

**FORMER COAL YARD, LLOYD'S LANE,
CHIRK**

REMEDIATION STRATEGY

For: Wrexham County Borough Council

April 2018

R2280-R03-v1

DOCUMENT CONTROL SHEET

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Remediation Strategy

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Signed For Smith Grant LLP

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D01 Site Boundary

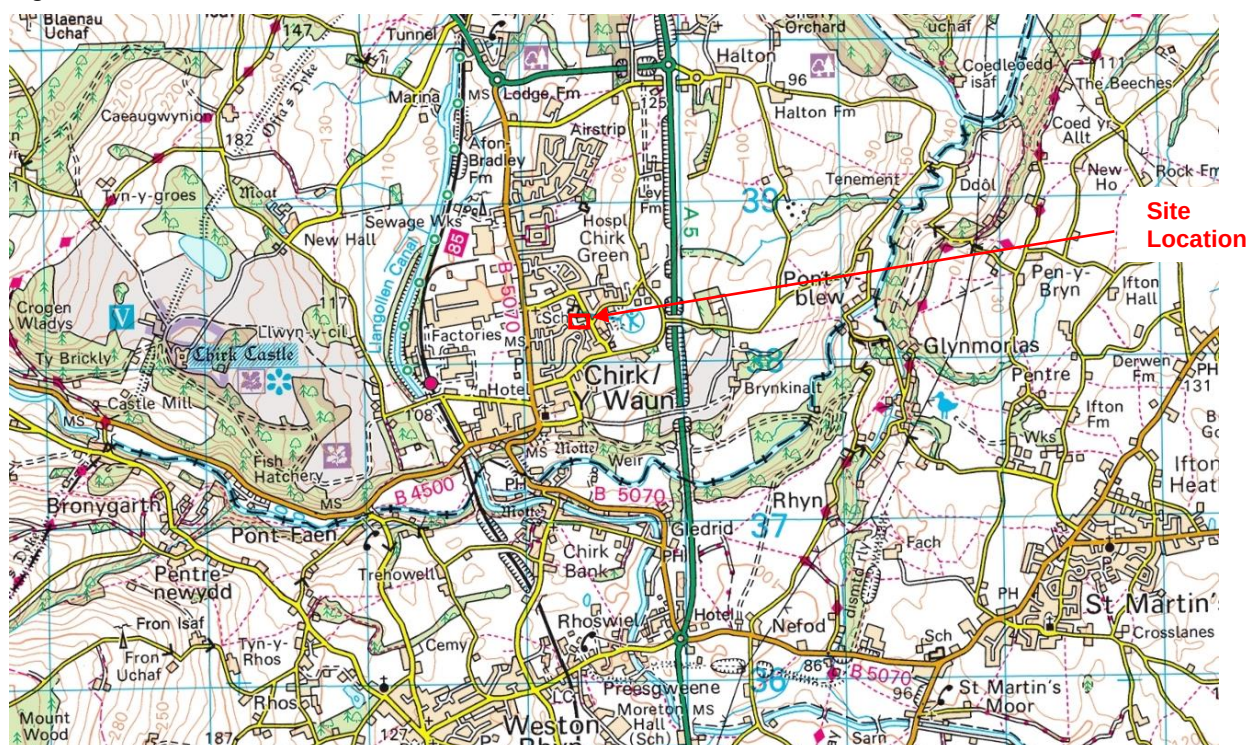
1. Introduction

- 1.1. Smith Grant LLP (SGP) has produced a Stage 1 & 2 Contaminated Land Assessment (R2280-R01, R2280-R02) for the former coal yard at Lloyd's Lane, Chirk. SGP understands that the site is being considered for a residential land use and that a Remediation Strategy was requested to address ground contamination issues and prepare the site for redevelopment.
- 1.2. The site presently consists of a vacant irregular shaped parcel of land with a slight slope from east to west. Several small buildings are present across the site with two material storage areas with associated partitioning walls along the northern boundary of the site. Site details are:

Table 1.1: Site details

Address	Former Coal Yard, Lloyds Lane, Chirk, LL14 5PU
National Grid Reference	329354, 338270
Local Authority	Wrexham County Borough Council
Site Area	3,150m ²
Current Nature of Site	Vacant land
Site Access	Off Lloyds Lane
Proposed use	Erection of four pairs of semi-detached and one detached properties with private garden area and formation of vehicular access
Planning Ref	P/2017/0459

Figure 1.1: Site Location



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- 1.3. The assessment methodology follows the framework described in the EA / DEFRA Contaminated Land Report 11: 'Model Procedures for the Management of Land Contamination' 2004, comprising an options appraisal to evaluate and identify feasible remediation options, specification of appropriate techniques, and an implementation programme and verification plan.
- 1.4. The site has been subject to a Desk Study and Ground Investigation undertaken by SGP which has characterised the contamination status of the site. There is considered to be sufficient information available to develop a Remediation Strategy to address any contamination that has been identified and whatever might be reasonably anticipated. It is intended that this Remediation Strategy will be submitted to support the current planning application of the site (P/2017/0459) and will require regulatory approval to confirm the proposed remedial works.
- 1.5. A programme of works to physically prepare the site for development will also be required; assessment of the geotechnical properties of the ground, its' stability and related impacts on foundation and infrastructure design lie outside the scope of this report which relates to risks from contamination only.

2. Information Sources

2.1. A summary of the previous Stage 1 (desk study) and Stage 2 (ground investigation) report produced by SGP is summarised in the table below:

Table 2.1: Primary Information Source

Report	Content
Smith Grant LLP Former Coal Yard, Lloyd's Lane, Chirk: Stage 1 Contaminated Land Desk Study. Ref. R2280-R01-v1 November 2017	Stage 1 (Desk Study) report comprising historical review, site setting, site description, geology, hydrogeology, conceptual model and risk assessment.
Smith Grant LLP Former Coal Yard, Lloyd's Lane, Chirk: Stage 2 Contaminated Land Assessment Ref: R2280-R02-v1 March 2018	Stage 2 (Site Investigation) report comprising intrusive works consisted of the excavation of 8 machine dug trial-pits to a maximum depth of 3m bgl. Ten soil samples were collected from both made ground and natural soils which were submitted for a range of chemical analysis including asbestos, metals/metalloids, PAHs, hydrocarbons (TPHCWG) and BTEX. The report contained a quantitative risk assessment and compared results of soil testing to contemporaneous screening criteria.

2.2. Use of Information in Strategy Development

2.3.1. This report contains a brief summary of the findings of the previous investigation and other available information, and the risk assessment carried out, and then uses the conclusions of the previous risk assessments identified to define clear remediation objectives which must be met to allow the site to be developed without significant risk to human health or the wider environment. The various options for achieving these objectives are explored and a preferred strategy is arrived at and presented.

3. Site Characterisation

3.1. Historical Development and Use

3.3.1. Historical mapping indicates that the site existed as part of an open field until between 1873 and 1961 when it was developed as a coal yard. No significant changes have occurred at the site since.

3.3.2. At the time of the earliest available mapping (1873), the surrounding land comprised predominantly open agricultural land with the village of Chirk located 500m south west of the site. The surrounding area steadily becomes more residential until present day. The site is now bound by residential development on the east, south and west with a primary school to the north.

3.2. Geology

3.3.1. Ground conditions encountered during the intrusive investigation were consistent across the site with a veneer of made ground overlying a cohesive layer of Boulder Clay Deposits.

3.3.2. Large areas of the site surface were covered by concrete hardstanding encountered to depths of between 0.1m and 0.3m bgl during the intrusive ground investigation. Underlying the hardstanding, made ground was present, generally comprising a brown / blackish dark grey gravelly clay or clayey gravel; the gravel consisted of frequent brick and concrete with occasional inclusions of wood, glass and metal. Depths of made ground ranged from between 0.2m bgl to a maximum depth of 1.0m bgl, a diesel odour and staining was associated with made ground in an area of the site.

3.3.3. Boulder Clay deposits were encountered within all intrusive entries comprising firm to stiff light grey, locally orange-brown, mottled slightly sandy clay with occasional rounded gravel and cobbles of mixed lithology.

3.3. Hydrogeology and Hydrology

3.3.1. The underlying superficial deposits are designated by the EA as an undifferentiated aquifer meaning that they are variable across their extent and have a low potential for water supply. The underlying Pennine Lower Coal Measures Formation is classified as a Secondary A Aquifer and therefore has the potential to support water supply at a local scale and/or river base flow on a local scale.

3.3.2. The site is not within a groundwater Source Protection Zone but is located within a Groundwater Vulnerability Zone of High for the secondary aquifer.

3.3.3. Groundwater inflow / seepage was recorded in 6 of the trial pits between 0.25m and 2.2m bgl along the boundary between made ground and the underlying boulder clay, indicating that minor mobile groundwater was contained within granular made ground.

3.4. Soil Contamination

3.3.1. Elevated concentrations of lead and several PAHs were detected within samples of shallow made ground. Elevated lead was detected within one sample collected at TP4-1 with a concentration of 480mg/kg reported, exceeding the residential C4SL for lead of 200mg/kg. Within three of the samples, minor exceedances of the PAHs naphthalene, benzo(b)fluoranthene, benzo(a)pyrene and dibenzo(ah)anthracene were also reported. No asbestos detected, however suspected ACM (asbestos cement sheeting) observed in fabric of buildings on site.

3.3.2. Concentrations of several aliphatic/aromatic hydrocarbon ranges above the adopted S4UL residential screening criteria were detected within samples of made ground collected from trial pits with a pronounced fuel odour at TP3-1 and TP4-1. This includes for the aliphatic range C8-C10 at 660mg/kg (S4UL 27mg/kg), C10-C12 at 3600mg/kg (S4UL 130mg/kg), C12-C16 at 6000mg/kg (S4UL 1100mg/kg), C21-C35 at 11,000mg/kg (S4UL 5000mg/kg) and the aromatic ranges C8-10 at 68mg/kg (S4UL 34mg/kg), C10-C12 at 820mg/kg (S4UL 74mg/kg), C12-C16 at 290mg/kg (S4UL 140mg/kg) and C16-21 at 840mg/kg (S4UL 260mg/kg). Samples of soils obtained from greater depths in the same entry did not contain elevated concentrations of hydrocarbons indicating that the contamination had not significantly migrated vertically.

3.3.3. The lead and PAH exceedance concentrations within the made ground are consistent with typical urban soils on previously developed sites. The presence of hydrocarbon contamination within two of the trial pit locations, in addition to observations of a diesel odour and a sheen on the incoming groundwater within the entry from which the sample was collected, indicates the presence of a contamination hotspot likely to be attributable to an historic fuel/oil spill.

3.5. Risk Assessment

3.3.1. The potential contamination sources identified during the investigation which could have imposed constraints on the proposed redevelopment of the site for residential use is limited to made ground containing elevated lead, PAHs and hydrocarbons.

3.3.2. The above potential sources are chiefly considered as posing a risk through long-term exposure to future residents. The reduced exposure time and duration of construction or maintenance work make it less likely to result in health impacts provided normal environmental, safety and occupational hygiene measures are implemented. These should include measures to prevent the release of dust or track-out from the site to avoid (mainly nuisance) impacts to neighbours.

3.3.3. Exposure is primarily through direct uptake (ingestion, dermal contact) and plant uptake. Diesel range hydrocarbons and naphthalene risks are partly through vapour inhalation and issues with odours if exposed in ground.

3.3.4. No off-site sources of contamination which have the potential to impact the site have been identified.

3.3.5. The site is located in an area with a moderate risk of radon ingress (10%-30% of properties above the radon action level), therefore the installation of radon protection measures is required.

3.3.6. The contamination reported may have the potential tainting and toxification of water supply pipes have been identified, however, it is recommended that a water pipeline risk assessment is completed after completion of the remediation works.

3.6. Conceptual Site Model

3.3.1. The conceptual site model is summarised below:

Table 3.1: Summary of Pollutant Linkages under development and residential use

receptors	pathways	contaminant sources
human health (future residents) (transient risks to construction workers addressed under HSWA 1974 / COSHH)	consumption of contaminated vegetables	Elevated lead, PAHs and hydrocarbons reported in made ground soils has been identified; concentrations of the lead, PAH and asbestos contaminants are typical of urban soils on redevelopment sites but are not acceptable for private gardens in new residential developments. The presence of localised elevated hydrocarbon concentrations is likely to be attributable to an historic fuel/oil spill.
	soil and dust ingestion	
	inhalation of dust	
	dermal uptake	
	migration and accumulation of ground gas / vapours / radon in buildings	Site is located in an area where radon protection measures are required. No known sources of ground gas have been identified. Diesel/naphthalene contamination may present an indoor vapour inhalation risk.
	infiltration of water supply pipes	No risks identified to date, but a water pipeline risk assessment is recommended following completion of the remediation works.
buildings	migration and accumulation of explosive gas in buildings	None – No known sources of ground gas have been identified.
	contact with aggressive soil or groundwater	No risks identified.

4. Scope of Remediation

4.1. Remediation Objectives

4.3.1. The remediation strategy and implementation plan described below addresses the contamination identified to date. If additional contamination is encountered, and subsequent investigations/risk assessment indicates the requirement for any substantial revisions to the strategy, these will be submitted to the Regulatory Authorities for approval.

4.3.2. The key remediation objectives are to:

- Break potentially significant future pollutant linkages resulting from the change in land use;
- remove/remediate significant pollution sources that pose a risk to human health and/or the environment if identified during the works;
- respond appropriately to contingencies in particular the discovery of currently uncharacterised contamination;
- manage all emissions to air and water to protect local residents, surface waters and groundwater, and the atmosphere during the remediation works;
- allow appropriate additional protection measures to be implemented during construction, specifically the provision of garden/landscaping soils of suitable quality and thickness, but also water mains protection if further investigation deems this to be necessary.

4.3.3. The potential risks identified will be managed in order to break any potential pollution linkages and allow development of the site for its intended residential use without harm to human health, property and the environment. Each of the potential contaminant linkages identified in the site conceptual model and risk assessment will be addressed for the remediation strategy to be considered appropriate for the site and to allow construction to commence.

4.3.4. Risks to human health presented by lead and PAH contamination within the made ground are typical of urban soils within redevelopment sites. To mitigate the risks presented by these contaminants, which are anticipated to be prevalent within the made ground in a confined area of the site, the most appropriate development requirement will be to provide clean soil cover in this area of the site if absent from hardstanding such as gardens or landscaping areas. This will form a suitable physical barrier between the low-level contamination within the residual made ground and potential future receptors.

4.3.5. Risks to human health and loss of amenity presented by the hydrocarbon contamination detected within the made ground is likely to be localised and resultant of an historic fuel/oil spill. Due to the mobile nature of these contaminants, the likely development requirement will be the

delineation and removal of impacted soils thereby removing the potential risk of exposure to future site users.

4.3.6. Radon protection measures are required within all new buildings. These will offer a degree of protection against other mobile contaminants.

4.3.7. The risk assessment carried out does not indicate any requirement for remediation to protect controlled waters; risks to surface and groundwater appear to be minimal based on the available evidence.

4.3.8. The potential for exposure of concrete to aggressive ground conditions and water supply pipes to damaging substances is considered to be very low, however, a water pipeline risk assessment should be completed following completion of the remediation works.

4.3.9. Enabling works will also be required to physically prepare the site for any future development. These are likely to entail the removal of hardstanding, grubbing out of underground obstructions and relict foundations and provision of supporting structures and suitable founding surfaces for infrastructure. A watching brief by supervisors and site operatives should be maintained during all the required preparatory earthworks and excavations for uncharacterised sources of contamination.

4.2. Options Appraisal

Table 4.1: Remedial Options Outline

Method	Advantages	Disadvantages.	Feasibility
Do nothing	No cost	Potential long-term health risk remains from exposure to made ground within garden areas	Currently not acceptable due to presence of lead, PAHs and hydrocarbons in the made ground.
Physical Barriers	Well understood technology.	Requirement to source, place and maintain cover layers, cost of installing and verifying	Practical option for garden and landscaped areas where direct exposure is a possibility.
In-situ treatment	Treat contamination at source, reducing disposal cost and waste generation.	Only suitable for organic contaminants, most sources anticipated to be either minor in volume resulting in disproportionate assessment and mobilisation costs or of low concentration and widespread affecting large volumes of materials therefore not amenable to such methods.	Not an effective / appropriate solution to address the contamination identified.
Excavation followed by ex situ treatment or disposal	Well understood technology. Method can reduce source volume and contaminant level and can be validated on short timescale. Any contamination requiring mitigation is likely to be at shallow depth so readily accessible.	Costs associated with off-site disposal of soils; import soil costs	Practical option for the limited made ground cover within future garden/landscape areas and hydrocarbon impacted soils.

4.3 Preferred Approach

4.3.1. Hydrocarbon impacted soils should be excavated under supervision of a suitably experienced consultant equipped with a Photon Ionisation Detector (PID) to assist with delineating the impacted soils. When the remaining soils no longer exhibit indicators of contamination such as odours, staining or elevated PID readings, verification samples should be collected from the extents of the excavation and submitted for TPHCWG analysis to confirm the complete removal of the impacted material. Excavated soils should be placed on either hardstanding or an impermeable geotextile membrane to prevent cross contamination of soils. Waste classification samples should then be collected from the excavated materials prior to disposal at a suitable, licenced waste facility who should be provided with the relevant laboratory analysis certification.

4.3.2. Following removal of the hydrocarbon impacted soils, the potential risks to future site users from direct exposure to shallow soils in gardens is due to the presence of elevated lead, PAHs and hydrocarbons within the made ground. In future gardens/landscaped areas where made ground is shallower than 600mm below finished levels, the made ground can be stripped down to formation soils, thereby removing the source material, and replaced with clean, validated material. Where this is feasible, and results in complete removal of the made ground, underlying natural soils should be subject to in-situ testing to assess their suitability to form part

of the garden subsoils. Where the made ground is greater than 600mm below finished levels, a full 600mm clean, validated soil cover system should be provided as a physical barrier to any underlying residual contamination. In either case, a minimum 150mm topsoil cover is recommended.

4.3.3. Given the generally immobile nature of the contaminants recorded (with exception of the hydrocarbon contaminated soils which should be removed offsite), made ground soils stripped from future garden / landscape areas could be retained under areas of permanent hardstanding or structures, providing there is a requirement for fill materials.

4.3.4. The preferred option for managing soil contamination within the site therefore involves elements of all the previously described techniques. This will entail:

- Segregation and strip of ACMs from all buildings prior to demolition;
- removal of any surface wastes (where present);
- breaking out of hardstanding and removal of subsurface structures with the option of onsite production of aggregate for reuse within the development subject to the necessary verification sampling;
- removal and disposal of hydrocarbon impacted soils including the collection of verification and waste classification samples;
- removal and disposal of impacted soils should currently uncharacterised contamination hotspots be identified during preparatory works including the collection of verification samples;
- stripping of made ground soils from future garden/landscape areas down to natural formation soils or 600mm below finished levels, whichever is shallower. Stripped made ground is suitable for retention below permanent hardstanding or may be disposed of offsite;
- in-situ testing of formation soils within the top 600mm of future gardens/landscaped areas following removal of overlying made ground, if applicable;
- replacement of excavated made ground in gardens and landscape areas with clean validated soils including a minimum 150mm topsoil, and;
- submission of a water pipeline risk assessment;
- Radon Protection Measures.

4.3. Contamination Hotspots/Unexpected Contamination

4.3.1. It is not considered likely that previously uncharacterised materials or contamination sources (i.e. buried wastes / tanks etc.) will be identified during the works, however if this were to occur, a decision must be made as to whether these can be dealt with using the techniques selected to manage the contamination characterised to date. Materials must be inspected by an appropriately qualified and experienced person and, if appropriate, samples collected and analysed. The Local Authority will be immediately informed in writing following any such discovery.

4.4. Materials Management

4.3.1. Earthworks will be carried out using methods/controls to ensure that contaminated materials, runoff or discharge, or dust, does not affect surroundings.

4.3.2. A decision should be made as to whether recovered materials are disposed of or are processed onsite to generate aggregate for use within the development. If onsite generation of aggregate is opted for, materials should be inspected for ACM by a competent person before crushing and the recovered aggregate product screened for fibres at an appropriate frequency before use.

4.3.3. If materials are removed from the site, then these will be waste materials requiring disposal at a suitably permitted facility for which transfer documentation should be retained.

4.5. Construction materials

4.3.1. It is considered unlikely that protected water mains will be required, however, following completion of preparatory earthworks and prior to the installation of services, consultation with the water utilities provider is recommended regarding submission of a pipeline risk assessment, utilising post-remediation data as necessary.

5. **Health, Safety and Environmental Management**

5.1. Health and Safety Roles / Responsibilities

5.3.1. The Principal Contractor under the Construction Design and Management Regulations 2015 (CDM2015) will be responsible for managing health and safety during the remediation / preparation works and for producing any risk assessments and method statements required.

5.3.2. SGP's responsibilities as 'Designer' under CDM 2015 are to eliminate, reduce or control foreseeable risks that may arise during construction, maintenance or use, and to provide information to other members of the project team to assist them in fulfilling their duties. The recommendations in this report should be considered by the 'Client' and/or 'Principal Designer', and Principal Contractor, as defined within the regulations, and included in the Health and Safety File for the site.

5.3.3. Protection of site workers, local residents and visitors during the remediation works can be achieved by the adoption of appropriate health and safety practices, environmental

management and site security. All site workers will be given a comprehensive health and safety induction and required to use appropriate personal protective equipment.

5.2. Environmental Management Issues

5.3.1. The scope of remediation works is unlikely to have a significant impact upon the nearby housing and the wider environment provided that due care is taken to control dust, odour, noise and vibration, and to prevent surface runoff/trackout onto roads and into drains. Noise emissions should be managed through the observation of approved working hours and use of appropriate plant.

5.3.2. Dust will be routinely monitored visually, and if unacceptable emissions beyond the site boundaries are noted then the element of the works contributing to this will be halted until appropriate mitigation (damping down, road sweeper, etc) can be deployed.

5.3.3. No discharges of dewatering or surface runoff to surface waters is permitted, however uncontaminated or marginally contaminated water may be discharged to foul sewer in agreement with the utility provider.

5.3.4. Plant fuel and lubricant storage will take place using suitable containers, bunds and secured filling points. An oil spill kit and adsorbent materials to manage any accidental release of liquid pollutants will be provided. Suitable sealed skips and containers will be used for the temporary storage of small quantities of hazardous wastes, if encountered.

6. **Inspection and Verification**

6.1. Additional Investigation / Monitoring

6.3.1. A watching brief by supervisors and site operatives should be maintained during the preparatory earthworks for uncharacterised sources of contamination.

6.3.2. In the event that any unexpected ground conditions are encountered during the remediation earthworks that include visual or olfactory contamination indicators, then works in that area should cease until specialist advice can be sought. Samples of suspect materials will then be collected and analysed to enable assessment of the risks to the future site use, and to determine the suitability of the materials for retention within the site. Any such additional risk assessment will be submitted to the WCBC for approval.

6.2. Verification Testing

In-situ Soils following excavation of hydrocarbon impacted soils

6.3.1. Following the excavation of the hydrocarbon impacted soils, detailed photographic record, PID log and a minimum of six verification samples should be collected from the extents of the excavation (or on a 5m grid), submitted for TPHCWG analysis and the results compared to the soil screening criteria for residential use as per Table 6.2 in order to confirm the absence of elevated concentrations of hydrocarbons within the remaining soils.

In-situ Formation Soils

6.3.2. Given that the site history and contamination status is already well characterised and will be limited to the presence of lead and PAHs within the made ground soils following the removal of the hydrocarbon impacted soils, it is advised that in areas where the made ground is shallower than 600mm below finished garden/landscaping levels then the material should be excavated down to natural formation soils.

6.3.3. In-situ validation testing of formation soils should then be carried where this material is to be retained within the top 600mm of gardens/landscape areas to confirm that elevated concentrations of lead, PAHs and hydrocarbons associated with residual made ground are absent.

6.3.4. In-situ validation testing of formation soils should be completed at a frequency of 1 per 3 gardens or 50m² grid spacing for landscape/POS areas. Soil concentrations will be compared to assessment criteria based on a residential land use as detailed in the table below:

Table 6.2 Garden soil screening criteria (residential use)

Contaminant	Residential Use Screening criteria (mg/kg unless stated)
Asbestos	<0.001% by mass (LOD)
Arsenic	37 LQM/CIEH S4UL
Cadmium	11 LQM/CIEH S4UL
Chromium (total)	910 LQM/CIEH S4UL
Hexavalent Chromium	6 LQM/CIEH S4UL
Copper	2,400 LQM/CIEH S4UL
Lead	200 (C4SL)
Mercury	40 LQM/CIEH S4UL
Nickel	180 LQM/CIEH S4UL
Zinc	3700 LQM/CIEH S4UL
Naphthalene	2.3 LQM/CIEH S4UL
Acenaphthylene	170 LQM/CIEH S4UL
Acenaphthene	210 LQM/CIEH S4UL
Fluorene	170 LQM/CIEH S4UL
Phenanthrene	95 LQM/CIEH S4UL
Fluoranthene	2400 LQM/CIEH S4UL
Anthracene	280 LQM/CIEH S4UL
Pyrene	620 LQM/CIEH S4UL

Contaminant	Residential Use Screening criteria (mg/kg unless stated)
Benzo(a)anthracene	7.2 LQM/CIEH S4UL
Chrysene	15 LQM/CIEH S4UL
Benzo(b)fluoranthene	2.6 LQM/CIEH S4UL
Benzo(k)fluoranthene	77 LQM/CIEH S4UL
Benzo(a)pyrene	2.2 LQM/CIEH S4UL
Indeno(123cd)pyrene	27 LQM/CIEH S4UL
Dibenzo(ah)anthracene	0.24 LQM/CIEH S4UL
Benzo(ghi)perylene	320 LQM/CIEH S4UL
Aliphatic C5-C6	42 LQM / CIEH S4UL
Aliphatic C6-C8	100 LQM / CIEH S4UL
Aliphatic C8-C10	27LQM / CIEH S4UL
Aliphatic C10-C12	130LQM / CIEH S4UL
Aliphatic C12-C16	1100 LQM / CIEH S4UL
Aliphatic C16-C21	65000 LQM / CIEH S4UL
Aliphatic C21-C35	65000 LQM / CIEH S4UL
Aromatic C5-C6	70 LQM / CIEH S4UL
Aromatic C6-C8	130 LQM / CIEH S4UL
Aromatic C8-C10	34 LQM / CIEH S4UL
Aromatic C10-C12	74 LQM / CIEH S4UL
Aromatic C12-C16	140 LQM / CIEH S4UL
Aromatic C16-C21	260 LQM / CIEH S4UL
Aromatic C21-C35	1100 LQM / CIEH S4UL
Benzene	0.08 LQM / CIEH S4UL
Toluene	130 LQM / CIEH S4UL
Ethyl-benzene	47 LQM / CIEH S4UL
m/p-xylene	56 LQM / CIEH S4UL
o-xylene	60 LQM / CIEH S4UL

S4UL: Generic assessment criteria published by Chartered Institute of Environmental Health and Land Quality Management Ltd S4UL, residential land use scenario; COPYRIGHT Land Quality Management Limited reproduced with permission; publication number UL3102. All Rights Reserved
C4SL: Category 4 Screening Levels published by CL: AIRE 'residential land use with plant uptake'

Imported Garden / Landscaping Soils

6.3.5. Providing made ground soils have been stripped from future gardens / landscape areas and in-situ testing has confirmed the compliance of underlying natural soils within the top 600mm of finished garden levels, the developer will be required to place a minimum 150mm clean validated topsoil cover. Where made ground is deeper than 600mm below finished garden levels, the developer will be required to provide a full 600mm clean validated soil cover system.

6.3.6. Imported soil for use within gardens and landscape areas is subject to chemical testing to determine the suitability for reuse. Sampling of imported garden soils should be completed in accordance with WLGA¹ requirements with a minimum of 4 samples collected per 250m³. Soil

¹ Welsh Land Contamination Working Group – Requirements for the Chemical Testing of Imported Materials for Various End Uses and Validation of Cover Systems

concentrations will be compared to assessment criteria based on a residential land use as detailed in table 6.2.

6.3.7. The developer will be responsible for managing soil stockpiles and completed areas of soil cover to avoid cross-contamination of clean materials.

6.3.8. For gardens where a 600mm soil cover system is prescribed, depth testing is required to confirm the depth of placed soils which is to be undertaken at a frequency of 1 depth test per 3 garden areas.

6.3. Remediation / Preparatory Earthworks Completion Reporting

6.3.1. A report detailing the works carried out and the results of any validation / verification testing undertaken will be prepared by the Environmental Consultant and submitted to the Local Authority for approval upon completion of the relevant phase of works. The report will include a full description of the works carried out, findings of all validation and verification testing, any photographic records, and details of wastes removed, and any materials imported.

6.3.2. The proposed management and remediation, and implementation and reporting of the verification/validation testing regime will demonstrate that the proposed remedial works have been carried out and the site made suitable for the proposed development, subject to the execution of any additional requirements on the developer during the construction stage of the regeneration programme for the phase.

6.3.3. With the adoption of the above normal practices for Brownfield development, and on the information available to it, SGP considers that the site can be safely and economically redeveloped, and the existing environmental liabilities managed.

6.4. Limitations

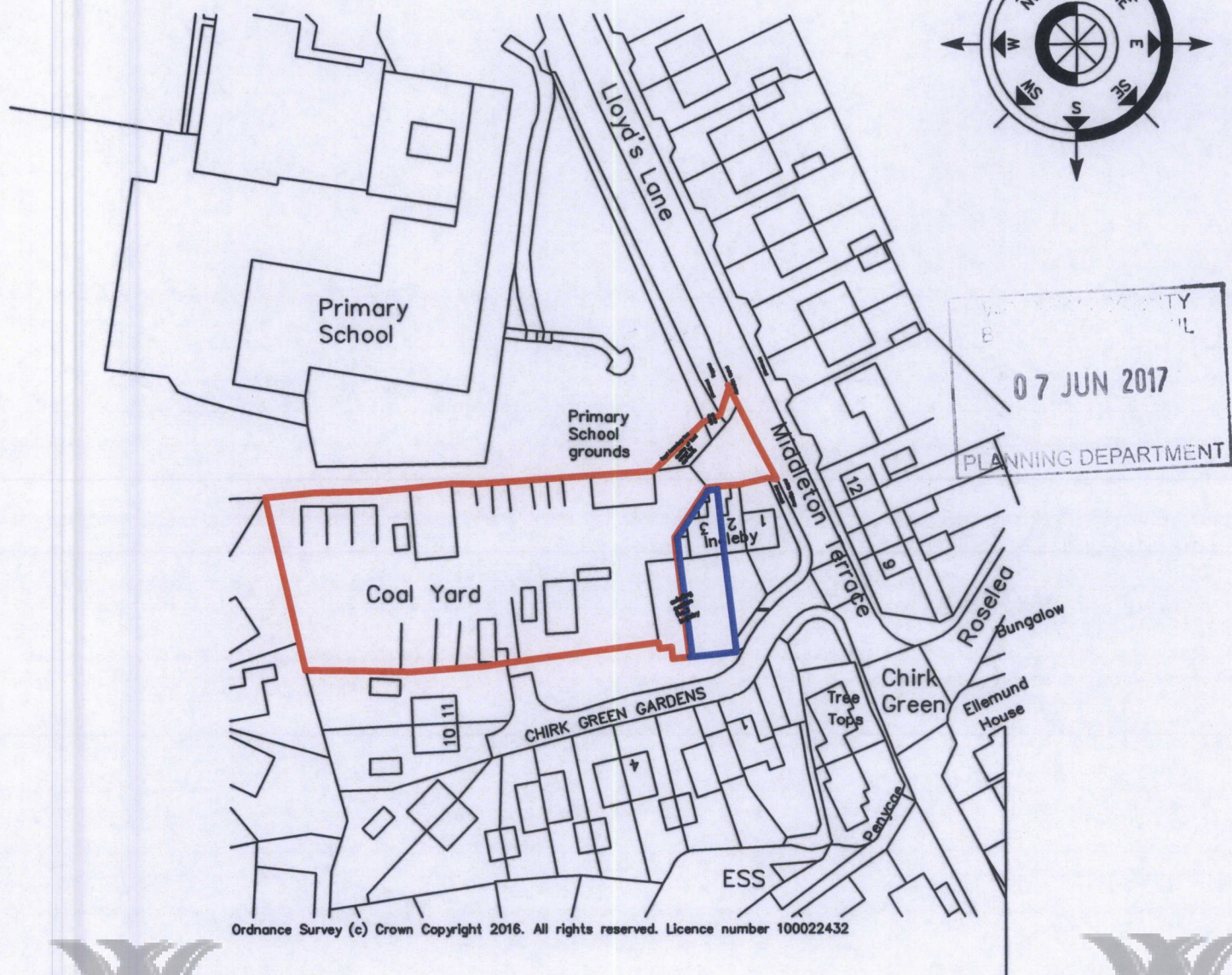
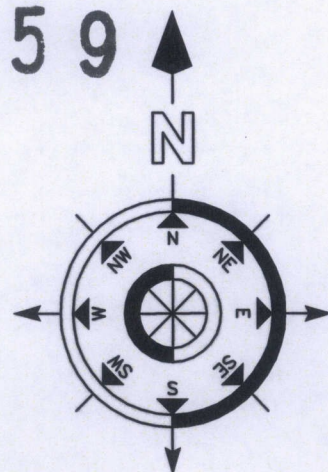
6.3.1. This report has been prepared by SGP for the sole and exclusive use of Wrexham County Borough Council. Reasonable skill, care and diligence has been exercised within the budget available, and in accordance with the technical requirements of the brief. Notwithstanding the efforts made by the professional team in undertaking the assessment and preparing this report, it is possible that other ground conditions and contamination as yet undetected may exist. Reliance on the findings of this report must therefore be limited accordingly. Such reliance must be based on the whole report and not on extracts which may lead to incomplete or incorrect conclusions when taken out of context.

6.3.2. SGP reserves the right to alter any of the foregoing information in the event of new information being disclosed or provided and in the light of changes to legislation, guidelines and responses by the statutory and regulatory authorities.

DRAWING

COALYARD adjoining 3 INGLEBY, LLOYD'S LANE, CHIRK 01 SITE LOCATION PLAN

P /2017/0459



EXISTING / SITE
LOCATION PLAN

Scale 1:1250 @ A4