TECHNICAL NOTE

WATER | ENVIRONMENT

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PROJECT	Rock Common Quarry Washington	CLIENT	West Sussex County Council	
TITLE	Water Neutrality Statement Review	REFERENCE	22180-WRC-TN-02	C01

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REV	COMMENTS	DATE	AUTH	CHKR	APPR
C01	Initial Review – Final Version	27/01/2023	FdM	GL	GL

1 Introduction

1.1 According to the Environment Agency Water Stressed Areas Classification 2021[1] 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[2] 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.

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.[3]

[1] https://www.gov.uk/government/publications/water-stressed-areas-2021-classification
[2] https://www.westsussex.gov.uk/media/17040/ne_positionstatement.pdf
[3] https://www.westsussex.gov.uk/planning/water-neutrality/

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 The scope of this Technical Note also advises the Council and applicant on the evidence required in order to satisfactorily demonstrate compliance with the above principles. It is the applicant's responsibility to gather the evidence and compile the WNS, however this document will provide additional advice on potential strategies to strengthen the existing assessment.

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.

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(WS) – "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(WS) – "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^3/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 16th 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 21st December 2021.

3.2 The WNS indicates that existing mains water facilities were confirmed based on a site visit. Facilities comprise of a toilet block (two WCs, two urinals and wash hand basin), a kitchenette sink and an external tap used for drinking and vehicle wash down. The WNS notes that the existing washing plant is supplied from the groundwater abstraction. Existing consumption is calculated using the BREEAM New Construction (NC) 2018 WAT 01 calculator using a floor area of 34m^2 to generate a default occupancy of 3.77. The fittings specified are as follows:

- WCs at 9 litres/flush;
- No urinals specified;
- WHB taps at 10 litres/minute;
- Kitchenette taps at 10 litres/minute; and
- No dishwasher specified.

3.3 For the existing demand calculation, it is necessary, under the precautionary principle, to obtain a minimum estimate of demand. In the absence of evidence demonstrating fitting performances (for example a flow measurement survey), it is typical to assume BREEAM NC Baseline performance. The specifications above accord with this, except for the WC capacity which should be 6 litres/flush. In addition, specifying urinals will result in a reduction in the theoretical calculation of water use and therefore should be included, since they are stated to be present. Not specifying a dishwasher is precautionary when setting an existing baseline since it estimates dishwashing use as zero.

3.4 The per person water demand has been multiplied by five persons to arrive at a daily consumption of 244 litres/day. Note that the use of five employees is higher than the default occupancy of 3.77 generated by the BREEAM methodology and therefore when urinals are accounted for the per-person urinal demand needs to be adjusted to account for the difference in occupancy between the known rate and the occupancy used in the calculator. Although it is acknowledged that the number of staff on-site will not be existing occupancy rate should be evidenced. Although it is acknowledged that the likely staff occupancy on the site in this instance will not be dictated by the size of the office, any increase in the default occupancy should be supported by evidence to provide sufficient certainty in the calculated demand. In the case where the default occupancy is used, the floor area of 34m^2 should be evidenced by providing surveyed floor plans or equivalent.

3.5 No metered water usage data has been provided. According to Natural England's FAQs, water usage should be evidenced by providing metered data, ideally for at least 3 years, the absence of which may result in the baseline use being regarded as "nil".

3.6 The proposed consumption covers the decommissioning of the existing toilet block, reception and workshop kitchen, however, there is nothing in the application to suggest that the existing facilities will be decommissioned prior to the completion of the restoration. This assumption is therefore incorrect, and these facilities should be allowed for in the proposed consumption calculation, either by adjusting the combined average performances of fittings based on a projected and evidenced workforce split between the facilities, or by calculating the use within this facility separately. Note that in the latter case, the calculation should be precautionary and aim to maximise the estimate of water consumption. It is likely to be necessary to retrofit fittings in this facility to achieve neutrality unless it is clearly demonstrated within the application that the buildings will be demolished prior to the increased work force commencing operations.

3.7 The new building in the RMRA is assessed based on facilities comprising three dual flush toilets, two urinals and wash hand basins, a kitchenette sink and dishwasher. The proposed consumption is calculated using the BREEAM NC 2018 WAT 01 calculator using a floor area of 48m^2 to generate a default occupancy of 5.33. The fittings specified are as follows:

- WCs at 6 litres/flush;
- No urinals specified;
- WHB taps at 6 litres/minute;
- Kitchenette taps at 10 litres/minute;
- Dishwasher specified at 17 litres/cycle.

3.8 With the exception of the WHB taps, the specified performances are equivalent to BREEAM NC Baseline performance. Ideally, the proposed fittings should be itemised together with their specifications, however the performances quoted are achievable across a range of products and the performance can therefore be secured by condition and/or legal agreement requiring the installation of fittings with the equivalent or better performance to the values used in the calculation.

3.9 The per person water demand has been multiplied by five persons to arrive at a daily consumption of 174 litres/day. This suggests that there will be no increase in the number of employees anticipated on the site as a result of the proposed development, which does not accord with the application form which states that the proposals will result in an increase in full time equivalent staff to sixteen (an increase of nine persons). Additionally, drawing DRCL/RCRA/WP-02 shows the provision of five visitor spaces. Clarification of anticipated staffing numbers, if different from the numbers indicated on the application form, as well as visitor numbers where comfort facilities are being made available, should be provided to verify the calculation of total water demand. Note that it may be possible to discount some uses from the calculation, particularly where uncertainty as to absolute figures exists (for example visitor numbers), if it can be shown that numbers will not increase as a result of the development, on the basis that fittings performance will be maintained or improved relative to the existing fittings.

3.10 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 and topping up. These quantities are not specified in the WNS, however it is understood that the filling and topping up will be supplied from the dewatering abstraction.

3.11 Since the daily water budget is calculated to be a reduction, no specific additional measures are proposed. However, the WNS indicates that WC and urinal uses will be supplied from the abstracted water. The WNS also suggests that rainwater collected from the roof of the welfare facilities can be used for

landscaping "particularly in the summer months, when watering is increased". However, irrigation use is not quantified, and it should be confirmed whether such demand will be supplied from the mains in the absence of rainwater collection.

3.12 The WNS is not currently sufficiently robust or precautionary to demonstrate beyond reasonable scientific doubt that 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, 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 31st 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.

Existing Water Demand

4.3 Existing water demand should, ideally, be evidenced by metered water bills or similar. Whilst it is acknowledged that this is not always practical, Natural England has indicated in the past that any baseline use in the absence of bills should be regarded as "nil". Where metered data is unavailable, assumptions used in the estimation of baseline demand should be sufficiently precautionary to meet the legislative tests. In practice, this means that assumptions that generate a reasonable minimum demand should be applied, unless it can be clearly evidenced that a higher figure (for example flow rates or occupancy rates) is applicable.

4.4 In this case, the most precautionary assumptions would be the default occupancy rate from BREEAM NC based on evidence of the office floorspace, together with fittings that perform at BREEAM NC Baseline standards, including urinals. Any assumptions that result in an increase to the demand calculated on this basis would need to be evidenced. In addition, where the default occupancy rate is adjusted, the appropriate alterations should be made to the BREEAM per person demand calculation to allow for uses that do not depend on occupancy (for example automatic urinal flushing).

4.5 It may be relevant to consider other uses that draw water from the mains (for example the WNS indicates that there is an external mains tap used for vehicle washing), however it is precautionary to exclude

these and they should only be included in the calculation of existing demand if the associated usage rates can be robustly quantified.

Proposed Water Demand

4.6 Every potential water consuming activity on the site should be identified, the means of supply clarified, and ideally, anticipated demand should be quantified to demonstrate that the chosen source of water supply is sufficient to meet demand. All potential mains demand should be quantified as precisely as possible in order to generate a robust calculation of the water budget. Examples of relevant proposed water uses associated with the period of the proposed works are:

- Staff comfort use, including WC, basins, showers (if provided), kitchen taps, dishwashing, drinking water etc.;
- General cleaning;
- Vehicle and wheel washing including dust and track-out control;
- General dust control;
- All material processing uses, for example sand washing;
- Irrigation of proposed landscaping species (ideally based on a site specific maintenance and watering plan); and
- Any public conveniences proposed as part of the public access provision.

4.7 All of the above activities with the exception of irrigation and public conveniences, will cease once restoration is complete. However, since Water Neutrality is temporally dependent, and in accordance with the precautionary principle, it is necessary to consider as the "proposed case" water demand, the point at which water demands are greatest and therefore the peak demand should be estimated for each use and combined, unless it can be shown that some uses will not occur concurrently. The calculation can, however, be undertaken on an annualised basis.

4.8 Since there are multiple potential water consuming activities on the site, the applicant should provide a plan showing the proposed facilities and an illustrative indication of likely water sources, connections and pipework. This should include all existing and proposed water uses.

4.9 In a reverse approach to the existing water demand calculation, the calculation of proposed demand should aim to maximise the calculation of demand in accordance with the precautionary principle. For example, in the case of domestic demand, the maximum number of site users including staff and, where numbers may be increased, visitors, should be considered alongside the worst-case fitting performance. Where assumptions are made that reduce the anticipated demand, these should be supported by a robust evidence base, for example details of specific fittings (or a commitment to abide by a certain standard which may be secured by condition or legal agreement), staffing schedules etc. Where rainwater harvesting or greywater recycling is to be implemented, the relevant calculations and specifications should be provided in accordance with BS EN 16941-1:2018 and BS 8525-1. Rainfall data should be taken from a reputable source, for example Met Office or Centre for Ecology and Hydrology records, and should be based on data that spans a recent period amounting to at least 3 years. Note that Natural England requires a drought period of 35 days to be applied in this area if using the simple method from BS EN 16941.

5 Specific Recommended Actions

5.1 In accordance with Natural England FAQs, ideally 3 years' worth of metered water bills should be provided.

5.2 In the absence of metered water bills, the estimate of existing demand should be calculated based on precautionary assumptions. The calculation should be revised to take account of the presence of urinals, and evidence should be provided to support the increased WC capacity and occupancy rate used. Where the occupancy rate differs from the standard occupancy and urinal use is included, the calculation needs to be adjusted to allow for the variation in per-person use of regular automatic flushing of urinals.

5.3 All proposed water uses should be itemised and the source of water indicated and evidenced. Potential sources that are relevant to the application are listed in paragraph 4.6, however the list is not necessarily exhaustive. For clarity, all existing and proposed uses must be set out on a plan, including any proposed connections and networks.

5.4 Where it can be conclusively shown that proposed demand will be supplied only from the existing abstraction, this demand can be excluded from the water budget. It may also be possible to exclude uses where it can be demonstrated that there will be no increase in usage rates relative to the existing development, so long as those uses are also excluded from the calculated existing demand.

5.5 Calculation of the proposed mains water usage should be based on precautionary assumptions (for example maximum occupancy rates and fitting performances) unless evidence can be provided to demonstrate that a lower figure is acceptable. This may be in the form of example specifications for fittings (or an enforceable commitment to a certain standard), anticipated staffing schedules, landscaping maintenance plans etc.

5.6 Any mitigation, for example rainwater harvesting or greywater recycling, or the use of the licenced abstraction to meet certain non-potable or potable demand (subject to the necessary filtration and treatment standard in the case of potable water) should be quantified and evidenced including calculations in accordance with the relevant British Standards. Connections and size and location of tanks should also be provided to WSCC so that they can be considered in the context of other planning requirements.

5.7 The final water budget, including existing demand and proposed demand incorporating mitigation, should be presented in the WNS. If it is not possible to cover all anticipated water demands without increasing potable demand from the public water supply, then it will be necessary to provide mitigation in the form of off-site off-setting within the SNWRZ for the proposed development. Any mitigation should be relevant and consistent with the application uses, including an acceptable and comparable calculation methodology to demonstrate sufficient certainty in the benefits identified, should be secured in perpetuity and must be in place before the permission is implemented.

6 Conclusions

6.1 The WNS report should be updated in line with the above recommendations and should include all necessary discussion on methodology, assumptions, limitations, sensitivity testing and include all supporting evidence.