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HATFIELD AERODROME

Town and Country Planning Act 1990, Section 78

Application for the establishment of a new quarry on land at the former Hatfield Aerodrome, including a new access onto the A1057, aggregate processing plant, concrete batching plant and other ancillary facilities, together with the importation of inert fill materials for the restoration of the minerals working

Application Ref. 5/0394-16

Section 78 Appeal against refusal of planning permission by Hertfordshire County Council.

Appeal Ref. APP/M1900/W/21/3278097

**Summary Proof of Peter Rowland BSc. MSc.
Hydrogeology**



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1.0 Introduction

1.1 The following summary proof has been prepared by Mr Peter Rowland. I hold the position of Technical Director (Land Quality and Remediation) at SLR Consulting Limited (SLR).

1.2 Regarding this proposed development, I was involved in initial discussions with the Environment Agency from 2010 and subsequently with Affinity Water and Hertfordshire County Council.

In 2010 The Agency stated that they could not support any application that compromised the Appropriate Persons ability to remediate the bromate plume. These early and subsequent discussions with stakeholders have guided site investigations and subsequent design by adopting a conservative and precautionary approach.

I, with the assistance of colleagues at SLR have continued to plan and review all aspects of the groundwater environment at the application site on behalf of the Appellant, including hydrogeological inputs to Chapter 6 of the Environmental Statement, which accompanied the Planning Application 5/0394-16 submitted in January 2016 and further operational information supplied to PINS in October 2021.

1.3 I can confirm the opinions expressed in this proof of evidence are my own.

2.0 Summary Proof of Evidence

- 2.1 I confirm that the assessments of Hydrogeology completed and presented in Chapter 6 (Water Environment) of the ES Report (CD1.2 & 2.2) has been completed in accordance with industry standard best practice.
- 2.2 It has included a desk-based literature review of the local and regional geology, hydrology, and hydrogeology. This was then verified by a substantial programme of site investigations to characterise the ground conditions, develop a Conceptual Site Model, and prove the southwest edge of the bromate plume.
- 2.3 Assessment work has comprised constructing 41 boreholes, installed with 54 monitoring wells, 9 years of water quality analysis and water level monitoring across 3 aquifer units and surface water; continuous water level monitoring in 9 monitoring wells and two groundwater pumping tests to quantify hydraulic properties of the aquifers and infiltration data to inform lagoon design.
- 2.4 Meetings have been held, technical data has been shared and 5 update presentations have been held with Affinity Water and the Environment Agency between 2014 and 2021 which has helped develop a common understanding of the Conceptual Site Model. It is my understanding that sharing of data with Affinity Water and the Environment Agency has assisted them in their task of understanding and managing the bromate plume scavenging system.
- 2.5 The Chalk aquifer to the northwest, north and east of the Site and in places the overlying LMA is impacted by a bromate and bromide groundwater plume. The plume was discovered in 2000 when water quality testing discovered bromate in Public Water Supply boreholes to the southeast and east of the Site. The plume source was traced back to the former Steetley chemical works in Sandridge approximately 2.6km northwest of northern boundary of the application site.
- 2.6 Regionally, the dissolved bromate plume extent is controlled by the groundwater flow direction in the Chalk. In this part of Hertfordshire groundwater flow is influenced by Chalk karstic features running east to west. Under these influences, the bromate plume is migrating southeast from Sandridge to Nashes Farm Lane and then east towards the River Lea valley.
- 2.7 Locally, the southwest edge of the bromate plume in the Chalk approximates to the northeast boundary of the Application site and is interpreted to be outside of the mineral excavation area.
- 2.8 Remedial action has been implemented since mid-2005 by Affinity acting on behalf of the identified Appropriate Person in accordance with EPA (1990) Part IIA legislation.
- 2.9 The plume location has remained stable during periods of extreme seasonal low and high groundwater levels between mid-2018 and 2021. This period of plume stability has occurred while the Bishops Rise pumping rates have been held in their optimum abstraction range of 4.5-5ML/d.
- 2.10 There are ground water monitoring wells within and adjacent to the application site. The hydrograph data from these monitoring wells show that the entire site and the bromate plume over 500m east the site is captured by remediation pumping at the Bishops Rise pumping station.
- 2.11 The Lower Mineral Horizon at the Application Site is in hydraulic continuity with the underlying Chalk and forms a small percentage of the total Chalk aquifer thickness. Evidence gathered shows there is no bromate plume in the Lower Mineral Horizon within the mineral excavation area during extreme high or low groundwater elevations, with stable bromate concentrations in the northeast corner of the site. The average concentration of <1ug/l bromate in the Lower Mineral Horizon in this area is considered insignificant when compared to the Environment Agency's stated bromate concentration of concern, of greater than or equal to 2ug/l.
- 2.12 Quarrying activity in the Lower Mineral Horizon at the Application site will have no discernible impact

on the hydrogeological environment of the underlying Chalk aquifer or the nature and extent of the bromate plume within it.

- 2.13 My main Proof of Evidence and the documents to which I refer have assessed the Reasons for Refusal cited by Hertfordshire County Council, and the objections of the Ellenbrook Area Residents Association, Smallford Residents Association and Colney Heath Parish Council. I have concluded that the proposed development will not extend the bromate contamination within the mineral workings; it will not reduce the overall effectiveness of the measures in place to remediate the bromate contamination and will not lead to contamination of the Essendon or Roestock Public Water Supply boreholes.
- 2.14 The Ground Water Management Plan sets out an operational plan for mineral extraction and the management of water through all stages of the project. This plan complies with the requirements of the proposed Planning Conditions, the requirements of key stakeholders and the conditions associated with the Environmental Permit and Abstraction Licences.
- 2.15 The site is divided into 7 operational phases, A to G. Each phasing plan will be designed in a manner that takes advantage of seasonal conditions as excavation of the Lower Mineral Horizon will be undertaken on a campaign basis that comprises excavation and stockpiling of mineral when water level conditions are most favourable.
- 2.16 Two fundamental aspects of the operational plan are that there will be no pumping of groundwater from the Lower Mineral Horizon and that phase specific investigations will be undertaken up to a year in advance to assess the geology, groundwater levels and groundwater quality to support the planning and development stage of the mineral extraction process. Once data has been collected and assessed a phase specific operating plan will be prepared by Brett and subsequently presented and considered by the stakeholders (Brett, Affinity, the Environment Agency, and Hertfordshire County Council). The decision to proceed will then be taken following stakeholder review.
- 2.17 Monitoring of groundwater levels and groundwater quality is a key task and fundamental to operations and permit compliance. There are 56 existing and planned future monitoring wells on the site and there is a robust sampling and analysis plan included in the Groundwater and Water Management Plan to document changes and trends and inform the management and operational process. Infiltration lagoons and operation-critical monitoring wells will be equipped with telemetry links for real-time data analysis.
- 2.18 Performance reviews, progress meetings and stakeholder engagement has been incorporated into the management plan. Meetings with stakeholders will be held semi-annually and more frequently during periods of mineral extraction when monitoring data is shared, and phasing plans and schedules are discussed. Time critical data will be provided to stakeholders upon receipt.
- 2.19 As statutory consultees, the Environment Agency and Affinity Water were engaged both before and after the 2016 Application regarding the impact of the development on the water environment and risks presented by the bromate plume. Based on the information gathered and provided by SLR in combination with a draft Groundwater and Water Management Plan and a Private Operators Agreement between the Applicant and Affinity Water the consultees have recommended approval of the planning application subject to 3 Conditions, all of which are addressed by the Groundwater and Water Management Plan.
- 2.20 The Hertfordshire County Council Planning Officer recommended approval, with a summary of the reasons for the recommendation stating that "... the Chief Executive and Director of Environment be authorised to grant planning permission subject to a series of planning conditions that included the Environment Agency's recommended conditions in relation to the groundwater environment".
- 2.21 In my opinion, there is no reason related to groundwater why the proposed development should not be permitted.

EUROPEAN OFFICES

United Kingdom

AYLESBURY

T: +44 (0)1844 337380

BELFAST

belfast@slrconsulting.com

BRADFORD-ON-AVON

T: +44 (0)1225 309400

BRISTOL

T: +44 (0)117 906 4280

CARDIFF

T: +44 (0)29 2049 1010

CHELMSFORD

T: +44 (0)1245 392170

EDINBURGH

T: +44 (0)131 335 6830

EXETER

T: + 44 (0)1392 490152

GLASGOW

glasgow@slrconsulting.com

GUILDFORD

guildford@slrconsulting.com

LONDON

T: +44 (0)203 805 6418

MAIDSTONE

T: +44 (0)1622 609242

MANCHESTER (Denton)

T: +44 (0)161 549 8410

MANCHESTER (Media City)

T: +44 (0)161 872 7564

NEWCASTLE UPON TYNE

T: +44 (0)191 261 1966

NOTTINGHAM

T: +44 (0)115 964 7280

SHEFFIELD

T: +44 (0)114 245 5153

SHREWSBURY

T: +44 (0)1743 23 9250

STIRLING

T: +44 (0)1786 239900

WORCESTER

T: +44 (0)1905 751310

Ireland

DUBLIN

T: + 353 (0)1 296 4667

France

GRENOBLE

T: +33 (0)6 23 37 14 14