

**DEPARTMENT OF
OPERATIONS**

Dean Clapworthy
Bury Council Planning Department

Date 6th December 2024
Reference CL1084.061224.1

Dear Dean,

Land at Pyramid Park, Market Street, Bury, BL9 0BG, Planning Application: 70903 – Contaminated Land.

I write regarding the above planning application. The Environment Section has received copies of the following documents:

- Geotechnical and Geo-Environmental Desk Study Report, Campbell Reith Hill, reference 13819-CRH-XX-XX-LQ-RP-0001 Desk Study.docx, dated 22/03/2022.
- Phase 2 Interpretative Report (Contamination), Campbell Reith Hill, reference 13819-CRH-XX-XX-RP-LQ-0002 LQS Report.docx, dated 26/07/2022.
- Land Quality Statement, Campbell Reith Hill, reference 14111-CRH-XX-XX-RP-LQ-0001.docx, dated 22/04/2024.
- Land Quality Statement, Campbell Reith Hill, reference 14111-CRH-XX-XX-RP-LQ-0001-P02, dated 11/11/2024.
- Remediation Strategy, Campbell Reith Hill, reference 14111-CRH-XX-XX-RPLQ-0001-P02_Rem, dated 11/11/2024.
- Letter entitled, DoW CoP Insight Service, CL:AIRE, dated 20/08/2024.
- Land Quality Statement, Campbell Reith Hill, reference 14111-CRH-XX-XX-RPLQ-0001-P03, dated 03/12/2024.
- Remediation Strategy, Campbell Reith Hill, reference 14111-CRH-XX-XX-RPLQ-0001-P03_Rem, dated 03/12/2024.

In addition, the following submitted drawings have been considered:

- Site Location Plan, Campbell Reith Hill, Drawing no. 4000, rev P1, dated 01/02/24.
- Existing and Proposed Contours and Levels Plan, Campbell Reith Hill, Drawing no. 5010, rev P3, dated 15/02/24.
- Preliminary Earthworks Cut and Fill, Campbell Reith Hill, Drawing no. 5013, rev P3, dated 15/02/24.
- Site Remediation Plan, Campbell Reith Hill, Drawing no. 4001, rev P4, dated 04/03/24.
- Site Constraints Plan, Campbell Reith Hill, Drawing no. 4002, rev P1, dated 04/03/24.
- Biodiversity Enhancement Planting Plan, The Environment Partnership, Drawing no. D9302.02.001A, dated 06/11/2024.

The Environment Section has reviewed the above information in order to assess the following points:

1. [The adequacy of the desk study information available for this site.](#)
2. [The adequacy of the site investigation.](#)
3. [The adequacy of the final risk assessment.](#)
4. [The acceptability of the proposed remediation strategy.](#)
5. [Whether the information submitted is sufficient to determine that the site presents a low risk to human health and the environment.](#)

The site currently comprises a public open space, having been reclaimed in the 1970s from its previous use as a Railway Goods Yard and sidings. Current uses in the surrounding area include residential, commercial and educational. It is within 250 metres of several registered landfill sites, but is not in close proximity to any major surface watercourse. The site is situated above the lower coal measures Secondary Aquifer, overlain by glaciofluvial deposits and is not situated within a Radon Affected Area.

It is understood that the proposed development comprises land remediation works, construction of vehicular access road and footway from Market Street with associated infrastructure and structural works. Essentially this is earthworks to create a development platform/level site ready for construction (once subsequently approved).

1. The adequacy of the desk study information available for this site

The report includes a description of the site including its past historical uses. An appraisal of the site environmental setting is presented including its geology, hydrogeology and hydrological regime, mining activities, waste management issues, and identification of additional environmental sources, pathways and receptors. This information has been used to compile a clear site conceptual model, which identifies potential sources, pathways and receptors and likely pollution linkages.

Additional internet research indicates that Pyramid Park opened c1975 following closure of the railway line in 1970 and the subsequent reclamation works. Originally comprising four pyramid earth structures and a lake/pond, the park fell into decline and various redevelopment schemes have been considered since the early 2000s. The fourth pyramid was removed when the adjacent housing on Towns Field Close was built c1995 following approval 30665-95. The archive planning records did not contain any information with regards contaminated land assessment or the management of material. A plan submitted for the application indicated that in the area of the pyramid the *existing earth mound was to be removed*.

The desk study information provided appears to be sufficient to assess the potential risks at the site.

2. The adequacy of the site investigation

Site investigations have been undertaken in three phases by three different Engineers on behalf of the Environmental Consultants, Campbell Reith and are summarised below

Dunelm, January – February 2022

Technique	No.	Comments
Mechanically Excavated Trial Pit	10	Excavated to a maximum depth of 4.0m below ground level.
Windowless Sample Borehole	6	Sunk to a maximum depth of 4.45m below ground level.
Soil sampling	13	Samples analysed for a suite of analysis that included: metals, inorganics (pH, cyanide - total, total organic Carbon, sulphide, sulphate as SO ₄ - total), petroleum hydrocarbons, polycyclic aromatic hydrocarbons, TPHCWG (2), phenols and asbestos screen (8).
Ground gas monitoring	3 visits	Monitoring wells installed in all boreholes with the following response zones: • WS01 and WS02 in Gravelly silt. • WS03 and WS04 mixed strata comprising made ground overlying gravelly silt • WS05 and WS06 in made ground

Geotechnics, November 2023

Technique	No.	Comments
Mechanically Excavated Trial Pit	19	Excavated to depths ranging between 0.40m (TP112) and 4.00m below ground level (bgl)
Hand-Dug Trial Pits	6	Excavated to depths ranging between 0.20m and 1.10m bgl
Cable Percussion Boreholes	8	Sunk to depths ranging between 4.38m and 11.77m bgl
Soil sampling	39	Samples analysed for a suite of analysis that included pH, moisture content, metals and inorganics, phenol, speciated polycyclic aromatic hydrocarbons (PAHs) and total petroleum hydrocarbons (TPH). Additional sampling: total organic carbon (11), asbestos screen (18), Speciated petroleum hydrocarbons + BTEX (6) and VOCs and SVOCs (2).
Ground gas monitoring	3 visits	Monitoring wells installed in all boreholes with cross strata response zones.

Technique	No.	Comments
Groundwater sampling	7	Analysis included: pH, metals and inorganics, phenol, total polycyclic aromatic hydrocarbons (PAHs) total petroleum hydrocarbons (TPH), Speciated polycyclic aromatic hydrocarbons (PAHs), speciated petroleum hydrocarbons (4), BTEX (1), VOCs and SVOCs (1) and speciated phenols (1).

e3P, July 2024

Technique	No.	Comments
Mechanically Excavated Trial Pit	10	Excavated to a maximum depth of 4.00m bgl.
Windowless Sample Borehole	3	Sunk to a maximum depth of 2.09m bgl.
Soil sampling	10	Samples analysed for a suite of analysis that included Asbestos Screen, Arsenic, Boron, Beryllium, Chromium III, Chromium VI, Copper, Lead, Nickel, Vanadium, Selenium, Zinc, Cyanide (total), pH, Sulphate (total and water sol), Sulphide, Phenols (total), EPH Banded TPH, BTEX, VOC (speciated), PAH (USEPA 16 Speciated) and Total Organic Carbon.

Site Ground Conditions: The reports note that *ground conditions generally consist of varying thicknesses of Made Ground over Glacial Deposits comprising a mix of clays and sands. The underlying mudstone bedrock of the Pennine Lower Coal Measures was encountered at several locations typically between 3m and 7m below ground level.*

Highly variable made ground was encountered across the site, from <1m to 6m thick and the extent not determined in several locations. Deeper areas of made ground were associated with the earth pyramid structures which are approximately 5-6m in height from the surrounding ground level. The reports describe the made ground across the site as two thirds being dominated by clays (*fine made ground*) and a third comprising sand and gravel (*granular made ground*). Material encountered within the made ground included: clinker, coal, brick (fragments and whole), concrete fragments, sandstone setts, railway sleeper, railway tracks, plastic, timber, metal (including rebar), glass and slag. Within the former pond area, a plastic liner was encountered at 0.19m bgl in several locations. Hydrocarbon (slight and strong) and sweet odours were reported in several locations and an oily sheen observed on soil and perched groundwater in one location.

Site Water Conditions: Groundwater was struck during the investigations across the site and reported to be *generally encountered in the shallow 50mm diameter standpipes at depths between 0.13m bgl (BH108) and 3.81m bgl (BH104).* Within the deeper 19mm and 33mm diameter standpipes it was encountered at *depths between 2.37m and 6.05m bgl.* The report stated that these results indicated that *perched groundwater is present near the contact between the Made Ground and underlying Glacial Deposits.* In addition, *groundwater seepages were recorded near*

the surface across the area of the former pond within the hand dug pits. The report noted that the presence of a pond liner may have prevented infiltration, leading to boggy conditions in this locality.

Site Ground Gas Conditions: Six monitoring visits were conducted over two investigations recording a maximum of 0.1% methane and 6.4% carbon dioxide. A worse case gas screening value was calculated for each location which did not have a submerged response zone. The assessment indicated a CIRIA Characteristic Situation 2 (low risk) classification.

3. The adequacy of the final risk assessment

During the application period the proposed end use for the development has changed from all residential to residential with a biodiversity area (east of Market Street). As such the risk assessments from earlier reports did not include the public open space end use.

Ground Assessment: The soil analysis results have been compared to the CIEH/LQM S4ULs and Defra C4SLs where available for residential with homegrown produce land use for land to the west of Market Street. For land to the east of Market Street, soil screening values for public open space residential (POS Resi) were utilised. The following should be noted:

- The S4ULs utilised assumed a *Soil Organic Matter (SOM) content of 6% based on average site derived SOM data from the Made Ground and Glacial Till of 8.1%*. For transparency a table showing summarising these selected sample results should be included within the report.
- Analysis of hydrocarbons in soil has been via Extractable Petroleum Hydrocarbons (EPH) rather than Total Petroleum Hydrocarbon Working Group (TPHCWG) fractions. The assessment criteria for S4ULs follows the UK approach as described by the [Environment Agency](#) which is similar to TPHCWG. This is based on equivalent carbon number and as such are considered to contain compounds with similar environmental properties. EPH analysis produces different banding and no aromatic/aliphatic split. Whilst a “worst case” has been assumed by comparing to the lower of the aromatic/aliphatic assessment criteria for the nearest banding, it is not best practice for risk assessment.
- For Benzo[a]pyrene (BaP) the assessment criteria from C4SLs has been adopted. This produces a higher assessment criteria than S4ULs as it assumes that BaP as a surrogate marker for PAHs. As such it should be demonstrated in the report that the samples are appropriate for this as outlined in the assumptions for the [Technical Report](#). In particular, the PAH profile in the soil sample should be similar to that of the Culp study on which the assessment criteria is based.
- Statistical analysis of the sample results has been undertaken in line with [CL:AIRE's professional guidance](#) for samples taken to the west of Market Street. Whilst the assessment has its merits for many sites, we have reservations of its appropriateness here given the site's history and construction and also proposed development. Furthermore, it is not certain whether the heterogeneity of the made ground and the targeted nature of the sampling meets the criteria for using the guidance as set out in the section, Application of this Guidance.
- Exceedances for PAHs were recorded from a sample within the proposed biodiversity area above the screening criteria for POS (Resi). Overlaying the location of this sample on

historical mapping places it in the locality of the fourth pyramid which was removed c1995. It could be assumed that this pyramid was constructed in a similar way to the remaining three from materials associated with the site's former use as a Goods Yard and that some of this material remains.

Elevated concentrations of contaminants were identified, particularly for PAHs and TPHs across the site, albeit at a low frequency. Asbestos was identified during the 2023 investigation only. There was also visibly contaminated material encountered. The assessment has concluded that the material is suitable for reuse following screening and /or treatment, but it is noted that there is a considerable amount of earthworks required before development can be considered and it is unlikely that much of the material will remain in situ.

It should be noted that there are four archways under the masonry bridge which now split the site between proposed residential use to the west and proposed biodiversity area to the west. It is not clear whether access will continue between the two end uses through the arches. A path is shown on the biodiversity plan leading up to the bridge, but it is not carried onto the other side. Hand sampling has been undertaken on material under one arch. A visit to the site undertaken by this section found that the first arch (when viewing from the biodiversity side) contained a banking of an ashy type material. Sampling of this area has been recommended during enabling works.

Given the nature of the site, the site investigation and ground assessment undertaken provides a reasonable understanding of the site which is appropriate for this application.

Controlled Waters Assessment: Groundwater samples were taken from boreholes from the 2023 investigation and the analysis results have been compared to the UK Drinking Water Standards (DWS) and Environmental Quality Standards. It is noted that the installations were screened within the Glacial Till deposits and the Pennine Lower Coal Measures bedrock. No hydrocarbon odours were noted during the groundwater monitoring and there was no evidence of free phase product in the samples retrieved.

A single marginal exceedance of BaP was recorded with regards the DWS. The report concluded that the underlying presence of Glacial Till will limit migration from the site.

It is noted that no groundwater assessment was carried out during the most recent investigation where a hydrocarbon sheen was observed on perched groundwater in one trial pit. This should be considered further if encountered during remedial works.

The Environment Agency (EA) are the regulators of controlled waters and in their [consultation response](#) advised that they were unable to provide site specific advice on this aspect. Given the site's hydrogeology and hydrology it is considered a low risk site with regards controlled waters and the assessment undertaken has not identified any concerns. As such, this assessment appears reasonable.

Ground Gas Assessment: The consultant has used the methodology set out in CIRIA 665 and BS8485:2015 to assess the gas regime at the site. A worst case Gas Screening Value was

calculated for each location. Consequently, the consultant considers that the gas regime at the site is representative of Characteristic Situation 2 and gas protection measures are recommended. This assessment appears reasonable, but should be reassessed post earthworks.

4. The acceptability of the proposed remediation strategy

The following measures are proposed to address onsite contamination and construct a development platform:

Enabling works phase (current application)

- The bulk excavation, processing by segregation/sorting/screening of materials within the pyramid structures and hydrocarbon impacted soils. This is to include a reduced level excavation of approximately 1.0m from existing surrounding ground level beneath the footprint of each pyramid structure;
- The bulk excavation, processing by segregation/sorting/screening of materials from within the former pond area, to approximately 1.0-1.5m from existing ground level.
- Reuse of suitable soils to restore site levels in the area of the former pond, within proposed soft landscaped areas or as general fill;
- Chemical verification of soils being treated and/or reused on site, and testing of soils exposed on bank under bridge arch;
- Geotechnical suitability of treated materials reused on site;
- Disposal of materials which are unsuitable for reuse following treatment or which are surplus to requirements;
- Treat and/or dispose of contaminated groundwater which is excavated (or pumped) during the works;
- Breaking out of concrete obstructions where present beneath proposed development areas;
- Chemical validation of all imported materials against suitable thresholds
- Control of works associated with low levels of asbestos in the Made Ground;
- Management / eradication of Japanese Knotweed and other invasive species;

A detailed overview for a watching brief is presented including what to look out for, how to deal with it and how to keep a record. Should any significant contamination be encountered which requires a change to the Remediation Strategy this Section should be informed as soon as practicable.

In addition, a proposed approach to mitigating controlled waters risk, should gross contamination be encountered, is detailed within the report. Furthermore, boreholes are to be decommissioned in accordance with the EA guidance.

Development Phase (should residential development be approved by a subsequent application)

- Placement of a validated soils cover and geotextile in areas of proposed soft landscaping;
- Chemical validation of all imported topsoil and subsoil against suitable thresholds;
- Installation of appropriate services;
- Installation and independent verification of gas protection measures (if required);
- Record keeping for subsequent verification reporting;

As the development phase remedial actions are outside of this current application, they will be considered in detail should an application for development be brought forward. This will also be post-completion and verification of the proposed development platform so there will be a better understanding of remedial requirements (if applicable) and material import.

It is noted that the [CL:AIRE Definition of Waste: Code of Practice](#) (DoWCoP) is to be followed during the enabling works. Advice was sought from CL:AIRE by the consultant as to whether the proposed movement and reuse of materials on site is in line with the code of practice. CL:AIRE is a registered charity that manages the DoWCoP initiative. The EA are the regulators of waste management.

The [response](#) from CL:AIRE concluded that the proposed works are in line with DoWCoP, but stated that plastics are not suitable for reuse under DoWCoP. It is noted from the response that the Land Quality Statement and Remediation Strategy should be fully approved by the relevant regulators and that no objection is obtained from the local EA waste officer. A copy of the Materials Management Plan should be submitted for information when available and confirmation that a declaration has been made to CL:AIRE. It would be useful if the response from the local EA waste officer was also provided for information.

With regards to the enabling works remedial actions, we have the following comments and observations:

- It is noted that the bulk excavation below the pyramid structure is proposed to extend to approximately 1m below the existing ground level. This may mean leaving a depth of made ground in situ should it extend deeper. However, the report does recommend that should any hydrocarbon impacted soils be encountered, excavation will be required to the top of any natural strata/groundwater present.
- Validation sampling of hydrocarbon affected areas is to include speciated total petroleum hydrocarbons in the criteria working group suite (TPHCWG). This should give more confidence in the data, especially if any further risk assessments are warranted.
- With regards to the material in the former pond area, the report states: it is *anticipated the material will be treated using solidification/stabilisation techniques prior to placement on site to ensure the material meets chemical and geotechnical criteria, to be established at detailed design stage*. Should this be the case, details regarding such treatment should be submitted ahead of undertaking this aspect.
- Placement of a *general growth medium* is required for the biodiversity/POS area. No details of this are currently available. As such specifications for this should be provided in good time ahead of undertaking the works and include details of the depth and source of the proposed material. The material should be confirmed to be suitable for use in accordance with the report's procedure for soil validation (reuse/import).
- Additional testing is to be carried out under the southernmost arch of the Market Street bridge from a bank of exposed material. This is welcomed as we are not aware of any plans to restrict public access to the site or through this area.

- It is understood that at this stage it is not possible to confirm a validation plan – i.e. advise which areas of the development area should be validated to confirm suitability for residential soft end use and which under hard standing or building footprints. The final end use/layout for this application is shown in the [Biodiversity Enhancement Planting Plan](#). As such, as a minimum the site will need to be demonstrated to be suitable for use as a POS given there are no plans to restrict access to the site and there is no application or approval for a residential end use.
- The report notes that it may be necessary to stockpile site won soils for later reuse. Guidance should be sought from the EA regarding this and ensure that the relevant exemption for storage of material is obtained. Should this be for longer than 12 months it may require a waste storage permit, or formal confirmation from the regulator of an agreed extended period beyond 12 months. It is understood that such an extension is limited, with a maximum for larger projects of up to three years if the material is intended for reuse or recovery. Proposed reuse would need to be satisfactorily demonstrated. Should any permits be required it would be beneficial to advise this Section accordingly.

The proposed remediation strategy is acceptable to this Section. The remedial works should be fully implemented in accordance with the strategy's recommendations with the following information, as discussed above, submitted prior to commencing the enabling works:

- A copy of the Materials Management Plan and declaration to CL:AIRE.
- Response from local EA waste officer regarding the submitted final Land Quality Statement and Remediation Strategy reports (regarding the use of DoWCoP).
- Details of the solidification/stabilisation techniques to be utilised in the former pond area.
- Specification of the general growth medium proposed in the biodiversity area.
- Validation Plan – noting this may be subject to change during the enabling works.
- List of permits acquired to undertake the works.

A verification report will be required on completion of the enabling works detailing all earthworks undertaken, material management on and off the site, validation sampling of soils and records of the watching brief. Supporting photographs, plans and documentation should be included.

5. Whether the information submitted is sufficient to determine that the site presents a low risk to human health and the environment

In order for this Section to be satisfied that this development does not pose a risk to human health or the environment, the following information needs to be submitted to the Council for approval:

- (i) A validation plan.
- (ii) A materials management plan, and declaration regarding the [CL:AIRE Definition of Waste Code of Practice](#).
- (iii) After completion of site works, a verification report is required to validate that the work undertaken conforms to the remediation proposals received and agreed by this Section.

The above information will be required by planning conditions, if permission is granted.



All parties involved with waste and soil movement at the site should be aware that materials illegally deposited or deposited at inappropriate sites may be subject to relevant landfill taxes, payable by all parties. Only robust due diligence is a defence against joint liability. Illegal deposits can include moving waste soil material on sites, or between sites, without the appropriate permits, exemptions or duty of care.

Please Note: The Environment Section has used all reasonable endeavours to determine the risk from contaminated land and ground gas based upon the information available to it. However, the comments made above should not be taken to imply that the land is safe or otherwise suitable for this or any other development. The ultimate responsibility for safe implementation of the development scheme resides entirely with the landowner and/or Planning Applicant.

Please do not hesitate to contact me if you require any clarification of the above.

Yours sincerely

Sally Shaw
Environmental Protection Officer

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