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Planning & Development



Water Monitoring Strategy
River Academy, Reading
Bowmer and Kirkland

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1 Introduction

1.1 Background

Ashfield Solutions Ltd. (Ashfield) have been commissioned by Bowmer and Kirkland (the Client) to prepare a Water Monitoring Strategy (henceforth referred to as “strategy”) for the proposed River Academy development, Richfield Avenue, Reading, RG1 8EQ. The proposal would include a new main school building, separate sports block, MUGA, new playing pitches together with car and cycle parking works, new accesses onto the public highway and all ancillary works and landscaping.

A planning application for the development is due to be submitted in December 2021 and as such planning conditions are not yet defined. However, the Department for Education has sought pre-application advice from the Environment Agency (EA) with regard to flood risk and groundwater quality matters. The advice received is detailed on letter reference WA/2020/127880/01-L01, dated 9th June 2020 and is included as Appendix A.

The development is located on a historical landfill in close proximity to sensitive controlled waters receptors. Previous assessment work on the site and adjacent Rivermead development has indicated that placed landfill materials have not caused significant groundwater pollution and poses minimal risk to the River Thames.

However, to further manage the low risk of contamination being mobilised by the proposed development works, the EA has indicated that they would expect the construction phase to include a water quality monitoring strategy with the aim to “demonstrate that no adverse impacts were occurring”.

A draft version of this report was submitted for review to the Contaminated Land Specialist of the Environment Agency's Reading office on the 18th November 2022. A copy of correspondence confirming acceptance in principle of this strategy is presented in Appendix B. The correspondence notes the strategy shall be formally presented to the LPA. It is requested that a planning condition will be imposed against the grant of planning permission which will require that this water monitoring scheme will be complied with during the construction of the permitted development.

1.2 Objectives

The water quality monitoring strategy is to be submitted in support of the planning application for the River Academy development.

The strategy comprises a programme of groundwater and surface water monitoring to be undertaken prior to and during the development and seeks to fulfil the following technical objectives:

- To enable data comparison and trend analysis against a baseline through the development works which will include piling activities and general earthworks:
- To provide a clear specification for the monitoring works including monitoring locations, frequency of testing and groundwater quality assessment criteria.

- To provide an action plan to be implemented if unacceptable deterioration of groundwater quality is identified.

Overall, the findings of the monitoring strategy as set out in this document shall be used to demonstrate that the development of the site does not contribute to an unacceptable risk of water pollution caused by the potential mobilisation of contamination during the works.

1.3 Report Structure

This report is structured as follows:

- **Section 2:** Provides an overview of the site's environmental setting and groundwater assessment completed to date.
- **Section 3:** Provides the Groundwater Monitoring Strategy and details the following:
 - Description of monitoring locations;
 - Protection measures to ensure that monitoring wells remain serviceable for the duration of the project;
 - Requirement for monitoring well reinstatement measures if damaged or lost during the development works;
 - A detailed description of the sampling methodology (essential to ensure consistency of sampling methodology during long term monitoring programmes);
 - Confirmation of the laboratory to be used for the duration of the project (consistency of laboratory analysis is essential for long term monitoring programmes);
 - Sampling handling storage and transport procedures (again essential for long term monitoring programmes); and,
 - Quality assessment criteria to be adopted for the duration of monitoring and reporting requirements.

2 Site Setting

2.1 Site Location

The proposed development is to be located on Land off Richfield Avenue, Reading, RG1 8EQ. The site is centred approximately on National Grid Reference (NGR) 470413 174483. The site location is shown on Figure 1 below.

Figure 1 – Site Location



The site is irregular in shape with a plan area of approximately 5 hectares situated approximately 37 m above ordnance datum. The topography of the site and surrounding area is typically flat. It is understood that the majority of the site is underlain a historic landfill.

The site is broadly divided into southern and northern areas by an east-west trending drainage ditch. The smaller, southern area is triangular shaped and comprises an area of bare open land enclosed by established hedgerows and trees. The largest, northern portion of the site comprises predominantly flat grassed cover and was most recently used as a golf driving range.

Land to the north of the site is open ground with the River Thames located approximately 140m beyond. To the east, directly adjoining the site is Rivermead Leisure Centre. To the south of the site across Richfield Avenue is a large commercial/ industrial zone. Further open space is located to the west of the site.

Within the northern site area the proposed development is understood to comprise a three storey secondary school with adjoining sports block, MUGA pitches, parking, landscaped areas and soft sports pitches. Car parking is understood to be proposed within the southern area. An indicative masterplan for the site is included as Drawing 02.

2.2 Ground Conditions

Previous Works

With regard to land and groundwater condition, a number of previous investigations and assessment reports have been undertaken for the site. The assessments together with the associated scope of works where pertinent to the groundwater monitoring strategy are summarised in Table 1 below.

Table 1 – Summary of Previous Works

Assessment	Summary of Works
"Short Geotechnical Report" Leaderboard Golf, Richfield Avenue, Reading, RG1 8EQ. Terramech Ltd. July 2017.	- Three cable percussive boreholes - Water level and gas monitoring - Taking samples to assess the soils human health suitability, also waste category. - Installation of groundwater monitoring wells. - No groundwater sampling undertaken
Phase I Contaminated Land & Geotechnical Desk Study Report, Proposed Secondary School Development, Land off Richfield Avenue, Reading, Terrafirma, May 2018. Ref. 6147/2	Desk study assessment only.
Phase II Geo-Environmental Assessment, Proposed secondary School, Richfield Avenue, Reading. REC Ltd., dated November 2018. Ref. 1CO106158/P2/RO	- Six cable percussion boreholes (BH01 to BH06) to depths of 15.0 m bgl in the southern part of the Site (proposed building footprints). - Nine hand dug trial pits (HP01 to HP09) across the northern part of the Site. - Installation of all boreholes as ground gas and groundwater monitoring installs (dual installs). Gas monitoring wells installed within Made Ground. Groundwater monitoring wells within the Kempton Park Gravels (2 No.) and within the Chalk (4 No.). - Soil testing for general suite of contaminants from boreholes and HP08 and HP09, only (13 No. samples). 13 No. Waste Acceptance Criteria (WAC) tests upon Made Ground. - Groundwater sampling and testing on one occasion.

Remediation Strategy, River Academy Reading. REC Ltd. February 2020	■ Presents a remediation strategy for the proposed development.
Factual Ground Investigation Report, River Academy, Reading. Delta Simons. August 2021	■ Drilling of two cable percussive boreholes (CP101 and CP102) to a maximum depth of 25.0 m bgl. ■ No monitoring well installations completed. ■ No contamination testing undertaken, geotechnical assessment only.
South West Geotechnical and Groundgas Solutions Ltd under appointment to Ashfield Solutions Limited. October 2021.	■ Excavation of 13 No. trial pits with sampling of upper “capping” layer soil and chemical analysis. ■ Installation of 7 No. groundgas monitoring wells. ■ Continuous groundgas monitoring for a 6 week period (ongoing at time of writing)

The purpose of the October 2021 investigation is to provide sufficient information for the assessment of human health risk associated with the site. The findings of this assessment shall be submitted to the Local Planning Authority as part of the forthcoming planning submission.

Geology

Published Geology

The Site is mapped as being underlain by superficial Langley Silt Member across the majority of the Site and Alluvium in the north, likely to be followed by the Kempton Park Gravel Member. Bedrock is mapped as the Seaford Chalk Formation and Newhaven Chalk Formation.

Proven Ground Conditions

The geology encountered across the landfilled northern portion of the site and area to be subjected to building construction work is summarised in Table 2 below.

Table 2 – Ground Conditions Summary – Landfill Area

Strata	Description	Depth Range Top (m)	Depth Range Base (m)	Thickness Range (m)
Made Ground – Surficial landfill “capping” material	Typically gravelly sand with some inclusions of anthropogenic material (plastic / glass)	0.0	0.4-1.2	0.4-1.2
Made Ground - Landfill material	Typically gravelly sandy infill with varying quantities of anthropogenic materials (metal, glass, plastic, wood etc.)	0.4-1.2	1.6-2.4	0.6-1.7
Kempton Park Gravel Member	Sandy gravel	2.0-3.0	7.0-8.7	4.0-5.9
Seaford and Newhaven Chalk Formation	Weathered chalk becoming competent with depth	7.0-8.7	Proven to a maximum of 25m below ground level	NP

It should be noted that the previous investigation only encountered the Langely Silt Member within the southern portion of the site to a maximum thickness of 0.6m

Hydrogeology

Published Information

The superficial deposits, Alluvium and Langley Silt is mapped as a Secondary A Aquifer and Unproductive Strata, respectively. The Kempton Gravel is mapped as a Secondary Aquifer and the chalk as a Principal Aquifer. Given the likely hydraulic connectivity between superficial and bedrock geology the Site as a whole is mapped as being located on a Principal Aquifer.

Proven Hydrogeology

During advancement of boreholes, groundwater strikes were typically encountered within the Kempton Park Gravels at depths of around 3m bgl. REC recorded resting groundwater levels at around 2.3m bgl to 2.6m bgl, within base of the landfill deposits / top of the Kempton Park Gravels.

The REC Phase II report indicated that there was hydraulic connectivity between the Kempton Park Gravels and the Seaford and Newhaven Chalk Formation.

Groundwater Quality

As part of their assessment, REC undertook sampling of 6 No. monitoring wells with standpipes installed within either the Kempton Park Gravel or Seaford and Newhaven Chalk Formation. Groundwater samples were analysed for:

- Heavy Metals & Metalloids;
- Cyanide (total);
- Phenols (mono);
- Total and Speciated Polycyclic Aromatic Hydrocarbons (PAHs): USEPA16; and,

- Total Petroleum Hydrocarbons (C10-C40).

The results of the analysis were compared against generic assessment criteria. The assessment concluded that there was no significant risk to either the aquifers beneath the site from a drinking water resource perspective nor risk to the nearby River Thames from the low contaminant concentrations identified.

The findings of REC's monitoring are broadly similar to those of previous investigations of the wider Rivermead site on Richfield Avenue. Investigation undertaken in support of the Rivermead Leisure Complex development between 2007 to 2009 by Structural Soils¹ and in 2015 by Soils Ltd² on behalf of Reading Borough Council did not identify significant pollution of groundwater.

¹ Validation Report for Rivermead Lesiure Centre. Structural Soils Ltd. May 2009. Report Ref. 720409VR

² Phase II Ground Investigation Report, Rivermead Leisure Centre. Soil Ltd for Reading Borough Council. Nov 2015. Report Ref. 15225/GIR

3 Monitoring Plan

3.1 Introduction

The findings of the previous assessment work upon the study site and the wider Rivermead site indicate that the landfill has not caused significant pollution of groundwater receptors, nor presents a significant risk to the River Thames. Notwithstanding this, given the heterogenous nature of the landfill and potential for secondary contamination to be mobilised during the proposed construction works, it is proposed to implement a water quality monitoring scheme to demonstrate that no adverse impacts are caused. The proposed strategy is set out in the following sections.

3.2 Monitoring Locations

The groundwater monitoring locations are presented in Table 3 below. Drawing 03 identifies the locations of monitoring wells and surface water samples. Surface water samples shall be retrieved from the drainage ditch that crosses the southern site area before running parallel with the western site boundary.

The target aquifer for monitoring shall be the Kempton Park Gravel Formation (KPGF); the rationale for this is as follows:

1. On account of future piles being advanced through the full thickness of the KPGF, this aquifer is considered to be the most suitable to demonstrate potential adverse impacts to groundwater quality.
2. This unit is likely to represent the most viable and significant groundwater contaminant pathway to the River Thames.

Table 3: Groundwater Monitoring Wells

Well ID	Easting	Northing	Monitoring Response Zone
RECBH01	470343	174523	4.0 - 7.0
RECBH03	470409	174528	3.0 – 5.0
RECBH06	470433	174449	4.0 - 5.0
ASMW01	470413	174421	4.0 - 6.0
ASMW02	470478	174534	4.0 - 6.0
ASMW03	470351	174661	4.0 - 6.0
ASMW04	470442	174679	4.0 - 6.0

3.3 Monitoring Frequency

The following sets out the monitoring frequency to be adopted for the development phase:

- **Prior to commencement of earthworks** – Monitoring to be undertaken three times, at a minimum of monthly intervals to establish baseline.
- **During general earthworks** – e.g. soil stripping, earth movement, foundation excavations, placement of fill materials. Monitoring to be undertaken at monthly intervals.
- **During piling activities** – Monitoring to be undertaken every two weeks.
- **Following earthworks** – Monitoring undertaken monthly for a period of three months following completion of groundworks.

3.4 Sampling Procedures

Prior to the purging of wells, the depth to groundwater shall be taken using an interface meter prior to the wells to assess groundwater elevation and whether or not any light non-aqueous phase liquids (LNAPLs) are present.

Prior to sampling, wells shall be purged by the removal of 3 well volumes of water or until purge waters run clear of any sediment. The purging shall ensure that groundwater within the well is representative of aquifer conditions prior to sampling. Purging shall be undertaken using either an electric submersible pump or inertial tubing ("waterra" or similar). Following each well volume purged, the technician will log observations from the removed groundwater including: colour, odour, sediment load, hydrocarbon presence, turbidity and groundwater recharge.

Groundwater samples shall then be collected using low flow sampling techniques. Samples will not be taken until the groundwater is deemed stable as assessed from field readings for pH, electrical conductivity, dissolved oxygen, ORP and temperature; these parameters shall be tested using a flow through cell at 5 minute intervals. Alongside the field readings observations will be made for odour, groundwater colour, sediment load and the presence of any hydrocarbons in the purge water.

Surface water samples shall be collected from the drainage ditch using a long-reach sampling device.

Samples will be collected and stored in strict accordance with the QA/QC requirements of the appointed laboratory. This shall include collection within appropriate laboratory glassware, storage in cool boxes prior to being couriered to the laboratory with 24 hours of being sampled. Only an MCerts/UKAS accredited laboratory shall be appointed.

3.5 Testing Schedule

The proposed schedule of laboratory analysis is detailed below:

- A suite of metals comprising AS, B (water soluble), Cd, Cr, CrVI, Cu, Pb, Hg, Ni, Se and Zn;
- Speciated Polyaromatic Hydrocarbons (USEPA 16);
- Total Petroleum Hydrocarbons (CWG speciated analysis);
- Benzene, Toluene, Ethylbenzene, Xylenes (BTEX) and MTBE;
- Total Cyanide;
- Phenols (total monohydric);
- pH and Water Soluble Sulphate.

Quality assurance and control samples will be incorporated into the monitoring programme to ensure reliability of the data. Equipment blanks and trip blanks are to be taken to quality check decontamination procedures. Duplicate samples will also be taken to assure laboratory testing performance and provide confidence in data sets.

3.6 Well Protection and Replacement

Monitoring wells will be protected during the construction works by the adoption of physical barriers as appropriate.

Location RECBH06 is situated within a building footprint and shall be retained as long as construction allows. This location shall not be replaced as further monitoring wells are located to the north i.e. between the areas of piling and the River Thames.

With the exception of RECBH06, all other wells if found to be missing or destroyed during a monitoring round, shall be reinstated within one month and developed prior to the next round of groundwater monitoring.

Following the completion of monitoring, wells shall be decommissioned in accordance with best practice and guidance such as the Environment Agency's 2012 document "Good Practice for decommissioning redundant boreholes and wells".

3.7 Assessment and Reporting

The laboratory test results will be compared against a set of screening criteria to be established upon establishment of baseline conditions i.e. following the proposed three, pre-construction monitoring rounds.

A tiered response to the monitoring data will be adopted, for example:

- Detections below screening criteria : no concern and works continue.
- Detections of Low Concern (e.g. minor short term exceedances): works continue, situation monitored. Environment Agency (EA) / Local Authority (LA) not informed.
- Detections of Moderate Concern. Works continue with increased monitoring. LA/EA informed.

- Detections of High Concern. Works suspected of causing issue suspended; LA/EA informed and corrective action plan agreed with LA/EA before implementation and suspended works re-commence.

Upon completion of the monitoring scheme a brief report shall be prepared and submitted to the EA. This shall include measurements of the in-situ parameters and laboratory test results. Graphs and spatial plots of individual determinands will also be presented where appropriate.

Drawings



- Legend
- Indicative Site Boundary
 - Buffer

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Client			Bowmer and Kirkland		
Project			River Academy		
Title			Site Location Plan		
Report No. 130321-S01		Drawing No. 01		Revision -	
Scale 1:5,000		Date 02/11/2021		Frame Size A3	
Produced by KG		Drawn by KG		Approved by CM	
ASHFIELD — SOLUTIONS GROUP — 					



Legend

Indicative Site Boundary

Note

Proposed outline taken from Based on Ares Landscape Architect's Landscape General Arrangement Plan (FS0949-ALA-00-XX-DR-L-0002 S1 P01).

Client			Bowmer and Kirkland		
Project			River Academy		
Title			Landscape General Arrangements Drawing		
Report No.	130321-S01	Drawing No.	02	Revision	-
Scale	1:2,000	Date	02/11/2021	Frame Size	A3
Produced by	KG	Drawn by	KG	Approved by	SR



Location	What 3 Words	Easting	Northing
ASMW1	composers.tools.shares	470413	174421
ASMW2	piles.early.palace	470478	174534
ASMW3	baking.baking.output	470351	174661
ASMW4	jukebox.pens.sound	470442	174679
RECBH01	drape.year.hung	470343	174523
RECBH03	outer.usual.tilt	470409	174528
RECBH06	packet.port.escape	470433	174449
SW1	shout.remedy.topic	470433	174413
SW2	saves.class.rotate	470320	174582

- Legend
- Indicative Site Boundary
 - Monitoring Locations
 - Existing Groundwater Monitoring (REC)
 - Proposed Groundwater Monitoring (AS)
 - Surface Water Sample (SW)

Client			Bowmer and Kirkland		
Project			River Academy		
Title			Monitoring Well Locations		
Report No.	130321-S01	Drawing No.	03	Revision	-
Scale	1:2,000	Date	17/11/2021	Frame Size	A3
Produced by	KG	Drawn by	KG	Approved by	SR

Appendices

Appendix A

Pre-planning application advice from Environment
Agency

Mr. Ian Leech
Department for Education
Operations Group
Sanctuary Buildings Great
Smith Street
London
SW1P 3BT

Our ref: WA/2020/127880/01-L01
Agreement No.:
ENVPAC/1/THM/00394
Date: 09 June 2020

Dear Mr. Leech

River Academy Secondary School

Richfield Ave, Reading, RG1 8EQ

Thank you for accepting our offer to provide detailed planning advice. We have reviewed the following documents:

- Site Assessment – Flood Risk by Rambol, 13 April 2018 Ref: 1620004973/ENV/R01
- Remediation Strategy by REC Ltd, February 2020, Ref: 1-CO107916p3r0
- 36344_A_100_RA_Control Option – Site Plan

We are providing this advice under Agreement No. ENVPAC/1/THM/00394. Please note we have taken 8 hours to review and provide our advice on these documents. You will be invoiced accordingly.

Please note that we are only providing you with our advice on the matters as outlined in our offer as requested.

Summary

In summary, further detailed analysis is required to establish whether the site is in Flood zone 3b and therefore appropriate in principle. In addition, the site appears to be impacted significantly in the 1 in 100 plus 35% (design) flood event. This could potentially make it very difficult to provide the required level for level flood compensation to mitigate for the built footprint within the 1 in 100 plus 35% flood extent.

The site lies in close proximity to sensitive controlled waters receptors. Groundwater quality issues could arise for the proposed development by secondary contamination mobilised by construction works including, increased infiltration from rainfall leading to leachate production, piling causing new pollutant pathways, and dewatering activities which could draw contaminated water from other parts of the landfill. Therefore, we

Cont/d..

would expect to see water quality monitoring carried out during construction to demonstrate that no adverse impacts were occurring.

Environment Agency Advice – Flood Risk

We have the following comments to make about the documents submitted:

From the email submitted by Ian Leech (Department for Education), dated 19 March 2020, it appears that the Richfield Avenue site is being promoted as the preferred option for a secondary school in Reading. However, the FRA submitted appears to be a high level appraisal of flood risk for two potential school development sites in Reading (Richfield Avenue and Hills Meadow). Therefore, we have covered both sites in our response.

Richfield Avenue

We note that you requested and received Flood Model data from us in March 2018. However, unfortunately since then we published new modelling flood model data (River Thames - Sandford to Mapledurham 2018). This new modelling must be used to inform any future Flood Risk Assessment (FRA). We recommend that you request this data from our Thames Customers and Engagement Team via email at enquiries_THM@environment-agency.gov.uk.

The new modelling shows that the Richfield Avenue site could potentially be the 1 in 20 year (Flood Zone 3b) extent. This will affect whether the principle of locating 'more vulnerable' development at this location is acceptable. The development is classed as more vulnerable in accordance with table 2 of the Flood Zones and flood risk tables of the PPG. Tables 1 and 3 make it clear that this type of development is not compatible with Flood Zone 3b and therefore should not be permitted.

The new modelling shows that the site is nearly entirely covered by the 1 in 100 plus 35% flood extent. This could mean that significant flood compensation would be necessary as mitigation for any increase in built footprint or ground raising on the site. If compensation was required then we would only accept level for level compensation up to the 1 in 100 plus 35% flood level. Given the likely scale of development and the extent of the 1 in 100 plus 35% flood level the requirement for compensation might make the Richfield Avenue site very difficult to develop.

We recommend that you make a comparison between a detailed topographic survey and the new modelled flood levels. This will confirm whether the site is within Flood Zone 3b and what mitigation will be required.

As this FRA is only a high level appraisal, we expect a detailed site specific FRA to be submitted with any planning application. This must clearly demonstrate that this proposal complies with National/Local policy and does not increase flood risk to the future occupants of the site or those elsewhere.

Hills Meadow

We note that you requested and used the 2011 Mapledurham to Sonning flood modelling to inform your FRA. This shows that the site is impacted by the 1 in 20 year (Flood Zone 3b) flood extent. This will affect whether the principle of locating 'more vulnerable' development in this location is acceptable.

The 2011 Mapledurham to Sonning flood modelling does not include the latest climate change scenarios. We expect the site specific FRA to make an assessment of both the 1 in 100 plus 35% and 1 in 100 plus 70% climate change scenarios. This will require

you to produce detailed modelling. We recommend you request a copy of our full model from our Thames Customers and Engagement Team via email at enquiries_THM@environment-agency.gov.uk.

The existing modelling is showing significant flooding across the site during the 1 in 100 plus 20% scenario. Therefore, it is highly likely that the 1 in 100 plus 35% (design flood event) will cover the vast majority of the site.

This will mean that significant flood compensation would be necessary as mitigation for any increase in built footprint or ground raising on the site. If compensation was required then we would only accept level for level compensation up to the 1 in 100 plus 35% flood level. Given the likely scale of development and the likely extent of the 1 in 100 plus 35% flood the requirement for compensation might make the Hills Meadow site very difficult to develop.

We recommend that you make a comparison between a detailed topographic survey and the new modelled flood levels. This will confirm whether the site is within Flood Zone 3b and what mitigation will be required.

As stated above, this FRA is only a high level appraisal. We expect a detailed site specific FRA to be submitted which clearly demonstrates that this proposal complies with National/Local policy and does not increase flood risk.

Advisory note

Surface water and groundwater flood risk is the responsibility of the Lead local Flood Authority (LLFA). The Sequential Test and safe access/egress is the responsibility of the LPA. We recommend you contact them for their pre-application advice.

Environment Agency Advice – Caversham Flood Alleviation Scheme

You should be aware that the Environment Agency have been considering ways to reduce the effects of flooding in north Reading and Lower Caversham. The proposals include raised works around Hills Meadow and a short bypass channel at Reading Bridge.

These proposals are at an early stage of development – more detail can be seen here <https://www.gov.uk/government/publications/north-reading-and-lower-caversham-flood-alleviation-scheme/north-reading-and-lower-caversham-flood-alleviation-scheme>

Modelling of the River Thames through Reading.

You will note that the boundary of the upstream model is Mapledurham. While the Sandford to Mapledurham 2018 model provides the best available representation of flood risk at this time there may be some changes to the flood mapping in the Mapledurham area, which could affect the Richfield Avenue site, in the future.

The river Thames flooding has been re-modelled between Mapledurham and Hurley. The new Mapledurham to Hurley model was used as a base model for project specific modelling for the Caversham Flood Alleviation scheme. To avoid confusion and potential multiple updates of the mapping in the area neither of these models are available or published at this stage.

We will be updating the mapping in the near future but at this stage the best available information for this area is the Thames Mapledurham to Hurley 2011 model.

Environment Agency Advice – Groundwater

The remediation strategy report for the Richfield Avenue site identifies that it is an area of former landfill overlying Kempton Park Gravels (Secondary Aquifer) over Seaford Chalk (Principal Aquifer). The River Thames lies 120 m to the north. This means that the site lies in close proximity to sensitive controlled waters receptors.

Section 2.5.1 notes that groundwater between the gravels and Chalk is in hydraulic continuity and that no unacceptable risk to groundwater has been identified. We have not been provided with the 2018 REC site investigation reports, so we cannot endorse those conclusions. However, we have been party to previous site investigations across the wider Rivermead site on Richfield Avenue and similar conclusions have been drawn there. Namely, there is hydraulic connectivity between the aquifers and there is no evidence of significant pollution of groundwater. Assuming these conclusions are correct for this site, then in its current state the site does not require significant remedial works from the perspective of groundwater quality.

The main issues with the proposed development would be from secondary contamination mobilised by construction works. This will come mainly from opening the site up to increased infiltration from rainfall leading to leachate production during construction. Piling may cause new pollutant pathways and drag landfill material to greater depths, while dewatering activities could draw contaminated water from other parts of the landfill.

In addition, there is a proposal to raise land levels by providing a capping layer. While this could in the long term provide benefit by reducing infiltration through the landfilled material, it might mobilise some leachate by compaction of the underlying fill. All these activities might cause deterioration of groundwater quality and mobilise pollutants towards the River Thames either directly through groundwater flow or via drainage channels.

Therefore, we would expect to see water quality monitoring carried out during construction to demonstrate no adverse impacts were occurring. The location of monitoring sites and the monitoring schedule should be set out in a water quality monitoring strategy.

The Rambol Flood Risk report appears slightly ambiguous. In section 2.7.2 it appears to rule out infiltration drainage, but then in section 3.7.2 it suggests it might be possible. The reason given for this is the high water table, which may be an issue if trying to avoid direct discharge into groundwater. There is also another issue which is drainage infiltration through landfill material mobilising leachate. While the site did not have a fully engineered cap, it is not clear how much the capping layer protected the underlying fill from leachate production. Therefore it is also not clear how much the current groundwater quality concentrations represent the worst case scenario in terms of leachate production.

Infiltration drainage techniques in areas of landfill material will not be acceptable.

Next Steps

We would be happy to provide further advice and a review of the site specific FRA once it is produced. If the “in principle” issue of location can be overcome, flood compensation will require detailed planning.

We would also be happy to provide you with advice and a review of the groundwater monitoring strategy once it is produced.

Final comments

Once again, thank you for contacting us with your enquiry. Our comments are based on our available records and the information as submitted to us.

I hope the above advice is helpful. If there is any further work you anticipate needing our detailed advice on in relation to this project, please let me know so it can be incorporated into this charging agreement.

Disclaimer

Please note that the views expressed in this report by the Environment Agency, is a response to a pre-application enquiry only and does not represent our final view in relation to any future consultations made in relation to this site. We reserve the right to change our position in relation to any such application. You should seek your own expert advice in relation to technical matters relevant to any conditions before submission.

Please quote our reference number in any future correspondence. If you have any queries please feel free to contact me.

Yours sincerely

Kirsty Macpherson
Planning Specialist

Direct dial 02030256243

Email Planning_THM@environment-agency.gov.uk

Appendix B

Pre-planning approval in principle of Strategy from
Environment Agency

From: [Hampton, Craig](#)
To: [Scott Ratcliffe](#)
Subject: RE: Riverside Monitoring Strategy
Date: 22 November 2021 14:17:45
Attachments: [image002.png](#)

Hi Scott

Your proposals for monitoring look fine to me. I guess they will have to be formally presented to the LPA against the relevant planning conditions for official sign off.

Cheers
Craig

From: Scott Ratcliffe [mailto:Scott.Ratcliffe@ashfieldsolutions.com]
Sent: 18 November 2021 15:49
To: Hampton, Craig <craig.hampton@environment-agency.gov.uk>
Cc: Paul Wood <paul.wood@ashfieldsolutions.com>
Subject: Riverside Monitoring Strategy

Hi Craig,

Further to our last meeting, please find attached a draft for discussion version of our water quality monitoring strategy.

The strategy sets out our intentions for further monitoring well locations, frequency of monitoring and scope of testing.

As ever, we would greatly welcome your feedback. We would then propose to finalise and issue as soon as we can.

Looking forward to hearing back from you.

Kind regards

Scott



Scott Ratcliffe

Principal Advisor

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[/scott-ratcliffe](#)

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