

Barmore Road, Tarbet – Peer Review

Review Details

Planning Reference	24/00306/PP
Building Warrant Reference	Not Supplied
AECOM Review Reference	60723630-034-LF
Date	20 May 2026
Review Limitations	Review limitations are presented at the end of this document in Annex 1 .

Advice for Applicants

Contaminated land risks are considered to be a ‘*material consideration*’ for planning applications as part of the statutory planning legislation. Furthermore, the Planning Advice Notice 33 (PAN33) states that ‘*The planning system has a key part to play in addressing the problem of historical contamination. In pursuing policies to re-use and redevelop sites, developers and planning authorities need to be aware of contamination issues, and the role of the planning system in dealing with them*’. Part IIA legislation and planning law define contaminated land in the context of ‘*suitable for use*’, and set out the approach for determination of suitable for use which includes the following statement:

“ensuring that land is made suitable for any new use, as planning permission is given for that new use – in other words, on the basis of the proposed future use and circumstances, assessing the potential risks from contamination before official permission is given for the development and, where necessary, to avoid unacceptable risks to human health and the environment, remediating land before new use commences; this is the role of the Town and Country Planning and Building Control regimes.”

Whilst it is the local planning authority’s role to be satisfied that proposed development for an associated planning application will be suitable for use in the proposed location, ultimate responsibility for this rests with the developer and / or landowner (irrespective of specific planning conditions). As such, whilst it is the local planning authority’s role to critically review documents received as part of planning applications, this review does not absolve liability from the developer / landowner.

To facilitate their role in the planning process with reference to contaminated land, the local planning authority requires a complete and transparent record of the decision-making process to develop the conclusion that a given site is suitable for use. This means that the developer (or their agents) **must** present clear, logical and evidence-based conclusions to determine that their site is suitable for use. The local planning authority **will not** fill in gaps in these records, make assumptions on evidence bases or accept any assertion / omission without an evidence base in support of it.

We would note that inadequacies in documents or statements provided to the local planning authority for review without accompanying evidence, reasoning, commentary evidence or proof will not be accepted, causing unnecessary delays to the planning process.

We thank you for your assistance in the provision of an evidence-based response.

The Proposed Development

The planning application states that the proposed development for the site comprises a residential land use, specifically comprising construction of five new residential dwellings of between three and four bedrooms with associated gardens, and formation of vehicular access.

Information Received for Review

Report Titled: 'Tier 1 Preliminary Risk Assessment (PRA), Site: Former Tarbert Garage, Barmore Road, Tarbet, Argyll and Bute, PA29 6TT'. Arthian Limited, dated 7th April 2026 (Ref: 321942-REP-001)

Report Titled: 'Intrusive Ground Investigations – Scope of Works'. Arthian Limited, dated 9th April 2026 (No Reference)

Desk Study Report / Information Review

Evidence of Competence	The Arthian report quality assurance details demonstrate that the project team consisted of personnel with the following evidence of competencies (with reference to LCRM): • Chartership – authorship team included CGeol, CSci, CEnv and CChem chartership statuses. • Professional Affiliations – two project team members are RSoBRA accredited for human health and controlled waters risk assessment.
Report Purpose	The assessment is being undertaken to satisfy Condition 11a of planning consent 24/00306/PP for the proposed development. The report objectives include establishing current site condition / presence of sources, establishing the environmental setting, establishing the historical setting, evaluation of contamination sources to establish the presence of contaminant linkages, development of a Conceptual Site Model (CSM) and to commentary on further investigation requirements.
Site Size (Ha)	0.36 ha
Grid Reference	186625 (E) 669251 (N) / NR 86625 69251
Walkover Observations	• Hardstanding concrete and soft landscaping. The soft landscaping was noted to be undulating with possible areas of filled material with metal, wood and brick observed at surface. • A waterlogged area located off site to the north was noted. • Derelict brownfield land, historically used as a vehicle repair garage and petrol filling station. Footprint of historical structures remains along with a possible loading bay. • Two underground tanks in the south of the site, approximately 0.50 m depth. • Drains observed at the eastern edge of Barmore Road to the north and south of the Site. Overhead electrical lines present across Barmore Road. • A stockpile of material was observed on the centre of the site, which comprised tiles, wood, metal, brick, and appeared overgrown with grass.
Historical Land Use	Historical on-site presence of an 'Electrical Telegraph', garage and associated petrol filling station forecourt area. Historical uses of surrounding property included agricultural fields, residential properties, two piers (jetties) on East Loch Tarbet Water, coal depot (250m south), wells, and a spring, garage (30m northwest), Electricity Substation (50m north), tank (250m northwest) and Tarbet Harbour.
Geological Sequence	Arthian noted that no published areas of Artificial Ground are present on-site or in the surrounding area, and no superficial deposits are noted to be present on-site. A small area of superficial deposits described as beach deposits characterised as gravel, sand and silt are mapped approximately 233 m east of the site. Published geological maps show the presence of the Southern Highland Group bedrock deposits beneath the site, of predominantly meta volcaniclastic sedimentary rocks.
Hydrogeology	Bedrock is recorded by Arthian as a low productivity aquifer with flow in fractures and discontinuities and small amounts of groundwater in near surface weathered zones and secondary fractures. The SEPA Water Classification Hub identifies the groundwater body underlying the Site as the Oban and Kintyre Groundwater Body (SEPA ID: 150698) recorded as in 'Good' overall condition for 2024. Arthian has reviewed the local hydrology, hydrogeology and topography and concluded that underlying groundwater within the designated aquifer is likely to flow in an easterly direction towards East Loch Tarbert and Loch Fyne. No licensed abstractions were identified within 1km of the site.
Hydrology	Arthian note that the Groundsure report does not identify any surface waters onsite.

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	The nearest surface water feature (narrower than 5m) is approximately 16m west flowing south towards East Loch Tarbet. Assumed to be associated with the spring noted on historical maps. The SEPA Water Classification Hub identifies Loch Fyne as a coastal water body located approximately 150 m southeast of the Site (SEPA ID: 200042), identified as in 'Good' overall condition for 2024.
Coal Mining History	No Mining Remediation Authority report was obtained, but Arthian have reviewed the Mining Remediation Authority Map Viewer, which indicated the site was not within a Coal Mining Reporting Area.
Regulatory Database Information	Arthian procured a Groundsure Report to provide regulatory database information, their review indicated that the following items were relevant to their site: • Historical industrial land uses: within 250m unspecified tanks, hospitals and fire engine. • Historical Tanks: One record of historical tanks within 250 m of the site. No historical tanks are recorded as on site within the Groundsure Report. • Historical Energy Features: Electricity substation 50m north. • Historical Garages: One record is located on site and pertains to a garage present from 1978. One record also pertains to a garage located 16 m northwest of the site present from 1978. • Current/recent tanks: One record of historical tanks, open storage tank for distribution or storage of materials, 157 m northwest. • Current/recent petrol stations: Unbranded petrol station located 7 m northwest, and it is assumed this entry is associated with the identification of a historical garage on historical maps (1978) located offsite to the northwest. • Current industrial land uses: within 250m include: sailmakers, unspecified works, sewage pumping station, water pumping station, harbour, jetty, yacht chandlery.
Radon Risk	Arthian consulted the Groundsure Report to assess potential radon risks to the site. Their review indicated that the site is within an area where <1% of homes are above the action level for radon gas.
Additional Information	Arthian requested information of the Environmental Health department of Argyll and Bute Council which noted the following: • The Council does not hold any site investigation records. • There is a Garage 26 m to NNW of the site. • There is no known contamination to land, surface water or groundwater within 100 m of the site. • There is no known waste disposal activities within 100 m of the site (including landfill). • The Council does not hold a preliminary risk ranking for the site. • A search of the Council's private water supplies records shows that there are no private water supplies within the site or within 100 m of its boundaries. Arthian requested information from the Petroleum Officer which noted the following: • Tank 1 stored 'four-star' petrol and Tank 2 stored unleaded petrol until circa 1997. Latterly, Tank 1 was changed to diesel, however, the date of this change is unknown. • Both tanks have a capacity of 13,368 litres (total 27,276 litres). • It is believed that the single petrol tank that was in use at the time that the site ceased operations was degassed and filled with foam on 22 August 2007. • There was a further diesel tank and dispenser on the west side of the A83 (Barmore Road) identified in the approximate location of the historical garage located approximately 10 m – 15 m to the west of the site. • The garage located 26 m northwest of the site is assumed to be the same garage. • The last petroleum licence issued appears to have expired on 02 February 2004. This covered all three (3) tanks, giving a total capacity of – Tank 1 (on site) – diesel – 13,638 litres. – Tank 2 (on site) - unleaded - 13, 638 litres. – Tank 3 (located approximately 10 m - 15 m west of the site) - diesel - 4,546 litres. • <i>It was reported that from memory the dispenser on the west side was further from the road than the tank and the vents on the site are marked (behind the main garage</i>

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building) but cannot recall where the vent was on the west side. The Trading Standards & Advice Services Manager cannot recall whether the dispenser on the west side was controlled by the console, or whether it was operating independently. If it was operated via the console, there may be an electric conduit under the road.

- A planning application response in 2010 noted tanks and pipework should be removed before any building work commences.

Arthian requested information from the SEPA which noted the following:

- There are two authorised discharges within 250 m of the site. These are each for private sewage treatment from domestic properties.
- There are no authorised abstractions within 250 m of the site.

Arthian have undertaken their CSM in accordance with CIRIA C552 and BS 21365:2020 guidance, specifically noting the multiple forms of contamination (both primary and secondary) and have reportedly utilised this within their CSM.

Arthian's Preliminary CSM included the following potential sources, pathways and receptors.

Sources:

- **Onsite:** Former Underground Storage Tanks & Fuel Infrastructure from petrol filling station use (with contaminants of potential concern (CoPC) including Volatile Organic Compounds (VOCs), halogenated hydrocarbons, non-halogenated hydrocarbons, Polycyclic Aromatic Hydrocarbons (PAHs), organometallic compounds, metals and asbestos), Made Ground from reported potential upfiling of site (with CoPC of asbestos), possible fly tipped materials (with CoPC of metals and asbestos).
- **Offsite:** Garage (with CoPC as above for the onsite petrol filling station) and electricity substation (with CoPC including non-halogenated hydrocarbons, Polychlorinated Biphenyls (PCBs), metals and non-metals).

Pathways: Direct contact, ingestion, inhalation, vapour migration, groundwater migration.

- **Human Health:** Dermal contact, consumption of homegrown produce and attached soil, Ingestion of soil/soil-derived dust, Inhalation of soil/soil-derived dust, Inhalation of soil-generated gases, Inhalation of vapours via migration through service entries, Inhalation of Non-Aqueous Phase Liquid (NAPL) derived vapours and Inhalation of groundwater-derived vapours.
- **Water Environment:** Leaching of contaminants from source into groundwater, spills or leakages from onsite infrastructure including underground storage tanks, migration of contaminants from source into adjacent surface waters through groundwater, advection/diffusion/dispersion of contaminants in groundwater within bedrock aquifer, dissolution from NAPL (NAPL spread/migration and NAPL penetration into groundwater to be assessed should NAPL be identified).
- **Property:** Permeation of water pipes, direct contact with contaminated ground conditions, accumulation of soil-generated gases and vapours leading to explosion.

Receptors:

- **Human Health:** Future site users [residents], offsite users [local residents to the east and south].
- **Water Environment:** Surface water [East Loch Tarbert, Spring]. Groundwater [localised shallow groundwater pockets]. Future resource potential [Bedrock aquifer].
- **Property:** Onsite - Proposed residential development. Offsite – Residential buildings.

Preliminary CSM

In their CSM, Arthian discounted the electricity substation as a potential source, noting the distance, direction and topography meant that no plausible linkage was present. Fly tipped materials are also discounted, as '*underlying soils potentially impacted by the tipped materials are unlikely to be exposed*'.

Arthian noted that the following potential sources represented potential unacceptable risks which required further assessment:

- **Moderate to high risk** to future residents from contaminated soils arising from former site use as a garage, residual light hydrocarbons associated with former UST and pipework, potential presence of NAPL released from fuel related infrastructure, hydrocarbon/volatile substance impacted shallow groundwater and soil contamination arising from uncharacterised materials used to upfill site.

Preliminary Risk Assessment

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- **Moderate risk** to groundwater from soil borne contaminants arising from former use of site as fuel station and garage, upfilled materials and fly tipped waste, NAPL and dissolved phase substances arising from historical contamination.
- **Moderate/Low risk** to surface water from dissolved phase substances arising from historical contamination.
- **Moderate/Low risk** to concrete foundation structures and infrastructure from hydrocarbon impacted soils.
- **Moderate/Low risk** to subsurface potable water supply pipes from soils impacted by contaminants associated with described sources.
- **High risk** to residential development (housing) from soils impacted contaminants associated with described sources (ground gas migration).
- **Low risk** to groundwater from offsite commercial garages.

Arthian also presented the current limitations and uncertainties in their assessment, which included incomplete third party / regulatory data records, incomplete tank decommissioning information, the lack of historical intrusive investigation data and the uncertainty of Made Ground presence. Where applicable Arthian noted that conservative assumptions have been made in their assessment based on these uncertainties.

Arthian presented a gap analysis of missing information, which requires to be resolved by the recommended ground investigation:

- Confirmation of tank presence, conditions and volumes remaining.
- Made Ground composition and contaminant concentrations.
- Groundwater levels, quality gradients and flow direction.
- Ground gas / vapour concentrations and migration pathways.
- Permeability and leachability characteristics of soils.
- Offsite groundwater connectivity.
- NAPL presence / absence.

Conclusions and Recommendations

Conclusions

- Identification of former use of the site as a petrol filling station and garage including historical underground storage tanks and potential releases associated with former fuel handling infrastructure, and contaminated soils and groundwater resulting from past activities.
- The CSM demonstrates possible risks to human health, the water environment and property which need further investigation.

Recommendations

- Intrusive investigation is recommended to test the assumptions developed in the CSM.
- Underground infrastructure associated with the former garage including but not limited to fuel storage tanks, tank cradles and fuel lines should be appropriately decommissioned and removed.

Ground Investigation Scope of Works Review

Background Information	Arthian summarised the preceding desk study information, the developed CSM and risk assessments. This information not repeated here.
Investigation Rationale	• Arthian proposed a phased ground investigation at the site, with the first phase of investigation limited to trial pitting to provide some preliminary information, prior to a second phase of investigation with boreholes once ground conditions are better understood. Arthian note the following rationale for the proposed ground investigation: – Initial trial pitting exercise is proposed in order to better constrain the depth and composition of any superficial soils across the site, the depth to rockhead and provide visual assessment of the shallow soils in the vicinity of the former garage infrastructure. – Based on the findings of the Phase 1 Trial Pitting, a second phase of investigation with boreholes to confirm presence of aquifer within shallow bedrock.

Ground Investigation Scope of Works Review

Ground Investigation Techniques	• Phase 1: Trial Pitting – 8 Non-Targeted trial pits up to 3.5m bgl. Located at approximately 25m centres across the site outwith areas of the former garage. – 11 Targeted trial pits up to 3.5m bgl. In the vicinity of former garage infrastructure and buildings to target specific features i.e., Underground Storage Tanks (USTs), tanker stand, pump and buildings. – Stockpile samples: Samples collected from stockpiles identified during walkover for waste classification purposes. Volume currently unknown but samples are collected at a frequency of approximately one sample per 50 m³ or a minimum of three, whichever is greater. • Phase 2: Boreholes (should trial pits identify potential for direct pathways to bedrock aquifer) – Four rotary drilling boreholes to at least 4.5m to 6.0m into solid bedrock. – Should groundwater be encountered within 4.50 m to 6.00 m of rockhead, or should significant fractures be encountered, the borehole will be progressed as to allow for a response zone to be screened across the identified groundwater strike or fracture(s) and to allow for sufficient hydraulic head to be generated. If boreholes do not encounter groundwater and competent bedrock is present, then the boreholes are proposed to be terminated at 4.50m bgl to 6.00m bgl. • Locations presented on Drawing 321942-3002-00 'Proposed Ground Investigation Location Plan.				
Monitoring Well Strategy	• If progressed, the boreholes are programmed to terminate within the solid strata deposits at depths of 4.50 m to 6.00 m below rockhead. All boreholes will be completed with monitoring wells. • The groundwater monitoring well response zone will be designed based on encountered ground conditions. Care will be taken to minimise the risk of contamination of underlying strata via the creation of preferential pathways. • Response zones of monitoring wells will be designed to target specific strata and will not cross strata.				
Sampling Strategy	<table border="0"> <tr> <td data-bbox="284 1220 443 1249">Soil / Leachate</td><td data-bbox="475 1124 1412 1339"> • Soil samples are proposed to be collected from each distinct soil/made ground strata encountered during the intrusive works. • Due to the potential presence of heterogenous made ground deposits, professional judgement will be used to direct sampling. • Sampling frequency is anticipated to as a minimum, include sampling within the top 0.50 m, made ground materials and natural strata (if encountered) at each location. • Minimum of three samples from stockpiled materials. </td></tr> <tr> <td data-bbox="284 1451 427 1480">Groundwater</td><td data-bbox="475 1355 1412 1568"> • Prior to sampling well will be dipped using oil interface probe. • If NAPL hydrocarbon is identified, purging and sampling will not be undertaken. Samples will be collected via closed bailers. • If NAPL is not detected, wells will be purged using low-flow purging methods to obtain sample. • If boreholes are progressed, three rounds of groundwater monitoring will be undertaken </td></tr> </table>	Soil / Leachate	• Soil samples are proposed to be collected from each distinct soil/made ground strata encountered during the intrusive works. • Due to the potential presence of heterogenous made ground deposits, professional judgement will be used to direct sampling. • Sampling frequency is anticipated to as a minimum, include sampling within the top 0.50 m, made ground materials and natural strata (if encountered) at each location. • Minimum of three samples from stockpiled materials.	Groundwater	• Prior to sampling well will be dipped using oil interface probe. • If NAPL hydrocarbon is identified, purging and sampling will not be undertaken. Samples will be collected via closed bailers. • If NAPL is not detected, wells will be purged using low-flow purging methods to obtain sample. • If boreholes are progressed, three rounds of groundwater monitoring will be undertaken
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Testing Strategy	<table border="0"> <tr> <td data-bbox="300 1803 347 1832">Soil</td><td data-bbox="475 1585 1412 2042"> • Up to 3 samples per trial pit and borehole location (up to 57 samples total from Trial Pits and 12 from Boreholes). • Should no Made Ground be encountered, it is proposed only one soil sample from natural superficial soils per exploratory hole location. • Analytical suite: Heavy metals, Soil Organic Matter (SOM), pH, inorganics, asbestos screen (with identification), asbestos quantification (if required), Total Petroleum Hydrocarbons (via the CWG method and including BTEX & MTBE), PAH (USEPA 16), VOCs, and SVOCs. • Minimum of 3 tests from stockpiled material: Heavy metals, SOM, pH, inorganics, TPH CWG (inc BTEX & MTBE), PAH (USEPA 16), asbestos screen & ID and asbestos quantification (if required). Samples from the identified stockpile will be submitted for Waste Acceptance Criteria (WAC) testing in order to inform on classification for offsite disposal. The volume of the stockpile is currently unknown; however, it is recommended that samples are collected at a frequency of approximately one sample per 250 m³, or sufficient samples to provide a robust assessment. </td></tr> </table>	Soil	• Up to 3 samples per trial pit and borehole location (up to 57 samples total from Trial Pits and 12 from Boreholes). • Should no Made Ground be encountered, it is proposed only one soil sample from natural superficial soils per exploratory hole location. • Analytical suite: Heavy metals, Soil Organic Matter (SOM), pH, inorganics, asbestos screen (with identification), asbestos quantification (if required), Total Petroleum Hydrocarbons (via the CWG method and including BTEX & MTBE), PAH (USEPA 16), VOCs, and SVOCs. • Minimum of 3 tests from stockpiled material: Heavy metals, SOM, pH, inorganics, TPH CWG (inc BTEX & MTBE), PAH (USEPA 16), asbestos screen & ID and asbestos quantification (if required). Samples from the identified stockpile will be submitted for Waste Acceptance Criteria (WAC) testing in order to inform on classification for offsite disposal. The volume of the stockpile is currently unknown; however, it is recommended that samples are collected at a frequency of approximately one sample per 250 m³, or sufficient samples to provide a robust assessment.		
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Ground Investigation Scope of Works Review

	Testing to confirm the design of water supply pipes in line with UKWIR and Scottish Water's barrier pipe guidance will be undertaken. It is anticipated that at least two soil samples will require laboratory testing of soil samples against UKWIR parameters, however, additional samples may be required depending on ground conditions encountered.
Leachate	- Nineteen samples will be submitted for leachate analysis. - Analytical suite: pH, Heavy metals, Dissolved Organic Carbon. - Leachate samples are not proposed to be analysed for organic parameters due the potential unreliability of the results obtained from soil leachate prepared samples.
Groundwater	- Three rounds of groundwater sampling will be undertaken if boreholes progressed. Up to twelve samples will be tested for: Heavy metals, pH, inorganics, TPH CWG (inc BTEX & MTBE), PAH (USEPA 16), VOC+TICs and SVOC+TICs. - If NAPL encountered, up to three samples will be tested for density, whole oil analysis, TPH banding and percentage composition.
Ground Gas Assessment	- Arthian noted that at this stage the thickness and composition of superficial soils across the site is unknown but rockhead is anticipated at relatively shallow depths. As such it is considered that the installation of ground gas monitoring wells targeting shallow soils may not be possible and consideration will be given to alternative risk assessments such as CL:AIRE Research Bulletin RB-17. - Arthian recommends that the ground gas risk assessment methodology is reviewed following completion of the Phase 1 trial pitting works.
Levelling Survey	All borehole and trial pit locations will be surveyed to an appropriate datum.
Reporting	Arthian note that findings of the proposed works will be presented in a Tier 2 Generic Quantitative Risk Assessment Site Investigation Report and will include: Summary of site works, laboratory analysis, generic quantitative risk assessment for human health, water environment, property and other relevant receptors, ground gas / vapour risk assessment, refined Conceptual Site Model and recommendations.

Review Comments

Tier 1 Preliminary Risk Assessment Comments

- The purpose and scope of the report is reasonably set-out, and the basis of the report's contents can therefore be appropriately reviewed in the context of the proposed development.
- The pCSM has been developed in a clear and structured manner. Reasoned justifications have been provided for the discounting of certain sources, demonstrating a logical and evidence-based approach and further recognising relevant uncertainty.
- Arthian have undertaken a thorough formal regulatory consultation.
- The risk assessment has been undertaken broadly in accordance with the CIRIA C552 methodology and reflects the basic principles of LCRM guidance, using the probability and consequence designations to arrive at a potential risk category. Contaminant linkages have assessed the pathways on an individual basis.
- A clear and logical gap analysis has been presented, which notes the relevant uncertainties in existing information and notes that these will need to be resolved by ground investigation.
- Whilst halogenated hydrocarbons are presented as a potential CoPC for fuel station use, fuel oxygenates (such as alcohols and ethers) have not been identified as a relevant CoPC. It may be that given the age of the petrol station that these are considered to be discounted by Arthian, though this should be justified in the report if this is the case.
- Whilst offsite residents are discounted on the basis of the an embankment to the east of the site removing the potential for pathway presence, it is noted that residences to the south of the site appear to not have this embankment between their properties and the site. It would be beneficial for Arthian to provide further justification to confirm this or recognise the relevant uncertainty and include residents to the south in their CSM and PRA.
- It is considered generally reasonable for fly tipped materials to be discounted, however, the reasoning presented is not fully justified. It is not clear how fly tipped materials will not be in contact with underlying materials, if this is due to the presence of hardstanding beneath fly tipped materials then this should be stated to confirm Arthian's conclusions on this.

Intrusive Ground Investigation – Scope of Works

- No site size has been provided in the Scope of Works, however, it is noted as 0.36ha within the PRA. Due to the small site size and number of exploratory holes provided, we anticipate the delivered coverage would be in accordance with guidance for a main investigation given in BS 10175:2026 with an average spacing of at least 25m. It is noted in the report that *'This level of investigation proposed constitutes a 'detailed' ground investigation as per BS5930:2015...'*.
- Drawings have been provided clearly noted the possible sources of contamination onsite (historical garage infrastructure and buildings) and both phases of ground investigation proposed.
- A reasonable sampling and testing strategy has been provided. There is some inconsistency between the provided sampling strategy for the stockpile. Both one sample per 50m³ and 250m³ (or three minimum) are provided. Confirmation of the stockpile sampling strategy should be provided.
- The presented scope of works reasonably states that ground gas assessment is proposed to be completed on the CL:AIRE RB17 basis and that this will be further developed at a later date, corresponding discussion of how vapour risks will be resolved does not appear to be included in the scope. We look forward to commentary on how potential vapour risks will be assessed.
- Whilst halogenated hydrocarbons are noted as a potential source of contamination, it is not clear whether these will be covered by the existing VOC and SVOC suites, or whether a specific analytical suite is proposed to cover these contaminants. We look forward to Arthian confirming this.

Review Recommendations

Following our review, the contaminated land planning status is considered to be as follows:

Applicable? (Y / N) Status Level

	The investigations, risk assessments and / or remediation validation reports are sufficient to support a conclusion that no further contaminated land risk assessment / mitigation is required.
	The remediation strategy documents are considered to be reasonably sufficient, and post works validation reporting should be provided once works are completed.
	The investigation and risk assessment phase reports are considered to be generally reasonable, and a remediation strategy should be prepared for the proposed risk mitigation actions.
Y	The reports presented are considered to be generally reasonable in principle, subject to resolution of our queries.
	Information submission does not meet basic requirements, and significant editing or complete re-submission of reports is required.

As indicated above, further information is considered to be required in order to satisfy concerns with the information submitted:

1. BGS Boreholes and Linear Features have not been reviewed as part of the desk study.
2. Whilst halogenated hydrocarbons are presented as a potential CoPC for fuel station use, fuel oxygenates (such as alcohols and ethers) have not been identified as a relevant CoPC. It may be that given the age of the petrol station that these are considered to be discounted by Arthian, though this should be justified in the report if this is the case.
3. Whilst offsite residents are discounted on the basis of the an embankment to the east of the site removing the potential for pathway presence, it is noted that residences to the south of the site appear to not have this embankment between their properties and the site. It would be beneficial for Arthian to provide further justification to confirm this or recognise the relevant uncertainty and include residents to the south in their CSM and PRA.
4. It is not clear how fly tipped materials will not be in contact with underlying materials, if this is due to the presence of hardstanding beneath fly tipped materials then this should be stated to confirm Arthian's conclusions on this.
5. Confirmation of the stockpile sampling strategy should be provided.
6. The presented scope of works reasonably states that ground gas assessment is proposed to be completed on the CL:AIRE RB17 basis and that this will be further developed at a later date, corresponding discussion of how vapour risks will be resolved does not appear to be included in the scope. We look forward to commentary on how potential vapour risks will be assessed.
7. Whilst halogenated hydrocarbons are noted as a potential source of contamination, it is not clear whether these will be covered by the existing VOC and SVOC suites, or whether a specific analytical suite is proposed to cover these contaminants. We look forward to Arthian confirming this.
8. We look forward to receiving the Tier 2 Generic Quantitative Risk Assessment Site Investigation Report.

Annex 1 – Review Limitations

1. This review considers contaminated land risk assessment only, and does not provide comment on geotechnical or engineering assessments except where they are directly related to land contamination issues.
2. The presentation of opinion and debating contractual responsibility and mineral stability risks (mine gases excepted) are excluded.
3. Potential risks from unexploded ordnance, flooding, and ozone depleting substances have not been commented on, as these do not form part of the contaminated land discipline.
4. This review is limited to the data made available at the time of writing. Should further information subsequently suggest differences to that submitted to the Planning Authority then the latter reserves the right to update and/or change its opinion.
5. Unless the Planning Authority has actual knowledge to the contrary, it has assumed the correctness and completeness of the third-party information supplied and shall have no liability in respect of any inaccuracy, defect or omission in any information or materials provided, anecdotally or otherwise, by the developer (or its agents) or any other third-party to the Planning Authority (or its agents). The Planning Authority does not assume any liability for misrepresentation of information or for items not visible, accessible, present or supplied by the developer (or its agents) at the time of the study.