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<b>PROJECT</b>	Rock Common Quarry Washington	<b>CLIENT</b>	West Sussex County Council			
<b>TITLE</b>	Water Neutrality Statement Review	<b>REFERENCE</b>	22180-WRC-TN-02	C04		
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C01	Initial Review – Final Version	27/01/2023	FdM	GL	GL	
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C03	Third Review – Final Version	29/09/2023	FdM	GL	GL	
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## 1 Introduction

- 1.1 According to the Environment Agency Water Stressed Areas Classification 2021<sup>1</sup> West Sussex county is situated within an area of serious water stress. Parts of the county lie within Southern Water’s Sussex North Water Resource Zone (SNWRZ), which draws water from abstraction points within the Arun Valley.
- 1.2 Natural England issued a position statement in September 2021<sup>2</sup> stating that it cannot be concluded that existing abstractions in the SNWRZ are not having an adverse impact on the Arun Valley sites including the Arun Valley Special Area of Conservation (SAC), Special Protection Area (SPA) and RAMSAR site. Therefore, it must be proved that proposed development does not increase this potential impact by increasing demand for water resources.
- 1.3 At present, the only manner in which it can be proved beyond reasonable scientific doubt that proposed development would not exacerbate the impact of the current abstractions, is to show that there is no increase in abstraction within the SNWRZ. Therefore, all proposed development on sites within the SNWRZ must demonstrate “Water Neutrality” i.e. that water demand following development does not exceed the current water use on the site. Water Neutrality could be achieved by reducing the water demand through reduced occupancy and/or floorspace and/or installing water-efficiency measures, or through “offsetting” by reducing water demand elsewhere (for example retro-fitting existing development) within the catchment.

<sup>1</sup> <https://www.gov.uk/government/publications/water-stressed-areas-2021-classification>

<sup>2</sup> [https://www.westsussex.gov.uk/media/17040/ne\\_positionstatement.pdf](https://www.westsussex.gov.uk/media/17040/ne_positionstatement.pdf)

- 1.4 West Sussex County Council may not approve any planning applications that lie within the SNWRZ without the applicant satisfactorily demonstrating that the development will achieve water neutrality. Proposed measures must be quantified and secured by legal agreement or, if considered appropriate, by planning condition before development is allowed to proceed.<sup>3</sup>
- 1.5 Within the context of the Habitats Regulations, Natural England's position statement and recent case law, it is necessary for West Sussex County Council to consider the conclusions set out in applicants' Water Neutrality Statements (WNS) in order to prepare an Appropriate Assessment (AA) demonstrating that the legislative tests for demonstrating no adverse effect are passed. This means that the WNS must:
  - Be based on established scientific methods, with all assumptions clearly evidence, and where uncertainty exists, comply with the precautionary principle which states that the worst possible scenario must be considered; and
  - Provide certainty that the assumptions on which the statement is based, including provision of any mitigation, will be delivered in a timely manner such that at no point in time does the water demand exceed the baseline water demand.
- 1.6 With this in mind, this Technical Note provides a review of the WNS submitted alongside the application for development extending the operation and revising the restoration plan at Rock Common Quarry near Washington (application reference WSCC/028/21).
- 1.7 Previous reviews, including advice for how to improve the WNS in terms of certainty and precautionality, were issued by Water Environment Limited in January 2023<sup>4</sup>, April 2023<sup>5</sup> and September 2023<sup>6</sup>. Following the latest review, additional evidence has been compiled by the applicant and a revised WNS has been completed.
- 1.8 The purpose of this Technical Note is to provide an independent review of the revised WNS. The following documents have been reviewed:
  - Water Neutrality Statement by H2O Geo version 3.0 dated 16<sup>th</sup> October 2023 (document reference 220805-20220401P1); and
  - Associated documents submitted with application reference WSCC/028/21 obtained from the West Sussex planning portal.

## **2 Description of Development**

- 2.1 The development is located at Rock Common Quarry, The Hollow, Washington. The application is for:

*The continued winning, working and processing of sand from the existing Rock Common Quarry, the importation of inert classified engineering and restoration material, the stockpiling and treating of the imported material, the placement of the imported material within the quarry void and the restoration and landscaping of the quarry*

- 2.2 According to the Environmental Statement Non-Technical Summary, the application has two primary components, firstly to extend the existing permission to work the remaining sand reserves within the quarry, and secondly, to alter the existing approved restoration scheme from wet restoration to a dry landform, which is considered to be safer and more sustainable. It is estimated that approximately 150,000 tonnes of sand reserves remains for extraction, with 5,500,000 tonnes of restoration material required. The combined period of extraction and restoration is estimated to be 8 to 10 years.

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<sup>3</sup> <https://www.westsussex.gov.uk/planning/water-neutrality/>

<sup>4</sup> 22180-WRC-TN-02-C01 dated 27/01/2023

<sup>5</sup> 22180-WRC-TN-02-C02 dated 13/04/2023

<sup>6</sup> 22180-WRC-TN-02-C03 dated 29/09/2023

- 2.3 As a result of the first component of the application, an extension is sought to the timeframe of existing developments in the existing processing area (application reference DC/2151/07(W.S) – “importation of up to 10,000 tonnes per annum of aggregates to Rock Common Quarry for blending and re-sale” and application reference DC/554/05(W.S) – “importation of up to 5,000 tonnes per annum of soils and peat to Rock Common Sandpit for blending with indigenous sands and resale as growing medium”). The application therefore results in the potential for retention of all facilities within the existing “processing area” north-east of The Hollow for the development lifetime. There is currently no indication within the application that the existing processing operations will cease once extraction is completed.
- 2.4 In terms of water resources, the site is currently supplied with water from two sources, water supply from the mains, which is supplied from within the SNWRZ, and from a licenced abstraction amounting to up to 6,000m<sup>3</sup>/day. The abstraction covers the need to dewater the quarry, and the licence is granted for the purposes of “dewatering and processing”. The dewatering has been taking place since sand extraction commenced in the 1920s. Groundwater is pumped predominantly into the nearby Honeybridge Stream, forming a significant source of flow in this stream, and it is proposed to continue pumping groundwater to protect the stream’s hydro-morphology and ecology. The stream is a tributary of the tidal River Adur.
- 2.5 The currently approved restoration plan could, among other issues, result in the potential for leachate contamination in the groundwater due to the combination of the cessation of pumping allowing local groundwater levels to rise, and the creation of a significant surface water body, in close proximity to local domestic waste landfill sites.
- 2.6 According to the Planning and Environmental Statement Volume 1, the existing development is equipped with administrative offices, workshop, stores and employee welfare facilities located within the “processing area” north-east of The Hollow. There is an office associated with the weighbridge, also in the “processing area”. It is understood that there are existing non-potable water uses on site that are supplied from the abstraction, for example a sand washing plant. As part of the proposed development, a new “restoration material reception area” (RMRA) is proposed which would include new offices and welfare unit, as well as a dedicated wheel-wash and vehicle cleaning facility.

### **3 Review of Current Water Neutrality Statement**

- 3.1 The applicant submitted a WNS undertaken by H2Ogeo dated 16<sup>th</sup> September 2022 (document reference 20220401P1 version Final v1.0), submitted as part of Terrestria Limited’s response to a WSCC Regulation 25 Further Information request issued on 21<sup>st</sup> December 2021. This was subsequently revised to version 1.4 following a previous review<sup>4</sup> undertaken by Water Environment Limited on behalf of WSCC. A further review was issued<sup>5</sup>, following which an updated WNS (v2.0) was submitted. The review of this third WNS (v2.0) concluded that the development would be water neutral, subject to further clarifications and evidence to support the argument used. A fourth WNS (v3.0) has been submitted, and is the subject of this review.
- 3.2 The WNS states that “the areas under consideration [...] do not include the quarry area, as no mains water is consumed in this part of the site”. The WNS discounts processing of sand and recycling from the assessment, indicating that these processes “will continue to use extracted groundwater until completion of the proposed restoration”. The processes are listed to include dust suppression, aggregate washing/processing and vehicle washing, however, the WNS does not cover the quantities required for these processes or indicate whether these would be adequately met within the terms of the existing licence. The license covers abstraction of 6000m<sup>3</sup>/day of groundwater.

#### **Existing (Baseline) Water Use**

- 3.3 The WNS presents water bills covering the period from 11<sup>th</sup> March to 23<sup>rd</sup> November 2022. This period is represented by three estimated readings and one actual reading. Ideally visual readings of the meter

would be used, however, estimated readings are typically based on long term average usage and therefore the estimated use is still relevant in the assessment of the baseline water use. In this case, the visual reading on 12<sup>th</sup> August is the same value as the preceding estimated reading of 23<sup>rd</sup> May- indicating that water consumption was lower than the anticipated use based on long-term averages in the period prior to the visual reading. At face value, the bills indicate a total use of 13m<sup>3</sup> over 257 days, equivalent to an annual consumption of 18m<sup>3</sup>, or 73 litres/day based on standard working days. However, it is acknowledged that with only a single visual reading, combined with the adjustment to the long-term average use, this is misleading. Consequently, the revised long-term average consumption used in the most recent bill (12<sup>th</sup> August to 23<sup>rd</sup> November) would be a more appropriate source of long term trends. This is a total use of 7m<sup>3</sup> over 103 days, equivalent to an annual consumption of 25m<sup>3</sup>, or 98 litres/day.

- 3.4 As a result of the current use of the site as a quarry, the precise behaviours of the existing employees are not necessarily expected to be consistent with the practices of office based workers in terms of the use of comfort facilities. This is a source of uncertainty, and therefore, under the precautionary principle, the lower water usage rate indicated by the water bills i.e. 98 litres/day has been used to define the baseline water use.

### Proposed Water Use

- 3.5 The proposed consumption includes the existing toilet block, reception and workshop kitchen.
- 3.6 The new building in the RMRA is assessed based on facilities comprising three dual flush toilets (two male and one female), two urinals, three wash hand basins, a kitchen tap and dishwasher. The existing facilities will remain, and will be decommissioned only following completion of the restoration, however the WNS does confirm that fittings will be upgraded in line with the proposals for the new building. The proposed consumption is calculated using the BREEAM UK NC 2018 WAT 01 calculator and Level 3 standard fittings. The fittings specified are as follows:
- WCs effective flush at 3.75 litres/flush;
  - Manually operated urinals specified at 1.5 litres/bowl across four urinal bowls;
  - WHB taps at 5 litres/minute;
  - Kitchenette taps at 6 litres/minute;
  - A separate drinking water tap (fixed use of 1.58 litres/person/day as per BREEAM standard methodology); and
  - Dishwasher at 12 litres/cycle.
- 3.7 The calculated per person demand based on these fitting is 19.34 litres/person/day. The calculation sheets in Annex C have been checked and are correct, resulting in a per person demand of 19.34 litres/person/day for Level 3 performance fittings.
- 3.8 According to the organogram presented in Annex D, an additional 15 staff are anticipated, bringing the total site occupancy to 20. The WNS assumes up to three visitors per day each using the equivalent water as one full time employee. Although five visitor spaces are indicated in drawing DRCL/RCRA/WP 02, this allowance is considered to be a sufficiently precautionary assumption, since the anticipated visitor water demand would typically be lower than an employee demand. The per person water demand has been multiplied by 23 persons to arrive at a daily consumption of 445 litres/day.
- 3.9 The organogram presented in Annex D indicates there may be a canteen/cleaning staff member, and therefore an allowance for food preparation and kitchen cleaning would be required in the calculation. However, it is acknowledged that the available floorspace is only 34m<sup>2</sup> and therefore the provision of a canteen is extremely unlikely. Ideally, this would be confirmed in the application documents and/or the WNS to improve confidence.

- 3.10 The unmitigated daily water budget presented in the WNS based on BREEAM International NC Level 3 fittings, is an increase in potable water demand of 347 litres/day based on the presented figures of 445 litres/day in the proposed case and a metered baseline of 98 litres/day.
- 3.11 Note that the budget presented is based on the quoted fittings being installed across all facilities, and it is confirmed in section 4.2 that fittings will be replaced in the existing site office.
- 3.12 The WNS includes details and the specification for the proposed wheel wash, which is a 100% recovery system, which only requires a water supply for initial filling (1m<sup>3</sup>) and topping up.
- 3.13 In addition, water will be used for dust suppression in accordance with the Dust Management Plan. Bowers will be used for occasional dust suppression, while fixed sprayers will be in place for areas where dust is frequently observed. Further, water will be used for sand and aggregate processing. Quantities of water required are not specified, however, it is likely that requirements for the fixed sprayers will be within the 2,000m<sup>3</sup>/day surplus available from the abstraction (roughly equivalent to 80% of the volume of an Olympic swimming pool daily). However, an estimate of the potential worst-case water volumes required for this purpose would increase confidence that all the demands on the abstraction can be met within the licence, and should therefore be included in the WNS.
- 3.14 It is acknowledged that the majority of these activities are already in operation and would be accounted for in the pumping statistics presented in the WNS. Consequently, it is reasonably certain that sufficient water is available for these elements, as well as to supply comfort uses as required. Nevertheless, an itemised list of the potential maximum demand would enable the County Council to determine with sufficient confidence that there is sufficient water available to meet these demands without needing to resort to mains water supply. It is assumed that these elements will not have any connection to public water sources, however under the current plans, water supply to other areas will be provided and therefore this is a necessary step in determining the budget.

## Mitigation

- 3.15 The WNS provides data that shows the average deficit between the licenced groundwater abstraction volume and the daily pumped volume at the quarry is 1,967m<sup>3</sup>. There is therefore ample groundwater available to cover the full comfort requirement of 0.5m<sup>3</sup> per day. Collected groundwater intended for use in comfort facilities would be treated to the required standards under the Water Supply Regulations (2016), and the WNS includes an Annex to demonstrate the necessary treatment level based on laboratory testing. The supplied report, undertaken by Oakshire Environmental, indicates that the risk to human health is low according to comparisons of the water samples to the WHO Guidelines for drinking water quality. In addition, the WNS commits to performing further analysis to finalise the treatment required and to demonstrate compliance with the Water Supply Regulations 2016 and the Private Water Supplies Regulations as required. The maximum treatment rate is 8 litres/minute. It is not within the scope of this review to assess the water quality requirements, and the County Council needs to satisfy themselves that it is feasible to treat water to the necessary standard prior to determination of the application.
- 3.16 The WNS indicates that all water uses with the exception of the kitchen taps will be supplied from the abstracted groundwater, treated to the appropriate standard, to further reduce demand. This will require retrofitting in the existing toilet block. Plans are provided showing the location of the borehole, existing pumping stations and proposed routes for supply pipes in order to pump groundwater to both office locations. In order to ensure certainty and to enable enforcement checks as necessary, The County Council may require further plans identifying the location and type of all water consuming elements detailed within the WNS, annotated to show the source of the water, the level of treatment (if any) required, and a schedule of discharge units proposed at each location including number and specification. Plans should include all types of activity, including comfort uses, aggregate washing, vehicle washing etc., and should clearly state whether each element will be existing, new, or altered relative to the

baseline scenario. This is sufficient to enable the County Council to consider the feasibility of the supply of water from the borehole for these facilities.

- 3.17 The supplied plans show mains water only supplying the new staff welfare facilities, which are also provided with a groundwater source. The development should comply with the supplied plans in particular Figure 3 and Figure 4 for the conclusions of the WNS to remain robust.
- 3.18 The calculated demand kitchenette use using BREEAM International NC Level 3 fittings is 4.30 litres/person/day, equivalent to a total daily demand for 23 persons of 98.9 litres/day. However, the WNS suggests that mains water would only be used for drinking water (1.58 litres/person/day). The WNS states that treated groundwater will be used for the kitchenette tap and dishwasher, with water treated to drinking water standards. However, for additional safety, a separate drinking water tap will be provided, connected to the mains. Ideally, this tap should be located away from the kitchen sink in order to minimise the risk of its being used for purposes other than drinking water. A demand of 1.58 litres/person/day for drinking water is equivalent to a mains requirement of 36.3 litres/day. Since this is the only mains connected facility, and other uses are supplied solely from groundwater, the development would be water neutral.

## **4 General Advice**

### **Source of Water Supply**

- 4.1 Water use at the site is currently supplied from two sources; from the mains and from the licenced abstraction. According to the Natural England FAQs, the Position Statement does not apply to existing licenced abstractions, because “they are not using the public water supply abstraction that is contributing to the adverse effect”. The Natural England Statement applies only to development that requires a public water supply from Southern Water’s SNWRZ, as it is only the Pulborough abstraction that has been identified as a potential contributing factor to declining status at the Arun Valley SAC. Specifically in relation to mineral site pumping, the FAQ states:

*Whether an application is included would depend on what water supply is chosen. Only development that uses public water supply from Sussex North water supply zone is included in the Statement. Many of the types of development that use water that the County Council permit do not use public water supply and would therefore not be covered by the Statement.*

Consequently, it is reasonable to consider the concept of Water Neutrality at the site solely in terms of the demand on the mains water supply, i.e. any water consuming element of the existing and proposed development that draws water from the mains must be considered in the water budget. Notwithstanding, where compatible with the terms of the abstraction licence, and it can be shown that there is sufficient water available from this source to cover all potential cumulative demands, any use that can instead be supplied by abstracted water can be discounted from the budget.

- 4.2 The security of the licenced abstraction as a source of water needs to be taken into account when justifying this position. According to the Adur and Ouse Abstraction Licensing Strategy (ALS), the next Common End Date for the ALS is 31<sup>st</sup> March 2030, which is before the end of the working and restoration period. However, based on the significant environmental risks of not renewing the abstraction licence, it is considered extremely unlikely that the licence would not be renewed.

## **5 Conclusions**

- 5.1 The WNS report demonstrates that it is possible to achieve water neutrality at the site by supplying the majority of uses from the existing licenced groundwater abstraction. It has already been shown that groundwater abstraction at this location would not adversely affect the aquifer or impact on the relevant designated sites.



- 5.2 The WNS includes calculations and evidence, including numerous plans, water quality testing reports and details of fixtures and fittings, sufficient to demonstrate that the proposed development can be supplied almost entirely by groundwater. Water quality testing indicated that the risk to human health from water abstracted from the borehole is low, and the WNS commits to treating the groundwater to drinking water standards. As a further safeguard, a separate drinking water tap is to be supplied, connected to the mains. A groundwater management system, monitoring plan and all information required to assess compliance with the Water Supply Regulations will need to be submitted prior to occupation of the new development buildings. Review of information related to water quality is outside the scope of this review, however, and the County Council will need to satisfy themselves that the level of treatment targeted is deliverable.
- 5.3 As a result of the strategy set out in the WNS, mains water from the SNWRZ will be utilised only for drinking water from the designated tap. Ideally, this tap should be located away from the kitchenette sink to minimise the risk of its being used for purposes other than drinking water. A fixed per person use of 1.58 litres/person/day is applied, in accordance with BREEAM guidelines, and multiplied by a precautionary occupancy rate of 23 which accounts for permanent staff and visitors, to arrive at a total daily mains demand of 36 litres/day. This is a reduction of 63% compared with the existing metered consumption of 98 litres/day. There is also sufficient headroom in this figure to allow confidence that occasional use of the drinking water tap for other purposes would not result in an exceedance of the current water budget.
- 5.4 The WNS, including the stated assumptions, calculations and evidence, is sufficient to provide confidence that mains water will only be used for drinking water, with other uses being supplied solely from groundwater. Therefore, the strategy outlined in the WNS, subject to the County Council confirming that the level of treatment targeted is deliverable and acceptable within the Water Supply Regulations, is sufficient to demonstrate beyond reasonable scientific doubt that the development would be water neutral.