

Your Ref:
Our Ref: B/LH003/DOC/25



Mr S Clabburn
Suttles Stone Quarries
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26th February 2025

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Dear Simon,

Swanworth Quarry, Worth Matravers, Dorset.
Northward Extension - Hydrogeological Risk Assessment (HRA), Ref.
B/SL/SWTH HRA/21, dated December 2021.
Additional groundwater monitoring point PZ1/24 – Provisional Control
and Compliance Limits.

Further to your instruction, and the request for additional information received from the Environment Agency (EA), we have reviewed the groundwater quality data so far collected for the additional groundwater monitoring point at your above site (monitoring point ref. PZ1/24).

The location and installation design for PZ1-24 was agreed with the EA by email (Barbara Keenan - email dated 19 September 2023). The additional location was deemed necessary to provide a further down hydraulic gradient groundwater sampling point for the proposed infill area.

In the aforementioned email, the EA expressed their agreement for using a combination of the new location - PZ1/24 and the existing location - PZ2_19, for the requisite down hydraulic gradient monitoring of the proposed infill area.

Control and Compliance Limits were specified for PZ2_19 within the HRA, with limits set for six chemical species (arsenic, chloride, lead, mercury, nickel and sulphate – see HRA **tables 30 and 31**).

A total of five rounds of samples have so far been collected for the PZ1_24 location. In order to provide a provisional set of limits, the data collected to date for the aforementioned set of determinands, have been assessed using the same criteria as within the HRA. The collected water quality data for PZ1-24 are presented at **table 1** and details of the statistical assessment are provided at **table 2**.

The data have been subsequently used for definition of interim Control and Compliance Limits for monitoring point PZ1-24. These values are presented at **table 3** and **table 4** below.

Whilst considered appropriate for the purposes of inclusion within the Environmental Permit (EP) application, the final Control and Compliance Levels will require refinement to ensure provision of robust assessment levels over the longer term. In this regard it is recommended

that allowance for an Improvement Condition is included, to enable update and agreement of finalised trigger values prior to the implementation of any infill operations within the Northward Extension Area. In this regard, the collection of water samples at location PZ1-24 should continue on the current quarterly basis, with a view to submission of final levels for approval, a minimum of six months prior to the commencement of infilling (or as otherwise specified within the issued EP).

I trust the above review and presentation of data meets with your approval but please do not hesitate to give me a call should you wish to discuss or require anything further.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'P. Burfitt', with a stylized flourish at the end.

Paul Burfitt
Principal Hydrogeologist
BCL Consultant Hydrogeologists Limited

Table 1 Groundwater quality data for definition of Control and Compliance Levels – PZ1-24							
Monitoring Point	PZ1_24						
Date	Arsenic	Chloride	Lead	Mercury	Nickel	Sulphate	Zinc
30-Jan-2024	0.001	35	<0.001	0.00005	0.004	43	0.007
30-Apr-2024	<0.001	38	<0.001	<0.00003	0.004	41	0.006
01-Jul-2024	<0.001	37	<0.001	<0.00003	0.005	49	0.008
03-Oct-2024	<0.001	38	<0.001	<0.00003	0.003	43	0.005
27-Jan-2025	<0.001	38	<0.001	<0.00003	0.002	16	<0.002
All values are mg/l.							

Table 2 Characteristic statistics of selected background groundwater quality datasets		
Monitoring Point	PZ1_24	RWQS
Species	$\mu + 2\sigma$ $\mu + 3\sigma$	
Arsenic	Not analysed – only one value recorded above detection limit	0.005
Chloride	*	250
Lead	Not analysed – all data below detection limit	0.01
Mercury	Not analysed – only one value recorded above detection limit	0.00001
Nickel	0.007 0.010	0.02
Sulphate	*	250
RWQS: Regulatory Water Quality Standard (See HRA table 13).		
*data not defined as normally or log-normally distributed.		
All values are mg/l.		

Table 3 Provisional Groundwater Control Levels		
Species	Control Level	Derivation
	PZ1_24	
Arsenic	0.001*	Maximum value recorded in dataset (remains below RWQS)
Chloride	56	Mean value plus 50% - to refine to 2 std dev with additional data
Lead	0.001	Limit of detection
Mercury	0.00003	Limit of detection
Nickel	0.007	Statistical analysis of baseline data (2 std. dev.)
Sulphate	58	Mean value plus 50% - to refine to 2 std dev with additional data
All values are mg/l.		
*Control Limit set at the maximum level recorded within the dataset.		

Table 4 Provisional Groundwater Compliance Limits		
Species	Control Level	Derivation
	PZ1_24	
Arsenic	0.001*	Maximum value recorded in dataset (remains below RWQS)
Chloride	65	Mean value plus 75% - to refine to 3 std dev with additional data
Lead	0.001	Limit of detection
Mercury	0.00003	Limit of detection
Nickel	0.010	Statistical analysis of baseline data (3 std. dev.)
Sulphate	67	Mean value plus 75% - to refine to 3 std dev with additional data
All values are mg/l.		
*Compliance Limit set at the maximum level recorded within the dataset.		