excluding any requirements relating to monitoring management maintenance or retention of the Offsetting Measures;

"Open Market Units" means those Dwellings that are not delivered as Affordable Housing;

"Owners" means the First Owner and the Second Owner;

"Planning Permission" means the planning permission to be granted by the Council pursuant to the Application in respect of the Application Site;

"Phasing Plan" means the plan attached to this Agreement at Schedule 10 with drawing number 010-108;

"Position Statement" means the statement dated 14th September 2021 received by the Council from Natural England which shows that water abstraction for drinking water supplies in the SNWSZ is having a negative impact on the wildlife sites in the Arun Valley;

"Proposed Site Plan" means the plan attached to this Agreement at Schedule 9 with drawing number 6991 PL-001Q;

"PROW Specification" means a specification to be approved by the County Council in writing in respect of the diversion of footpath 1604 to include as a minimum:

a) a requirement that the New Bridleway shall have a minimum width of three (3) metres and be designed in accordance with the Proposed Site Plan (drawing ref:6991 PL-001Q);

b) details as to the surface treatment;

c) details as to the location of dropped crossing points at junctions where the New Bridleway crosses the access road(s);

d) a requirement for Slow and Equestrian warning signs to be erected on Chapel Road on both approaches to the New Bridleway at 59 metres based on a stopping distance of 37.5mph or as otherwise agreed with the County Council;

e) a requirement for Slow and Equestrian warning signs to be erected on the access road towards Chapel Road which are positioned at 43 metres based on a stopping sight distance of 30mph or as otherwise agreed with the County Council.

"Rented Housing Units" means either Affordable Rented Housing Units or Social Rented Housing Units;

"Registered Provider" means a registered provider as defined by the Housing and Regeneration Act 2008 and/or registered by Homes England and/or a non-profit making body which is registered with Homes England and/or any other body

	which is authorised by Homes England to own and manage Affordable Housing;
"Residential Occupier"	means any occupier of a Dwelling to be constructed on the Application Site in accordance with the Planning Permission;
"Residential Site"	means the area of the Application Site on which the Dwellings forming part of the Development are to be constructed and which is shown indicatively and for identification purposes only shaded orange and marked "Phase B" on the Phasing Plan;
"Section 73 Consent"	means a planning permission granted pursuant to section 73 of the Act which varies and/or removes any condition subject to which the Planning Permission and/or such planning permission pursuant to section 73 of the Act was granted;
"Social Rented Housing Units"	means the Affordable Housing Units that will be let to persons in housing need at a social rent in accordance with the Regulator for Social Housing's Tenancy Standard (April 2012) as may be amended updated or replaced from time to time at a rent not higher than the national rent regime amount and "Social Rented Housing Unit" shall mean any one of them;
"SNWSZ"	means the Sussex North Water Supply Zone from which Southern Water supplies drinking water;
"Statutory Undertaker"	means a statutory undertaker as defined in Section 329 of the Highways Act 1980 and shall include persons authorised under any enactment to carry on an undertaking for the supply of electricity gas water and any sewerage undertaking and shall also include the Environment Agency the holder of a licence to operate telecommunication systems the Civil Authority and the holder of a licence to supply cable television;
"Travel Plan"	means the travel plan to be approved pursuant to the Planning Permission;
"Trust Land"	means the land encompassed in titles WSX274676 and WSX337849 which are held on trust as set out at clauses 1.2 and 1.3 above and which are both identified at clause 1.6;
"Travel Plan Monitoring Fee"	means the sum of £1,500 (fifteen hundred pounds) payable for the monitoring and audit of the Travel Plan;
"VAT"	means value added tax chargeable under the Value Added Tax Act 1994 and any similar replacement tax and any similar additional tax;
"Water Neutral"	means the use of water in the SNWSZ after the Development has taken place is the same or lower than it was before the Development so as to accord with the Position Statement and "Water Neutrality" shall be construed accordingly;

"Water Neutrality Statement"	means the statement prepared by Daedalus Environmental dated June 2022 and agreed with the Council to demonstrate and ensure that the Development is considered and delivered as Water Neutral and in accordance with the Position Statement by setting out key mitigation measures to achieve Water Neutrality and which appears at Schedule 3;
"Water Stressed Areas Classification"	means the Environment Agency's report dated 1st July 2021 setting out the results of the Environment Agency's determination of areas of water stress in England and any subsequent report;
"Working Day"	means Monday to Friday inclusive but excluding any day that is a bank holiday or statutory holiday.

4. ENABLING PROVISIONS

4.1 This Agreement is made pursuant to section 106 of the Act, section 111 of the Local Government Act 1972, section 1 of the Localism Act 2011 and all other enabling powers.

5. CONDITIONS PRECEDENT

5.1 This Agreement shall come into effect upon the date hereof but the provisions in Schedule 4 – Schedule 6 (inclusive) shall only take effect upon the Commencement of Development.

6. COVENANTS

6.1 The Owners covenant with the Council to fully comply with and to perform the obligations contained herein and in Schedule 4 of this Agreement in accordance with the requirements and timescales set out.

6.2 The Owners covenant with the Council that the Development shall be carried out in strict accordance with this Agreement.

6.3 The First Owner covenants with the Council to fully comply with and to perform the obligations contained herein and in Schedule 5 of this Agreement in accordance with the requirements and timescales set out.

6.4 The Owners covenant with the County Council to fully comply with and perform the obligations contained herein and in Schedule 6 of this Agreement in accordance with the requirements and timescales set out.

6.5 The Council covenants with the Owners to fully comply with and perform the obligations contained herein and in Schedule 7 of this Agreement in accordance with the requirements and timescales set out.

6.6 The County Council covenants with the Owners to fully comply with and perform the obligations contained herein and in Schedule 8 of this Agreement in accordance with the requirements and timescales set out.

7. NOTICES

7.1 The Owners covenant with the Council as follows:

7.1.1 to give the Commencement Notice to the Council not less than 14 (fourteen) days before the anticipated Commencement Date; and

7.1.2 to give the Occupation Notice to the Council not less than 14 (fourteen) days before the anticipated Occupation Date.

7.2 The parties to this Agreement agree that if the Owners fail to give the notice required by clause 7.1.1 and clause 7.1.2 above then the Council shall be entitled to determine acting reasonably the Commencement Date and Occupation Date and shall give notice to the Owners of the Council's determination.

7.3 Any notice, certificate or other communication required or permitted to be given under this Agreement shall be given in writing to the relevant party at the relevant address referred to at the start of this Agreement or such other address as may be notified in writing to the other parties and must be served personally or by first class registered or first class recorded delivery post and, in the case of the Council, the relevant party shall address any notice to the Head of Legal and Democratic Services of the Council.

7.4 Any notice, certificate or other communication sent by post shall be deemed (in the absence of evidence of receipt) to have been delivered 2 (two) Working Days after despatch and in proving the fact of despatch it shall be sufficient to show that the envelope was properly addressed and posted.

7.5 Any notice, certificate or other communication delivered personally shall be deemed to have been delivered at the time it is received provided it is received between 0900 and 1700 on a Working Day but otherwise it shall be deemed to have been received on the next Working Day.

8. COSTS AND MONITORING FEES

8.1 The Developer has undertaken to pay on or before the date hereof the Council's reasonable legal costs incurred in preparing and entering into this Agreement in the sum of £4,320 (four thousand three hundred and twenty pounds) and the planning officer fee of £375 (three hundred and seventy five pounds).

8.2 The Developer has undertaken to pay on or before the date hereof the County Council's reasonable legal costs in relation to this Agreement in the sum of £1,410.10 (one thousand four hundred and ten pounds and ten pence).

8.3 The Developer covenants to pay the County Council Monitoring Fee to the County Council on or before the completion of this Agreement.

8.4 The Owner covenants to pay the Council the Monitoring Fee on or before the completion of this Agreement.

9. DEVELOPER'S AND MORTGAGEE'S CONSENT

9.1 The Developer consents to the completion of this Agreement and acknowledges that the obligations in this Agreement shall bind the Application Site and the Offsetting Land and declares that their interest in the Application Site (and Offsetting Land if applicable) shall be bound by the terms of this Agreement in the event that the Developer acquires a legal interest in the or any part of the Application Site or Offsetting Land as if it were a person deriving title from the Owners and until then the Developer shall otherwise have no liability under this Agreement except in respect of clause 8.

9.2 The Mortgagee consents to the completion of this deed and declares that its interests in the Application Site and the Offsetting Land shall be bound by the terms of this Agreement as if it had been executed and registered as a land charge prior to the creation of the Mortgagee's interests in the Application Site and the Offsetting Land provided that the Mortgagee shall otherwise have no liability under this Agreement unless it takes possession of the Application Site and/or Offsetting Land (or any part of the Application Site and/or the Offsetting Land as the case may be) in which case it too will be bound by the obligations as if it were a person deriving title from the Owners.

9.3 The security of any future chargee or mortgagee over the Application Site and/or Offsetting Land shall take effect subject to this Agreement provided that any future chargee or mortgagee shall otherwise have no liability under this Agreement unless it takes possession of the Application Site and/or Offsetting Land (or any part of the Application Site and/or the Offsetting Land as the case may be) in which case it too will be bound by the obligations as if it were a person deriving title from the Owners.

10. GENERAL

The parties undertake that:

10.1 this Agreement constitutes a planning obligation for the purposes of section 106 of the Act, section 111 of the Local Government Act 1972, section 1 of the Localism Act 2011 and any other enabling powers.

10.2 this Agreement constitutes a deed;

10.3 this Agreement is enforceable by the Council in accordance with section 106 of the Act; and

10.4 nothing in this Agreement confers or is intended to confer a benefit on a third party under the Contracts (Rights of Third Parties) Act 1999.

10.5 It is hereby agreed by the Owners and the Developer that failure by the Council or County Council at any time to enforce the provisions of this Agreement or to require performance strictly or otherwise by the Owners or Developer of any of the conditions, covenants, agreements or obligations of this Agreement or any failure or delay by the Council or County Council to exercise any act, right or remedy shall not be construed as a creating an estoppel in connection with any such condition, covenant, agreement or obligation and shall not affect the validity of this Agreement or any part thereof or the right of the Council or County Council to enforce any provision and any variation of this Agreement shall not vitiate the remainder of the Agreement which shall remain in full force and effect subject to such amendment or amendments.

10.6 The Owners and the Developer hereby undertake that:

10.6.1 this Agreement supersedes and replaces all previous negotiations whether oral or written;

10.6.2 the parties have not relied on any express or implied statement warranty representation or undertaking given by or on behalf of the Council; and

10.6.3 nothing herein contained excludes the liability of any party in relation to fraud.

10.7 The Owners and the Developer acknowledge that this Agreement will be registered as a local land charge.

10.8 The Developer hereby gives consent for the Development Site Plan, the Phasing Plan, the Proposed Site Plan and the Offsetting Land Plan to be reproduced by the Council.

10.9 If any provision in this Agreement shall be held to be invalid, illegal or unenforceable the validity, legality and enforceability of the remaining provisions hereof shall not in any way be deemed thereby to be affected or impaired.

10.10 This Agreement shall be governed by and interpreted in accordance with laws of England and the parties submit to the exclusive jurisdiction of the courts of England.

10.11 The obligations in this Agreement (with the exception of clause 8) shall cease to have effect (insofar only as it has not already been complied with) if, before the Commencement of Development, the Planning Permission:

10.11.1 expires;

10.11.2 is varied or revoked other than at the request of the Owners and Developer; or

10.11.3 is quashed following a successful legal challenge

but will remain in full force and effect so far as any subsisting Section 73 Consent is concerned.

10.12 The First Owner and/or the Second Owner (or any person deriving title to the Application Site from them) shall not be liable for any breach of the restrictions and obligations set out in this Agreement where such breach arises after the First Owner and/or the Second Owner (as the case may be) has parted with their respective interest in the Application Site or such part of the Application Site to which such breach relates save in respect of liability for antecedent breach of this Agreement.

10.13 The First Owner (or any person deriving title to the Offsetting Land from them) shall not be liable for any breach of the restrictions and obligations set out in this Agreement where such breach arises after the First Owner has parted with their interest in the Offsetting Land or such part of the Offsetting Land to which such breach relates save in respect of liability for antecedent breach of this Agreement.

10.14 No person shall be liable for a breach of the covenants restrictions or obligations in this Agreement relating to a part of the Application Site or Offsetting Land in which they do not have an interest.

10.15 The obligations contained in this Agreement shall not be enforceable against a Statutory Undertaker or other person who acquires any part of the Application Site or Offsetting Land or interest therein for the purpose of the supply of electricity, gas, water, drainage, telecommunication services or public transport services.

10.16 The obligations contained in this Agreement shall not be enforceable against any individual Residential Occupier or Commercial Occupier their mortgagees or successors in title.

10.17 Save for the obligations which relate to the use and Occupation of the Affordable Housing Units contained in Part 3 of Schedule 4 the obligations contained in this Agreement shall not be enforceable against any Registered Provider or their mortgagees or successors in title.

10.18 Section 33 of the Local Government (Miscellaneous Provisions) Act 1982 applies to the covenants in this agreement.

10.19 References to the Application Site and Offsetting Land include any part of it.

10.20 Nothing in this Agreement shall prohibit or limit the right to develop any part of the Application Site in accordance with any planning permission (other than the Planning Permission or any modification variation or amendment thereof) granted after the date of the Planning Permission.

10.21 Subject to the proviso to this clause if any Section 73 Consent is granted after the date of this Agreement:

10.21.1 the obligations in this Agreement shall relate to and bind such Section 73 Consent; and

10.21.2 the definitions of Application, Development and Planning Permission (other than for the purposes of clause 1) shall be construed to include reference to (respectively)

the planning application for the Section 73 Consent, the development permitted by the Section 73 Consent and the Section 73 Consent itself

PROVIDED THAT:

10.21.3 nothing in this clause shall fetter the discretion of the Council in determining any planning application for a Section 73 Consent and the appropriate planning obligations required in connection with the determination of the same;

10.21.4 to the extent that any of the obligations in this Agreement have already been discharged at the date that a Section 73 Consent is granted they shall remain discharged for the purposes of the Section 73 Consent; and

10.21.5 the Council reserves the right to insist upon the completion of a separate planning obligation by deed of agreement in connection with any Section 73 Consent if the Council (acting reasonably) considers it desirable to do so.

10.22 It is agreed and acknowledged that:

10.22.1 the obligations in Part 1 and Part 2 of Schedule 4 and Schedule 6 shall only bind the Application Site and cannot be enforced against the Offsetting Land;

10.22.2 the obligations in Part 3 of Schedule 4 shall only bind the Residential Site and cannot be enforced against any other part or parts of the Application Site or against the Offsetting Land; and

10.22.3 the obligations in Schedule 5 shall bind the Offsetting Land and cannot be enforced against the Application Site.

11. DISPUTE RESOLUTION

11.1 Should a dispute or difference arise between any of the parties to this Agreement concerning anything herein then the provisions of this clause 11 shall apply.

11.2 All differences and disputes which may arise between the parties concerning this Agreement shall be referred to the determination (as an expert and not as an arbitrator) of an independent leading conveyancing/planning counsel agreed upon by the parties but in default of such agreement appointed by the President of the Law Society of England and Wales on the application of any of the parties and the finding of any expert appointed shall be final and binding on the parties save in the case of manifest error or fraud.

11.3 Any expert appointed pursuant to clause 11.2 shall:

11.3.1 on his appointment serve written notice thereof on the parties in dispute;

11.3.2 consider any written representations by or on behalf of those parties which are received by him within 20 (twenty) Working Days of such service and immediately forward a copy of the written representation of one party to the other party;

11.3.3 allow the parties to the dispute an opportunity of commenting in writing on the other party's representations within 20 (twenty) Working Days of receipt by the other party thereof;

11.3.4 have an unfettered discretion to determine the reference to him;

11.3.5 serve notice of his determination as soon as he has made it;

11.3.6 give full and clear reasons for his decision; and

11.3.7 be paid his proper fee and expenses in connection with such reference by the parties in dispute in equal shares or in such shares as he may determine and his determination shall be final and binding on the parties in dispute (save in the case of manifest error) PROVIDED THAT if any such expert shall die, become insolvent or of unsound mind or if any of the parties in dispute shall serve on him written notice in their opinion he has unreasonably delayed making his determination he shall be ipso facto discharged and be entitled only to his reasonable expenses prior to such discharge and another person shall be appointed in his place as such expert.

11.4 The provisions of this clause shall not affect the ability of the Council or County Council to apply for and be granted any of the following: declaratory relief, injunction, specific performance, payment of any sum, damages, and any other means of enforcing this Agreement and consequential and interim orders and relief.

12. OWNERSHIP

12.1 The Owners warrant that no person other than the Owners, Developer and Mortgagee have any legal or equitable interest in the Application Site or the Offsetting Land.

12.2 The Owners undertake to the Council and the County Council to give the Council and the County Council immediate written notice of any change in the ownership of any of their respective interests in the Application Site and/or the Offsetting Land occurring before all the obligations under this Agreement have been discharged such notice to give details of the transferee's full name and registered office (if a company or usual address if not) together with the area of the Application Site or Offsetting Land purchased by reference to a plan.

13. INDEXATION

13.1 All financial contributions payable to the Council and County Council shall be Index Linked.

13.2 Where reference is made to an index and that index ceases to exist or is replaced or rebased then it shall include reference to any index which replaces it or any rebased index (applied in a fair and reasonable manner to the periods before and after rebasing under this deed) or in the event the index is not replaced, to an alternative reasonably comparable basis or index as the Council shall advise the Owners in writing.

14. INTEREST ON LATE PAYMENT

14.1 If any sum or amount has not been paid to the Council or County Council by the date it is due, the Owners shall pay the Council or County Council as appropriate interest on that amount at the Default Interest Rate (both before and after any judgment). Such interest shall accrue on a daily basis for the period from the due date to and including the date of payment.

15. VAT

15.1 Each amount stated to be payable under or pursuant to this agreement is exclusive of VAT (if any).

15.2 If any VAT is at any time chargeable on any supply made by the parties under or pursuant to this Agreement, the party making the payment shall pay the other an amount equal to that VAT as additional consideration on receipt of a valid VAT invoice.

16. TRUSTEE LIABILITY

16.1 In relation to the Trust Land the liability of the First Owner and the Second Owner in respect of any breach by the First Owner and the Second Owner of the obligations under this Agreement insofar as they bind and relate to the Trust Land is limited in amount to the realisable value of the individual trusts and the assets of those trusts in their possession from time to time.

16.2 In relation to the Trust Land nothing contained in this Agreement entitles the Council or the County Council to any right or remedy against:

16.2.1 the personal estate, property, effects or assets of the First Owner or the Second Owner or their respective personal representatives other than any legal and/or beneficial interest in the Trust Land; or

16.2.2 any assets for the time being vested in the First Owner or the Second Owner other than the part of the Trust Land which is in its ownership from time to time.

16.3 Clauses 16.1 and 16.2 will not apply to any liability arising from any wilful or reckless breach of duty or trust by the First Owner or Second Owner.

16.4 The parties agree that clauses 16.1 and 16.2 do not and are not intended to exclude or limit any liability of the First Owner or Second Owner (as appropriate) arising under this Agreement with respect to those parts of the Application Site or Offsetting Land described in clause 1.1, or 1.4 which do not form part of the Trust Land and which are also owned by the First Owner and/or Second Owner. Nothing in this agreement otherwise limits (or excludes) the entitlement of the Council or County Council to any remedy or right against either the First Owner or Second Owner in the event of a breach of the obligations and covenants set out in this Agreement insofar as they bind any part of the of the Application Site or Offsetting Land, which does not form part of the Trust Land.

IN WITNESS whereof this Agreement has been duly executed the day and year first hereinbefore mentioned

SEALED WITH THE COMMON SEAL of
HORSHAM DISTRICT COUNCIL
in the presence of:

[redacted] HEAD OF LEGAL &
DEMOCRATIC SERVICES

SEALED WITH THE COMMON SEAL of
WEST SUSSEX COUNTY COUNCIL
In the presence of [redacted]

Authorised Officer

EXECUTED as a **DEED** by
SIMON PHILIP SMITH [redacted]

in the presence of:

Name of witness

Address of witness

EXECUTED as a **DEED** by
MATTHEW MILLER [redacted]

in the presence of:

Name of witness

Address of witness

EXECUTED as a **DEED** by
BARCLAYS SECURITY TRUSTEE LIMITED

Acting by a director in [redacted]

Name of witness

Address of witness

	Initials	Date
QCC	[redacted]	

EXECUTED as a **DEED** by
HUNTER DEVELOPMENT HOLDINGS LIMITED

[redacted]

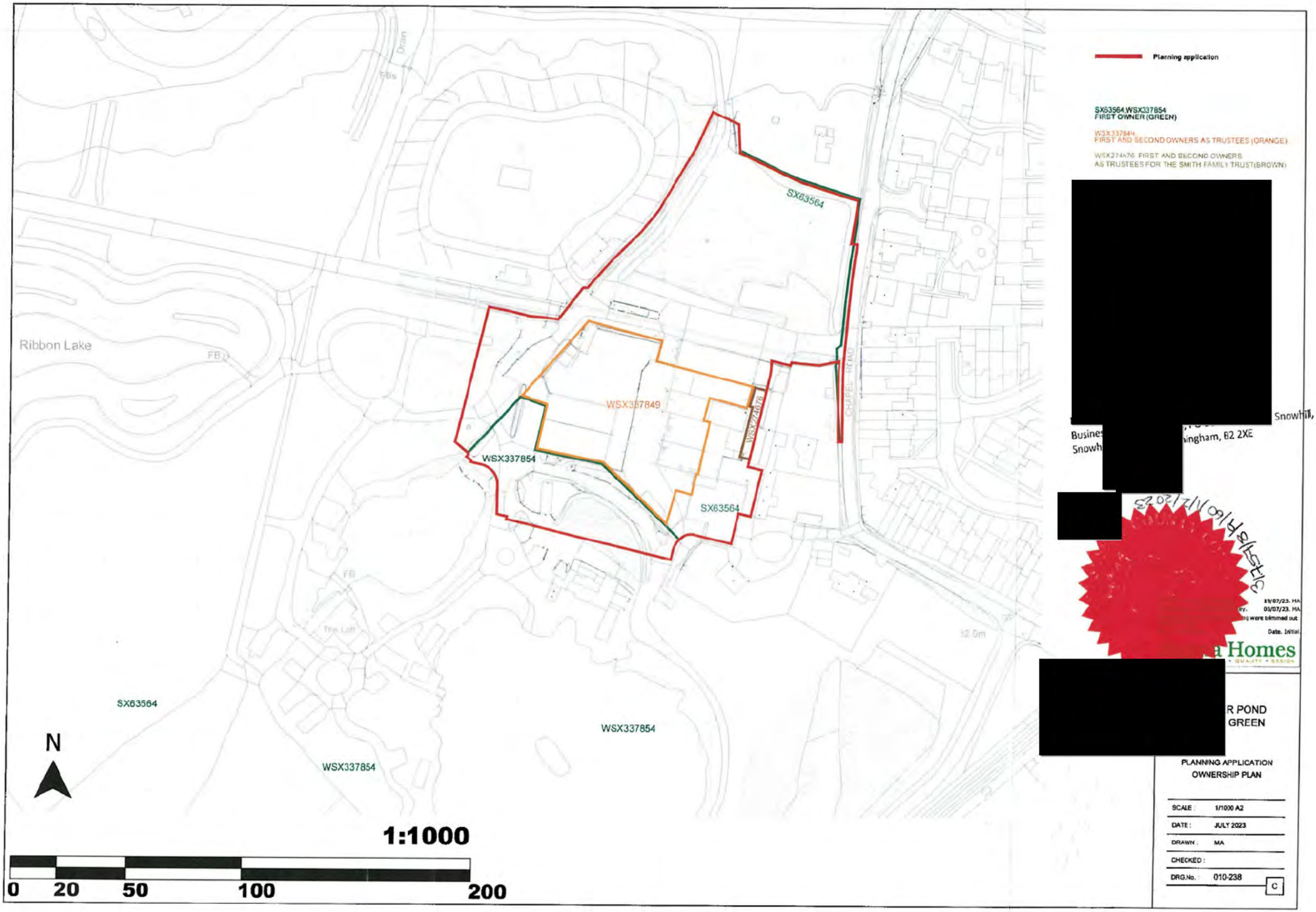
Acting by a director in

Name of witness

Address of witness

Schedule 1

Development Site Plan


Planning application
SX63564,WSX337854
FIRST OWNER (GREEN)
WSX337849
FIRST AND SECOND OWNERS AS TRUSTEES (ORANGE)
WSX274476 FIRST AND SECOND OWNERS
AS TRUSTEES FOR THE SMITH FAMILY TRUST(BROWN)
Ribbon Lake
SX63564
WSX337849
WSX337854
SX63564
SX63564
WSX337854
WSX337854
N
1:1000
0 20 50 100 200
R POND
GREEN
PLANNING APPLICATION
OWNERSHIP PLAN
SCALE : 1/1000 A2
DATE : JULY 2023
DRAWN : MA
CHECKED :
DRG.No. : 010-238
C

Schedule 2

Offsetting Land Plan



N

SCALE 1:2000

0 50 100 200 400

Offsetting Land

[redacted]

Barclays Security Trustee Limited
Business Lending Services, PO Box 16276, On
Snowhill Queensway Birmingham, B2 2XE

[redacted]

[redacted]

[redacted]

Rev.	Description.	Date. Initial.
	...d southern part of green	01/8/23.AL
	...ated.	30/7/23.AL
	...colar changed.	28/7/23.M.A
	...pdated.	27/7/23.M.A
	...s corrected.	26/7/23. MA.
	...nces corrected.	18/7/23. MA.
	...rea of WSX63564 noted with point	
	...23. MA.	
	A little lines within offsetting line were trimmed out.	29/6/23. MA.

Sigma Homes

SUMNER POND
BARNS GREEN

OFFSETTING PLAN

SCALE :	1/2000 A1
DATE :	JULY 2023
DRAWN :	MA
CHECKED :	
DRG.No. :	010-237

Thisofficialcopyisincompletewithout

Schedule 3

Water Neutrality Statement

DAEDALUS
ENVIRONMENTAL

Sumners Ponds
Chapel Road, Barns Green

Water Neutrality Statement

June 2022

Daedalus Environmental Limited
61 London Road
Maidstone
Kent
ME16 8TX

E: enquiries@daedalusenvironmental.co.uk
W: www.daedalusenvironmental.co.uk

Version	Final	Date	June 2022
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Address:	Shaves Wood Lane, Albourne, Hassocks, Sussex, BN6 9DY		

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Contents

1 Introduction 4

1.1 This Statement 4

1.2 The Issue of Water Neutrality 5

1.3 Site Description 6

1.4 The Proposals 6

2 Water Demand in the New Development 8

2.1 Approach to Water Efficiency 8

2.2 Proposal Demand 13

3 Offsetting 15

3.1 Background and Reasoning 15

3.2 Existing Water Demand 15

3.3 Primary Offsetting Option: On Site Water Efficiency Improvements 17

3.4 Back-Up Option: A New Borehole Supply 19

4 Conclusions and Recommendations 21

5 Appendices 22

5.1 Appendix A – Map of the Affected Area 22

5.2 Appendix B – Fixture and Fittings Flow Data 23

5.3 Appendix C – Site Meter Readings Summary 27

5.4 Appendix D – Attendance/Booking Records 27

5.5 Appendix E – RPS Report for Borehole Option 27

1 Introduction

1.1 This Statement

1.1.1 This Water Neutrality Statement supports the full planning application for the proposed mixed-use development on land at Sumners Ponds, Chapel Road, Barns Green within Horsham district. It has been commissioned by The Hunter Group (the Applicant).

1.1.2 The Statement sets out how the development proposals for 32 dwellings, 6 commercial units and 1 reception unit are aiming to proactively address the issue of sustainable water use. It describes how the proposals responds to the requirement for water neutrality in line with Natural England's Position Statement (2021) (see section 1.2).

1.1.3 Strategic options for achieving water neutrality in new developments continue to evolve and a structured offsetting mechanism administered by the authority is still to be confirmed. The development proposals for Sumners Ponds are therefore designed to adhere to the agreed interim approach as currently described in the Position Statement and expanded upon on the Horsham Borough Council website, and will develop as the planning and design process progresses.

1.1.4 This Statement describes the proposed performance standard for water fixtures and fittings in the new dwellings, calculates the expected water use for the site as a whole (the 'water budget') and the resulting indicative offset requirement. It also discusses two robust options for offsetting the residual water use which have been assessed and explored in detail and will be confirmed later in the planning process.

1.1.5 In respect of one of these options – related to the introduction of a new borehole to feed non-potable water use on the development, an accompanying geotechnical report has been compiled by RPS to explain the technical viability and validity of this option, including an explanation of why such a borehole would not affect the Sussex North Water Supply Zone. The reader should therefore consult that report in conjunction with this document for a fuller picture of that potential solution.

1.2 The Issue of Water Neutrality

Natural England's Position Statement for Applications within the Sussex North Water Supply Zone (September 2021 Interim Approach)

1.2.1 Natural England's Position Statement has been produced following concerns over the adverse effects of existing groundwater abstraction on the integrity of Arun Valley, specifically Arun Valley Special Conservation Area, Arun Valley Special Protection Area and Arun Valley Ramsar site, and the potential impacts of further development on these areas.

1.2.2 To ensure that new developments do not exacerbate this situation, Natural England has advised that all new development proposals within the Sussex North Water Supply Zone (see Appendix A) must demonstrate water neutrality. Natural England define water neutrality as follows:

For every new development, total water use in the region after the development must be equal to or less than the total water use in the region before the new development.

1.2.3 The local authorities in the area are working with Natural England to secure water neutrality through a water neutrality strategy. In the interim, Natural England have advised the following approach:

Minimising water use of new builds.

- Complete a water budget (based on occupancy)
- All new builds to demonstrate that they can achieve strict water targets (e.g., 85L/pp/day*)

This can be achieved by measures such as:

- Grey water recycling (advantage of being reliable in hot dry weather);
- Rainwater harvesting;
- Water efficient fixings (such as shower aerators) to demonstrably reduce demand-this would need to be suitably certain.

In addition, water offsetting is required

- One way to achieve this is retrofitting of council owned properties/commercial buildings-located within Sussex North. Examples include:
- Grey water recycling- (for example there are clear opportunities for commercial properties).
- Rainwater harvesting of commercial settings;
- Installation of water reduction fittings in Council-owned buildings.

These measures need to be implemented until such time as a more sustainable water supply has been secured. It will also need to be ensured that measures are not already proposed (for example in Southern Water's Management Plan) to avoid double-counting. Any mitigation must be suitably certain in order to comply with the Habitats Regulations and Caselaw.

Water Neutrality in Horsham District (www.horsham.gov.uk)

1.2.4 As a result of the issue identified by Natural England, Horsham District Council now requires development applications to be accompanied by a statement setting out the strategy for achieving water neutrality, including through significant water efficiency measures and by providing offsetting solutions where required.

1.2.5 The Horsham District Council website includes a proposed method for dealing with the water neutrality issue and this Statement has been designed to align with this advice.

1.3 Site Description

1.3.1 The proposed site is situated in the village of Barns Green within Horsham district. It forms part of 'Sumners Ponds' which is a large commercial site used for fishing, camping and for livestock farming.

1.3.2 The development site itself is a 1.9ha portion of the overall Sumners Ponds site and it comprises a field currently used for storage, a car park, farm buildings used for cattle accommodation and storage and light industrial units.

1.3.3 Dense hedgerows and trees form a boundary around the north, east and west of the northern portion of the site. Chapel Road and a converted barn dwelling adjoin the site to the east while the Grade II Listed house, Little Slaughterford, sits to the north. To the west is the Sumners Ponds campsite, Farm Pond and Ribbon Lake. The southern parcel is occupied by commercial units and is bordered by Sumners Lake and café.

1.3.4 The site is proposed to be allocated within the Itchingfield Neighbourhood Plan, which has gone through independent examination.

1.4 The Proposals

1.4.1 The full planning application (ref DC/21/2697) was submitted to Horsham District Council on 30 November 2021 and seeks permission for: "*the provision of 32 no. residential dwellings including 35% affordable housing; 6no. commercial units and 1no. reception building; access and circulation routes, parking hard and soft landscaping together with sustainable drainage system*".

1.4.2 Figure 1 below shows the proposed site plan:



Figure 1: Proposed Site Plan (ECE Architecture)

2 Water Demand in the New Development

2.1 Approach to Water Efficiency

2.1.1 The management of water in the proposed development will follow the principles of the Water Hierarchy, prioritising a reduction in demand for water, specifying efficient fittings and employing rainwater harvesting:

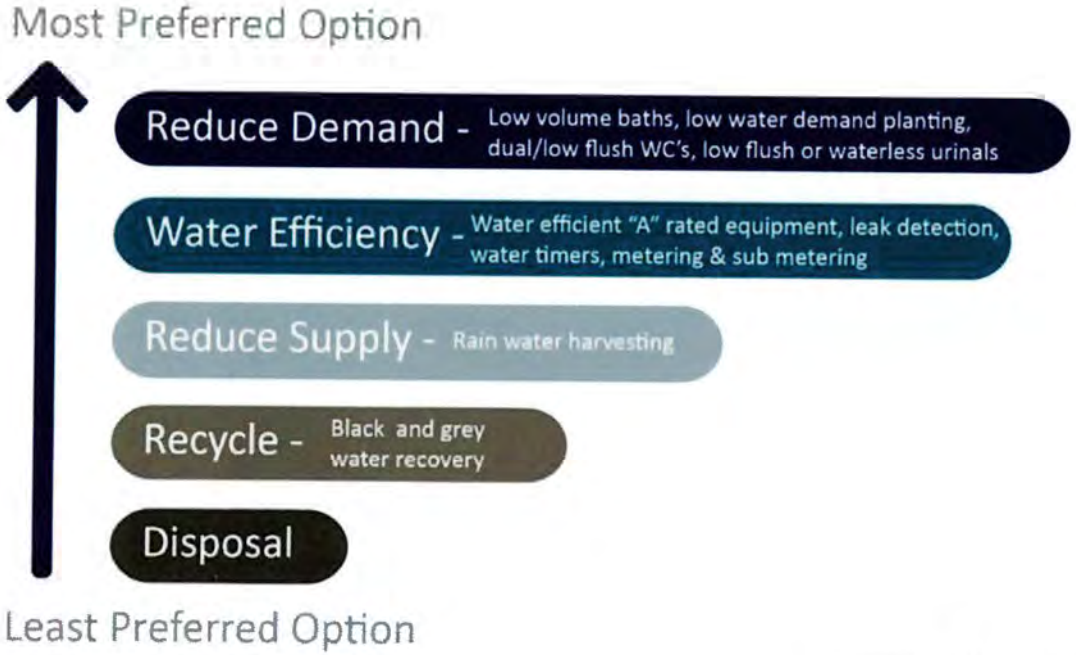


Figure 2: The Water Hierarchy

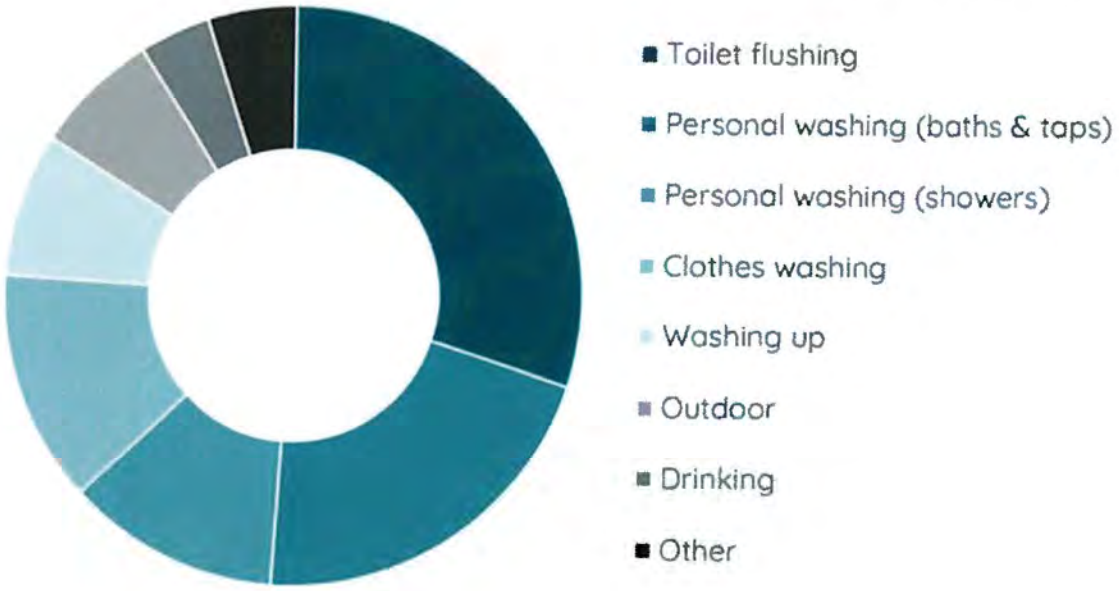


Figure 3: Domestic Water Consumption by End Use

2.1.2 The Natural England Position Statement advises a domestic water consumption target of 85 litres per person per day (l/p/d) for this location, well below the local average of 135 l/p/d (www.horsham.gov.uk).

2.1.3 The Applicant is committed to achieving this ambitious target as the first step to achieving water neutrality and has applied the principles of the Water Hierarchy to design a suitable approach.

Water Efficient Fixtures and Fittings

2.1.4 The Applicant will reduce demand for water by specifying water efficient fixtures, fittings and appliances for all 32 residential dwellings on the development as shown in Table 1.

2.1.5 The accredited calculation methodology for Part G of the Water Regulations has been used to demonstrate that this proposed specification, alongside rainwater recycling as described below, will exceed the daily water use target, achieving 84.07 l/p/d. An extract from the Water Calculator is given in figure 5.

2.1.6 The final specification to be used on the site to achieve the daily water use target will be confirmed later in the design process:

Measure	Water Use	Example Product
Showers (l/min)	9	Bristan Heritage
Aerated taps (l/min)	4	Bristan CAP 1/2 E4 C
Kitchen sink taps (l/min)	5	VitrA Flo S
Bath (l capacity)	140	Armitage Shanks Sandringham 21 S1832
Low / dual flush WC (l)	4/2.6	Armitage Shanks Sandringham 21 ASPK010
Washing machine (l/kg dry load)	8.17	Part G fixed usage figures
Dishwasher (l/place setting)	1.25	Part G fixed usage figures

Table 1: Proposed Water Efficiency Fixtures and Fittings Performance Standards (Residential)

Rainwater Recycling

2.1.7 Achieving the water usage figure of below 85 l/p/d through efficient fixtures and fittings alone typically leads to a poor 'water experience' for residents, particularly in relation to shower use, increasing the risk of fixtures immediately being replaced with units with higher flow rates.

2.1.8 To avoid this scenario, the Applicant will install a rainwater recycling system to each property to supply water for some non-potable uses including WC flushing and clothes washing. With the domestic sector consuming a large proportion of potable water in non-potable situations, this will significantly help maximise efficiency on the development without relying solely on internal fixtures and fittings.

2.1.9 The rainwater harvesting systems to be installed will capture rainwater from the building roofs and store this within a rainwater tank which is typically buried in the garden (in the case of houses)

or within the curtilage of the property (in the case of flats). The tanks are sized so that, over the course of a year, they will be able to provide the required average daily rainwater contribution. A secondary plumbing system then enables the collected water to be used.

2.1.10 The Water Calculator has been used to size an indicative rainwater harvesting system such that, when combined with the efficiency measures, it reduces mains water use to below the 85 l/p/d target. The specification for this indicative system is shown in figure 4.

2.1.11 Many variations on system design and configuration are available. The actual systems to be employed at this site and their final specifications will be confirmed at the detailed design stage.

Contribution from Rain Water *			
Collection area (m^2)	45	a	
Yield co-efficient and hydraulic efficiency	0.8	b	
Rainfall (average mm/year)	900	c	
Daily rainwater collection (litres)	88.77	d	(a × b × c) ÷ 365
Percentage collected (%)	60	e	
Number of occupants	2.4	f	
Daily rainwater per person (litres)	22.19	g	(d × e ÷ 100) ÷ f
Rainwater demand (litres/person/day)	18	h	
Rainwater savings (litres/person/day)	18	i	min (g, h)
* BS 8515 intermediate approach			

* These calculations assume 900ml annual rainfall in this location and, for this sample property calculation, a collection area of 45m^2.

Figure 4: Indicative Rainwater System (The Water Calculator)

The Water Calculator

http //www thewatercalculator org uk/

Congratulations

Sumners Pond

You are within your target maximum consumption of potable water (85 litres per person per day)

Total water consumption from your calculation **84.07** litres per person per day

This calculator is intended to inform design choices by demonstrating the likely impact of specification changes on total water consumption Results can only be used to demonstrate compliance with the Code for Sustainable Homes when the calculations have been verified by a suitably qualified Code for Sustainable Homes assessor

Calculation summary

Installation type	Unit of measure	Capacity / flow rate	Use factor	Fixed use	Litres / person / day
WCs (single flush)	Flush volume (litres)				
WCs (dual flush)	Average effective flushing volume (litres)	3 06	4 42	0	13 53
Taps (excl. kitchen/utility room)	Flow rate (litres / minute)	4	1.58	1.58	7 9
Bath (shower also present)	Capacity to overflow (litres)	140	0 11	0	15 4
Shower (bath also present)	Flow rate (litres / minute)	9	4 37	0	39 33
Kitchen/utility room sink taps	Flow rate (litres / minute)	5	0.44	10.36	12 56
Washing machine	Litres / kg dry load	8 17	2 1	0	17 16
Dishwasher	Litres / place setting	1.25	3 6	0	4 5
Waste disposal unit	Litres / use	☐	3.08	0	
Water softener	Litres / person / day	☐	1	0	
Contribution from Grey Water					undefined
Contribution from Rain Water					-18
				Normalisation factor	∑ × 0 91

water label bma waterwise

anglianwater

Product Information

* These calculations assume 900ml annual rainfall in this location and, for this sample property calculation, a collection area of 45m².

Figure 5: Indicative Part G Accredited Water Calculator Results (The Water Calculator)

Commercial Development

2.1.12 The proposals for the site include seven commercial units comprising one reception building associated with the campsite and six further units for light industrial/commercial use. Each of the six light industrial/commercial units include a kitchen and three WCs with handwashing facilities as shown in the image below.

2.1.13 The Applicant will apply the principles of the Water Hierarchy to reduce demand for water from these premises, in line with the approach described for the residential element of the proposals.

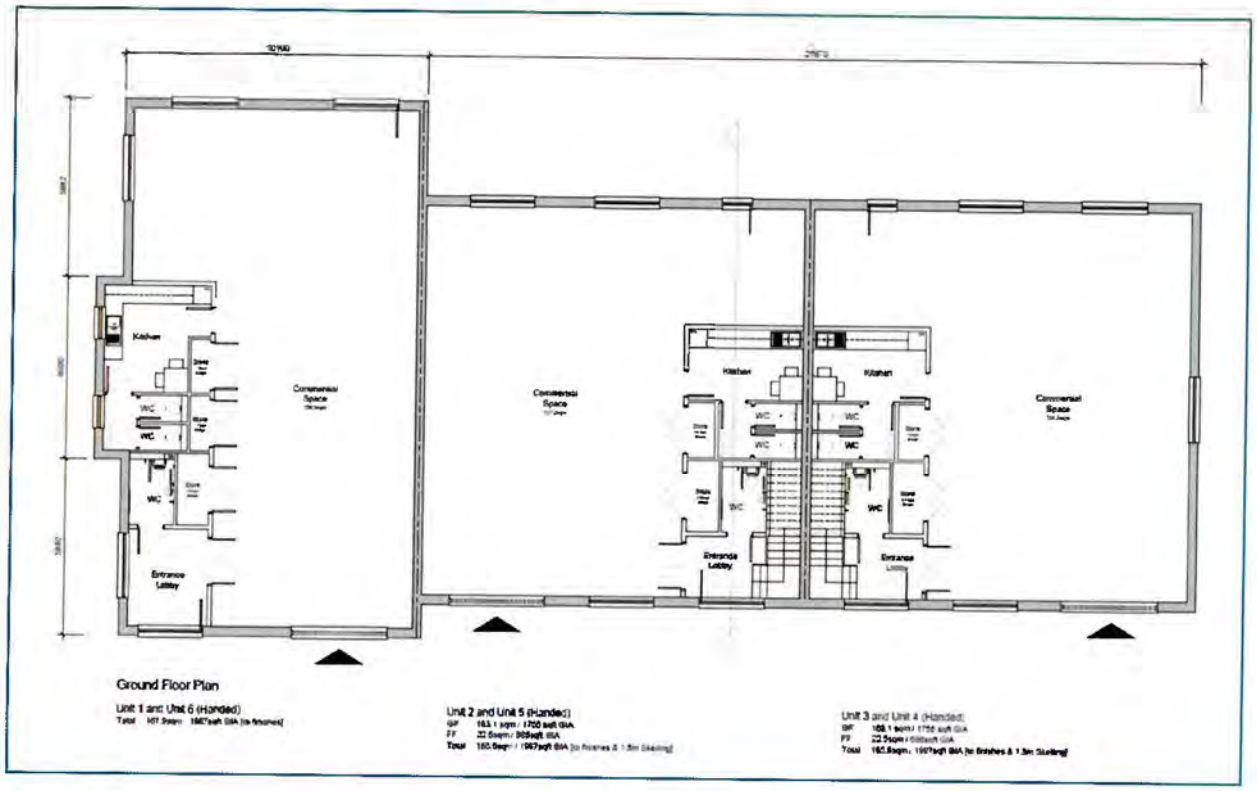


Figure 6: Proposed Commercial Units: Floor Plan (ECE Architecture)

Water Efficient Fixtures and Fittings

2.1.14 Appropriate water efficient fixtures and fittings will be specified throughout using a specification similar to that designed for the residential properties (aerated taps, low/dual flush cisterns) and with the addition of automatic, sensor-enabled tap controls.

Measure	Water Use	Example Product
Aerated taps (l/min)	3.7	Armitage Shanks Sensorflow 21 Suite
Kitchen sink taps (l/min)	5	VitrA Flo S
Low / dual flush WC (l)	4/2.6	Armitage Shanks Sandringham 21

Table 2: Proposed Water Efficiency Fixtures and Fittings Performance Standards (Commercial)

2.1.15 As recommended in the *Water Neutrality and Planning Applications* section of the Horsham District Council website, the BREEAM Wat 1 Calculator has been used to estimate the water used during the course of each unit's operation. This takes into account a building's end use, its floor area and the internal fixtures and fittings specifications.

2.1.16 The results are shown in Table 3 and suggest a water use figure of 18.59 l/p/d.

2.2 Proposal Demand

2.2.1 This section combines the water consumption data calculated above and the accommodation schedule and occupancy rates to calculate the total water demand for the proposed development.

Residential

2.2.2 The illustrative schedule of accommodation produced for the proposed development has been combined with extrapolated 2011 census data on average occupancy in Horsham District (as recommended in the *Water Neutrality and Planning Applications* section of the Horsham District Council website) to estimate a residential population of 74 people once the site is fully occupied.

Housetype	Quantity	Occupancy	Total Residents (indicative)
1 bedroom	6	1.32	7.92
2 bedroom	4	1.88	7.52
3 bedroom	13	2.47	32.11
4 bedroom	9	2.86	25.74
Total	**32**		**73.29**

Table 2: Residential Occupancy

2.2.3 On this basis, the total estimated daily water use for the residential element of this development would be approximately:

84.07 litres per person per day x 74 residents = 6,221.18 litres per day

Commercial

2.2.4 The BREEAM Wat 1 Calculator has been used to estimate the average occupancy rate for each building and the results have been combined with estimated water use per person to predict the total daily water use as a result of the commercial development:

Commercial Units		Total Floor Area (sqm)	Commercial Space (sqm)	Office Space (sqm)	Kitchen, WC, Storage Areas (sqm)	BREEAM Results		
						Predicted Occupancy	Predicted Daily Water Use (l/p/d)	Total Daily Water Use (l)
Unit C1	Single storey	167.9	130.9	None	37.0	2.93216	18.59	54.5
Unit C2	1.5 storey	185.6	127.2	20.1	38.3	4.84722	18.59	90.1
Unit C3	1.5 storey	185.6	127.2	20.1	38.3	4.84722	18.59	90.1
Unit C4	1.5 storey	185.6	127.2	20.1	38.3	4.84722	18.59	90.1
Unit C5	1.5 storey	185.6	127.2	20.1	38.3	4.84722	18.59	90.1
Unit C6	Single storey	167.9	130.9	None	37.0	2.93216	18.59	54.5
Reception Unit	Single storey	95.7	95.7	None	0.0	0	0	0
Total Daily Water Use								469.5

Table 3: Commercial water demands

Total Proposal Demand

2.2.5 The total estimated daily water use from the combination of uses is therefore:

6,221.18 litres + 469.5 litres = 6,690.68 litres per day

2.2.6 This is the equivalent of 2,442 m3 per annum.

3 Offsetting

3.1 Background and Reasoning

3.1.1 The additional water demand as a result of the new development is 6,691l/day, which is the equivalent of 2,443m^3 per annum. The Applicant has two viable options for offsetting this requirement within the guidelines on water neutrality provided by Horsham:

1. To implement a broad range of water efficiency measures on the wider, existing Sumners Ponds site
2. To install a borehole and extract groundwater for use on the wider Sumners Pond site

3.1.2 In both cases this will reduce the water drawn from the public water network and enable the new development to be water neutral. Both options have been examined in detail.

3.1.3 The reason why these two solutions are viable is because the wider Sumners Pond site already includes buildings and other uses which consume considerable amounts of potable water from the public network. The site includes:

- agricultural uses and farm buildings, including watering of cattle
- camping and caravanning pitches, with associated washing, shower and sanitary blocks
- holiday lodges and other similar facilities
- café/restaurant
- other dwellings on site for holiday rentals and/or accommodation for on-site staff

3.1.4 The overwhelming proportion of existing demand, however, comes from the camping and caravanning operation, with 47,271 nights stayed in a single year based on the most recent data available (provided at length in the spreadsheet Appendix D).

3.1.5 This site occupancy data covers the period from 1st April 21 through to 31st March 22, and is drawn directly from the site's booking systems. Clearly there will be fluctuations year on year depending on demand, but even during the pandemic in 2020 there were over 39,000 nights stayed.

3.1.6 The total amount of water offset from the public water main will therefore change year on year, but we can be confident that the approach to offset using water efficiency will, even in the lowest occupancy years like 2020, exceed the requirement of 6,691 litres per day.

3.2 Existing Water Demand

3.2.1 The site contains 6 separate water meters covering a range of different uses, and we have collected data from these meters to establish an estimate of the annual water use from the public network. Clearly the nature of the site means this will fluctuate annually depending on demand from holiday makers but the water meter data secured and the park visitor data provides a robust basis on which to assess demand.

3.2.2 The available meter data for the site has been collated into the following tables and shows that in a typical year the water demand for the existing site equates to around 9,936m^3 per annum (or 27m^3 per day):

Customer Meter Ref No.	Date of 1st Meter Reading	Figure of 1st Meter Reading	Date of 2nd Meter Reading	Figure of 2nd Meter Reading	Usage over time period m3	Days between Readings	Avg. Daily Use (m3)
2766961	26/09/2017	254	14/12/2021	2444	2190	1540	1.42
2731624	01/04/2017	15572	03/12/2021	32094	16522	1707	9.68
2747004	31/03/2022	0	06/05/2022	532	532	36	14.78
10246372	15/05/2018	2415	05/10/2021	2636	221	1239	0.178
11149778	20/08/2013	4978	10/03/2022	6946	1968	3124	0.63
11179743	09/08/2013	1373	10/03/2022	2035	662	3135	0.21

Table 4: Associated meter data (evidence provided in Appendix C)

Meter Location	Customer Meter Ref No.	Meter Address	Avg. Daily Usage (m3)	Yearly Avg. (m3)
Bullbrook, Crossing	2766961	C/T Flds 1308 2400, 2695 3008 05, Valewood Lane, Horsham, RH13 0QJ	1.42	519
North of Sumners Ponds Entrance	2731624	Sumner Ponds Fishery, And Campsite, Chapel Road, Horsham, RH13 0PR	9.68	3533
Main Site Entrance	2747004	Sumner Ponds Fishery, And Campsite, Chapel Road, Horsham, RH13 0PR	14.78	5394
Residence Entrance	10246372	Sumners Cottage, Chapel Road, Horsham, RH13 0PR	0.18	65
Corner by Owlers	11149778	Munthum Drive, Slaughterford Farm, Barns Green, RH13 0PR	0.63	230
Bullbrook, Tunnel	11179743	Bullbrook, Slaughterford Farm, Valewood Lane, Horsham, RH13 0PR	0.21	77
		TOTAL	26.90	9,818

Table 5: Annual water use (existing site) by meter

3.2.3 The vast majority of water use on the site is channelled through 2 meters, and it is these meters which cover the tourist uses on the site in terms of visitor facilities. The targeting of efficiency measures is therefore focused here – as opposed to meters with minor use which include (for example) animal water troughs.

3.2.4 Meter 2747004 was replaced on the 31st March 2022, due to it being faulty. We therefore only have reliable data from that point, and this continues to be tracked over time. Early readings indicate however substantial water use, reflecting those areas it serves.

3.2.5 In addition to the above, and to support the assessment of the Primary Offsetting Option, we have visited every fixture and fitting across the site to establish existing flow rates and flush volumes from taps/showers and toilets respectively. We have undertaken, and can provide, if necessary, a full photographic record of those fixtures and fittings in situ.

3.2.6 We can therefore make a robust calculation of water use from these fixtures and fittings based on annual site occupancy, and therefore the improvement where efficiency measures are implemented. This is described further in Section 3.3, and more data on this point is provided in the Appendix.

3.3 Primary Offsetting Option: On Site Water Efficiency Improvements

3.3.1 In order to establish the opportunity for water efficiency savings on the existing site we have undertaken the following approach to assessment:

- Recorded each and every water use fixture and fitting on the Sumners Pond site serviced by the various water meters. There are, for information, 36 basins, 42 sinks, 39 toilets, 24 showers, 5 baths, 7 urinals and 57 outdoor taps.
- Manually recorded (through test use) the flow rates and flush volumes of each of those fixtures (the data is supplied in the Appendix, for information) in terms of litres per minute or litres per flush, respectively

3.3.2 The annual water use associated with each of the different types of fixtures and fittings has then been calculated based on a set of reasonable daily usage assumptions drawn from sources including Part G of the Building Regulations, or similar. Combining this with over all site visitor data then enables us to form as accurate a picture as possible of the water use break down for the site on an annual basis by end use.

3.3.3 In practice, however, there are certain aspects of the use for which we cannot 'legislate', or which are not within the control of the site owner. This includes, for example, the use of 'outside taps' by visitors and water used within sinks (which do not rely on flow rates, rather it relates to volume of the sink) for dish washing etc. Sinks could be replaced with smaller ones in principle, however in practice this would cause useability issues for visitors. On this basis there are three main types of fixtures and fittings that will have an impact on end use, and where this Primary Option would focus, specifically:

- Sink taps (primarily for hand washing and sanitary use)
- Showers
- Toilets and urinals

3.3.4 The average water use for each of these fixtures and fittings is as follows (see also data in the Appendix for a breakdown by fitting):

- Sink taps: 11 litres per minute
- Showers: 12 litres per minute
- Toilets: 7 litres per flush; Urinals: 2.5l per use

3.3.5 The assumption for the Primary Offsetting Option is that all the existing fixtures and fittings, where they exceed the enhanced performance standard in the table below (shaded orange), will be replaced with new to meet that improve standard. In each of the three cases, we have made conservative assumptions on frequency and length of use to establish the impact of their replacement (those cells in the tables highlighted green):

SHOWERS			TOILETS			URINALS			TAPS		
Existing Average Shower Flow Rate	12	l	Existing Average Total Flush Volume	7.4	l	Existing Flush Volume	2.5	l	Existing Average Flow Rate	11	l
Total Stays	47,271		Total Stays	47,271		Total Stays	23,636		Total Stays	47,271	
Total annual showers (one / day / stay)	47,271		Toilet Use / Person / Day*	4.5		Uses Per Day*	3		Uses Per Day	8	
Minutes per shower	8	min	Total Toilet Uses	212,770		Total Uses Per Year	70,907		Total Uses Per Year	378,168	
Water use per shower	96	l							Length of Use	0.4	min
Water Use Annual	4,522,259	l	Water Use Annual	1,582,633	l	Water Use Annual	177,266	l	Water Use Annual	1,617,298	l
Improved shower flow rate	9	l/min	Improved effective flush volume (dual)	3.06	l	Improved effective flush system	1.5	l	Improved flow rate	4.0	l/min
Efficient Water Use Annual	3,403,512	l	Efficient Water Use Annual	650,922	l	Efficient Water Use Annual	106,360	l	Efficient Water Use Annual	605,069	l
Saving	1,118,747	l	Saving	931,711	l	Saving	70,907	l	Saving	1,012,230	l
Saving	1,119	m^3	Saving	932	m^3	Saving	71	m^3	Saving	1,012	m^3

Saving Required (based on 6691l/day)	2,442	m^3/a
Saving Generated (showers/toilets/taps)	3,373	m^3/a
Offsetting [Shortfall (-ve) or Surplus (+ve)]	931	m^3/a

Table 6: Water Efficiency Saving Potential

* We have assumed that there is an even split of female and male visitors to site and that both female and male visitors use toilet facilities 6 times per day. However, male visitors use urinals for 3 of those visits. Given there are only 7 on the whole site this is conservative in the extreme but therefore gives even greater confidence in the approach and figures above.

3.3.6 In effect this approach to offsetting would require the replacement of every toilet, urinal, shower and basin tap within the site. As with the borehole option, we would expect that, assuming Horsham and Natural England find this approach acceptable, that the replacement installations will be secured by condition. To be clear – we are proposing the same specification (make/manufacture) of fixtures and fittings as described above for the new build development.

2011/2016), the water requirements for livestock will range from 3.3-7.5l per day for sheep, and 15-50l per day for beef cattle, depending on the time of year, feed type, and age / stage of life.

3.4.3 The farm currently has 28 sheep and 83 beef cattle, which equates to water demands between 488,000 and 1.6m litres of water annually, all of which is currently drawn from the public water supply. The existing toilet flushing requirements are in the region of 2.11m litres (see Table 6). Combined, this totals more than the increase in water demand from the new development (2.442m litres) – and therefore provides a viable route to offsetting.

3.4.4 It will not affect the North Sussex Water Supply Zone in any way, and will reduce daily water use by the required amount. It is anticipated that, assuming the council and Natural England find this acceptable, that a condition associated with the permission, requiring the developer to demonstrate:

- The location of the new borehole
- Details of the treatment plant to be installed
- Details of the uses within the Sumners Pond site to be serviced by the borehole
- Relevant calculations to show the volumes to be abstracted (and therefore offset from the public network
- The legal commitment to maintain that borehole for use in perpetuity

... will be required prior to any occupation of the new development.

4 Conclusions and Recommendations

4.1.1 This Water Neutrality Statement has been commissioned by the Hunter Group to describe the emerging approach to water efficiency and neutrality for the proposed new mixed-use development on land at Sumners Pond, Chapel Road, Barns Green within Horsham district.

4.1.2 It provides the required detail to demonstrate the emerging approach to compliance with the requirements of the Natural England Position Statement for Applications within the Sussex North Water Supply Zone 2021.

4.1.3 The information and calculations presented show that the proposed development will increase the amount of water drawn from the public network, unless mitigation / offsetting measures are put in place. Once water efficient fixtures and fittings and rainwater recycling measures for the new buildings have been factored in, it is currently calculated that the additional water use with the proposed development will be 2,442m^3/a.

4.1.4 The preferred route to offsetting is for the introduction of water efficiency measures to the existing site. A viable back-up option has also been developed in the form of a new borehole (which, as shown within the accompanying RPS report, will not affect the affected supply zone), abstracting water for use on site.

4.1.5 Both options are robust and viable, and the Applicant will pursue both pending a decision by the council on the wider application. A condition associated with water neutrality is expected and will be welcomed, allowing flexibility for either of these solutions to be implemented.

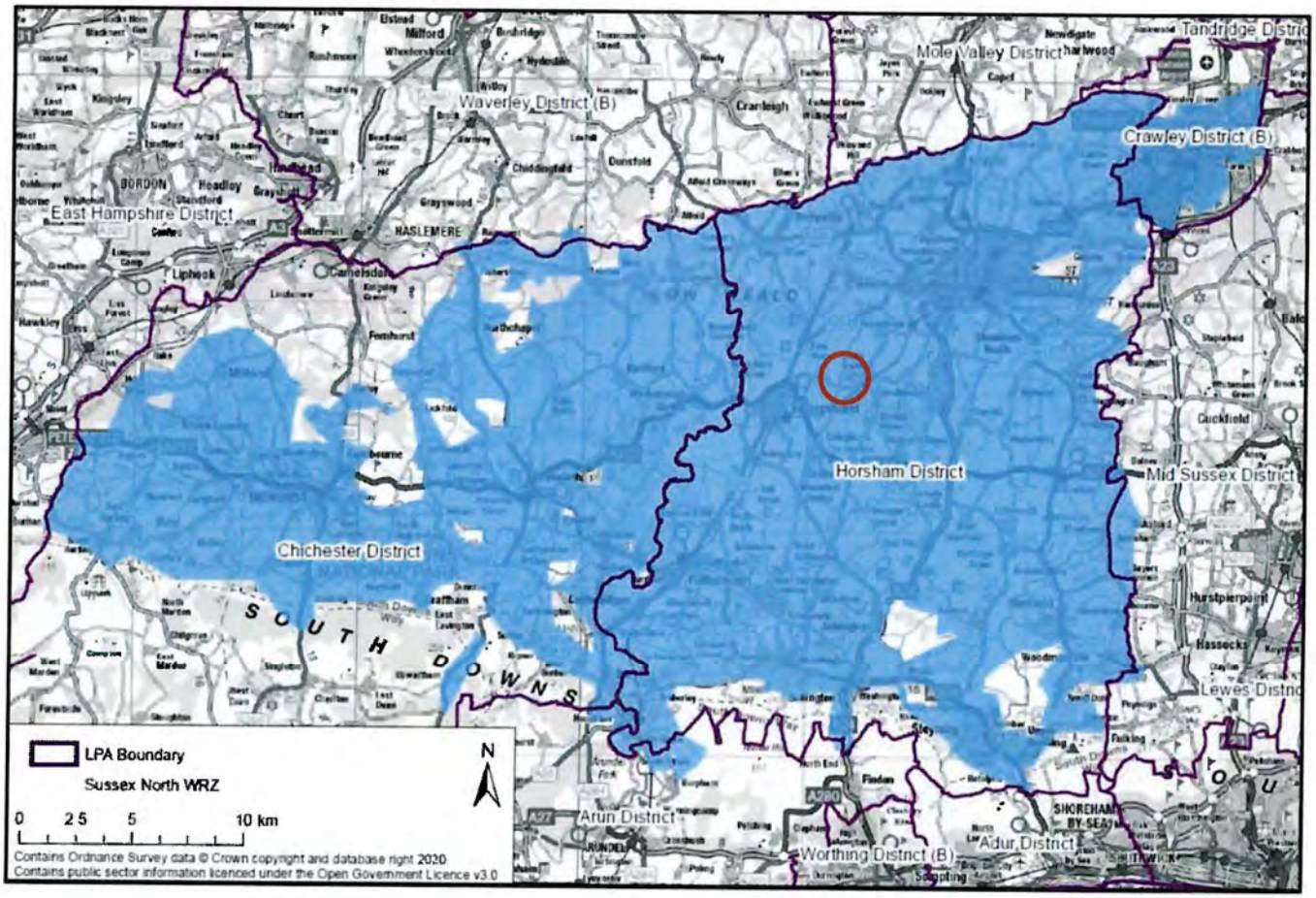
4.1.6 Furthermore, it is anticipated that a condition will be applied requiring that the final construction of the homes and non-domestic buildings will align to this Statement in terms of water efficiency with further detail / final specifications demonstrating compliance to be provided prior to occupation.

4.1.7 In committing to achieve water neutrality, the Applicant is demonstrating an understanding of the importance of this issue, one which they are working proactively to resolve. A significant amount of work has been undertaken to establish a high level of detail in terms of site water use, even down to individual fixtures and fittings, and we trust this, in combination with additional meter data submitted, is sufficient to enable permission to be granted (subject to the conditions identified).

4.1.8 Wherever necessary the Applicant would welcome continued dialogue on the proposed offsetting options over the coming weeks to ensure that the final approach will be both robust and acceptable to Horsham District Council and Natural England.

5 Appendices

5.1 Appendix A – Map of the Affected Area



5.2 Appendix B – Fixture and Fittings Flow Data

Raw Data

No	Blue Bell Touring Park	Sumners touring park	Ribbon Touring Park	Bluebell WC Block	Ribbon WC block	Family field	Café by the lake	Reception	Fishermans toilets	Iris lodge	Lily lodge	Morehen Lodge	Grebe Lodge	BB wardens lodge	Wren lodge	The loft	Sumners cottage	Farm workshop	New tent	Farmyard	Farm staff room
Basin 1				10	5	10	10	17	5	8	8	14	13	13	13	12	11				14
Basin 2				10	6	10	7		5	8	8			10			13				
Basin 3				10	5		9														
Basin 4				10	4		7														
Baisn 5					6		9														
Basin 6					5		6														
Basin 7					4																
Basin 8					4																
Sink 1				33	24	9	14			12	12	10	17	12	14	28	17	16			11
Sink 2				33	25		10			16	16						17				
Sink 3				33	25		10										5				
Sink 4				27	24		10														
Sink 5				33	25		25														
Sink 6				33	25		25														
Sink 7				27	25		29														
Sink 8				33	25		29														
Sink 9					25																
Sink 10																					
Toilet 1				7	8	5	8	8	8	8	8	8	8	8	8	7.5	6.5				5
Toilet 2				7	8	5	8		8	8	8			8			6.5				
Toilet 3				7	8		8										5				
Toilet 4				7	8		8														
Toilet 5				7	8																
Toilet 6				7	8																
Toilet 7					8																
Toilet 8					8																
Toilet 9					8																
Toilet 10					8																
Urinal 1				2.5	2.5		2.5														
Urinal 2				2.5	2.5		2.5														
Urinal 3					2.5																
Shower 1				13	13	9															
Shower 2				13	13	9				13	13	13	13	6	6	14	16				16
Shower 3				13	13					13	13			6			13				
Shower 4				13	13																
Shower 5					13																
Bath 1																					
Outside tap 1	33	37	40		27	11	13	17	26	16	16	23	23	20	16		16				
Outside tap 2	22	37	40				10							20	20		30		16	16	33
Outside tap 3	27	40	40				15														
Outside tap 4	27	40	40																		

Outside tap 5	25		27																	
Outside tap 6			27																	
Outside tap 7			40																	
Outside tap 8			40																	
Outside tap 9			40																	
Outside tap 10			27																	
Outside tap 11			27																	
Outisde tap 12			27																	
Outside tap 13			27																	
Outside tap 14			22																	
Outside tap 15			22																	
Outside tap 16			22																	
Outside tap 17			22																	
Outside tap 18			27																	
Outside tap 19			27																	
Outside tap 20			10																	
Outside tap 21			10																	
Outside tap 22			10																	
Outside tap 23			10																	
Outside tap 24			10																	
Outside tap 25			10																	
Outside tap 26			10																	
Outside tap 27			10																	
Outside tap 28			10																	

Consolidated Data

Meter Reference	Meter Address	Water Use from Meter (m3/day)	Water Use from Meter (m3/a)	AVERAGE FLOW RATES & VOLUMES								
	ANNUAL TOTAL	**27.22**	9936.25									
2766961	C/T Flds 1308 2400, 2695 3008 05, Valewood Lane, Horsham, RH13 0QJ	1.42	519.1	Animal troughs								
2731624	Sumner Ponds Fishery, And Campsite, Chapel Road, Horsham, RH13 0PR	9.68	3533		**Ribbon**	**Sumners**	**Café**	**Morehen Lodge**	**Grebe Lodge**	**Wren Lodge**	**The Loft**	**New Tent**
				Basin Taps	4.9		8	14	13	13	12	
				Sink Taps	24.8		19	10	17	14	28	
				Toilet	8.0		8	8	8	6	8	
				Shower	13.0			13	13	6	14	
				Urinal	2.5		2.5					
				Bath Tap				23	23	16		
				Outside Tap	27		12.7			20		16.0
				Touring Park Taps	24.1	38.5						
2747004	Sumner Ponds Fishery, And Campsite, Chapel Road, Horsham, RH13 0PR	14.57	5319		**Bluebell**	**Reception**	**Fishermens Toilets**	**BB Warden's Lodge**	**Farm workshop**	**Farmyard**	**Farm staff room**	
				Basin Taps	10.0	17	5	11.5			14	
				Sink Taps	31.5			12	16		11	
				Toilet	7.0	8	8	8			5	
				Shower	13.0			6			16	
				Urinal	2.5							
				Bath Tap				20				
				Outside Tap		17	26	20		16	33	

				Touring Park Taps	26.8							
10246372	Sumners Cottage, Chapel Road, Horsham, RH13 0PR	0.71	259		**Iris Lodge**	**Lily Lodge**	**Sumners Cottage**					
				Basin Taps	8	8	12					
				Sink Taps	14	14	13					
				Toilet	8	8	5.7					
				Shower	13	13	14.5					
				Bath Tap			16					
				Outside Tap			30					
				Touring Park Taps								
11149778	Munthum Drive, Slaughterford Farm, Barns Green, RH13 0PR	0.63	230		**Family Field**							
				Basin Taps	10							
				Sink Taps	9							
				Toilet	5							
				Shower	9							
				Bath Tap								
				Outside Tap	11							
11179743	Bullbrook, Slaughterford Farm, Valewood Lane, Horsham, RH13 0PR	0.21	77	Animal Troughs								

5.3 Appendix C – Site Meter Readings Summary

Customer Ref No.	Date of 1st Meter Reading	Figure of 1st Meter Reading	Date of 2nd Meter Reading	Figure of 2nd Meter Reading	Usage over time period m3	Days between Readings	Avg. Daily Use (m3)
2766961	26/09/2017	254	14/12/2021	2,444	2,190	1,540	1.42
2731624	01/04/2017	15,572	03/12/2021	32,094	16,522	1,707	9.68
2747004	31/03/2022	0	06/05/2022	532	532	36	14.78
10246372	15/05/2018	2,415	05/10/2021	2,636	221	1,239	0.18
11149778	20/08/2013	4,978	10/03/2022	6,946	1,968	3,124	0.63
11179743	09/08/2013	1,373	10/03/2022	2,035	662	3,135	0.21

5.4 Appendix D – Attendance/Booking Records

Excel file issued separately.

5.5 Appendix E – RPS Report for Borehole Option

Report issued separately.

Schedule 4

The Owners' Covenants to the Council

The Owners covenant with the Council as follows:

Part 1 Financial Contributions

1. To pay the Air Quality Mitigation Contribution to the Council on or before Commencement of Development.

2. Not to Commence the Development unless and until the Air Quality Mitigation Contribution has been paid to the Council.

Part 2 Water Neutrality

3. Not to Occupy the Development or any part of the Development until the Owners have submitted evidence in writing to the Council that the Offsetting Measures in the approved Water Neutrality Statement have been implemented in full on the Offsetting Land (including installation of the fixtures and fittings outlined at Table 6, paragraph 3.3.5 of the Water Neutrality Statement), the evidence to include the specifications and photographs of the installed measures and a water calculation as per that provided in the Water Neutrality Statement detailing the resultant surveyed water consumption.

4. Not to Occupy the Development or any part of the Development until the Council has confirmed in writing that the Offsetting Measures in the approved Water Neutrality Statement have been implemented in full at the Offsetting Land.

5. If in the reasonable opinion of the Head of Development and Building Control (or respective successor) there are defects in any of the Offsetting Measures when installed at the Offsetting Land in accordance with paragraph 3 above (howsoever arising) the Owners covenant to make good any defects in the Offsetting Measures and for the avoidance of doubt, any approval in writing (pursuant to paragraph 4 above) will be withheld where in the reasonable opinion of the Head of Development and Building Control the Owners have not complied with this obligation to make good any defects in the relevant Offsetting Measures at the Offsetting Land.

6. Notwithstanding the obligations set out above in this Part 2 of Schedule 4, in the event that the Council approves in writing that the Offsetting Measures are no longer required for the Development or that the Development is no longer required to achieve Water Neutrality then the obligations in this Part 2 of Schedule 4 shall determine and cease to have legal effect.

Part 3 Affordable Housing

7. To deliver at least 35% of the Dwellings as Affordable Housing Units in accordance with the Affordable Housing Tenure Mix.

8. Unless otherwise agreed in writing with the Council to provide the following Affordable Housing Units:

   8.1 6 (six) x 1 bedroom flat (2 (two) persons) of which 2 (two) units will be Intermediate Housing Units and at least 4 (four) will be Affordable Rented Units;

   8.2 2 (two) x 2 bedroom flat (4 (four) persons) which will be Affordable Rented Units;

   8.3 4 (four) x 3 bedroom houses (5 (five) persons) of which 2 (two) will be Affordable Rented Units and 2 (two) will be Intermediate Housing Units.

9. To procure that the Affordable Housing Units are physically completed in a workmanlike manner and with due care and skill.

10. To provide vehicular and pedestrian access and connections to adequate foul and surface water sewers and water and gas (if applicable), electricity, telecommunication service systems and service media to the Affordable Housing Units linking in each case to the estate roads sewers and service systems to be constructed and laid as part of the remainder of the Development and connected to highways and sewers maintainable at the public expense.

11. Unless otherwise agreed with the Council, not to Occupy more than 25% (twenty-five percent) of the Open Market Units of the Development unless and until either:

    11.1 the land upon which the Affordable Housing Units are to be constructed is the subject of a binding contract that provides for its Disposal from the Owners to a Registered Provider together with a contract for the construction of the Affordable Housing Units; or

    11.2 the Affordable Housing Units are the subject of a binding contract for transfer from the Owners to a Registered Provider in a clean condition and fully serviced unless otherwise agreed in writing by the Council.

12. Unless otherwise agreed with the Council not to permit the Occupation of more than 75% (seventy-five percent) of the Open Market Units until:

    12.1 the Affordable Housing Units have been Completed in accordance with the provisions of this Schedule 4, Part 3 and

    12.2 a freehold interest or minimum 125-year leasehold interest in the Affordable Housing Units has been transferred to a Registered Provider.

13. Within any transfer of any Affordable Housing Units to the Registered Provider in accordance with paragraph 11 to require or procure the execution by the Registered Provider and delivery to the Council of a deed of nomination substantially (but subject to such amendments as may be agreed between the Registered Provider and the Council) in the form of the Council's template Deed of Nomination and for the Registered Provider to pay the Council's reasonable legal costs in drafting and agreeing the deed of nomination.

14. Not to Dispose of or cause or allow the Disposal of any Rented Housing Unit other than:

    14.1 to a Registered Provider; or

    14.2 by way of an assured tenancy complying with the guidance given by Homes England (for the relevant type of rented unit) or such other form of occupancy agreement approved for use by a Registered Provider by Homes England; or

    14.3 by way of any statutory or contractual right to buy or the preserved right to buy/acquire under the Housing Associations Act 1985, the Housing Act 1996 or the Housing and Regeneration Act 2008 or otherwise by way of any statutory or contractual right to buy/acquire to the preserved right to buy/acquire under the Housing Association Act 1985, the Housing Act 1996 or the Housing and Regeneration Act 2008;

    AND

    14.4 in the case of a Social Rented Housing Unit to an individual residential purchaser, tenant or occupant who (unless the Council shall acting reasonably otherwise agree in writing) satisfies the qualifications set out below namely that the person(s):

        i. is an individual or are individuals;

        ii. is considered in their reasonable opinion by the Council or the Registered Provider in accordance with its rules or its allocations and lettings policies to be in need of the accommodation provided by the Social Rented Housing Unit

and in accordance with the deed of nomination referred to in paragraph 13 of this schedule;

iii. is not able easily to compete in the open market for equivalent housing accommodation in the administrative area of the Council;

iv. before taking up occupation of the Social Rented Housing Unit has not owned a freehold or a lease for a term exceeding 3 (three) years within the previous 12 (twelve) months (save that the condition shall not apply where the Council or the Registered Provider is satisfied that the circumstances of that person are such as to put him in need of housing) and intends to occupy and subsequently occupies the Social Rented Housing Unit as his/her only or principal home;

v. is an individual who meets the criteria in the Council's Housing Register and Nominations Policy and has a Local Connection.

15. To take all reasonable and prudent steps to avert the repossession of any Affordable Housing Unit by any chargee, mortgagee or receiver or the exercise by any chargee, mortgagee or receiver under a power of sale and for these purposes, in the event of default under the charge or security or likely default, to co-operate fully with the Council and Homes England to attempt to arrange a transfer of the Affordable Housing Units to another Registered Provider (or at the Council's option) to the Council and in particular, the Owner shall inform the Council immediately in the event of any breach or alleged breach of any of the obligations under the security.

16. To notify the Council immediately in the event of service of any notice order or direction served made or given under s220 or s266 of the Housing and Regeneration Act 2008.

17. The obligations in this Part 3 will not be binding on:

a) any owner or occupier who staircases out by acquiring 100% equity share in an Intermediate Housing Unit; or

b) a tenant or occupier who acquires the freehold or leasehold interest in a Rented Housing Unit pursuant to a statutory right to acquire or right to buy; or

c) a mortgagee or chargee (or any receiver (including an administrative receiver) appointed by such mortgagee or chargee or any other person appointed under any security documentation to enable such mortgagee or chargee to realise its security or any administrator (howsoever appointed) including a housing administrator (each a "Receiver")) of the whole or any part of the Affordable Housing Units or any persons or bodies deriving title through such mortgagee or chargee or Receiver PROVIDED THAT:

i. such mortgagee or chargee or Receiver shall first give written notice to the Council of its intention to dispose of the Affordable Housing Units and shall have used reasonable endeavours over a period of 3 (three) months from the date of the written notice to complete a disposal of the Affordable Housing Units to another registered provider or to the Council for a consideration not less than the amount due and outstanding under the terms of the relevant security documentation including all accrued principal monies, interest and costs and expenses; and

ii. if such disposal has not completed within the 3 (three) month period, the mortgagee, chargee or Receiver shall be entitled to dispose of the Affordable Housing Units free from the obligations in this Part 3 which provisions shall determine absolutely.

Schedule 5

The Offsetting Land Covenants to the Council

The First Owner covenants with the Council (with the intention of binding the Offsetting Land so as to ensure that the Development is delivered and remains Water Neutral) as follows:

1. to retain the Offsetting Measures for a period of at least eighty (80) years and not to remove or replace the Offsetting Measures other than with a replacement fixture or fitting which meets an equivalent or more efficient water standard during such eighty (80) year period;

2. to maintain and keep in good repair at all times the Offsetting Measures installed on the Offsetting Land for the eighty (80) year period specified above;

3. to allow the Council (and its officers or agent) to enter the Offsetting Land between the hours of 0900 and 1700 on a Working Day for the purpose of inspecting and monitoring the Offsetting Measures and ensuring that the measures are retained and maintained and kept in good repair and operation as required provided that the Council (and its officers or agents) shall give the First Owner not less than one (1) Working Days' notice of such intention to inspect and comply fully with the regulations of the Offsetting Land as at the time of access and throughout the duration of such inspection and with health and safety legislation, policy and best practice; and the Council (and its agents) shall at all times be accompanied by the First Owner and or the First Owner's agent;

4. for the avoidance of doubt should the Offsetting Measures result in any additional water saving over and above that required to achieve Water Neutrality (being a minimum water saving of 3,373m3 (three thousand three hundred and seventy three metres cubed per year) per annum as set out in Table 6 of the Water Neutrality Statement) such additional water saving shall belong to the owner(s) of the Offsetting Land for the time being who, for the avoidance of doubt, is at the date of this Agreement the First Owner and nothing in this Agreement shall prevent the owner(s) of the Offsetting Land from utilising such additional water saving or entering into contractual arrangements for its use;

5. to submit evidence at the request of the Council confirming the operation of the Offsetting Measures, such request to be made no more than once per annum.

6. Notwithstanding the obligations set out above in this Schedule 5, in the event that the Council approves in writing that the Offsetting Measures are no longer required to be delivered on the Offsetting Land to achieve Water Neutrality then the obligations in this Schedule 5 shall determine and cease to have legal effect and the Offsetting Land shall no longer be bound by the terms of this deed and in respect of the Offsetting Land any reference to this Agreement shall be removed from the land charges register upon a request by the owner(s) of the Offsetting Land.

Schedule 6

The Owners' Covenants to the County Council

The Owners covenant with the County Council as follows:

1. Travel Plan

1.1 To pay to the County Council the Travel Plan Monitoring Fee prior to Occupation of the Development

1.2 It is hereby acknowledged for the avoidance of doubt and without prejudice to the above that the County Council is authorised to apply the Travel Plan Monitoring Fee for the purposes of monitoring compliance with the Travel Plan.

2. Public Right of Way

2.1 Not to Occupy, cause or allow to be Occupied any of the Dwelling Units until the Owners have submitted an application for the diversion of the public bridleway 1604 in accordance with the Proposed Site Plan (drawing ref:6991 PL-001Q between the points marked A and B ("the New Bridleway"), have submitted the PROW Specification to the County Council for approval in writing and the Owners have obtained All Requisite Consents in relation to the New Bridleway.

2.2 Not to Occupy, cause or allow to be Occupied any of the Dwelling Units until the public bridleway 1604 has been diverted in accordance with the PROW Specification and the Proposed Site Plan (drawing ref:6991 PL-001Q).

2.3 Not to Occupy, cause or allow to be Occupied any of the Dwelling Units until the New Bridleway has been provided in accordance with the PROW Specification and the Proposed Site Plan (drawing ref: 6991 PL-001Q)

2.4 The Owner shall ensure that the current public bridleway 1604 remains accessible to the public at all times during the construction of the New Bridleway unless this cannot be achieved without maintaining public safety, in which case the Owner shall apply to the County Council Public Rights of Way Team for a temporary closure order and shall be entitled to close access to the current public bridleway 1604 as soon as it becomes apparent that this is necessary in the interests of maintaining public safety

2.5 In the event that it is necessary to close the current public bridleway 1604 with a temporary closure order, the Owner should ensure their reasonable endeavours to provide an alternative route for safe public access.

Schedule 7

The Council's Covenants to the Owners

The Council covenants with the Owners as follows:

1. Where the Council's approval is required in relation to any scheme, plan, documentation or other event arising under this Agreement or in connection with the Development it shall not unreasonably withhold or delay such approval and for the avoidance of doubt this shall include the confirmation required under Schedule 4, Part 2 paragraph 4.

2. Upon receipt of the Air Quality Mitigation Contribution to hold it as a separately identifiable balance within the Council's interest bearing accounts.

3. To use the Air Quality Mitigation Contribution for the purpose for which it was paid as set out in this Agreement and not for any other purpose without the prior written consent of the party that paid the Air Quality Mitigation Contribution.

4. Upon receiving a written request on or after 10 (ten) years of the date of receipt of the Air Quality Mitigation Contribution in writing and addressed to the Head of Legal and Democratic Services from the paying party or its successor in title or assignee (as the case may be) to notify the paying party how the Air Quality Mitigation Contribution has been expended by the Council.

5. To repay the Air Quality Mitigation Contribution or any unspent part of it to the paying party or its successor in title or assignee (as the case may be) in the event that it has not been spent by the Council within 10 years from the date of payment of the Air Quality Mitigation Contribution together with the interest which has accrued on it.

6. If at the end of the period referred to in paragraph 4 of this Schedule the Council shall have entered into a contract or other legally binding obligation to expend the Air Quality Mitigation Contribution or part thereof for the purposes specified in paragraph 3 then the Council shall not be required to refund any part of it required for those purposes but shall as soon as possible following the completion of the said contract or other legally binding commitment account to the party that paid the Air Quality Mitigation Contribution or its successor in title or assignee (as the case may be) in the manner set out in paragraph 4 of this Schedule and refund any unexpended part of it in the manner set out in paragraph 5 of this Schedule.

Schedule 8

The County Council's covenants to the Owners

The County Council covenants with the Owners as follows:

1. Where the County Council's approval is required in relation to any scheme, plan, documentation or other event arising under this Agreement or in connection with the Development it shall not unreasonably withhold or delay such approval and for the avoidance of doubt this shall include the approval required under Schedule 6, paragraph 2.1 and the PROW Specification shall not be refused for any reasons which contradict either the content of the Planning Permission or the diversion order granted in respect of public bridleway 1604.

Schedule 9

Proposed Site Plan



CDM 2015 Health & Safety Information

The information relates only to 'Significant Hazards' identified on this drawing and is to be read in conjunction with the Designer's Hazard Register.

Accommodation Schedule

Commercial Units 7no.

Unit C1	1807sqft	Single Storey
Unit C2	1997sqft	1.5 Storeys
Unit C3	1997sqft	1.5 Storeys
Unit C4	1997sqft	1.5 Storeys
Unit C5	1997sqft	1.5 Storeys
Unit C6	1807sqft	Single Storey
Reception Unit	1030sqft	Single Storey

Affordable Dwellings 12no. [37.5%]

6no.	1-Bedroom Flats	Flat Block	1.5 Storeys
2no.	2-Bedroom Flats	Flat Block	1.5 Storeys
4no.	3-Bedroom Houses	Semi-Detached	2 Storeys

Open Market Dwellings 20no. [62.5%]

2no.	2-Bedroom Houses	Semi-Detached	1.5 Storeys
2no.	3-Bedroom Houses	Semi-Detached	1.5 Storeys
1no.	3-Bedroom Houses	Semi-Detached	2 Storeys
5no.	3-Bedroom Houses	Semi-Detached	2 Storeys
1no.	3-Bedroom Houses	Semi-Detached	2 Storeys
2no.	4-Bedroom House	Detached	2 Storeys
1no.	4-Bedroom House	Semi-Detached	2 Storeys
1no.	4-Bedroom House	Detached	1.5 Storeys
1no.	4-Bedroom Houses	Detached	2 Storeys
1no.	4-Bedroom Houses	Detached	1.5 Storeys
1no.	4-Bedroom Houses	Detached	2 Storeys
2no.	4-Bedroom House	Detached	1.5 Storeys

Total: 32 Dwellings

Car Parking:

Commercial units
- 90 parking spaces
- Incl. spaces in front of loading doors
- 5 disabled access spaces
- **95 Total Spaces**

Residential
- 1-2 spaces per 1 and 2-Bedroom Flat
- 2 spaces per 2-Bedroom House
- 2-3 spaces per 3-Bedroom House [incl. car barns / garages]
- **3 spaces per 4-Bedroom House [incl. garages]**
- 7 unallocated spaces for residents
- 1 communal ev charging space to the flat block
- 12 visitor spaces at 0.3 spaces per dwelling

[redacted]

Rev	Date	Revision Details		
		Parking nos updated	GP	LT
		Access	GP	LT
		Planning Consultant comments	GP	LT
		Planning Consultant comments	GP	LT
		Accommodation tree retention	GP	LT
		Ref	GP	LT
		Updated to Mesh Comments	GP	LT
		Building Issue	AK	LT
F	07.10.21	Site Layout Adjusted	LT	GP
E	18.08.21	Site Layout Adjusted	LT	AK
	16.06.21	Updated per Village cartilage added	LT	
D	25.04.21	Updated to match comments	GP	LT
C	26.04.21	Red line amended	GP	LT
B	19.04.21	Commercial unit adjusted	LT	AK
A	07.04.21	Red line amended	GP	LT

[redacted]

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Bristol Westerleigh, Colston Tower Colston Street, Bristol, BS1 4XE T 0117 214 1101 E bristol@eceprojectarchitects.com
ECE Architecture www.eceprojectarchitects.com

[redacted]ments Holdings Ltd
[redacted]mily

[redacted]nds, Chapel Road,
[redacted], Horsham

[redacted]posed Site Plan
Residential and Commercial Scheme

Scale
1:500 @ A1 / 1:1000 @ A3

Metres 10 20 30 40 50

Drawn	Checked	Date
AK	PF	25.03.2021

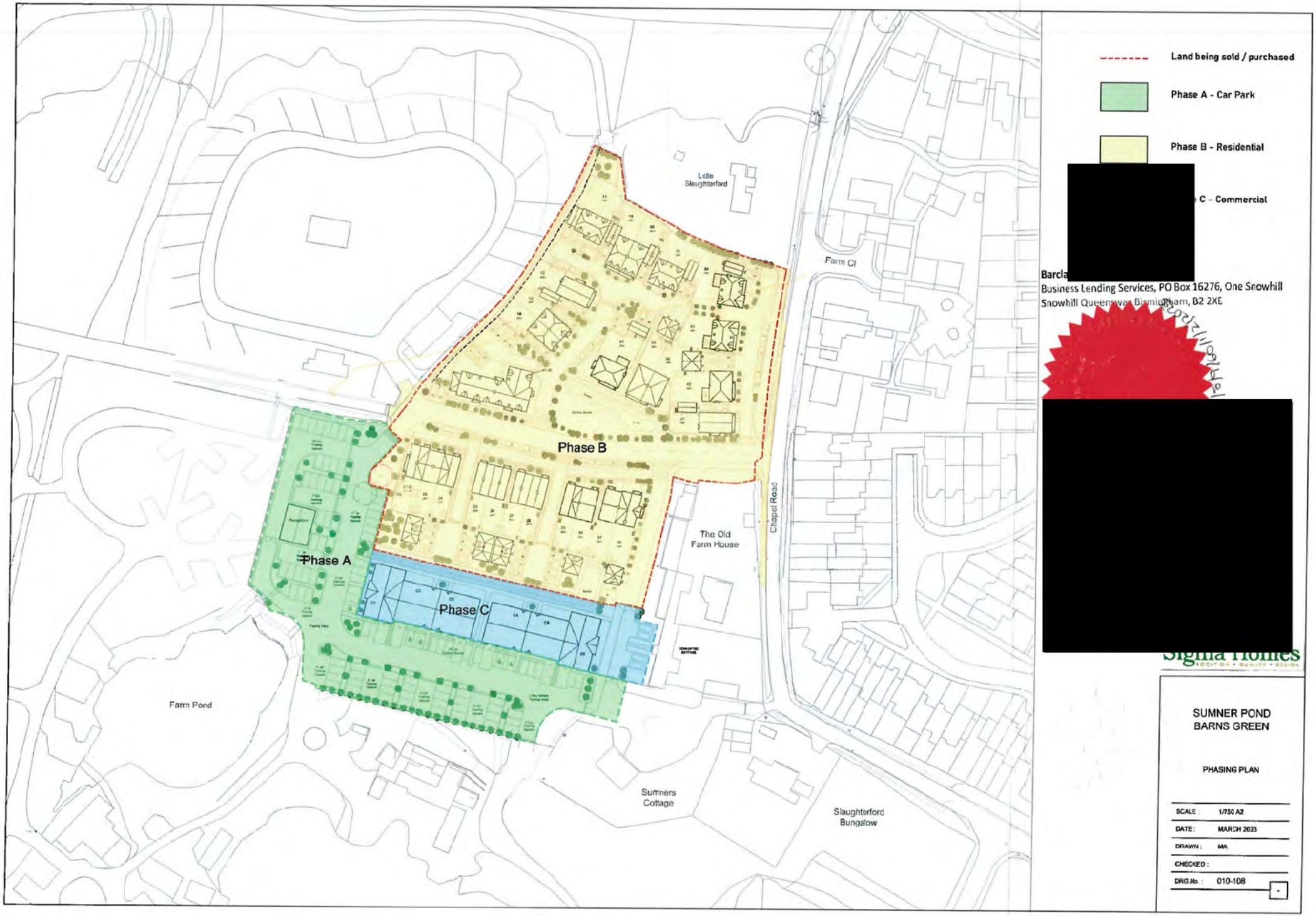
Job No.	Drawing No.	Rev
6991	001	Q

Status
APPROVAL

© ECE Architecture Limited. No dimensions to be scaled from drawing except for the purposes of Planning Applications. The contractor should check all dimensions on site. It is the contractors responsibility to ensure compliance with Building Regulations.

Schedule 10

Phasing Plan


Land being sold / purchased
Phase A - Car Park
Phase B - Residential
[redacted] C - Commercial
Barcla
Business Lending Services, PO Box 16276, One Snowhill
Snowhill Queensway Birmingham, B2 2XE
[redacted]
Little Slaughterford
Farm Cl
Phase B
Phase A
Phase C
Chapel Road
The Old Farm House
Farm Pond
Sumners Cottage
Slaughterford Bungalow
SUMNER POND
BARNS GREEN
PHASING PLAN
SCALE : 1/750 A2
DATE : MARCH 2023
DRAWN : MA
CHECKED :
DRG.No : 010-108

Appendix 1

Deed of Nomination

DATED **202X**

[REGISTERED PROVIDER]

and

HORSHAM DISTRICT COUNCIL

DEED OF NOMINATION

for

[ ] Affordable Rented Units

at

[ ] West Sussex

Authority: Signed and Dated S106 [ ]

Lauren Kelly
Interim Head of Legal and Democratic Services
Horsham Council
Parkside
Chart Way
Horsham
West Sussex
RH12 1RL

Ref:

THIS DEED OF NOMINATION RIGHTS is made the day of 202X

BETWEEN:

(1) ("the Registered Provider"); and

(2) **HORSHAM DISTRICT COUNCIL** of Parkside, Chart Way, Horsham West Sussex RH12 1RL ("the Council")

1. Definitions

In this Deed the following expressions shall have the following meanings:

1.1 **"Affordable Housing"** means subsidised housing comprising Rented Units and shared ownership units (or such other forms of intermediate tenure as are defined as affordable housing under the National Planning Policy Framework as that definition may be amended from time to time) provided to eligible households whose needs are not met by the market and which should meet the needs of eligible households, including availability at a cost low enough for them to afford, determined with regard to local incomes and local house prices and shall include provision for the home to remain at an affordable price for future eligible households or if these restrictions are lifted for the subsidy to be recycled for alternative affordable housing provision;

1.2 **"Exempted Void"** means a Void which has occurred as a result of the Council transferring the previous tenant to more suitable accommodation to meet that tenant's needs;

1.3 **"Homes England"** means Homes England, an executive non-departmental public body, sponsored by the Department for Levelling Up, Housing and Communities or any bodies undertaking the existing functions of Homes England within the meaning of Part 1 of the Housing and Regeneration Act 2008 (or redefined by any amendment replacement or re-enactment of such Act;

1.4 **"Housing Register and Nominations Policy"** means the Council's Housing Register and Nominations Policy:

https://www.horsham.gov.uk/__data/assets/pdf_file/0005/58586/Nominations-Policy-August-2021.pdf

or other document which may replace it;

1.5 **"Initial Let"** means the first tenancy or lease of a newly constructed and previously unoccupied Rented Unit;

1.6 **"Insufficient Persons"** means that in the reasonable opinion of the Council there are fewer Nominees with a Local Connection to the parish of X, than the total number of Rented Units available for occupation in accordance with the written notice served by the Registered Provider in accordance with Clause 4.1 or 4.10;

1.7 **"Local Connection"** means in relation to an individual, that such individual:

1.7.1 immediately before taking up occupation of a Rented Unit had his only or principal home in the parish of [XXX] for a continuous period of not less than two years; or

1.7.2 a member of his household has a parent, child, adult child, brother or sister whose only or principal home is and has been for a continuous period of not less than two years in the parish of [XXX] and he wishes to be near that relative; or

1.7.3 is and has been permanently employed in the parish of [XXX] for a continuous period of not less than two years

provided that where no person or Insufficient Persons can be identified as having a connection with the parish of XXX as outlined above then the District of Horsham shall be substituted for the parish of [XXX.];

1.8 **"Nominee"** means a person who may be nominated by the Council to the Rented Units and who is in need of Affordable Housing, who is not easily able to compete in the local housing market and who meets the following criteria:

1.8.1 is an individual or are individuals;

1.8.2 is considered in their reasonable opinion by the Council or the Registered Provider in accordance with its rules or its allocations and lettings policies to be in need of the accommodation provided by the Rented Unit;

1.8.3 is not able easily to compete in the open market for equivalent housing accommodation in the administrative area of the Council;

1.8.4 before taking up occupation of the Rented Unit has not owned a freehold or a lease for a term exceeding 3 years within the previous 12 months (save that the condition shall not apply where the Council or the Registered Provider is satisfied that the circumstances of that person are such as to put him in need of housing) and intends to occupy and subsequently occupies the Rented Unit as his/her only or principal home;

1.8.5 is an individual who meets the criteria of the Council's Housing Register and Nominations Policy;

1.8.6 has a Local Connection.

and **"Nominee"** and **"Nominees"** shall be construed accordingly;

1.9 **"Registered Provider"** has the same definition as set out in the Housing & Regeneration Act 2008;

1.10 **"Rented Units"** means housing made available by a Registered Provider as low-cost rented accommodation (as defined by the Housing and Regeneration Act 2008 section 69) with a rent charged at a level up to 80% of the equivalent market rent inclusive of any service charges applicable, as detailed in Schedule [xxx] of the S106 Agreement and Schedule 1 of this Deed and which have been constructed or are to be constructed upon the Site and each of which is to be offered under a Tenancy Agreement;

1.11 **"S106 Agreement"** means the agreement relating to the Site and dated [ ] and made between (1) [ ] and (2) [ ] and any subsequent supplemental agreements varying it thereafter;

1.12 **"Site"** means the land upon which the Rented Units are constructed [address of property] shown edged red on the attached plan;

1.13 **"Tenancy Agreement"** means an assured tenancy agreement in a form prepared by the Registered Provider and containing terms which accord with the form of tenancy agreement being used by the Registered Provider from time to time for its general lettings or such other form of tenancy as the Registered Provider specifies (acting reasonably);

1.14 **"Vacancy Notice"** means a written notice given by the Registered Provider to the Council (in a form to be agreed between the Registered Provider and the Council within 5 (five) weeks from the date of this Deed) the function of such notice being the notification to the Council by the Registered Provider that the construction and fitting out of the Rented Unit is completed;

1.15 **"Void"** means a Rented Unit which is vacant as a result of the tenant vacating the Rented Unit;

1.16 **"Void Notice"** means a written notice given by the Registered Provider to the Council (in a form to be agreed between the Registered Provider and the Council within 8 (eight) weeks from the date of this Deed) the function of such a notice being the notification to the Council that a Void is now available for re-letting;

1.17 **"Void Notification"** means the notification to the Council by the Registered Provider that a Rented Unit is to become a Void with such notification to include the anticipated period that the Rented Unit will remain as a Void; and

1.18 **"Working Day"** means any day which is not a Saturday, a Sunday, a bank holiday or a public holiday in England.

2. Interpretation

2.1 Clause headings shall not affect the interpretation of this Deed.

2.2 A person includes a natural person, corporate or unincorporated body (whether or not having separate legal personality).

2.3 A reference to a company shall include any company, corporation or other body corporate, wherever and however incorporated or established.

2.4 Unless the context otherwise requires, words in the singular shall include the plural and the plural shall include the singular.

2.5 Unless the context otherwise requires, a reference to one gender shall include a reference to the other genders.

2.6 A reference to any party shall include that party's personal representatives, successors and permitted assigns and in the case of the Council the successors to its respective statutory functions.

2.7 Unless the context otherwise requires, a reference to a statute or statutory provision is a reference to it as amended, extended or re-enacted from time to time.

2.8 Unless the context otherwise requires, a reference to a statute or statutory provision shall include any subordinate legislation made from time to time under that statute or statutory provision.

2.9 A reference to writing or written excludes faxes and e-mail.

2.10 A reference to this Deed or to any other deed or document referred to in this Deed is a reference to this Deed or such other deed or document as varied or novated from time to time.

2.11 References to clauses are to the clauses of this Deed.

2.12 Any words following the terms including, include, in particular, for example or any similar expression shall be construed as illustrative and shall not limit the sense of the words, description, definition, phrase or term preceding those terms.

3. Enabling Provisions

This Agreement is made pursuant to s111 of the Local Government Act 1972, s33 of the Local Government (Miscellaneous Provisions) Act 1982 and all other enabling powers.

4. Procedure for Rented Units

The parties agree that the following nomination procedure shall apply to the nomination of persons in respect of the Rented Units:

Initial Lets

4.1 The Registered Provider shall give the Council not less than 10 (ten) weeks' written notice of the date when the Initial Lets will be ready for occupation.

4.2 The Registered Provider shall serve on the Council a Vacancy Notice not less than 2 (two) weeks' notice in respect of the Rented Unit prior to such newly constructed and previously unoccupied Rented Unit becoming available for occupation.

4.3 The Council shall within 10 (ten) Working Days of receipt of a Vacancy Notice or written notice served in accordance with clauses 4.14.1, 4.14.2 or 4.14.3 as appropriate, serve upon the Registered Provider details of a Nominee.

4.4 Details of a Nominee served by the Council shall:

4.4.1 specify the type of Rented Unit which the Nominee requires and sufficient details of the Nominee's requirements and circumstances to justify their nomination to the particular Rented Unit or type of Rented Unit; and

4.4.2 include any other details that the Registered Provider may reasonably require from time to time.

4.5 The Registered Provider shall have the right to let/grant the Initial Let in respect of the Rented Units to persons of its own choosing (subject to provisions within the S106 Agreement) in the event of the Council's failure to serve details of the Nominees within the period of 10 (ten) Working Days of receipt of the Vacancy Notice or written notice served in accordance clause 4.14.1 - 4.14.3 subject to the provisions of Clause 4.16.

4.6 Within 10 (ten) Working Days of the receipt of the details of a Nominee, the Registered Provider shall, use its reasonable endeavours to arrange viewing of the Rented Unit and offer a Tenancy Agreement to the Nominee.

4.7 If the Nominee fails to enter into a Tenancy Agreement within 10 (ten) Working Days of receipt of the Registered Provider's offer of a Tenancy Agreement that Nominee shall be deemed to have rejected the Registered Provider's offer. Upon receipt of written notice served in accordance with clause 4.14.1, 4.14.2 or 4.14.3, the Council shall serve details of a further Nominee upon the Registered Provider and the parties will follow the procedure set out in Clause 4.3 to 4.6 for a second time, but for the purposes of this Clause 4.7 the 10 (ten) Working Day period referred to in those Clauses 4.3 to 4.6 shall be reduced to 5 (five) Working Days.

4.8 If the Registered Provider's offer of a Tenancy Agreement on the second occasion is deemed to have been rejected the procedure set out in Clauses 4.3 to 4.6 shall be repeated for a third time but for the purposes of this Clause 4.8 the 10 (ten) Working Day period referred to in Clauses 4.3 to 4.6 shall be reduced to 5 (five) Working Days.

4.9 In the event a third Nominee fails to accept the Registered Provider's offer of a Tenancy Agreement within the time prescribed by clause 4.8 then the Registered Provider shall have the right to let the Initial Let in respect of the Rented Unit to persons of its own choosing (subject to the provisions within the S106 Agreement) or in the event of the Council's failure to serve details of the Nominees within the period of 10 (ten) Working Days of receipt of the Vacancy Notice (subject to the provisions of Clause 4.16).

Voids

4.10 Should a Rented Unit become a Void after the Initial Let or the Registered Provider has reasonable cause to believe it will become a Void then and in each case:

4.10.1 the Registered Provider shall serve a Void Notification in respect of the relevant vacant Rented Unit within 5 (five) Working Days of the Rented Unit becoming a Void;

4.10.2 the Registered Provider shall serve a Void Notice in respect of the relevant vacant Rented Unit upon the Council as soon as the Rented Unit is available for re-letting; and

4.10.3 within 10 (ten) Working Days of receipt of the said notice the Council shall serve upon the Registered Provider details of a Nominee.

4.11 The Registered Provider shall have the right to let the relevant vacant Rented Unit to a person of its own choosing (subject to the provisions within the S106 Agreement) in the event of the Council's failure to serve details of a Nominee referred to in Clause 4.10 within 10 (ten) Working Days of receipt of the Void Notice (subject to the provisions of Clause 4.16).

4.12 Upon receipt of the details of a Nominee referred to in Clause 4.10 the Registered Provider shall follow the procedure set out in Clauses 4.6 to 4.9 SAVE THAT where the Void is an Exempted Void and on each and every occasion that 75% of the Voids (which for the avoidance of doubt means 75% of the total number of Rented Units) have been let, the Registered Provider shall not be required to follow the procedure set down in Clauses 4.10 -4.12 and the Registered Provider shall then be entitled to let the remaining 25% of the Voids (which for the avoidance of doubt means 25% of the total number of Rented Units) to a person of its own choosing (subject to the provisions within the S106 Agreement).

4.13 Where the Void is an Exempted Void the Registered Provider shall follow the procedure set out in Clauses 4.6 to 4.9 in the event that fewer than 75% of the total number of Rented Units have been let.

Provision of information

4.14 The Registered Provider shall give written notice to the Council of the occurrence of the following events within 5 (five) Working Days of their occurrence:

4.14.1 a Nominee failing to view a Unit within 10 (ten) or 5 (five) (as appropriate) Working Days of an offer being made;

4.14.2 a Nominee failing to accept the offer of a Tenancy Agreement within the time limit prescribed by this Agreement;

4.14.3 the Registered Provider rejecting a Nominee in accordance with Clause 4.17 such written notice to explain the reasons for rejecting the Nominee;

4.14.4 a Nominee accepting an offer of a Tenancy Agreement from the Registered Provider.

4.15 Within 10 (ten) Working Days of the Council receiving notice served in accordance with Clause 4.14 above save for notice under 4.14.4 the Council shall serve upon the Registered Provider the names and addresses of a Nominee to include the information set out in Clause 4.4.

4.16 If the Council shall, within the period mentioned in Clause 4.15 notify the Registered Provider that the Council then has no suitable Nominee, the Council shall advise the Registered Provider of a Nominee as soon as reasonably practicable but this period shall not be any longer than a total of 20 (twenty) Working Days from the date the Council received the notice served in accordance with Clause 4.14.

4.17 The Registered Provider shall have the right to interview and make enquiries of each Nominee and to reject any Nominee if in the opinion of the Registered Provider the grant of a Tenancy Agreement to such Nominee would be in contravention of the Registered Provider's registered rules or its letting criteria and if a Registered Provider rejects a Nominee in accordance with this clause, the Registered Provider must serve written notice upon the Council in accordance with Clause 4.14.3.

4.18 Where the Registered Provider intends to reject a Nominee in accordance with clause 4.17 and it serves notice of this upon the Council in accordance with Clause 4.14.3, the Council shall:

4.18.1 within 5 (five) Working Days of receipt of the said notice be entitled to send the Registered Provider written representations setting out the reason(s) why the Nominee does meet the Registered Provider's registered rules or its lettings criteria; and

4.18.2 within 5 (five) Wording Days of receipt of the Council's written representations, the Registered Provider shall consider the written representations and will notify the Council in writing that the Nominee has been accepted or that they have not and the reasons for their decision.

4.19 When calculating percentage for the purposes of this Deed percentage in excess of 0.5 shall be rounded up and percentages equal to or less than 0.5 shall be rounded down.

4.20 The Council and the Registered Provider agree that the nomination rights contained in this Deed may be varied from time to time but only by agreement in writing by the parties.

5. Notices

5.1 Any notice to be given under this Deed must be in writing and must be:

5.1.1 delivered by hand; or

5.1.2 sent by pre-paid first class post or other next working day delivery service.

5.2 Any notice to be given under this Deed must be sent to the relevant party at the address indicated above or such other address notified by one party to the other and addressed, in the case of the Council to Head of Housing & Community Services and, in the case of the Registered Provider [xxx].

5.3 Any notice given in accordance with clause 5 will be deemed to have been received:

5.3.1 if delivered by hand, on signature of a delivery receipt or at the time the notice or document is left at the address provided that if delivery occurs before 9.00 am on a Working Day, the notice will be deemed to have been received at 9.00 am on that day, and if delivery occurs after 5.00 pm on a Working Day, or on a day which is not a Working Day, the notice will be deemed to have been received at 9.00 am on the next Working Day; or

5.3.2 if sent by pre-paid first class post or other next working day delivery service, at 9.00 am on the second Working Day after posting.

6. Transfers to other Registered Providers

The Registered Provider shall ensure that any Registered Provider to which the Site and Affordable Housing erected thereon are transferred otherwise than by direction of the Homes England under its statutory powers shall enter into a similar agreement with the Council.

7. Disputes

Where any matters fail to be agreed between the parties or any dispute or difference occurs the question shall be referred on the application of either party for the determination of a single expert to be agreed between the parties or in default of agreement to be nominated by the President for the time being of the Chartered Institute of Housing.

8. Costs

The Registered Provider agrees with the Council to pay the reasonable and proper legal costs of £ [ ] which the Council incurs in preparing and entering into this Deed.

9. Agreements and Declarations

The parties agree:

9.1 nothing in this Deed fetters or restricts the exercise by the Council of any of its powers;

9.2 the obligations contained in this Deed are covenants for the purpose of s33 of the Local Government (Miscellaneous Provisions) Act 1982.

10. Discrepancies and Priority

Where there is any discrepancy between this Deed and the s106 Agreement the S106 Agreement shall take priority.

11. Exclusion Clause

The provisions of this Deed shall not be binding nor enforceable against any of the following:

11.1 Any person who shall exercise a statutory right to buy (including the preserved right to buy) or right to acquire any Rented Unit and their successor in title or chargee;

11.2 Any mortgagee or chargee (or any receiver (including an administrative receiver) appointed by such mortgagee or chargee or any other person appointed under any security documentation to enable such mortgagee or chargee to realise its security or any administrator (howsoever appointed) including a housing administrator of a Registered Provider provided that such party so appointed shall have first complied with the procedure in clause [xx] Schedule [xx] of the S106 Agreement.; and

11.3 Any and all successors in title from the persons specified in clauses 11.1 – 11.2 above.

Execution clause for the

Registered Provider

The common seal of

HORSHAM DISTRICT COUNCIL

was affixed in the presence of:

Authorised signatory

Schedule 1

The Plan

Schedule 2

Rented Unit Details

[Details to depend upon the scheme but will typically include address/plot number, type of property (flat/house), no. bedrooms, no. persons property will accommodate, type of tenure (usually affordable rent), location (ground, first floor etc), any other relevant details such as accessibility details, wet rooms etc]

APPENDIX J – CORRESPONDENCE ADDRESSING QUERIES RAISED BY KEVIN BEER IN RELATION TO APPLICATION DC/24/1581

Stephen Buss Environmental Consulting

Kevin Beer 6 June 2025

Horsham District Council

Albery House

Springfield Road

Horsham RH12 2GB

Re: DC/24/1581 | Water Credits at Sumners Pond

Dear Kevin

I am writing on behalf of the Nicholls Licensing & Consulting regarding the planning application above. We received your comments on the potential contamination risk at Sumners Ponds, dated 7 May 2025, and subsequently on 5 June 2025, and I wish to discuss the risk. In May you noted:

5. *Ground investigations to satisfy planning conditions associated with the re-development of part of the Sumners Ponds site have found elevated levels of contamination. We note the comment in section 5.3 of the above report, it is however not clear if all the ground investigations associated with the redevelopment of the site have been taken into account. In our view parts of the Sumners Pond site subject to redevelopment, in particular the commercial development where contamination is more likely, have not yet been subject to sufficient site investigation works – this needs to be taken into account with a full review of all available information. This review should also take into account the underlying geology, likely groundwater flow etc.*

In June you further noted:

1. *The comments in the report are welcomed, a number of assumptions in the report are however based on site investigation works that have been undertaken to date. I think its important to stress that large parts, if not all, of the commercial area of the Sumners Ponds site, which in our view are the most likely to be contaminated, have been subject to very limited site investigation works, the extend of any contaminated soils on the commercial side of the site has therefore not been established. This therefore needs to be taken into account as part of this assessment.*

I understand that you refer to the mixed commercial/residential development with planning reference DC/21/2697: Land at Sumners Ponds etc. Figure 1 shows the proximity of the commercial and residential development areas to the borehole. For comparison, and as you know, a borehole source protection zone 1 default radius is 50 m and a SPZ 2 has a default radius of 250 m.

I have updated the following text to take into consideration your comments from June. The only substantive new text is under the new heading 'CONCLUSIONS'.

BACKGROUND

Former uses of the commercial and residential development areas include a mixture of agricultural (barns) and commercial (vehicle storage, repair and sales), with some above-ground storage tanks, car parking, deposit of dredgings from the ponds, and a visitors centre.

Ground investigation information has been provided by the developer in three tranches, under planning applications DISC/24/0216 (on 23 Aug 2024, for land south of the PROW), DISC/23/0218 (on 9 Oct 2024, for land north of the PROW), and DISC/24/0293 (on 25 Nov 2024, for phase B). Ground investigation is not available for the commercial units to the west of the site (reference DC/09/0169) but again these are former agricultural barns and not industrial.

Across all the investigations trial pits encountered made ground that was mostly less than 0.5 m thick [2, 3]. It was deeper beneath trackways, roads and car parks: in some locations north of the PROW made ground reached 1.53 m depth [2]. Natural ground comprised clay.

Made ground and natural material from trial pits was tested for contamination and concentrations were compared against GACs for the protection of human health. For land north of the PROW [2] there were elevated concentrations of lead (1/19 samples) and benzo(a)pyrene (2/19 samples) in made ground and no exceedances (from 7 samples) in natural ground. For land south of the PROW there were elevated concentrations only of benzo(a)pyrene (2/11 samples in made ground and 1/10 samples in natural ground) [3].

Regarding other potential contaminants, there were no detections of pesticides or PCBs; there were no concentrations of metals higher than GACs (except one sample with lead); concentrations of hydrocarbons were detected but at much lower concentrations than would be expected in the presence of free product; and concentrations of PAHs not significantly higher than the concentration of benzo(a)pyrene.

Two boreholes (WS2 and WS5) were completed to 2.4 m and 5.0 m respectively with standpipes, and groundwater levels were monitored over December 2022 to March 2023 [1]. WS2, in the north of the site, measured groundwater levels between 1.66 and 1.90 m depth. WS5, in the south of the site, measured groundwater levels between 0.45 and 0.60 m depth. Groundwater quality was not sampled.

As part of Nicholls' borehole investigation [4] we identified that bedrock comprised clay with bands of mudstone to 35 m depth, then 5.0 m of Horsham Stone, and a further 14 m of clay with stone bands (to the maximum depth 54 m). The borehole is cased to 10.4 m depth.

INTERPRETATION

Based on the history of the commercial and residential development areas there have been no particularly risky land uses. See, for example, the GroundSure report.

Where the commercial and residential development areas have been investigated a layer of made ground is ubiquitous, but it is rarely deeper than 0.5 m. Within the made ground and the natural (clayey) ground below there is limited spotty contamination of benzo(a)pyrene and lead, which exceeds GACs that are protective of human health, across the development site. There is no indication of the presence of free-phase hydrocarbons on site.

I acknowledge that GACs that are protective of human health are not necessarily protective of controlled waters. But my point above is that there is clearly not gross contamination of the site.

The borehole is more than 250 m away from most of the development site. The ground is dominantly clayey, with mudstone bands, down to about 35 m depth. The contaminants that have been detected: PAH, lead and long-chain TPH molecules, are significantly retarded in Weald Clay. It is highly unlikely that any of these substances have reached more than a metre into the natural ground.

There are several locations where this point can be illustrated. I have chosen the following examples where trial pits were sampled at several depths including in natural ground, and where near-surface concentrations were elevated:

- In TP308 [2] lead concentrations decrease from 334 mg/kg at 0.6 m, to 104 mg/kg at 1.0 m to 37 mg/kg in natural ground at 1.5 m. (Comparison with the other trail pits suggests that 37 mg/kg would be within the range of background concentrations.) Similarly, in TP201 [3] lead goes from 55.6 mg/kg in made ground at 0.3 m to 27.6 mg/kg at 0.7 m in natural ground. And in TP208 [3] lead goes from 79.1 mg/kg in made ground at 0.05 m to 20.8 mg/kg at 0.3 m in natural ground.
- In TP309 [2] benzo(a)pyrene concentration decreases from 3.23 at 0.2 m in made ground to 0.02 mg/kg at 0.6 m in made ground. In TP205 [3] benzo(a)pyrene decreases in made ground from 26.9 at 0.2 m, to 5.42 mg/kg at 0.3 m; then to <0.02 mg/kg at 0.7 m in natural ground. In TP209 [3] benzo(a)pyrene decreases from 3.59 mg/kg at 0.4 m in made ground to <0.02 mg/kg at 0.9 m in made ground.

  The exception is in TP210 [3] where there is a drop in benzo(a)pyrene concentration from 8.59 mg/kg to 1.55 mg/kg between 0.05 m to 0.40 m in the made ground, but a slight jump to 2.01 mg/kg at 0.45 m in natural ground. This one example, with made ground and natural ground samples taken from very close together, does not disprove the general trend.
- Finally, in TP205 [3] samples were taken from 0.2 m in made ground and several TPH fractions were detected, which summed to 520 mg/kg. But there were no detectable fractions at 0.3 m in natural ground.

CONCLUSIONS

I will discuss the site vulnerability in terms of the source-pathway-receptor paradigm:

Source: I understand that not all of the commercial and residential development areas have yet been investigated fully but no gross contamination has been picked up in preliminary investigations. Furthermore, none of the historical land uses were likely to lead to gross contamination: they were mostly normal agricultural and commercial activities (i.e. no heavy industry, no filling stations, etc.). So, whilst the non-investigated area might be more contaminated, it is reasonable to expect that there is not substantial pollution.

Pathway: The borehole log and the trail pits show that the ground is dominantly clay down to about 35 m depth. Moderate concentrations of lead and PAHs have been held up within the top metre of natural ground, and so I would not expect even high concentrations of other low-mobility substances to have penetrated far into/through the clayey natural ground.

In the hydrogeological impact assessment for the groundwater license application, I originally presumed that the average recharge rate was 332 mm/year, but in reality this is too high for clayey bedrock. If I assume that the recharge rate is one quarter that, or 83 mm/year, and that the porosity is 0.28 [4], any potentially contaminated infiltration moves through the underlying clayey bedrock at a rate of 0.29 m/year; so travel time of a conservative contaminant across the 35 m of clayey bedrock is c. 120 years. Any contaminant other than, say, chloride will move much slower than that rate due to retardation. Almost all organic and inorganic contaminants will likely move more than 10 times slower than this. Hence any contaminant released from the site, even if it present, will not reach the borehole within the lifetime of the site.

The development site is downhill from the borehole, so there are no feasible near-surface gravity-driven pathways to link a source with and the receptor. Furthermore, the borehole was

cased to 10.4 m and backfilled near the surface with bentonite pellets, removing any risk of near-surface contamination reaching the borehole.

Receptor: the borehole itself draws groundwater from the formations at depth, probably mainly the Horsham Stone Member, between 35 and 40 m depth. Sampling of the borehole showed no elevated levels of substances that would not be expected (elevated concentrations of ammonium, iron and manganese are commonly found in pristine confined aquifers) and there were no detections of organic contaminant substances.

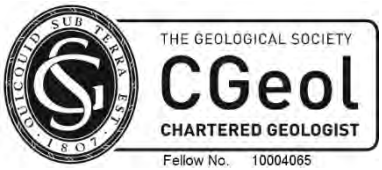
In the hydrogeological impact assessment for the groundwater license application, I explored the borehole catchment area. If I assume again that the recharge rate is 83 mm/year, the catchment area is 131 900 m^2, or a circle with radius 205 m. With reference to Figure 1 the development is not within this circle. Whilst, in reality, the catchment may or may not include part of the development area, we can be sure that the development area will comprise a small part of the catchment. If any contamination does manage to reach the borehole there will be considerable dilution in the borehole by recharge from the surrounding uncontaminated catchment.

SUMMARY

Irrespective of what is found in future site investigations, I still have no concerns about groundwater quality at the borehole due to risks from the development site. The development does not have a historical land use suggestive of gross contamination; the vertical part of the pathway to groundwater comprises a thick clayey layer across which travel time of retarded contaminants is long; the horizontal pathway comprises a significant distance in a poor aquifer; and the potentially contaminated development site comprises only a small part of the borehole's catchment.

Yours sincerely





Dr Stephen Buss MA MSc FGS CGeol

Owner / Principal Hydrogeologist

ABBREVIATIONS

GAC	generic assessment criteria
PAH	polycyclic aromatic hydrocarbons
PROW	public right of way
TPH	total petroleum hydrocarbons

REFERENCES

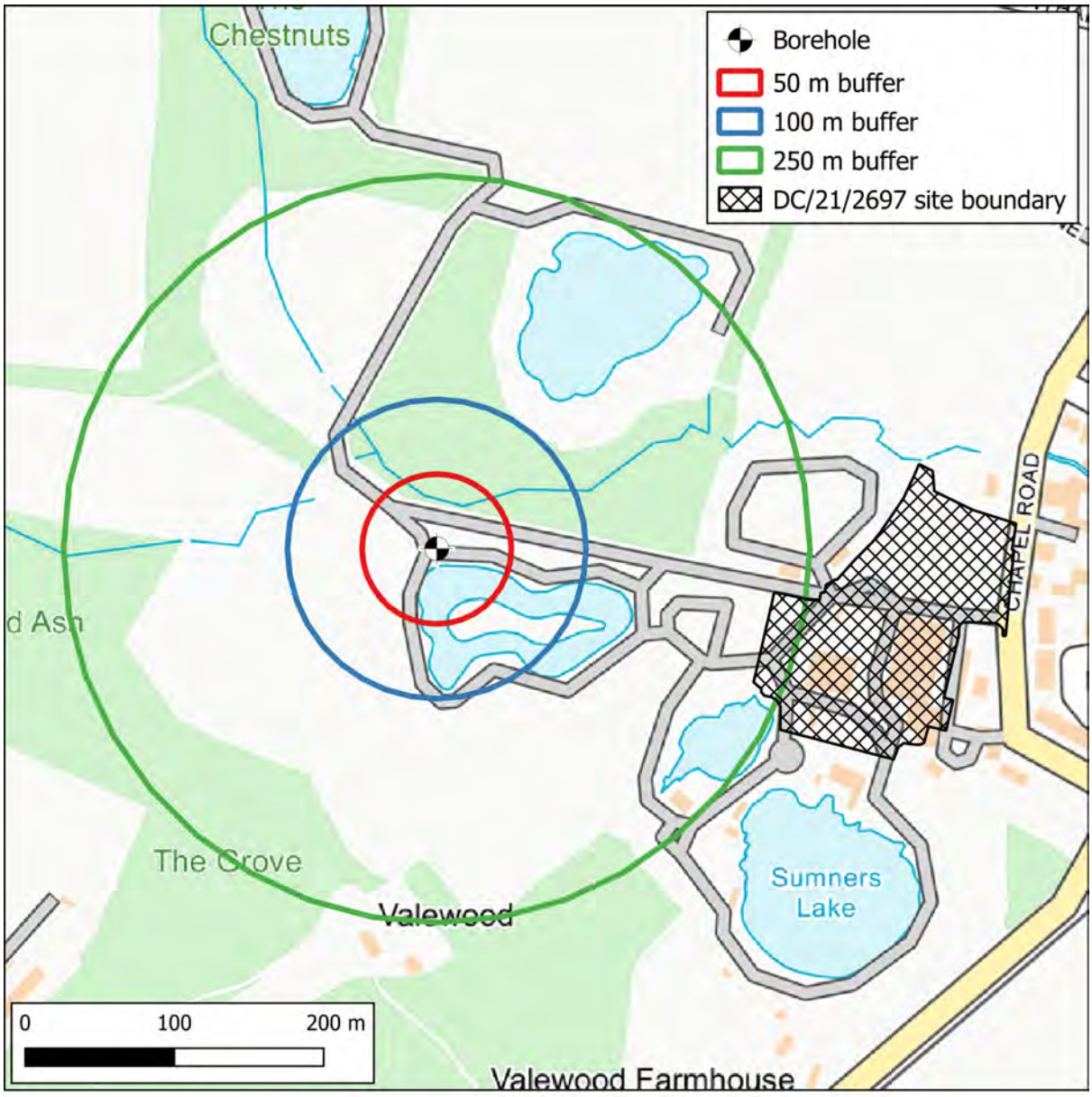
[1] LEAP Environmental, 2023. Phase III Investigation Report, 29 September 2023

[2] LEAP Environmental, 2024a. Addendum site investigation - Northern Area, 7 June 2024

[3] LEAP Environmental, 2024b. Addendum site investigation - Southern Area, 15 August 2024

[4] Stephen Buss Environmental Consulting, 2023. Hydrogeological impact assessment, 21 December 2023.

[5] Forster, A., Hobbs, P.R.N., Cripps, A.C., Entwisle, D.C., Fenwick, S.M.M., Raines, R., Hallam, J.R., Jones, L.D., Self, S.J., and Meakin J.L., 1994. Engineering geology of British rocks and soils: Gault Clay. British Geological Survey Technical Report WN/94/31.



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Figure 1: Borehole location and development site

Reference: Sumners Pond – Reverse Osmosis Performance Report

6th June 2025

Author: George Parker, Nicholls Boreholes – Project Manager



Co-Author: Neil Grant MRSC CChem (Charted Chemist), Kennet Water – General Manager



Introduction

This report has been provided to show the performance of a Hydranautics reverse osmosis membrane in the specific context of the groundwater analysed from Sumners Pond (ref BH1494). Hydranautics are a well respected and leading manufacturer of RO membrane and are the membrane of choice in this design stage of the filtration concept design for this site, provided in Appendix 1 by Nicholls Boreholes. The results provided are calculated using IMSDesign software which is the official modelling software from Hydranautics.

Hypothesis for Reverse Osmosis

The chemistry of the water is such that requires reverse osmosis in order to provide a potable water supply. Pre-filtration will reduce the contaminants Iron and Manganese before the reverse osmosis will remove the ammonium (NH4) and a high proportion of other contaminants not above the UK drinking water limit. A number of parameters which will affect the performance of reverse osmosis membranes are considered in the Table 1 of Appendix 2, in order to improve the accuracy of the calculation.

Chloride and Sulphate sample analysis were not provided by a UKAS test at the time of this report. A non-UKAS test provided by BAHS showed levels of chloride (Cl) and sulphate (SO4) to be below the UK drinking limit at 77.3 mg/l (limit 250) and 140mg/l (limit 250). For the purposes of the calculation a factor of safety of 100% has been applied to these results, over-compensating for any discrepancies that may exist between UKAS and non-UKAS analysis.

The results expect to show a significant reduction in contaminants, bringing their concentrations to below the UK drinking water limits.

Conclusion

The results of RO based on the mathematical calculations from the IMSDesign software are shown in Table 2 of Appendix 2

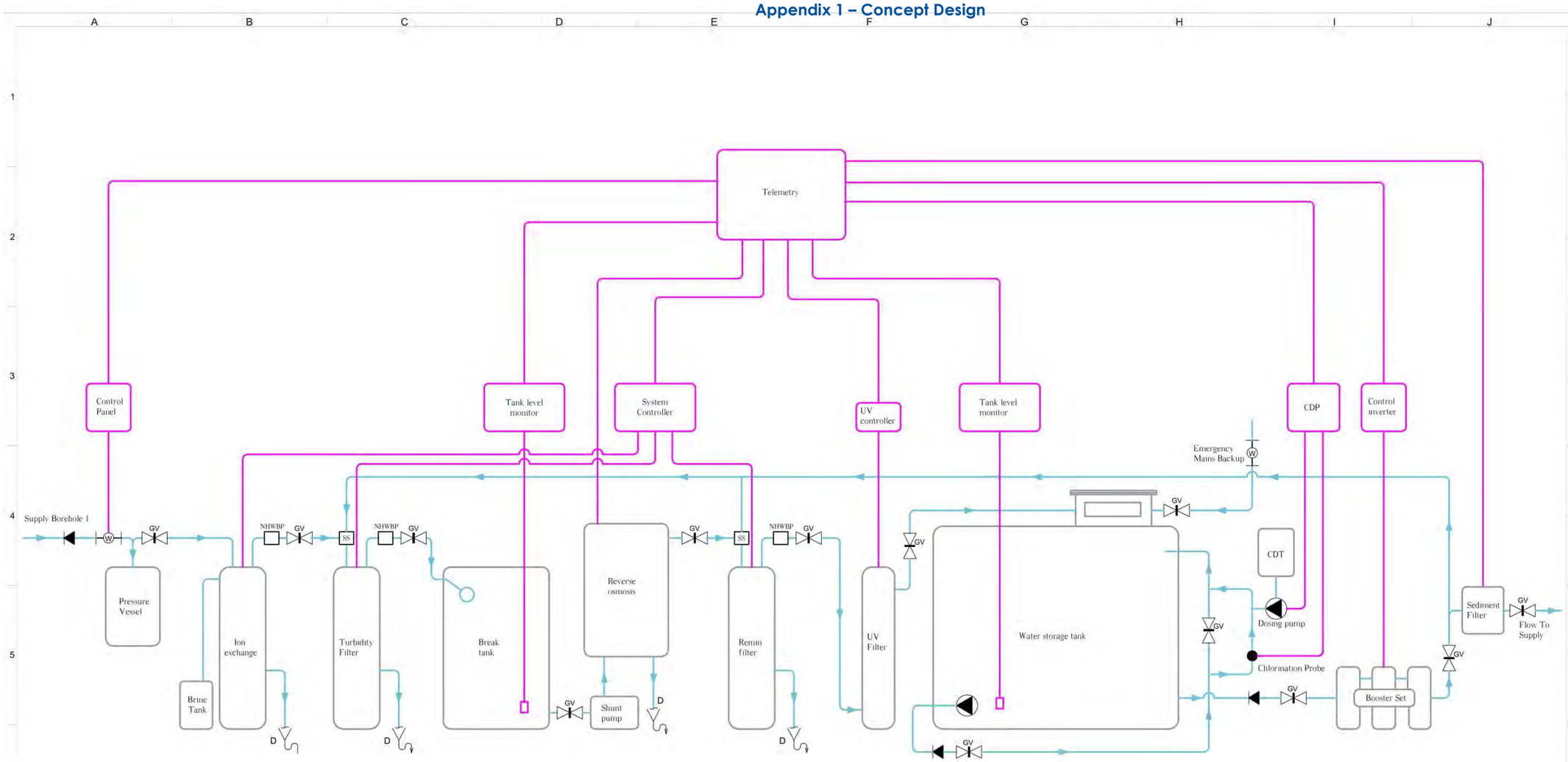
Most contaminants are reduced by about 97%, meaning a significant reduction of chloride (Cl) to 1.322mg/l – limit 250, sulphate (SO4) 0.927mg/l – limit 250 and ammonium (NH4) 0.046 – limit 0.5mg/l). The pH is reduced to below the drinking water limit, however the filtration design shown in Appendix 1 has accounted for this with remineralisation post reverse osmosis which will increase the pH to be above the UK drinking water limit.

For avoidance of doubt, the sulphate and chloride concentrations were over stated by a factor of 100% which has made no significant difference to the treated water quality with the RO still removing approximately 97% of contaminants. This means that even without the UKAS results for Chloride and Sulphate, a degree of certainty is provided that RO will remove these along with Ammonium.

Accounting for a minimum value of 75% recovery, the RO has a raw input flow of 1.6m3/hour leading to a permeate (treated water) flow of 1.2m3/hr. This allows sufficient potable water to provide the site with their daily requirements. While the sites abstraction licence is limited to 30m3/hour, the RO is anticipated to run for a maximum of 18.75 hours per day abstraction within their licence needs and still providing sufficient water to meet the potable requirements.

As shown from the calculations in Table 3 of Appendix 2, the decline in permeate flow is 5% over the course of 1 year. This would result in a permeate flow reduced to 70% resulting in a treated output flow from the RO of 1.12m3/hour. This in turn will provide the site with the require potable water for the period. Periodic maintenance, which has not yet been specified, will take this into account to ensure permeate flow is maintained to a level suitable to deliver the potable water required for the site.

Appendix 1 – Concept Design



Pump	Gate valve
Flow to drain	No hard water bypass
Water meter	Separate source
Non return valve	CDT – Chlorine dosing tank
CDP – Chlorine dosing panel	

Approved

Name:

Date: 20.02.25

Sign: Mark Aylwin

General Notes

Labour Division
Unless otherwise specified in Nicholls Bill of Quantities, all ground work, brick / block work and back filling of holes and trenches are to be priced and completed by others.
All pipe work and tanks are to be back filled with clean shingle to prevent damage to pipes.

Mains Power
Unless otherwise stated, mains power is to be provided to a IP56 Rated junction box with isolation 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 pathogens. A break gap of 30mm with header tank is required between the incoming mains and incomming borehole supplies.
See http://www.wras.co.uk/ for more information.

Surface Water
Unless otherwise stated and agreed all well covers will be raised to prevent surface contamination. 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 contractors/Clients responsibility to protect from damage any and all bespoke components installed on site by Nicholls.

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

Notes:

Title:	BH1494 High Level Design		
Client:	Sumners Pond		
Date:	20/02/2025		
Revision:	Rev000	Sheet:	1 of 1

Drawn:	Simon Parsons
Checked:	Mark Aylwin

NICHOLLS BOREHOLES & GROUND SOURCE

Indicative layout for design purposes only. Final position to be confirmed on site. Drawing is not to be scaled.

Appendix 2 – Integrated Membranes Solutions Design Software Analysis

Table 1 – Raw Water input

Ion (mg/l)	Raw Water
Hardness, as CaCO3	0.00
Ca	0.00
Mg	0.00
Na	335.00
K	6.00
NH4	2.11
Ba	0.000
Sr	0.000
H	0.00
CO3	0.15
HCO3	276.00
SO4	280.00
Cl	140.00
F	0.30
NO3	22.00
PO4	0.00
OH	0.00
SiO2	0.00
B	0.00
CO2	51.13
NH3	0.00
TDS	**1061.56**
pH	**7.00**

Table 2 – Treated Water output

Ion (mg/l)	Permeate Water
Hardness, as CaCO3	0.000
Ca	0.000
Mg	0.000
Na	6.469
K	0.130
NH4	0.046
Ba	0.000
Sr	0.000
H	0.002
CO3	0.000
HCO3	11.091
SO4	0.927
Cl	1.322
F	0.011
NO3	2.984
PO4	0.000
OH	0.000
SiO2	0.000
B	0.000
CO2	51.13
NH3	0.00
TDS	**22.98**
pH	**5.65**

Table 3 – Membrane Decline over 12 Months

Permeate flow/train	1.20	m3/h
Raw water flow/train	1.60	m3/h
Permeate recovery	75.00	%
Element age	0.0	years
Flux decline %, per year	5.0	
Fouling factor	1.00	