



Intended for
Balfour Beatty Construction Ltd.

Project No.
007764/005311

Date
September 2012

Revision
1B

ST AMBROSE HIGH SCHOOL & DRUMPARK ASN

ENVIRONMENTAL & REMEDICATION VALIDATION REPORT

Ramboll UK Ltd.
6 Bells Brae
Edinburgh EH4 3BJ
United Kingdom



Revision History

Revision	Date	Purpose / Status	Document Ref.	Comments
1A	August 2012	DRAFT	7764.E.EVR.1A	
1B	September 2012	Issued in support of planning conditions	7764.E.EVR.1B	

Prepared by:

Reviewed by:

Approved by:



EXECUTIVE SUMMARY

In October 2010, Ramboll UK was commissioned by Balfour Beatty Construction Ltd. to provide an *Environmental Specification* (Ramboll, 2010) for the proposed development at the St Ambrose site.

The *Environmental Specification* was produced in response to the findings of a number of previous site investigations reported in a *Ground Contamination Risk Assessment Report, Detailed Quantitative Risk Assessment* (both Ramboll, 2010), *Risk Assessment of the Water Environment v2* and *Surface Water Impact Assessment* (both Ramboll, 2011).

Following development, Ramboll was commissioned to produce an *Environmental Validation Report* for the site. This report validates all works undertaken on site regarding potential risks to Human Health. Correspondence and validation in regards to potential risks to the Water Environment are not included in this report and will be discussed in an addendum to this report.

The objectives of this report are to:

- Demonstrate that the development has been undertaken in accordance with mitigation measures proposed in the *Risk Assessment Reports* (Ramboll) and *Environmental Specification* (Ramboll, 2010);
- Detail and justify any deviations from the original mitigation measures;
- Highlight any additional remediation measures that may have been adopted as a result of environmental conditions not previously identified;
- Review any residual ground-based Human Health risks resulting from environmental conditions at the site; and
- Satisfy the Planning Authority that ground contamination risks which may present a risk to Human Health have been mitigated for the purpose of supporting the discharge of contaminated land related planning conditions.

The scope of the validation works and risk mitigation measures comprised a part-time presence by an appropriately qualified Ramboll Environmental Consultant on-site and subsequent reporting and included:

- A part-time watching brief by Ramboll Environmental Consultant (Zoë Miller) during development;
- Specification of the level of ground gas protection measures required and confirmation that the specified measures were installed in accordance with the specification and specialist design (Landline);
- Sampling of materials cut from across the site to demonstrate suitability for re-use in areas of fill;
- Import of clean topsoil cover (600mm) in all planted areas;
- Segregation of stockpiles of any potentially contaminated material identified across the site, particularly in the areas of identified elevated lead; and
- Specification of appropriate materials for potable water supply and confirmation of installation as specified.

Consultation has been undertaken with the Contaminated Land Officer at North Lanarkshire Council, Scottish Water, Landline and ABG Ltd. at various times throughout the project.

Based on the information provided to Ramboll, it is considered that the mitigation measures in relation to the protection of Human Health outlined above have been adequately complied with.

CONTENTS

1	INTRODUCTION	3
1.1	Brief	3
1.2	Objectives	3
1.3	Relevant Planning Conditions	4
1.4	Agreed Scope and Purpose of Validation Works	4
1.5	Constraints and Limitations	5
2	CONSULTATION	7
2.1	North Lanarkshire Council	7
2.2	Scottish Water Business Stream Ltd.	7
2.3	Landline Containment Solutions	7
2.4	ABG Environmental Synthetics	7
2.5	Principal Contractor	7
3	RISK MANAGEMENT STRATEGY	8
3.1	Environmental Setting	8
3.2	Risk Management Measures	8
4	ENVIRONMENTAL VERIFICATION	10
4.1	Summary of Environmental Watching Brief	10
4.2	Ground Gas Protection Measures	14
4.3	Potable Water Supply	14
4.4	Potentially Contaminated Material	15
4.5	Cut/Fill Works and Re-use of Materials	18
4.6	Off-Site Disposal of Material	21
4.7	Imported Topsoil and Manufactured Soil Materials	22
4.8	General Site Operations	23
5	CONCLUSION AND RESIDUAL RISKS	24
5.1	Conclusion	24
	DRAWINGS AND FIGURES	25
	NLC-STA-DRG-A-L(0)0001 - Proposed Site Plan	
	7764/E/010 - Borehole Location Plan	
	0569 - TL-8000 Rev B - Chemical Sample Points	
	0569 - Earthworks Isopach Pitches 3-6 Rev A	
	0569 - Pitches 1&2 Isopach Grid Rev C	
	NLC-STA-DRG-C-318 Rev C - Isopach Contours	
	NLC-STA-DRG-E (90)001 Rev F - Proposed Utilities Water Services	
	NLC-STA-DRG-C-111 Rev 8 - Proposed Drainage Layout (Sheet 1)	
	NLC-STA-DRG-C-112 Rev 10 - Proposed Drainage Layout (Sheet 2)	
	MCS/SL/569/RM/001 - Pitches 2, 3 & 4 (make up)	
	MCS/SL/569/RM/002 - Pitch 1 (make up)	
	MCS/SL/569/RM/003 - Pitches 5 & 6 (make up)	
	APPENDIX A: CORRESPONDENCE	26
	APPENDIX A1: NORTH LANARKSHIRE COUNCIL	27
	APPENDIX A2: SCOTTISH WATER	28
	APPENDIX A3: LANDLINE SOLUTIONS LTD. & DETAILS OF GROUND GAS PROTECTION SYSTEM	29
	APPENDIX A4: ABG ENVIRONMENTAL SYNTHETICS (POZIDRAIN)	30
	APPENDIX B: SITE VISIT RECORDS	31
	APPENDIX B1: RAMBOLL UK SITE VISIT RECORDS	32

APPENDIX B2: BBCL SITE MONITORING RECORDS (EXAMPLE OF VISUAL CHECKS OF BURGINS HOLME BURN)	33
APPENDIX C: PHOTOGRAPHS OF THE GROUND GAS PROTECTION SYSTEM INSTALLATION (PROVIDED BY BBCL)	34
APPENDIX D: TIER 1 SCREENING RESULTS	35
APPENDIX E: RESULTS OF CHEMICAL ANALYSIS	36
APPENDIX F: ASBESTOS	37
APPENDIX F1: CONSIGNMENT NOTE FOR ASBESTOS REMOVAL	38
APPENDIX F2: WH MALCOLM METHOD STATEMENT FOR ASBESTOS REMOVAL WH MALCOLM SPECIALIST TRAINING CERTIFICATES	39
APPENDIX F3: PHOTOGRAPHS OF ASBESTOS REMOVAL (PROVIDED BY BBCL)	40
APPENDIX F4: WH MALCOLM WASTE CARRIER LICENCE	41
APPENDIX G: WASTE TRANSFER NOTES & LICENCES	42
APPENDIX G1: WASTE TRANSFER NOTES & LICENCE FOR VIRIDOR	43
APPENDIX G2: WASTE TRANSFER NOTES REGARDING REMOVAL OF WASTE CONCRETE TO WH MALCOLMS	44
APPENDIX H: CERTIFICATES FROM IMPORTED MATERIALS	45
APPENDIX I: GENERAL SITE OPERATIONS	46
APPENDIX I1: MANAGEMENT PLANS	47
APPENDIX I2: EVIDENCE OF ON SITE TOOLBOX TALKS	48
APPENDIX J: ON SITE METHOD STATEMENTS, RISK ASSESSMENTS AND HEALTH & SAFETY DOCUMENTATION	49
APPENDIX K: TEMPORARY SITE DRAINAGE	50
APPENDIX K1: TEMPORARY DRAINAGE PLAN	51
APPENDIX K2: DETAILS OF SOAKAWAY CONSTRUCTION	52
APPENDIX K3: SOAKAWAY MONITORING CHECKLIST	53
APPENDIX L: GAS MONITORING CHECKLIST IN EXCAVATIONS	54
APPENDIX M: PUBLIC LIAISONS	55
APPENDIX M1: EXAMPLES OF COMPLAINTS RECORD	56
APPENDIX M2: EXAMPLES OF COMMUNICATION WITH LOCAL RESIDENTS	57

1 INTRODUCTION

1.1 Brief

In October 2010, Ramboll UK was commissioned by Balfour Beatty Construction Ltd. to provide an *Environmental Specification* (Ramboll, 2010) for the proposed development at the St Ambrose site.

The *Environmental Specification* was produced in response to the findings of a number of previous site investigations reported in the following risk assessment reports:

- *Ground Contamination Risk Assessment Report* (Ramboll, 2010);
- *Ground Contamination Detailed Quantitative Risk Assessment* (Ramboll, 2010);
- *Risk Assessment of the Water Environment v2* (Ramboll, 2011); and
- *St Ambrose Surface Water Impact Assessment* (Ramboll, 2011)

Ramboll was commissioned to produce an *Environmental Validation Report* for the site on completion of the development. This report validates all works undertaken on site regarding potential risks to Human Health. Correspondence and validation with regards to potential risks to the Water Environment are not included in this report and will be discussed in an addendum report.

The Validation Report is required to review available information in relation to the implementation of mitigation measures proposed to protect Human Health in the *Environmental Specification*, *Ground Contamination Risk Assessment*, *Detailed Risk Assessment* and relevant planning conditions.

1.2 Objectives

The objectives of this report are to:

- Demonstrate that the development has been undertaken in accordance with mitigation measures proposed in the *Ground Contamination Risk Assessment Report* (Ramboll, 2010), *Detailed Quantitative Risk Assessment Report* (Ramboll, 2010) and *Environmental Specification* (Ramboll, 2010);
- Detail and justify any deviations from the original mitigation measures proposed in the *Ground Contamination Risk Assessment*, *Detailed Quantitative Risk Assessment* and *Environmental Specification*;
- Highlight any additional remediation measures that may have been adopted as a result of environmental conditions not identified in the *Ground Contamination Risk Assessment*, *Detailed Quantitative Risk Assessment* and *Environmental Specification*;
- Review any residual ground-based Human Health risks resulting from environmental conditions at the site; and
- Satisfy the Planning Authority that ground contamination risks which may present a risk to Human Health have been mitigated in accordance with the *Environmental Specification* for the purpose of supporting the discharge of contaminated land related planning conditions.

1.3 Relevant Planning Conditions

The planning conditions relevant to this *Environmental Validation Report* are reproduced below:

16. That **BEFORE** any works of any description start on the application site, unless otherwise agreed in writing with the Planning Authority, a consolidated site investigation report shall be submitted to and for the approval of the said Authority. The investigation must be carried out in accordance with current best practice advice, such as BS 10175: 'The Investigation of Potentially Contaminated Sites' or CLR 11. The report must include a site specific risk assessment of all relevant pollution linkages and a conceptual site model. Depending on the results of the investigation, a detailed Remediation Strategy may be required.

Reason: To ensure the suitability of the site for the proposed development.

17. That any remediation works identified by the site investigation required in terms of Condition 16 shall be carried out to the satisfaction of the Planning Authority. A certificate (signed by a Chartered Environmental Engineer) shall be submitted to the Planning Authority, prior to the completion of the development, confirming that any remediation works have been carried out in accordance with the terms of the Remediation Strategy.

Reason: To ensure the suitability of the site for the proposed development.

A risk assessment report *St Ambrose - Ground Contamination Risk Assessment Report* (Ramboll, February 2010) details a summary of the additional site investigation works undertaken in 2009 and 2010 in accordance with BS10175:2001 and BS5930:1999 (Amendment No. 1), as well as summarising the findings of previous investigations, and includes a risk assessment of all relevant pollutant linkages. Additional detailed assessment was also undertaken in the report *St Ambrose - Ground Contamination Detailed Quantitative Risk Assessment Report* (Ramboll, February 2010) to develop site specific target values for particular determinands. These reports also outlined a Risk Management Strategy which included recommendations for remedial measures to be carried out during earthworks. An *Environmental Specification Report* (Ramboll, October 2010) provided a summary of how these remedial measures should be carried out on site along with an outline of other environmental procedures which should be adhered to during the works.

We understand that the above reports were considered to be acceptable by the Local Planning Authority at the time of submission. Details of correspondence between Ramboll and the Contaminated Land Officer of North Lanarkshire Council with regards to these reports are included in Appendix A1.

1.4 Agreed Scope and Purpose of Validation Works

The scope of the validation works is detailed in full in the Risk Management Strategy outlined in the *Ground Contamination Risk Assessment Report* (Ramboll, 2010) and further detailed in the Environmental Specification. This comprised a part-time presence by an appropriately qualified Ramboll Environmental Consultant on-site and subsequent reporting and included:

- A part-time watching brief by Ramboll Environmental Consultants [REDACTED] during development;
- Specification of the level of ground gas protection measures required for the building, based on the results of ground gas monitoring, and

confirmation that the specified measures were installed in accordance with the specification and specialist design (Landline);

- Sampling of materials cut from across the site to demonstrate suitability for re-use in areas of fill;
- Import of clean topsoil cover (600mm) in all planted areas;
- Segregation of stockpiles of any potentially contaminated material identified across the site during previous phases of investigation, particularly in the areas of identified elevated lead concentrations (BH308, BH210 and TP102); and
- Specification of appropriate materials for potable water supply and confirmation of installation as specified.

Environmental validation work is necessarily flexible in order to respond to ground conditions encountered. Any alterations to this scope or unforeseen eventualities would therefore be discussed with the Principal Contractor and agreed with the Local Planning Authority as necessary.

The Ramboll Environmental Consultant made regular site visits, in consultation with the Construction Manager, in order to observe and record the progress of earthworks and other intrusive works, and to discuss planned future works with the Construction Manager. Records of these site visits are included in Appendix B1.

1.3 **Context and Limitations**

This report should be read in conjunction with the other relevant reports already submitted for the site listed in Table 1-1 below.

Table 1-1: Reports relevant to the site

Report	Author	Date
St Ambrose High Desk Study	URS	2005
Preliminary Ground Investigation Report	URS	2006
Proposed St Ambrose High School, Ground Investigation Report	URS	2008
Proposed St Ambrose High School, Additional Gas Monitoring	URS	2009
St Ambrose Ground Contamination Risk Assessment Report	Ramboll UK	February 2010
St Ambrose Ground Contamination Detailed Quantitative Risk Assessment Report	Ramboll UK	February 2010
St Ambrose Environmental Specification	Ramboll UK	October 2010
St Ambrose Surface Water Risk Assessment Letter Report	Ramboll UK	March 2011
Risk Assessment of the Water Environment (v2A)	Ramboll UK	April 2011
St Ambrose Amendment to Vehicular Access – Ground Contamination Review	Ramboll UK	March 2012

This report has been prepared for the exclusive use of Balfour Beatty Construction Ltd. for the purpose of verifying that development of the site has been carried out in accordance with the requirements of the planning conditions in relation to potential risks to Human Health, measures proposed in the *Ground Contamination Risk*

Assessment Report, Detailed Quantitative Risk Assessment Report (Human Health) and Environmental Specification (all Ramboll, 2010) to assist them in evaluating any potential residual Human Health risks arising from ground contamination.

Ramboll UK has endeavoured to assess all information provided to them during this investigation, but makes no guarantees or warranties as to the accuracy or completeness of this information. The assessment is based on the assumption that the development has been built in accordance with the design drawings.

Ramboll UK has undertaken a part-time watching brief during key stages of the enabling and construction works. Third party information is relied upon for any aspect of the development for which a watching brief was not held.

The conclusions resulting from this *Environmental Validation Report* are not necessarily indicative of future conditions or operating practices at or adjacent to the site. No conclusions are made regarding risks to the Water Environment.

2 CONSULTATION

With regards to potential risks to Human Health, consultation has been undertaken with the Environmental Health Officer from North Lanarkshire Council throughout the development process, with Landline Containment Solutions and with Scottish Water Business Stream Ltd. at various times throughout the project. Consultation with the Principal Contractor was undertaken throughout the development process.

All communication with the Scottish Environment Protection Agency (SEPA) with regards to potential risks to the Water Environment and the drainage solution is not included in this report and will be discussed in an addendum report.

2.1 North Lanarkshire Council

██████████ Contaminated Land Officer at North Lanarkshire Council's Pollution Control Department, was the principal statutory consultee during the development process. Key correspondence with the Environmental Health Officer is contained in Appendix A1.

2.2 Scottish Water Business Stream Ltd.

██████████ of Scottish Water Business Stream Ltd. was consulted regarding confirmation of the materials to be used for the drinking water supply pipes on site. Ductile Iron water supply pipes were recommended following the risk assessment undertaken by Ramboll (2010) and Scottish Water completed a *successful technical assessment* of these proposals.

Confirmation of this *successful technical assessment* is provided in a quotation letter, dated 29th April 2011, which is included in Appendix A2. The Proposed Utilities Drawing (NLC-STA-DRG-E-(90)001) is also appended to this report.

Confirmation from ██████████ at FES that the water supply pipes had been tested and inspected by Scottish Water is also included in Appendix A2.

2.3 Landline Containment Solutions

██████████ at Landline were the principal consultees during development and installation of the ground gas protection system. Key correspondence with Landline including drawings and details of the ground gas protection system installed and inspection sign-off declaration certificates are contained in Appendix A3.

2.4 ABG Environmental Systems

██████████ at ABG completed an installation inspection of the Pozidrain, installed beneath the make-up of all pitches across the site. The Pozidrain was provided by ABG and installed under their instruction by WH Malcolm. Communication from ABG in Appendix A4 confirms that their standard installation instructions had been followed by WH Malcolm.

2.5 Principal Contractor

Consultation with the Principal Contractor (Balfour Beatty Construction Ltd.) was undertaken prior to and throughout the development process, mainly with the Site Managers (██████████) via emails, telephone conversations and through discussions on site.

3 RISK MANAGEMENT STRATEGY

3.1 Environmental Setting

The environmental setting is described in detail in the *Ground Contamination Risk Assessment Report* (Ramboll, February 2010).

The site is located off Townhead Road, Coatbridge and occupies an area of approximately 13.5Ha. The site is bordered by Townhead Road and residential properties to the north, a community centre, pavilion and residential properties to the east, Drumpellier Park to the south and a Golf Course to the west.

A review of site history is provided in the *Ground Contamination Risk Assessment Report* (Ramboll, February 2010). The site was historically in use as rough pasture in a mining area with railway lines on and adjacent to the site. In the early 1900s, a reservoir was constructed to the southeast of the site boundary and 2No. tanks were installed northeast of the site. Residential developments were constructed to the north of the site by the 1930s and the railway was dismantled. The site was then used as a landfill from 1945-1972, thought to have received an estimated half a million tonnes of domestic refuse from Coatbridge, and sewage/unspecified residue from Gartsherrie Steel Works. By the 1990s the site was remodelled and has been used as playing fields since.

The solid geology underlying the site is classified as moderately permeable according to the Scottish Environmental Protection Agency (SEPA) although the site is not within a source protection zone.

The shallow groundwater reported on site is considered to represent a shallow aquifer typically perched above the peat within the shallow superficial deposits. This perched groundwater table appears to fluctuate depending on the weather.

A small burn ("railway burn") is present, emerging approximately 30m southeast of the site flowing adjacent to the railway towards the east. This burn disappears into what is thought to be a sink hole where it connects into a culverted watercourse and eventually drains into the Burginsholme Burn 400m southeast of the site. Monkland Canal lies approximately 350m south of the site running approximately east to west and Lochend Loch and Woodend Loch lie approximately 450m west and 650m northwest of the site boundary respectively.

The Scottish Environment Protection Agency surface water flood map indicates the site and surrounding area is not at risk from flooding from rivers or sea.

3.2 Risk Management Measures

The potential risks to Human Health associated with ground conditions at the site prior to development were assessed in the *Ground Contamination Risk Assessment Report* and *Detailed Quantitative Risk Assessment* (Ramboll, 2010) for the site and a number of risks to future site users and building materials were identified from the presence of contamination at the site. In order to mitigate these risks, the Risk Management Strategy *Risk Assessment Reports* and the *Environmental Specification Report* (Ramboll, 2010) outlined a number of risk management measures to be implemented as part of the development process at the site:

- A part-time watching brief by Ramboll Environmental Consultants [REDACTED] during development;
- Specification of appropriate ground gas protection measures for the building, based on the results of ground gas monitoring, and confirmation

that the specified measures were installed in accordance with the specification;

- Sampling of materials cut from across the site to demonstrate suitability for re-use in areas of fill;
- Import of clean topsoil cover (600mm) in all planted areas;
- Segregation of stockpiles of any potentially contaminated material identified across the site, particularly in the areas of identified elevated lead concentrations (BH308, BH210 and TP102); and
- Specification of appropriate materials for potable water supply and confirmation of installation as specified.

The implementation of these measures during the development period formed the basis of the risk management strategy for the site and verification that such measures were undertaken form the basis of the validation works for the site and are addressed in the remainder of this *Environmental Validation Report*.

4 ENVIRONMENTAL VERIFICATION

The site activities undertaken in accordance with the proposed risk management measures identified in the *Ground Contamination Risk Assessment Report*, *Detailed Quantitative Risk Assessment* and *Environmental Specification Report* and summarised in Section 3.2 are detailed in the following sections as well as any other risk management measures that were adopted during development at the site.

4.1 SUMMARY OF ENVIRONMENTAL WORKING ON SITE

30No. site visits were undertaken during the development period between September 2010 and September 2012 by [REDACTED]. Detailed notes for each of these site visits are contained in Records of Site Visits, presented in Appendix B1. Table 4-1 below contains a brief summary of the validation works undertaken on each visit.

Table 4-1: Summary of Validation Work/Observations During Site Visits

Date of Visit	Summary of Validation Work Undertaken/Site Works Observed
23 rd September 2010	[REDACTED] on site for start of enabling works; heras fencing is being erected; CPT tests on-going; infiltration tests on-going; temporary site compound has been constructed.
6 th October 2010	[REDACTED] and [REDACTED] on site for start of enabling works; Site fencing is fully erected and site is accessible to public; topsoil strip has started; topsoil is being stockpiled adjacent to the north site boundary; earthworks have started in southwest corner; infiltration tests on-going; discussion with Contractor regarding sampling techniques and compliance with <i>Environmental Specification</i> .
13 th October 2010	[REDACTED] on site for on-going works; topsoil strip has been extended across pitches in the northeast and central area of site; piling mat is being constructed using imported hard core material; badger exclusion zone has been set up on the southern site boundary; fragments of cement-bonded asbestos roofing sheets have been identified in southwest corner of site; met with site contractor regarding sampling; [REDACTED] observed [REDACTED] sampling techniques; infiltration tests on-going.
27 th October 2010	[REDACTED] on site for regular site visit; topsoil and subsoil stripped from northeast pitches; topsoil stockpiled in north and southwest of site; cut and fill works on-going; piling mat has been extended; haulage road is starting to be prepared; asbestos has been removed from southwest corner of site and placed in a closed skip; mine stabilisation works have started; infiltration tests on-going.
3 rd November 2010	[REDACTED] on site for regular site visit; cut and fill extended towards the east and west; excavation for haulage road is on-going; temporary access being constructed on eastern site boundary; main site offices are being constructed; more cement-bonded asbestos roofing sheets have been encountered in the north-eastern area of site; mine stabilisation works are on-going.
18 th November 2010	[REDACTED] on site for regular site visit and meeting with SEPA; cut and fill works are on-going; haulage road is being construction; site office complex has been extended; heras fencing has been replaced by site hoarding; ecologist has realigned site boundary in area of badger sett; asbestos material has been removed from site; mine stabilisation works are ongoing; piling mat is being extended; significant standing water in southeast area of site; met with SEPA to investigate reports of a discharge into an un-named burn 1km south of the site; SEPA and [REDACTED] agreed that this discharge was unlikely to be a result of site activities but further monitoring is recommended; area south of the site boundary has become extremely waterlogged and water is upwelling in this area with an orange colour indicative of iron hydroxide; southeast of the site in the

Date of Visit	Summary of Validation Work Undertaken/Site Works Observed
	burn adjacent to the railway is also showing signs of iron hydroxide.
15 th December 2010	█ on site for regular site visit; works had been stopped on site due to snow; piling mat has been cleared and piling works have started on site; piling mat is being extended; cut and fill works are on-going; more site offices have been constructed; haulage road is being built up; snow is being cleared from site; mine stabilisation works on-going; area of standing water on site is being drained and infilled with geotextile and imported hardcore; visual observation of local burns and area of upwelling south of the site.
13 th January 2011	█ on site for regular site visit; piling is on-going on southwest area of site; mine stabilisation works are on-going; tarmac access routes to site are being constructed; a temporary attenuation soakaway has been constructed for site drainage; standing water in the southwest of the site has been removed and infilled; visual observation of local burns and area of upwelling south of the site.
25 th January 2011	█ on site for regular site visit; site car park has been constructed; piling works are on-going; piling mat is being extended; mine stabilisation works are on-going; cut and fill works are on-going; visual observation of all surface water features in the vicinity of the site.
3 rd February 2011	█ on site for regular site visit; piling works on-going; pile caps are being undertaken; cut and fill works are on-going; site car park has been completed; drainage runs are beginning to be excavated; haulage road is being undertaken; mine stabilisation works are on-going; visual observation of all surface water features in the vicinity of the site.
9 th February 2011	█ and █ on site for regular site visit; piling works on-going; pile caps are being installed; piling mat is being extended; recycling skips set up on site; mine stabilisation works nearing completion; cut and fill works on-going; visual observation of all surface water features in the vicinity of the site.
17 th February 2011	█ on site for regular site visit; majority of piling works now complete; piling mat has been extended outside of the building footprint to allow for piling beneath drainage runs; pile caps are being installed; build-up of haulage road is continuing; cut and fill works on-going; additional car park east of the site is being prepared; mine stabilisation works are nearing completion; visual observation of all surface water features in the vicinity of the site; samples taken from surface water features.
2 nd March 2011	█ on site for regular site visit; piling works are now complete beneath the building footprint; piling beneath drainage runs is on-going; pile caps continue to be installed; haulage road has been built up in preparation for steelwork delivery; steelwork construction has commenced; drainage excavations have commenced; mine stabilisation works are complete; ; visual observation of all surface water features in the vicinity of the site; comparison of sample taken from tributary of Bishop's Burn and the groud show no correlation.
7 th March 2011	█ and █ on site for regular validation visit; piling beneath drainage runs is on-going; pile caps are being installed; █ is continuing with steelwork construction; drainage and utilities are being laid in east of site; visual observation of all surface water features in the vicinity of the site; observations of a flooded air pit south of the site boundary indicates further upwelling of water and iron hydroxide.
11 th March 2011	█ on site to monitor surface water features in the vicinity of the site.
14 th March 2011	█ on site to monitor surface water features in the vicinity of the site.
21 st March 2011	█ on site to monitor surface water features in the vicinity of the site. A gas leak has been identified in area of unstable ground and this has been repaired.
24 th March 2011	█ on site for regular site visit and meeting with SEPA; piling works are

Date of Visit	Summary of Validation Work Undertaken/Site Works Observed
	all complete; pile caps are being installed; steelwork construction is on-going; utilities and drainage is being installed in the east; excavations for installation of drainage are on-going in southwest corner of site and water encountered is being pumped to the temporary attenuation soakaway on the west site boundary; soil strip is on-going in northwest of site; visual observation of all surface water features in the vicinity of the site with ██████████ of SEPA.
29 th March 2011	█████ on site for regular site visit; pile caps are still being completed; steel work construction is on-going; drainage and utilities are being installed in the southeast of the site; excavations for installation of drainage are on-going in southwest corner of site and water encountered is being pumped to the temporary attenuation soakaway on the west site boundary; this pond is being extended; a second attenuation soakaway has been constructed to the south of the site; northwest pitch has been stripped of topsoil and subsoil; subsoil and topsoil is being stockpiled adjacent to north boundary; cut and fill works on-going; type 1 material has been imported for beneath the building footprint; visual observation of all surface water features in the vicinity of the site.
5 th April 2011	█████ on site for regular site visit; pile caps are almost complete; steelwork construction is on-going; services are being installed in eastern area of site, supervised by FES; drainage excavations are on-going and water encounters is being pumped to settling pond; pond at western site boundary has been cleaned and extended; cut and fill works ongoing in northwest of site; visual observation of all surface water features in the vicinity of the site.
5 th May 2011	█████ on site for regular site visit; pile caps are complete across the site; steelwork construction is on-going; additional services are being installed to east; installation of drainage in excavations is on-going and water encountered is being pumper to attenuation soakaways; cut and fill works are on-going in northwest; topsoil has been stripped from southern pitches; visual observation of all surface water features in the vicinity of the site.
26 th May 2011	█████ on site for regular site visit and meeting with SEPA; steelwork construction is on-going; first and second floor slabs have been poured in some areas; ground floor being prepared for pouring; installation of ground gas protection system by Landline specialists has commenced; concrete for the swimming pool is being poured; drainage excavations are continuing and water is being pumped from these excavations; attenuation soakaway to west is almost overflowing along emergency outfall trench; ██████ to monitor every day and stop pumping should overflow be suspected; cut and fill works on-going in northwest; visual observation of all surface water features in the vicinity of the site.
24 th June 2011	█████ on site for regular site visit and meeting with SEPA; ground gas protection system is still being installed; pitch make-up is on-going; eastern most pitch has been built up following installation of geotextile and impermeable membrane; visual observation of all surface water features in the vicinity of the site with ██████
6 th July 2011	█████ on site for regular site visit; steel work construction is nearing completion; ground floor slab has been poured above gas protection system in west of building; brickwork, cladding and windows are being installed; preparation for pouring concrete slab in other areas of site is on-going; ground gas protection system still being installed by Landline in central area of the building; some outdoor hard landscaping is on-going; drainage works on-going; recent rainfall has resulted in standing water on site and settling pond is extremely full, BBCL have stopped pumping until water level in this pond has dropped; pond to the south of site has been extended; cut and full works on-going in southern pitches; power station has been installed; north pitches have been levelled and prepared using site won material and imported fill; visual observation of all surface

Date of Visit	Summary of Validation Work Undertaken/Site Works Observed
	water features in the vicinity of the site.
22 nd August 2011	█ on site for regular site visit and meeting with SEPA; steelworks are nearing completion; cladding and brickwork is on-going; ground floor slab is being poured in central site area; installation of ground gas protection system is on-going by Landline; drainage works are on-going; settling pond to the south of site is now in use; north pitches are being prepared; visual observation of all surface water features in the vicinity of the site with █ of SEPA.
14 th October 2011	█ on site for regular site visit; steelwork construction has been completed; cladding and brickwork is on-going; ground floor slab has been poured over entire building footprint; fit out of building is on-going; drainage works are nearing completion; attenuation soakaway on west site boundary has been in filled; artificial pitches in north have been compacted with imported stone to allow settling; two grass pitches in north have been turfed; car park area and access route north of the building is being prepared; visual observation of all surface water features in the vicinity of the site.
28 th November 2011	█ on site for regular site visit; brickwork and glasswork on-going; cladding on-going; drainage works nearing completion; settling pond to south still in use and very full, additional filter trench installed down gradient; material has been brought to site for installation of attenuation ponds; southern pitches have been compacted and levelled; visual observation of all surface water features in the vicinity of the site.
13 th January 2012	█ on site for regular site visit; main building structure is nearing completion; drainage works complete except some small areas east of the building; attenuation tank is being installed on the eastern site boundary and material cut from here is being placed on southern pitches; visual observation of all surface water features in the vicinity of the site.
23 rd March 2012	█ on site for regular site visit; building nearing completion; drainage works complete except some isolated areas; attenuation tank to the east has been installed and excavation has been backfilled; surplus material has been used to balance southern pitches; landscape areas have been constructed in southeast corner; planting is due to start imminently; service installations are on-going adjacent to Townhead Road; visual observation of all surface water features in the vicinity of the site.
25 th May 2012	█ on site for regular site visit; building is complete with the exception of some facades; car parking areas are being blocked and paved; attenuation soakaway south of the site has been in filled; landscaping and planting works are on-going; access route along the eastern site boundary has been laid out; sand slitting is on-going in grass pitches and imported topsoil removed is being used in planted areas across the site; artificial pitches in the north are being laid; fencing and lighting posts have been installed around the pitches; south pitches have been levelled with imported stone to allow settling; fitting out of building is on-going; pump system for ground gas protection system has been installed; visual observation of all surface water features in the vicinity of the site.
10 th August 2012	█ on site for regular site visit; external structure of building is complete and internal fit-out is continuing; car parking areas are nearing completion; planting works are on-going; access route along the eastern site boundary has tarmaced; all pitches are complete with lighting columns and paths complete and fencing nearing completion; visual observation of all surface water features in the vicinity of the site.

As well as regular visits by a Ramboll Environmental Consultant, weekly checks of the site and surrounding area were undertaken by BBCL's site Environmental Coordinator █. An example of the reports produced each week is provided in Appendix B2.

4.2 Ground Gas Protection Measures

A classification of Characteristic Situation 4 was considered appropriate for the site based on reported concentrations of ground gas during the site investigations. This was approved by North Lanarkshire Council's contaminated land officer (CLO) as part of the approval for the *Ground Contamination Risk Assessment Report* (Ramboll, 2010).

Correspondence with the CLO in regards to the ground gas protection measures are provided in Appendix A1.

Landline Containment Solutions were employed to design and install a ground gas protection system in accordance with current guidelines, which would comply with Characteristic Situation 4. The system Landline has designed and installed included a high specification, gas resistant membrane and void former venting system attached to outlets to allow air to circulate beneath the building. This is an intelligent system, which includes a network of below floor sensors, which sample the air beneath the building on a regular basis. Should these sensors detect elevated ground gas (set at a suitably low concentration), an active fan system is switched on to introduce more air into the space beneath the building and dilute the concentrations of gas beneath the building. Further information on this system is provided in Appendix A3.

The ground gas protection system has been installed by Landline's installation engineers who operate to a stringent CQA regime. Landline have provided CQA certificates to detail inspection sign off of the gas protection system. These are included in Appendix A3 along with drawings of the system installed.

During numerous site visits undertaken by Ramboll, photographs of the installation of the gas protection system were obtained (see Appendix B1). The Ramboll engineer made checks that all penetrations of the membrane had been appropriately taped and sealed and that the installation was being undertaken by Landline installation engineers. Although Ramboll was not present full time during installation of the ground gas protection system, during all visits Ramboll observed that the system was being installed in accordance with the *Environmental Specification* and Landline's proposals. Additional photographs obtained by the Contractor illustrating the installation of the ground gas protection system are included in Appendix C.

4.3 Potable Water Supply

In the *Ground Contamination Risk Assessment Report* (Ramboll, 2010) the following statement was made regarding materials proposed for drinking water supply pipes:

Various contaminants have been reported as elevated when compared to the WRAS screening criteria. In order to protect the mains water supply from contamination in Made Ground strata across the site, it is recommended that wrapped iron pipes are used for potable water supply.... Detailed and early consultation with Scottish Water is strongly recommended in this regard.

Scottish Water reviewed the drawings and application submitted by FES regarding the use of ductile iron pipes for the water supply on site. A report referring to the "successful technical assessment of [their] application" is provided in Appendix A2. Drawing NLC-STA-DRG-E-(90)001 is provided for reference and illustrates the locations of these water mains and the material used. This drawing was submitted with the application to Scottish Water and approved as per the response provided in Appendix A2.

FES confirmed via email that all pipe work has been installed, inspected by Scottish Water and tested to the Scottish Water Code of Disinfection. Communication from [REDACTED] at FES, which includes these details, is provided in Appendix A2.

4.4 Potentially Contaminated Material

Given the previous use of the site as a landfill, there was the potential to encounter localised pockets of contaminated material during the earthworks. A strategy was put into place in the Environmental Specification in order to manage potential risks associated with this material, should it be encountered.

The only potentially contaminated material encountered during the earthworks was areas of asbestos containing materials. Further details regarding this material are provided in Section 4.6 below.

Following the *Ground Contamination Risk Assessment Report* and *Detailed Quantitative Risk Assessment Report* (Ramboll, 2010) a number of hotspots of lead were encountered in the area of the pitches, north of the site, one hotspot of lead was encountered beneath the building footprint and in supplementary investigation as part of the site works one hotspot of lead was also encountered in the area of car parking north of the building (as illustrated on drawing 7764/E/010).

In the *Environmental Specification Report* (Ramboll, 2010) recommendations were made to ensure that during excavation works in these areas, additional testing should be undertaken to ensure the material is suitable for reuse on site.

4.5 Topsoil and Imported Sub-base Material

In the area beneath the central and eastern areas of the building footprint (BH308 lead hotspot) and the car parking area north of the building (SOP24), no Made Ground material was excavated as part of the earthworks. Topsoil was stripped from these areas and stockpiled in the southeast corner of site. 4No. samples were taken from this stockpile of topsoil (8002-8004; 8010) and no elevated concentrations of lead were reported (maximum concentration recorded was 300mg/kg). Further details on the topsoil reused across the site is provided in Section 4.7 below.

The hotspot of lead, encountered beneath the building footprint has been placed beneath 1m fill, cut from the south-western area of site and over 600mm of hard core 6F2 material has been placed above this material and compacted to create a piling platform for construction of the building.

The hotspot of lead encountered beneath the car parking area has been placed beneath approximately 0.50m of site won fill, an impermeable membrane, 350mm imported stone sub base material and a further geotextile separation layer before being capped with clean stone and porous paving (130mm).

Further information regarding the imported sub-base material used is detailed in Section 4.7 below.

Given this area of lead impacts has not been disturbed, and that they are now located beneath hardstanding, there is not considered to be any direct contact or inhalation pathways to present a significant risk to Human Health. The Final Conceptual Site Model (Human Health), Drawing 7764/E/201 further illustrates this.

During the enabling works on site, excavation works were undertaken across the site, including across the northern pitches. An *Earthworks Isopach (Pitches 3-6)* drawing is appended to this report and illustrates the movement of material across these pitches. A Ramboll Environmental Consultant was on site at numerous occasions during earthworks in these areas and no evidence of potentially contaminated material was encountered during these visits.

The information below details the results of validation sampling in the vicinity of previously identified hotspots of lead.

Hotspot – TP102

In TP102, 1,400mg/kg lead was reported during the 2009 investigation at a depth of 1.80m. This is in an area of proposed fill (~1.00m) on pitch 3 as illustrated on the *Earthworks Isopach Pitches 3-6* Drawing. The only excavation works in this area included a topsoil strip and topsoil stripped from this area was stockpiled adjacent to the northern site boundary, prior to further testing. The results of this testing are discussed in Section 4.5 below. Following the topsoil strip, 3No. samples from Made Ground were taken in this area as part of the validation (8037-8038, 8083). All three samples reported lead concentrations below the GAC, with a reported maximum concentration of 350mg/kg.

Hotspot – BHS210

In BHS210, 3,600mg/kg lead was reported during the 2008 investigation at a depth of 4.00m on pitch 6. This is in an area of proposed cut, and during excavation works in this area, Made Ground material was cut to a depth of approximately 0.70mbgl. 1No. sample was taken from the immediate vicinity of this hotspot (8099) and reported a lead concentration of 250mg/kg, significantly below the recommended GAC.

A total of 9No. samples were obtained from the cut material across pitch 6 (refer to Drawing 0569-TL-800, *Chemical Sample Points*) and of these 9No. samples, 2No. reported concentrations of lead slightly above the GAC (540mg/kg, 550mg/kg). However, statistical analysis of these 9No. samples (in accordance with CIEH guidance (2008)) indicates a 95%UCL of 430mg/kg, below the recommended GAC of 450mg/kg (see Table 4-1 below) therefore is not considered to present a significant risk to Human Health.

Hotspot – SOP25B

During the additional investigation works undertaken during preliminary earthworks in 2010, another lead hotspot was identified at SOP25B at 3.00mbgl (1,100mg/kg). 1No. sample has been taken in this area prior to fill works (8042) and reported lead concentration of 290mg/kg. This area has been subject to fill works of approximately 1.50m, using material from the north half of the northern pitches. This lead hotspot is therefore beneath over 4.50m of site-won material (refer to Section 4.5 below for further details).

A total of 38No. samples of Made Ground material were taken from across the northern pitch areas (pitches 3-6); 18No. samples from material in areas of cut and 20No. samples from material in areas of fill. In addition, subsoil excavated from pitches 3 and 4 was excavated and stockpiled in the central area of pitch 4 and subject to chemical analysis (3No. samples). All samples were analysed for lead,

along with a suite of other contaminants (Screening Tables are provided in Appendix D). The pitch numbers are illustrated on Drawing 7764/E/010.

The following table provides analysis of all lead concentrations recorded during the validation sampling.

Table 4-2: Summary of recorded lead concentrations from north pitches & results of statistical analysis

Area	No. Samples	No. Lead Exceedences (>450mg/kg)	Maximum Lead Concentration (mg/kg)	Upper Confidence Limit (excluding outliers) (mg/kg)	Outliers
All Made Ground Material (cut and fill)	38	7	1,900	388	1No. (1,900mg/kg) Sample 8019
Material in cut areas	18	4	590	395	None
Material in fill areas	20	3	1,900	401	1No. (1,900mg/kg) Sample 8019
Pitch 3	9	1	470	377	None
Pitch 4	12	0	-	376	None
Pitch 5	11	4	1,900	472	1No. (1,900mg/kg) Sample 8019
Pitch 6	9	2	550	433	None

The results and statistical analysis of these results indicate that in the area of the northern pitches, lead is typically at concentrations significantly below the lead GAC of 450mg/kg, with only ~15% of samples slightly exceeding the GAC (max. concentration recorded was 590mg/kg) and the 95%UCL from areas of cut and fill across the four pitches well below the GAC.

1No. sample, from an area of fill on pitch 5 did indicate another lead hotspot, recording concentrations of 1,900mg/kg (8019). The statistical analysis of material sampled from pitch 5 also indicated a 95%UCL slightly above the GAC for lead of 450mg/kg. However, the material in the area of 8019 has been left in-situ, and has had approximately 0.6m site-won fill placed above it from the areas of cut at the northern edge of this pitch and from pitch 6 as illustrated on the *Earthworks Isopach Drawing Pitches 3-6*. In addition, when the statistical analysis of samples taken from across the northern pitches (including analysis of cut and fill quantities) is considered, the 95%UCLs are significantly below the GAC and given material has been moved between pitches during the earthworks, these 95%UCL are considered more reliable.

Further information regarding the re-use of this material is detailed in Section 4.5 below.

Both pitches 5 and 6 are grass and following earthworks, a Pozidrain system (ABG Ltd.) has been installed, which has been overlain by 60mm of imported grit and 200mm of imported topsoil (refer to Section 4.7) including a top 50mm of amelioration sand worked into the topsoil. This make-up is illustrated in Drawing MCS/SL/569/RM/003, *Pitches 5 & 6 Ameliorated*.

Pitches 3 and 4 are artificial and they too have a Pozidrain system, overlain by 250mm type 1 hard core, 50mm stone and 60mm pitch carpet.

The Pozidrain system essentially acts as an impermeable membrane collecting rainwater and directing it to the surface water drains at the south of the pitches (see Drawing NLC-STA-DRG-C-111, *Proposed Drainage Layout*). This therefore acts as a

physical barrier across all four northern pitches, ensuring there is no direct pathway between the Made Ground material and site users (see the Conceptual Site Model 7764/E/201).

1.5 Cut/Fill Works and (Re-used) Materials

Significant amounts of cut and fill were required across the site as illustrated on Drawing *Earthworks Isopach*. Photographs taken by Ramboll UK are provided in the Site Visit Notes in Appendix B1 and show significant material movement across the site.

Approximately 32000m³ of material was re-used on site as part of the earthworks and an additional 24,700m³ of topsoil and subsoil was re-used in grassed landscaped areas.

Where possible, material movements across the site were kept to a minimum. Material cut from the pitches in the north used for fill on the other northern pitches, material cut from the southwest corner was compacted beneath the building and haulage road and material from excavations for the attenuation tanks and any surplus from across the site were used to balance the pitches in the south.

In order to ensure material cut from site was suitable for reuse, validation sampling of soils was undertaken by the Contractor across the site. The locations of these samples are illustrated on the Drawing *Chemical Sample Points, 0569-TL-8000*. Screening tables, highlighting any exceedences of the residential without home-grown produce GACs (and site specific target values developed for this site), are provided in Appendix D and the full laboratory reports are provided in Appendix E.

A total of 110No. samples were taken during validation sampling and sent to either Severn Trent Laboratories in Coventry or Exova Laboratories in Clydebank. 65No. samples were taken from Made Ground (landfill) material across the site and 45No. samples were taken of site won topsoil and subsoil.

The majority of samples were tested for a standard suite of testing including heavy metals, inorganics, pH, asbestos, speciated poly aromatic hydrocarbons (PAHs) and total petroleum hydrocarbons (TPH). In addition, a small number of samples were subject to more specific testing including 90No. samples analysed for speciated TPH-CWG, 10No. samples fraction of organic carbon, 2No. samples for volatile and semi-volatile organic compounds (VOCs, SVOCs) and poly chlorinated biphenyls (PCBs) and 1No. sample was also analysed for dioxins.

All concentrations of TPH-CWG were reported significantly below the respected GAC for each fraction. Therefore there is not considered to be a significant risk to Human Health from petroleum hydrocarbons. In addition, the lower, more volatile fractions of TPH were all recorded either below laboratory detection or significantly below the recommended GAC, indicating there is no significant risk to Human Health from volatile hydrocarbons. This is further demonstrated as 2No. samples analysed for VOCs and SVOCs reported concentrations below laboratory detection limits.

Table 4-3: Summary of Validation Sampling

Location	Date of Sampling	Validation Sample No.	Lab Report No. (STL/Exova)	Result
Made Ground (samples from cut and fill areas in northern pitches)	27 th October 2010	2No. samples (Ref: 19, 20; WHM Ref: 8018, 8019)	COV/734528/2010	No exceedences in 8018; Lead, arsenic and PAH exceedences in 8019
	5 th May	16No. samples (Ref:	COV/775493/20	3No. marginal pH

Location	Date of Sampling	Validation Sample No.	Lab Report No. (STL/Exova)	Result
	2011	Subsoil5 - Subsoil20; WHM Ref: 8035-8050)	11	exceedences in 8037-8038, 8041; 5No. marginal lead exceedences in 8035, 8044-8046, 8050
	6 th June 2011	20No. samples (Ref: 1-20; WHM Ref: 8083-8102)	COV/782647/2011	1No. lead exceedence in 8102
Topsoil Stockpiles (topsoil stripped from across site and stockpiled in the southwest corner and north boundary)	13 th October 2010	6No. samples (Ref: 3-8; WHM Ref: 8002-8007)	COV/732107/2010	All determinands below recommended GAC
	27 th October 2010	3No. samples (Ref: 11-13; WHM Ref: 8010-8012)	COV/734528/2010	All determinands below recommended GAC
	4 th November 2010	3No. samples (Ref: 23-25; WHM Ref: 8022-8024)	COV/736211/2010	All determinands below recommended GAC
	5 th May 2011	4No. samples (Ref: Topsoil1-4; WHM Ref: 8031-8034)	COV/7755493/2011	All determinands below recommended GAC
Subsoil stockpiles (subsoil stripped from across site and stockpiled at north site boundary, in area of attenuation tank east of site and on pitch 3)	4 th November 2010	3No. samples (Ref: 26-28; WHM Ref: 8025-8027)	COV/736211/2010	All determinands below recommended GAC
	6 th June 2011	16No. samples (Ref: 21-36; WHM Ref: 8103-8118)	COV/782647/2011	All determinands below recommended GAC
	11 th January 2012	10No. samples (Ref: Subsoil1-10; WHM Ref: 8051-8060)	12/0074/C/C1 Report 3	All determinands below recommended GAC
Made Ground (samples from cut and fill areas in southern pitches)	11 th January 2012	12No. samples (Ref: Pitch 1/1-Pitch 2/6; WHM Ref: 8071-8082)	12/0074/C/C1 Report 2	All determinands below recommended GAC
Made Ground (samples from cut and fill works in southeast corner of site, beneath building and beneath car park)	13 th October 2010	4No. samples (Ref: 1-2, 9-10; WHM Ref: 8000-8001, 8008-8009)	COV/732107/2010	4No. marginal exceedences of lead (8000-8001; 8008-8009)
	27 th October 2010	5No. samples (Ref: 14-18; WHM Ref: 8013-8017)	COV/734528/2010	3No. marginal exceedences of lead (8013; 8015-8016)
Asbestos validation testing (following removal of asbestos material found on site)	8 th November 2010	4No. samples (Ref: 32-35; WHM Ref: 9000-9003)	COV/736964/2010	No asbestos detected

Site-won Topsoil

Validation samples have been taken from the topsoil stripped from the site and stockpiled temporarily on site adjacent to the north boundary and in the southwest corner of site. All determinands in topsoil were reported below the recommended GAC.

This material has therefore been considered suitable for reuse as topsoil in landscaped areas across the site where required.

Subsoil

Validation samples have been taken from the subsoil stripped from the site and stockpiled temporarily adjacent to the northern site boundary, in the area of the

attenuation tank in the east area of site and on pitch 3. All determinands in the subsoil were reported below the recommended GAC.

This material has therefore been considered suitable for reuse on site and has been used where required, either beneath approximately 350-400mm topsoil in landscaped areas or beneath the pitch make-up.

Made Ground

Typically, determinands were reported below the recommended GAC in the samples of Made Ground from across the site.

In the areas beneath the building, in the southwest corner of site and beneath the car park, samples taken reported all determinands below the recommended GAC, with the exception of lead in 7No. samples. Lead exceedences in these samples ranged from 460mg/kg to 680mg/kg.

This material was used in fill works beneath the building, car parking areas and haulage route, therefore has been placed beneath compacted hard core material and hardstanding and therefore is not considered to present a risk to Human Health.

In the southern pitches, material cut from these areas was typically used in fill works within the immediate area (refer to *Drawing Pitches 1 & 2, Isopach Grid*) beneath the pitch make up, or compacted in soft landscaped areas beneath at least 600mm of site-won topsoil/subsoil. Chemical analysis of samples taken from these pitches indicated determinands all below the recommended GAC therefore this material is considered suitable for reuse in its proposed location.

In the area of the northern pitches 7No. lead exceedences were reported. 6No. of these were marginal (470-590mg/kg) and following statistical analysis (as illustrated in Table 4-2 above) the 95%UCL from across these pitches was significantly below the recommended GAC (388mg/kg). However, a hotspot of lead was reported in sample 8019 (1,900mg/kg). Marginally elevated concentrations of arsenic and PAHs were also reported in this sample. As discussed further in Section 4.4.3, this hotspot is in an area of ~0.60m fill, overlain by pitch make-up and other than a topsoil strip, no material has been cut from this area.

All material cut from these pitches has been used in fill works on the pitches, as illustrated in *Drawing Earthworks Isopach Pitches 3-6*, with any surplus compacted beneath the building and haulage road make-up. Given the results of statistical analysis from testing across these pitches and the fact that this material has been compacted beneath the pitch make-up (further discussed in Section 4.4.3 above) this material is not considered to present a significant risk to Human Health in its current position.

Summary

In summary, soil validation works demonstrate that materials used for cut/fill works were suitable for re-use.

The only sample representing soils identified as a potential localised hotspot of contamination is Sample 8019, which was taken from Made Ground material on pitch 5. This material has remained in-situ beneath approximately 0.6m site-won fill, an impermeable membrane and the pitch make-up, comprising 60mm imported grit and 200mm imported topsoil. This material is therefore considered suitable for use in the context of the design for pitch 5 and is not considered to present a risk to Human Health.

4.6 Off-Site Disposal of Material

The cut and fill works were carefully balanced to ensure that all material deemed suitable for reuse could be used on site. Approximately 32000m³ of material was re-used on site as part of the earthworks and an additional 24,700m³ of topsoil was re-used in grassed landscaped areas.

Approximately 1690m³ of material was deemed unsuitable for reuse and was removed from site. This included glass bottles screened from the Made Ground material onsite and other co-mingled waste. A representative selection of Waste Transfer Notes regarding removal of this material is presented in Appendix G1. This material was disposed of at Viridor Enviroscott Ltd. and their certificate of registration is also included in Appendix G1. In addition, concrete materials was deemed unsuitable for reuse and was sent to WH Malcolms depot for recycling and reuse. Waste transfer notes for this material are included in Appendix G2.

In addition to the above material, 9330kg of material contaminated with asbestos as detailed in Section 4.7.1 below, was removed from site by WH Malcolms and disposed off site to Patersons of Greenoakhill Ltd under Duty of Care. A consignment note is included in Appendix F1 detailing the removal of this material.

4.7 Asbestos

As detailed above, asbestos containing materials were located in 2No. areas of site during preliminary earthworks in October and November. One area was in the southeast corner of the site, and the other was close to the eastern site boundary. Further details of this material are included in Site Visit Notes from 27th October and the 3rd November 2010. The material in both areas was a similar type; fragments of cement-bonded asbestos sheets.

The site Contractor WH Malcolm had immediately stopped works on discovered of this material. Each area was signed and fenced off (area of approximately 5m) to prevent entry by other site users. The material was also damped down using a fine spray to prevent release of any airborne fibres prior to and during removal.

Ramboll Environmental Consultant observed that each area had been appropriately fenced off during the site visits and WH Malcolm and Balfour Beatty had appropriate health and safety procedures in place to ensure the area was not disturbed further and prepare for the safe removal of this material. Method Statements from removal of this material is provided in Appendix F2 along with training certificates from Malcolms site staff.

The material was removed by hand picking by appropriate trained site staff in appropriate PPE and placed in double, sealed, polythene bags and placed into a closed skip. Photographs taken during removal of this material are included in Appendix F3. Made Ground material in the vicinity of the asbestos sheeting was also excavated and placed in the skip. The skip was then moved to the second area of asbestos encountered (eastern area of site) and the same procedures were adopted to remove this material.

The 9330kg of contaminated material was removed by site by WH Malcolm (waste carrier licence is included in Appendix F4) and disposed of at Patersons of Greenoakhill Ltd (see consignment note in Appendix F1).

Samples were taken from the materials left in situ and subjected to asbestos screening. No asbestos was detected in any of these samples (see Table 4-3 above and Appendix D).

4.7 Imported (Aggregate and Manufactured) Soil Materials

Approximately 56,320tonnes of material was brought to site including the following (approximate values):

- 43,000T - 6F2 (whole site)
- 2,500T - Clean stone 63/10 (car parks)
- 420T - Clean stone 5 mm (car parks)
- 7,000T - Type 1 (roads, footpaths)
- 1,400T - Pipe bedding (drainage lines)
- 300T - Clean stone 4"x 2" (drainage)
- 600T - Fines (building footprint)
- 1,100T - Sand, as dug (backfill)

This manufactured material was brought onto site from various sources. A selection of analysis reports from Construction Materials Testing Ltd. detailing the suitability of this material are provided in Appendix H.

13No. samples were taken of 6F2 material brought onto site and 38No. samples were taken from imported topsoil brought to site (approximately 1No. sample per 100m³ as required in the Environmental Specification). Results of the chemical analysis of these samples is provided in Appendix E and screening tables are provided in Appendix D.

All concentrations of determinands in the topsoil were reported below the recommended GAC provided in the Environmental Specification. In addition, no elevated concentrations of phytotoxic contaminants were reported (refer to Appendix D). Slightly elevated pH was reported in the 6F2 materials which is common as this material comprised broken up concrete.

A summary of the results are provided in Table 4-4 below.

Table 4-4: Summary of Validation Sampling of Imported Materials

Location	Date of Sampling	Validation Sample No.	Lab Report No. (STL/Exova)	Result
Imported topsoil material (beneath pitches and in planted landscape areas)	9 th April 2012	3No. samples (Ref: TS1-TS37 NB 2No. samples referenced TS20)	12/2194/C/C1	All determinands below recommended GAC All heavy metals below phytotoxic levels.
Imported 6F2 material (beneath building and car parking areas)	4 th November 2010	3No. samples (Ref: 26-28; WHM Ref: 8025-8027)	COV/736211/2010	All samples marginally alkaline.
	11 th January 2012	12No. samples (Ref: 6F2/1-6F2/10; WHM Ref: 8061-8070)	12/0074/C/C1 Report 1	All samples marginally alkaline

Approximately 3,700m³ of additional topsoil material was imported to site for use in pitch make-up (pitches 5 and 6), which consisted of 60mm of imported grit and 200mm of imported topsoil including a top 50mm of amelioration sand worked into the topsoil (illustrated in Drawing MCS/SL/569/RM/003, Pitches 5 & 6 Ameliorated).

Sand slitting was undertaken across the grass pitches for drainage purposes and approximately 400m³ of imported topsoil was obtained from these operations. An additional volume of 350m³ of imported topsoil removed from the pitches during works to complete the access route to site was also used was obtained from the site.

This imported topsoil was used as a planting medium in planted landscape areas including tree pits across the site and planted areas adjacent to the building.

BBCL confirmed that a depth of approximately 600mm imported topsoil was used in these planted areas increasing to a depth of 1m in tree pits. Photographs taken during sand slitting are provided in the more recent site visit records.

1.8 General Site Operations

Site plans, including a Pollution Prevention Plan, Environmental Management Plan and Site Waste Management Plan were completed and implemented by the Contractor BBCL through the duration of the works. These plans are provided in Appendix I1 for information. In addition, regular tool box talks were provided by BBCL and WH Malcolms to all site staff to ensure full understanding of potential environmental issues on site such as asbestos or other potential ground contamination. An example checklist to demonstrate these tool box talks have been provided is included in Appendix I2.

All materials handling and earthworks were completed on site by subcontractor WH Malcolm, under instruction and supervision of BBCL. Method Statements and Risk Assessments from WH Malcolms are provided in Appendix J for information. A selection of BBCL health and safety risk assessments implemented on site is also provided in Appendix J.

Surface water was controlled on site using a temporary drainage plan, provided in Appendix K1. 2No. attenuation soakaways were constructed on site (as described in the weekly Environmental Co-ordinator's Report provided in Appendix K2) and regularly monitored by BBCL's Environmental Co-ordinator to ensure the ponds did not overflow. An example of the soakaway monitoring checklist is provided in Appendix K3. Correspondence with North Lanarkshire Council's CLO regarding on site drainage is also included in Appendix A1.

Due to the potential for elevated ground gas concentrations on site (methane and carbon dioxide) regular ground gas monitoring was undertaken on site in any confined spaces or below ground excavation to which manned entry was required, in order to protect the welfare of site operatives. BBCL confirmed that no elevated concentrations of potentially hazardous ground gas were reported in any confined spaces or excavations during the works and an example checklist is provided in Appendix L.

Any complaints received during the works, by the local residents and general public have been dealt with and logged by BBCL. An example of these complaint forms have been provided in Appendix M1 for information. Any complaints made to SEPA or NLC regarding potential contamination risks were either communicated to the Ramboll Environmental Consultant or directly to BBCL. These complaints were always followed up by a visit to site from Ramboll (often to meet representatives from the statutory authorities) and potential issues were addressed as appropriate. The site visit records provided in Appendix B1 detail these reported complaints addressed during visits on site by Ramboll.

BBCL have provided regular information updates to local residents regarding the on-going works on site and a selection of these are provided in Appendix M2.

5 CONCLUSION AND RESIDUAL RISKS

5.1 Conclusion

Based on the information provided to Ramboll, it is considered that the mitigation measures proposed in the Risk Management Strategy as part of the *Ground Contamination Risk Assessment Report* (Ramboll, 2010) and *Environmental Specification* (Ramboll, 2010) have been adequately complied with in regards to mitigation of potential risks to Human Health.

The Conceptual Site Model (CSM) for Human Health has been updated following the Development to illustrate that the site does not present any residual significant risks to Human Health. This CSM is appended to this report as Drawing 7764/E/201 *Final Conceptual Site Model following Development*.

DRAWINGS AND FIGURES

NOTES:
 1. THIS DRAWING NOT TO BE SCALED, FIGURED DIMENSIONS ONLY TO BE TAKEN.
 2. SHOULD ANY DISCREPANCIES BE FOUND WITH THIS DRAWING, PLEASE INFORM THIS OFFICE.
 3. COPYRIGHT OF THIS DRAWING IS OWNED BY JM ARCHITECTS.



Landscaping Indicative; Refer also Landscape Architect information for more detail.
 Refer to Structural Engineer's information for site levels and road & junction design details.

TOTAL PARKING SHOWN:

170 STANDARD BAYS
11 DISABLED BAYS
21 DROP OFF
3 MINI BUS
4 COACHES
152 CYCLES

PARKING BAY SIZES:

STANDARD BAY:	2.5m x 5m
DROP OFF:	2.5m x 6m
DISABLED:	3.6m x 6m (2.5m x 5m BAY)
MINI BUS:	3.25m x 8m
COACH:	3.25m x 19m

TREE REMOVAL - SEE IRONSIDE FARRAR VEGETATION CLEARANCE DRAWING 4442_104

J	ROUNDBOUT REMOVED. NEW ROAD JUNCTION & ACCESS INDICATED AT NLC INSTRUCTION (BASED ON RAMBOLL UK DRAWING NLC-SIA-DR0-C-531 Rev P02) NE GRASS PITCHES ALTERED TO SUIT NEW ROAD ALIGNMENT. SITE BOUNDARY UPDATED TO EXCLUDE AREA OF LAND TO NORTH EAST CORNER. GOALJUG OUT RECESSES REVISED AT CONTRACTOR INSTRUCTION. VEHICLE ACCESS FENCE LINE ALTERED AT NLC INSTRUCTION. RAMP REVISED TO SUIT S.E. FLOOD PROPOSALS. SITE AREA INFORMATION NOTED. BIKE SHELTER ALTERED TO CONTRACTOR PROPOSAL.	16.02.12	ET	AC
H	SYNTHETIC PITCHES TO NORTH & SOUTH UPDATED ALONG WITH FENCE LINES/SITES. NOTE WEST SIDE OF FENCE LINE AT SOUTH PITCHES PUSHED FURTHER WESTWARDS. EXIT GATE RELOCATED TO WEST SIDE OF HABITAT ZONE. GATE REMOVED FROM SOUTHSIDE OF RUGBY PITCH. IN ACCORDANCE WITH NLC REQUEST. NE GRASS PITCHES REALIGNED. BIN STORE ROTATED. WEST & SOUTH FENCE LINES AMENDED AT CONTRACTOR'S REQUEST. SPRINKLER HOUSING/SUBSTATION RE-ARRANGED AT STRUCTURAL ENGINEER REQUEST. GAS HOUSING LOCATION NOTED. CORE PATH LINE INDICATED. ASN GATES UPDATED.	22.06.11	ET	AC
G	SOUTH MIDDLE COURTYARD ALTERED IN LINE WITH LANDSCAPE ARCH DRAWINGS (NLC ADVICE). TREE REMOVAL NOTE ADDED. ASN COURTYARD ALTERED IN LINE WITH FIRE SERVICE REQUIREMENTS. NW FENCE LINE UPDATED FOLLOWING REVISION OF THIS AREA ON STRUCTURAL ENGINEER'S DRAWINGS. EAST FENCE LINE ALTERED DUE TO PATH 'ON SITE' CONDITION.	07.10.10	ET	AC
F	SYNTHETIC PITCH DIMENSIONS REVISED. GAELIC PITCH SIZE REPAVED AT COUNCIL/CONTRACTOR REQUEST. MINOR ALTERATIONS TO CARPARK. FOLLOWING CHANGE:	10.05.10	ET	AC
E	ROUNDBOUT UPDATED. BASED ON ENGINEER'S DRAWINGS. EXTENSION OF NORTH ROADWAY INDICATED FOR PITCH ACCESS. FENCE LINE ALTERED AT SOUTH SIDE FOR BADGER PROTECTION & BOUNDARY ALTERED AT SE CORNER TO FOLLOW SPORTS PITCH FENCE LINE NOTE ADDED ON EXTENTS OF FENCING TO NORTH. HARD & SOFT LANDSCAPING LOCATION TO MATCH LANDSCAPE ARCH. DRAWINGS. BICYCLE STAND LOCATION & NUMBERS UPDATED. RAMP & STAIR ACCESS TO PITCH NOTED. BUILDINGS UPDATED IN CONJUNCTION WITH GENERAL PLAN AMENDMENTS.	06.04.10	ET	AC
D	UPDATED ROUNDBOUT SIZE / POSITION BASED ON ENGINEER'S DRAWINGS. RUGBY & GAELIC FOOTBALL PITCH LOCATION MOVED. CAR PARKING/ROADS AMENDED TO SUIT FENCE LINE EXTENDED AROUND GRASS PITCHES. LAYOUT UPDATED TO MATCH LANDSCAPE ARCH. DRAWING. BUILDING OUTLINE UPDATED IN CONJUNCTION WITH GENERAL PLAN AMENDMENTS.	22.01.10	AC/ET	RD
C	4G & SAND COVERED PITCH SWAPPED. GAELIC PITCH ADDED. RUGBY PITCH REALIGNED. WEST BOUNDARY ALTERED TO SUIT NEW PITCH LAYOUT.	10.07.09	ET	RD
B	PARKING NUMBERS AMENDED; BUS BAY SIZES INCREASED. SERVICE ROAD INCREASED TO 6m WIDE; PEDESTRIAN ENTRANCE TO WEST OF ROUNDBOUT INTRODUCED; HARD PLAY/OVERSPILL CAR PARK INTRODUCED ALL PER HIGHWAYS MEETING 18.06.09.	08.07.09	AC	RD
A	BOUNDARY LINE ALTERED TO EXCLUDE PATHS TO SOUTH SIDE; PITCHES AMENDED	18.06.09	ET	RD

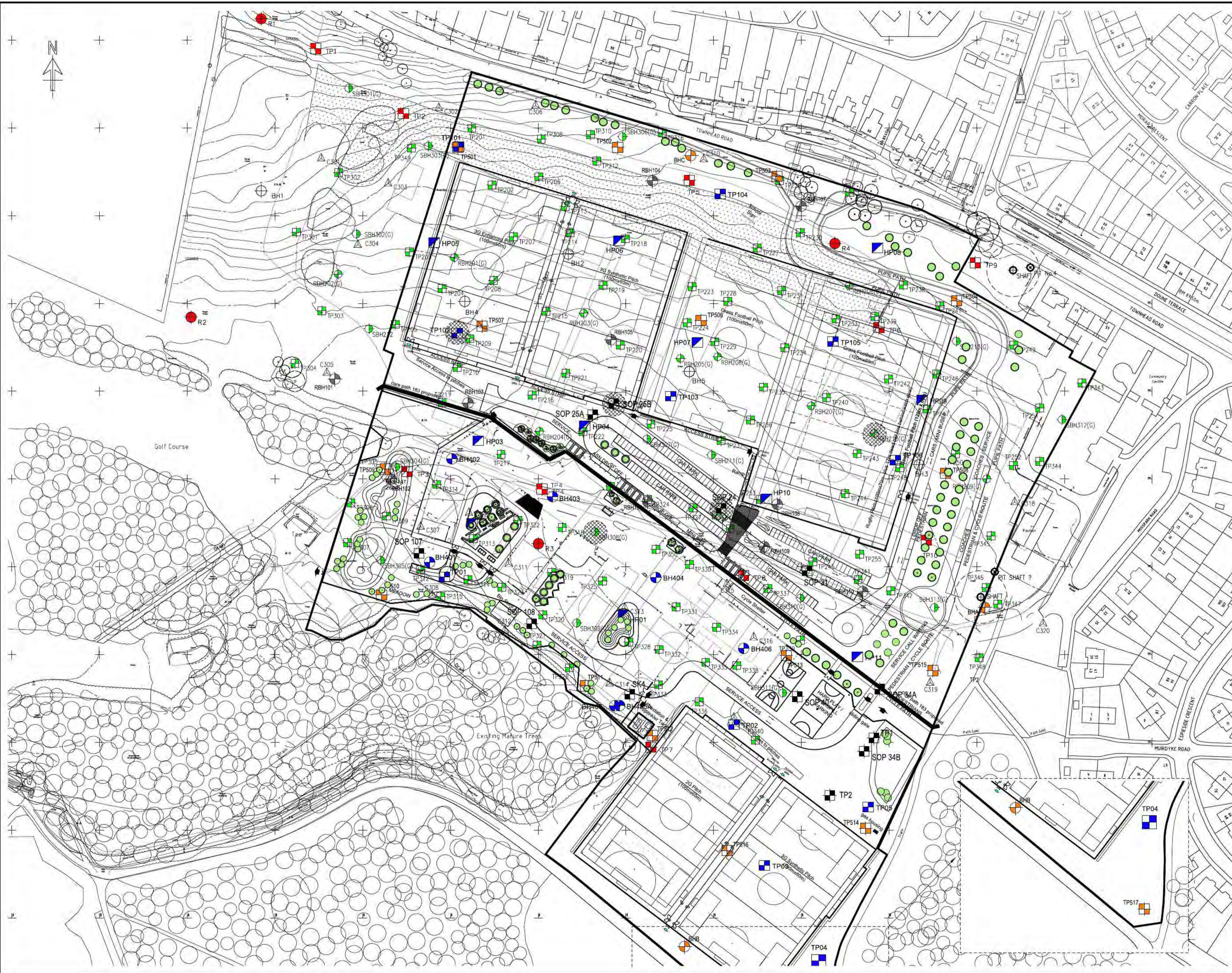
jmarchitects

PROJECT: ST AMBROSE HIGH SCHOOL & DRUMPARK ASN
 PROPOSED SITE PLAN
 NORTH LANARKSHIRE COUNCIL

DATE: 05 JUNE 2009
 STATUS: CONSTRUCTION

64 Queen Street
 Edinburgh
 EH2 4NA
 T: 0131 464 6100
 F: 0131 464 6150
 edm@jmarchitects.net
 www.jmarchitects.net





- Notes
- DO NOT SCALE FROM THIS DRAWING
 - ALL DIMENSIONS ARE IN MILLIMETRES U.N.O.
 - ALL HEIGHTS ARE IN METRES ABOVE ORDNANCE DATUM U.N.O.
 - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS

KEY

- GEOTECHNICS 2009
- URS 2006
- URS 2008
- URS ROTARY BOREHOLES, MINING INVESTIGATION 2008 (APPROXIMATE LOCATIONS)
- MALCOLM'S TRIAL PITS 2010 (APPROXIMATE LOCATIONS)
- MALCOLM'S TRIAL PITS 2011 (APPROXIMATE LOCATIONS)
- NORWEST HOLST BOREHOLES 2011
- POTENTIAL LEAD HOTSPOT

NO	DESCRIPTION	Date	By	Checked	PS
101	DESCRIPTION	07/09/2012	CS	ZM	PS
Rev	Description	Date	By	Checked	App

INFORMATION

ST AMBROSE HIGH SCHOOL



EXPLORATORY HOLE LOCATION PLAN

Scale:	Date:	Drawn:	Checked:
1:1000 @ A1	SEP 2012		
Drawing No:		Rev:	
7764/E/010			101

KEY:

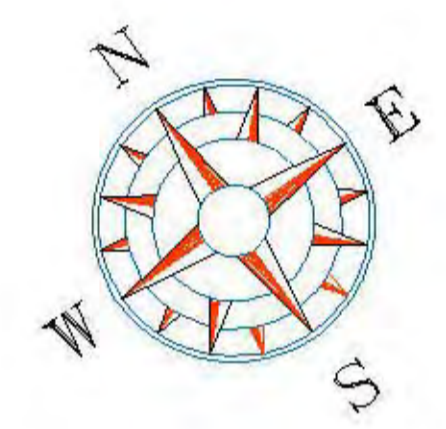
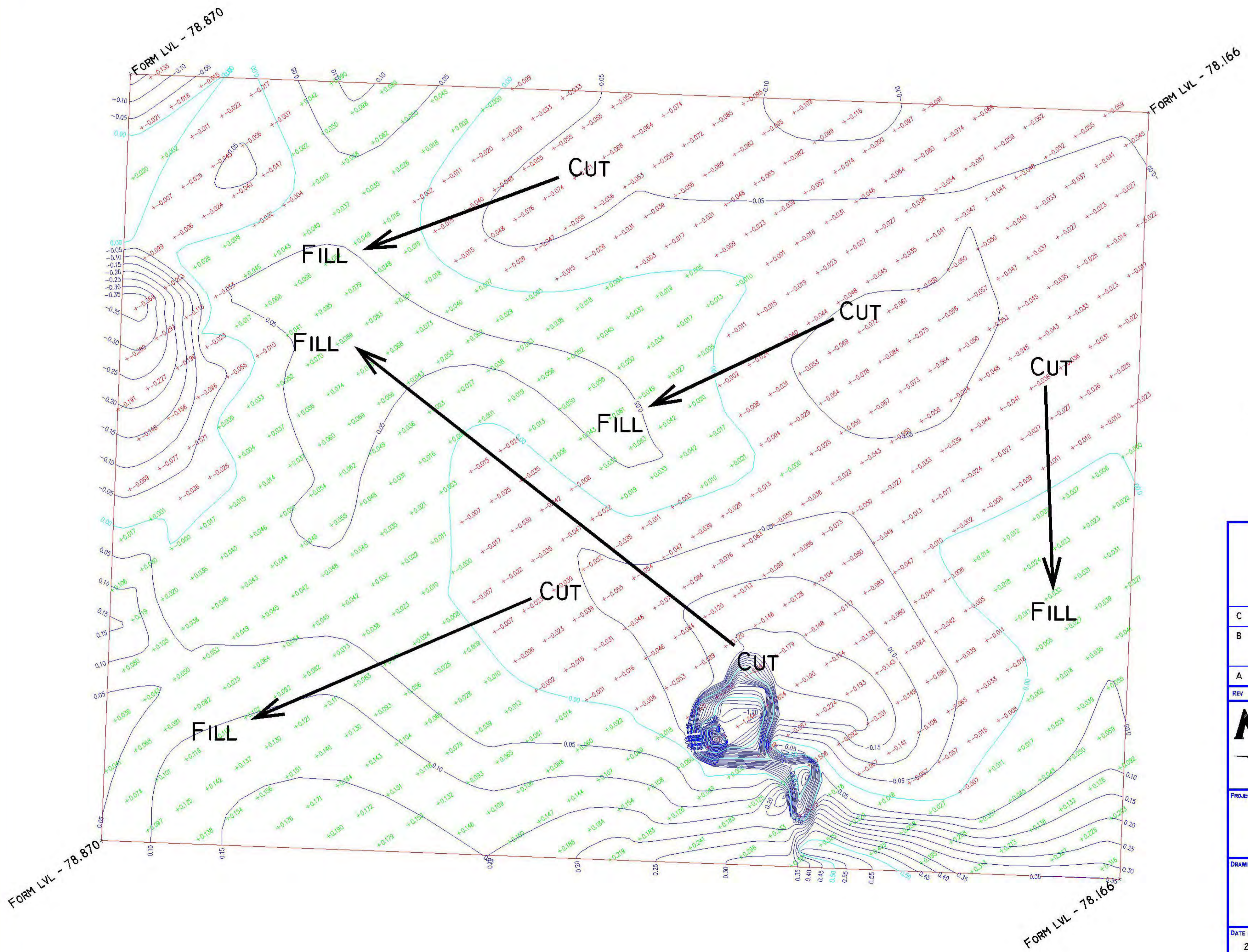
- ASBESTOS SCREENING
- SAMPLE POINT



WMS#	Sample	Test report ID	Eastings	Northings	Test	Type	WMS#	Sample	Test report ID	Eastings	Northings	Test	Type	WMS#	Sample	Test report ID	Eastings	Northings	Test	Type		
8001	1	8041	811				8002							8003	1							
8002	2	8042	812				8004							8004	2							
8003	3	8043	813				8005							8005	3							
8004	4	8044	814				8006							8006	4							
8005	5	8045	815				8007							8007	5							
8006	6	8046	816				8008							8008	6							
8007	7	8047	817				8009							8009	7							
8008	8	8048	818				8010							8010	8							
8009	9	8049	819				8011							8011	9							
8010	10	8050	820				8012							8012	10							
8011	11	8051	821				8013							8013	11							
8012	12	8052	822				8014							8014	12							
8013	13	8053	823				8015							8015	13							
8014	14	8054	824				8016							8016	14							
8015	15	8055	825				8017							8017	15							
8016	16	8056	826				8018							8018	16							
8017	17	8057	827				8019							8019	17							
8018	18	8058	828				8020							8020	18							
8019	19	8059	829				8021							8021	19							
8020	20	8060	830				8022							8022	20							
8021	21	8061	831				8023							8023	21							
8022	22	8062	832				8024							8024	22							
8023	23	8063	833				8025							8025	23							
8024	24	8064	834				8026							8026	24							
8025	25	8065	835				8027							8027	25							
8026	26	8066	836				8028							8028	26							
8027	27	8067	837				8029							8029	27							
8028	28	8068	838				8030							8030	28							
8029	29	8069	839				8031							8031	29							
8030	30	8070	840				8032							8032	30							
8031	31	8071	841				8033							8033	31							
8032	32	8072	842				8034							8034	32							
8033	33	8073	843				8035							8035	33							
8034	34	8074	844				8036							8036	34							
8035	35	8075	845				8037							8037	35							
8036	36	8076	846				8038							8038	36							
8037	37	8077	847				8039							8039	37							
8038	38	8078	848				8040							8040	38							
8039	39	8079	849				8041							8041	39							
8040	40	8080	850				8042							8042	40							
8041	41	8081	851				8043							8043	41							
8042	42	8082	852				8044							8044	42							
8043	43	8083	853				8045							8045	43							
8044	44	8084	854				8046							8046	44							
8045	45	8085	855				8047							8047	45							
8046	46	8086	856				8048							8048	46							
8047	47	8087	857				8049							8049	47							
8048	48	8088	858				8050							8050	48							
8049	49	8089	859				8051							8051	49							
8050	50	8090	860				8052							8052	50							
8051	51	8091	861				8053							8053	51							
8052	52	8092	862				8054							8054	52							
8053	53	8093	863				8055							8055	53							
8054	54	8094	864				8056							8056	54							
8055	55	8095	865				8057							8057	55							
8056	56	8096	866				8058							8058	56							
8057	57	8097	867				8059							8059	57							
8058	58	8098	868				8060							8060	58							
8059	59	8099	869																			
8060	60	8100	870																			
8061	61	8101	871																			
8062	62	8102	872																			
8063	63	8103	873																			
8064	64	8104	874																			
8065	65	8105	875																			
8066	66	8106	876																			
8067	67	8107	877																			
8068	68	8108	878																			
8069	69	8109	879																			
8070	70	8110	880																			

B	22-MAY-2012	UPDATED SITE PLAN.
A	18-MAY-2012	UPDATED TABLE.
REV	DATE	DESCRIPTION
MALCOLM GROUP		
865 SOUTH STREET - GLASGOW - G14 0BX TEL: 0141 435 5200 - FAX: 0141 954 5961		
PROJECT :		
ST AMBROSE & DRUM PARK ASN		
DRAWING TITLE :		
CHEMICAL SAMPLE POINTS		
DATE :	SCALE :	DRAWN :
04-MAY-2012	1 : 1000 @ A1	[Signature]
DRAWING No : 0569 - TL - 8000		REV. : B

NOTES:
 * -0.030 DEPTH OF CUT
 x 0.073 DEPTH OF FILL



REV	DATE	DESCRIPTION
C	18-MAY-2012	EARTHWORKS STRATEGY ADDED.
B	23-MAR-2012	AREA RE-SURVEYED, FORMATION LEVEL ADJUSTED TO SUIT.
A	05-SEP-2011	ADJUSTED FORMATION LEVELS

MALCOLM GROUP
 865 SOUTH STREET - GLASGOW - G14 0BX
 TEL: 0141 435 5200 - FAX: 0141 954 5961

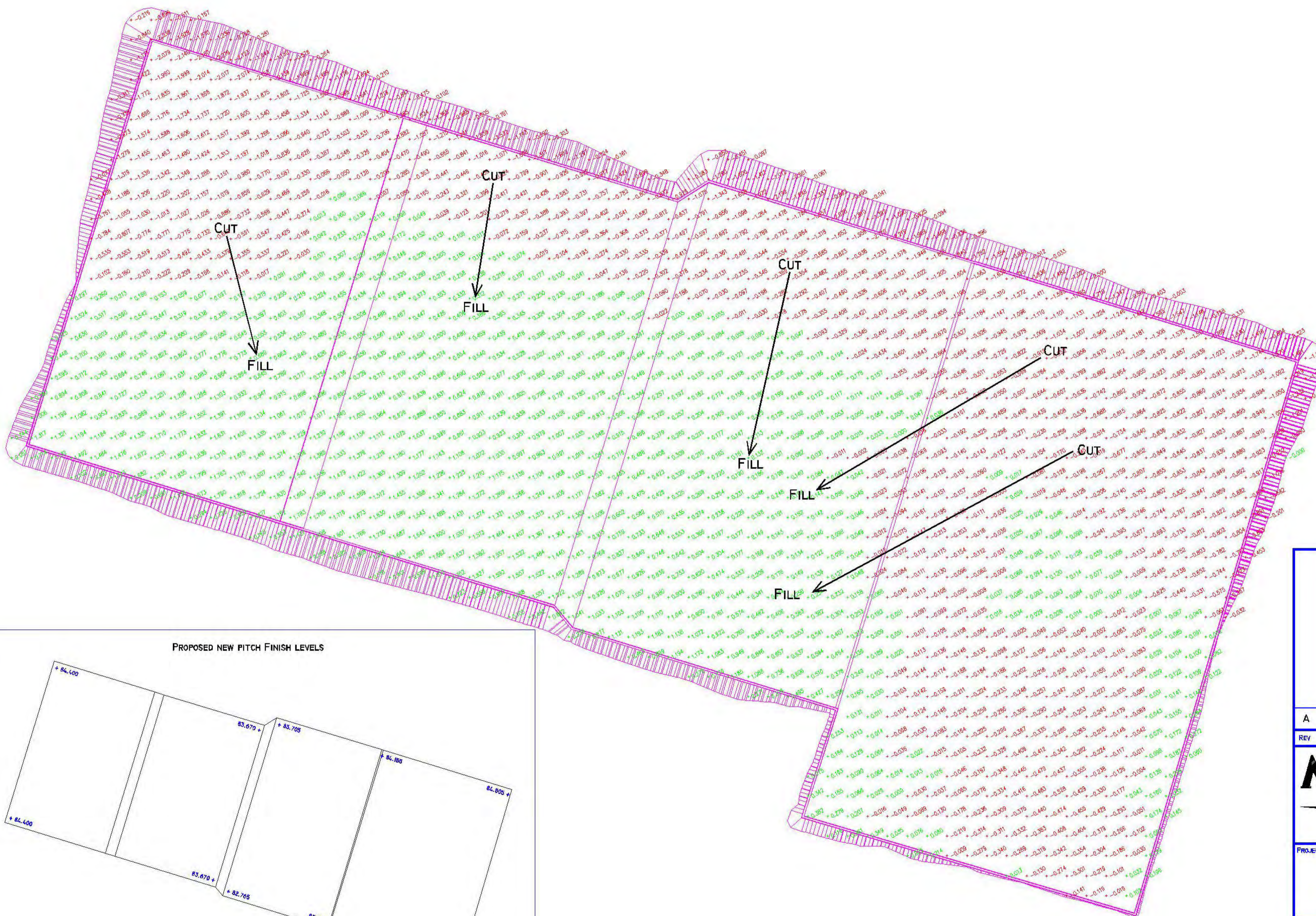
PROJECT :
 ST AMBROSE & DRUMPARK ASN

DRAWING TITLE :
 PITCHES 1 & 2
 ISOPACH GRID

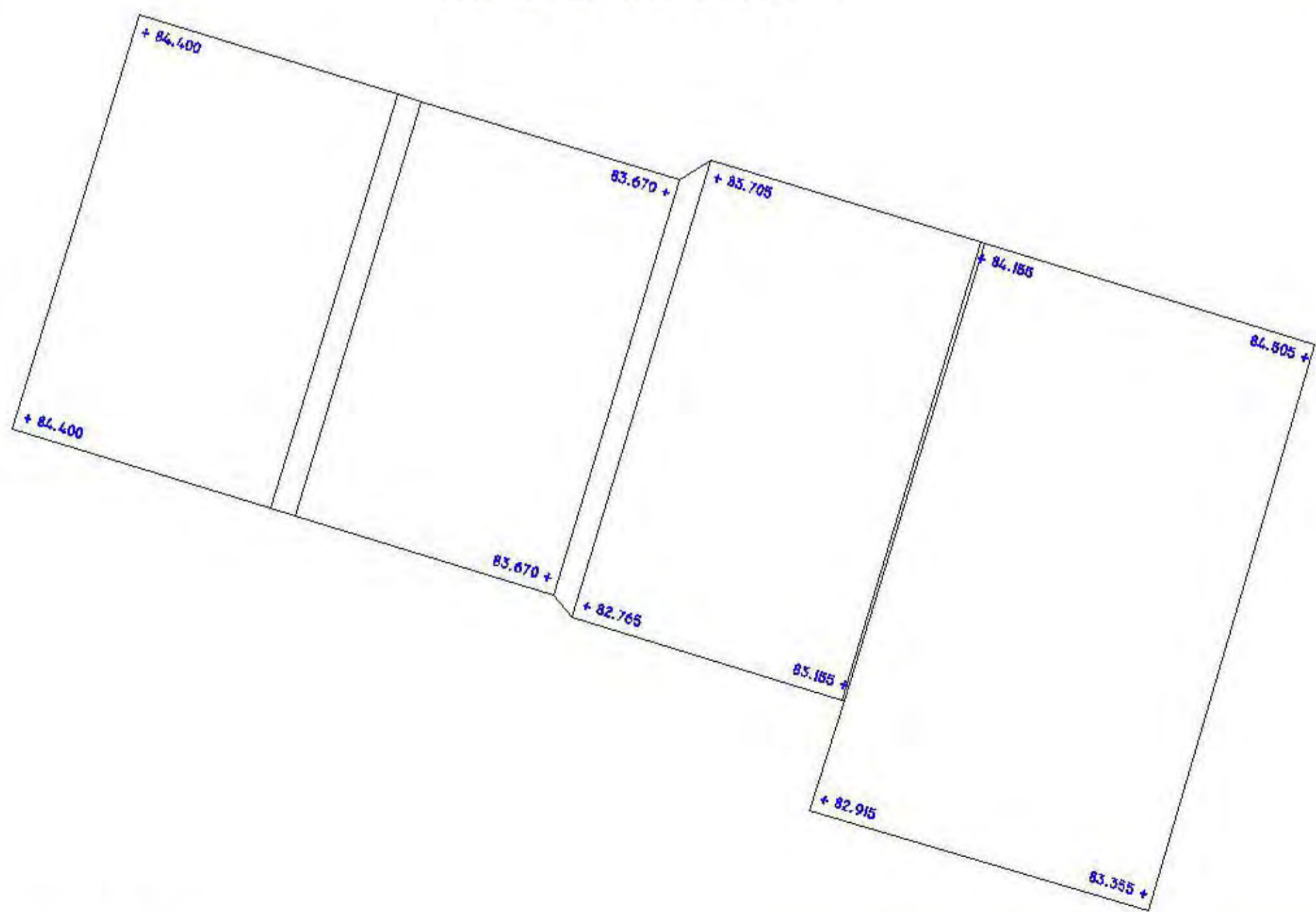
DATE : 26-AUG-2011
 SCALE : 1 : 250 @ A1
 DRAWN : [Redacted]

DRAWING No : [Redacted]
 REV : C

-0.030 DEPTH OF CUT
 -0.055 DEPTH OF FILL



PROPOSED NEW PITCH FINISH LEVELS



SCALE 1 : 1250 @ AI

A	18-MAY-2012	EARTHWORKS STRATEGY ADDED.
REV	DATE	DESCRIPTION
<h1>MALCOLM GROUP</h1> <p>865 SOUTH STREET - GLASGOW - G14 0BX TEL: 0141 435 5200 - FAX: 0141 954 5961</p>		
PROJECT :		
ST AMBROSE HIGH SCHOOL & DRUM PARK ASN		
DRAWING TITLE :		
EARTHWORKS ISOPACH PITCHES 3-6		
DATE :	SCALE :	DRAWN :
12-APR-2011	1 : 500 @ AI	
DRAWING No :		REV. :
		A



- Notes
- THIS DRAWING IS NOT TO BE SCALED.
 - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL DRAWINGS, STRUCTURAL AND M&E DRAWINGS.
 - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH RAMBOLL 300 SERIES DRAWINGS.
 - CONTOURS SHOWN ARE BETWEEN EXISTING GROUND LEVELS AND PROPOSED FINISHED GROUND LEVELS.

- KEY
- PRIMARY FILL CONTOUR (0.50m)
 - SECONDARY FILL CONTOUR (0.10m)
 - ZERO CUT FILL CONTOUR
 - PRIMARY CUT CONTOUR (0.50m)
 - SECONDARY CUT CONTOUR (0.10m)
 - SITE BOUNDARY

C01	CONSTRUCTION ISSUE	22/09/2010	GVY/RH
Rev	Description	Date	By/Chk/ App

CONSTRUCTION

ST AMBROSE HIGH SCHOOL & DRUM PARK ASN



ISOPACHYTE CONTOURS BETWEEN EXISTING AND PROPOSED FINISHED GROUND LEVELS

Scale:	Date:	Drawn:	Checked:
1:1000@A1	SEPT. 2009		
Drawing No.:		Rev:	
NLC-STA-DRG-C-318		C01	