Water Neutrality Statement

Change of Use of Equestrian Stables to Offices (Class E)

at

Beckley Stud
Reeds Lane
Southwater
RH13 9DQ

On Behalf of
Equine America

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1 INTRODUCTION

1.1 Horsham District is situated in an area of serious water stress, as identified by the Environment Agency Water Stressed Areas Classification.

1.2 Horsham District is supplied with water by Southern Water from its Sussex North Water Resource Zone. This supply is sourced from abstraction points in the Arun Valley, which includes locations such as Amberley Wild Brooks Site of Special Scientific Interest (SSSI), Pulborough Brooks SSSI and Arun Valley Special Protection Area/Special Area of Conservation and Ramsar site.

1.3 On 14 September 2021, Horsham District Council received a Position Statement from Natural England. Information collected by Natural England shows that water abstraction for drinking water supplies is having a negative impact on the wildlife sites in the Arun Valley. They have advised that any new development that takes place must not add to this negative impact.

1.4 One way of preventing any further negative impact is to ensure that all new development which takes place is water neutral. Water neutrality is defined as the use of water in the supply area before the development is the same or lower after the development is in place.

1.5 The application site is located within the Sussex North Water Resource Zone. This report therefore provides evidence to show that the proposed development will be water neutral.

2 BACKGROUND

2.1 The application site known as Beckley Stud is located close to the settlement of Southwater (approximately 0.4km away on the opposite side of the A24) accessed directly of Reeds Lane via Coltstaple Lane.

2.2 The site comprises of 11 acres of land, paddocks, a sand school, lunge arena, a brick built stable building and a storage building which is used in association with the equestrian activity undertaken on site.

2.3 As well as Beckley Stud the applicant owns several other sites across all of which are used in association with the equestrian activity undertaken as part of Equine America.

2.4 The applicant is proposing the change of use of the existing stable block to offices, which will result in the existing horses housed with the stables being relocated to their site located within the catchment of Waverley Borough Council.

2.5 Details of the proposed and existing water usage related to the proposal can be found within Sections 3 and 4 of this report.

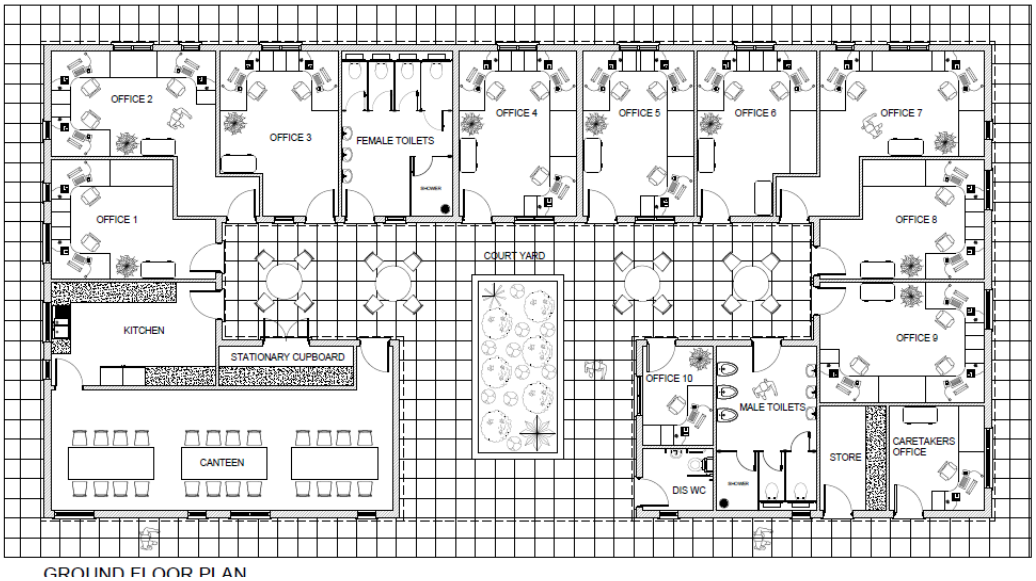
3 PROPOSED WATER CONSUMPTION

3.1 The planning application seeks permission for the change of use of the existing stable block to offices (Class E).

3.2 The existing stable block internal floor area measures approximately 216.4 sqm and is currently split into 10 stable blocks, tack room, washroom, feed store and day room associated with its current equestrian use.

3.3 As shown on the proposed floor plan in Figure 3.1 the proposal will result in the remodelling of the internal features to enable the proposed office use.

Figure 3.1 Proposed Floor Plan



3.4 The stable building measures approximately 286 sqm, using the OffPAT employment densities (2010) figures this would therefore equate to the following number of employees being on site for the proposed change of use to offices:

Class E previously B1(a) use (12sqm per 1 employee) = 24 employees

https://assets.publishing.service.gov.uk/media/5a7dedd8e5274a2e8ab44baf/employ-den.pdf

3.5 Taking the employee average water usage of 50 litres per person per day this would equate to 950 litres of water being used per day or 346,750 litres per annum based on the premises being open for a worst-case 365 days.

50 litres per day x 24 employees = 1,200 litres per day

1,200 litres per day x 365 = 438,000 litres per annum

Baseline Water Usage

3.9 The application site which is connected to a main water supply is currently used to house 10 horses and which will be used towards the offsetting associated with the proposed change of use further details of which can be found in Section 4 of this report.

4 OFFSETTING

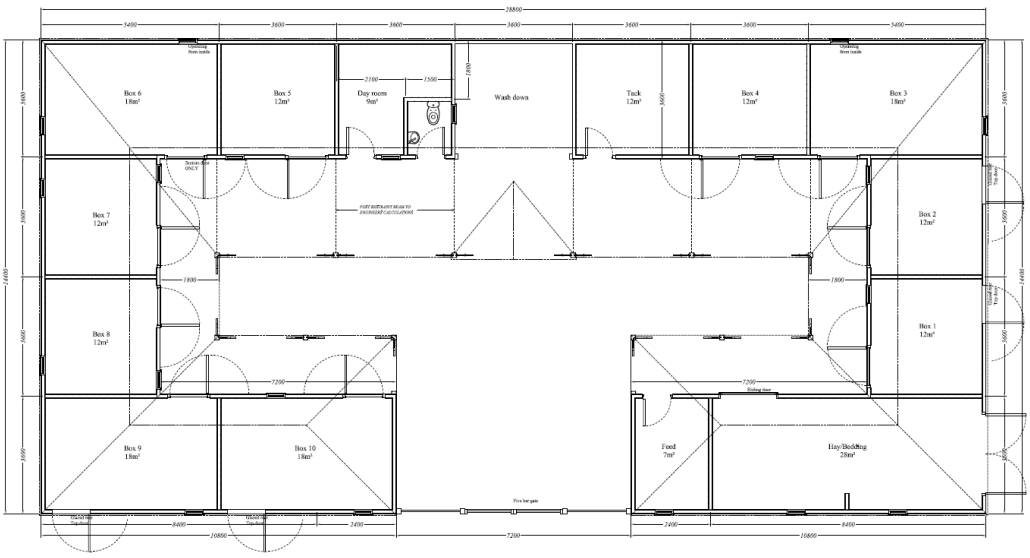
4.1 It is assumed on a worst-case scenario basis that the proposed use of the site under Class E offices would potentially use up to 1,200 litres per day, which would equate to 438,000 litres of water based on a 365 day operation.

4.2 The application site is currently used to house 10 horses and which is conditioned as part of the original planning permission for the stables as noted below:

DC/19/0278 – Demolition of Existing Stables and Erection of Stables

Condition 5: The total number of horses to be stabled on site at any one time shall be restricted to 10.

Figure 4.1 – Existing Floor Plan



4.3 Due to the stables not being on a separate water meter it is not possible to evidence the water usage of the stables specifically. Therefore, in order to calculate how much water the existing horses use we have sourced information from a number of animal welfare organisations on the drinking water requirements of horses and which is an accepted approach by Natural England and Local Planning Authorities. This information is detailed below:

- RSPCA – 30-50 litres of water per day, more in hot weather
- Blue Cross – 25-55 litres of water per day

- Equine Nutritionist – 30 litres of water per day
- British Horse Society – up to 50 litres of water per day
- DEFRA - 25-50 litres of water per day, more in hot weather
- Penn State University (USA) – 40 litres per day

4.3 Taking the average water requirements of a horse (39.5 litres per day), we can calculate the water usage of the horses to be as follows:

39.5 litres x 10 horses = 395 litres per day

395 litres per day x 365 days = 144,175 litres per annum

4.4 The stables are proposed to be converted into office space, and since there are no alternative buildings on-site to house the horses, they will be relocated to the applicant's other facility, Brook Hurst Grange. This facility is situated within the Waverley Borough Council area, which lies outside the Sussex North Water Resource Zone.

4.5 This relocation establishes a baseline water saving of 395 litres per day (144,175 litres per year), which can be credited against the water usage of the proposed offices. As previously stated, the offices are expected to consume 438,000 litres per year, leaving a remaining 293,825 litres per year that must be offset to achieve water neutrality.

Further Offsetting Strategy

4.6 The proposed 50 litres per person water usage is broken down by the following uses:

43% **WC's**

27% **Washing**

20% **Urinals**

9% **Canteen/Drinking**

1% **Cleaning**

https://encorecistern.com/flushing-toilet-biggest-waste-of-water-offices/

4.7 This therefore equates to only 10% of the proposed 1,200 litres requiring mains water for drinking and cleaning with the remaining 90% being capable of being sourced from rainwater harvesting.

43,800 litres per annum of Mains Water

394,200 litres per annum of Grey Water

4.8 As only 293,825 litres per annum of further offsetting is required it is proposed to use rainwater harvesting to provide the additional grey water usage required to enable the proposal to be water neutral which will be for all non potable water such as WC's and urinals.

Rainwater Harvesting

4.9 To determine an appropriate rainwater harvesting system for the building it is necessary to firstly determine how much rainfall the area experiences.

4.10 The site is located within the Arun at Alfoldean rainfall catchment area. Data from the UK Centre for Ecology & Hydrology shows that on average 868 mm of rain falls per month. Rainfall data is provided below.

	Average Rainfall (mm)						
	July 2019 - June 2020	July 2020 - June 2021	July 2021 - June 2022	July 2022 - June 2023	July 2023 - June 2024	July 2024 - June 2025	Average
July	124.26	42.14	93.38	4.14	65.63	35.49	60.84
August	51.28	29.70	95.88	38.14	52.12	12.64	46.63
Sept	54.02	58.96	54.42	97.50	48.50	139.96	75.56
Oct	10.74	28.46	61.52	93.82	170.07	82.76	74.56
Nov	123.86	178.60	151.64	218.58	124.90	83.77	146.89
Dec	116.32	63.88	43.18	107.58	123.84	53.07	84.65
Jan	143.68	128.84	82.40	101.73	84.47	125.65	111.13
Feb	80.50	103.22	30.88	6.24	139.72	67.26	71.30
March	142.18	50.22	59.08	130.67	97.90	4.58	80.77
April	55.02	33.42	41.13	88.58	84.49	21.38	54.00
May	44.48	5.22	20.04	42.83	32.82	27.57	28.83
June	5.32	91.78	40.53	26.25	0.79	32.96	32.94
TOTALS	951.66	814.44	774.07	956.06	1025.25	687.10	868.10

UK Water Resources Portal (ceh.ac.uk)

4.11 The application building has a roof area of 344 square meters and has the ability to capture 298,592 litres of water per annum. This is more than enough to supply the site's grey water needs of 293,825 litres per annum.

344 sqm x 868 mm of rainwater = 298,592 litres per annum

4.12 To cater for a 35 day drought period, which would require 28,175 litres of water, one 30,000 litre rainwater harvesting tank will be used to capture this water and would be positioned by the side of the building and be connected to service the toilets and washrooms (grey water). Details of an option for the rainwater harvesting tank can be found in Appendix B.

4.13 As noted above in item 4.5 293,825 per annum is required to be offset to deem the proposal water neutral. By undertaking the offsetting measures identified above deems the proposal water neutral a summary of which can be found below:

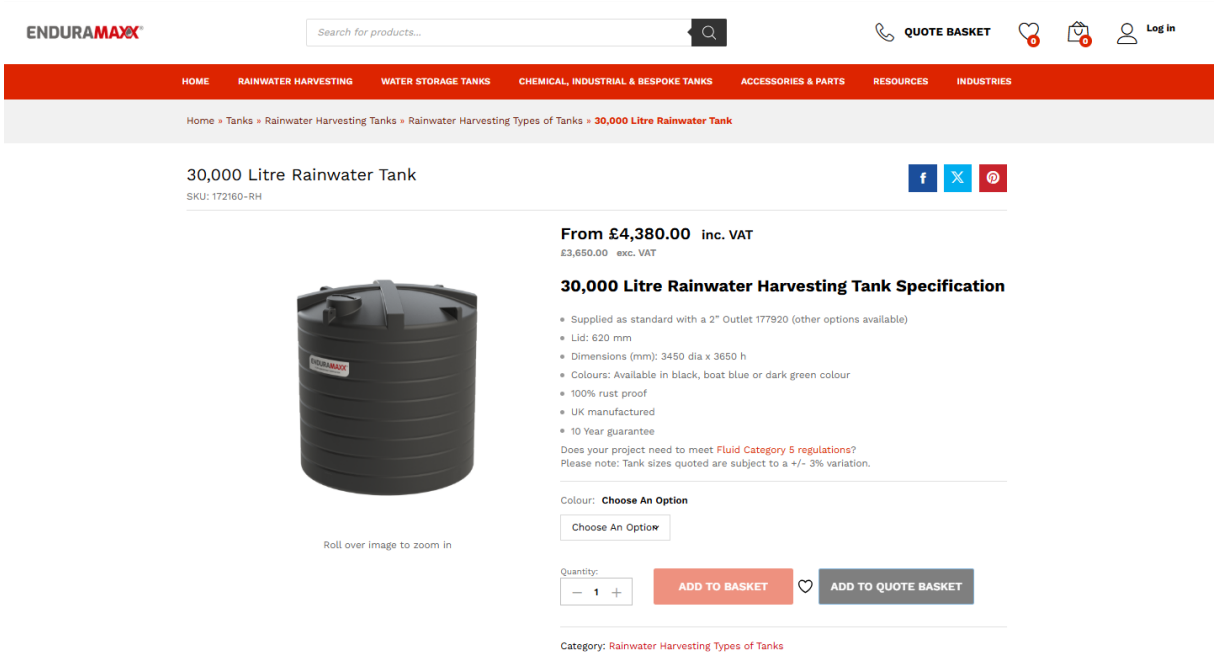
Proposed Water Usage of Offices Combined Per Annum		**(438,000)**
Mains Water Usage for Office Per Annum	**43,800**	
Grey Water Usage for Office Per Annum	**394,200**	
Baseline Mains Water Usage Available		**144,175**
Grey Water Required to be Further Offset via Rainwater Harvesting Per Annum		**293,825**
Rainwater Harvesting Available for Grey Water		**298,592**
Water Reduction Post Offsetting Measures		**-4,767**

Appendix A

Site Location Plan

Appendix B

Rainwater Harvesting Tank



RAINHARVESTING SYSTEMS DATA SHEET

Saphir UV DISINFECTION UNITS

- Suitable for a range of domestic and commercial applications.
- Available in various sizes to suit required flow rates.
- Effective microbiological protection.
- Uses no chemicals & produces no by-products.
- Economical, safe & reliable
- Lamp operation indicator.
- Does not affect taste or odour.
- Long life lamps require only annual replacement.
- Simple to install & maintain.
- *Saphir+* version now available with additional telemetry.

Why use UV treatment?

The quality of untreated rainwater is such that it cannot be classified as potable or 'wholesome' and therefore is not fit for drinking. Even though it is widely used for drinking, bathing etc. in various parts of the world, it is not deemed acceptable practice for the UK.

Untreated rainwater is not considered safe for personal use due to the contamination risk, particularly from bird droppings. To be sure that any 'unwholesome' water is fit to drink it should therefore be treated, and the simplest and most reliable way of doing this on a small scale is to use Ultra-Violet (UV) sterilisation. The water to be treated must first be free of even microscopic particles, so it is usually necessary to fit sediment pre-filters prior to the water entering the UV unit.

How does it work?

UV disinfection works by destroying the DNA of potentially damaging micro-organisms, thus rendering them harmless. This process is instant, effective and reliable. No chemicals are involved and the process does not affect the taste of the water in any way. UV radiation is part of natural sunlight, and a UV lamp emits a particular wavelength at high concentration to destroy bacteria, viruses and cysts.

Saphir UV unit

UV treatment is safe, reliable and simple to maintain. It is generally deemed to be ecologically preferable to chlorination and reverse osmosis (RO). However, please note that UV treatment alone will not remove discolouration or bad taste.

Several models available to suit most applications

Model	flow rate @ 40mJ/cm²	flow rate @ 25mJ/cm²	Inlet / outlet size	Power consumption	Length mm
Saphir 1	13.5 l/min.	20 l/min.	¾" bsp	15w	405
Saphir 2	22.5 l/min.	36.5 l/min	¾" bsp	25w	554
Saphir 3	40 l/min.	63 l/min	¾" bsp	40w	554
Saphir 4	46.5 l/min.	73 l/min	1" bsp	36w	962
Saphir 7	89 l/min.	140 l/min	1" bsp	36w	962
Saphir 10	120 l/min.	193 l/min	1 ½" bsp	75w	962

** mJ/cm² = millijoules per cm² at end of lamp life*

Saphir UV

Standard units have:
- Stainless steel chamber
- High-output low-pressure UV lamp
- Lamp on indicator
- IP55 rated controls
- Control module can be chamber or wall mounted
- Chamber can be mounted vertically or horizontally
- Up to 10 bar pressure
- UK manufactured
-

Saphir+

The + version of the Saphir unit has several additional features:
- Micro processor control
- Lamp status indicator to show when the lamp needs changing
- Alarm & processer reset button
- volt-free contacts for remote alarm output.

Data Sheet UV/17/01

SEDIMENT PRE-FILTERS FOR USE WITH UV UNITS

- **For use with pressurised water supplies.**
- **Sediment removal down to 5 microns.**
- **Available in a range of sizes to suit different flow rates.**
- **Replaceable polypropylene cartridges or bags.**
- **Simple cartridge changing.**
- **Nitrate and Carbon filters also available.**

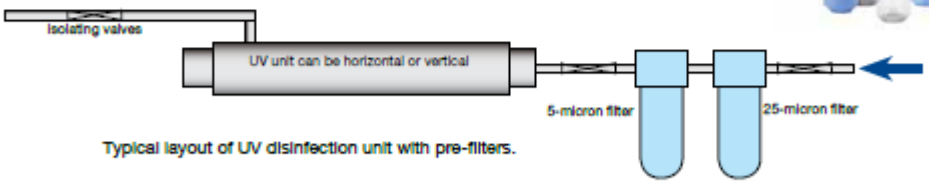
When using *Saphir* UV units to disinfect rainwater we recommend that additional filtration is added prior to the water passing through the UV chamber. It is important that the water to be treated is as clean as possbile, otherwise small particles can create a 'shadow' which the UV light cannot penetrate. We recommend that water is cleaned down to 5 microns prior to UV treatment.

The filters require pressure in order to work effectively so are suitable only for pumped supplies. The cartridges require regular replacement, frequency of which will vary according to the nature of the water they are treating.

Water is normally pumped through 25-micron and 5-micron wound sediment filters to ensure that sufficient material is removed. These are available in a range of sizes to suit different flow rates. For larger UV units where a higher flow rate is required, a single 5-micron 'bag' filter is sufficient.

Filters are selected to match the flow rate of the UV unit

UV Unit	25-micron pre-filter	5-micron pre-filter	Connection size
Saphir 1	10" standard wound cartridge	10" standard wound cartridge	¾" bsp
Saphir 2	20" standard wound cartridge	20" standard wound cartridge	¾" bsp
Saphir 3	10" 'Big Blue' wound cartridge	10" 'Big Blue' wound cartridge	¾" bsp
Saphir 4	10" 'Big Blue' wound cartridge	10" 'Big Blue' wound cartridge	1" bsp
Saphir 7	N/A	10" 'Big Blue' bag filter	1" bsp
Saphir 10	N/A	10" 'Big Blue' bag filter	1½" bsp



Typical layout of UV disinfection unit with pre-filters.

Distributor:

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