FRESHWATER PARADE,
BISHOPRIC,
HORSHAM,
RH12 1QD

Water Neutrality Report

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Date: 27 March, 2025
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1.0 INTRODUCTION

The Water Neutrality report is grounded on the directive issued by Natural England, mandating that all new residential and commercial projects within the **Sussex North Water Resource Supply Zone** must exhibit water neutrality. The primary objective of this requirement is to safeguard ecological flows and minimise the need for additional water extraction from the Hardham wells. This report will evaluate the water consumption of the proposed development site, suggest measures to reduce water usage, and present strategies for offsetting water demands to attain water neutrality.

Since the first submission of this report to Horsham District Council under application ref. HRA/24/0018, comments have been received from Natural England (Appendix E) requesting further clarification, and this report has therefore been updated to address these comments.

1.1 Existing Site Description

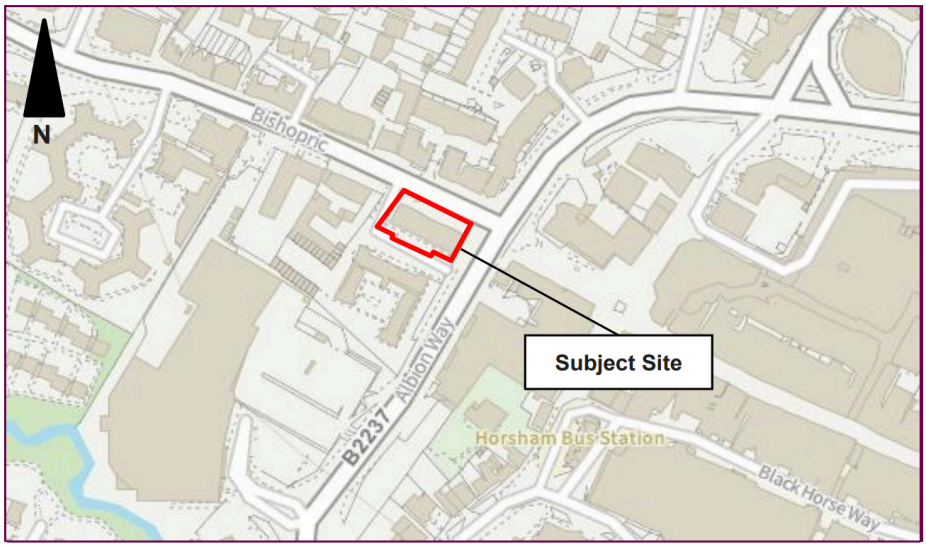
The site currently houses a rectangular building measuring approximately 501 square metres, consisting of ground-floor commercial units and occupied second-floor residential units. The first floor is vacant and designated for retail. adjacent to the site's southern boundary, there is an additional loading bay/car park.

Vehicular access to the site is gained via Bishopric (A281), which runs parallel to the site's northern boundary, leading into Bishopric Court to the west. Pedestrian access is available from Bishopric (A281) through a main entrance door. Additionally, pedestrian access from Albion Way (B2237) on the western boundary provides entry to the south side of the commercial units and one residential unit

1.1.1 Existing Site Water Use

The site comprises buildings utilised for both residential and commercial purposes. Potable water for both is supplied solely by Southern Water through the distribution mains. In the absence of existing water bills, we will utilise local water usage data to estimate the current site's consumption accurately.

Figure 1.1 - Existing Site



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1.2 Proposed Development Site

The site currently comprises retail units on the ground floor and first floor and occupied residential units on the second floor. The proposed works involve converting the first floor from retail to accommodate 6 residential units. The details of the proposed development can be found in Appendix A.

The accommodation schedule for the proposed development will be:

Table 1.1: Accommodation Schedule - Proposed New Home

Type of Accommodation	***Beds***	***Maximum Capacity***	***No. of Units***	***Total Cumulative Number of Residents***
1 - Bed Flat	*1*	*1.32*	*6*	*7.92*
Total Units & Maximum Number of Residents			***6***	***7.92***

Note: (Note: Occupancy Rates based on 2011 Census data that has been adopted by Horsham District Council https://www.horsham.gov.uk/planning/water-neutrality-in-horsham-district/water-neutrality-and-planning-applications)

2.0 NATURAL ENGLAND WATER NEUTRALITY

The proposed new home development site falls within the Sussex North Water Resource Supply Zone. A recent directive from Natural England states that all new residential and commercial accommodations, with high-water uses, in this area will need to meet the new Habitat Regulations Assessment (HRA) requirement to demonstrate water neutrality. This measure has been stipulated to protect ecological flows and reduce the demand for increased water abstraction from the wells at Hardham. This could adversely impact the integrity of the Arun Valley which has the following protected designations; Sites of Special Scientific Interest, Special Protected Area, Special Area of Conservation and Ramsar.

To demonstrate water neutrality, the applicant must submit a statement or water budget (including calculations) that incorporates some or all of the following measures:

● Reduce on-site water consumption to 85 litres per person per day through the implementation of:

- Water-efficient fixtures and fittings
- Rainwater harvesting and/or greywater recycling systems

● Offset the remaining water usage by implementing off-site measures, such as installing flow regulators into existing properties.

3.0 WATER NEUTRALITY APPROACH

3.1 Residential Water Demand

The proposed development will consist of 6 new residential dwellings and this study considers how the proposed properties may be serviced. Horsham Council has stipulated that the preferred allowable daily water consumption for each new residential unit is 85 litres/person/day.

3.1.1 Daily Water Demand

The proposed capacity/flow rates or the proposed dwellings will be, as per the Building Regulations specifications methodology. These figures are applied to the water efficiency calculator in Table 3.1 on the following page:

INSTALLATION TYPE	UNIT OF MEASURES	CAPACITY/FLOW RATE
Basin Taps	Flow Rate (litres/ min)	3
Bath	Capacity to Overflow	140
Shower	Flow Rate (litres/ min)	7.5
Toilet	Flush Volumes (litres)	6/3
Dishwasher	Flow Rate (litres/ place setting)	1
Washing Machine	Flow Rate (litres/ Kg Dry Load)	6
Sink Tap	Flow Rate (litres/ min)	5

In order to calculate the proposed water usage from each unit, a part G water efficiency calculation has been carried out as demonstrated in Table 3.1 below.

Table 3.1 - Building Regulations Part G Calculator (Bath Specification)

WATER EFFICIENCY CALCULATOR - BATH SPECIFICATION

Installation Type	Unit of Measure	Capacity/Flow Rate	Use Factor	Fixed Use (l/p/d)	Litres/person/ day
WC (single flush)	Flush volume (l)	0.00	4.42	0.00	**0.00**
WC (dual flush)	Full flush volume (l)	6.00	1.46	0.00	**8.76**
	Part flush volume (l)	3.00	2.96	0.00	**8.88**
WCs (multiple fittings)	Ave. effective flush volume (l)	0.00	4.42	0.00	**0.00**
Taps (excluding kitchen/utility room taps)	Flow Rate (l/min)	3.00	1.58	1.58	**6.32**
Bath (where shower also present)	Capacity to Overflow (l)	140.00	0.11	0.00	**15.40**
Shower (where bath also present)	Flow Rate (l/min)	7.50	4.37	0.00	**32.78**
Bath Only	Capacity to Overflow (l)	0.00	0.50	0.00	**0.00**
Shower Only	Flow Rate (l/min)	0.00	5.60	0.00	**0.00**
Kitchen/Utility Room Sink Taps	Flow Rate (l/min)	5.00	0.44	10.36	**12.56**
Washing Machine	Litres/kg Dry Load	6.00	2.10	0.00	**12.60**
Dishwasher	Litres/ Place Setting	1.00	3.60	0.00	**3.60**
Waste Disposal Unit	Litres/Use	0.00	3.08	0.00	**0.00**
Water Softner	Litres/pers/day	0.00	1.00	0.00	**0.00**
		Total Internal Calculated Use			**100.90**
		Contribution from Greywater			**23.94**
		Contribution from Rainwater			**0.00**
		Normalisation Factor			**0.91**
		Total Internal Water Consumption			**70.03**
		External Water Use			**5.00**
		Effective Daily Water Demand l/p/d			**75.03**

GREYWATER YIELD - BATH SPECIFICATION

Installation Type	Unit of Measure	Capacity/Flow Rate	Use Factor	Fixed Use (l/p/d)	Litres/person/ day
WC (single flush)	Flush volume (l)	0.00	4.42	0.00	**0.00**
WC (dual flush)	Full flush volume (l)	6.00	1.46	0.00	**8.76**
	Part flush volume (l)	3.00	2.96	0.00	**8.88**
WCs (multiple fittings)	Ave. effective flush volume (l)	0.00	4.42	0.00	**0.00**
Taps (excluding kitchen/utility room taps)	Flow Rate (l/min)	3.00	1.58	1.58	**6.32**
Bath (where shower also present)	Capacity to Overflow (l)	140.00	0.11	0.00	**15.40**
Shower (where bath also present)	Flow Rate (l/min)	7.50	4.37	0.00	**32.78**
Bath Only	Capacity to Overflow (l)	0.00	0.50	0.00	**0.00**
Shower Only	Flow Rate (l/min)	0.00	5.60	0.00	**0.00**
Kitchen/Utility Room Sink Taps	Flow Rate (l/min)	5.00	0.44	10.36	**12.56**
Washing Machine	Litres/kg Dry Load	6.00	2.10	0.00	**12.60**
Dishwasher	Litres/ Place Setting	1.00	3.60	0.00	**3.60**
Waste Disposal Unit	Litres/Use	0.00	3.08	0.00	**0.00**
Water Softner	Litres/pers/day	0.00	1.00	0.00	**0.00**
		Total Internal Calculated Use l/p/d			**100.90**
		Contribution towards Greywater			**60.80**
		% Greywater Contribution			**65.96%**

Based on incorporating water-efficient fittings and appliances in the dwellings, the initial water consumption is calculated at 100.9 litres per person per day, which is less than Horsham Council's current planning policy target of 110 l/p/d. With the introduction of greywater recycling, it is estimated that this consumption can be significantly reduced to 75.03 litres per person per day, which is below the Natural England target of 85 l/p/d. The inclusion of greywater recycling allows for the reuse of water from various sources, further enhancing the overall water efficiency of the dwellings.

3.2 Water Reduction Measures

3.2.1 Introduction

This section presents the water reduction measures proposed for the development site. The aim is to minimise water consumption and contribute to achieving water neutrality. The measures outlined in this chapter are designed to protect ecological flows and reduce the demand for additional water abstraction from the Hardham wells.

3.2.2 Greywater Recycling

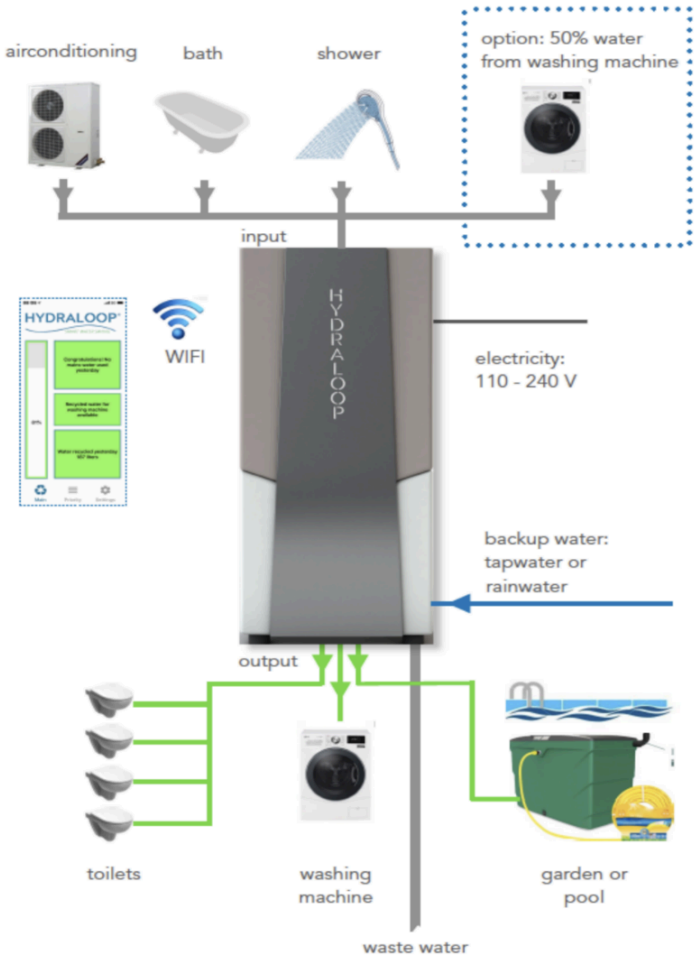
Greywater presents a sustainable solution for meeting water demands within the development while reducing reliance on freshwater sources. Greywater recycling presents an effective water reduction measure that enables the reuse of potable water through the collection, treatment, and reuse of "greywater" generated from various sources such as showers, baths, washing machines and hand basins. Additionally, the greywater system will collect water from basin taps, further contributing to its sustainable use.

The Hydraloop greywater recycling system functions by collecting greywater and subjecting it to a thorough cleaning and disinfection process. The treated water can then be utilised for non-potable purposes like toilet flushing, garden irrigation and even washing machines as indicated in Figure 3.1 below. The Hydraloop system effectively transforms greywater into a valuable resource, so that the development can capitalise on this sustainable solution to conserve water resources and reduce freshwater demand.

Figure 3.1 below illustrates the key components comprising the Hydraloop greywater recycling system, highlighting its functionality and potential impact on water

conservation. A copy of the detailed Hydraloop specification can be found in Appendix B.

Figure 3.1 – Greywater Recycling System



By installing a Hydraloop greywater recycling system into each property, the daily water demand will be 75.03 l/p/d as calculated in Table 3.1. This would equate to an annual water consumption of 216,896.72 litres per annum for the whole development as shown in Table 3.2 on the next page.

Table 3.2: Potable Water Demand - New Development using greywater

Type of Accommodation	*No. of Units*	*Total Cumulative Number of occupants*	*Daily Water Demand Per Occupant*	*Daily Potable Water Demand (l/d)*
1-Bed Flat	*6*	*7.92*	*75.03*	*594.24*
Total Water Consumption (litres/day)	***6***	***7.92***		***594.24***
Annual Water Demand (litres)				***216,896.72***

3.2.3 Hydraloop Concealed Unit System

Hydraloop Concealed Unit for 1-Bed Flat

- *150 litres tank capacity*
- *200 litres cleaning capacity per day.*
- *Greywater demand per person per day (23.94)*

The proposed Hydraloop system has the volume and cleaning capacity to comfortably manage the necessary demand from the WCs and washing machines as a result will significantly reduce the demand for potable water.

From Table 3.1 (Greywater yield – Bath specification) the fittings highlighted in blue demonstrate a total of 60.80 l/p/d of recycled greywater produced from each person per day (contribution towards greywater). The Water Efficiency - Bath specification highlights that 23.94 l/p/d will contribute from greywater. Therefore the available treated greywater for toilet flushing and the washing machine will be 36.86 l/p/d (contribution towards greywater minus contribution from greywater).

The excess treated recycled greywater will also provide 5 l/p/d for external water use (garden irrigation/car washing).

The proposed installation of the Hydraloop greywater recycling system within each dwelling will support various non-potable water demands, including toilet flushing, landscaping, car washing, and washing machines. These applications have been carefully selected to maximise water conservation without compromising the daily needs of the residents. Additionally, the pump from the concealed unit can efficiently supply

water not only to the connected washing machine but also to other toilets throughout the house and the external water taps.

3.2.4 Greywater Recycling Maintenance

The device should only be opened or serviced by Hydraloop staff or a certified Hydraloop partner and/or installers.The hydraloop will be permanently installed, remain on the property in perpetuity, and be maintained in accordance with the manufacturer's schedule.

This check contains the following elements:

- Descaling of Hydraloop device with a citric acid solution.
- Remove, clean, and descale the air diffuser.
- Replace the rubber membranes of the air pump every three years (according to the manual of the air pump supplier).
- Replace the UV light bulb every two years by unscrewing the lid on the UV-C lamp housing.
- Collect effluent samples using the water valve that is connected to the washing machine.
- In regions with very high levels of water hardness more frequent descaling of the water tanks may be necessary.

3.3 Water Offsetting Measures

To meet the water demand of the new residential development, which is calculated to be 594.24 litres per day or 216,896.72 litres annually, an offsetting strategy is proposed. The client's other site, Freshwater Parade, will serve as the offsetting site, with additional offset achieved through the purchase of water credits. According to the Water Audit Report, water-saving measures implemented at Freshwater Parade, including the replacement of high-flow fixtures and installation of efficient appliances, have achieved savings of 78,300 litres per year. This reduces the offsetting requirement to **138,596.72** litres per year. This remaining of **138,596.72 l**itres will be offset through the acquisition of water credits. This offsetting strategy supports water neutrality by balancing the development's water consumption through existing site efficiencies and additional credit purchase, aligning with sustainable water management goals.

3.4 Water Offsetting Strategy - Housing Association

To meet the water demand of the new residential development—estimated at 594.24 litres per day or 216,896.72 litres annually—a comprehensive offsetting strategy will be implemented. The strategy involves balancing the site's water consumption through both on-site efficiency improvements and partnerships with off-site entities in the Sussex North Water Resource Supply Zone, as required by the latest Habitat Regulations Assessment (HRA). The proposed water efficiency improvements at Freshwater Parade will save 78,300 litres per year. To offset the remaining **138,596.72** litres of annual demand, an agreement will be utilised with Raven Housing Trust, a Housing Association within the Sussex North Water Resource Supply Zone. This offsetting will ensure compliance with Natural England's directive that all new high-water-use accommodations within the region achieve water neutrality. This regulatory measure aims to protect the ecological flow and reduce further water abstraction from the Hardham wells, which serve the region. These combined offsetting measures support the integrity of the Arun Valley, which holds multiple protected designations, including Sites of Special Scientific Interest (SSSI), Special Protection Area (SPA), Special Area of Conservation (SAC), and Ramsar status. By aligning with responsible water management practices, this strategy ensures that the proposed development contributes to safeguarding these critical ecosystems.

What is Water Neutral Development?

A Water Neutral development will not add to the overall existing water demand of an area or catchment and will have zero impact on existing water abstraction requirements or water mains supply.

As demonstrated in Section 3 and the accompanying water offsetting report, water neutrality at the development site is demonstrated by implementing water efficiency measures, while this section of the resort will address the water offsetting works that will be undertaken at the Housing Association Homes.

3.4.1 Housing Association Interventions - *Flow Control Valves*

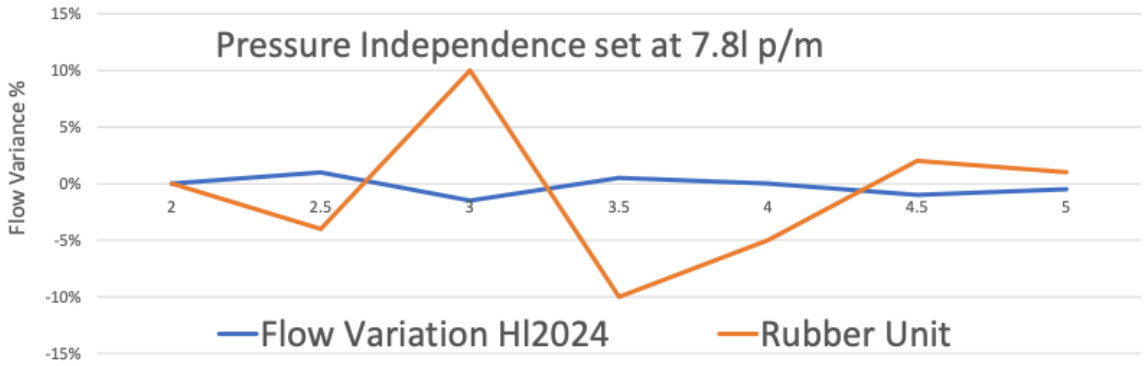
The water offsetting intervention that is proposed is the installation of the Control Flow HL2024. After reviewing an array of measures this is considered to be the most viable and deliverable water efficiency measure. This method is a tried and tested method for retrofitting existing properties to achieve robust water efficiency performance. Cenergist has installed this valve in over 30,000 homes achieving an average 70 to 75.00 litres/house/day; 23% per household.

The Control Flow HL2024 is an independent flow controller that can be set at varying flow rates, the lowest being 5 litres per minute, and the highest being 23.4 litres per minute. For domestic properties it is recommended to install 10, 12.8 or 15.6 litres per minute within each individual water offsetting home.

Traditional rubber flow controllers do not offer pressure independence such that they result in a flow rate variance of up to 10%, which is excessive when trying to deliver a consistent and robust water efficiency programme. Secondly the rubber flow controllers have a very short life span, owing to deteriorating rubber parts which ultimately lead to the destruction and ineffectiveness of the control flow unit.

Control Flow HL2024 is designed using high grade materials, offering a high level of durability and superior flow regulation that other products do not. As such, the Control Flow technology will offer lifetime savings of 10 years or more.

Figure 3.2 - Pressure Analysis HL2024 vs Rubber Unit



3.4.2 Control Flow HL2024 - 3P InLine

The Control Flow HL2024 3P Inline is optimally suitable to control flows into specified areas of any water system. This ensures flow system stabilisation, optimal user comfort and water savings. The Housing Association is responsible for the HL2024 Cenergist valve after it is installed, and they can guarantee that it is maintained in perpetuity. This product is installed inline on the main supply leading into the property therefore negating the risk of the customer removing it and lasting a minimum of 10 years, a much longer period than traditional water-saving products. It can deliver flow rates from 5 to 23.4 litres/minute. With typical residential installation being between 7.8 to 15.6 litres/minute. Prior to installation the existing flow rate and occupancy rate are checked and recorded.

Figure 3.3 - Control HL2024 - 3P Inline



3.4.3 Benchmarking Crawley Homes Offsetting Strategy

Cenergist installed the HL2024 Control Flow products into 100 existing Crawley Homes properties. As outlined above they obtained pre and post installation consumption data for all the 100 installations. Following analysis of the pilot study the results indicated a successful water reduction across all the 100 homes. The key outcomes are as follows:

Table 3.3 - Flow Control Performance Results

Control Flow HL2024 Performance Results	
No. of Properties	*100*
Average PCC Reduction (L)	*30.53*
Average Occupancy	*2.8*
Average Daily Savings (L)	*73.07*
% Decrease in Water Consumption	*23%*

Cenergist has been installing the Control Flow HL2024 into homes in the United Kingdom since early 2020, and as such have a significant amount of data that they have gathered which can be benchmarked against the water savings achieved on the Crawley Homes pilot study. These readings are spread over a two year period, therefore accounting for seasonal variations during this time.

Table 4.2 - National Performance of Control Flow HL2024

Control Flow HL2024 National Performance Results	
Average Pre Consumption (L)	*396.34*
Average Post Consumption (L)	*326.93*
Average Pre PCC (L)	*199.85*
Average Post PCC (L)	*166.52*
Average Post Reduction (L)	*31.64*
Average Occupancy	***2.32***
Average Daily Saving (L)	***69.40***

3.4.4 Water Offsetting Using Housing Association Homes

Based on the benchmarking results in the Water Audit Report, it is estimated that water savings of 64.8 litres per day per home can be achieved from improvements in existing Housing Association properties. The following outlines the water offsetting potential from seven Housing Association homes that connect to the Sussex North main connection within the Sussex North water Resource Zone, and are operated by Raven Housing Trust: (Appendix D). These homes were built prior to 2010 when the building regulations and water efficiency standards were introduced and do not benefit from significant water efficiency measures (eg - Rainwater harvesting or existing flow restrictions).

- **Benchmarked Savings**: 64.8 litres per home per day
- **Number of Housing Association Homes**: 7 homes
- **Daily Available Water Offsetting Volume**: 453.6 litres/day

Post Code	Occupants	Water Savings Components	Achieved Savings (litres/day)	Target Savings based on a 2.4 Occupancy (litres/day)
RH11 7GW	2	1P 7.8L Inline (Kitchen, Qty: 1), 1P 5L Inline (Bathroom, Qty:2)	54	64.8
RH11 8GA	1	1P 5L Inline (Kitchen, Qty: 2), 1P 5L Inline (Bathroom, Qty: 2)	27	64.8
RH11 8GA	2	1P 7.8L Inline (Kitchen, Qty: 2)	54	64.8
RH11 0FZ	5	1P 5L Inline (Kitchen, Qty: 2)	135	64.8
RH11 7HR	4	1P 5L Inline (Kitchen, Qty: 2)	108	64.8
RH11 0FZ	1	1P 5L Inline (Bathroom, Qty: 2)	27	64.8
RH10 1EU	1	1P 7.8L Inline (Kitchen, Qty: 2), 1P 5L Inline (Bathroom, Qty: 2)	27	64.8
			432	453.6
		Required Water Savings		
		Daily Water Savings =	379.71	litres/day
		Annual Water Savings =	138,594.15	litres/year
		Required Water Savings		
		Daily Water Savings =	432.00	litres/day
		Annual Water Savings =	157,680.00	litres/year
		Surplus Water Savings	13.77%	

3.4.5 Water Offsetting Works Site Installation Results:

The Water Offsetting works have been implemented according to this strategy, at properties belonging to Raven Housing Trust. The results of the water savings from the 7 no. Properties where the efficiency installations were undertaken is stated below. Further details can be found in the accompanying Water Audit Report.

- **Number of Housing Association Homes**: 7 homes
- **Daily Available Water Offsetting Volume**: 432 litres/day
- **Annual Water Offsetting Volume**: 157,680 litres/year (or 157 m³/year)

Given that the remaining water demand for the residential development stands at 138,596.72 litres/year (or 138.60 m³/year), the available offsetting volume of 157,680 litres/year (or 157 m³/year) from the Raven Housing Trust Association homes exceeds the development's remaining offsetting requirement. This capacity is sufficient to ensure water neutrality for the project.

The implemented water-saving measures at the offsetting homes will facilitate the development's planning consent and will be stated as a condition in the S106 Obligations, ensuring compliance with regional water neutrality standards as per the Habitat Regulations Assessment (HRA) requirements. This approach supports the overall sustainability goals and mitigates additional water demand on the Arun Valley's sensitive ecosystems.

3.4.6 Discussion of the results

Referring to the email that was exchanged with the Council (Appendix C), the Council has agreed that the savings for the properties is **27 l/p/d** which provides a 10% reduction from the 30 l/p/d savings that was previously established in Housing Stock built before the 2010 Building Regulations was implemented. To confirm:

● The age of the properties specifically addresses the issue of fixtures as these fixtures were associated with the pre-2010 housing developments.

● 27 l/pd multiplied by the number of people in the house (occupants) i.e.a 5 bedroomed home will save 27 x 5 = 135. The last column provides a computation of the average number of occupants 2.4 multiplied by 27l/p/d, to compare against the actual occupancies.

● The Council has specifically confirmed the above and has also stated that both they and Natural England agree on this strategy. The Council has also reinforced this by reference to the planning decision notice: DC/21/2180.

For clarity, based on the comments received from Natural England (Appendix E), this report has been updated accordingly by addressing the following:

- Location of the housing association, date of construction, and the fact that the aforementioned housing association has not benefited from significant water-saving measures like rainwater collecting, flow controls, etc.
- Maintenance and the management of the greywater recycling unit and the control flow and that such measures will be retained in perpetuity.

4.0 CONCLUSION

In conclusion, this Water Neutrality report provides a comprehensive assessment of the proposed residential developments' water usage and outlines effective measures to achieve water neutrality. Through the utilisation of water offsetting credits and efficiency works, the development can successfully address the increased water demand while meeting the requirements set by Natural England. This version of the report has been specifically updated to reflect Natural England's consultation response (included at Appendix E).

By successfully meeting the water neutrality requirement stipulated by the Natural England directive and incorporating built-in water demand resilience, this report demonstrates that it is possible to achieve a balance between residential development and the protection of ecological flows. The proposed development serves as an exemplary site for the effective implementation of water neutrality strategies, ensuring the preservation of the environment and sustainable water management practices.

This Water Neutrality report highlights the feasibility of achieving water neutrality in the proposed residential development through the collective efforts of stakeholders, including the Horsham Council, Natural England, and the developers. It sets a precedent for future projects and emphasises the importance of responsible water usage, conservation, and sustainable development in safeguarding our valuable water resources for generations to come.

APPENDIX A - PROPOSED DEVELOPMENT

METASHAPE | ARCHITECTS

Revision	Date	Reason	Initial
-	-	-	-



Note: All external alterations are subject to a separate Planning Application.

This drawing is for information only and is subject to Planning Approval, Statutory undertaker searches, Building Control Approval and Detailed Design Development.

Do not scale drawing except for planning purposes. Figure dimensions to be worked to in all cases.

KEY

Site boundary

PLANNING

NOT FOR CONSTRUCTION

PROJECT	Freshwater Parade, Bishopric, Horsham, RH12 1QD					NO	2022-063/P1000
TITLE	Site Location Plan					DATE	October 2022
SCALE	1:1250 @A4	REVISION	-	REVIEWED	IPL	BY	DK



0 1 2 3 4 5 10 15

Scale 1:100 meters

PLANNING

NOT FOR CONSTRUCTION

METASHAPE | ARCHITECTS

Revision	Date	Reason	Initial	Notes
-	-	-	-	

Note: All external alterations are subject to a separate Planning Application.

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PROJECT
Freshwater Parade, Bishopric
Horsham, RH12 1QD

TITLE
Existing First Floor Plan

SCALE
1:100 @ A2

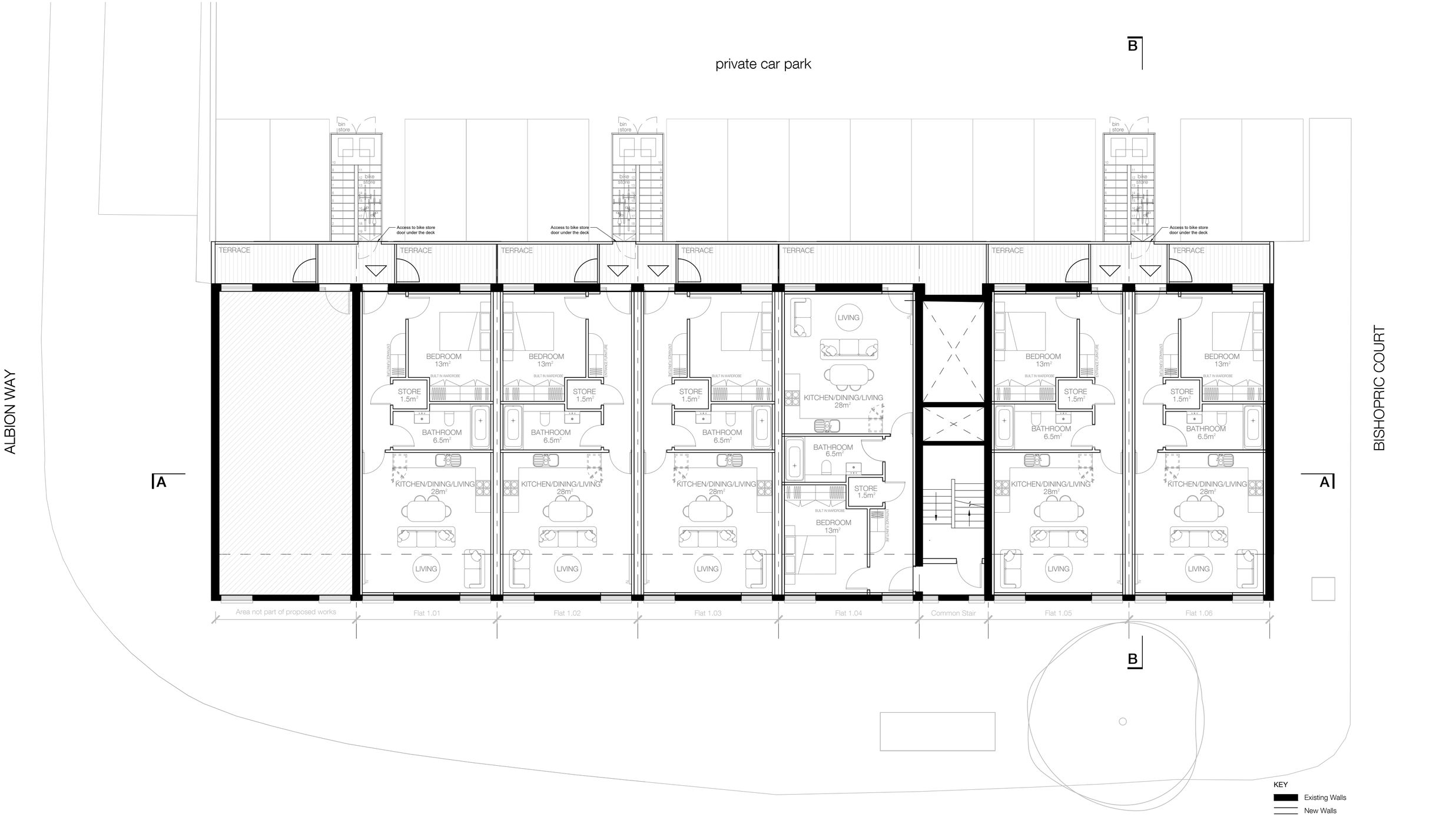
DATE
October 2022

DRAWING No
2022-063/P1100

DRAWN
DK

REVIEWED
IPL

REVISION
-



KEY

Existing Walls

New Walls

PLANNING

NOT FOR CONSTRUCTION

0 1 2 3 4 5 10 15

Scale 1:100 meters

Revision	Date	Reason	Initial	Notes
-	-	-	-	

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METASHAPE | ARCHITECTS

PROJECT
Freshwater Parade, Bishopric
Horsham, RH12 1QD

TITLE
Proposed First Floor Plan

SCALE
1:100 @ A2

DATE
October 2022

DRAWING No
2022-063/P2100

DRAWN
DK

REVIEWED
IPL

REVISION
-

APPENDIX B - HYDRALOOP SYSTEM

FACT SHEET | Have your building Recycle Ready

With Hydraloop, you can recycle up to 95% of shower and bath water, as well as condensation water from air conditioning and optionally 50% of washing machine water. This enables you to reuse up to 85% of the total in-house water.
In order to install a Hydraloop system, make sure to be well prepared for plug-and-play installation. In this document, you'll find guidelines and plumbing information to make any building Recycle Ready and future proof for sustainable water supply.

INPUT & OUTPUT

Input sources	Grey water from showers, baths, air conditioning and optionally washing machines. At any time: avoid grey water from hand basins, dishwashers, floor drain and kitchen sink.
Output options	Toilets, garden, pool, washing machine, optional faucets for cleaning purposes. At any time: label recycled water faucets with a 'non potable water' sign.

POSITIONING

Hydraloop vs input sources	If input sources are located on a higher floor than the Hydraloop system, you can make use of gravity for the input water. In other circumstances you'll need a lift pump. For Hydraloop Qualified lift pumps, see page 3.
Washing machine	If you want to use the washing machine recycle option for your laundry, we advise to install the Hydraloop system near the washing machine. You can only connect one machine.

CONDITIONS

Room specifications	Minimum height of the ceiling: 210 cm, 6.10" – Room temperature between 14-35° C | 57-95° F. At any time: avoid direct sunlight on the Hydraloop system.
Access to back up water	Tap water or rainwater
Electricity	100-230 Volt
Online access	Stable internet with working Wi-Fi connection
Washing machine water input	Only possible with Hydraloop washing machine add-on (sanitary lift pump included)

PIPING

Isolation	Isolate all pipes.
Input connection	Tie all incoming drains into a single pipe (75/50/40 mm | 3"/2"/1 ½") into the inlet (40 mm | 1 ½") on top of the Hydraloop system. Use riser pipes out of the system and branch them out to the output options.
Ventilation	Don't forget proper ventilation of the inlet pipe (75/50/40 mm | 3"/2"/1 ½") to support grey water flowing into the Hydraloop system without airlocks. Also provide sewer venting to ensure proper functioning of the Hydraloop system.
Bypass	Install appropriate bypass connections for maintenance
Grey water Identification	Label everything. Use color coding or large warning labels to designate that the pipes are running grey water.

INPUT CONNECTIONS

Grey water into Hydraloop	40 mm | 1 ½" connections
Backup water	½" male thread, minimum water flow of 20 liters | 5.3 gallons p/m, 29 psi / 2.2 bar. If pressure is higher (max. 55 psi / 4 bar), install expansion vessel and 50Mu mash filter.

OUTPUT CONNECTIONS

Wastewater to sewer	40 mm | 1 ½" connection to sewer – Sewer connection (75 to 50 mm| 3" to 2") with rubber manchet underneath or behind the Hydraloop system into floor or wall.
Recycled water to toilet	½" male thread – Prepare plumbing underneath or behind Hydraloop system. Connect with flexible hose.
Recycled water to washing machine	½" male thread – Prepare plumbing underneath or behind Hydraloop system. Connect with flexible hose.
Recycled water to garden/pool	½" male thread – Prepare plumbing underneath or behind Hydraloop system. Connect with flexible hose.

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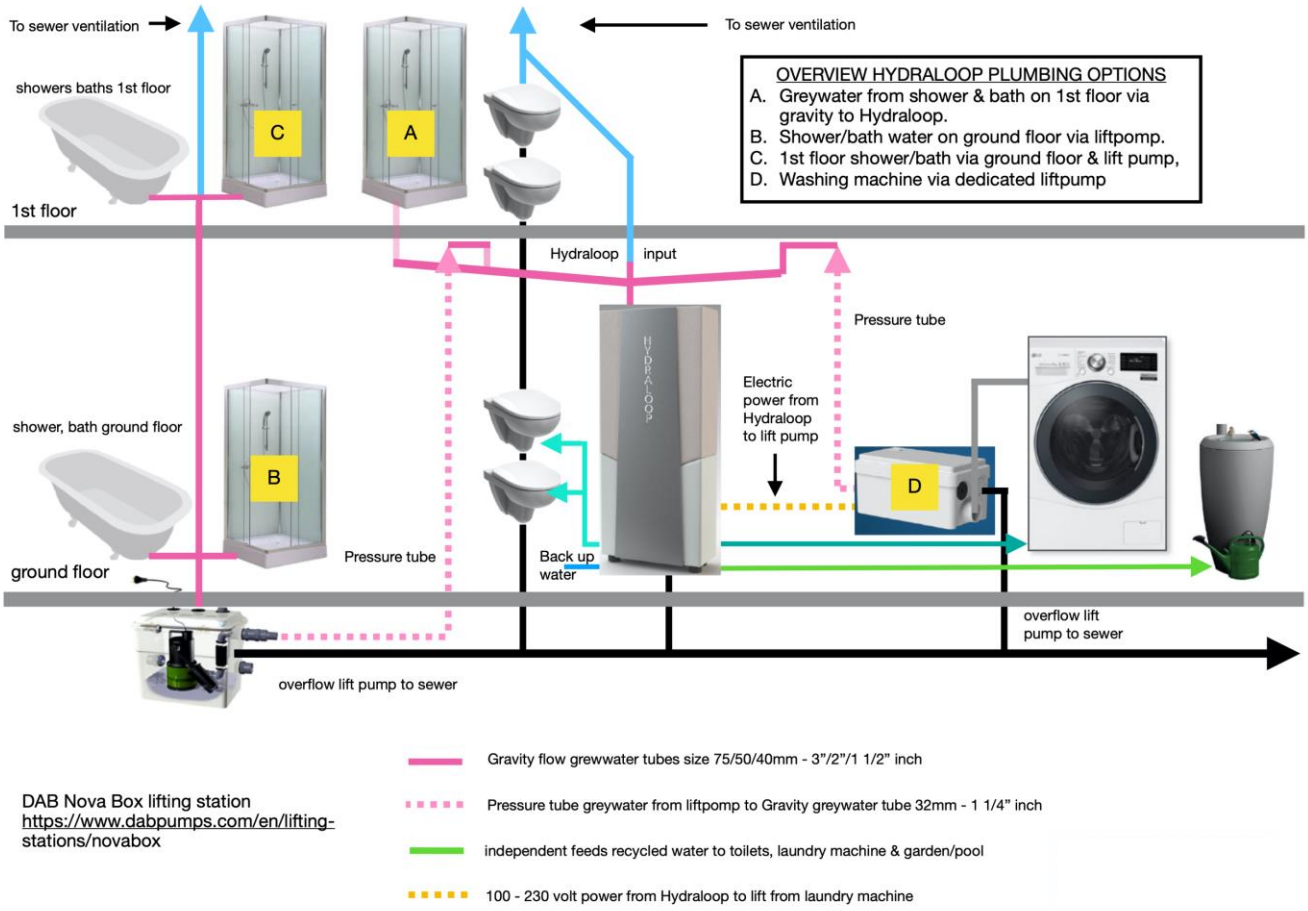
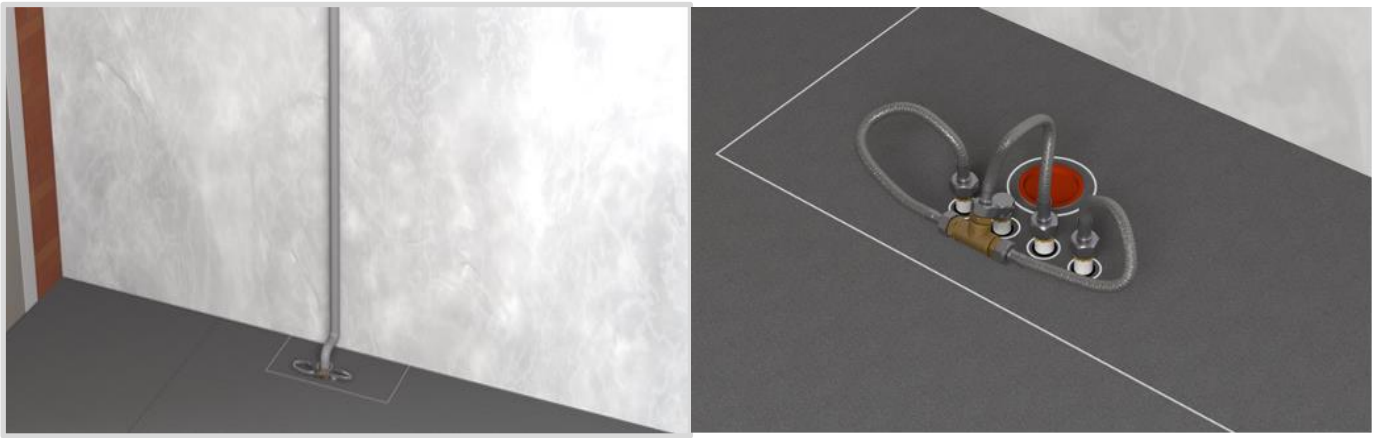
SCHEMATIC OVERVIEW



WATER SUPPLY UNTIL INSTALLATION OF HYDRALOOP

OPERATION BEFORE INSTALLATION OF A WATER RECYCLING SYSTEM	When your building is Recycle Ready, you can install a (temporary) bridge connection from the input pipes to the sewer. This enables you to use showers and baths as usual, until a water recycling system like Hydraloop is installed.



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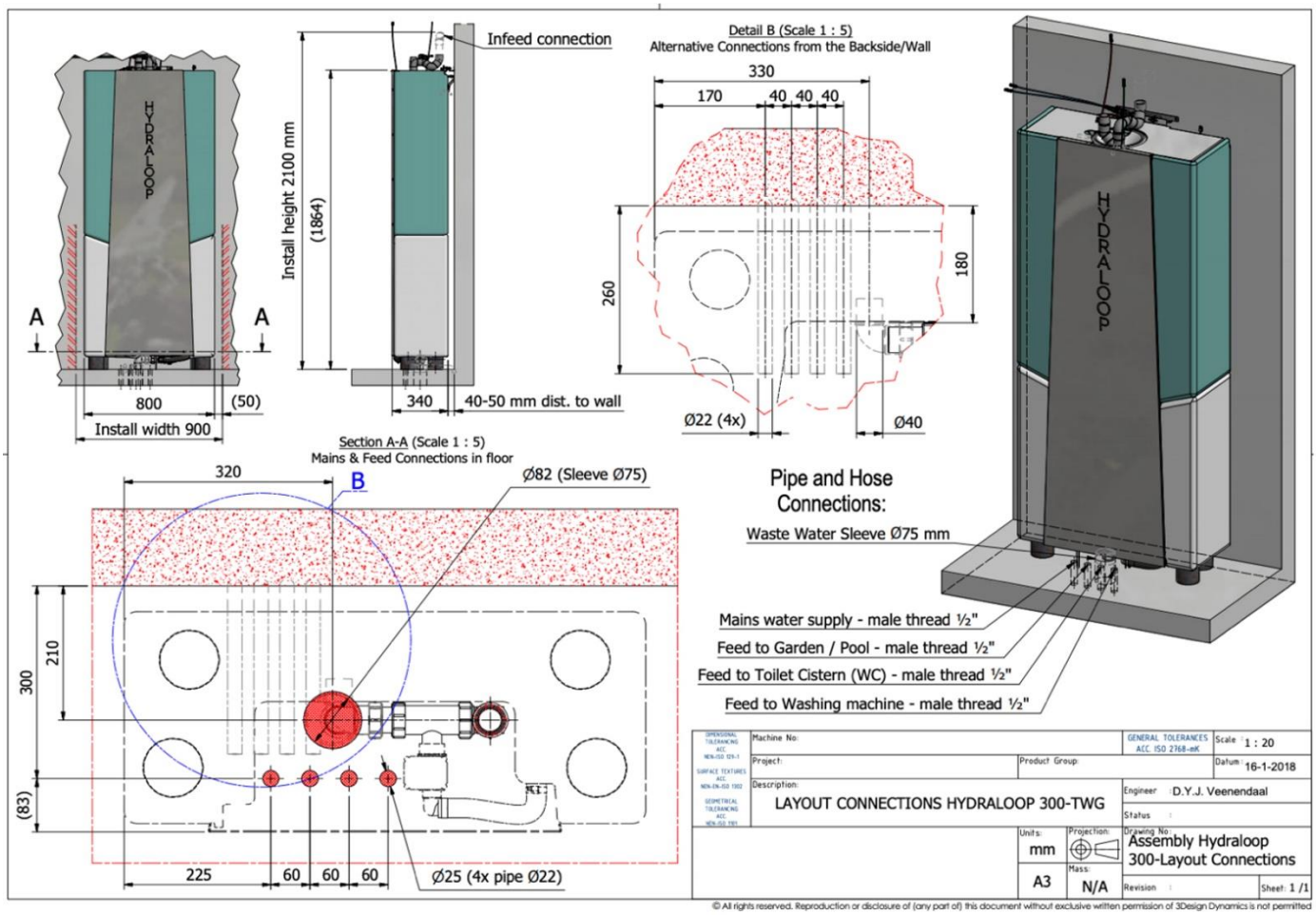
Certified to NSF/ANSI Standard 350

HYDRALOOP
USE WATER TWICE

DIMENSIONS



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HYDRALOOP 300 SPECIFICATIONS

CAPACITY	300 liters | 80 gallons
FAMILY HOME	Up to 5 persons
TREATMENT CAPACITY	530 liters | 140 gallons per day
DIMENSIONS	80 cm wide, 34 cm deep, 187 cm high | 31 ½" wide, 13'4" deep, 74" high
VOLTAGE	100/230 Volt, 24 Volt internal
POWER CONSUMPTION	20 watts during treatment. On average: 200 kWh/year per system
AVERAGE RECYCLED WATER QUALITY	non-potable water CBOD5 (mg/L) < 10 TSS (mg/L) <10 Turbidity (NTU < 5) E. coli (MPN/100ml.) < 14 PH (SU) 6.0 – 9.0
NOISE LEVEL	± 44 dB

HYDRALOOP QUALIFIED LIFT PUMPS

DAB NOVABOX 30/300	This lift pump is for installation in the crawl space underneath the floor 60.7 cm wide, 30.9 cm deep, 36 cm high | 23.9" wide, 12.2" deep, 14.1" high
DAB GENIX VT030	This lift pump is placed on or partly in the floor. 45.6 cm wide, 17.8 deep, 34.6 cm high | 18" wide, 7" deep, 13.6" high
CONNECTION PIPES	Make sure the pressure tube from the lift pump is 32 mm | 1.26" to avoid excessive flow of water entering the Hydraloop system.

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VIDEO SUPPORT

Click any blue field to watch an instructional video that suits your individual situation.



ADDITIONAL INFORMATION

Please visit our website at www.hydraloop.com/technical,
or mail your questions and/or technical drawings to
recycleready@hydraloop.com.
Our support team will be pleased to guide you through the process.

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APPENDIX C - Email From the Council

Gmail Tapiwa Gavaza <tapiwa@wateroffsets.co.uk>

Re: Water Offsetting Credits using Housing Association Properties

2 messages

Tapiwa Gavaza <tapiwa@wateroffsets.co.uk> Fri, Dec 6, 2024 at 8:16 PM
To: "Adrian.Smith" <adrian.smith@horsham.gov.uk>
Cc: Stephen Johnston <stephen.johnston@cenergist.com>, Caroline Gray Mason <Caroline.gray-mason@cenergist.com>

Dear Adrian

I trust that you are well?

We are keen to urgently establish the acceptable criteria for the generation of water offsetting credits from Housing Association properties in order to meet water neutrality requirements, further to the success of the Crawley Homes pilot study on 100 properties.

Would the following criteria be acceptable criteria to deliver the Housing Association water credits for housing stock located within the water neutrality zone?

- The flow regulator to be used is the HL2024, as in the Crawley Borough Council pilot.
- Per capita water savings of 27 litres per day, providing a 10% contingency on the 30 l/p/d savings value demonstrated by the Crawley Borough Council pilot.
- Retrofitting of the HL2024 is only undertaken on housing property built before the 2010 Building Regulations water efficiency standards came into effect.
- Retrofitting cannot provide water neutrality credits in properties where water efficiency measures have already been installed.
- The Housing Association properties must be located within the water neutrality zone.

Best regards

TAPIWA GAVAZA| BSc MSc MICE CEng CEnv
Chief Executive Officer

Water Resilience | Smart Water Cities | WaterTECH | Climate & Flood Resilience | Water Circular Economy | Water Offsetting

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Adrian.Smith <Adrian.Smith@horsham.gov.uk> Fri, Dec 6, 2024 at 8:26 PM
To: Tapiwa Gavaza <tapiwa@wateroffsets.co.uk>
Cc: Stephen Johnston <stephen.johnston@cenergist.com>, Caroline Gray Mason <Caroline.gray-mason@cenergist.com>

Hello Tapiwa, yes that the correct summary, as supported by Natural England and ourselves under application DC/21/2180. We are also happy for the 1P and the 3P variants of the device to be used. Note we understand that RPs are generally finding that take-up is about 50% in their stock which is lower than we would have hoped.

Kind regards

Adrian Smith

Major Applications Team Leader

Telephone: 01403 215460

Email: Adrian.Smith@horsham.gov.uk





Horsham District Council, Parkside, Chart Way, Horsham, West Sussex RH12 1RL
Telephone: 01403 215100 (calls may be recorded) www.horsham.gov.uk Chief Executive: Jane Eaton

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APPENDIX D - Housing Association

DEVELOPMENT ADDRESS: FRESHWATER PARADE

Customer	Housing Association	Contractor	Date of Completion	Address	Post Code	Occupants	Water Savings Components	Achieved Savings (litres/day)	Target Savings based on a 2.4 Occupancy (litres/day)
Water Offsets	Raven Housing Trust	Cenergist - CEN298529	04/10/2024	91 Langley Drive, Crawley, RH11 7TF	RH11 7GW	2	1P 7.8L Inline (Kitchen, Qty: 1), 1P 5L Inline (Bathroom, Qty:2)	54	64.8
Water Offsets	Raven Housing Trust	Cenergist - CEN298550	03/10/2024	6 Anaba House, St. Augustine Road, Crawley, RH11 8GA	RH11 8GA	1	1P 5L Inline (Kitchen, Qty: 2), 1P 5L Inline (Bathroom, Qty: 2)	27	64.8
Water Offsets	Raven Housing Trust	Cenergist - CEN298561	03/10/2024	2 Anaba House, St. Augustine Road, Crawley, RH11 8GA	RH11 8GA	2	1P 7.8L Inline (Kitchen, Qty: 2)	54	64.8
Water Offsets	Raven Housing Trust	Cenergist - CEN298576	03/10/2024	15 Percivale Close, Crawley , RH11 0FZ	RH11 0FZ	5	1P 5L Inline (Kitchen, Qty: 2)	135	64.8
Water Offsets	Raven Housing Trust	Cenergist - CEN298590	03/10/2024	12 Cottonwood Close, Crawley, RH11 7HR	RH11 7HR	4	1P 5L Inline (Kitchen, Qty: 2)	108	64.8
Water Offsets	Raven Housing Trust	Cenergist - CEN298592	03/10/2024	52 Percivale Close, Crawley , RH11 0FZ	RH11 0FZ	1	1P 5L Inline (Bathroom, Qty: 2)	27	64.8
Water Offsets	Raven Housing Trust	Cenergist - CEN298488	02/10/2024	7 Arun Close, Crawley, RH10 1EU	RH10 1EU	1	1P 7.8L Inline (Kitchen, Qty: 2), 1P 5L Inline (Bathroom, Qty: 2)	27	64.8
								432	**453.6**

Required Water Savings		
Daily Water Savings =	***379.71***	***litres/day***
Annual Water Savings =	***138,594.15***	***litres/year***
Required Water Savings		
Daily Water Savings =	***432.00***	***litres/day***
Annual Water Savings =	***157,680.00***	***litres/year***
Surplus Water Savings	***13.77%***	

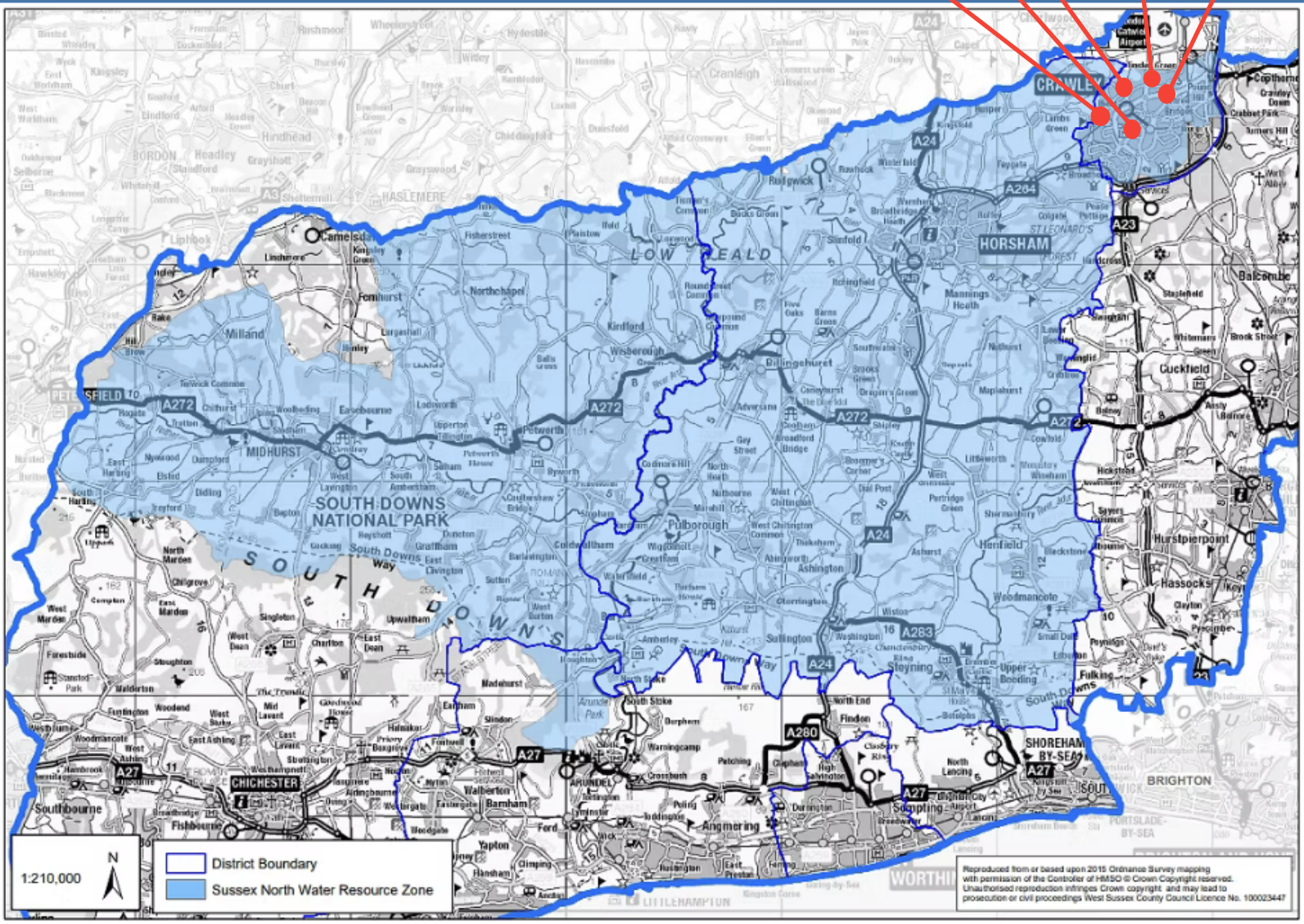
RH11 8GA

RH11 0FZ

RH11 7TF & RH11 7HR

RH11 7GW & RH11 7NH

RH10 1EU



APPENDIX E - Comments from Natural England

Date: 07 March 2025
Our ref: 503282
Your ref: HRA/24/0018

Customer Services
Hornbeam House
Crewe Business Park
Electra Way
Crewe
Cheshire
CW1 6GJ

T 0300 060 3900

Horsham District Council
Chart Way
Horsham
West Sussex
RH12 1RL

BY EMAIL ONLY

Dear Ms Turner,

Planning consultation: Application under Regulation 77 of the Conservation of Habitats and Species Regulation 2017 in respect of Prior Approval consent DC/23/0603.
Location: Freshwater Parade, Bishopric, Horsham, West Sussex.

Thank you for your consultation on the above dated 18 February 2025 which was received by Natural England on the same date.

Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

SUMMARY OF NATURAL ENGLAND'S ADVICE

FURTHER INFORMATION REQUIRED TO DETERMINE IMPACTS ON DESIGNATED SITES

As submitted, the application could have potential significant effects on Arun Valley Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar site as well as Amberley Wild Brooks site of Special Scientific Interest (SSSI) and Pulborough Brooks SSSI. Natural England requires further information in order to determine the significance of these impacts and the scope for mitigation.

The following information is required:

- Further information relating to the proposed use of Cenergist flow restrictors.
- Confirmation that the management, monitoring and maintenance of the proposed mitigation can be secured in perpetuity.

Without this information, Natural England may need to object to the proposal.

Please re-consult Natural England once this information has been obtained.

Natural England's further advice on designated sites/landscapes and advice on other issues is set out below.

Habitats Regulations Assessment

The development site is located close to Arun Valley SPA, SAC and Ramsar site. Natural England considers that the proposed works could result in a likely significant effect or a "relevant effect" (in line with Regulation 77 of The Conservation of Habitats and Species Regulations 2017), (the Habitat Regulations)). In coming to this view Natural England must exclude the consideration of measures that are specifically designated to avoid or reduce harmful effects on a European Site.

Natural England notes that your authority, as competent authority, has undertaken an appropriate assessment of the proposal in accordance with regulation 63 of the Conservation of Species and Habitats Regulations 2017 (as amended). Natural England is a statutory consultee on the appropriate assessment stage of the Habitats Regulations Assessment process, and a competent authority should have regard to Natural England's advice.

Your appropriate assessment concludes that your authority is able to ascertain that the proposal will not result in adverse effects on the integrity of any of the sites in question. Having considered the assessment, and the measures proposed to mitigate for any adverse effects, it is the advice of Natural England that **it is not possible** to ascertain that the proposal will not result in adverse effects on the integrity of the sites in question.

Natural England advises that the assessment does not currently provide enough information and/or certainty to justify the assessment conclusion and that your authority should not grant planning permission at this stage.

We have no comment to make on other prior approval matters included in the consultation.

We recommend that should your authority give its prior approval to the proposed permitted development; the following paragraphs are included on the decision notice as advisory notes to the applicant.

Site of Special Scientific Interest

Should prior approval be given, and before a landowner commences a permitted development within a Site of Special Scientific Interest (SSSI), they must give written notice to Natural England and await its consent[1]. See here for further details.

Should prior approval be given, and before a public body, statutory undertaker or other body commences a permitted development within or might affect a Site of Special Scientific Interest (SSSI), it must give written notice to Natural England and await its assent or, in some cases, its advice. See here for further details.

Protected Species

In addition to the advice in this letter, there may be impacts on protected species and a mitigation licence may be required from Natural England. Further information can be found here https://www.gov.uk/guidance/wildlife-licences

[1] Because permitted development is not authorised by a planning permission granted following an application under Part III of the Town and Country Planning Act 1990, it is not a 'reasonable excuse' under section 28P(4) of the 1981 Wildlife and Countryside Act to carry out operations affecting a Site of Special Scientific Interest without giving prior notice to Natural England and without receiving its prior SSSI assent/consent/advice. Failure to do so is an offence.

Additional Information Required

The proposed development falls within the Sussex North Water Supply Zone (SNWSZ). As set out in Natural England's Advice Note regarding planning applications within the SNWSZ, the existing water supply in the zone cannot be ruled out as contributing to the declines in wildlife within the internationally protected Arun Valley SPA, SAC and Ramsar sites. Ensuring that there is no net increase in water consumption is recognised as a suitable method to rule out potential adverse effects on the integrity of these sites arising from development.

Natural England has considered the information provided in the following documents:

- Water Neutrality Report [November, 2024]
- Water Audit Report [November, 2024]
- Water Offsetting Properties Installations [November, 2024]

It is our advice that the following further information is required:

Proposed Mitigation

Cenergist Flow Restrictors

We note that the applicant is proposing to install flow restrictors into existing housing stock belonging to Ravens Housing Trust to offset the increased water demand from the proposed development. While we accept the use of Cenergist Control Flow HL2024 devices to retrofit existing properties, it is our advice that its use is only applicable to properties that:

- Are supplied via mains connection within the Sussex North Water Resource Zone.
- Were built prior to 2010 when Buildings Regulations water efficiency standard were introduced.
- Do not already benefit from significant water efficiency measures, for example rainwater harvesting or existing flow restrictors.

In addition, your authority will need to be satisfied that the implementation of flow restrictors can be suitably secured in perpetuity and that there will be no 'double counting' of offsetting capability for this, or future proposals.

We therefore require the applicant to submit evidence that the properties were built prior to 2010 and confirm that they do not already benefit from significant water efficiency measures. We would also like clarification that the more precautionary water saving value of 27 litres per person, per day is being used as the submitted Water Neutrality Report appears to use a standard value of 70 litres per dwelling.

Ongoing Management, Monitoring and Maintenance

Whilst we appreciate that the maintenance of the proposed greywater harvesting system has been addressed in the submitted Water Neutrality Report (Section 3.2.4), we are concerned that the contract for this will only run for 10 years. In order to pass through appropriate assessment the ongoing management, monitoring and maintenance of mitigation measures should be secured in perpetuity.

Similarly, it is stated in section 3.4.1 that the Cenergist Control Flow HL2024 offers 'lifetime savings of 10 years or more' yet no information has been provided as to who is responsible for replacing the devices to ensure savings continue in perpetuity. We ask that these concerns are addressed by the applicant and considered in your authority's HRA.

Final Comments

Please note that if your authority is minded to grant planning permission contrary to the advice in this letter, you are required under Section 28I (6) of the Wildlife and Countryside Act 1981 (as amended) to notify Natural England of the permission, the terms on which it is proposed to grant it and how, if at all, your authority has taken account of Natural England's advice. You must also allow a further period of 21 days before the operation can commence.

Further general advice on the protected species and other natural environment issues is provided at Annex A.

If you have any queries relating to the advice in this letter please contact me at Sophie.Moore@naturalengland.org.uk.

Please consult us again once the information requested above, has been provided.

Yours faithfully

Sophie Moore
Senior Officer for Sussex- Sustainable Development
Sussex & Kent Team

Annex A –Natural England general advice

Protected Landscapes
Paragraph 182 of the National Planning Policy Framework (NPPF) requires great weight to be given to conserving and enhancing landscape and scenic beauty within Areas of Outstanding Natural Beauty (known as National Landscapes), National Parks, and the Broads and states that the scale and extent of development within all these areas should be limited. Paragraph 183 requires exceptional circumstances to be demonstrated to justify major development within a designated landscape and sets out criteria which should be applied in considering relevant development proposals. Section 245 of the Levelling Up and Regeneration Act 2023 places a duty on relevant authorities (including local planning authorities) to seek to further the statutory purposes of a National Park, the Broads or an Area of Outstanding Natural Beauty in England in exercising their functions. This duty also applies to proposals outside the designated area but impacting on its natural beauty.

The local planning authority should carefully consider any impacts on the statutory purposes of protected landscapes and their settings in line with the NPPF, relevant development plan policies and the Section 245 duty. The relevant National Landscape Partnership or Conservation Board may be able to offer advice on the impacts of the proposal on the natural beauty of the area and the aims and objectives of the statutory management plan, as well as environmental enhancement opportunities. Where available, a local Landscape Character Assessment can also be a helpful guide to the landscape's sensitivity to development and its capacity to accommodate proposed development.

Wider landscapes
Paragraph 180 of the NPPF highlights the need to protect and enhance valued landscapes through the planning system. This application may present opportunities to protect and enhance locally valued landscapes, including any local landscape designations. You may want to consider whether any local landscape features or characteristics (such as ponds, woodland, or dry-stone walls) could be incorporated into the development to respond to and enhance local landscape character and distinctiveness, in line with any local landscape character assessments. Where the impacts of development are likely to be significant, a Landscape and Visual Impact Assessment should be provided with the proposal to inform decision making. We refer you to the Landscape Institute Guidelines for Landscape and Visual Impact Assessment for further guidance.

Biodiversity duty
The local planning authority has a duty to conserve and enhance biodiversity as part of its decision making. Further information is available here.

Designated nature conservation sites
Paragraphs 186-188 of the NPPF set out the principles for determining applications impacting on Sites of Special Scientific Interest (SSSI) and habitats sites. Both the direct and indirect impacts of the development should be considered. A Habitats Regulations Assessment is needed where there is a likely significant effect on a habitats site and Natural England must be consulted on 'appropriate assessments'. Natural England must also be consulted where development is in or likely to affect a SSSI and provides advice on potential impacts on SSSIs either via Impact Risk Zones or as standard or bespoke consultation responses.

Protected Species
Natural England has produced standing advice to help planning authorities understand the impact of particular developments on protected species. Natural England will only provide bespoke advice on protected species where they form part of a Site of Special Scientific Interest or in exceptional circumstances. A protected species licence may be required in certain cases.

Local sites and priority habitats and species
The local planning authority should consider the impacts of the proposed development on any local wildlife or geodiversity site, in line with paragraphs 180, 181 and 185 of the NPPF and any relevant development plan policy. There may also be opportunities to enhance local sites and improve their connectivity to help nature's recovery. Natural England does not hold locally specific information on local sites and recommends further information is obtained from appropriate bodies such as the local records centre,

wildlife trust, geoconservation groups or recording societies. Emerging Local Nature Recovery Strategies may also provide further useful information.

Priority habitats and species are of particular importance for nature conservation and are included in the England Biodiversity List published under section 41 of the Natural Environment and Rural Communities Act 2006. Most priority habitats will be mapped either as Sites of Special Scientific Interest on the Magic website or as Local Wildlife Sites. A list of priority habitats and species can be found on Gov.uk.

Natural England does not routinely hold species data. Such data should be collected when impacts on priority habitats or species are considered likely. Consideration should also be given to the potential environmental value of brownfield sites, often found in urban areas and former industrial land, further information including links to the open mosaic habitats inventory can be found here.

Biodiversity and wider environmental gains

Development should provide net gains for biodiversity in line with the NPPF paragraphs 180(d), 185 and 186. Major development (defined in the NPPF glossary) is required by law to deliver a biodiversity gain of at least 10% from 12 February 2024 and this requirement is expected to be extended to smaller scale development in spring 2024. For nationally significant infrastructure projects (NSIPs), it is anticipated that the requirement for biodiversity net gain will be implemented from 2025.

Further information on the timetable for mandatory biodiversity net gain can be found here. Further information on biodiversity net gain, including draft Planning Practice Guidance, can be found here.

The statutory Biodiversity Metric should be used to calculate biodiversity losses and gains for terrestrial and intertidal habitats and can be used to inform any development project. For small development sites, the Small Sites Metric may be used. This is a simplified version of the Biodiversity Metric and is designed for use where certain criteria are met.

The mitigation hierarchy as set out in paragraph 186 of the NPPF should be followed to firstly consider what existing habitats within the site can be retained or enhanced. Where on-site measures are not possible, provision off-site will need to be considered.

Development also provides opportunities to secure wider biodiversity enhancements and environmental gains, as outlined in the NPPF (paragraphs 8, 74, 108, 124, 180, 181 and 186). Opportunities for enhancement might include incorporating features to support specific species within the design of new buildings such as swift or bat boxes or designing lighting to encourage wildlife.

Natural England's Environmental Benefits from Nature tool may be used to identify opportunities to enhance wider benefits from nature and to avoid and minimise any negative impacts. It is designed to work alongside the Biodiversity Metric and is available as a beta test version.

Further information on biodiversity net gain, the mitigation hierarchy and wider environmental net gain can be found in government Planning Practice Guidance for the natural environment.

Ancient woodland, ancient and veteran trees

The local planning authority should consider any impacts on ancient woodland and ancient and veteran trees in line with paragraph 186 of the NPPF. Natural England maintains the Ancient Woodland Inventory which can help identify ancient woodland. Natural England and the Forestry Commission have produced standing advice for planning authorities in relation to ancient woodland and ancient and veteran trees. It should be taken into account when determining relevant planning applications. Natural England will only provide bespoke advice on ancient woodland, ancient and veteran trees where they form part of a Site of Special Scientific Interest or in exceptional circumstances.

Best and most versatile agricultural land and soils

Local planning authorities are responsible for ensuring that they have sufficient detailed agricultural land classification (ALC) information to apply NPPF policies (Paragraphs 180 and 181). This is the case regardless of whether the proposed development is sufficiently large to consult Natural England. Further

Annex A –Natural England general advice

information is contained in GOV.UK guidance Agricultural Land Classification information is available on the Magic website and the Data.Gov.uk website

Guidance on soil protection is available in the Defra Construction Code of Practice for the Sustainable Use of Soils on Construction Sites, and we recommend its use in the design and construction of development, including any planning conditions. For mineral working and landfilling, separate guidance on soil protection for site restoration and aftercare is available on Gov.uk website. Detailed guidance on soil handling for mineral sites is contained in the Institute of Quarrying *Good Practice Guide for Handling Soils in Mineral Workings*.

Should the development proceed, we advise that the developer uses an appropriately experienced soil specialist to advise on, and supervise soil handling, including identifying when soils are dry enough to be handled and how to make the best use of soils on site.

Green Infrastructure
Natural England's Green Infrastructure Framework provides evidence-based advice and tools on how to design, deliver and manage green and blue infrastructure (GI). GI should create and maintain green liveable places that enable people to experience and connect with nature, and that offer everyone, wherever they live, access to good quality parks, greenspaces, recreational, walking and cycling routes that are inclusive, safe, welcoming, well-managed and accessible for all. GI provision should enhance ecological networks, support ecosystems services and connect as a living network at local, regional and national scales.

Development should be designed to meet the 15 Green Infrastructure Principles. The GI Standards can be used to inform the quality, quantity and type of GI to be provided. Major development should have a GI plan including a long-term delivery and management plan. Relevant aspects of local authority GI strategies should be delivered where appropriate.

GI mapping resources are available here and here. These can be used to help assess deficiencies in greenspace provision and identify priority locations for new GI provision.

Access and Recreation
Natural England encourages any proposal to incorporate measures to help improve people's access to the natural environment. Measures such as reinstating existing footpaths, together with the creation of new footpaths and bridleways should be considered. Links to urban fringe areas should also be explored to strengthen access networks, reduce fragmentation, and promote wider green infrastructure.

Rights of Way, Access land, Coastal access and National Trails
Paragraphs 104 and 180 of the NPPF highlight the important of public rights of way and access. Development should consider potential impacts on access land, common land, rights of way and coastal access routes in the vicinity of the development. Consideration should also be given to the potential impacts on the any nearby National Trails. The National Trails website www.nationaltrail.co.uk provides information including contact details for the National Trail Officer. Appropriate mitigation measures should be incorporated for any adverse impacts.

Further information is set out in Planning Practice Guidance on the natural environment