

Sarah Westwood

To: Matthewman, Dan J

Subject: FW: 3/2011/0247 Low Moor Clitheroe

Attachments: Low Moor Clitheroe Cover Sheet pdf.pdf; Low Moor Clitheroe Validation Report pdf.pdf; Appendix M Ecological Validation report.pdf.pdf; Appendix A As-Built Survey pdf.pdf; Appendix B RSK Phase I Report.pdf.pdf; Appendix C RSK GeoEnvironmental Investigation pdf.pdf; Appendix D RSK Ecological Report pdf.pdf; Appendix E Bowland Tree Survey.pdf.pdf; Appendix F McAuliffe Materials Management Plan pdf.pdf; Appendix G McAuliffe Remediation Method Statement pdf.pdf; Appendix I Topsoil Chemical Testing Results pdf.pdf; Appendix J Approval from Ribble Valley MBC.htm.htm; Appendix L Ground Gas Results.pdf.pdf; Appendix H WS2.pdf.pdf; Appendix H BH1.pdf.pdf; Appendix H BH2.pdf.pdf; Appendix H WS1.pdf.pdf; ATT2092865.htm

Hi Dan

PLEASE find attached additional information submitted today to us regarding the above development and details required in order to discharge conditions under application 3/2012/0845/P I'm not sure if this will address the outstanding issues in respect of condition 7 that you have raised. Please can you pass it onto the appropriate people to confirm whether a partial discharge of 7 is appropriate or if this satisfies all the requirements of the condition.

Clearly 5 and 6 still need to be sorted in terms of information to be submitted.

Many thanks

Sarah

From: Adam Czarnecki [mailto:Adam@mcauliffegroup.co.uk]

Sent: 05 November 2012 08:04

To: Terry Longden

Cc: Sarah Westwood; Neil Martin; Simon Hartley; Richard Quinn; Dawson, Mark - TW Manchester

Subject: 3/2011/0247 Low Moor Clitheroe

Terry,

Please find attached the Remediation Validation Report

Should you have any queries please do not hesitate to contact me.

Could you please acknowledge receipt of this information which is required in order to discharge planning conditions

Regards,

Adam

Adam Czarnecki
Director

McAuliffe Environmental
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Hale
Cheshire

05/11/2012

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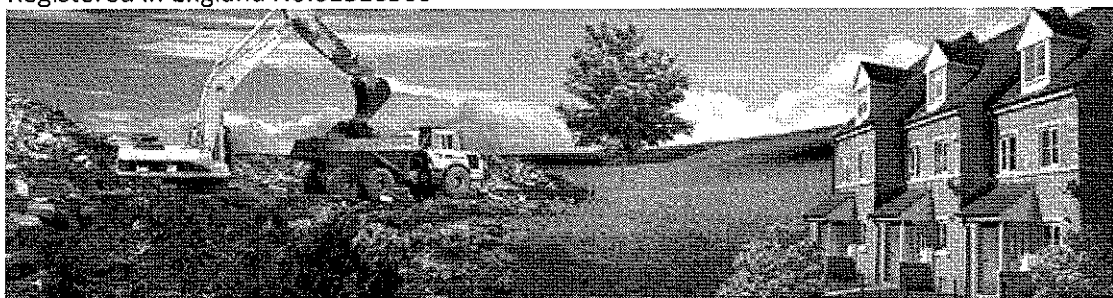
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From: Adam Czarnecki

Sent: 16 August 2012 15:34

To: 'Terry Longden'

Cc: Sarah Westwood; Neil Martin; Simon Hartley; Richard Quinn; 'Dawson, Mark - TW Manchester'; 'Devine, Simon - TW Manchester'

Subject: 3/2011/0247 Low Moor Clitheroe

Terry

Thank you for your comments.

Yes some of the remedial standards proposed are high but are in reality based upon non viable pathways.

I have amended the whole table and incorporated lower standards for copper, nickel and zinc in garden areas which have been taken from BS3882 Specification for Topsoil.

I trust that these can be incorporated into the Remedial Method Statement.

Regards,

Adam

Adam Czarnecki
Director

05/11/2012

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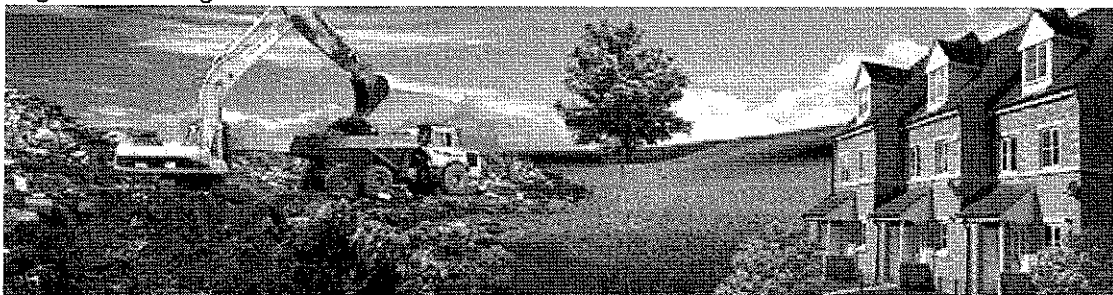
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From: Terry Longden [mailto:Terry.Longden@ribblevalley.gov.uk]
Sent: 16 August 2012 10:23
To: Adam Czarnecki
Cc: Sarah Westwood; Neil Martin; Simon Hartley
Subject: RE: 3/2011/0247 Low Moor Clitheroe

Adam, the overall process is satisfactory, I do query however certain of the given Site Specific Risk Based Targets (appendix A ref MC539/11)

I have tabulated the targets from the report (attached) and highlighted figures I query that relate to Nickel, Zinc and Naphthalene.

Please could you give background as to how the targets have been arrived at It's my view that they are high I appreciate the the latter figures in relation to Zinc are probably a "typo".

Thank you

Terry Longden
Head of Engineering Services
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Mob 07932 604 981
terry.longden@ribblevalley.gov.uk

05/11/2012

From: Adam Czarnecki [<mailto:Adam@mcauliffegroup.co.uk>]

Sent: 09 August 2012 09:45

To: Neil Martin

Cc: Terry Longden; Richard Quinn; Dawson, Mark - TW Manchester; Devine, Simon - TW Manchester

Subject: RE: 3/2011/0247 Low Moor Clitheroe

Neil,

When is the response coming?

Regards,

Adam

Adam Czarnecki

Director

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From: Neil Martin [<mailto:Neil.Martin@ribblevalley.gov.uk>]

Sent: 07 August 2012 14:11

To: Adam Czarnecki

Cc: Terry Longden

Subject: 3/2011/0247 Low Moor Clitheroe

Adam,

Terry has asked me to contact you regarding the above site.

Could you please let me have a copy of the the Groundsure report (appendix B of the desk survey) We have been in touch with the Environment Agency who also raised some issues and need to confirm with them that everything is ok Once we have the groundsure report, we will have all the documentation provided and should be able to reply fairly quickly Please also copy terry into the e-mail

Regards

Neil

Neil Martin

Environmental Health Officer

Ribble Valley Borough Council

05/11/2012

Tel: 01200 413214

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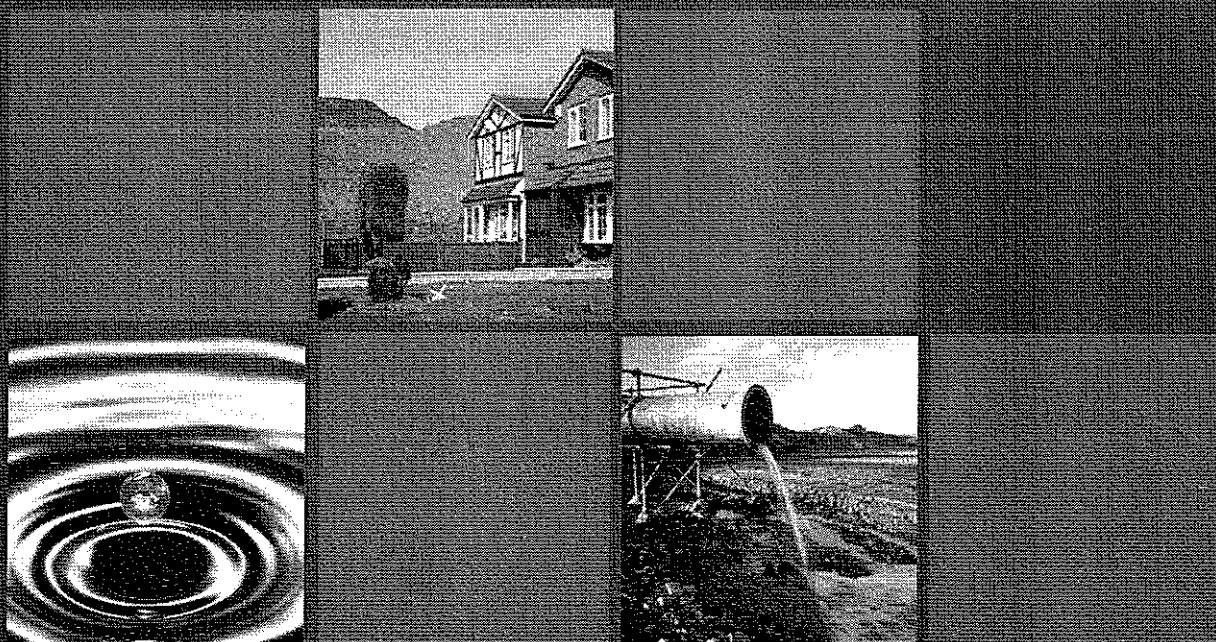
Remediation Validation Report

Low Moor Gardens, Clitheroe

Taylor Wimpey (Manchester)

October 2012

Ref: MC539/11



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APPENDICES

Appendix A	Drawings MC539-12-1 As Built Construction Drawing
Appendix B	RSK Preliminary Phase I Risk Assessment
Appendix C	RSK GeoEnvironmental Investigation & Quantitative Risk Assessment
Appendix D	RSK Ecological Report
Appendix E	Bowland Tree Survey
Appendix F	McAuliffe Materials Management Plan
Appendix G	McAuliffe Remediation Method Statement
Appendix H	Drilling Borehole Logs
Appendix I	Topsoil Chemical Testing Results
Appendix J	Approval by Ribble Valley MBC of Remedial Strategy
Appendix K	Drillers Borehole Logs
Appendix L	Ground gas Monitoring Results
Appendix M	Ecological Validation Report

1 Background & Scope of Work

McAuliffe Civil Engineering Limited (McAuliffe) has been commissioned by Taylor Wimpey (Manchester) to complete remediation works at Low Moor Gardens, Clitheroe. This validation report provides a record of the earthworks and remedial works, which have been completed in accordance with outline planning permission (3/2011/0247) and a Remedial Method Statement (Appendix F) which was agreed with Ribble Valley Borough council representatives prior to commencement of site activities.

The site (approximately 1.8 Hectares) prior to commencement of site activities comprised of undeveloped land with access via a dirt track leading from Chapel Close. The dirt track which leads to allotments and farm holdings, bisects the site, enters from the southwest and exits through the northwest boundary, effectively forming two parcels of land (referred to as eastern and western).

A static caravan was present on the eastern parcel which was owned and lived in by the former site vendor. This parcel of land was accessed through a wooden gate adjacent to which was a relict stockpile of topsoil, which was recovered (sold offsite) from the site by the former landowner.

The smaller western parcel of the site consisted of overgrown grass vegetation and occasional small shrubs. A steep gradient (1 in 2 gradient) was evident with a Japanese Knotweed stand located within the central sector of the embankment, amongst other shrubs and vegetation.

The development area comprises of an area of land that was from 1912 a cricket pitch and by 1932 as allotments. In the early 1980's the western parcel of the site was used to tip construction waste in accordance with a Waste Management Licensing (1984) Exemption (personal communication with Mr. David Ashworth, former site owner).

The whole site was previously investigated by RSK in February 2011 as part of a desk based appraisal of ground conditions, site history and environmental setting of the site. A subsequent assessment of ground conditions, contamination and the ground gas regime was made by RSK in April 2011. The investigation encompassed a combination of cable window sampling drilling and trial pitting within the development area. The consultants identified a number of development constraints, including the presence of tipped material within a western parcel of the site, infilled cess pit, former septic tank and elevated ground gases associated with the tipped

area.

The site investigation by RSK proved upto 2.0m of Made Ground within the former landfill, which was described as demolition material mixed with sand and clay. Inclusions of tyres, plastic, timber, china and plastic were noted within the soil mass. On the eastern parcel ground conditions were found to be uniform with up to "400mm of topsoil" underlain by soft to firm glacial clays. At one location the presence of a former cess pit (slurry pit) was identified which was indicated by the former landowner to extend offsite, due to encroachment on site of the relatively recent housing development.

A small pond was located on the eastern parcel with associated organic peaty deposits.

Asbestos bearing soils were visually identified in the south-eastern sector of the site amongst a hawthorn hedge. During a site inspection, attended by representatives from both Taylor Wimpey and McAuliffe, the landowner was found to be clearing asbestos fragments along the hedge line at the south eastern corner of the site. Upon mobilisation to site further asbestos debris was found at the same location near to the site entrance.

Planning permission on the site referred to a previous RSK Ecological report (Appendix D) and the need for a watching brief for reptiles in the western parcel of the site and nesting bird survey prior to felling of any trees. As a result, an ecological practice (Rachel Hacking Ecology) was commissioned by McAuliffe to undertake a nesting bird survey of all trees and hedges prior to commencement on site and provide a reptile watching brief during soil stripping operations.

An arboricultural survey was carried out by Bowland Tree Consultancy (Appendix E) and advised upon the retention of four trees on the eastern together with the northern and eastern hedge lines on the eastern parcel of land. The western hedge line and trees adjacent to the dirt track on the eastern parcel were planned to be removed, together with all trees and vegetation within the western sector.

Prior to commencement on site a meeting was held with the Tree Protection Officer (David Hewitt, Ribble Valley MBC) to agree upon the scope of protection measures for the retained trees and hedges.

Plate 1 (overleaf) shows an aerial photograph of the site prior to commencement of the earthworks and remedial works.



Plate 1 Aerial photograph of Site

As part of the agreed remediation strategy it was agreed with the client to undertake the following scope of work:

- a) Development of a Remediation Method Statement after initial consultation with Ribble Valley BC. This document to utilise the existing RSK reports to develop a remedial strategy for the site that would be protective of the end users of the site and the local environment.
- b) Excavate and stockpile topsoil material with subsequent chemical testing to determine suitability of use by developer in garden areas.
- c) Remove surface vegetation and trees from western and eastern parcels of the site with implementation of tree protection fencing for relevant trees and hedges. Provide ecologist to survey nesting birds in tree and hedge areas and oversee soil stripping in western parcel prior to commencement
- d) Remove visible asbestos containing material from south eastern sector of the eastern parcel

after trimming of hedge line. Material to be removed offsite to a suitable waste management facility.

e) Prepare piling mats (300mm thick) for plots 7-16 left at formation level, after removal of topsoil.

f) Excavate cess pit material and remove relict foundations at depth. Install sheet pile cut-off wall (if necessary) to prevent migration of cess pit material from neighbouring offsite land

g) Excavate pond area and associated organic deposits

h) Excavate landfill material within western sector and placed in temporary stockpile on eastern parcel. Material to be screened to specific size fraction with oversize fraction crushed. Material to be left on site for later use by the developer. Material to be re-used in accordance with a Materials Management Plan developed by McAuliffe's.

i) Remove septic tank near to location of caravan.

2 Proposed Land Use

Following earthworks and remediation, the site will be developed for residential housing, associated gardens and road infrastructure. Figure 1 (below) shows the proposed residential development.

The development will consist of a series of two to three storey buildings with rear private garden areas.



Figure 1 Development Layout Plan

3 Previous Site Investigation Work

A previous site investigation was conducted on the site in April 2011 by the RSK Group. Figure 2 (below) shows the location of the RSK sampling locations together with identified development constraints.

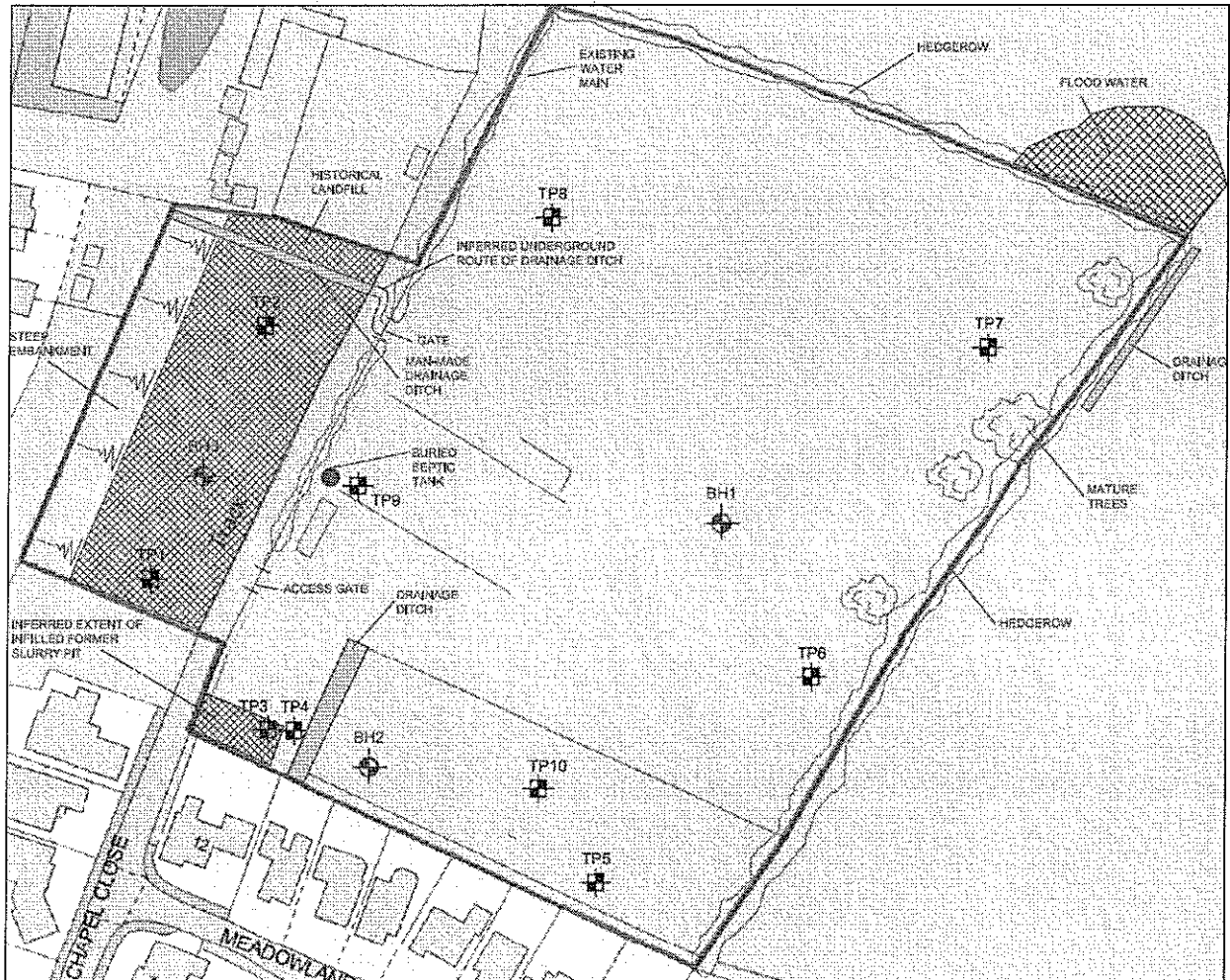


Figure 2 RSK Sampling Locations

The RSK sampling locations were planned following the development of an earlier Phase I Desk Study for the site. The site investigation was designed to assess the extent and risk posed by ground gases, soil and groundwater contamination (if present) and ground conditions for foundation design purposes.

The ground investigation consisted of the drilling of three cable percussive holes, one within the

tipped area (western parcel), together with ten trial pits.

The site investigation proved the presence of topsoil across the site underlain by natural glacial clay (soft to firm in consistency) deposits and tipped material upto 2m thick within the western parcel of the site. Due to the presence of weak and compressible clays within certain areas of the site the consultants recommended that several plots would need foundation loadings transferred to competent strata.

Subsequent chemical testing proved an absence of any contaminants of concern within soils or groundwater on the site. The consultants however recommended the adoption of a cover system in garden areas in the western parcel of the site and cess pit area, due to the presence of tipped materials.

Gas monitoring by RSK suggested elevated methane concentrations within BH3 which was located within the tipped materials in the western parcel. Amber 1 gas precautionary measures were recommended for the tipped and cess pit based upon the limited monitoring dataset and nature of the materials. Further gas monitoring was recommended in order to confirm the ground gas regime and design mitigation measures.

4 Licences and Approvals

Prior to commencement of site operations a number of supporting documents were required to be submitted to regulatory authorities and agencies.

A Remediation Method Statement (Appendix G) was developed by McAuliffe and detailed the proposed remedial activities. The RMS was approved (Appendix J for copy of correspondence) by the local authority prior to commencement of site works and detailed a contingency for a sheet piled cut-off wall within the former cess pit, further testing of topsoil material and excavated tipped materials, further site investigation work to assess the ground gas regime (after removal of tipped materials). Subsequent to the development of the Remedial Strategy during a walkover survey two other development constraints became apparent, the presence of asbestos fragments in soils and a stand of Japanese Knotweed within the western parcel on the flanks for the tipped material embankment.

Other documentation that was presented is listed below and were either established on site by the site manager or developed by MCE technical staff;

- (i) All documentation in accordance with the CDM 2007 Regulations developed by management team and enhanced by Site Manager.
- (ii) Site Waste Management Plan, provided to Site Manager and retained on site as a live document.
- (iii) Signed declaration by qualified person of the Materials Management Plan (Appendix F) in accordance with CL:AIRE Waste Code of Practice, Version 2

Due to the need to use site-won Made Ground as fill material in the earthworks a Materials Management Plan was developed by McAuliffe's. The document was reviewed by a CL:AIRE Code of Practice Qualified Person and despatched to the Environment Agency.

5 Earthworks

5.1 Welfare Facilities

Welfare facilities were provided adjacent to the entrance of the site and consisted of a fenced off area with two site offices, a canteen with drying facilities, bunded fuel storage area and car parking.

5.2 Site Security & Tree Fencing

The whole site was fenced by McAuliffe, with Heras fencing, to prevent unauthorised access to the site with a dedicated pedestrian and vehicular crossing point created along the dirt track road bisecting the western and eastern parcels of the site.

Tree and protection fencing was installed by McAuliffe with an alternative design from that recommended within the Bowland Consultancy tree report (Appendix E). The revised design was agreed with Bowland Consultancy and the Ribble Valley Borough Council tree protection officer.

5.3 Mobilisation

A total of two 18 tonne excavators and two 25 tonne dump trucks were brought to the site to allow for excavation of material from the western parcel.

5.4 Earthworks

The brief for the earthworks was agreed between McAuliffes and Taylor Wimpey and involved the excavation of the tipped material in the western parcel of the site, septic tank and former cess pit. The work in the western parcel involved the excavation of tipped material, estimated prior to commencement of work to be 3000m³ in volume, with stockpiling of material at an agreed location on the eastern parcel. During the project the client gave instructions for the removal offsite of the majority of the excavated tipped material.

Appendix A provides an as-built drawing showing remnant stockpiles (Stockpile 1 & Stockpile 2) in the central sector of the eastern parcel which originated from the western parcel. The materials left on site were not chemically tested to demonstrate suitability for use (to be undertaken by developer).

The material taken offsite was taken via an Environment Agency licenced haulier (Stanley Bros Tippers. CB\TN5177PC)) to an exempt landfill facility (Southfield Lane,

Burnley), Environment Agency registration a000157046 and later to Tong Quarry in Bacup. All waste was transported offsite in sheeted wagons and Duty of Care transport notes collated by the site manager. The Duty of Care Transfer notes are retained by McAuliffes at the Wolverhampton head office address.

Plate 2 (below) shows the nature of salvaged materials from the tipped soil mass that was taken offsite to waste recovery facilities.



Plate 2 Photograph showing salvaged materials from tipped waste mass

The former cess pit area located at the southern boundary of the eastern parcel was excavated with a remnant slab and wall removed. The content of the former cess pit were taken offsite together with tipped materials from the western parcel.

Plate 3 (overleaf) provides a photograph of the excavation of former cess pit, revealing an upstand on the basal concrete slab and the nature of the materials.

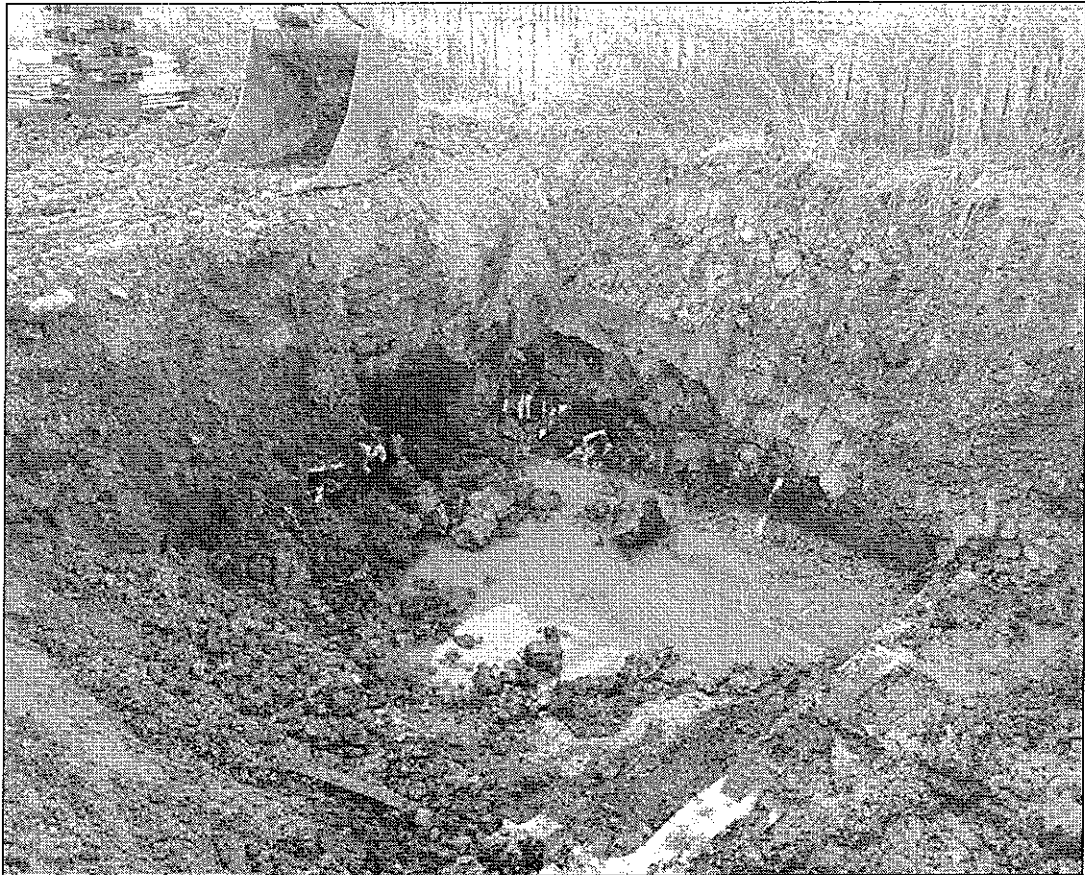


Plate 3 Photograph showing area excavated cess pit

Plate 4 (overleaf) shows the cess pit being filled with site won cohesive material which was used as a physical barrier to separate the reinstated cess pit from the adjoining property. The need for a sheet piled wall was discounted primarily due to the presence of sensitive building structures adjacent to the former cess pit.

The horizontal thickness of the emplaced clay wall along the rear section of the cess pit wall was 0.5m and its construction was witnessed by McAuliffe management. The clay material was sourced from the western parcel and consisted of firm to stiff glacial Boulder Clay



Plate 4 Photograph showing clay stank being emplaced within former cess pit

Other materials that were removed offsite included metal and tyres which were taken to a suitable recycling facility. Plate 5 (overleaf) shows the nature and volume of materials removed offsite together with the condition of the septic tank that was removed offsite.



Plate 5 Photograph showing excavated septic tank

5.5 Tree Removal/Protection & Topsoil Stockpiling

Topsoil and subsoil materials were removed from the whole of the site by dozers and excavators. The material together with surface vegetation (grass and reeds) was placed within separate stockpiles for later use by the client. Appendix A provides an as-built survey with Stockpile 3 being the topsoil stockpile (1350m³).

During the excavation of the topsoil in the western parcel a reptile watching brief was undertaken by Rachel Hacking Ecology. Appendix M provides a summary of their validation work.

The topsoil quality was tested by McAuliffe to determine suitability for retention on site. Appendix I provides the topsoil chemical testing results. Ten spot soil samples were taken from 1350m³ equate to one sample for every 135m³.

6 Further Site Investigation & Monitoring

A number of site investigations have been carried out for the site, the most recent of which have been detailed in Section 3. In summary, prior to remedial works there was a ground gas issue associated with the former tipped area. Elevated methane was encountered in one borehole located within the tipped mass. Due to the sparse monitoring data set RSK adopted a conservative view on the ground gas regime and recommended the implementation of ground gas mitigation measures within the western parcel and cess pit area.

As part of the proposed remedial strategy it was agreed that it was necessary upon excavation and transport of the tipped material to prove the absence of ground gases in the natural underlying strata.

Four boreholes were drilled by McAuliffe to allow for additional monitoring of the ground gas regime to be undertaken. Figure 3 (below) shows the location of the sampling points.

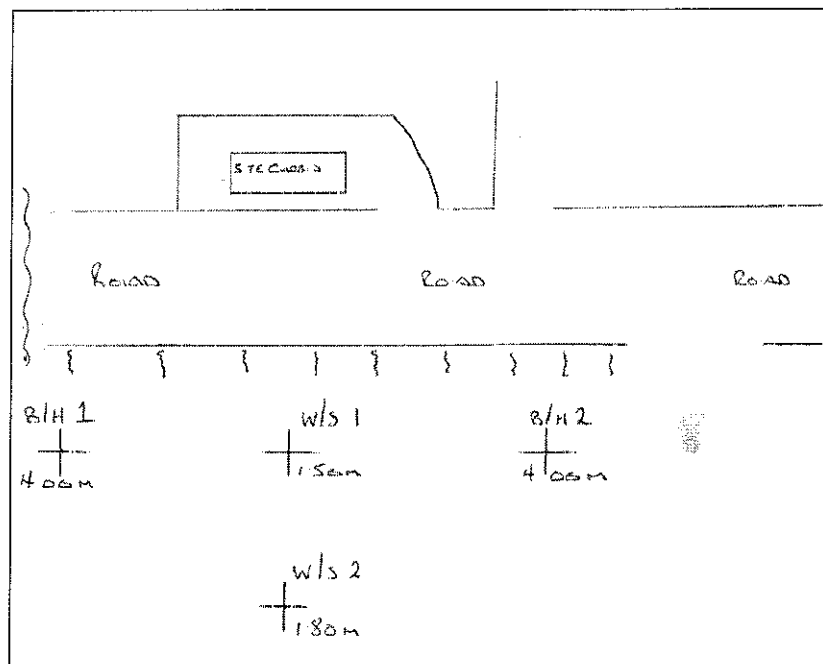


Figure 3 Additional Ground Gas Monitoring Locations

Appendix A also shows the locations of the surveyed boreholes, with Appendix K containing the driller's logs.

Ground gas monitoring was undertaken in the boreholes by use of a GA2000 Infra-Red analyser. No significant ground gas concentrations or flow rates were encountered over the four monitoring visits and it was concluded that ground gas mitigation measures would not be required within the western parcel or former cess pit area.

Appendix L provides a summary of the ground gas monitoring results.

7 Remediation Works

7.1 Asbestos Fragment Clearance

Prior to earthworks within the eastern parcel a reduced level dig was conducted near to the hedge line on the eastern boundary in the presence of two technical personnel from McAuliffe's together with the site manager and operative. Visible fragments of asbestos, comprising of roof tiles, were removed by hand, double bagged and placed in a covered skip. The material was removed as hazardous waste and a total of one skip was removed offsite by a licence contractor.

7.2 Piling Mat

A 300mm thick piling mat (virgin quarried stone) was placed on plots 7-16, extending 2m beyond the perimeter of the plots. The material was placed on ground level, after removal of the topsoil horizon.

Appendix A shows the extent of the piling mat.

7.3 Removal of Pond Peat Material & Cess Pit

The former pond area was removed and the organic material placed within the topsoil stockpile.

8 Validation

Validation of the works is required to demonstrate to the local authority, Environment Agency and NHBC that remedial objectives had been achieved and that the site is suitable for development.

Asbestos fragments have been removed from the eastern parcel under the supervision of senior management from McAuliffe's. Japanese Knotweed has been excavated from the western parcel of the site and removed offsite.

The tipped materials from the western parcel have been excavated to expose natural glacial clays. Further ground gas monitoring has proved an absence of any ground gases within the soils beneath the former tipped area. Ground gas mitigation measures are now not necessary on the site.

A relict stockpile of tipped material is located within the central sector of the eastern parcel. Further chemical testing should be conducted to establish the suitability of use of the material. Based upon the existing chemical testing data and after examination of the nature of the material it is highly likely that the material could be mixed with topsoil to form a soil making material or used as non-structural fill.

APPENDIX A DRAWINGS

APPENDIX B

RSK PRELIMINARY PHASE I RISK ASSESSMENT

APPENDIX C

RSK GEOENVIRONMENTAL INVESTIGATION & QUANTITATIVE RISK ASSESSMENT

APPENDIX D

RSK ECOLOGICAL REPORT

APPENDIX E BOWLAND TREE SURVEY

APPENDIX F

MCAULIFFE MATERIALS MANAGEMENT PLAN

APPENDIX G

MCAULIFFE REMEDIATION METHOD STATEMENT

APPENDIX H DRILLING BOREHOLE LOGS

APPENDIX I TOPSOIL CHEMICAL TESTING RESULTS

APPENDIX J

APPROVAL BY RIBBLE VALLEY MBC OF REMEDIAL STRATEGY

APPENDIX K DRILLERS BOREHOLE LOGS

APPENDIX L GROUND GAS MONITORING RESULTS

APPENDIX M ECOLOGICAL VALIDATION REPORT

**LOW MOOR, CLITHEROE
SITE CLEARANCE WORKS 2012**

ECOLOGICAL STATEMENT

SEPTEMBER 2012



**RACHEL
HACKING
ECOLOGY**

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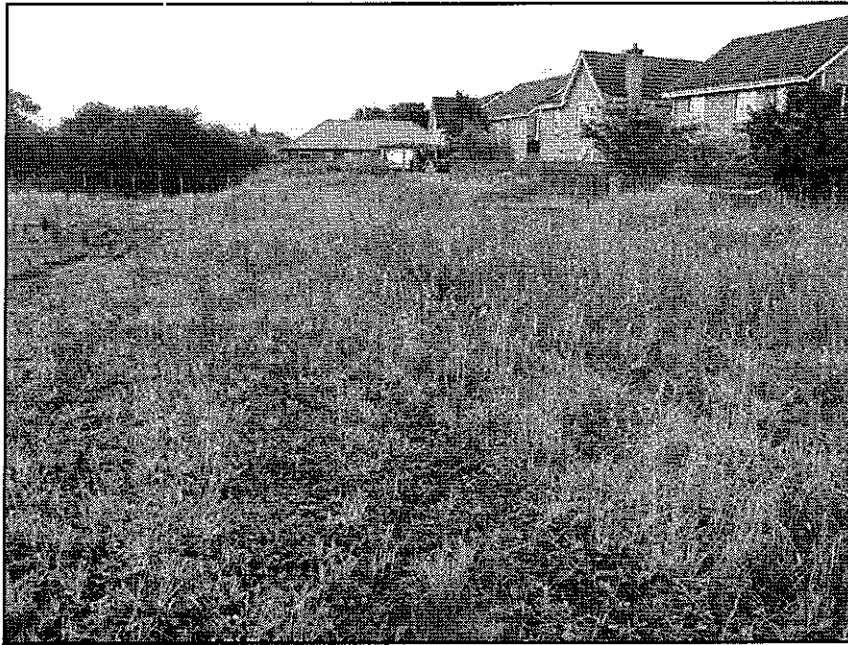
mail@rachelhackingecology.co.uk www.rachelhackingecology.co.uk

1.0 INTRODUCTION AND BACKGROUND

- 1.1 Rachel Hacking Ecology Limited (RHE) was commissioned in 2012 by the McAuliffe Group to provide ecological supervision during clearance works at a site in Low Moor, Clitheroe, Lancashire.
- 1.2 The site at Low Moor is a large field of permanent pasture with a smaller adjacent area of well vegetated ground over an old tip. The field is bordered on three sides by mature hedgerows. Relatively new residential development borders the site to the south.
- 1.3 A Phase 1 Habitat Survey was conducted in March 2008 by RSK (see *Low Moor, Chapel Close, Clitheroe – Phase 1 Survey Report – RSK March 2011*). This concluded by mentioning the possibility of reptiles within the marshy grassland areas, i.e. the old tip site and within the south of the main field. Therefore, an ecological watching brief was recommended to be carried out during the stripping of the vegetation.
- 1.4 The site has planning permission for 54 houses with associated upgraded access and open space (ref: 3/2011/0247). Condition 8 of the planning permission advises that the recommendations within the Phase 1 Report are adhered to. The McAuliffe Group undertook the site clearance in August 2012. In addition to the clearance of the potential reptile habitat, a mature hedgerow was also removed. Therefore, with this being removed during the bird breeding season, a check for nesting birds was required.
- 1.5 Rachel Hacking (Principal Ecologist), with assistants, carried out the ecological supervision. Rachel has over ten years experience of habitat and protected species surveys and has undertaken ecological supervision on a number of sites pre-development.

2.0 ECOLOGICAL SUPERVISION

- 2.1 The ecological watching brief commenced on 21st August 2012. Prior to this, a site visit was undertaken on 13th August 2012 to assess the habitats and check the hedgerows for nesting birds.
- 2.2 Prior to the soil being stripped, starting on 21st August, the ecologist walked over the area to be stripped that day and checked for amphibians, reptiles and other wildlife. Soil stripping began and was carefully watched by an ecologist (see photographs below).



Photograph 1 showing south of site prior to vegetation clearance



Photograph 2 showing south of site after vegetation clearance



Photograph 3 showing vegetation stripping under supervision

- 2.3 The old tip site was also checked prior to clearance and during clearance (see photographs below).



Photograph 4 showing the old tip site after clearance

- 2.4 Immediately prior to the hedgerow being removed, a nesting bird check was carried out. The hedgerow was then carefully grubbed out under ecological supervision (see photographs below).



Photograph 5 showing the hedgerow prior to removal



Photograph 6 showing the site of the removed hedgerow

- 2.5 A small pond on site was netted prior to being dredged and filled in.
- 2.6 Any wild animals found during the ecological watching brief were removed from the site and placed beneath hedgerows that were being retained. Once the site had been cleared of vegetation, it became hostile to amphibians etc.

- 2.7 No protected species were located during the initial walkover or during the site clearance. No nesting birds were found within the hedgerow prior to its removal. Common Frog, Common Toad and Field Mouse were all found on the site during the clearance and were moved outside of the site into long grass.

3.0 CONCLUSION

- 3.1 No protected species were located at the site during the walkover, the hand-searching or the vegetation clearance. The site has now been cleared ready for development to commence.
- 3.2 Condition 8 of the planning permission can be discharged.



Approx North

Notes:

This plan has been prepared to the scale shown. Caution should be exercised when all critical dimensions should be confirmed on site and to the satisfaction of the client. All dimensions have been measured or estimated from ground level. Tree species shown should be treated with caution. Tree sizes are estimated from a surface inspection only, due to Health and Safety measures, however it should be borne in mind that there may be items obscured at the time of survey.

KEY

BT British Telecom
CB Control Box
CLV Cover Level
ELV Electricity Valve
EP Electricity Pole
FH Fire Hydrant
FV Footpath
IC Inspection Cover
IL Invert Level
LP Lamp Post
MH Manhole
RS Road Sign
SV Stop Valve (Unidentified)
TL Traffic Light
TP Telegraph Pole
UTL Unable to Lift
SV Stop Valve

Revisions

JOB CHAPEL CLOSE LOW MOOR
CLITHEROE

DRAWING
LEVEL SURVEY WITH STOCKPILES

DATE: 12-10-12 DRAWN: SCALE: 1:500



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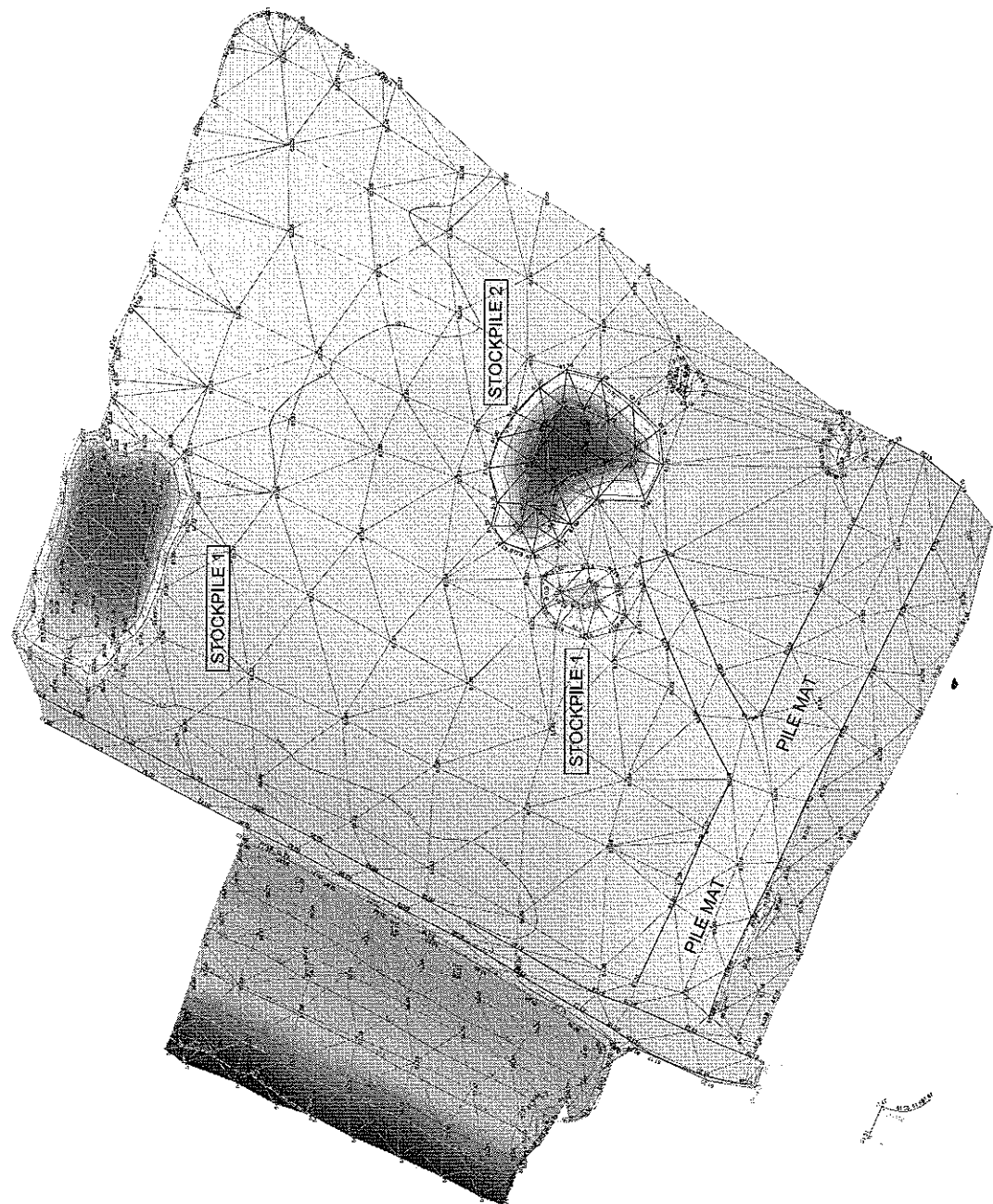
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320110247P

Arboricultural Impact Assessment
of Proposed Construction of Residential Development
of 56 units at



Chapel Close, Low Moor, Clitheroe,
Lancashire, BB7 2

Prepared by:

Bowland 
Tree Consultancy Ltd

March 2011

ARBORICULTURAL IMPACT ASSESSMENT
CHAPEL CLOSE, CLITHEROE

Control sheet

320110247P

Project no.: BTC178

Project Title: Arboricultural Impact Assessment at Chapel Close, Clitheroe

Client: The Strategic Land Group Limited

Architect: MCK Architects

Local Authority: Ribble Valley Borough Council

Date of Survey: 14th December 2010

Prepared by: Phill Harris BSc(Hons) HND CEnv MAIborA MICFor Chartered Arboriculturist

Date of Issue: 29th March 2011

Status: Final

Version No: 1

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DISCLAIMER

Survey Limitations: Unless otherwise stated all tree inspections have been undertaken from ground level using non-invasive techniques only, and the disclosure of hidden crown and stem defects, in particular where they may be above a reachable height or where trees are ivy clad or in areas of ground vegetation, cannot therefore be expected. Where trees are located wholly or partially on neighbouring private third-party land then said land was not accessed and our inspection was therefore restricted to what could reasonably be seen from within the site itself, and stem diameters of trees located on such land are estimated. Any subsequent comments and judgments made in respect of neighbouring third-party trees are based on these restrictions and are our preliminary opinion only. Recommendations for works to neighbouring third-party trees are only made where a potential risk to persons and/or property has been identified during our survey or, if applicable, where permissible works are required to implement a proposed development. Where significant structural defects of third-party trees are identified and associated management works are considered essential to negate any risk of harm and/or damage then we will first attempt to inform the site occupier of the issues and, if not possible, then inform the relevant Local Authority. Where a more detailed assessment is considered necessary then appropriate recommendations are also set out in the Tree Survey Schedule.

Comments upon evident tree safety relate to the condition of said tree at the time of the survey. Unless otherwise stated in the Tree Survey Schedule all trees should be re-inspected annually in order to appraise their on-going mechanical integrity and their physiological condition. It should, however, be recognised that tree condition is subject to change due to, for example, the effects of disease, decay, high winds, nearby development works, etc. Changes in land use and site conditions (e.g. a development that increases access frequency) and the occurrence of severe weather incidents are also significant considerations in respect of tree structural integrity and trees should therefore be re-assessed in the context of such changes and/or incidents and inspected at intervals relative to identified and varying site conditions and associated risks.

Where tree stem locations are not included on the plan(s) provided then they are plotted at the time of the survey using, where appropriate and/or practicable, a combination of measurement triangulation and GPS co-ordination. Where this is not possible then locations are estimated. Restrictions in these respects are detailed in the report.

The potential influence of trees upon buildings or other structures resulting from the effects of their roots abstracting water from shrinkable load-bearing soils is not considered herein. The advice of a structural engineer should be sought with regard to appropriate foundation depths for new buildings with reference to NHBC Standards Chapter 4.2 (NHBC, 2008).

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320110247P

ARBORICULTURAL IMPACT ASSESSMENT
CHAPEL CLOSE, CLITHEROE

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PLAN

PLAN ONE:	TREE IMPACT PLAN
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1.0 INTRODUCTION

Terms of Reference

- 1.1 Bowland Tree Consultancy Ltd were commissioned by The Strategic Land Group Ltd to:
- a) Survey from ground level, individually or by group, all trees having reasonable potential to be adversely affected by the proposed site development;
 - b) Prepare a tabulated Tree Survey Schedule (TSS) based on guidance specified in British Standard BS5837:2005 - Trees in Relation to Construction – Recommendations;
 - c) Assess the tree related impacts of the proposed development;
 - d) Advise on removal, retention and management options for the trees in the current context and in the context of the proposed development;
 - e) Annotate the site proposal plan to identify tree numbers, retention category grades, crown spreads and Root Protection Areas (RPAs) to indicate tree related constraints, along with which trees are proposed for retention and which trees are proposed for removal in order to produce a Tree Impact Plan (TIP);
 - f) Produce an Arboricultural Impact Assessment (AIA) report outlining the main tree related issues and potential tree related impacts in relation to the development proposal and detail any suitable mitigation measures; and
 - g) Provide the AIA, TIP, TSS and other associated documents as a combined report in electronic PDF format in support of the planning application

Scope and Purpose of Report

- 1.2 By detailing foreseeable tree related issues this report is intended to assist the Local Planning Authority (LPA) in their review of the proposed development and, as such, should be supplied to them in support of the planning application to which it pertains. Essentially, the report provides a preliminary analysis of the impacts that the proposed development would potentially have on trees and, in turn, the effects that any such impacts would potentially have on the visual amenity of the local landscape. It also offers guidance on suitable tree management and mitigation and appropriate tree protection measures in the context of the proposed development.

Site Visit, Data Collection and Tree Impact Plan

- 1.3 I confirm that I visited the site on 14 December 2010 and carried out an appraisal of trees, as detailed above and in accordance with the preceding disclaimer. All tree data collected on site is set out in the attached tabulated Tree Survey Schedule (TSS) at Appendix One which, for ease of interpretation, should be read in conjunction with the associated BS5837:2005 Table 1. Weather conditions during my survey were moderately cold at approximately 3°C, overcast, dry and with no discernable wind.
- 1.4 During my survey I identified seventeen individual trees (prefixed 'T'), three groups of trees (prefixed 'G') and one hedge (prefixed 'H') and have numbered them T1 to T17, G1 to G3 and H1, as detailed on the appended Tree Impact Plan (TIP) at Plan One. The TIP is based on a topographical survey plan that was provided in electronic format by The Strategic Land Group Ltd with tree locations plotted and, for the purpose of this report, I presume the plan details to be accurate.
- 1.5 The TIP details the existing site with the readily definable tree constraints (see 1.1e) and an overlay of the development proposal, thereby allowing a preliminary appraisal of the development's potential impacts on trees (see section 6.0) and a subsequent evaluation of protection, tree work and mitigation requirements. The constraints relating to tree RPAs and their protection requirements are discussed in detail at paragraphs 7.1 and 7.2.

2.0 STATUTORY PROTECTION IN RESPECT OF TREES AND ASSOCIATED WILDLIFE**Tree Preservation Orders and Conservation Area Designations**

- 2.1 The Town & Country Planning Act (1990) (the Act) and associated Regulations empower Local Planning Authorities (LPAs) to protect trees in the interests of amenity by making Tree Preservation Orders (TPOs). The Act also affords protection for trees of over 75mm diameter that stand within the curtilage of a Conservation Area (CA). Subject to certain exemptions, an application must be made to the LPA in question to carry out works upon or to remove trees that are subject to a TPO, whilst six weeks' notice of intention must be given to carry out works upon or to remove trees within a CA that are not protected by a TPO. However, in situations where detailed planning permission has been granted and protected trees directly affect the implementation of the approved development, then it is permissible to carry out any works necessary to said trees in order to implement said development.
- 2.2 I have not been informed if there is a TPO covering any of the trees considered herein, and this should therefore be checked with Ribble Valley BC prior to scheduling or carrying out any tree works. According to the Lancashire County Council 'Maps & Related Information Online' (MARIO) website the site itself does not stand within a CA.

Protected Species

- 2.3 Nesting birds are afforded statutory protection under the Wildlife & Countryside Act (1981) (as amended) and their potential presence should therefore be considered when clipping hedges, removing climbing plants and pruning and removing trees. Hedges provide valuable nesting sites for many birds and clipping should therefore be avoided during March to July. Trees, hedges and ivy should be inspected for nests prior to pruning or removal and any work likely to destroy or disturb active nests should be avoided until the young have fledged.
- 2.4 All species of bat are protected under Schedule 5 of the Wildlife & Countryside Act (1981) (as amended) and under Schedule 2 of the Conservation of Habitats and Species Regulations 2010. In this respect it should be noted that it is possible that unidentified bat habitat features may be located high up in tree crowns and all personnel subsequently carrying out tree works at the site should therefore be vigilant and mindful of the possibility that roosting bats may be present in trees with such features. If any bat roosts are identified then it is essential that works are halted immediately and that a qualified and an experienced ecologist investigate them prior to works continuing.

Felling Licences

- 2.5 Subject to certain exemptions the Forestry Act (1967) requires that a 'Felling Licence' be obtained to fell growing trees amounting to specific volumes of timber. Felling Licences are administered by the Forestry Commission and contravention of the associated controls can incur substantial penalties. However, I would note that a Felling Licence is not needed for the removal of trees immediately required for the purpose of carrying out a development authorised by detailed planning permission granted under the Act (1990).

3.0 COUNCIL POLICY IN RESPECT OF TREES AND DEVELOPMENT

- 3.1 The site stands within the administrative boundaries of Ribble Valley BC and, as such, my arboricultural appraisal considers the proposed site development against the relevant Council policies. The current Ribble Valley BC Districtwide Local Plan (Ribble Valley BC, 1998) includes a single policy (overleaf) specific to trees in relation to this site; 'Policy ENV13 -

Landscape Protection' Ribble Valley BC also have a Supplementary Planning Policy for Trees, of which paragraph 5.5 states that the "Local Authority will ensure that the right trees are maintained, protected and correctly managed".

POLICY ENV13 - LANDSCAPE PROTECTION

The Borough Council will refuse development proposals which harm important landscape features including traditional stone walls, ponds, characteristic herb rich meadows and pastures, woodlands, copses, hedgerows and individual trees other than in exceptional circumstances where satisfactory works of mitigation or enhancement would be achieved, including rebuilding, replanting and landscape management

Reasoned Justification

It is important to protect the existing landscape features which add to the character of the Borough. The woodland coverage of the borough whether large woods, small groups, or individual trees, together with hedgerow coverage forms an important part of the landscape quality. In addition valuable ecological, recreational and economic functions arise from these features.

4.0 THE SITE AND THE SURROUNDINGS

- 4.1 The site in question is rural in character and stands at the edge of a suburban area approximately 1.3kms due west of the centre of the Council's administrative town of Clitheroe, Lancashire. It consists of two distinct sections, being a large open field to the east and a smaller area of rough grassland with significant level changes to the west, with these areas being divided by an unmade access track running in a north-south direction.
- 4.2 The site is bordered to the north and east by open fields and to the south and west by moderate density residential properties. Site topography is relatively level in the field to the east and highly variable in the western section, where it falls significantly down to the western boundary. Vehicular access is via the unmade access track.



Fig 1: The eastern (field) section of the site, looking north-west

- 4.3 I did not carry out a detailed landscape or townscape character appraisal of the locality as part of this assessment. However, I did make a general appraisal of the visual amenity that various trees standing within the site confer in the locality based on their visual prominence and overall contribution to the landscape, as discussed in paragraph 5.2.

5.0 THE TREE POPULATION

- 5.1 As noted previously, seventeen individual trees, three groups of trees and one hedge were surveyed for the purpose of this appraisal, of which two individuals (T4 and T5) evidently stand on neighbouring land, whilst three further individuals (T1, T2 and T3) stand on or very close to the eastern site boundary. As such, the ownership of these trees should be verified.
- 5.2 The surveyed trees are small to moderately large in size and consist of native and non-native deciduous broadleaves including common oak, ash, sycamore and goat willow. They are in the young to mature age range and stand at heights of up to approximately 17 metres, have maximum diametrical crown spreads of up to approximately 16.5 metres and stem diameters of up to approximately 960 millimetres.
- 5.3 All the surveyed trees are visible from various public vantage points to varying degrees and, due to their differing sizes and locations, confer variable visual amenities. For instance, common oak T1 and sycamores T2 and T3 are moderately large in size and are located along the site's eastern boundary where they are highly visible from the access road to their west and from various neighbouring residential properties, thereby conferring a moderately high visual amenity in the local landscape (see Fig 2, below). In contrast, most of the trees located at the foot of the slope towards the western site boundary (T14 to T17 and G1 to G3) are relatively small and only partially visible from public vantage points and therefore confer a relatively low visual amenity in the local landscape.



Fig 2: Sycamores T2 and T3, as seen from the eastern section of the site (the field) looking east

- 5.4 Detailed tree dimensions and other pertinent information such as structural defects and physiological deficiencies are included in the Tree Survey Schedule (TSS) attached at Appendix One. In respect of the TSS it should be noted that tree quality and value is categorised within the existing context without taking into account any site development proposals. However, the recommendations for works included in the TSS take both current site usage into consideration and the proposed site development where there are definable development related issues with regards specific trees.

- 5.5 The TSS includes a column ('Cat. Grade') listing the trees' respective retention values, where they are rated either 'A', 'B', 'C' or 'R', as per BS5837:2005 Table 1 (Appendix One) 'A' category trees are those considered to be of 'high quality and value' and, accordingly, the most suitable for retention and 'B' category trees are those considered to be of 'moderate quality and value'. 'C' category trees are those considered to be of 'low quality and value' which, as stated in BS5837:2005 Table 1, *"will usually not be retained where they would pose a significant constraint on development"*. In turn, 'R' category trees are those that are in relatively poor condition whereby they should be removed for reasons of sound arboricultural management regardless of any plans for the site
- 5.6 As such, only those classed either 'A' or 'B' are of a quality and value whereby they may be considered as a potential material constraint in the development process and, in this respect, BS5837:2005 states that *"Certain ['A' category] trees are of such importance and sensitivity as to prevent development occurring or to substantially modify its design"*. However, it should be noted that the guidance does not state that all trees identified as 'A' or 'B' category have to be retained at all costs. Rather, a more pragmatic approach should be taken whereby the retention values of such trees are considered against the merits of the planned land use changes and they are subsequently afforded appropriate weight in the context of such proposals, with suitable compensatory planting proffered for any necessary losses should this course of action be established to be acceptable
- 5.7 As detailed in Table One (below) four of the trees and two of the groups were allocated moderate retention values of 'B' and eleven of the trees, one of the groups and the hedge were allocated low retention values of 'C'. In addition, two of the trees were allocated 'R' values due to their limited future potential, and these trees are therefore recommended for removal in the short term (<10 years) in accordance with prudent arboricultural management
- 5.8 In this respect I would note that 'R' category sycamore T3 has a moderately large basal cavity with evidently extensive progressive decay within it and several *Kretzschmaria deusta* fungal fruiting bodies to its stem base, which is a very aggressive soft rot root and butt decay producing fungi that causes a brittle fracture of the wood. As such, it has a short projected remaining safe life expectancy and is considered unsuitable for retention in the context of a development and the subsequent increased land usage and associated risk that it would present to persons and/or property. However, the tree stands on or close to the site boundary and it is therefore important that its ownership is verified prior to any works being carried out

Table One: BS5837-2005 Retention Values of the Trees

	Ret. Cats.	Tree Numbers	Totals
Trees of a moderate or high quality & value that should be afforded appropriate consideration in the context of development	'A'	-	-
	'B'	T1, T2, T5, T13, G2, G3	4 Trees 2 Groups
Trees of a low quality & value that should not be considered a material constraint to development	'C'	T4, T6, T7, T8, T9, T10, T11, T12, T14, T15, T17, G1, H1	11 Trees 1 Group 1 Hedge
Trees that should be removed for sound management reasons regardless of site plans	'R'	T3, T16	2 Trees
			= 17 Trees, 3 Groups & 1 Hedge in Total

6.0 THE DEVELOPMENT PROPOSAL AND ITS PROJECTED ARBORICULTURAL IMPACTS

6.1 I am informed by the project architects, MCK Associates, that the proposal, which is in outline, is to construct 56 new residential properties with associated hard-standing, garages, outdoor parking, private gardens and an area of public open space, as per the attached Plan One. In order to identify the impacts that this proposal would potentially have upon the trees in question the proposed development has been overlaid onto the tree survey and constraints information to produce a Tree Impact Plan (TIP) (appended at Plan One) detailing:

- The locations of the proposed properties and their associated areas of hard-standing, garages, driveways and gardens;
- The locations of the proposed vehicular access point;
- The surveyed trees along with their respective radial RPAs and other pertinent information; and
- Indicative locations for new tree planting proposals

Projected Arboricultural Impacts Relating to the Proposal

6.2 As detailed on the TIP and in Table Two (below) construction of the proposed development will require the removal of seven of the individually surveyed trees, one of the groups and the section of hedge that runs along the east of the access road, all of which are low ('C') value. Two low value ('C') category trees are also recommended for removal in the context of the proposal due to their limited future potential. In addition, two category 'R' trees are also recommended for removal in the short-term regardless of the site proposals. Nonetheless, the loss of these trees is projected to have a negligible impact upon the visual amenity of the locality and can be more than adequately mitigated for through the provision of new tree planting, as discussed in paragraph 6.3. In consideration of the impacted trees it is evident that none are of a value whereby they could be considered a constraint to development.

Table Two: Arboricultural Impacts of Proposed Development & Other Tree Removal Proposals

	Ret. Cats.	Removals necessary to implement development	Removals recommended for non-development related reasons	Total number of tree removals
Trees of a moderate or high quality & value that should be afforded appropriate consideration in the context of development	'A'	-	-	-
	'B'	-	-	-
Trees of a low quality & value that should not be considered a material constraint to development	'C'	T6, T7, T8, T9, T10, T11, T12, G1, H1 (part)	T14, T17	9 Trees, 1 Group & part of 1 Hedge
Trees that should be removed for sound management reasons regardless of site plans	'R'	-	T3, T16	2 Trees
Totals		7 Trees, 1 Group & part of 1 Hedge	4 Trees	11 Trees, 1 Group & part of 1 Hedge in Total

Mitigation for Projected Tree Losses as Part of Site Landscaping

6.3 As detailed on the TIP the necessary development related tree losses can be more adequately mitigated for through the provision of up to approximately 50 new trees on site. The establishment of moderate to large growing long-lived trees of locally native species such as common alder (*Alnus glutinosa*) and common oak (*Quercus robur*) where space permits, and smaller growing species such as rowan (*Sorbus aucuparia*) and silver birch

(*Betula pendula*) would effectively complement the existing surrounding rural landscape and enhance the long-term visual amenity of the locality, as well as provide important urban wildlife habitat. General new tree planting recommendations are outlined further in paragraph 8.6, whilst specific tree planting requirements for this particular development proposal can be conditioned to a planning approval.

7.0 RECOMMENDATIONS FOR SUCCESSFUL TREE RETENTION IN THE CONTEXT OF DEVELOPMENT

Root Protection Areas and Construction Exclusion Zones

- 7.1 Adequate protection of the Root Protection Areas (RPAs) of retained trees during construction is essential if their long-term viability is to be assured. RPAs, which are calculated through a method provided in BS5837:2005, are ground areas that should be protected by temporary protective fencing as Construction Exclusion Zones (CEZs) throughout the development process, thereby keeping the trees' root zones free from disturbance. Consequently, the RPA distances, as detailed in the TSS (see 7.2, below), give an idea of the on-site below-ground constraints in respect of tree roots and assist in planning for appropriate tree retention in relation to feasible development. In certain situations, there is a limited degree of flexibility in the RPA and CEZ positioning.
- 7.2 The TSS includes two columns listing the RPAs of the individually surveyed trees and, where applicable, the largest of the trees in any surveyed groups as overall areas in square metres and as radial distances. The radial RPAs are indicated as magenta coloured circles on the TIP. With regards CEZs the design, materials and construction of the fencing should be appropriate for the intensity and type of site construction works, should conform to section 9 of BS5837:2005 and should be agreed with the LPA. A temporary protective fencing specification is included at Appendix Two and the extents of the RPAs should dictate locations of the CEZs.
- 7.3 In respect of the site under consideration I would note that the LPA's Countryside Officer has requested that the trees' RPAs be increased by 20% which, as detailed on the TIP, can largely be achieved. However, I would also note that, under current Government guidance, an RPA increase of this type is not a mandatory requirement.

Arboricultural Method Statement and Tree Protection Plan

- 7.4 BS5837:2005 recommends that, where considered expedient, an Arboricultural Method Statement (AMS) and a Tree Protection Plan (TPP) be prepared detailing "*special mitigation construction*" such as the construction of structures within tree RPAs using special methods. Essentially, the AMS and TPP describe the procedures, working methods and protective measures to be used in relation to retained trees in order to ensure that they are adequately protected during the construction process. Production of and adherence to an AMS and TPP can be conditioned to a planning approval if considered necessary.

8.0 OTHER RECOMMENDATIONS

Non-Development Related Tree Works and Recommendations

- 8.1 Any general management pruning works for retained trees that are stated to be non-development related, as detailed in the TSS, are recommended in accordance with prudent arboricultural management and should therefore be carried out regardless of any site plans.

and potential changes in land usage All tree works should be carried out in accordance with BS3998:2010 - Tree Work – Recommendations

Tree Work Related Consents

- 8 2 No tree pruning or removal works should commence on site until necessary consents have been obtained from the LPA as part of a planning approval or in respect of any statutory tree protection

Arboricultural Contractors

- 8 3 All tree works should be carried out by suitably qualified and experienced arboricultural contractors carrying appropriate public liability insurance cover and be implemented to the minimum current CE and UK industry standards and in accordance with industry codes of practice. Only certificated personnel should, in accordance with The Control of Pesticides Regulations, apply any pesticides

Contractors and Subsequently Identified Tree Defects

- 8 4 Contractors should be made aware that, should any significant tree defects become apparent during operations that would not have been immediately obvious to the surveyor, then such defects should be notified immediately to the client and subsequently confirmed to the consultant within five working days.

Retained Tree Management

- 8 5 Any tree risk management appraisals and subsequent recommendations made in this report were based on observations and site circumstances at the time of my survey. Trees are dynamic living organisms whose structure is constantly changing and even those evidently in good condition can succumb to damage and/or stress. In this respect I would note that, under the Occupiers' Liability Act (1957 & 1984), site occupants have a duty of care to take reasonable steps to prevent or minimise the risk of personal injury and/or damage to property from any tree located within the curtilage of the land they occupy. It is accepted that these steps should normally include commissioning a qualified and experienced arboriculturist to survey their trees in order to identify any risk of harm to persons or damage to property that they may present and, where unacceptable risks are identified, taking suitable remedial action to negate those risks.

New Tree Planting

- 8 6 New tree planting should be implemented in mitigation of any tree removals required for development purposes and subsequent impacts on associated habitats and amenity, as discussed in paragraph 6.3. New tree planting proposals should be agreed with the LPA and included in a landscape design plan for the site. All tree planting should be carried out in accordance with BS4428:1989 - Code of Practice for General Landscape Operations, BS3936-1:1992, Nursery Stock – Part 1: Specification for Trees and Shrubs and BS4043:1989, Transplanting Root-Balled Trees where applicable.

9.0 SUMMARY AND CONCLUSIONS

- 9 1 Seventeen individual trees, three groups of trees and one hedge were surveyed in respect of an outline application proposal to construct 56 residential properties at the site in question. Of these trees two individuals stand on neighbouring land and three further

- individuals stand on or very close to the site boundary. The ownership of these trees should therefore be verified.
- 92 The trees are small to moderately large in size and confer a variable individual visual amenity in the local landscape, from moderately low to moderately high. The larger trees along the western boundary (i.e. T1 to T3) confer the most substantial visual amenities.
- 93 Four of the trees and two of the groups were allocated moderate retention values, one of the groups and the hedge were allocated low retention values and two of the trees were recommended for removal in the short term in accordance with prudent arboricultural management due to their short projected remaining safe life expectancies.
- 94 Construction of the proposed development can be achieved with the removal of seven individual trees, one group and part of the hedge, all of which are low value. Two low value trees are also recommended for removal in the context of the proposal due to limited future potential whilst two further 'R' category individuals are recommended for removal in the short-term regardless of the site proposals. As such, in accordance with Government guidance, none of the impacted trees are of a value whereby they should be considered a constraint to development.
- 95 The removal of these trees is projected to have a negligible impact upon the visual amenity of the locality and the associated losses can be more than adequately mitigated for through the provision of up to approximately 50 new small, medium and large growing trees of locally native species which, in turn, would have a positive long-term effect on the immediate landscape and provide important urban wildlife habitat. New tree planting, as part of the landscaping proposals for the site, can be conditioned to a planning approval.
- 96 The outstanding trees, most of which are moderate value and several of which are relatively large and subsequently confer a moderately high visual amenity, can be retained and adequately protected throughout the development to their calculated RPAs plus the additional 20% requested by the LPA.
- 97 In consideration of the above I therefore conclude that the proposal complies with the requirements of relevant Council Policy and current Government guidance in respect of trees and development.

REFERENCES

- BS4428:1989 - Code of Practice for General Landscape Operations. BSI British Standards, London.
- BS3936-1:1992, Nursery Stock – Part 1: Specification for Trees and Shrubs. BSI British Standards, London.
- BS3998:2010 - Tree Work – Recommendations. BSI British Standards, London.
- BS4043:1989 - Transplanting Root-Balled Trees. BSI British Standards, London.
- BS5837:2005 - Trees in Relation to Construction – Recommendations. BSI British Standards, London.
- National House Building Council (2008) NHBC Standards Chapter 4.2 - Building Near Trees. NHBC, Amersham.
- National Joint Utilities Group (2007). Volume 4: NJUG Guidelines For The Planning, Installation And Maintenance Of Utility Apparatus In Proximity To Trees (Issue 2) – Operatives Handbook.
- Ribble Valley Borough Council (1998) Ribble Valley Borough Council Districtwide Local Plan.

AUTHOR'S QUALIFICATIONS & EXPERIENCE

Qualifications. I hold a Higher National Diploma (HND) in arboriculture at distinction level and a Bachelor's Degree (BSc(Hons)) in arboriculture at first class level, both of which were awarded at the University of Central Lancashire. As part of my continuing professional development I am currently studying towards a Master's Degree (MSc) in arboriculture and urban forestry.

Professional Memberships. I am a professional member of the Arboricultural Association (MArborA), a professional member of the Consulting Arborist Society, a professional member of the Institute of Chartered Foresters and a professional member of the Society for the Environment.

Chartered Status. As a professional member of the Institute of Chartered Foresters I am a Chartered Arboriculturist (MICFor), and as a professional member of the Society for the Environment I am a Chartered Environmentalist (CEnv).

Experience. I have over 13 years' practical involvement in the profession of arboriculture, with experience initially gained as a tree climber for various contractors in the UK and Australia. In 1999 I worked as an arboricultural technician for Bradford Council resurveying their TPO stock and, from early 2000 to late 2001, as a surveyor for Cheshire Woodlands arboricultural consultants. During this period I also spent several months working in the USA with HortScience Inc., a highly regarded consultancy whose proprietors have made a notable contribution to the worldwide advancement of the profession of arboriculture. From early 2002 to late 2003 I then worked as a consulting arboriculturist with TEP, a large multi-disciplinary environmental consultancy practice in Warrington, following which I began to work as a freelance consulting arboriculturist to various UK companies, including Cheshire Woodlands, TEP and OCA. Since 2007 I have worked solely as an independent arboricultural consultant, subsequently establishing Bowland Tree Consultancy Ltd in early 2010. Throughout my varied arboricultural career I have gained widespread knowledge and experience of tree matters in relation to planning, construction and development and continue to apply these skills on a day to day basis.

Continuing Professional Development. In order to stay professionally current I regularly attend seminars, workshops, conferences and training courses relevant to my profession and scope of work.

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APPENDIX ONE:

TREE SURVEY SCHEDULE & BS5837:2005 - TABLE 1

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TREE SURVEY SCHEDULE FOR ARBORICULTURAL IMPACT APPRAISAL

Site: Chapel Close, Clitheroe, Lancashire, BB7 2

Client: The Strategic Land Group Limited

Surveyor: Phill Harris - Chartered Arboriculturist
 Assessment Date: 14 December 2010
 Job Reference: BTC178

Page: 1 of 4

No.	Species	Height	Stem Diam.	Branch Spread	Height of C.C.	Age	PC	Comments on Condition, etc.	Management Recommendations	ERC	Cat. Grade	RPA Radius (m)
T1	Common Oak (<i>Quercus robur</i>)	15	780	N 7 E 9.5 S 9.5 W 6	3	M	G	- Standing on or close to site boundary with ownership therefore unclear. - Not inspected in detail as neighbouring field not accessed. - Moderate stem lean to east. - Moderate amount of deadwood to approximately 100mm diameter. - Several broken branches.	- Verify boundary extents and tree ownership. - Inspect tree in detail. - Retain and ensure protection of Root Protection Area (RPA) throughout development with (CEZ).	>40	B1	275.27
T2	Sycamore (<i>Acer pseudoplatanus</i>)	16.5	790	N 6 E 7 S 6 W 6	3	M	G	- Standing on or close to site boundary with ownership therefore unclear. - Not inspected in detail as neighbouring field not accessed. - Stem bifurcates into co-dominant primary branches at a height of approximately 4.0m with a tight union. - Moderate amount of deadwood to approximately 40mm diameter.	- Verify boundary extents and tree ownership. - Inspect tree in detail. - Retain and ensure protection of RPA throughout development with CEZ.	20-40	B1	282.37
T3	Sycamore	17	960	N 6.5 E 7 S 6.5 W 6.5	3.5	M	M	- Standing on or close to site boundary with ownership therefore unclear. - Stem divides into multiple primary branches at a height of approximately 4.5m. - Moderately large basal cavity to west with evidently extensive progressive decay within. - Several <i>Kretzschmaria deusta</i> fungal fruiting bodies to southern side of stem base, which is a soft rot root and butt decay causing fungi that causes a brittle fracture of the wood. - Crown showing signs of a moderate reduction in vitality. - Short projected remaining safe life expectancy.	- Verify boundary extents and tree ownership. - Remove due to short projected remaining safe life expectancy.	<10	R	416.98
T4	Common Oak	16	800	N 5 E 7 S 9.5 W 7	4.5	M	M/P	- Located on neighbouring land and therefore not inspected in detail. - Crown showing signs of a moderately severe reduction in vitality with extensive dieback.	Retain and ensure protection of RPA throughout development with CEZ.	10-20	C1	289.57

HEADINGS & ABBREVIATIONS

No. Species: Height: Stem Diam.: Branch Spread: Age: PC: Comments on Condition, etc: Management Recommendations: ERC: Cat. Grade: RPA Radius (m):

Allocated Tree (T), Group (G), Woodland (W) or Hedge (H) reference number - refer to plan and to numbered tags where applicable

Common and botanical name in brackets where appropriate

In metres - where possible approximately 50% are measured using an electronic clinometer and the remainder estimated against the measured trees. In the case of Groups and Woodlands the measurement listed is that of the highest tree

Stem diameter in millimetres - measured or estimated at a height of approximately 1.5 metres above ground level or just above the root flare for multi-stemmed trees. MS = multi-stemmed, TS = twin-stemmed

Crown radius measured for estimated where considered appropriate from the four cardinal points (north, east, south and west) to give an accurate visual representation of the crown

Height of crown clearance in metres - measured at lowest point above adjacent ground level - to inform on crown to height ratio, potential for shading, etc

Estimated age class - Y = young, SM = semi-mature, EM = early-mature, M = mature, PM = post-mature

Physiological Condition - a measure of the tree's overall vitality, i.e. D = Dead, MD = Moribund, P = Poor, M = Moderate, G = Good

Comments relating to the tree's overall condition and any other pertinent factors including structural defects, current and potential direct structural damage, physiological decline, poor form, etc

Either Preliminary or In Consideration of the Proposal - In the case of Arboricultural Consultancy Surveys the recommended management works only take existing site and tree circumstances and conditions into account and not proposed developments. Arboricultural Impact Assessment and Method Statement related Surveys take the proposed development into consideration with recommendations made accordingly. More than one option may be given if considered appropriate

Estimated Remaining Contribution - in years as per BS5837:2005 (i.e. less than 10, 10-20, 20-40, more than 40)

Category Grading - tree retention value listed as R or A to G - broadly in line with BS5837:2005 table 1

Root Protection Area in m² - calculated area around the tree that must be appropriately protected throughout the development process in order to avoid root damage

Root Protection Area Radius - in metres measured from the centre of the stem to the line of tree protection

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TREE SURVEY SCHEDULE FOR ARBORICULTURAL IMPACT APPRAISAL

Site: Chapel Close, Clitheroe, Lancashire, BB7 2

Client: The Strategic Land Group Limited

Surveyor: Phill Hams – Chartered Arboriculturist

Assessment Date: 14 December 2010

Job Reference: BTC178

No.	Species	Height	Stem Diam.	Branch Spread	Height of CC	Age	PC	Comments on Condition, etc.	Management Recommendations	ERC	Can. Grade	RPA Area (m ²)	RPA Radius (m)
T5	Ash (<i>Fraxinus excelsior</i>)	10	500 (ms)	N 6 E 5 S 6 W 5	3.5	EM	G	- Located on neighbouring land and therefore not inspected in detail. - Stem divides into multiple sub-stems at a height of approximately 0.7m with partially included bark unions.	Retain and ensure protection of RPA throughout development with CEZ.	20-40	B1/2	78.55	5
T6	Ash	7.5	200	N 4 E 2.5 S 2.5 W 3	5	Y	G	- Minor mid-stem curvature. - Branch arises to north close to ground level with a partially included bark union.	- Remove in order to construct development. - Replace with 1no. Common Oak (<i>Quercus robur</i>).	10-20	C1	18.1	2.4
T7	Goat Willow (<i>Salix caprea</i>)	5	110	N 2 E 2 S 2 W 2	1.5	Y	G	No visible structural defects.	- Remove in order to construct development and grub out stump. - Replace with 1no. Common Oak (<i>Quercus robur</i>).	>40	C1/2	5.47	1.32
T8	Ash	7.5	330 (ts)	N 4.5 E 4.5 S 2.5 W 3.5	4.5	SM	G	- Two stems arise at ground level with an included bark union. - lv up stem(s).	- Remove in order to construct development. - Replace with 1no. Common Oak (<i>Quercus robur</i>).	10-20	C1	34.22	3.30
T9	Ash	7.5	200 (ts)	N 2 E 2 S 2 W 2	4.5	Y	M	- Two stems arise at ground level with an included bark union. - lv up stem(s).	- Remove in order to construct development and grub out stump. - Replace with 1no. Common Oak (<i>Quercus robur</i>).	10-20	C1	12.57	2
T10	Ash	9.5	550 (ts)	N 4 E 4.5 S 4.5 W 4	3.5	SM	M	- Two stems arise at ground level with an included bark union. - lv up stem(s).	- Remove in order to construct development. - Replace with 1no. Common Oak (<i>Quercus robur</i>).	10-20	C1	95.05	5.5
T11	Ash	6	110	N 1 E 2 S 2 W 1.5	3	Y	G	No visible structural defects.	- Remove in order to construct development. - Replace with 1no. Common Oak (<i>Quercus robur</i>).	>40	C1	5.47	1.32
T12	Ash	6	320 (ts)	N 3 E 5 S 3 W 2.5	2.5	SM	M	Two stems arise at ground level with a partially included bark union.	- Remove in order to construct development. - Replace with 1no. Common Oak (<i>Quercus robur</i>).	10-20	C1	32.17	3.2

TREE SURVEY SCHEDULE FOR ARBORICULTURAL IMPACT APPRAISAL

Site: Chapel Close, Clitheroe, Lancashire, BB7 2

Client: The Strategic Land Group Limited

Surveyor: Phill Harris – Chartered Arboriculturist
Assessment Date: 14 December 2010
Job Reference: BTC178

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No.	Species	Height	Stem Diam.	Branch Spread	Height of CC	Age	PC	Comments on Condition, etc.	Management Recommendations	EMC	Cal. Grade	RPA Area (m ²)	RPA Radius (m)
T13	Ash	12.5	400 (ts)	N 5 E 6 S 5 W 2	0.5	SM	G	- Stem bifurcates into co-dominant primary branches at a height of approximately 1.3m. - Highly biased crown to east. - Upright branch arises from east of stem at a height of approximately 0.2m with an included bark union.	- Retain and ensure protection of RPA throughout development with CEZ. - Carry out corrective pruning to remove branch from lower stem.	20-40	B1	50.27	4
T14	Pissards Plum (<i>Prunus atropurpurea</i>)	8	250 (ms)	N 5 E 4 S 0 W 2	1	M	M	- Stem trifurcates into sub-stems at a height of approximately 0.2m with included bark unions. - Severe stem lean to east and highly biased crown to north due to suppression by neighbouring tree(s).	Remove due to suppression from proximity of T13 and grind out stump.	10-20	C1/2	19.64	2.5
T15	Sycamore	12	430 (ts)	N 4 E 3.5 S 4 W 5	1	SM	G	- Severe lower stem lean and curvature to south. - Stem bifurcates at a height of approximately 0.2m. - Previously partially topped at a height of approximately 2.5m.	- Retain and ensure protection of RPA throughout development with CEZ. - Carry out corrective pruning.	10-20	C1/2	58.1	4.3
T16	<i>Prunus</i> sp.	9	330 (ts)	N 1 E 2 S 3.5 W 4	2	EM	P	- Two stems arise at ground level. - Crown showing signs of a moderately severe reduction in vitality with short protected remaining safe life expectancy.	Remove due to short projected remaining safe life expectancy and grind out stump.	<10	R	34.22	3
T17	Ash	6	250 (ms)	N 2.5 E 2.5 S 1.5 W 1.5	0.5	Y	G	Three stems arise at ground level.	Remove due to tree's low value and grind out stump.	>40	C1/2	19.64	2.5
G1	7no. Goat Willow	≤ 9.5	≤ 450 (ms)	N ≤ 4 E ≤ 4 S ≤ 4 W ≤ 4	≥ 0.5	SM	G	- Moderately closely spaced group. - Most trees are multi-stemmed.	- Remove in order to construct development and grind out stumps. - Replace with 1no. Common Oak (<i>Quercus robur</i>).	20-40	C2	≤ 63.63	≤ 4.5
G2	Sycamore	≤ 14	≤ 460 (ts)	N ≤ 4 E ≤ 2.5 S ≤ 4 W ≤ 4	≥ 2.5	SM	G	- Very closely spaced group with interconnecting crowns. - Tree to south's stem bifurcates into co-dominant sub-stems at a height of approximately 0.1m with an acute included bark union and compression fork.	Retain and ensure protection of RPA throughout development with CEZ.	20-40	B1/2	≤ 66.48	≤ 4.6
G3	Approx. 4no. Ash	≤ 13.5	≤ 500 (ts)	N ≤ 4 E ≤ 6 S ≤ 6 W ≤ 6	≥ 0.5	SM-EM	G	- Closely spaced group with interconnecting crowns. - Growing within area of demolished buildings with several stems in contact with low brick walls.	- Retain and ensure protection of RPA throughout development with CEZ. - Remove building remains by hand.	>40	B1/2	≤ 78.55	≤ 5

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TREE SURVEY SCHEDULE FOR ARBORICULTURAL IMPACT APPRAISAL	
Site:	Chapel Close, Clitheroe, Lancashire, BB7 2
Client:	The Strategic Land Group Limited

Surveyor:	Phill Harris -- Chartered Arboriculturist
Assessment Date:	14 December 2010
Job Reference:	BTC178

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No.	Species	Height	Stem Diam.	Branch Spread	Height to CC	Age	PC	Comments on Condition, etc.	Management Recommendations	ERC	Can. Grade	RPA Radius (m)	RPA Radius (m)
H1	Hawthorn (<i>Crataegus monogyna</i>), Elder (<i>Sambucus nigra</i>), Bird Cherry (<i>Prunus padus</i>), Hazel (<i>Corylus avellana</i>)	≤ 10	≤ 450 (ms)	N ≤ 5 E ≤ 5 S ≤ 5 W ≤ 5	≥ 0	M	G	- Overgrown hedge along north, east and west field boundaries. - Mainly made up of Hawthorn with small numbers of other species.	- Retain northern and eastern sections and ensure protection of RPA throughout development with CEZ> - Remove areas of western section in accordance with development design priorities.	>40	C2	≤ 63.63	≤ 4.5

BS5837:2005 Table 1 – Cascade Chart for Tree Quality Assessment

Trees for removal		Criteria		Identification on plan	
Category and definition					
Category R Those in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural management		• Trees that have senous, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unstable after removal of other R category trees such as where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, for example Dutch Elm Disease, or very low quality trees suppressing adjacent trees of better quality Note – Habitat reinstatement may be appropriate. For example R category tree used as a bat roost: installation of bat box in nearby tree.		Dark Red	
Trees to be considered for retention					
Category and definition		Category – Subcategories		Identification on plan	
		1. Mainly arboricultural values	2. Mainly landscape values		3. Mainly cultural values, including conservation
Category A Those of high quality and value: in such a condition as to be able to make a substantial contribution. A minimum of 40 years is suggested.	Trees that are particularly good examples of their species, especially if rare or unusual, or essential components of groups, or of formal or semi-formal Arboricultural features for example the dominant and/or principal trees within an avenue	Trees that might be included in the high category, but are downgraded because of impaired condition. Examples include the presence of remediable defects including unsympathetic past management and minor storm damage	Trees, groups or woodlands which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of particular visual importance for example avenues or other arboricultural features assessed as groups	Trees, groups or woodlands or significant conservation, historical, commemorative or other value for example veteran trees or wood-pasture	Light Green
Category B Those of moderate quality and value: those in such a condition as to make a significant contribution. A minimum of 20 years is suggested.	Trees not qualifying in higher categories	Trees present in numbers, usually as groups or woodlands, so they form distinct landscape features which attract a higher collective rating than they might as individuals. But which are not, individually, essential components of formal or semi-formal arboricultural features. For example, trees of moderate quality within an avenue that includes better, A category specimens. Or trees which are internal to the site, therefore individually having little visual impact on the wider locality	Trees with clearly identifiable conservation or other cultural benefits		Mid Blue
Category C Those trees of low quality and value: currently in adequate condition to remain until new planting could be established - a minimum of 10 years is suggested - or young trees with a stem diameter below 150 mm	Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value, and/or trees offering low or only temporary screening benefit	Trees with very limited conservation or other cultural benefits			Grey
Note – Whilst C category trees will usually not be retained where they would impose a significant constraint on development, young trees with a stem diameter of less than 150mm should be considered for relocation					

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APPENDIX TWO:

TEMPORARY PROTECTIVE FENCING SPECIFICATION

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- TEMPORARY PROTECTIVE FENCING SPECIFICATION -

Construction Exclusion Zones (CEZs), enclosed by Temporary Protective Fencing, as detailed below and to be agreed with the Local Planning Authority (LPA), shall:

- 1 be protected throughout the development process, as specified in the 'Temporary Protective Fencing Construction' section below and detailed in BS5837:2005 Fig 2 (overleaf) and, if applicable, as defined by area on the Tree Protection Plan (TPP);
- 2 be erected prior to any construction, demolition or excavation works and remain in place for the duration of the project;
- 3 preclude any delivery of site accommodation and/or materials and/or plant machinery;
- 4 preclude all construction related activity, with the sole exception of specified arboricultural works and any other works to be carried out under supervision that have been agreed by all parties; and
- 5 preclude the storage of all development related materials and substances including fuels, oils, additives, cement and/or any other deleterious substance

Any incursion into CEZs must be by prior arrangement, following consultation with the LPA

Temporary Protective Fencing Construction

1. Temporary protective fencing panels shall be of at least 2.1 metres in height and, in agreement with the LPA, be either weldmesh "Heras" panels or 18mm thick exterior grade plywood boards.
2. The panels shall butt together and be securely fixed to a scaffold framework, as per 3 to 5 below
3. The scaffold framework shall comprise of upright poles of at least 3.0 metres in length driven no less than 0.6 metres into the ground at maximum 3.0 metre centres with horizontal and diagonal poles fixed to the uprights, as per 4 to 5 below
4. The two horizontal rail poles shall be attached to the uprights at heights of 0.6 and 1.8 metres with 3 no. clamps to each joint
5. The diagonal scaffold pole struts be clamped to the top rail of the scaffold framework at a 45° angle and extend back into the CEZ and clamped to a 0.7 metre length of scaffold tube that shall be driven no less than 0.5m into the ground
6. No fixing shall be made to any tree and all possible precautions shall be taken to prevent damage to tree roots when locating posts
7. A 600mm x 300mm warning sign reading "TREE PROTECTION AREA KEEP OUT" (Fig 1) shall be fixed to every 10.0 metre length of protective fencing
8. On completion and prior to any demolition or construction works, site preparation, excavation or delivery of plant and materials, the Consulting Arborist shall inspect the Temporary Protective Fencing.

Temporary Ground Protection

1. Any necessary Temporary Ground Protection shall conform to Figure 3 of BS5837:2005 (see overleaf)
2. The Ground Protection Area shall be left undisturbed and covered by a semi-permeable geotextile membrane which shall, in turn, be covered by a compressible layer consisting of a material such as woodchip
3. Side-butting scaffold boards shall then be fitted to cover the Ground Protection Area.
4. Prior to any demolition or construction works, site preparation, excavation or delivery of plant and materials, the Arboricultural Consultant shall inspect the Temporary Ground Protection
5. The Temporary Ground Protection shall remain in place until completion of the project and only removed following receipt of written permission from the LPA

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**– CONSTRUCTION EXCLUSION ZONE –
KEEP OUT!**

(TOWN & COUNTRY PLANNING ACT 1990)
THE TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY
PLANNING CONDITIONS AND/OR SUBJECTS OF A 'TREE
PRESERVATION ORDER', THE CONTRAVENTION OF WHICH MAY
LEAD TO CRIMINAL PROSECUTION

THE FOLLOWING MUST BE OBSERVED BY ALL PERSONNEL:

- THE PROTECTIVE FENCING MUST NOT BE MOVED
- NO PERSON SHALL ENTER THE CONSTRUCTION EXCLUSION ZONE
- NO MACHINE, PLANT OR VEHICLES SHALL ENTER THE EXCLUSION ZONE
- NO MATERIALS SHALL BE STORED IN THE EXCLUSION ZONE
- NO SPOIL SHALL BE DEPOSITED IN THE EXCLUSION ZONE
- NO EXCAVATION SHALL OCCUR IN THE EXCLUSION ZONE
- NO FIRES SHALL BE LIT IN THE EXCLUSION ZONE

ANY INCURSION INTO THE EXCLUSION ZONE MUST BE WITH THE
WRITTEN PERMISSION OF THE LOCAL PLANNING AUTHORITY

Fig 1: CEZ Warning Sign

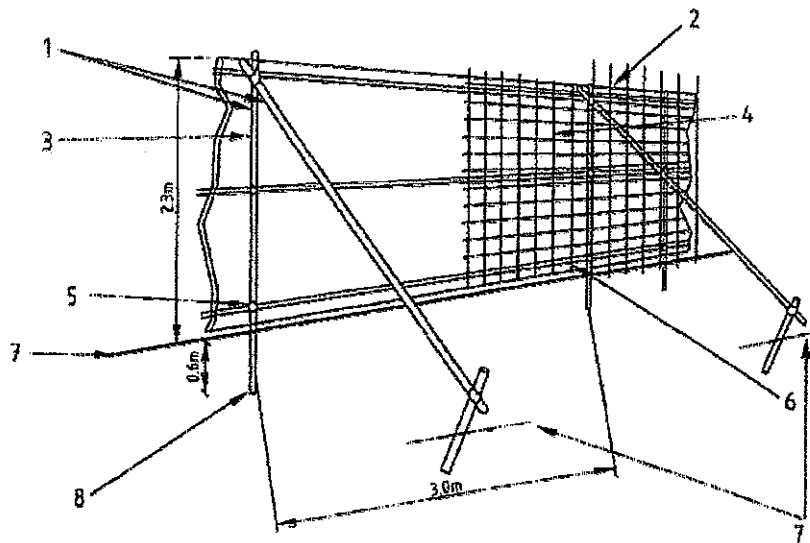


Fig 2: BS5837:2005 Temporary Protective Fencing – Recommended Construction

- 1 Scaffold poles
- 2 Uprights driven into ground at a maximum 3.0m spacing with cross members and brace as appropriate
- 3 Wooden panels secured with wire ties or scaffold clamps where necessary
- 4 Weldmesh 'Heras' type clamped to uprights and horizontals
- 5 Scaffold clamps
- 6 Wire twisted and secured to inside face of fencing
- 7 Ground level
- 8 Scaffold poles driven approximately 0.6m into the ground

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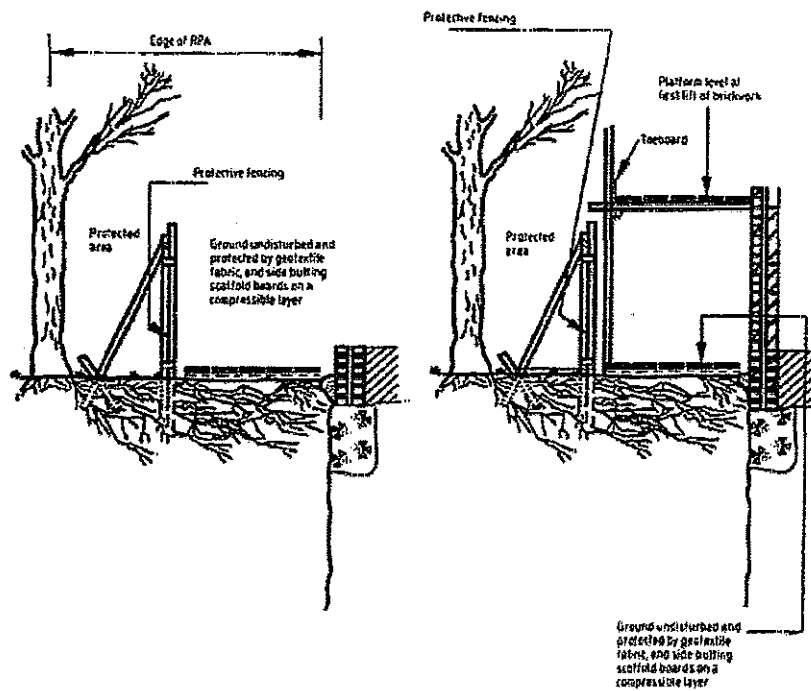


Fig 3: BS5837:2005 Temporary Ground Protection



**PHASE 1 PRELIMINARY
RISK ASSESSMENT**

**LOW MOOR,
CLITHEROE**

320469-R01(00)

BOWSALL LTD

FEBRUARY 2011

**Safeguarding
your business
environment**

CONFIDENTIAL



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PHASE 1 PRELIMINARY RISK ASSESSMENT

LOW MOOR, CLITHEROE

REPORT NO: 320469-R01(00)

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1. INTRODUCTION

RSK STATS Geoconsult Limited (RSK) was requested by Bowsall Ltd to undertake a Phase 1 Preliminary Risk Assessment at a site located off Chapel Road, Low Moor in Clitheroe, Lancashire. The site is proposed for redevelopment with low-rise residential housing units.

1.1 Objective

The objective of this assessment is to identify key issues that could affect the proposed future development at the site for residential end-use in addition to supporting any future planning application.

1.2 Scope of Works

To meet the above objective the scope of works included the following:

- Obtain and review an environmental database and historical maps;
- Undertake a site walkover to view current site condition and identify potential access constraints;
- Review geological and hydrogeological information to determine likely ground conditions; and,
- Identify potential sources of contamination, receptors that could be impacted and plausible pathways connecting the two;

2. SITE DETAILS

Details of the site location, description and proposed future development are discussed below.

2.1 Site Location

The site is located off Chapel Close in the Low Moor area of Clitheroe, Lancashire in a mixed agricultural and residential area. The site is approximately 1.5km to the west of Clitheroe Town Centre and can be located by National Grid reference 373020, 441970. A site location plan is presented as Figure 1.

2.1.1 Site Description

The site is approximately 1.8ha in area and currently comprises undeveloped rural land. A public access path, linking into Chapel Close to the southwest, passes through the site from south to north in the west section of the site connecting the adjacent land parcels to the north. Relative to the public access path, the site comprises two land parcels; a larger land parcel located to the east of the path and a smaller land parcel situated to the west.

At the time of the assessment, the site is unoccupied except for a static caravan belonging to the landowner situated on the larger land parcel. The remainder of this land parcel was predominantly open grassland with small area of exposed subsoil in its central portion. Similarly, the smaller land parcel also comprised overgrown vegetative cover.

Low-rise residential housing was located south and west of the site with the River Ribble, approximately 150m further on to the west. Allotment gardens were noted present to the northwest and further agricultural land was situated adjacent to the north and east of the site.

The site is at an elevation of approximately 60m above ordnance datum (AOD) and is generally flat for the most part with a sharp incline dropping from east to west in the site's western parcel. The surrounding topography slopes to the west towards the River Ribble. A site plan is presented as Figure 2 and there are site photographs presented within Appendix C.

2.1.2 Future Development

RSK understands that the site is to be redeveloped with 60 low-rise residential housing units.

2.2 Preliminary Risk Assessment

The following section describes the findings from the site walkover inspection and a review of the information presented within the Groundsure Report (Report Ref: EMS-117537_154476) ⁽¹⁾ a copy of which is presented in Appendix B. The information has been used to identify potential contaminant sources and sensitive receptors, from which an outline conceptual model has been developed for the site.

2.2.1 Geology

Geological maps for the area presented within the Groundsure Report ⁽¹⁾ indicate the geology of the site to be characterised by superficial deposits of glacial till, described as diamicton. The solid geology beneath the site comprises Permo Triassic sandstone and mudstone. Information within the Groundsure Report indicates that there are no records of Made Ground on site.

The geological information recorded in the Groundsure Report ⁽¹⁾ identifies that the site is within 500m of a fault, which is located 381m northeast of the site.

The National Radiological Protection Board information contained within the Groundsure Report ⁽¹⁾ indicates that the site is located in a Radon Affected Area, as between 1 and 3% of properties are above the Action Level. However, it is reported that no radon measures are considered necessary for the site in accordance with the Building Research Establishment publication BRE211.

The Groundsure Report ⁽¹⁾ identifies no historical surface ground workings are within 250m of the site and no current or underground workings are identified within 1000m of the site. Coal mining is also not identified within 1000m of the site boundary, although non-coal mining activities are identified within 1000m of the site. This is recorded as a vein mineral mine 14m south east of the site and is likely to be a small scale mine and restricted in extent.

In addition, risks from natural ground subsidence on site are reported to be low. The risks from landslides are also reported as negligible and there is no data for the risk from ground dissolution at the site.

Examination of compressible deposits in the area has revealed the risk to the site to be negligible. Examination of running sands on site has also revealed risks to be very low.

The Groundsure report ⁽¹⁾ provides estimates regarding background soil chemistry on site as follows: Arsenic <15mg/kg, Cadmium <1.8mg/kg, Chromium 60-90 mg/kg, Nickel 15-30mg/kg and Lead <150mg/kg.

2.2.2 Hydrogeology

The Environment Agency ⁽²⁾ website shows the geology beneath the site to be classified as a Secondary A Aquifer, associated with the Permo Triassic rocks. Secondary A Aquifers are defined as permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers. The Groundsure Report ⁽¹⁾ classifies the site to be overlying a minor aquifer in relation to the former classification system.

2.2.3 Groundwater Abstractions

The Environment Agency has defined source protection zones (SPZ) for nearly 2,000 groundwater sources used for public drinking water supply. The SPZ provides an indication of the potential sensitivity of the aquifer to pollution. Three zones (Inner, Outer and Total Catchment) are usually defined.

There are no SPZs within 500m of the site.

No groundwater abstractions are reported within a 1000m radius of the site.

2.2.4 Soil Leaching Potential

The soils beneath the site are classified as having low leaching potential.

2.2.5 Hydrology

Information within the Groundsure Report ⁽¹⁾ identifies a number of surface water features within 50m of the site. These are all unnamed with the closest being a drain that is located in the southern corner of the site, a tributary is also located ~20m north of the site that feeds into the River Ribble. Historical mapping (reviewed within later sections of this report) indicate this to be a section of a former 'mill race' associated with an old Cotton Works that was historically located close by. The nearest named surface water feature is the River Ribble, ~94m west of the site.

2.2.6 Surface Water Abstractions

No surface water abstractions were identified within a 1000m radius of the site.

2.2.7 Flooding

Information contained within the Groundsure Report ⁽¹⁾ records the site to be located within 1.0m of a Zone 2 Floodplain. This estimates the annual probability of flooding as 0.1% or greater from rivers and the sea, less than 1% from rivers and 0.5% from the sea. The area is recorded as benefiting from a number of flood defences within 250m of the site.

2.2.8 Sensitive Land Uses

The site is reported to be situated in a Nitrate Vulnerable Zone. There are no more records of environmentally sensitive sites within a 500m radius of the site.

2.3 Landfills, Waste and Licenses

2.3.1 Active Landfill Sites

The Groundsure Report ⁽¹⁾ records no active landfill sites within 1km of the site

2.3.2 Historical and Non-Operational Landfills

The Groundsure Report ⁽¹⁾ shows an historic landfill is present on site. This encroaches onto the western portion of the site and is recorded at the address: Ashworth's farm, Low Moor, Clitheroe. Details of the waste accepted and period of operation are not presented within the report

2.4 Site History Review

A review of the site history has been carried out through the study of Ordnance Survey maps dating from the late 1800s and information contained within the Groundsure Report ⁽¹⁾. The review is designed to identify potential historic sources of contamination that may have affected soil or groundwater quality beneath the site and to identify any potentially contaminative land uses in the area that may have affected the site

2.4.1 Historic Maps

A review of the historical maps was undertaken for the site from between 1884 and 2010. In 1884, the site is undeveloped and remains so, with the exception of the track that passes through the site, until the map of 1912 that shows the site to be used as a cricket ground. The map of 1932 then shows the western portion of the site to have been used as allotment gardens and the eastern part is no longer used as a cricket ground. The site then remains undeveloped until present

The surrounding land use is summarised below for every year a map is available:

- 1884 (1:2500 scale map) – The Low Moor Factory (cotton) is located roughly 50m southwest of the site. A 'mill race' water channel (flowing from north to south) runs adjacent to the site's western boundary before entering the Low Moor Factory site in its northern area; the footpath that now runs through the site runs parallel to this. Several weirs, footbridges and sluices are marked along the 'mill race' and a narrow channel appearing to connect the 'mill race' to the River Ribble (which is roughly 90m further west of the site) is indicated. Two cylindrical features marked as 'gasometers' are marked roughly 50m southwest of the site adjacent to the north of Low Moor Factory (cotton) and in-between the mill race and River Ribble.

Residential properties, a school, post office and church occupy the area south of the site approximately 60m from the southern site boundary. The areas to the east and north of the site are undeveloped.

- 1886 (1:2500 scale map) - Little significant change observed

- 1908 (1:2500 scale map) - Little significant change observed
- 1910 (1:10560 scale map) - A pavilion associated with the on-site cricket ground is located roughly 20m northwest of the site. No other significant change is observed in the surrounding area
- 1911 (1:10560 scale map) - No significant change observed
- 1912 (1:2500 scale map) - No significant change observed
- 1930 (1:10560 scale map) - The allotment gardens situated on site in the west are noted to extend off-site to the north. Additional allotment gardens are now also present roughly 175m south of the site. Approximately 40m southwest of the site, a sloped feature is now present. The pavilion structure is no longer marked.
- 1932 (1:2500 scale map) - No significant change observed
- 1938 (1:10560 scale map) - No significant change observed
- 1950 (1:10560 scale map) - No significant change observed
- 1964 (1:2500 scale map) - The Low Moor Mill is now marked as a 'depot' and the residential estate south of the site has extended to the southeast. A land drain is marked adjacent to the site's south eastern boundary with a recreation ground also now present 100m from the site in the same direction
- 1971 (1:10560 scale map) - The depot is no longer present to the southeast of the site. No other significant change is observed
- 1976 (1:2500 scale map) - The 'mill race' is no longer marked adjacent to the west and southwest of the site. No other significant change is observed
- 1980 – 1983 (1:2500 scale map) – Residential development of the area to west and southwest between the site and the River Ribble has now occurred
- 1995 (1:2500 scale map) – No significant change observed
- 2002 (1:10000 scale map) – The former 'mill race' is now indicated as a drain where it is still present to the northwest of the site. Little other significant change is observable
- 2010 (1:10000 & 1:2500 scale maps) - Little significant change observed

2.4.2 Database and Regulatory Information

The Groundsure Report ⁽¹⁾ identifies no Regulated Industrial Activities within 500m of the site. However, the report identifies a pollution incident recorded by the regulatory authorities located 100m west of the site, this occurred on 15 July 2003. The pollutant was described as contaminated water and was classed as a category 3 (minor) impact to water.

There are 5 discharge consents within 500m of the site, the nearest recorded ~200m west of the site at Riverside Sps, Low Moor, Clitheroe which discharges into the River Ribble. The effluent type is recorded as 'miscellaneous discharges'. The second nearest is located ~220m south west of the site at Low Moor Ps, Adj Roundabout, Ribble Valley which discharges into the S w System. The effluent type is recorded as sewer storm overflow. The remainder of discharges are greater than 250m from the site.

There are no sites determined as contaminated land under Part IIA of the Environmental Protection Act (1990) within 500m of the site.

2.4.3 Summary of Historic Potentially Contaminative Land Uses

A review of the site history indicates the following potentially contaminative land uses associated with the site.

- Historical on-site landfill;

The following historical potentially contaminative land uses have been identified in the area surrounding the site;

- Operations associated with Low Moor Works (cotton)/Depot roughly 60m to the southwest. This includes two gas holders and chimneys identified; and,
- Potential infilling of the 'mill race' with contaminated materials;

2.5 Site Walkover

A site inspection was carried out on 05 January 2011 by a RSK Engineer. The findings are summarised below and are supported by a photograph account presented in Appendix C.

At the time of the walkover, the site comprised occupied, undeveloped rural land. Access to the site was gained from the south via a 'dirt track' that runs into Chapel Close. The 'dirt track' passes through the site, entering from the southwest and exiting through the northwest boundary, with the two distinct land parcels that comprise the site located adjacent to the east and west. The land parcels are considered separately below:

Land Parcel to the West

The smaller of the two land parcels (located to the west) consisted mainly of overgrown grass, vegetation and occasional small shrubs. The boundary extent was defined to the north, east and south by a mixed wire and wooden fence, roughly one metre-high. To the west, a steep embankment was present (estimated as roughly 1:2 gradient) and the boundary line believed to be located just beyond the base of this. Discussions with the landowner confirmed the historical map information, that the area had historically been used (under license) for landfilling operations. In addition, the landowner indicated that the material emplaced typically comprised 'inert, demolition-type material'. No visible signs of vegetation 'stress' or contamination was noted during the walkover.

In the north area of the land parcel, a drainage ditch was present flowing east to west. The drainage ditch was noted to flow into an 'unnamed' surface channel (believed to be a section of the historical 'mill race') located adjacent to the site's west boundary. The landowner indicated he had constructed the drainage ditch within the 'last few years' to receive land drainage water from the larger land parcel to the east. No visual and/or olfactory evidence of contamination was noted on the drainage water when inspected.

The land-uses noted in the areas surrounding the land parcel included an allotment and livestock area adjacent to the north, residential properties roughly 20m to the south and thick overgrowth to the west. To the east, the larger land parcel was located.

Japanese Knotweed was not identified within the land parcel during the site visit.

Land Parcel to the East

The larger land parcel was accessed through a wooden gate (roughly 1.5m high and 3m wide) via the adjacent 'dirt track'. A temporary vehicular access path/turning area (comprising a granular hardcore cover) extended into the site beyond the fence, occupying an area roughly 50m² in size. Adjacent to the north of the access path/turning area, a static caravan was present and, at the time of the walkover, was occupied by the landowner. The landowner indicated that the caravan was 'plumbed' into a water main running parallel to the land parcel's western boundary and roughly 1m inside the fence line. In addition, the landowner also indicated that a septic tank was buried adjacent to the north of the caravan. The Landowner stated that 'he knew of no other buried services' (electricity, gas etc) to be present beneath the site.

The land parcel predominantly consisted of grass cover. The grass was noted to be overgrown in the far south and maintained across the remainder of the site. A mixed wire and wooden fence roughly one metre-high separated the grassed areas. In addition, anecdotal evidence (disclosed by the landowner) indicated that the area in the southwest corner of the land parcel and extending onto the adjacent land had previously contained a slurry pit that had historically been 'dug out' and backfilled with 'inert demolition-type material'. Inspection of the area did not indicate any obvious signs of contamination or visible signs of vegetation stress. At the time of the walkover, two stockpiles of topsoil material occupied the central part of the site with an area of exposed clay observed to underlie the section where the topsoil had been 'stripped back'. The clay was interpreted to be natural in-situ glacial till.

The land parcel's southern boundary comprised a 2m-high wooden fence with residential properties beyond. The eastern and northern boundaries were formed by a mixture of hedgerows and several mature trees. In the northeast corner, a drainage ditch was noted in the adjacent field along the east boundary and a flooded area in the field adjacent to the site's northern boundary. The western boundary of the land parcel was also noted to comprise hedgerows with an area of overgrowth noted to extend into the land parcel in the central section of the boundary.

Japanese Knotweed was not identified within the land parcel during the site visit.

3. INITIAL CONCEPTUAL MODEL

The information obtained from the previous sections has been used to compile an Initial Conceptual Model for the site considering the potential contaminant sources, pathways and receptors.

3.1.1 Potential historic on-site sources

The review of desk study data and observations made during the site walkover identified the following potential sources of contamination:

3.1.2 Potential current on-site sources

- Landfill area in the west section of the site;
- Former slurry pit in southwest section of the site indicated to have been infilled with demolition-type material; and,
- Buried septic tank.

3.1.3 Potential off-site sources

- Former Cotton works/depot located 60m southwest of the site;
- Gasholders and chimneys located 60m southwest of the site;
- Made Ground materials used to infill the former 'mill race' water channel

3.1.4 Sensitive Receptors

The sensitive receptors associated with the site are listed below:

- Construction workers during redevelopment works;
- Future site users;
- Neighbouring residents and adjacent properties;
- Underlying groundwater in the Secondary A aquifer;
- On site drainage ditch;
- Off-site surface water features including River Ribble located roughly 95m to the west, two drainage ditches located adjacent to the northeast and southeast of the site and an unnamed drain (believed to be part of the former 'mill race') approximately 20m to the north ; and,

- Building infrastructure associated with future residential properties

3.1.5 Summary of Plausible Pathways

The potential plausible pathways associated with the site are listed below:

- Direct contact with contaminated soil including dermal contact, soil ingestion and inhalation of dust;
- Migration of potential ground gas/ VOC to indoor areas and/ or confined spaces with subsequent risk of inhalation/ asphyxiation/ explosion;
- Site surface run-off and/ or infiltration;
- Vertical and lateral groundwater migration;
- Permeation of plastic water supply pipelines; and
- Potential risk to buildings via direct contact with aggressive soils and groundwater

3.1.6 Potentially Complete Pollutant Linkages

The initial conceptual model has identified the following potentially complete pollutant linkages:

1. Ingestion, inhalation of dust and dermal contact with Made Ground/contaminated materials by site users (e.g. construction workers, future site users/residents);
2. Build up of migrating ground gas and/or soil vapours from on-site landfills and subsequent inhalation by site users or explosion risk;
3. Off-site migration of ground gas and/or soil vapours from on-site landfills resulting in subsequent inhalation by adjacent site users and/or explosion risks in adjacent properties;
4. Leaching of contamination from shallow soils and/or landfill material followed by vertical and lateral migration to the underlying Secondary B aquifer and/or the identified nearby surface water receptors;
5. Surface run-off of potential contaminants to surface water receptors;
6. Contact of foundations with soils and groundwater containing contaminants deleterious to concrete; and
7. Permeation of plastic utility service pipes

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PHASE 1 - PRELIMINARY RISK ASSESSMENT



Potential Source	Pollutants	Potential Receptor	Possible Pathway	Likelihood	Severity	Risk Class and Justification
Contamination associated with historical and current site uses (landfills, slurry pit & septic tank)	Material impacted by inorganic and organic pollutants	Future on site users	Direct contact including ingestion, dermal contact and/or inhalation of dust	Unlikely	Medium	Low – Majority of site to be covered with hard cover (i.e. roadways, buildings etc...) as part of proposed development. Any landscaped/grassed areas to comprise chemically suitable material. Extent and location of potential contamination to be determined prior to proposed development (e.g. chemical testing as part of a site investigation)
		Neighbouring residents/site users		Unlikely	Medium	Low – Adjacent residents unlikely to come into contact with soils other than via dust generation during development construction works. Potential risks to these receptors can be managed during the construction phase.
		Construction workers		Likely	Minor	Low⁽¹⁾ – See note below
		Groundwater in Secondary A Aquifer	Leaching and vertical migration	Low likelihood	Medium	Moderate/Low – Anecdotal evidence indicates material emplaced within the on-site landfills comprised demolition-type rubble; material that would typically contain low concentrations of contaminants. Details relating to the construction of the landfill are unknown (e.g. presence or otherwise of a liner, liner material specification etc). However, geological maps for the area indicate that superficial deposits of glacial till underlie the site. This material is likely to inhibit the migration of contaminants if the landfills are contained within the glacial till and providing extensive and interconnected sand lenses are absent. The presence of the glacial till material was confirmed during the site walkover in areas of the site where topsoil had been excavated thus exposing the underlying clay material.
		River Ribble	Leaching and lateral groundwater migration	Unlikely	Medium	Low – Although the surrounding topography slopes towards the River Ribble, the river is located ~95m to the west of the site with geological mapping indicating extensive deposits of glacial till present in-between. The glacial till deposits are likely to comprise predominantly low permeability material (i.e. low-k clays) that can be expected to impede contaminant migration in groundwater. However, there potential exists for extensive horizons of more permeable material (i.e. interconnected sand lenses) to be present within the glacial till deposits acting as a preferential pathway to the receptor. Ground investigation may confirm.
		On site drainage ditch and unnamed surface water features adjacent to northeast, northwest and southeast	Leaching and lateral groundwater migration	Likely	Mild	Moderate/Low – Several unnamed surface water features are located adjacent to the site in addition to the on-site drainage ditch. If any issues relating to contamination are present on site then there is potential for these surface water receptors to be impacted, in particular the on-site drainage ditch and the unnamed water channel to the northwest.
			Surface run-off of contaminants	Likely	Mild	

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Off site sources: Former Cotton Works/Depot, Gas Holders & chimneys ~60m southwest of the site/potential made ground materials used to infill 'mill race'	Ground Gases and VOCs	Potable water supply	Permeation of plastic pipes	Unlikely	Medium	Moderate/Low – potential organic contamination associated with former site uses may potentially impact water supply. This is more likely to occur in the areas of the site where the made ground deposits are most extensive (i.e. former landfill areas)
		Building infrastructure	Building attack	Likely	Mild	Moderate/Low – Several of the proposed housing units are in the areas of site where landfills located. Testing is recommended to confirm 'chemical aggressiveness' of ground in these areas.
	Ground Gases and VOCs	Construction Workers	Migration of ground gas/vapour from former on site landfills along permeable strata and/or service trenches to surface or buildings Vapour Inhalation arising from volatile organic compounds	Unlikely	Severe	Moderate/Low – Potential health effects associated with inhalation of harmful vapours or gases (e.g. asphyxiation resulting in death). Risks can be mitigated by use of PPE and specialist training should confined space entry be required.
		Future on site users		Low likelihood	Severe	Moderate – Asphyxiation or explosion from flammable gases. RSK has received a draft version of the planning layout for the residential units and several properties are proposed within areas of the site where the former landfills are located. Although anecdotal evidence suggests that non-putrescible materials have been employed within the landfills, it is recommended that confirmatory site investigation and monitoring is undertaken. This will allow assessment of the ground conditions, characterisation of the underlying ground gas regime and indicate the level (if any) of gas protection measures required within the properties. In addition, neighbouring properties and residents located adjacent to the south and southwest of the site may be at risk.
		Future on site property				
		Neighbouring Residents				
		Off-site property				
Off site sources: Former Cotton Works/Depot, Gas Holders & chimneys ~60m southwest of the site/potential made ground materials used to infill 'mill race'	Ground Gases and VOCs	Construction workers		Low likelihood	Minor	Very low – Migration of gases and vapours associated with off-site historic sources (namely the gas holders ~60m to the southwest). Potential risks can be mitigated by use of correct PPE.
		Future on site users	Migration and inhalation of vapours	Low likelihood	Medium	Moderate/Low – Potential for off-site gases/vapours associated with former gas holders to migrate onto site. However, the presence of a significant thickness of low permeability material (i.e. glacial till) is likely to impede any lateral migration. Ground gases associated with the former landfill which extends off site beneath adjacent properties. It is not known if remedial measures were carried out during construction of these properties to address the source. Ground gas investigation required.
	Inorganic and organic pollutants	Potable water supply	Permeation of plastic pipes via shallow groundwater migration	Unlikely	Medium	Low Potential exists for shallow groundwater in off site landfilled areas, which may be contaminated and which may migrate in towards the landfilled part of the site. Ground investigation required.
		On site drainage ditch	Lateral migration of groundwater/surface run-off of contaminants	Unlikely	Mild	Very Low – On site drainage ditch located topographically and hydraulically up-gradient of historical sources of contamination.
		Building infrastructure	Attack	Unlikely	Mild	Very Low – As above

(1) The risk classification regarding exposure to site construction workers was made with the understanding that appropriate levels of hygiene are maintained and personal protective equipment is worn at all times.

3.1.7 Preliminary Risk Assessment Conclusions and Recommendations

The review of available information and development of the initial conceptual model has highlighted several potentially complete pollutant linkages with a risk classification of Moderate/Low or higher. These are:

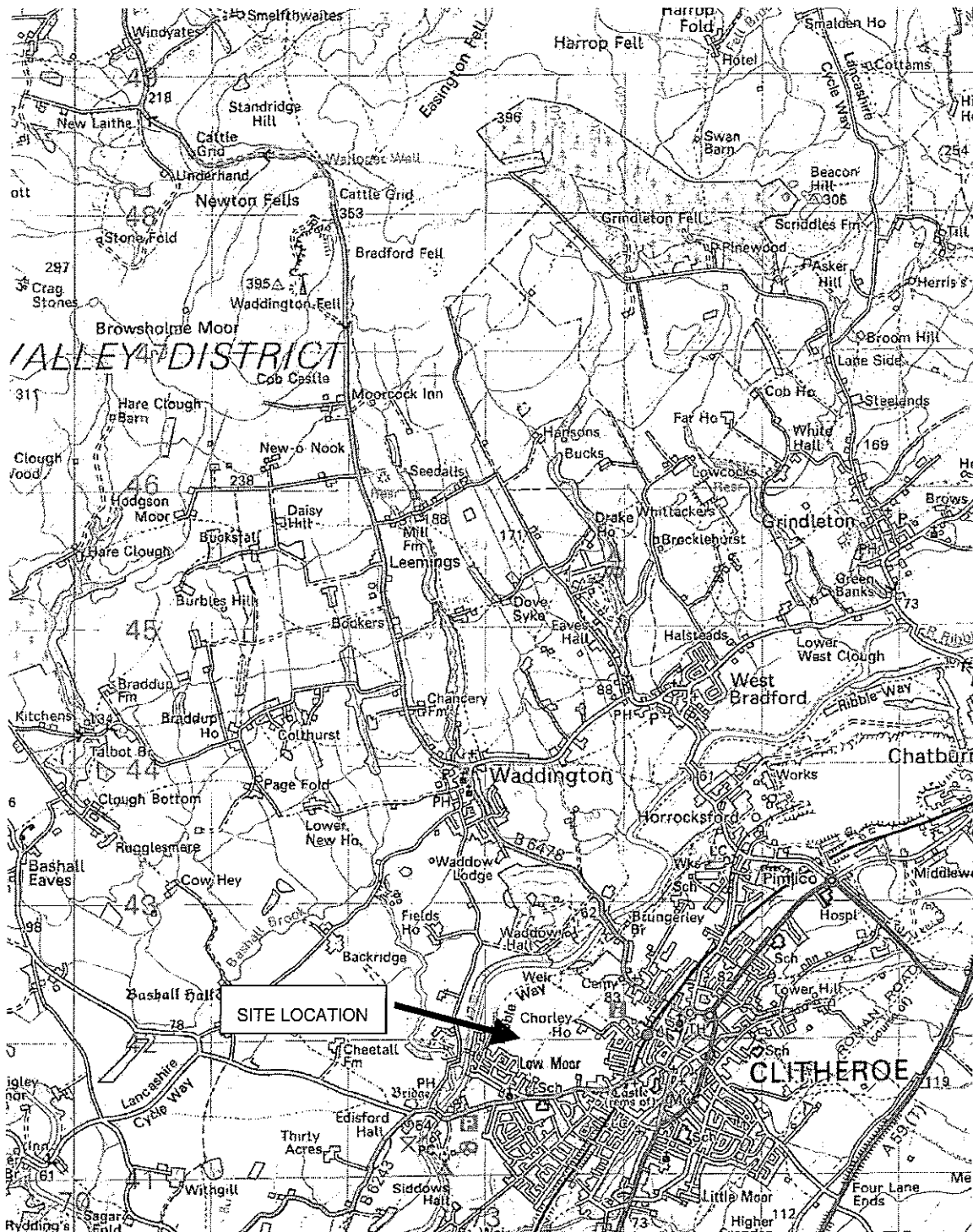
- Leaching and vertical migration of potential contaminants from materials within the former landfill parts of the site to groundwater in the underlying Permo Triassic Secondary A Aquifer;
- Leaching and lateral migration and/or surface run-off of potential contaminants to on-site drainage ditch and adjacent unnamed surface water receptors;
- Permeation of plastic utility pipes by potential contaminants in materials underlying the site resulting in degradation of potable water supply quality;
- Migration of ground gases/vapours from former on site landfills along permeable strata and/or service trenches to surface or future buildings;
- Building foundation attack by potential contaminants on properties proposed in former landfill areas;
- Risks associated with ground gases to new build and adjacent properties arising from landfilled material in western part of site, from landfill present beyond the site's boundaries;
- Inhalation of ground gases/vapours (associated with historical site uses) by construction workers, future site users and neighbouring residents; and,
- Vapour inhalation of ground gases/vapours from historical off-site sources (landfill extending to north and south of western part of site by future site users

In order to investigate these linkages further, an intrusive investigation is recommended at the site to ascertain soil, groundwater and ground gas conditions beneath the site

4. REFERENCES

1. Groundsure Report, Ref: EMS-117537_154476, dated December 20 2010
2. www.environment-agency.gov.uk

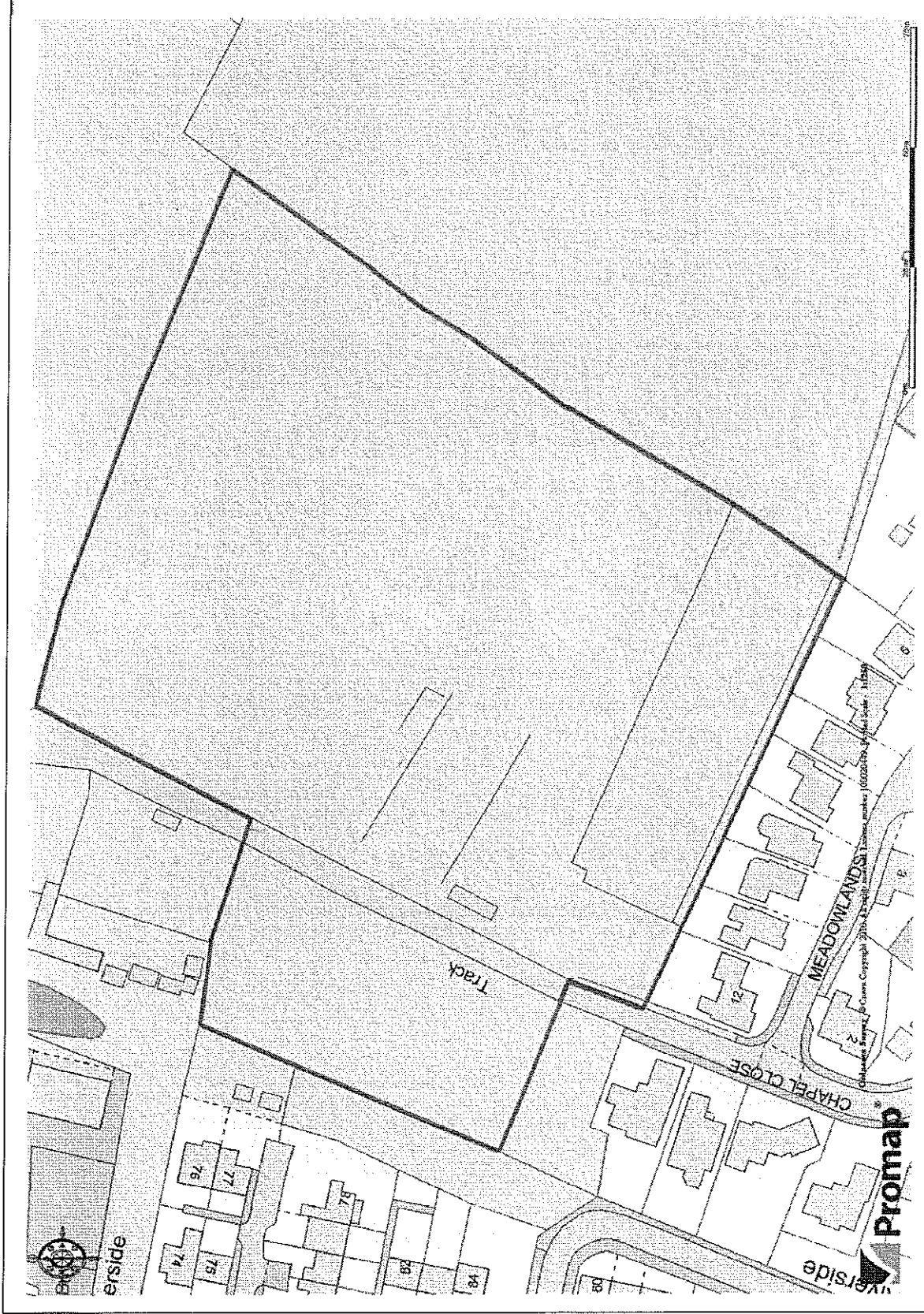
FIGURES



Reproduced from the 1991 Ordnance Survey 1:50 000 Scale Landranger Map 103 SGR – SD 724 423
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RSK STATS Group Limited 18 Frogmore Road, Hemel Hempstead Hertfordshire HP3 9RT

SITE LOCATION MAP

LEGEND:



Rev.	Date	First Issue	Amc	KH	RI
A	04.01.11				

Amendment	Drawn	Check	Appd.

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Client

BOWSALL LTD

Project Title

LOW MOOR,
CLITHEROE

Drawing Title

SITE FEATURES PLAN

Drawn	Date	Checked	Date	Approved	Date
AMC	04.01.11	LC	04.01.11	GS	04.01.11
Scale	Orig Size	Dimensions			
NTS	A3	-			

Project No.	Drawing File
320469-R01(00)	320469-R01(00)D002A.dwg

Drawing No.	Rev.
FIGURE 2	A

APPENDIX A

Service Constraints

RSK STATS GEOCONSULT LIMITED

SERVICE CONSTRAINTS

- 1 This report and the site investigation carried out in connection with the report (together the Services) were compiled and carried out by RSK STATS Geoconsult Limited (RSK) for Bowsall Limited. (the 'client') in accordance with the terms of a contract between RSK and the client. The Services were performed by RSK with the skill and care ordinarily exercised by a reasonable environmental consultant at the time the Services were performed. Further, and in particular the Services were performed by RSK taking into account the limits of the scope of works required by the client the time scale involved and the resources including financial and manpower resources agreed between RSK and the client.
- 2 Other than that expressly contained in paragraph 1 above RSK provides no other representation or warranty whether express or implied in relation to the Services.
- 3 Unless otherwise agreed the Services were performed by RSK exclusively for the purposes of the client. RSK is not aware of any interest of or reliance by any party other than the client in or on the services. Unless expressly provided in writing RSK does not authorise, consent or condone any party other than the client relying upon the Services. Should this report or any part of this report, or otherwise details of the Services or any part of the Services be made known to any such party and such party relies thereon that party does so wholly at its own and sole risk and RSK disclaims any liability to such parties. Any such party would be well advised to seek independent advice from a competent environmental consultant and/or lawyer.
- 4 It is RSK's understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used or the proposed use of the site change this report may no longer be valid and any further use of or reliance upon the report in those circumstances by the client without RSK's review and advice shall be at the client's sole and own risk. Should RSK be requested to review the report after the date hereof RSK shall be entitled to additional payment at the then existing rates or such other terms as agreed between RSK and the client.
- 5 The passage of time may result in changes in site conditions regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of RSK. In the absence of such written advice of RSK reliance on the report in the future shall be at the client's own and sole risk. Should RSK be requested to review the report in the future RSK shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between RSK and the client.
- 6 The observations and conclusions described in this report are based solely upon the Services which were provided pursuant to the agreement between the client and RSK. RSK has not performed any observations investigations studies or testing not specifically set out or required by the content between the client and RSK. RSK is not liable for the existence of any condition the discovery of which would require performance of services not otherwise contained in the Services. For the avoidance of doubt unless otherwise expressly referred to in the introduction to this report RSK did not seek to evaluate the presence on or off the site of asbestos electromagnetic fields lead paint, heavy metals radon gas or other radioactive or hazardous materials.
- 7 The Services are based upon RSK's observations of existing physical conditions at the Site gained from a walkover survey of the site together with RSK's interpretation of information including documentation obtained from third parties and from the client on the history and usage of the site. The Services are also based on information and/or analysis provided by independent testing and information services or laboratories upon which RSK was reasonably entitled to rely. The Services clearly are limited by the accuracy of the information including documentation reviewed by RSK and the observations possible at the time of the walkover survey. Further RSK was not authorised and did not attempt to independently verify the accuracy or completeness of information documentation or materials received from the client or third parties, including laboratories and information services during the performance of the Services. RSK is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to RSK and including the doing of any independent investigation of the information provided to RSK save as otherwise provided in the terms of the contract between the client and RSK.
- 8 The phase II or intrusive environmental site investigation aspects of the Services is a limited sampling of the site at pre-determined borehole and soil vapour locations based on the operational configuration of the site. The conclusions given in this report are based on information gathered at the specific test locations and can only be extrapolated to an undefined limited area around those locations. The extent of the limited area depends on the soil and groundwater conditions together with the position of any current structures and underground facilities and natural and other activities on site. In addition chemical analysis was carried out for a limited number of parameters [as stipulated in the contract between the client and RSK] [based on an understanding of the available operational and historical information] and it should not be inferred that other chemical species are not present.
- 9 Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan but is (are) used to present the general relative locations of features on and surrounding the site.

APPENDIX B

GroundSure Report

APPENDIX C

Photographic Account of Site Walkover

RSK**GROUP PLC****PHOTOGRAPHIC LOG**

Client Name: Bowsall Ltd		Site Location: Low Moor, Clitheroe	Preliminary Environmental Assessment
Photo No 1	Date: 05.01.11		
Direction Photo Taken: NW			
Description: View looking northwest at smaller land parcel in west section of the site Public access path is present to the east			

Photo No. 2	Date: 05 01.11	
Direction Photo Taken: N		
Description: Steep embankment in west section of smaller land parcel		

RSK**GROUP PLC****PHOTOGRAPHIC LOG**

Client Name: Bowsall Ltd		Site Location: Low Moor, Clitheroe	Preliminary Environmental Assessment
Photo No. 3	Date: 05.01.11		
Direction Photo Taken: W			
Description: Drainage ditch in west land parcel			

Photo No. 4	Date: 05.01.11	
Direction Photo Taken: E		
Description: Access gate into the larger land parcel located to the east		

Client Name:

Bowsall Ltd

Site Location:

Low Moor, Clitheroe

**Preliminary
Environmental
Assessment**

Photo No

5

Date:

05.01.11

**Direction Photo
Taken:**

N

Description:

View looking north from
the southwest corner of
the larger land parcel



Photo No.

6

Date:

05.01.11

**Direction Photo
Taken:**

NW

Description:

Topsoil stockpile and
area of exposed clay in
central region of larger
land parcel



RSK**GROUP PLC****PHOTOGRAPHIC LOG****Client Name:**

Bowsall Ltd

Site Location:

Low Moor, Clitheroe

**Preliminary
Environmental
Assessment****Photo No.****7****Date:**

05.01.11

Direction Photo**Taken:**

SW

Description:

General view overlooking
site from the northeast
corner of the larger land
parcel

**Photo No.****8****Date:**

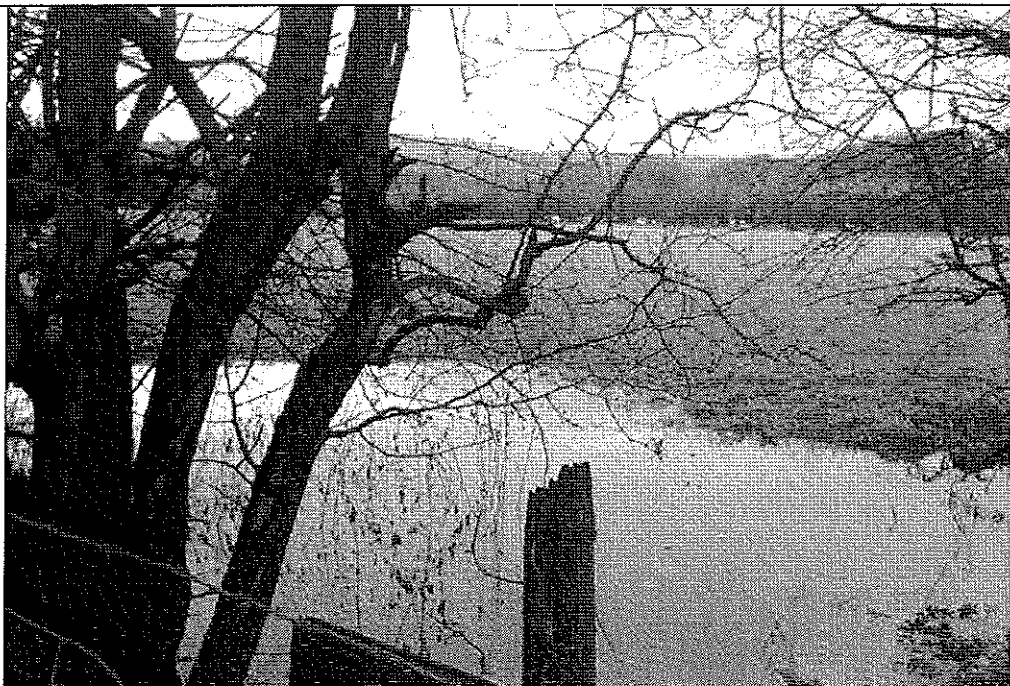
05.01.11

Direction Photo**Taken:**

NW

Description:

Flooding in the field
adjacent to the
northeast of the larger
land parcel



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Figure 1 Aerial Photograph of Site

Figure 2 Site Features Plan

APPENDICES

Appendix A Remedial Method Statement

Document Control Sheet

Project:	Low Moor Clitheroe
Client:	Taylor Wimpey Manchester
Project Reference:	MC539/11
Project Description:	Remediation and enabling works Recycling of construction waste on site by screening and crushing operations. Importation of topsoil material (if necessary)
Address:	Chapel Close, Low Moor, Clitheroe, BB7 2ND
Person who prepared the MMP:	Richard Quinn
Position:	Remediation Director
Company Name and Details:	McAuliffe Environmental Ltd 12 Bath Street Hale Cheshire WA14 2HG Tel: 0161 928 7740
Contact Details:	richardq@mcauliffegroup.co.uk

Revision	Date Issued	Summary of Revision
Rev A	17 th May 2012	

* Revisions, such as additional materials not identified in the remediation strategy, are to be recorded here without the need for a further declaration. Such amendments to be recorded in the verification report

Declaration by Qualified Person

To: McAuliffe Environmental Ltd – Low Moor Clitheroe

CL:AIRE Code of Practice Qualified Person's Declaration

I confirm that I satisfy the Qualified Person requirements set out in Appendix 6 of the Definition of Waste: Development Industry Code of Practice dated March 2011 to complete this Declaration.

I have reviewed the following documents in relation to development work to be carried out at the above site:

- Combined Materials Management Plan (MMP) and Site Waste Management Plan Rev A Low Moor Clitheroe, by McAuliffe Environmental dated 17th May 2012
- Remediation Method Statement, Low Moor, Clitheroe by McAuliffe Environmental dated May 2012
- Phase 1 Preliminary Risk Assessment, by RSK Consulting dated February 2011.
- GeoEnvironmental investigation and quantitative risk assessment, by RSK Consulting dated April 2011.

I confirm that:

- 1 The MMP contains all the information required by Section 3.2 of the Definition of Waste: Development Industry Code of Practice dated March 2011
- 2 The Risk Assessment assesses human health and environmental risks in relation to the proposed uses of all the materials in the MMP in accordance with the McAuliffe Environmental Ltd Remediation Method Statement. The Risk Assessment concludes that the objectives of preventing harm to human health and pollution of the environment will be met if materials are used in the proposed manner
- 3 The Local Authority, the Environment Agency and other relevant environmental regulatory bodies have not objected to the proposed development/land remediation on the basis that the use of any material is likely to cause harm to human health or pollution of the environment [This confirmation should be given regardless of whether planning consent is required for the activity].

This declaration has been made for the purposes of the Definition of Waste: Development Industry Code of Practice dated March 2011 and will be submitted to the Environment Agency under that Code. I have advised you that if materials are not used in accordance with the MMP or Risk Assessment or if it is discovered that materials were not suitable for use, were used in excessive quantity or in such a manner as to harm human health or pollute the environment, the Environment Agency may conclude that those materials were discarded and were waste.

I have also reminded you that a Validation Report must be prepared on completion of the work as set out in the Remediation Strategy covering the site and that this Validation Report must be provided to the Environment Agency upon request.

Signed,



Adam Czamecki
Director
McAuliffe Environmental
Date: 17th April 2012

1 Introduction

This Combined Materials Management Plan and Site Waste Management plan has been prepared as part of a remediation project which is being undertaken in accordance with the CL:AIRE Code of Practice, Version 2 (March 2011).

The project involves the recovery of waste construction material that was deposited on the site in the early 1980's. The material is geotechnically unsuitable for placement of foundations to support new residential building structures and also poses a ground gas risk due to the presence of a biodegradable component to the soil mass.

This document consists of an auditable system that allows for the history of excavated material to be evaluated. It sets out good practice for 'assessing whether materials are classified as waste or not' and in 'determining when treated waste can cease to be waste for a particular use'.

1.1 Scope & Objectives

McAuliffe Environmental Ltd (McAuliffe) has been contracted by Taylor Wimpey Manchester (client) to complete various works at Low Moor, Clitheroe:

- i. Further site investigation to topsoil quality across the site prior to re-use by the client.
- ii. Excavation of peat and organic soft soils / clays, and placement within a pond area
- iii. Topsoil strip from all site areas to be stockpiled for use at a later date by developer
- iv. Excavation of material from part of site where an exempted (from Waste Management Licensing Regulations 1994) tipping facility allowed for deposition of construction waste
- v. Recycling of excavated construction material by screening and crushing operations
- vi. Removal of cess pit that is currently connected to static caravan
- vii. Importation of topsoil material from offsite sources (if necessary).
- viii. Removal of a former cess pit on southern site boundary and if necessary install sheet pile cut –off wall to prevent cross boundary migration of unforeseen contamination.

ix. Development of a Remediation Validation Report.

1.2 Relevant Parties and Their Roles and Responsibilities

The relevant parties currently involved in the planned works are listed in Table 1.2 below:
This table will require maintaining as a live reference as the redevelopment progresses and further parties become involved

Table 1.2 – Relevant parties involved with the project

Role	Relevant Party	Responsibilities
Client:	Taylor Wimpey Manchester	Client
Principal Contractor	McAuliffe Environmental Ltd 12 Bath Street Hale Nr. Altrincham WA14 2HG	McAuliffe will be responsible for the recycling of construction waste deposited on the site and verification that the soils are suitable for use on site. McAuliffe shall be Principal Contractor in accordance with the CDM Regulations 2007.
Local Authority	Ribble Valley Borough Council, Church Walk, Clitheroe, BB7 2RA	Mr. Terry Longden (Terry.Longden@ribblevalley.gov.uk)
Environment Agency	Southern Area Office Appleton House Birchwood Boulevard Warrington Cheshire WA3 7WD	Mr. Nigel Glasgow (nigel.glasgow@environment-agency.gov.uk)
Remediation Contractor	McAuliffe Environmental Ltd 12 Bath Street, Hale, Cheshire WA14 2HG	McAuliffe will be responsible for classifying the topsoil and recycled construction material on the site.

2 Characterisation of Recorded Ground Conditions

2.1 Plans of the Site

Figure 1 below shows an aerial photograph of the site.

Figure 1 Aerial Photograph of site (Google Earth)



The red line on the above figure has been taken from a RSK report and should not be construed as the definitive title boundary.

Figure 2 (overleaf) provides an overview of current site features, including the western parcel former tipped area, buried septic tank, drainage ditches, flooding areas and former cess pit. During the site visit on 21st March 2012 the site owner indicated that the housing development to the south of the eastern parcel of land has encroached onto the proposed development. As a result of the encroachment it is possible that the buried cess pit may partially be within an adjacent garden, as well as within the development area.

A small pond is present on the eastern parcel (not shown in Figure 2) and ground records indicate shallow peat associated with the land feature

Figure 2 refers to a historic landfill which appears from visual examination and anecdotal evidence to occupy a narrow strip of land on the western parcel and a small tract of neighbouring land. It is understood that during a planning application consultation (by Bowsall) the Environment Agency misinterpreted the landfill as a former munitions training ground that was located to the north west of the site. It is understood that this area was remediated over ten years ago.

Figure 2 Site Features Plan (extract from RSK Report)



2.2 Material Originating on Site

Sufficient chemical testing will be carried out on potential materials to be recovered from site including site won topsoil and site won recycled construction material. Only those materials meeting the remediation method statement criteria (Appendix A) for the site will be considered suitable for use on site. It has been agreed with Ribble Valley Borough Council that one topsoil sample from every 100m³ and every 250m³ for recycled construction material will be tested in accordance with a range of potential contaminants of concern.

3 Risk Assessments and Evidence of Suitability

3.1 Human Health Risk Assessment

A human health based risk assessment has been provided by RSK on materials to be used on site won and imported materials. The McAuliffe Environmental Remedial Method Statement (Appendix A) contains a summary of remedial criteria based upon the land use and material, i.e. topsoil, use in cover, use below cover etc.

The site specific remedial targets are based upon protection of long-term human health and use DEFRA Soil Guideline Values, using CLEA 1 06 and CIEH Generic Assessment Criteria (2nd Edition).

3.2 Imported Materials Specification

Material imported to the site will require prior (to use) characterisation to ensure that it is suitable for use in terms of chemical quality and if used as structural fill in terms of geotechnical characteristics.

4 Quantity

4.1 Site Generated Materials

An estimate of site won materials has been made and quantified below in Table 4.1

Table 4.1 Quantities of Excavated Material Originating on Site

Description of Waste Stream	Approx Quantity of Material for Re-Use (m³)
Construction Material in former tipped area	3000
Pond Material	50
Cess Pit	50
Topsoil	3600

Quantities are based upon modelling of information gained during site investigation works, present topographic data and professional judgement based upon experience gained on numerous similar projects.

5 Materials Management Plan

5.1 Selective Excavation

5.1.1 Contaminated Hotspots

There are no contamination hot-spots.

5.1.2 Topsoil Strip

Topsoil will be excavated and stockpiled separately on the site development. This material will be later sampled, tested and used by the developer.

5.1.3 Organic Clays / Silts and Peat

Organic clays, silts and peat horizons within the pond area will be reused as a topsoil conditioner.

5.1.4 Construction Material Excavation

The material within the western land parcel of the site will be excavated screened and oversize fraction crushed on site. Any biodegradable or deleterious component to the soil mass will be removed offsite.

5.2 Storage and Stockpiling

All materials will be segregated, stored, and treated in several individual areas to ensure that waste remains segregated and handled in individual streams.

The treatment area will be located on an appropriately constructed and maintained treatment area. All works will be completed under the direct and full time supervision of appropriately qualified site managers.

5.3 Topography

A topographic survey of the site will be completed prior any works commencing. During site works, a McAuliffe representative will prepare drawings for validation samples and extent of any earthworks.

5.4 Reinstatement

Following processing, treatment and validation, all suitable arisings will be reused to re-instate the works. The site will be re-instated generally to existing site levels and topography. However, the proposed residential area will not be fully re-instated but topsoil shall be left in stockpile for subsequent placement by the developer after construction.

5.5 Compaction

There is currently no requirement for any compaction of material on site. The excavated construction material may be (subject to client instruction) reinstated within the western parcel of land but will not require compaction to an engineering specification, as the foundation solution will involve vibro-stone columns.

6 Material Tracking System

6.1 Flow Chart

The sequence for the processing of excavated material will be detailed within a material processing flow chart. This chart will lay out the order of events that will take place for all material excavated on-site and imported onto the site for the purpose of validation.

6.2 Materials Audit

Each individual stockpile shall have a unique identification reference number on the MMP and SWMP audit. Copies of the audit will be kept on-site and updated daily where appropriate, by a suitably qualified McAuliffe representative. Materials not suitable for on-site reuse will be characterised and tested if required and disposed of to an appropriately licensed recycling or landfill facility as detailed in the Site Waste Management Plan in Section 8 of this document.

The audit will consist of the following detail:

Detail	Summary
Date	The commencement of excavation to the designated stockpile
Origin	Onsite location where the material has been generated
Description / Classification	Group identification number as discussed in section 8.5 material characterisation and segregation
Estimated Volume	Will be estimated daily by the McAuliffe onsite representative, the material will be surveyed and volumes calculated at intervals during the project.
Chemical Testing Reference	Laboratory Test Certificates for solid and liquid wastes as appropriate.
Destination of material	Fill location onsite

6.3 Record Keeping & Verification

Records relating to site characterisation, risk assessment, and waste transfer documentation will be kept at the regional office of McAuliffe for two years following completion of the remediation works.

In addition to Duty of Care / Consignment Notes relating to the wastes generated on site, McAuliffe will maintain records relating to the amount of treated material and where it was

reinstated on the site. Such records will be kept by McAuliffe for two years at their Hale Office.

McAuliffe will use the data collated below for inclusion in the Validation Report clearly referencing the origin of the materials used, testing carried out to confirm its suitability for use and prepare a final contour plan / as built drawings

Upon completion of the reuse of excavated materials McAuliffe will provide this data to their client. Records associated with this development will be kept by McAuliffe for two years at their Hale Office.

7 MMP Review

The MMP will be reviewed and alterations made as required, for its effectiveness and ease of operation by the Material Management coordinator, McAuliffe Director and senior McAuliffe site staff to ensure the MMP is being correctly implemented onsite and recorded sufficiently.

McAuliffe operate an Integrated Management System (IMS), part of which is the accurate recording of all material produced during remediation works. This is in the form of a Materials Audit which records all materials excavated; their subsequent treatment and final destination, reused on site or disposal off-site to appropriate facilities. These records will be included in the Validation Report.

Records associated with this development – specific to the CoP – will be kept by McAuliffe at the head office for a minimum of 2 years upon the completion of the Validation Report.

8 Site Waste Management Plan Administration and Planning

Client:	Taylor Wimpey Manchester
Principal Contractor:	McAuliffe Environmental Ltd
Project Title:	Low Moor, Clitheroe
Project Reference:	MC539/11
Project Location:	Chapel Close, Low Moor, Clitheroe, BB7 2ND
Project Value:	£800,000
Anticipated Start Date	28 July 2012
Start Date:	
Anticipated Completion Date	28 June 2012
Completion Date:	
Project Type:	Remediation
Site Area (m²):	Approximately 1.8 Ha

8.1 Project Administration:

Client:	Taylor Wimpey Manchester
Principal Contractor:	McAuliffe Environmental Ltd 12 Bath Street Hale Cheshire WA14 2HG Tel: 0161 928 7740
SWMP Drafter:	Richard Quinn Remediation Director McAuliffe Environmental Ltd richardq@mcauliffegroup.co.uk
Local Authority:	Ribble Valley Borough Council
WM Coordinator:	Richard Quinn, Remediation Director, McAuliffe Environmental Ltd
Document controller:	Richard Quinn, Remediation Director, McAuliffe Environmental Ltd

8.2 Document Control

Version	Date	Author	Company and position	Project Stage
Rev A	May 2012	Richard Quinn	McAuliffe Environmental Ltd Remediation Director	Pre-Start

IMPLEMENTATION:

REVIEW PERIOD: Every 2 weeks.

8.3 Declaration

The Person in charge of the project and the principal contractor will take all responsible steps to ensure that:

- a) All waste from the site is dealt with in accordance with the waste duty of care in section 34 of the Environmental Protection Act 1990 the Environmental Protection (Duty of Care) Regulations 1991; and
- b) Materials will be handled efficiently and waste managed appropriately.

On Behalf of Ribble Valley Borough Council:

Name: Mr Terry Longden

Signature:

Date:

Organisation: Ribble Valley Borough Council

Position: Engineer

Principal Contractor:

Name: Adam Czarnecki

Signature: 

Date: 17/5/2012

Organisation: McAuliffe Environmental Ltd

Position: Director

8.4 Waste Characterisation, Anticipated Quantities and Disposal / Recycling / Reuse

Based on the scope of works described in Section 1.1 and within the Remediation Strategy contained within Appendix A, the types of waste generated and estimates of the quantities arising from the site clearance works and remediation are as follows:

Description of Waste Stream	EW Code	Approx Quantity m ³	Disposal / Recycling / Reuse
1 Organic Clays / Silts and Peat		50	Stockpiled for reuse on site
2 Topsoil		3600	Stockpiled on site for reuse
3 Cess Pit	17 05 04		
4 Construction Material	17 09 04	3000	Processed and treated on site for reuse

The above volumes are an estimate - subject to the actual type, nature and quantity of the contamination found on site and the subsequent success of remediation treatment

8.5 Waste Segregation and Minimisation

During the remediation scheme all soils and aggregates will be segregated to reduce the volume of waste, the amount of waste to be treated and the amount of waste to be disposed of.

Excavated soils will be segregated into one of the groups as described in Section 8.4.

Waste will be segregated, stored, and treated on site to ensure that waste remains segregated and handled in individual streams.

8.6 Waste Auditing

All material movements on site will be audited to ensure all waste is traceable and recorded; each individual stockpile shall have a unique identification reference number on the MMP and SWMP audit. The audit will contain all the necessary information of the state of each stockpile and its history. Copies of the audit will be kept on-site and updated daily where appropriate, by a suitably qualified McAuliffe representative. The audit will consist of the following detail:

Origin:	On site location where the material has been generated
---------	--

Categorisation of waste:	Type of material, EWC identification
Estimated volume:	Will be estimated by the onsite Environmental Engineer
Destination of material:	Offsite to a recycling or disposal facility
Chemical Testing Reference:	Laboratory Test Certificates for solid and liquid wastes as appropriate

Material that is not suitable for on-site reuse will be characterised and tested if required and disposed of to an appropriately licensed recycling or landfill facility. All transportation of material will be undertaken by a registered waste carrier, details to be confirmed.

8.7 SWMP Review

The SWMP will be reviewed every 2 weeks or sooner for its effectiveness and ease of operation by the Project Manager and senior site staff to ensure the SWMP and WML (EP) documents are being correctly implemented onsite and recorded sufficiently.

McAuliffe operate an Integrated Management System (IMS) part of which is the accurate recording of all material produced during remediation works. The Material Audit form is used to record all materials excavated, their subsequent treatment and final destination, reused on site or disposal off-site to appropriate facilities. These records will be integrated into the SWMP to avoid unnecessary duplication.

8.8 Implementation

- a) The Client must give reasonable directions to any contractor so far as is necessary to enable the Principal Contractor to comply with the regulation
- b) The Principal Contractor must ensure that so far as reasonably practical coordination of the work and co-operation among contractors at work is occurring during the construction phase.
- c) The Principal Contractor must ensure that so far as reasonably practical every worker carrying out construction work is provided with a suitable site induction.
- d) The Principal Contractor must make and maintain arrangements which will enable the workers engaged in construction work to co-operate effectively in promoting and developing measures to ensure any material arising on site is managed within the

terms of the Site Waste Management Plan and in checking the effectiveness of such measures

- e) The Principal Contractor must ensure that as far as reasonably practical that material produced during construction is reused, recycled or recovered
- f) The Client and the Principal Contractor must review, revise and refine the Site Waste Management Plan as necessary, and ensure that any changes in respective roles and responsibilities are clearly communicated to those affected.
- g) The Client and Principal Contractor must take reasonable steps to ensure sufficient site security measures are in place to prevent illegal disposal of waste.

9 Project Validation

Upon completion of the remediation works a Validation Report shall be produced, this report shall include the following: -

- a) Quantities of material generated, treated and reused on site;
- b) As built drawings;
- c) Results of chemical validation testing for materials treated and reused on site.
- d) Photographic log of onsite works;
- e) Details of any variations
- f) Reconciliation of the quantities of waste removed for disposal / recycling.
- g) Waste disposal locations
- h) Hazardous waste transfer notes and duty of care notes for inert and non-hazardous materials.
- i) An explanation of any differences between the SWMP and actual performance, including an estimate of the cost savings achieved by implementing the SWMP.

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FIGURES

Figure 1	Aerial Photograph of Site
Figure 2	Site Features Plan
Figure 3	Tree Management Plan
Figure 4	Proposed Development Layout Plan
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APPENDICES

Appendix A	Site Specific Risk Based Targets for Protection of Human Health
Appendix B	RSK Preliminary Risk Assessment Report, February 2011
Appendix C	RSK GeoEnvironmental Investigation & Quantitative Risk Assessment, April 2011
Appendix D	Tree Management Plan

1 Introduction

McAuliffe Ltd (McAuliffe) has been commissioned by Taylor Wimpey Manchester (Client) to complete land remediation works at Low Moor, Clitheroe, Lancashire. This remediation method statement (RMS) defines the scope of remediation works and the methods by which they will be undertaken and independently validated

McAuliffe Environmental have been appointed by Taylor Wimpey Manchester as the Principal Contractor in accordance with the CDM Regulations 2007.

The majority of the site is currently vacant flat lying poorly draining rural land. A public right of way bisects the site, leading from Chapel Close, which separates the site into two parcels (west and east). The larger parcel to the east of the path (which leads to allotments to the north of site) is currently occupied (by site owner) by a static caravan that is attached to a septic tank. No other site features are evident on the eastern parcel with the exception of a stockpile of topsoil near to the site entrance, originating from recent soil stripping operations (by the site owner) and a drainage ditch in the southern section of the site.

The western smaller parcel is heavily vegetated with grass, shrubs and trees and has a westerly slope (gradient of approximately 1 in 3) leading to a flat lying narrow tract of adjacent land. A drainage ditch is present in the northern section which leads to a recently constructed (by site owner) surface water drainage point along a former River Ribble mill race, which once served a local cotton mill. At the time of a site visit on 21st March 2012 recently felled (by site owner) trees were evident that were removed as part of the construction of a new storm water drainage connection.

The site (1.8hectares in size, source RSK report) has been relatively unused since records began with the exception of a cricket pitch in 1921 on the eastern parcel of land and allotments in 1932. Anecdotal evidence from the site owner suggests that the western parcel was raised to current ground level by landfilling (in accordance with Waste Management Licensing 1994 Exemption) of construction/demolition waste material, over a three week period in the 1980's.

A new housing development is located along the southern eastern parcel site boundary with a new housing plot also located on the southern boundary of the western parcel.

Figure 1 (overleaf) provides a recent aerial image of the site from Google Earth.

Figure 1 Aerial Photograph of site (Google Earth)



The red line on the above figure has been taken from a RSK report and should not be construed as the definitive title boundary.

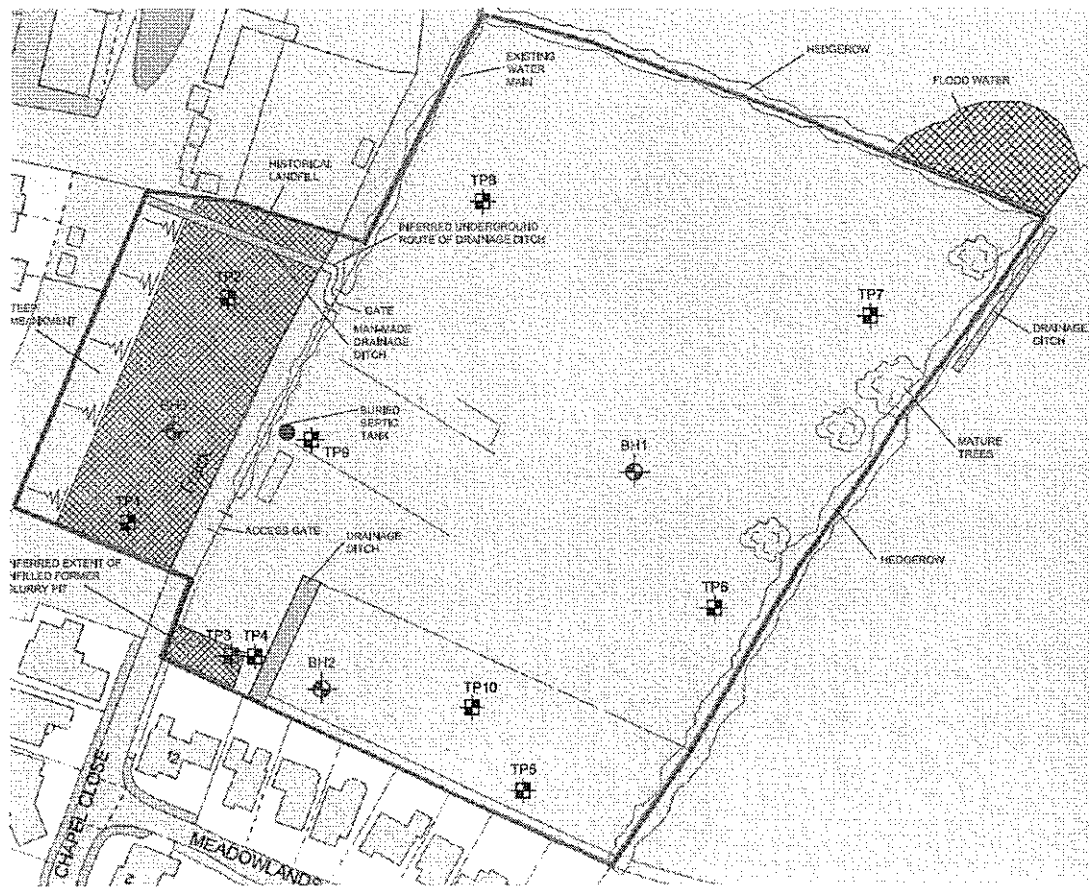
Figure 2 (overleaf) provides an overview of current site features, including the western parcel former tipped area, buried septic tank, drainage ditches, flooding areas and former cess pit. During the site visit on 21st March 2012 the site owner indicated that the housing development to the south of the eastern parcel of land has encroached onto the proposed development. As a result of the encroachment it is possible that the buried cess pit may partially be within an adjacent garden, as well as within the development area.

A small pond is present on the eastern parcel (not shown in Figure 2) and ground records indicate shallow peat associated with the land feature.

Figure 2 refers to a historic landfill which appears from visual examination and anecdotal evidence to occupy a narrow strip of land on the western parcel and a small tract of neighbouring land. It is understood that during a planning application consultation (by Bowsall) the Environment Agency misinterpreted the landfill as a former munitions training ground that was located to the north west of the site. It is

understood that this area was remediated over ten years ago.

Figure 2 Site Features Plan (extract from RSK Report)

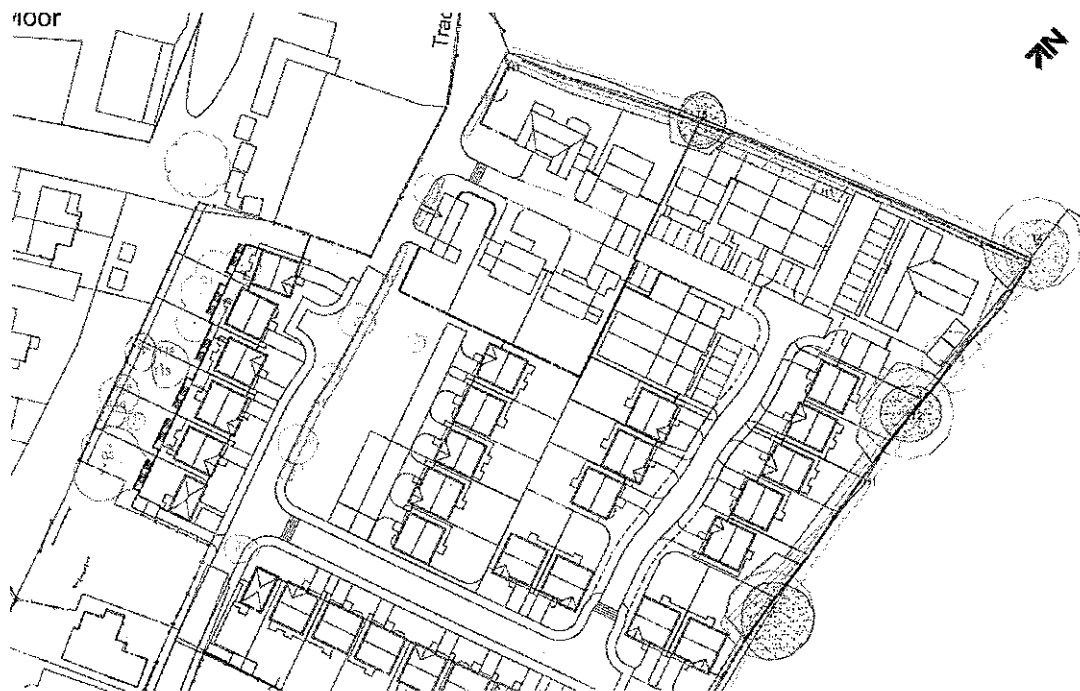


A number of trees and hedges are present on the site which will either require protection during the construction works or felling in accordance with a tree management plan (Appendix D) that has been developed by Bowland Tree Consultancy Ltd.

Figure 3 (overleaf) shows an extract from the Tree Management Plan which highlights that four trees (T1, T2, T4, T5) are to be protected during construction activities. Two hedges at the northern and eastern boundaries of the eastern parcel are also to be protected.

All trees and vegetation within the western parcel are to be removed.

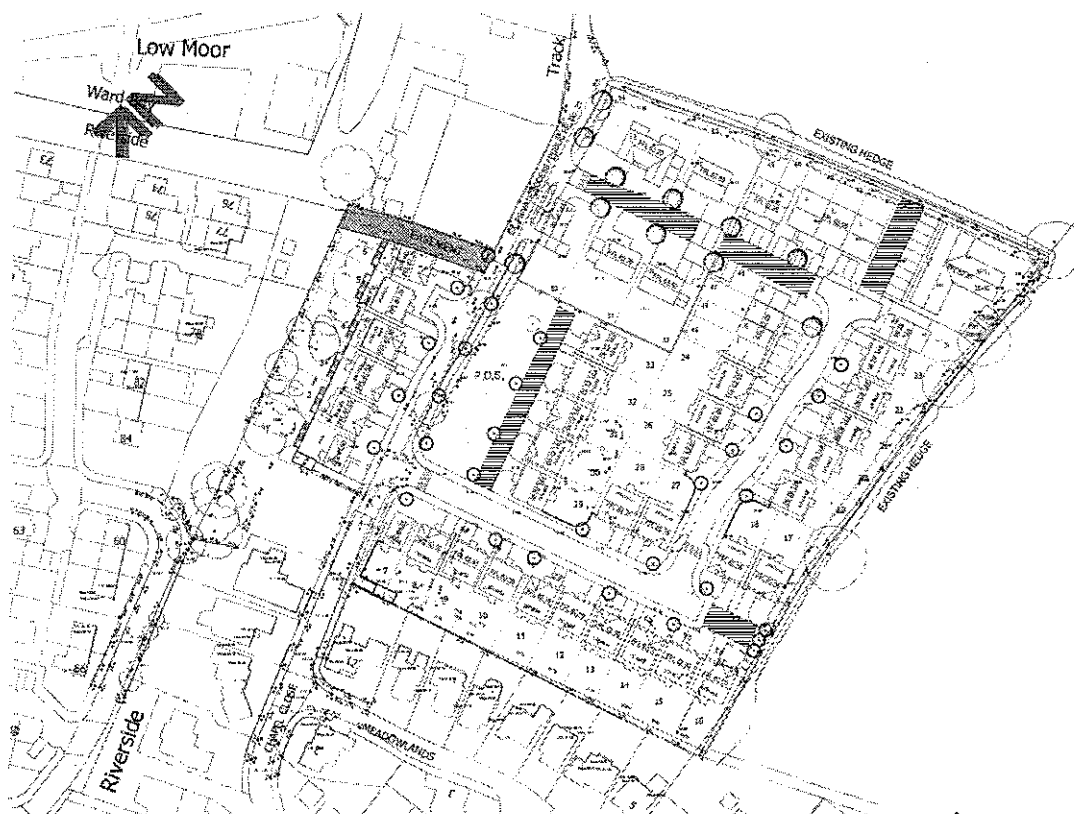
Figure 3 Tree Management Plan



2 Proposed Development

Following remediation, the site will be re-developed with residential housing and associated front/rear gardens, area of open space and road infrastructure. Figure 4 (below) shows the proposed development scheme by Taylor Wimpey Manchester.

Figure 4 Proposed Site Development Layout Plan



3 Proposed Remediation Strategy

The desk based study and site investigation work by RSK has highlighted a number of development constraints associated with the legacy of former site uses and natural land features.

The tipped material within the western land parcel represents an unsuitable horizon for placement of house foundations, due to the weak strength and variable density of the material, and presence of degradable content of the soil mass. Chemical testing on this material has proved that there are no potential contaminants of concern with respect to protection of long term human health or controlled waters. However ground gas testing within the tipped area has proved elevated methane (upto 6.7% vol/vol) and have classified the site in accordance with NHBC ground gas guidance (*"Guidance on Evaluation of Development Proposals on sites Where Methane and Carbon Dioxide are Present"*, March 2007), as Amber 1. An Amber 1 NHBC requires the implementation of ground gas membranes for development on the tipped area and potentially the infilled slurry pit area.

In order to prevent the need for ground gas measures and improve the materials geotechnical properties it is proposed to excavate the tipped material and screen it to allow for removal of deleterious materials and removal of oversize fragments (>90mm). It is currently the intention of the client that the material is left in a stockpile, with the resultant low lying area in the western parcel to be filled (by the developer) by natural clay drainage arisings.

Subject to further chemical testing the excavated material could be re-used on site within the open space area or beneath roads. A Materials Management Plan will be developed in accordance with CL:AIRE Definition of Waste Development Industry Code of Practice (Version 2), which will demonstrate the suitability of use of the recycled materials.

Prior to establishment of houses within the former tipped area boreholes would be drilled and shallow monitoring points installed within the natural ground. The results of spot ground gas monitoring and data assessment will reveal whether any ground gas measures are required within relevant dwellings.

The remediation strategy was discussed with Mr. Terry Longden of Ribble Valley Borough Council on 4th April 2012

4 Licences and Approvals

Various licenses, permits & approvals are required at various stages before certain works can commence. Some activities can start before all such approvals are in place.

- (i) Approval of this Remediation Strategy
- (ii) All documentation in accordance with the CDM 2007 Regulations
- (iii) Site Waste Management Plan
- (iv) Materials Management Plan in accordance with CL:AIRE Definition of Waste: Development Industry Code of Practice
- (v) Signed declaration by qualified person of the Materials Management Plan in accordance with CL:AIRE Definition of Waste: Development Industry Code of Practice
- (vi) General condition survey of boundary features

5 Site Establishment

Initial mobilisation works will include the establishment of appropriate office and welfare facilities. Such facilities may include but are not restricted to; office accommodation, canteen facilities, washroom/drying room, toilets, car parking, stores and security unit.

Site security fencing will be provided by the client and installed by McAuliffe.

Technical and operational staff shall be resident on site throughout the contract. Additional third party security will also be provided as necessary.

6 Site Investigations & Risk Assessment

6.1 *Summary of Previous Site Investigation*

A desk based and environmental study has been undertaken on behalf of Bowsall, a residential developer that originally sought planning permission on the site. The report highlights a number of potential contamination issues associated with landfilling of waste material on the western parcel of land and also infilling of the River Ribble mill race, which is located offsite, but adjacent to the western site boundary. The adjacent Low Moor Cotton Mill is reported to have two gasholders located approximately 60m from the south western site boundary.

As part of the desk based study geological, historical and environmental information was acquired to develop a Conceptual Site Model, detailing potential sources (cess pits, septic tank and landfill) of contamination and pollutant linkages. The report identified that the site is developed upon a sequence of glacial clay that has been since exposed beneath topsoil in recent soil stripping operations.

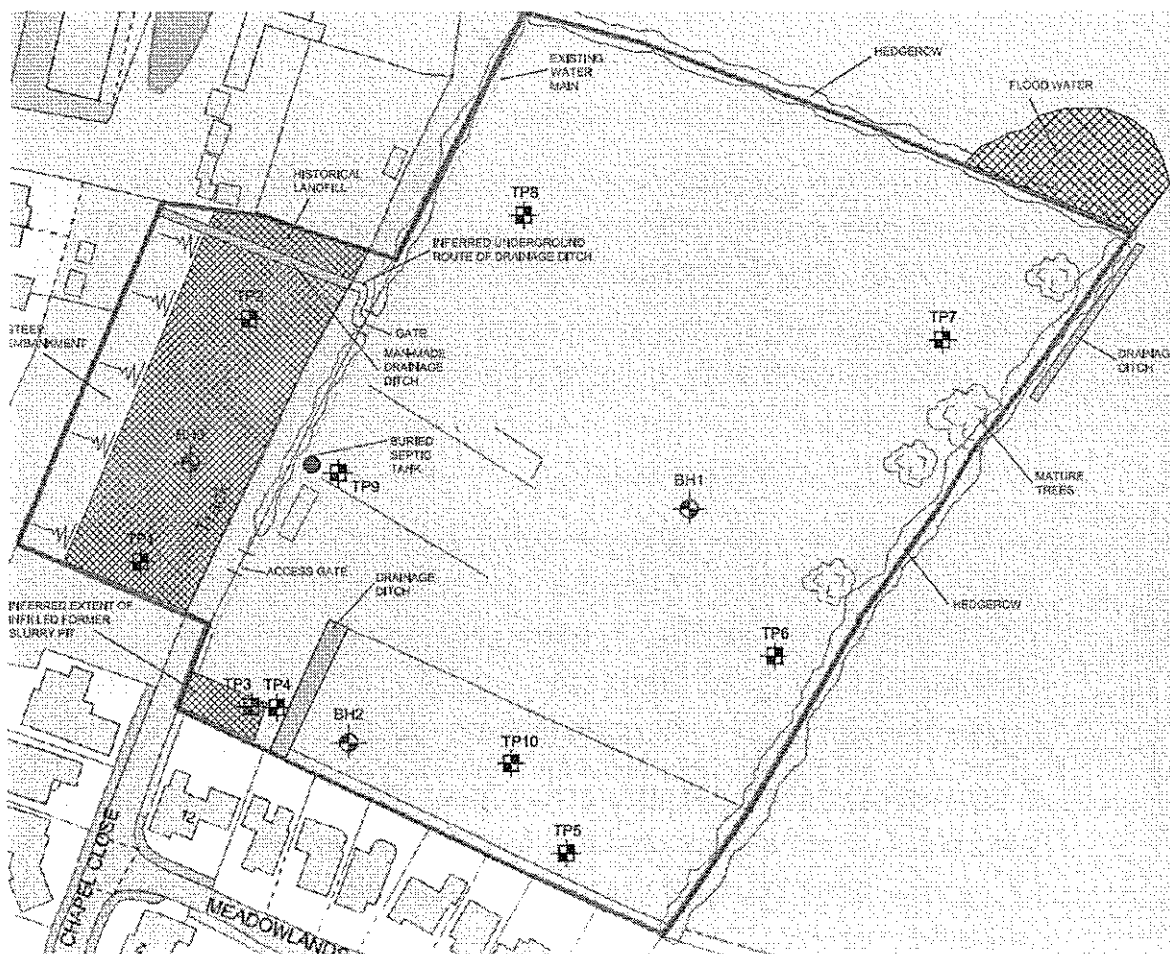
A site investigation was performed on the site by RSK in February 2011 comprising of the drilling of three cable percussive boreholes and excavation of ten trial pits. As part of the assessment of ground conditions the three boreholes were installed with gas monitoring pipework.

Figure 5 (overleaf) shows the location of the RSK sampling points, which have been distributed across the former landfill (BH3, TP1, TP2), cess pit (TP3), septic tank (TP9) and pond area (TP10) and wider site area

The investigation proved that the landfill materials vary from 1.6m to 2.0m in thickness within the western land parcel and consisted of general construction and demolition waste with some deleterious material such as tyres and plastic.

Outside of the former landfill area ground conditions are consistent with a thin topsoil horizon present at all locations varying in thickness from 50mm to 400mm, underlain by a soft to firm clay (Glacial Clay). A thin (0.1m) band of peat was found at TP10 at a depth of 1.0m, associated with a pond feature.

Figure 5 RSK Sampling Location Plan



6.2 Summary of Risk Assessment Works

The RSK site investigation report provides an assessment of risk posed to long term human health of future residents and controlled water from potential contaminants of concern within soils and groundwater. An assessment has also been made of the ground gas regime from four site monitoring visits.

Testing of soils by RSK proved an absence of soil concentrations above general assessment criteria.

Testing of groundwater by RSK proved an absence of any risk to the River Ribble or human health.

Ground gas concentrations have been measured on four separate occasions by RSK with elevated methane being encountered at BH3 within the landfilled materials

Whilst ground gas concentrations are elevated (upto 6.7% vol/vol) at BH3, with low flow rates, RSK have recommended an NHBC Amber 1 classification for relevant areas (landfill and cess pit) of the site.

Appendix A provides a summary of appropriate site assessment targets which are based upon CLEA 1.06 modelling and different scenarios, i.e.;

- a) Site won or imported topsoil within garden areas
- b) Soils below house plots;
- c) Soils below roads and external areas;
- d) Soils within landscaped areas.

All of the site assessment targets are based upon 2.5% soil organic matter and an assumption that the soils are sandy loam in texture (and physical characteristics).

7 Proposed Remedial Work

7.1 Peat Removal

Further site investigations will be carried out to further characterise and delineate areas of organic clays and silts, and peat within the area of the pond and TP10

Peat in the proposed residential area of site will be excavated, transported and stockpiled within the topsoil.

7.2 Topsoil Strip

All topsoil will be selectively excavated and placed within a sealed stockpile for later use by the developer

All topsoil will be sampled and tested by McAuliffe Environmental, with the intention of using it within garden areas. Topsoil will be tested at a frequency of 1 test per 100m³ of material. It has been estimated that there is 3600m³ of topsoil over the site area

7.3 Surface and Subsurface Obstructions, etc.

All subsurface obstructions found and hardstanding will be removed in a phased manner, which have only been found, to date, within the area of the cess pit. Concrete will be broken, lifted and transported to a processing area where it will be crushed to form a recycled aggregate suitable for re-use within the re-instatement works.

7.4 Landfill Material

It has been estimated that there is 3000m³ of material within the former landfill to excavate and process by screening to remove deleterious (plastic, wood, tyres etc) and organic material from the soil mass. Material will be segregated into two size fractions <40mm and <90mm, with crushing of the oversize component.

The material will be placed within a stockpile for later use by the client.

The material will be excavated from the western parcel of the site and transported to the eastern parcel by means of dumpers.

7.5 Cess Pit & Septic Tank

During the RSK site investigation TP3 within the cess pit area encountered a 1.80m thick sequence of Made Ground underlain by a concrete obstruction. The material and concrete obstruction represent constraints to the development and will be removed as part of the remedial works. As the cess pit may extend onto neighbouring land a contingency has been allowed for the installation of a sheet piled wall system to be installed at/near to the site boundary to prevent migration of any slurry soil or leachate into the development area.

The septic tank that serves the existing caravan will be removed offsite.

7.6 Ground Gas

Following the excavation of the landfill material within the western parcel of land, and the cess pit the ground gas regime will be re-assessed by installation of gas monitoring points

The monitoring points (four in total) together with existing wells (BH1, BH2) will be monitored on over four weeks on a weekly basis for ground gas concentrations (methane and carbon dioxide) and flow rates.

The ground gas regime will be re-assessed for the relevant areas after the additional monitoring period is complete. The need, scope and outline design of any ground gas mitigation measures will be incorporated into the Validation Report.

8 Validation

It will be necessary to validate remediation works during and after the completion of the remediation contract. Validation requirements can be summarised as follows:

- Validation of suitability of site won soils from the former landfill area
- Further ground gas monitoring within landfill and cess pit area
- Validation of chemical suitability of site won or imported topsoil material.

The excavated and processed landfill material will be placed within a stockpile for later use by the developer. Alternatively the client may require the material to be placed within the landfill area, with the benefit of nominal compaction, to facilitate the use of a vibro-stone column solution to support building foundation loadings.

In addition to visual and olfactory inspection of soils, any imported or site won topsoil will be tested on a frequency of one sample per 100m³. The suite shall be as detailed in Table 1 (below). Any site won material from the landfill area will be tested on a frequency of one sample per 250m³.

Subject to further testing of the landfill materials there may be requirement for placement of a cover system on the recycled landfill material if it is placed back in garden areas. At this stage a 600mm thick cover system should be allowed for, although the extent may be reduced after further data assessment. No cover system is required for other areas of the site.

Table 1

Testing Suite for Imported Material (Air Dried Soils)	
Arsenic	Zinc
Cadmium	Speciated PAH
Chromium	Speciated TPH
Selenium	Inorganic Mercury
Lead	Copper
Nickel	Asbestos (fibre & fragments)

9 Environmental Monitoring & Controls

A comprehensive schedule of environmental monitoring will be undertaken in addition to the validation activities detailed previously.

The site will be monitored on a daily basis for dust and dust suppression equipment will be utilised as required.

All plant and equipment utilised on site will be modern and well maintained ensuring minimum noise is generated throughout the works.

The type and concentration of contaminants identified are unlikely to generate odours. However, this shall be constantly reviewed by the Site Manager and if necessary, assessment will be monitored as per Environment Agency 'Internal Guidance for Regulation of Odours at Waste Management Facilities' July 2002 Version 3.0. VOC's will also be monitored regularly during periods of excavation and around soil treatment areas to ensure that levels are not elevated above previously recorded background levels. VOC's will be monitored using olfactory methods. Records of VOC monitoring shall be maintained on site for inspection by appropriate interested parties at any time.

To ensure compliance with this RMS, all works will be supervised by an appropriately qualified site manager at all times.

Detailed method statements and risk assessments for all potentially hazardous activities will be prepared and disseminated to all interested parties and applicable personnel.

Fencing shall be provided by the client, erected and maintained throughout the project. Gates shall be erected at the compound and any other defined access/egress points onto the site. Appropriate warning signs will be erected as required.

Additional temporary Heras fencing will be erected internally around hazards such as open excavations although every effort shall be made to ensure such hazards are backfilled before the end of each working day.

Proposed works will not generate windblown litter nor create an attraction to vermin.

Working hours shall be 0730 – 1800hrs Monday to Friday although non-intrusive maintenance activities may be undertaken outside of these times. No works will take place on Sundays or Bank Holidays.

Appropriate welfare facilities will be established and will include office, messing unit, washroom, toilets, drying room and secure stores. These facilities will be regularly maintained and cleaned as necessary.

The remediation works are unlikely to generate noise beyond the site boundary at nuisance levels. However, noise mitigation measures will include but are not limited to the following:

- ▶ ensuring works are completed only within the permitted working hours,
- ▶ positioning noisy items of plant such as crushers away from boundaries with sensitive receptors,
- ▶ use of modern and properly maintained mobile plant & tools,
- ▶ restricting noisy operations to less sensitive times of day where possible.

Dust may be generated by the remediation works. Dust mitigation measures will include but are not limited to the following:

- ▶ carrying out operations with the potential to generate significant dust away from the sensitive receptors whenever possible
- ▶ using dust suppression spray bars on crushers and bowser on site as required
- ▶ using and maintaining good quality site roads
- ▶ use of modern and properly maintained mobile plant
- ▶ covering stockpiles if they are contributing to fugitive dust
- ▶ suspending some operations during unfavourable weather conditions i.e. crushing if wind is blowing towards or beyond site boundaries

Odour is unlikely to be produced by the remediation works. Due to the volume and type of contaminants present, any odours present are unlikely to be particularly noticeable beyond 5m of excavations, or stockpiles.

Odour mitigation measures will include any combination of the following:

- ▶ carrying out operations with the potential to generate significant odour away from boundaries with sensitive receptors,
- ▶ covering stockpiles containing odorous soils,
- ▶ suspending some operations during unfavourable weather conditions i.e. excavating soil if wind is blowing towards the more sensitive site boundaries.

All personnel shall wear appropriate PPE, which as a minimum shall include safety footwear, safety hat and high visibility vest. Overalls, gloves, goggles and appropriate dust/vapour masks shall also be utilised if deemed necessary.

Comprehensive records will be maintained throughout the project and will be available for inspection at anytime by the appropriate regulators and the client. Records will include but are not limited to validation results to date, local dust monitoring results, odour monitoring, general site records, duty of care waste transfer and consignment notes, photographs, incident reports, details of complaints and corrective action reports, inspection reports and other records generated as part of our integrated management system which is certified to BSEN9001 and BSEN14001. Regular topographical survey information will also be maintained as necessary.

In the event of a major variation to either site conditions or working methodology, further written details will be submitted to the client and the regulators for approval.

On completion of the practical works, we shall prepare a detailed contract Validation Report confirming all works as detailed above have been completed in accordance with this RMS. This report will be submitted to the local authority contaminated land officer for approval.

10 Post Remediation Works

In the context of remediation, a number of activities and controls will be applicable following the main remediation works and will be the responsibility of others. The following is provided for information only. More detailed information will be produced at a later date.

In the unlikely event of unforeseen contamination being discovered during construction works, works should be suspended in that area and advice sought from a suitably qualified person. This may also entail further discussions with the local authority contaminated land officer.

Gas monitoring will be undertaken during and following remediation works. Further gas monitoring may be required after this period. This data should be utilised to assess the site in accordance with CIRIA 665. Thereafter, appropriate gas and vapour protection to buildings if required, can be designed. Details of this assessment and design of any gas protection should be submitted to the local authority contaminated land officer before construction of buildings commence.

APPENDIX A

SITE SPECIFIC RISK BASED TARGETS FOR PROTECTION OF HUMAN HEALTH

APPENDIX B

RSK PRELIMINARY RISK ASSESSMENT REPORT, FEBRUARY 2011

APPENDIX C

RSK GEOENVIRONMENTAL INVESTIGATION & QUANTITATIVE RISK ASSESSMENT

APPENDIX D
TREE MANAGEMENT PLAN



Scientific Analysis Laboratories is a
limited company registered in England and
Wales (No 2514788) whose address is at
Hadfield House Hadfield Street Manchester M16 9FE

Scientific Analysis Laboratories Ltd

Certificate of Analysis

Hadfield House
Hadfield Street
Combrook
Manchester
M16 9FE
Tel : 0161 874 2400
Fax : 0161 874 2468

Report Number: 294891-1

Date of Report: 18-Sep-2012

Customer: McAuliffe Environmental
12 Bath Street
Hale
Cheshire
WA14 2HG

Customer Contact: Mr Adam Czarnecki

Customer Job Reference: MC539111

Customer Purchase Order: 6652/TWIM539/AC

Customer Site Reference: Low Moor Gardens Clitheroe

Date Job Received at SAL: 10-Sep-2012

Date Analysis Started: 12-Sep-2012

Date Analysis Completed: 17-Sep-2012

The results reported relate to samples received in the laboratory

This report should not be reproduced except in full without the written approval of the laboratory

Tests covered by this certificate were conducted in accordance with SAL SOPs



Report checked
and authorised by :
Mr Ross Walker
Customer Services Manager
(Land)

Issued by :
Mr Ross Walker
Customer Services Manager
(Land)

SAL Reference: 294891 Project Site: Low Moor Gardens Clitheroe Customer Reference: MC539111 Soil MCERTS Preparation														
SAL Reference					294891 001	294891 002	294891 003	294891 004	294891 005	294891 006	294891 007	294891 008	294891 009	294891 010
Customer Sample Reference					TOPSOIL 1	TOPSOIL 2	TOPSOIL 3	TOPSOIL 4	TOPSOIL 5	TOPSOIL 6	TOPSOIL 7	TOPSOIL 8	TOPSOIL 9	TOPSOIL 10
Date Sampled					07-SEP-2012	07-SEP-2012	07-SEP-2012	07-SEP-2012	07-SEP-2012	07-SEP-2012	07-SEP-2012	07-SEP-2012	07-SEP-2012	07-SEP-2012
Type					Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil
Determinand	Method	Test Sample	LOD	Units										
Moisture	T277	AR	0.1	%	16	20	26	27	22	22	20	7.8	11	7.7
Moisture @ 105 C	T162	AR	0.1	%	35	23	25	16	22	9.9	21	8.5	7.7	10

SAL Reference: 294891 Project Site: Low Moor Gardens Clitheroe Customer Reference: MC539111 Soil Soil Suite														
SAL Reference					294891 001	294891 002	294891 003	294891 004	294891 005	294891 006	294891 007	294891 008	294891 009	294891 010
Customer Sample Reference					TOPSOIL 1	TOPSOIL 2	TOPSOIL 3	TOPSOIL 4	TOPSOIL 5	TOPSOIL 6	TOPSOIL 7	TOPSOIL 8	TOPSOIL 9	TOPSOIL 10
Date Sampled					07-SEP-2012	07-SEP-2012	07-SEP-2012	07-SEP-2012	07-SEP-2012	07-SEP-2012	07-SEP-2012	07-SEP-2012	07-SEP-2012	07-SEP-2012
Type					Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil
Determinand	Method	Test Sample	LOD	Units										
Arsenic	T6	M40	2	mg/kg	15	13	17	14	13	19	11	15	15	12
Cadmium	T6	M40	1	mg/kg	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper	T6	M40	1	mg/kg	140	100	120	110	88	110	58	88	77	70
Lead	T6	M40	1	mg/kg	150	110	110	120	110	160	80	110	120	98
Mercury	T6	M40	1	mg/kg	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Nickel	T6	M40	1	mg/kg	28	28	30	28	25	30	15	24	24	24
Selenium	T6	M40	3	mg/kg	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Zinc	T6	M40	1	mg/kg	160	160	170	180	140	180	89	130	140	120
Benzo(a)Pyrene	T16	M105	0.1	mg/kg	0.2	0.7	0.8	0.3	1.4	0.4	0.6	1.4	1.4	0.3
Naphthalene	T16	M105	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2	0.1	<0.1	0.1	0.2	0.1

SAL Reference: 294891 Project Site: Low Moor Gardens Clitheroe Customer Reference: MC539111 Soil Miscellaneous														
SAL Reference					294891 001	294891 002	294891 003	294891 004	294891 005	294891 006	294891 007	294891 008	294891 009	294891 010
Customer Sample Reference					TOPSOIL 1	TOPSOIL 2	TOPSOIL 3	TOPSOIL 4	TOPSOIL 5	TOPSOIL 6	TOPSOIL 7	TOPSOIL 8	TOPSOIL 9	TOPSOIL 10
Date Sampled					07-SEP-2012	07-SEP-2012	07-SEP-2012	07-SEP-2012	07-SEP-2012	07-SEP-2012	07-SEP-2012	07-SEP-2012	07-SEP-2012	07-SEP-2012
Type					Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil	Topsoil
Determinand	Method	Test Sample	LOD	Units										
Asbestos ID	T27	AR			N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

Index to symbols used in 294891-1

Value	Description
AR	As Received
M40	Analysis conducted on sample assisted dried at no more than 40C. Results are reported on a dry weight basis.

M105	Analysis conducted on an "as received" aliquot. Results are reported on a dry weight basis where moisture content was determined by assisted drying of sample at 105C
N.D.	Not Detected
S	Analysis was subcontracted
M	Analysis is MCERTS accredited
U	Analysis is UKAS accredited
N	Analysis is not UKAS accredited

Method Index

Value	Description
T16	GC/MS
T6	ICP/OES
T162	Grav (1 Dec) (105 C)
T277	Grav (1 Dec) (40 C)
T27	PLM

Accreditation Summary

Determinand	Method	Test Sample	LOD	Units	Symbol	SAL References
Asbestos ID	T27	AR			SU	001-010
Arsenic	T6	M40	2	mg/kg	M	001-010
Cadmium	T6	M40	1	mg/kg	M	001-010
Copper	T6	M40	1	mg/kg	M	001-010
Lead	T6	M40	1	mg/kg	M	001-010
Mercury	T6	M40	1	mg/kg	M	001-010
Nickel	T6	M40	1	mg/kg	M	001-010
Selenium	T6	M40	3	mg/kg	M	001-010
Zinc	T6	M40	1	mg/kg	M	001-010
Benzo(a)Pyrene	T16	M105	0.1	mg/kg	M	001-010
Naphthalene	T16	M105	0.1	mg/kg	M	001-010
Moisture	T277	AR	0.1	%	N	001-010
Moisture @ 105 C	T162	AR	0.1	%	N	001-010

From: Terry Longden [Terry.Longden@ribblevalley.gov.uk]
Sent: 16 August 2012 10:23
To: Adam Czarnecki
Cc: Sarah Westwood; Neil Martin; Simon Hartley
Subject: RE: 3/2011/0247 Low Moor Clitheroe
Attachments: Target for contaminants (Low Moor).xls

Adam, the overall process is satisfactory, I do query however certain of the given Site Specific Risk Based Targets (appendix A ref MC539/11).

I have tabulated the targets from the report (attached) and highlighted figures I query that relate to Nickel, Zinc and Naphthalene.

Please could you give background as to how the targets have been arrived at. It's my view that they are high. I appreciate the the latter figures in relation to Zinc are probably a "typo".

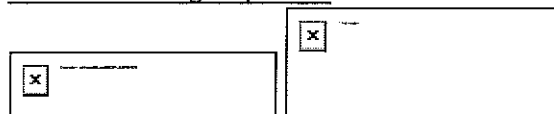
Thank you

Terry Longden
Head of Engineering Services
Tel.01200 414523
Mob 07932 604 981
terry.longden@ribblevalley.gov.uk

From: Adam Czarnecki [<mailto:Adam@mcauliffegroup.co.uk>]
Sent: 09 August 2012 09:45
To: Neil Martin
Cc: Terry Longden; Richard Quinn; Dawson, Mark - TW Manchester; Devine, Simon - TW Manchester
Subject: RE: 3/2011/0247 Low Moor Clitheroe

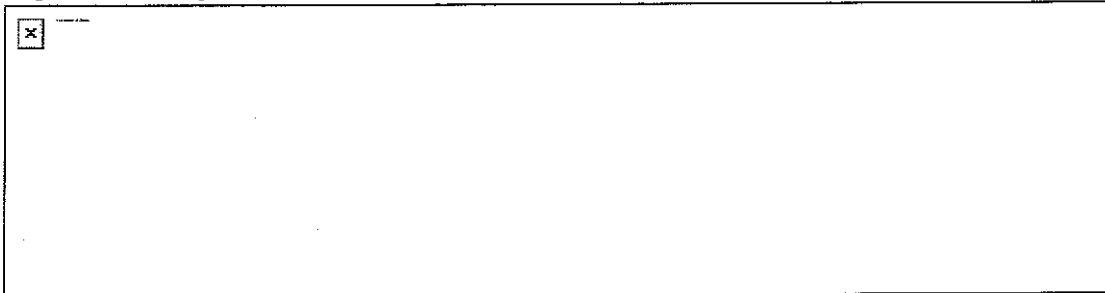
Neil,
When is the response coming?
Regards,
Adam
Adam Czarnecki
Director
McAuliffe Environmental
12 Bath Street
Hale
Cheshire
WA14 2HG
Mob: 07960 677677
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From: Neil Martin [<mailto:Neil.Martin@ribblevalley.gov.uk>]

Sent: 07 August 2012 14:11

To: Adam Czarnecki

Cc: Terry Longden

Subject: 3/2011/0247 Low Moor Clitheroe

Adam,

Terry has asked me to contact you regarding the above site.

Could you please let me have a copy of the the Groundsure report (appendix B of the desk survey). We have been in touch with the Environment Agency who also raised some issues and need to confirm with them that everything is ok. Once we have the groundsure report, we will have all the documentation provided and should be able to reply fairly quickly. Please also copy terry into the e-mail.

Regards

Neil

Neil Martin

Environmental Health Officer

Ribble Valley Borough Council

Tel: 01200 413214

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GAS SCREENING ASSESSMENT

Well	Date	Methane Peak %v/v	Methane Steady %v/v	Methane GSV l/hr	Carbon Dioxide Peak %v/v	Carbon Dioxide Steady %v/v	Carbon Dioxide GSV l/hr	Oxygen %v/v	Atmos. %	Atmos Dynamic	Flow	Depth to Base	Depth to Water
BH 1	18/09/2012	0.3	0.3	0.0003	1.0	1.0	0.001	19.90	1008	Steady	0.10	4.119	0.406
	21/09/2012	0.4	0.4	0.0004	0.7	0.6	0.0007	20.50	1010	Steady	0.10	4.079	0.371
	24/09/2012	0.3	0.3	0.0003	1.9	1.9	0.0019	19.30	985	Steady	0.10	4.063	0.379
	01/10/2012	0.3	0.3	0.0003	1.8	1.8	0.0018	19.10	1003	Steady	0.10	4.064	0.474
BH 2	18/09/2012	0.4	0.4	0.0004	0.7	0.7	0.0007	18.20	1008	Steady	0.10	4.189	Dry
	21/09/2012	0.5	0.5	0.0005	0.8	0.8	0.0008	17.20	1010	Steady	0.10	4.188	4.067
	24/09/2012	0.4	0.3	0.0004	1.2	1.2	0.0012	15.10	985	Steady	0.10	4.193	3.921
	01/10/2012	0.4	0.4	0.0004	1.5	1.5	0.0015	13.10	1003	Steady	0.10	4.187	3.606
WS 1	18/09/2012	0.4	0.4	0.0004	0.1	0.1	0.0001	20.10	1008	Steady	0.10	1.826	0.717
	21/09/2012	0.5	0.5	0.0005	0.1	0.1	0.0001	21.00	1010	Steady	0.10	1.828	0.498
	24/09/2012	0.3	0.3	0.0003	0.2	0.1	0.0002	20.30	985	Steady	0.10	1.822	0.433
	01/10/2012	0.4	0.4	0.0004	0.1	0.1	0.0001	16.30	1003	Steady	0.10	1.826	0.415
WS 2	18/09/2012	0.4	0.4	0.0004	0.8	0.8	0.0008	20.30	1008	Steady	0.60	2.128	0.787
	21/09/2012	0.5	0.5	0.0005	0.5	0.5	0.001	20.50	1010	Steady	0.20	2.130	0.581
	24/09/2012	0.3	0.3	0.0003	0.4	0.4	0.0004	20.40	985	Steady	0.10	2.119	0.850
	01/10/2012	0.4	0.4	0.0004	1.2	1.2	0.0012	19.40	1003	Steady	0.10	2.127	0.588

Notes

NR = Not recorded

Values in Bold exceed the CO₂ Building Regulations threshold (> 1.5%)

Values in Red exceed the Buildings Regulations Action Level (CO₂ >5.0% and CH₄ > 1.5%)

Geo Site Surveys Borehole Log Sheet Tel: 0161 282 8583 Fax: 0161 282 9784 e-mail: toni@geositesurveys.co.uk					Bore Holes No		WS 2				
					Site		Clitheroe				
					Date		07/09/12				
					Rig		Competitor 130				
Depth Mtr	Sampling Details	SPT Depth	Seating Drive 150mm or 25 Blows		Test Drive 50 Blows Max 100 Blows for Soft Rock				W A T E R	Description of Strata	
	CASED -1m		75	75	75	75	75	75			
0 mtr to 1 mtr	101 Sampler	Initial Penetration									GL-1.0 clay U38 1.0m
	87 Liner		6	7	6	9	10	15			
1 mtr to 2 mtr	Sampler	Initial Penetration									1.0-1.8 clay & cobbles 1.8 REFUSAL
	Liner	1.5-1.95m	6	27	50						
2 mtr to 3 mtr	Sampler	Initial Penetration									
	Liner	2-2.45m									
3 mtr to 4 mtr	Sampler	Initial Penetration									
	Liner	3-3.45m									
4 mtr to 5 mtr	Sampler	Initial Penetration									
	Liner	4-4.45m									
5 mtr to 6 mtr	Sampler	Initial Penetration									
	Liner										
Client :			50mm Plain		0.5	Covers		UR			
			50mm Slotted		1.3	Gas Taps		1			
Driller: marcus williams			35mm Plain		0	Bentonite		0.5			
			35mm Slotted		0	Gravel		1.3			
Remarks:											



CABLE & ROTARY DRILLING

32 Mersey Road, Sale, Cheshire M33 6HN

Office Tel: +44 (0)161 282 8583 Fax: 0870-738 6388 Mobile: 07738 929394

Email: info@geositesurveys.co.uk www.geositesurveys.co.uk

TOWN CLITHEROE

SITE NAME CLITHEROE

JOB No

BORE HOLE B/H 1

DATE 10.09.2012 DAY Monday DEPTH TO BASE OF STRATA Mtr

DESCRIPTION OF STRATA

Start of days

Hole depth

Water level

Ø

Ø

CL

1.70

4.00m

END.

CORE RECOVERY = LENGTH

Type = U S C B D Core 412 PWF ETC

U BLOWS = NUMBER

Number

CASED

SPT BLOWS

Type

From

To

Length

To

75

150

225

300

375

450

525

CB

100

145

0.20

Ø

27

50

SB

200

245

0.45

20

4

3

3

2

4

12

SB

300

345

0.45

30

2

3

3

6

5

5

SB

400

445

0.45

40

7

7

4

7

8

8

VERY STIFF SANDY BOULDER

CLAY SOME LARGE BOULDERS

AND COBBLES

BROWN/CREAM SANDY, GRANULAR

CLAY SOME SMALL COBBLES

END OF SHIFT

WATER

Ø

DRILLING AT

4.45m

OBSTRUCTIONS CHISELLING, PITS ETC

Reasons From To Time Hrs

WINCH

TO B/H

CHISSEL 1.30 1.30 1 HR

1.30 1.30 40 MINS

CASING SIZE

From

To

TOTAL SAMPLES TAKEN

BORE HOLE BACK FILLED YES NO

150mm

CL

400

U100

C/S

BULK

D=jar

0

4

8

0

150mm

CL

400

U100

C/S

BULK

D=jar

0

4

8

0

CL

400

U100

C/S

BULK

D=jar

0

4

8

0

INSTALLATION DETAILS

GAS WELL DETAILS

PIEZOMETER DETAILS

ROTARY DRILLING FLUSH TYPE

WATER AIR FOAM MIST

RETURNS STRONG MEDIUM WEAK

TOTAL LOSS AT CASING

RETURNED CASING

REMARKS

DELAYS, PITS, EXTRA OVER 1HR MOVE, Etc.

WATER OBSERVATIONS

STRIKES SEALS SAMPLES ETC

STRUCK AT 5min 10min FLOW RATE

0.80m

15min 20min SEALED

NO

2.70m

STRUCK AT 5min 10min FLOW RATE

15min 20min SEALED

STRUCK AT 5min 10min FLOW RATE

15min 20min SEALED

Yes / No

DRILLER CLIENT

M. Williams

PLAIN TO

0.50

SEAL TO

0.50

FILTER TYPE

SAND OR

PEA GRAVEL

PIPE Dia

50mm

SLOTTED TO

400

FILTER TO

Ø

BOTT SEAL TO

GRAVEL FILL

Ø

GRAVEL ETC

B/H DEPTH

4.00m

BACK FILLED

OR

GROUTED

TOP SEAL

FILTER TYPE

SAND OR

PEA GRAVEL

BOTT SEAL

FILL TYPE

GROUT

GRAVEL Etc

B/H DEPTH



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Email: info@geositesurveys.co.uk www.geositesurveys.co.uk

TOWN CLITHEROE

SITE NAME CLITHEROE

JOB No

BORE HOLE B/H 2

DATE 10.9.2012 DAY Monday DEPTH TO BASE OF STRATA Mtr

DESCRIPTION OF STRATA

Start of days

Hole depth

Water level

CORE RECOVERY = LENGTH

Type = U S C B D Core 412 PWF ETC

U BLOWS = NUMBER

Number

CASED

SPT BLOWS

Type

From

To

Length

To

75

150

225

300

375

450

525

CL

CB

100

145

045

0

4

9

17

9

8

8

CB

200

245

020

20

50

50

SB

300

345

045

30

4

4

5

14

50

SB

400

445

045

40

5

4

5

5

5

6

LIGHT BROWN SANDY

Clay

0.80

FIRM STIFF GRAY BOUNDER

Clay WITH SOME LARGE BOULDER

AND COBBLES

4.00M

END

END OF SHIFT

WATER 0

DRILLING AT

4.45M

OBSTRUCTIONS CHISELLING, PITS ETC

Reasons From To Time Hrs

WINCH 180 230 1 HR

CHISEL 340 380 40 mins

CHISEL 340 380 40 mins

WINCH

OFF SITE 40 mins

CASING SIZE

From

To

TOTAL SAMPLES TAKEN

U100

C/S

BULK

D=jar

BORE HOLE BACK FILLED YES (NO)

From

To

With = GROUT GRAVEL SPOIL

OTHERS

INSTALLATION DETAILS

GAS WELL DETAILS

PIEZOMETER DETAILS

COVER TYPE

U/R

COVER TYPE

VALVE

C/S

CONCRETE

CONCRETE

0.30

PLAIN TO

0.50

BACK FILLED

SEAL TO

0.50

OR

FILTER TYPE

SAND OR

GROUTED

PEA GRAVEL

PIPE Dia

5mm

TOP SEAL

SLOTTED TO

4.00M

FILTER TYPE

FILTER TO

4.00

SAND OR

BOTT SEAL TO

0

BOTT SEAL

GRAVEL FILL

0

FILL TYPE

GROUT ETC

0

GROUT

B/H DEPTH

4.00M

GRAVEL Etc

B/H DEPTH

ROTARY DRILLING FLUSH TYPE

WATER

AIR

FOAM

MIST

RETURNS

STRONG

MEDIUM

WEAK

TOTAL LOSS AT

CASING

RETURNED

CASING

REMARKS

DELAYS, PITS, EXTRA OVER 1HR MOVE, Etc

WATER OBSERVATIONS

STRIKES SEALS SAMPLES ETC

STRUCK AT 5min 10min FLOW RATE

SAMPLE 15min 20min SEALED

STRUCK AT 5min 10min FLOW RATE

SAMPLE 15min 20min SEALED

STRUCK AT 5min 10min FLOW RATE

SAMPLE 15min 20min SEALED

Yes / No

DRILLER

CLIENT

M. Williams

Geo Site Surveys Borehole Log Sheet Tel: 0161 282 8583 Fax: 0161 282 9784 e-mail: toni@geositesurveys.co.uk					Bore Holes No		WS 1				
					Site		Clitheroe				
					Date		07/09/12				
					Rig		Competitor 130				
Depth Mtr	Sampling Details	SPT Depth	Seating Drive 150mm or 25 Blows		Test Drive 50 Blows Max 100 Blows for Soft Rock				W A I E R	Description of Strata	
	CASED -1m		75	75	75	75	75	75			
0 mtr to 1 mtr	101 Sampler	Initial Penetration									GL-1.0 clay U38 1.0m
	87 Liner		5	7	7	6	5	5			
1 mtr to 2 mtr	Sampler	Initial Penetration									1.0-1.5 clay & cobbles 1.5 REFUSAL
	Liner	1.5-1.95m	8	6	21	50					
2 mtr to 3 mtr	Sampler	Initial Penetration									
	Liner	2-2.45m									
3 mtr to 4 mtr	Sampler	Initial Penetration									
	Liner	3-3.45m									
4 mtr to 5 mtr	Sampler	Initial Penetration									
	Liner	4-4.45m									
5 mtr to 6 mtr	Sampler	Initial Penetration									
	Liner										
Client :			50mm Plain		0.5		Covers		UR		
			50mm Slotted		1.0		Gas Taps		1		
Driller: marcus williams			35mm Plain		0		Bentonite		0.5		
			35mm Slotted		0		Gravel		1.0		
Remarks:											

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