REMEDIATION & ENABLING WORKS STRATEGY

1st Phase Commercial / Retail Development

The Crescent,
Speke

Prepared for:

Countryside Properties

COUNTRYSIDE
Places People Love

E3P Report: 11-065-R1
Issued: February 2016

e3p | Environmental | Energy | Engineering

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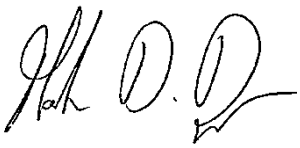
SIGNATURE	
PROJECT NUMBER	10-523

Executive Summary	
Site Address	Speke Church Road, Speke, approximately 11km southeast of Liverpool City Centre.
National Grid Reference	E343040, N383570.
Site Area	0.75 Hectares
Background	E3P has been instructed by Countryside Properties to develop a Remediation Strategy and Enabling Works Performance Specification for the 1st Phase of the development at the site referred to as 'The Crescent, Speke Church Road'. For the avoidance of any doubt, this strategy has been developed to address the initial development works that will incorporate the construction of a new retail development within the NE Quadrant of the wider site. It is intended that as and when the existing commercial / retail businesses can be relocated to the new buildings, the remainder of the site can be subject to demolition and site clearance works which will facilitate further detailed intrusive ground investigations and contamination risk assessment for the wider residential development. The site has previously been subject to intrusive site investigations by IDG, which included a Preliminary Contamination Risk Assessment for the entire site in conjunction with intrusive Ground Investigations and Qualitative Risk Assessment within the area of the proposed commercial units in the NE Quadrant with further sampling to the Southwest (former garages to rear of retail premises). E3P has undertaken a review of the Preliminary Risk Assessment and intrusive investigations within the area of proposed commercial development to inform the development of this Remediation Strategy for the 1st Phase Development and satisfy Condition 6 of the Planning Permission (ref: 13F/1895) dated 19th November 2015.
Contaminated Land Assessment	
Human Health Risk Assessment	The Qualitative Contamination Risk assessment was completed utilising the chemical dataset obtained from the intrusive Ground Investigation which identified the following exceedances of the Tier 1 Assessment criteria for protection of chronic human health within the context of a residential end use scenario: • Lead; and, • PAH's The risk associated with the contaminants highlighted above are associated with direct exposure to the soils in terms of inhalation of particulate, ingestion, dermal contact and consumption of vegetables. Therefore the risk associated with the viable exposure pathway can be mitigated through the construction of a suitable cover system within all areas of garden and soft landscaping. The risk assessment confirmed that the elevated concentrations of potential contaminants of concern are attributed to Made ground soil matrices. It is therefore concluded that the natural soils pose no unacceptable degree of risk within the context of the CSM for a residential end use.

Executive Summary (continued)

Controlled Waters Risk Assessment	The Tier 1 Controlled waters Risk Assessment has not identified any source of potential contamination or dissolved phase impact / leachate within the laboratory analysis. The developed Conceptual Site Model has not identified a potentially complete pollutant linkage and as such the site poses no unacceptable risk to controlled waters or the wider environ.
Ground Gas	The Preliminary Risk Assessment has not identified any source of potentially hazardous ground gasses within influencing distance of the site. Intrusive investigations confirmed the absence of any material within the sub-stratum that could potentially generate hazardous ground gasses. IDG determined that no monitoring of hazardous ground gasses was warranted given the absence of any viable source and a such no specialist mitigation measures are required in the construction of new dwellings.
Summary of Site Remediation & Enabling Works	The site Remediation / Enabling Works Strategy provides a comprehensive specification for the regeneration of the land to negate identified pollutant linkages and construct a development platform that will be suitable for the proposed end use. The salient features of the Remediation & Enabling Works Strategy are summarised below: • Implement all works in strict accordance with UK Environmental Permitting and Local Planning Authority Requirements. • Controlled removal of all trees and vegetation; • Removal and treatment of all invasive plans species (if any identified during site works); • Removal of all relict foundations and buried features in their entirety; • Excavation and processing of Made Ground in a controlled manner with the sorting, processing and segregation of identified deleterious materials; • Validation sampling and leachate testing to confirm material retained on-site pose no unacceptable risk to the residential end users, controlled waters or wider environ; • Preparation of landscaping and garden areas to ensure where made ground is present, levels are reduced to either 300mm (landscaping) or 600mm (private garden) below FFL or natural stratum (whichever is the shallower) to facilitate placement and validation of clean cover; • Importation of suitable material (if required) to achieve the required development levels; and, • Replacement of material in accordance with the E3P enabling specification & engineering requirements.
Summary of Build Phase Mitigation Requirements	The developer's works will also include the completion of the following additional elements: • Provision of a 300mm cover system using certified material with appropriate validation within proposed areas of Public Open Space and soft landscaping.

Table of Contents

APPENDICES

1. INTRODUCTION

1.1 Background

E3P has been instructed by Countryside Properties to develop a Remediation Strategy and Enabling Works Performance Specification for the 1st Phase of the proposed residential development at the site referred to as 'The Crescent, Speke Church Road'.

For the avoidance of any doubt, this strategy has been developed to address the initial development works that will incorporate the construction of a new retail development within the NE Quadrant of the wider site.

It is intended that as and when the existing commercial / retail businesses can be relocated to the new buildings, the remainder of the site can be subject to demolition and site clearance works which will facilitate further detailed investigations for the wider residential development.

The site has previously been subject to intrusive site investigations by IDG, which included a Preliminary Contamination Risk Assessment for the entire site in conjunction with intrusive Ground Investigations and Qualitative Risk Assessment within the area of the proposed commercial units in the NE Quadrant with further sampling to the Southwest (former garages to rear of retail premises).

E3P has undertaken a review of the Preliminary Risk Assessment and intrusive investigations within the area of proposed commercial development to inform the development of this Remediation Strategy for the 1st Phase Development and satisfy Condition 6 of the Planning Permission (ref: 13F/1895) dated 19th November 2015, a copy of which is included within Appendix IV.

1.2 Report Objectives

The objectives of this report are to:

- Review of Site Investigation Report & Contamination Risk Assessments;
- Prepare an overview of Contaminated Land Remediation requirements;
- Evaluate feasible remedial technologies;
- Assess the most appropriate earthworks solution to ensure the delivery of the optimum development platform;
- Define validation criteria to demonstrate the successful implementation of a site Remediation & Enabling works plan;
- Specify Geotechnical Engineering Performance Requirements; and,
- Ensure the safe, cost effective and regulatory compliant redevelopment of the site.

1.3 Scope of Works

The development of the risk management strategy for the subject site includes the following tasks:

- Identification the relevant pollutant linkages;
- Review of site characteristics;
- Identification of geotechnical constraints;

- Development of remedial objectives;
- Selection of appropriate remedial technology; and,
- Development of remedial strategy.

1.4 Previous Works

The following phases of geotechnical and environmental works have previously been completed at the subject site:

IDG Geo-Environmental:

Geo-Environmental Appraisal, Land at the Crescent, Speke, June 2013 (ref: 3890-G-R001)

To inform the assessment of the potential risk to contaminated land within the context of the proposed residential development and to inform the preparation of the Remediation Strategy the pertinent points from the above reports are summarised within Section 2.0.

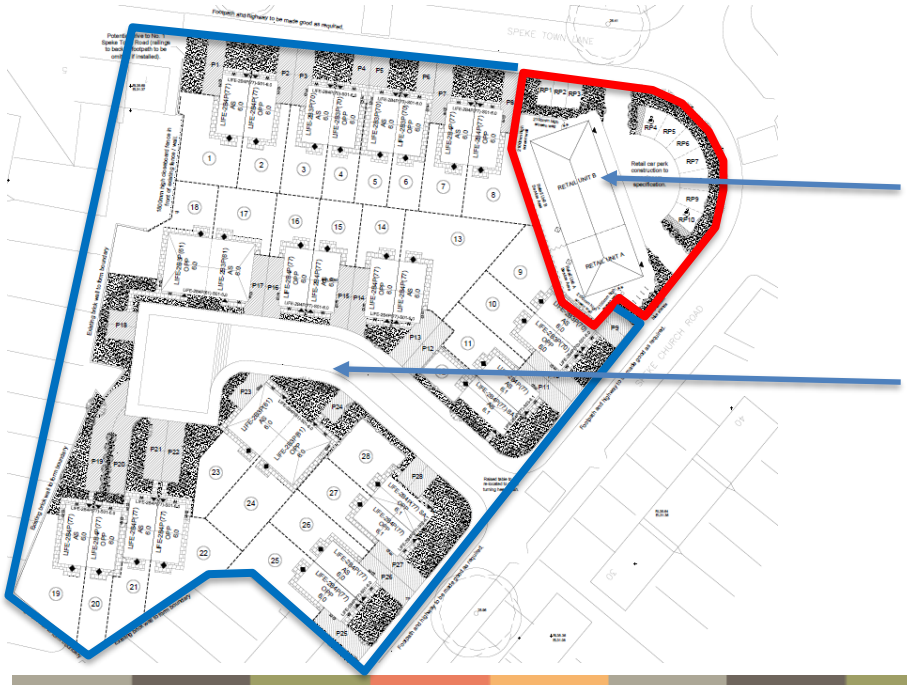
For the avoidance of any doubt, the IDG Reports should be read both as a precursor and in conjunction with this document and specifically to address subsections A & B of Condition 6 for the Planning Permission.

1.5 Redevelopment Plan

Within the overarching development, Countryside proposed to redeveloped the site in a phase manner with a new commercial / retain building (specifically addressed herein), the demolition and clearance of all existing structures and the subsequent construction of 28 No semi-detached low rise residential dwellings with associated access roads, parking, landscaping and adopted drainage infrastructure.

E3P has been provided with an approved planning layout (ref: SK336-CRES-EXT01) detailing the proposed construction

Figure 1.1 Proposed Development



1.6 Summary of Parties Involved

FUNCTION / INTEREST	NAME OF PARTY
Local Planning Authority	Liverpool City Council
Developer	Countryside Properties
Geo-Environmental Consultant	E3P
Main Contractor	Countryside Properties
Remediation / Enabling Works Contractor	TBC
Human Health Regulator	Liverpool City Council
Controlled Waters & Waste Regulator	Environment Agency

1.7 Regulatory Correspondence

Countryside Properties have been granted a detailed Planning permission from Liverpool City Council for the wider redevelopment of the site for commercial retail and low rise residential housing with associated adopted estate roads and infrastructure.

It is presumed that as part of the planning approval process, the Planning Authority will undertake consultation with the pertinent statutory consultees which will include:

- *Environmental Health / Contaminated Land Officer at the Local Authority (or external advisor);*
- *Environment Agency Planning Liaison; and,*
- *The Coal Authority.*

For the avoidance of any doubt, E3P can confirm that in this instance, all matters relating to the assessment of potential ground instability risk attributed to historical mine workings has been undertaken by a third party consultant and as such is dealt with under a separate report.

1.8 Site Details

Site Address	Speke Church Road, Speke, approximately 11km southeast of Liverpool City Centre
National Grid Reference	E343040, N383570.
Site Area	0.75 Hectares
Tenure	Freehold

All acronyms used within this report are defined in the Glossary presented in Appendix II.

A site location map is presented in Appendix III as Drawing 10-11-065

1.9 Site Summary

SITE DESCRIPTION & SETTING		
Occupancy/use	The northeast of the site comprises public open space. The central area of the site comprises a three storey brick building (retail premises), two tarmac car parks and a concrete paved/tarmac area. The southwest of the site is covered in concrete hardstanding with a small area of grass noted by Speke Church Road.	
Environmental Setting	*Drift Geology*	Drift: Shirdley Hill Sand Formation
	Bedrock Geology	Solid: Chester Pebble Beds Formation
	Faults	No geological faults indicated within the vicinity of the site
	Hydrogeology	Superficial (Drift): Secondary Aquifer A Solid (Bedrock): Principal Aquifer
	Source Protection Zone	None
	Groundwater Sensitivity	Groundwater abstractions: Two within 1km of the site; Toleman Holding Company Ltd – *882m northwest – used for cooling and manufacturing* Eli Lilly & Co Ltd – 989m northeast – *used for general cooling, boiler feed & process water*
	Surface Water Safeguarding Zone	None
	Groundwater Safeguarding Zone	None
Site History	The historical plans show that the northeast of the site has been occupied by several small buildings, assumed to be residential properties, with associated enclosed areas that have been demolished and replaced by an area of POS. Prior to construction of the large brick building with associated car parking and paved areas, the central area of the site was part of a field with several enclosed areas which are assumed to have had an agricultural land use. Historical OS plans also show a well was present in this part of the site. Prior to construction of a corporation yard with several small buildings assumed to be garages, the southwest of the site was open land. All of the structures in this part of the site have been demolished.	
Landfill Sites & Ground Gases	No landfill sites have been identified within influencing distance of the subject site. The IDG PRA and subsequent Ground Investigation confirmed that there are no sources of potentially hazardous ground gasses and as such no specialist mitigation measures are required in the construction of the proposed commercial buildings or the residential dwellings within the 2nd Phase of construction works.	

1.10 Summary of Reported Ground Conditions

E3P has prepared a synopsis of identified ground conditions summarised report from works carried out within the IDG Geo-Environmental Report in 2013:

SUMMARY OF GROUND CONDITIONS	
Made Ground	Northeast: Topsoil Made Ground underlain by Granular Made Ground to maximum depth of 1.4m. Southwest: Concrete or Topsoil Made Ground underlain by Granular Made Ground to a maximum depth of 0.4m
Drift	Northeast: Thin sand deposits present from 0.8m-1.3m and proven to 1.4m to 1.5m underlain by soft to firm becoming firm to stiff cohesive Glacial Till proven to 5.45m. Southwest: Relict topsoil present to depths of between 0.6m-0.9m, underlain by loose to medium dense Shirdley Hill Sand Formation Deposits present to depths of between 1.2m-2.8m underlain by soft to firm becoming firm to stiff cohesive Glacial Till proven to a depth of 4.45m.
Groundwater	Shallow groundwater present in the Shirdley Hill Sand Formation deposits at depths of between 1.34m-1.61m. Excavations into the Shirdley Hill Sand Formation deposits to depths greater than 1.5m bgl are likely to encounter running sand and unstable sidewalls.

Figure 1.2 Previous Exploratory Hole Locations – Proposed 1st Phase

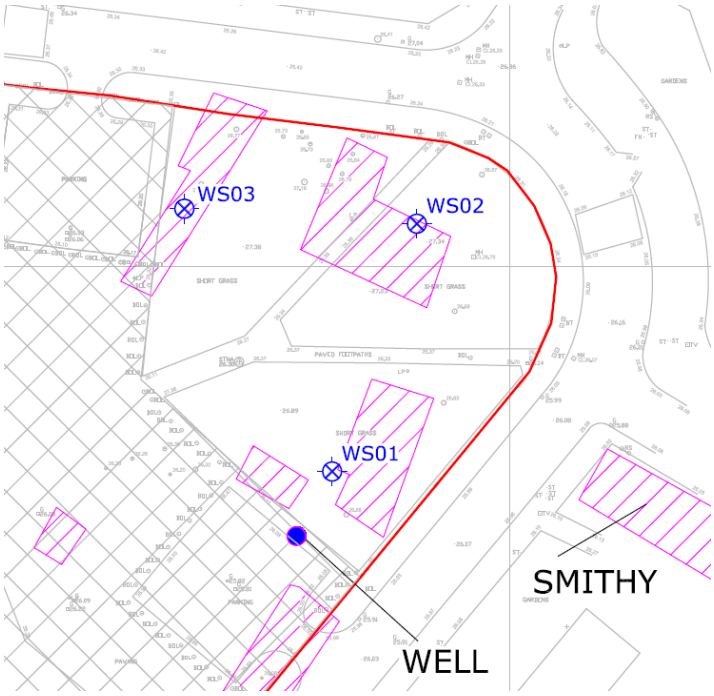
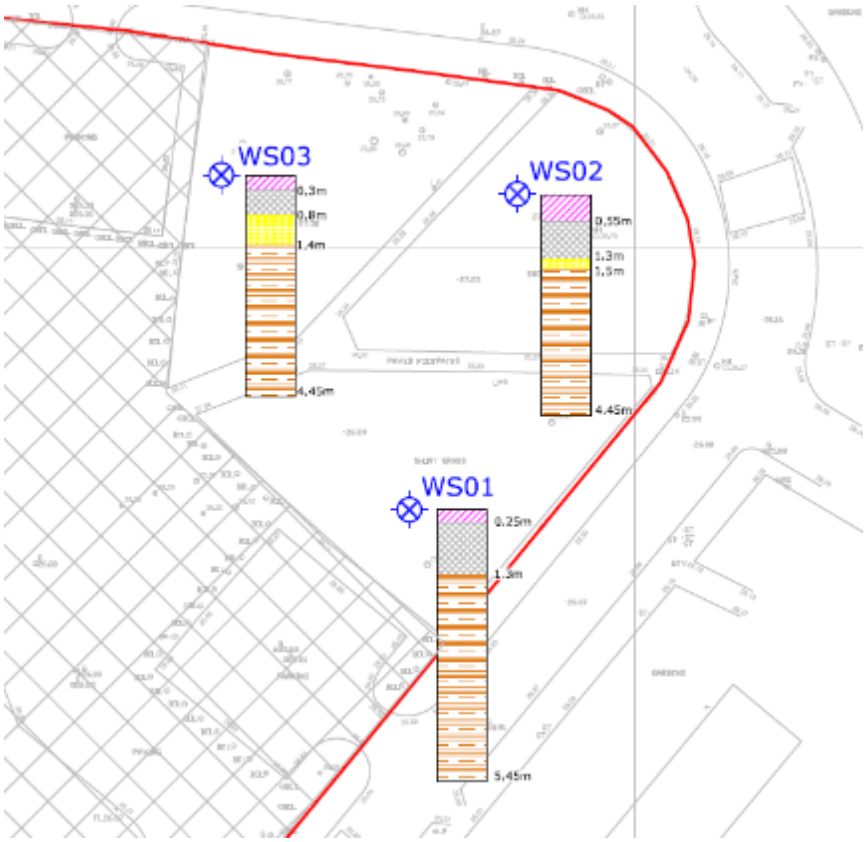


Figure 1.3 Previous Exploratory Logs – Proposed 1st Phase



1.11 Summary of IDG Contamination Assessment

Chemical analysis of the Granular Made Ground detected elevated concentrations of arsenic and lead, statistical analysis of these two determinands calculated 95%UCL values in excess of their respective assessment criteria.

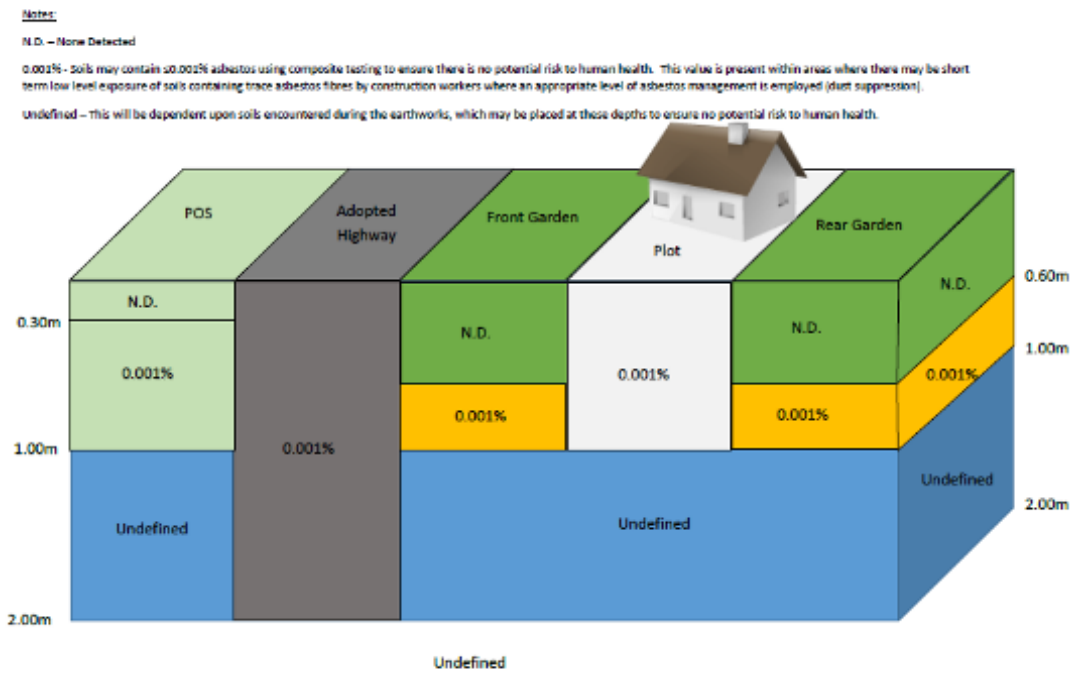
Leachability analysis of the Granular Made Ground detected elevated concentrations of inorganic (copper, lead) and PAH determinands when compared to UK DWS.

IDG recommended that the Granular Made Ground be disposed offsite to a suitably licensed facility or redistributed beneath the clean cover to gardens or areas of hardstanding, where it would be satisfactorily isolated from end users and infiltration of water to enable leaching of contaminants to controlled waters would effectively be negligible.

Any site won or imported topsoil/subsoil material intended for placement within garden and landscaped areas should be subjected to chemical analysis to determine its suitability for use.

Asbestos fibres were not identified within any of the site investigation works carried out by IDG, however if any soils are found to exhibit evidence of potential ACM all materials shall be handled in a highly controlled manner (to prevent any risk to construction workers) prior to placement within the context of the Developed Conceptual Site Model (CSM) which will ensure the appropriate mitigation of all future risk.

Figure 2.1 Asbestos Conceptual Site Model



It is concluded that the site will be suitable for the proposed residential end use subject to the completion of the afore mentioned supplementary assessments and the following build phase mitigation items:

- *Management of soils to ensure all materials impacted by asbestos fibres are placed in areas of low sensitivity during the site enabling works;*
- *Use of potable water supply infrastructure that will be compliant with UKWIR assessment criteria;*
- *Construction of all dwellings with ground gas mitigation measures that conform to CS2 requirements of BS8485; and,*
- *Construction of a clean cover system to all areas of private garden in accordance with the detailed methodologies herein.*

1.12 Controlled Waters Contamination Risk Summary

Risk Profile	Discussion	Risk Rating & Rationale
Source Protection Zone (SPZ)	No	**Low**
Distance to the closest groundwater abstraction point.	>1000m	**Low – No potable extraction**
Aquifer classification in Superficial Drift Deposits	Undifferentiated	**Low**
Aquifer classification in Bedrock.	Principal	**Low to Moderate**
Surface water or Groundwater Vulnerability Area.	No	**Low**
Viability for Anthropogenic soil in direct contact with aquifer (drift or bedrock).	Yes	**Low to Moderate –** Variable Made Ground overlying drift.
Is the site located within 50m of a surface water course	No	**Low** – No surface water features are within influencing distance to the site.

Summary

The ICSM developed within the context of the site setting has only identified a single viable pollutant risk which would be the downward migration of soluble contaminants towards the underlying secondary A Aquifer within the bedrock deposits.

However the overall sensitivity of this receptor is reduced given the absence of any identifiable aquifer within the shallow impermeable clay drift deposits, absence of a SPZ or the extraction of waters for potable use.

The direct comparison of leachate samples recovered from dedicated soil samples has not identified any elevated concentrations of organic compounds that would exceed the screening criteria for either an Environmental Quality System or a more conservative potable water supply.

The site is located within an area of low to moderate sensitivity with a groundwater abstraction for industrial use and no controlled water features within influencing distance to the site.

Given the absence of any notable source of potential contamination within the Made Ground or detectable concentrations of dissolved phase organic compounds within the leachate samples collected, it is considered that the site poses a very low risk in terms of pollution to controlled waters and the wider environ.

The current site condition is hardstanding / soft landscaping and as such the proposed construction of a low rise development that will include circa 60% impermeable hard stand with drainage infrastructure will significantly reduce the infiltration potential and thus reduce the volume of water entering the deep filled materials.

1.13 Ground Gas

No radon protective measures required in the construction of new dwellings.

No sources of hazardous ground gas have been identified at the site or within 250m of the site.

The site is neither underlain by shallow mine workings nor located in an area considered susceptible to mines gas emissions.

Ground conditions encountered at the site recorded a maximum thickness of 1.3m of made ground. Both the made ground and natural strata were free of deposits rich in organic material (i.e. peat, pond deposits), which could potentially represent a minor source of ground gas.

IDG considered the site is not at risk from hazardous ground gas and hazardous ground gas protection measures are not required.

2. SITE REMEDIATION & ENABLING WORKS

2.1 Overview of Works

Prior to the commencement of works on-site, the contractor must establish all necessary plant, equipment and site welfare facilities as is necessary to complete the contract within the agreed timescales to the rationale as outlined in Table 3.1 (below).

Table 2.1 – Enabling Works Schedule

RE-1	**Pre-Commencement Regulatory Compliance** Prior to commencement of any works on-site, all reports relating to the assessment of risk to contaminated land should be submitted to the regulatory authorities to gain written approval. All relevant Standard Rules Permits should be registered with the EA. The LAPC Part B Notification for deployment of mobile crushing plant should be implemented prior to the establishment of equipment on-site. E3P have completed a summary of the materials management volumes for re-use on site, detailed below: It is not anticipated that there will be any requirement to treat any materials on-site (such as hydrocarbon impact soil or groundwater), however should any previously unidentified contractor must either notify the EA of their intention to complete a minor works operation or arrange for the deployment of the appropriate Environmental Permit for the specified operation.
RE-2	**Environment & Nuisance Control** Management of all works so as to ensure that no environmental nuisance is created through dust emissions, noise or vibration levels. Ensure that all works are completed in a manner so as not to create any structural risk to the adjacent highways. Implement all temporary works as necessary to support excavations throughout the duration of the works. In the event that a complaint is made in respect of dust emissions, noise or vibration levels, remedial measures and a programme of ongoing monitoring should be agreed with the local authority and implemented on site.
RE-3	**Environment Monitoring of Surface Water** The site is not within an influencing distance of any surface water features therefore there is a very low risk associated with the development works.
RE-4	**Risk to Infrastructure** Site works should be completed in a manner that ensures no risk of disturbance to the adjacent infrastructure including the newly built college to the east and residential dwellings to the north and west.

RE-5	**Identification, Isolation and Treatment of Invasive Plants** At this time no invasive plant species have been identified, however the contractor will satisfy themselves with respect to the absence of any species deemed invasive prior to the commencement of works on-site. If any invasive species are treated, a validation report should be prepared documenting all identified invasive plant species, their location and the treatment methodology. Where materials are removed from site all Waste Transfer Notes / Duty of Care certificates should be included within the validation statement.
RE-6	**Site Clearance Operations** General site clearance & provision of welfare, offices and site security as per the contract requirements. The site is mainly clear of vegetation however there are dense vegetation within the western boundary and north-western section. Ascerta conducted a Bat Tree Assessment and Tree Survey for the site in February 2015 which concluded that the trees on site had been categorised as category 3 (no potential to support bats), further details are within this letter and survey ref 501.15. All vegetation should either be stockpiled at a pre-agreed location or alternatively removed from site in accordance with Waste Permitting Regulations.
RE-7	**Excavation, Breaking and Processing of All Above & Below Ground Structures** Obstructions, relict foundations and infrastructure (apart from live services) are to be removed from the areas of proposed highway and utilities infrastructure (road box) in their entirety. Artificially hard materials should be broken out and crushed. Stockpiles will be made, validation testing undertaken, and site won material reused on site where required. Materials will be processed as per the E3P chemical and geotechnical specification using licensed plant. The E3P drawings denote the extent of known historic features with obstructions, however it will be the contractor's responsibility to remove all obstructions. Obstructions encountered within the near surface soils will be chased to their full depth and removed; if not possible, the obstruction must be surveyed with the location communicated to E3P, the client and the developer. Where natural soils are present at a relatively shallow depth (majority of the site) extreme care should be taken to ensure that the natural cohesive deposits remain undisturbed with a full reduced level survey to be completed to map the depth of filled / processed material.

RE-8

Cut & Filling of Made Ground to Development Levels

To achieve the proposed Enabling Works Levels (EWL's), the contractor will undertake a process of cut / fill works that will include the careful selection of materials from within areas of reduced level excavation (cut) prior to placement in a manner that accords with the Geotechnical Engineering Specification & Contamination compliance criteria.

The Remediation & Enabling works contractor will seek to incorporate the following key aims:

- Careful Segregation of natural topsoil (where present) for stockpiling in quarantine area, validation testing and potentially re-use in gardens and landscaping;
- Placement of topsoil / organic soils deemed unsuitable for use in a residential garden outside any areas of proposed structures / infrastructure with no future exposure pathway. Soils are not to be used as deep fill in the event of the creation of a hazardous ground gas risk;
- General cut / fill of natural and anthropogenic soils in accordance with the E3P Geotechnical & Contamination performance criteria; and,
- Potentially stockpiling of clean naturally occurring soils for use as sub-soil within the garden cover systems.

RE-9

Replacement of Materials Geotechnical Engineering Requirements

Rationale

Material is to be backfilled in strict compliance with the E3P Geotechnical Engineering Specification as presented in detail within

Section 6 of this report which generally requires the following reinstatement and compaction criteria:

LAND USE	CONSTRUCTION REQUIREMENT	REQUIREMENT
Footprint of proposed structure	Pile Foundation	Backfill using general Method Compaction to CBR of 5%
	Vibro Stone Colum	Granular backfill with suitably graded granular aggregate with <10% fines. CBR >5% with suitable pile mat.
	Traditional Spread Foundation	Ensure no disturbance of natural soil at shallow depth.
Highways	Adopted Estate Road / Drainage	Method Compaction using DOT ensure CBR >5% in sub-grade (engineered fill)
Driveways	Private Drives & Car Parking	Method Compaction

RE-10	**Importation of Bulk Fill** Where there is a net shortfall of material required to achieve the proposed ground levels, it will be necessary to import natural inert soils and aggregate as per the engineering requirements (Section 6). Imported material must be certified as suitable for use in strict accordance with the E3P chemical and geotechnical performance criteria in conjunction with the required duty of care notes and waste transfer exemption. If recycled aggregates are imported laboratory testing should be completed to demonstrate compliance with the WRAP Protocol. Where inert soils are imported laboratory testing should be completed in accordance with the requirements of the pertinent Environmental Permit (i.e. U1 Standard Rules) or CL:AIRE MMP for the re-use of clean naturally occurring soils.
RE-11	**Preparation of Garden for Cover System** As part of the land remediation works, garden areas will be prepared in a manner that will facilitate the placement of the clean cover system during the development phase of the woks. The preparation of the areas requiring clean cover is critical in ensuring delivery of the site in a manner that will ensure no risk to the proposed end users. Where Made Ground is deemed unsuitable for retention in a landscaping or gardens, the area will be subject to a reduced level dig to remove unsuitable material to a minimum depth of 300mm in POS and landscaping or 600mm below finished garden level or verified natural stratum (whichever is the shallower). Excavated soil will be stockpiled pending the results of the appropriate validation testing (to be completed in accordance with this specification) prior to re-use in an area of no sensitivity or where necessary, this material will be removed from site in accordance with UK Waste Management Legislation.
RE-12	**Provision of Subsoil** Sub-soil is present on-site at a depth that would allow a ‘soil inversion’. However it may be necessary to import and validate sub-soils to ensure suitability for use within the clean cover that will be placed in all areas of soft private garden, landscaping and POS. The garden and landscaped areas will require depth validation to satisfy the requirement of the Council Mortgage Lenders (CML) in order to demonstrate that the appropriate thickness has been provided as a growing medium.
RE-13	**Provision of Topsoil** Topsoil within the north-western sector of the site would be deemed suitable on site. Topsoil will require testing in line with the schedule present within Section 2.4 and Table 2.3. The garden and landscaped areas will require depth validation to satisfy the requirement of CML in order to demonstrate that the appropriate thickness has been provided.
RE-14	**Remedial Verification Report** Collation of information relating to site clearance, chemical testing, remedial works, remedial verification, material movements and waste transfer documentation where appropriate. Complete remedial validation reported in line with regulatory guidance. This will include a detailed risk assessment. The report will be submitted to the Local Authority for approval following completion.

2.2 Second Phase Mitigation & Management – Build Phase

A second post Remediation & Enabling phase of works will be required to ensure the proposed development is constructed in a manner that incorporates the required mitigation measures to ensure the development is compliant with UK Building Regulations and the Local Authority Planning requirements.

Once the ground has been stabilised and rendered suitable for development, the builder will be required to undertake a second phase of remediation works to mitigate the identified theoretical risk to human health.

- Placement of soils to form cover system to either 300m in POS & landscaping or 600mm below finished garden or natural stratum (whichever is the shallower) using certified material with appropriate validation within proposed garden areas, comprising 450mm subsoil (potentially site won natural drift deposits) overlain by 150mm topsoil;
- Provision of 300mm certified cover system to all areas of soft landscaping and POS.
- Provision of appropriately assessed water supply pipes.

2.3 Materials Management & Legislative Compliance

The processing of recycled aggregates will be completed using LAPC Part B Licensed Plant with the appropriate deployment notification to the Local Authority prior to commencement of works. All materials that are recovered as recycled aggregate will be compliant with the requirements of the WRAP protocol and the E3P validation testing requirements and as such would not be deemed to be a waste material.

Natural site won materials that are re-use on the site are not deemed to be a waste material (EA Guidance note) and as such this material will be suitable for re-use without the need for any EP subject to confirmatory testing to demonstrate viability and certainty of use.

A U1 Standard Rules Permit has been registered for the site which allows the re-use of up to 3000m3 of material within construction with up to 12,000m3 of material permissible to be re-used in the construction of roads.

A T5 Standard Rules permit allows the screening and recovery of up to 3000m3 of material for sub-sequent re-use in construction.

All materials that are recovered under the WRAP Protocol, U1 or T5 exemptions must be analysed to demonstrate that they are both chemically and structurally suitable for use within the context of the development.

The relevant LAPC, U1, T5 and WRAP Licenses, Exemption and Protocols provides the legislative framework for material compliance during the site remediation and enabling works to be completed by the specialist contractor under the supervision or E3P.

The Environment Agency Guidance note 190 confirms that manufactured topsoil is not deemed to be a waste material.

2.4 Validation Sampling Protocol

In accordance with the current requirements of the regulatory authorities, validation samples will be collected from all materials that are to be subject to movement under the protocols

outlined within this Remediation Strategy, or for materials to be imported onto site to facilitate the proposed residential development.

Upon removal of the hotspot of unsuitable made ground in the western sector (HP08/ underlying proposed dwellings 81 & 82), validation samples will be collected from the base (2 No.) and sidewalls (4 No.) of the excavation to reasonably demonstrate no residual impact to the underlying strata.

Soil samples destined for chemical analysis will be collected at regular intervals in appropriate sampling containers. All samples will subsequently be stored in cooled boxes prior to submission to a UKAS / MCERTS accredited laboratory.

All samples will be collected using appropriate PPE and sampling equipment that will be cleaned at each sampling location.

A detailed copy of E3P Ltd sampling methodology, QA procedures and laboratory chain of custody forms will be documented within the site records and presented within the final validation report for the site.

Where material is found to contain concentrations of potential contaminants at levels in excess of the site specific screening criteria (as detailed within Appendix IV), E3P will undertake further assessment and recommendations on the appropriate use for the material in question, which may involve the disposal of such materials off-site to a suitable waste management facility.

Table 2.3 - Specification of Chemical Validation Laboratory Analysis

Material Use	Testing Frequency	Suite of Analysis
Site Generated		
Site Generated 6F2	1 Sample Per 1000m^3	A / B / C / D
Site Won Made Ground General Backfill	1 Sample Per 250m^3	G
Site Won Made Ground General Backfill	1 Sample Per 1000m^3	A / B / C / D
Site Won Made Ground General Backfill	1 Sample Per 2000m^3	I
Site Won Natural Backfill	1 Sample Per 2000m^3	A / B / C / D
Site generated Sub-Soil	1 Sample Per 250m^3	A / B / C / D
Imported		
6F2	1 Sample Per 1000m^3	A / B / C / D
Topsoil Greenfield Source *(150mm garden cover)*	1 Sample per 200m^3	A / B / C / D
Topsoil Brownfield Source *(150mm garden cover)*	1 Sample per 50m^3	A / B / C / D
Topsoil Greenfield Source *(150mm garden cover)*	1 Sample per 200m^3	A / B / C / D
Topsoil Brownfield Source *(150mm garden cover)*	1 Sample per 50m^3	A / B / C / D

Notes Table 2.3

Suites of Analysis
A) Speciated PAH
B) Speciated TPH (C5-C35)
C) Asbestos (ID)
D) CLEA Inorganic Heavy Metals
E) Speciated PAH, Banded TPH and VOCs
F) SVOC / Speciated TPH
G) On-site screening for VOC using calibrated PID
H) Lechate 2:1 Speciated PAH and Banded TPH
I) Leachate analysis of Inorganic heavy metals, TPH, sulphate and PAH.
J) All analysis prescribed above to be completed by UKAS accredited laboratory.

3. ENVIRONMENTAL MONITORING AND VALIDATION

3.1 Site Management

The tracking of materials will be based on the following hierarchy:

- The Principal Contractor will have the responsibility for setting out areas of the site on the basis of the contract specification;
- Operatives will have instructions only to excavate and to emplace materials in specified areas as assigned by the Site Manager / Foreman;
- The Site Manager (employed by the Principal Contractor) will issue daily instructions to drivers regarding the placement of materials sourced from specific stockpiles or areas, ensuring that appropriate documentary evidence is collected that details which materials are going where and why;
- The strategy for the programme of work will be agreed with the E3P Consultant, who will be in attendance as required, prior to the commencement of the works. E3P will:
    - Inspect the excavation areas and certify that the correct materials are being excavated;
    - Conduct spot checks on loaded vehicles to ensure compliance with this Remediation Strategy;
    - Ensure that any loads which fail visual, olfactory or spot checks either remain on the vehicle or if unloaded are excavated and set aside. This material will be treated according to the recommendations of the E3P site engineer.
- All material imported and removed from site will have Duty of Care / Consignment Notes, copies of which will be retained on-site by the Site Manager; and,
- Materials directly reusable will be incorporated into the earthworks, subject to operational conditions and phasing of excavations, in which case they will be stockpiled prior to final placement.

3.2 Completion

Following the completion of the remediation works a report will be compiled by the Environmental Consultant detailing all site enabling works undertaken, waste consignment notes, and all site investigations, laboratory test certificates, and validation testing undertaken.

A certificate of completion of earthworks should be included within the report which should then be issued to The Local Authority for their approval.

E3P considers that with the adoption of the above best practices the site can be safely redeveloped. The site enabling works process and presence of any residual contamination (if this is the case) should be recorded for future reference by landowners /occupiers. Future development at the site where this may result in penetration of new areas of hard-standing should be subject to no less stringent measures with respect to assessment, and, where appropriate, monitoring than those set out above.

4. RECORD KEEPING & VERIFICATION

4.1 Record Keeping

During the course of the remediation and site enabling works, the on-site E3P Consultant will undertake the following record keeping protocols:

- Detailed daily site diary including material movements;
- Sampling register, testing results, photographs, details of locations of hydrocarbon impacted soils (drawings), details of hotspot removals, details of consignment notes of any hydrocarbon impacted material that is required to be disposed of off-site; and,
- Detailed surveys (volumes).

Record keeping on site, in particular movements and analysis of specific material types, will be in the form of site diaries and a remediation excavation record. This record will remain on site and will be completed by the E3P on-site engineer during the course of the remediation and site enabling works.

4.2 Verification

The records listed above will then be compiled into a Validation Report produced by E3P on completion of the remediation and site enabling works, clearly referencing the origin of the materials used and testing carried out to confirm its suitability for use, where required. E3P will also prepare an as built development drawing clearly detailing the materials present on-site to be cross referenced with the supporting validation documentation.

The Validation Report will include the following:

- Remediation Strategy (including copies of confirmation from regulatory authorities agreeing criteria);
- Detailed surveys of all excavations and production of ‘as built’ drawings for the earthworks;
- Copy of Consignment Notes relating to the movement of wastes to a licensed waste management facility;
- Detailed drawings showing all sampling locations for both chemical and geotechnical testing;
- Chemical test results;
- Geotechnical test results;
- Details of Qualified Persons signed declaration; and,
- Monitoring results if undertaken (i.e. asbestos in air, gas water etc.)

5. CONTINGENCY PLAN

5.1 Previously Unidentified Contaminants

Should significantly impacted material be encountered during the development, then it will be excavated and stockpiled on an impermeable material and sampled and tested for an appropriate range of determinants.

Once the laboratory analysis of the material is available an assessment will be undertaken to determine whether it can be retained on-site as part of the Material Management Plan or whether it should be disposed off-site.

Depending on the nature of any such impact it may be necessary to undertake validation testing of the excavation faces in order to demonstrate that no such materials are left in-situ.

END OF REPORT

APPENDIX I
LIMITATIONS

1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between E3P and the Client as indicated in Section 1.2.

2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information it has been assumed it is correct. No attempt has been made to verify the information.

3. This report has been produced in accordance with current UK policy and legislative requirements for land and groundwater contamination which are enforced by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and requires advice from legal professionals.

4. During the site walkover reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not be made known or accessible.

5. Access considerations, the presence of services and the activities being carried out on the site limited the locations where sampling locations could be installed and the techniques that could be used.

6. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.

7. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials this is for indicative purposes only and do not constitute or replace full and proper surveys.

8. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.

9. E3P cannot be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The copyright in this report and other plans and documents prepared by E3P is owned by them and no such plans or documents may be reproduced, published or adapted without written consent. Complete copies of this may, however, be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied, but no professional liability or warranties shall be extended to other parties by E3P in this connection without their explicit written agreement there to by E3P.

10. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.

APPENDIX II
GLOSSARY

TERMS

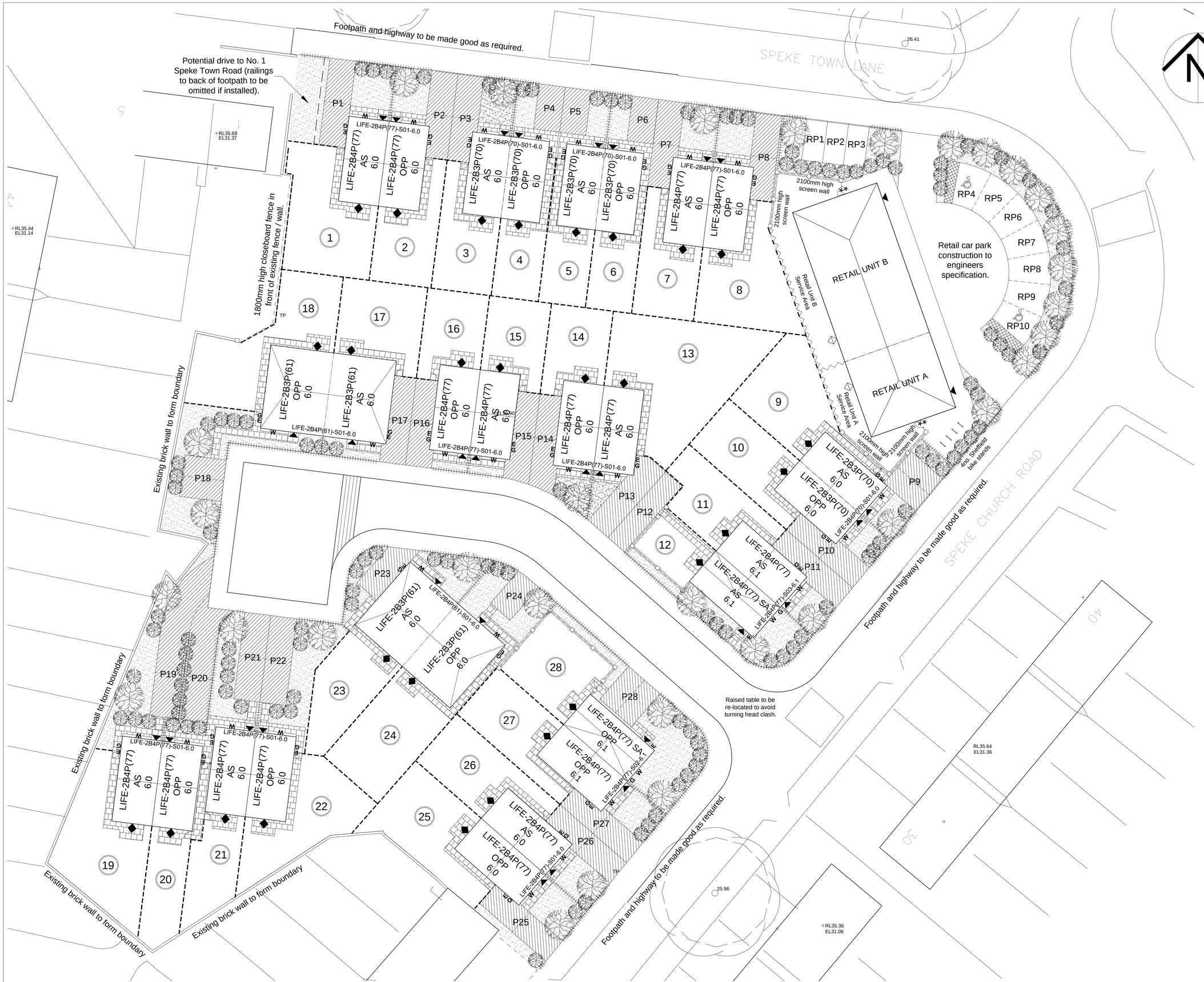
AST	Above Ground Storage Tank
BGS	British Geological Survey
BSI	British Standards Institute
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CIEH	Chartered Institute of Environmental Health
CIRIA	Construction Industry Research Association
CLEA	Contaminated Land Exposure Assessment
CSM	Conceptual Site Model
DNAPL	Dense Non-Aqueous Phase Liquid (chlorinated solvents, PCB)
DWS	Drinking Water Standard
EA	Environment Agency
EQS	Environmental Quality Standard
GAC	General Assessment Criteria
GL	Ground Level
GSV	Gas Screening Value
HCV	Health Criteria Value
ICSM	Initial Conceptual Site Model
LNAPL	Light Non-Aqueous Phase Liquid (petrol, diesel, kerosene)
ND	Not Detected
LMRL	Lower Method Reporting Limit
NR	Not Recorded
PAH	Poly Aromatic Hydrocarbon
PCB	Poly-Chlorinated Biphenyl
PID	Photo Ionisation Detector
QA	Quality Assurance
SGV	Soil Guideline Value
SPH	Separate Phase Hydrocarbon
Sp.TPH (CWG)	Total Petroleum Hydrocarbon (Criteria Working Group)
SPT	Standard Penetration Test
SVOC	Semi Volatile Organic Compound
UST	Underground Storage Tank
VCCs	Vibro Concrete Columns
VOC	Volatile Organic Compound
WTE	Water Table Elevation

UNITS

m	Metres
km	Kilometres
%	Percent
%v/v	Percent volume in air
mb	Milli Bars (atmospheric pressure)
l/hr	Litres per hour
µg/l	Micrograms per Litre (parts per billion)
ppb	Parts Per Billion

mg/kg	Milligrams per kilogram (parts per million)
ppm	Parts Per Million
mg/m^3	Milligram per metre cubed
m bgl	Metres Below Ground Level
m bcl	Metre Below Cover Level
mAOD	Metres Above Ordnance Datum (sea level)
kN/m^2	Kilo Newtons per metre squared
µm	Micro metre

APPENDIX III
DRAWINGS



The Crescent 13-08-15					
	Number	Sqft		Total	Parking ratio %
LIFE-2B3P(61)	4	656	2 bed	2624	200
LIFE-2B3P(70)	6	753	2 bed	4518	200
LIFE-2B4P(77)	18	829	2 bed	14922	200
Site total	28			22064	200
		Acres		Hectares	
Gross Area		1.866		0.76	
Coverage		11824		26218	
Density		15.01		37.08	

LEGEND

- FOOTPATH AND PATIOS TO BE MARSHALLS RICHMOND 450 x 450mm BUFF CONCRETE FLAGS BUTT JOINTED, ON 50mm THICK SAND BED ON 100mm THICK LAYER OF WELL CONSOLIDATED HARDCORE.
- PARKING BAYS / DRIVEWAYS IN TRAFFICABLE BLACK BITUMEN MACADAM WEARING SURFACE TO LOCAL AUTHORITY STANDARDS, REFER TO CIVIL ENGINEERS DRAWINGS.
- HATCH DENTOES LANDSCAPING, PLEASE REFER TO SPECIALIST CONTRACTORS DRAWING
- 1800mm HIGH BRICK WALL (UNLESS NOTED OTHERWISE ON PLAN, SEE RSD 9001 TYPE 1.
- 1800mm HIGH TIMBER FENCE (1500mm FENCE PANEL ON 300mm CONCRETE GRAVEL BOARD WITH CONCRETE POSTS), SEE RSD 9102
- 1800mm HIGH CLOSE BOARDED GATE, SLAM TO LOCK WITH ACCESS KEY. GATES MARKED WITH AN * TO BE SLAM TO LOCK WITH COMMUNAL ACCESS KEY.
- 2100mm HIGH TIMBER FENCE (1500mm FENCE PANEL ON 300mm CONCRETE GRAVEL BOARD WITH CONCRETE POSTS) WITH 300mm TRELLIS, SEE RSD 9102.
- 1100mm HIGH HOOPED TOP METAL RAILING, SEE RSD 9202
- 2400mm SECURITY MESH FENCE WITH LOCKABLE GATE; SEE NSD 9500
- TREES TO BE REMOVED.
- ROOT PROTECTION AREA (REFER TO TREE SURVEY FOR RADIUS.
- TREES TO BE REMOVED.
- FRONT ENTRANCE DOOR, ALL DOORS TO HAVE FLUSH THRESHOLD. UNLESS NOTED OTHERWISE PROVIDE 1200 x 1200mm LEVEL PLATFORM AT ENTRANCE TO DWELLING.
- PATIO / FRENCH DOORS.
- GARAGE / RETAIL UNIT PERSONNEL DOOR.
- SHEFFIELD BIKE STAND.
- 2400mm HIGH METAL GATES AS PER SK336-CRES-101

NOTES

- PATHS GENERALLY TO BE 900mm WIDE.
- PATIOS GENERALLY TO BE 2700 x 1800mm UNLESS INDICATED OTHERWISE.
- PAVING SLABS TO ABUT HOUSE WHERE FOOTPATH OR PATIO IS ADJACENT TO DWELLING.
- MOWING STRIP TO BE PROVIDED WHERE TURFED AREAS ABUT HOUSE, TO CONSIST OF 150mm WIDE WHITE STONE CHIPPINGS.

MATERIAL REFERENCE
6.0 = BRICK
6.1 = BRICK / RENDER

0 1 2 3 4 5 10 m

SCALE BAR 1:200

Rev	Date	By	Description	Chk'd
A	03.02.16	MB	Hoop topped railing division shown between plots to front gardens.	

COUNTRYSIDE
Places People Love

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site:
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Off Speke Town Lane & Speke Church Road
Speke

title:
External Finishes

scale: @A1	1:200	drawn by:	GWP / ABC
date:	Nov 2015	checked:	

drawing no: **SK336-CRES-EXT01**

sheet no: **Sheet 1 of 1**

revision: **A**

FS 53054 EMS 61920 ISO 9001:2008 ISO 14001:2004

g:\1. p&d\1. sites\sk336 - slh sites, liverpool\1.cad drawings\2. planning\2. detailed layout\sk336-cres-pl01 - the crescent proposed site layout rev c.dwg

Revision	Description	Date

Geo
Structures
Civils

iD GeoEnvironmental
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CLIENT

COUNTRYSIDE PROPERTIES (UK) LIMITED

JOB TITLE

THE CRESCENT, SPEKE

DRAWING TITLE

SITE FEATURES PLAN

STATUS

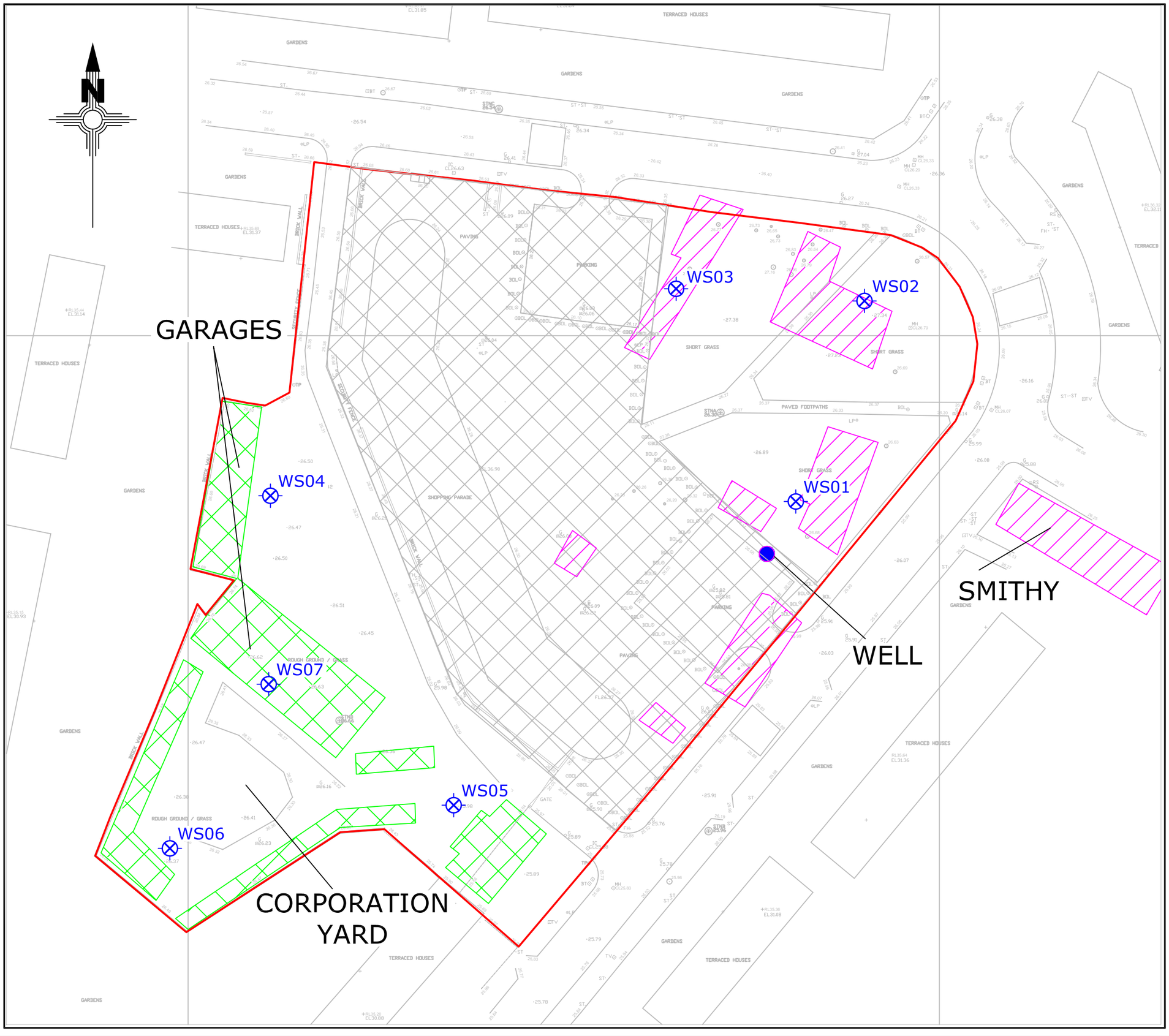
FINAL

DRAWN BY	SIGNATURE	DATE
MJ		10-05-13

APPROVED	SIGNATURE	DATE
BRB		10-05-13

SCALE	DRG No.
1:500@A2	3890-G-D002

A2 border: 460 X 392



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KEY

- FEATURE SHOWN ON 1929 OS PLAN
- FEATURE SHOWN ON 1993 OS PLAN
- EXTENT OF AREA UNABLE TO BE INVESTIGATED
- SITE BOUNDARY
- WS — WINDOW SAMPLE LOCATION

Revision	Description	Date

Geo
Structures
Civils

iD GeoEnvironmental
Consulting Engineers

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CLIENT

COUNTRYSIDE PROPERTIES (UK) LIMITED

JOB TITLE

THE CRESCENT, SPEKE

DRAWING TITLE

HISTORIC SITE FEATURES PLAN & EXPLORATORY HOLE LOCATIONS

STATUS: FINAL

DRAWN BY	SIGNATURE	DATE
MJ		09-05-13
APPROVED	SIGNATURE	DATE
BRB		10-05-13

SCALE	DRG No.
1:500@A3	3890-G-D003

A3 border: 309 X 27/3

APPENDIX IV
E3P REMEDIATION
&
VALIDATION CRITERIA

Human Health Remediation Targets – Low Rise Residential End Use

Determinand	Units	300mm / 600mm Cover System (Garden)	within Public Open Space 300mm Cover	Under Public Open Space >300mm	Pathway
Arsenic (vii)	mg/kg	37	37	370(4)	1(5)
Cadmium (vii)	mg/kg	11	120	532	1(5)
Chromium (Hexavalent)	mg/kg	6	7.7	77	1(5)
Lead (vii)	mg/kg	210	210	1000**	1(5)
Elemental Mercury (ii)	mg/kg	1.2	16	160	2
Nickel	mg/kg	180	230	1000**	1(5)
Selenium (New SGV)	mg/kg	350	-	-	1(5)
Copper	mg/kg	2400	3700(4)	3700(4)	1(5)
Zinc	mg/kg	3700	3700(4)	3700(4)	1(5)
Cyanide	mg/kg	791	791	7910(4)	1(5)
Phenol	mg/kg	280	760	760	2
Naphthalene	mg/kg	2.3)	500	500	2
Acenaphthylene	mg/kg	170(1)	1000	1000	3(5)
Acenaphthene	mg/kg	210(1)	1000	1000	1(5)
Fluorene	mg/kg	170(1)	1000	1000	1(5)
Phenanthrene	mg/kg	95(1)	1000	1000	3(5)
Anthracene	mg/kg	2400(1)	1000	1000	3(5)
Fluoranthene	mg/kg	280(1)	1000	1000	3(5)
Pyrene	mg/kg	620(1)	1000	1000	3(5)
Benzo(a)Anthracene(	mg/kg	7.2(1)	29	49	3(5)
Chrysene	mg/kg	15(1)	57	93	3(5)
Benzo(b)Fluoranthene (iii)	mg/kg	2.6(1)	7.1	13	3(5)
Benzo(k)Fluoranthene (iii	mg/kg	77	190	370	3(5)
Benzo(a)Pyrene (vii)	mg/kg	2.2	5.7	11	3(5)
Indeno(123-cd)Pyrene	mg/kg	27(1)	82	150	3(5)
Dibenzo(a,h)Anthracene	mg/kg	0.24(1)	0.57	1.1	3(5)
Benzo(ghi)Perylene	mg/kg	320(1)	1000	1000	3(5)
TPH C_5-C_6 (aliphatic)	mg/kg	42	500	500	2
TPH C_6-C_8 (aliphatic)	mg/kg	100	500	500	2
TPH C_8-C_{10} (aliphatic)	mg/kg	27	500	500	2
TPH C_{10}-C_{12} (aliphatic)	mg/kg	130	500	500	2
TPH C_{12}-C_{16} (aliphatic)	mg/kg	1000	1000	1000	1(5)
TPH C_{16}-C_{21} (aliphatic)	mg/kg	500	1000	1000	1(5)
TPH C_{21}-C_{35} (aliphatic)	mg/kg				1(5)
TPH C_5-C_7 (aromatic)	mg/kg	70	500	500	2
TPH C_7-C_8 (aromatic)	mg/kg	130	500	500	2
TPH C_8-C_{10} (aromatic)	mg/kg	34	500	500	2
TPH C_{10}-C_{12} (aromatic)	mg/kg	74	1000	1000	2
TPH C_{12}-C_{16} (aromatic)	mg/kg	140	1000	1000	1(5)
TPH C_{16}-C_{21} (aromatic)	mg/kg	260	1000	1000	1(5)
TPH C_{21}-C_{35} (aromatic)	mg/kg	1000	1000	1000	1(5)

Determinand	Units	Within 300 / 600mm Cover System (Garden)	Under Hard Standing and >600mm of cover system	Within Public Open Space 300mm Cover	Under Public Open Space >300mm	Pathway
1.2 Dichloroethene	mg/kg	0.011	0.013	29	29	2
Trichloroethane	mg/kg	18	18	500	500	2
Tetrachloroethane	mg/kg	1.6	8.0	500	500	2
Tetrachloroethene	mg/kg	0.18	0.40	500	500	2
Tetrachloromethane	mg/kg	0.026	0.056	500	500	2
Trichloroethene (TCE)	mg/kg	0.016	0.036	120	120	2
Trichloromethane	mg/kg	0.91	2.1	500	500	2
Chloroethene (VC)	mg/kg	0.00064	0.0010	3.5	3.5	2

Notes 1

Asbestos will be screened visually on-site by a qualified environmental consultant and where potential ACM is identified representative samples will be subject to quantitative analysis of 5&volume by weight. Should any ACM be identified within the soil matrices, further detailed % assessment would be required when the reported laboratory result exceeds the limit of detection for the analytical method at 0.01% by volume (weight).

Notes 2

Excludes matrices where free product is observed;
Assumes 10 x Tier 1 GAC for non volatile PAH screening criteria for residential garden & non separate phase with conservative TOC assessment of 2.5%;
Commercial Tier 1 GAC modelled to assume no exposure pathway; and,
Values for soils below 600mm cover system and beneath areas of hard standing with no vapour exposure pathway have been calculated as 10 x Tier 1 GAC for 1% SOM.
Inorganics marked ** have been set at 1000mg/kg to ensure that soils are below the hazardous criteria threshold in accordance with WM2.
No viable exposure pathway beneath hard standing and cover system.

Notes 3

Main Exposure Pathways: 1 = Soil Ingestion, 2 = Vapour Inhalation (indoor), 3 = Dermal Contact & Ingestion, 4 = Dust Inhalation.
Abbreviations: GAC = General Assessment Criteria, n = number of samples, MC = Maximum Concentration; NA – Not Applicable (no exceedance of assessment criteria); Loc of MC = Location of Exceedances
*
(ii) Mercury – Based on elemental Mercury
(iii) Benzo (b) Fluoranthene (100mg/kg) Benzo (k) Fluoranthene (140mg/kg)
(iv) BTEX is not SOM related due to inhalation pathway
(v) Xylenes based on p-xylene (o-xylene 2600mg/kg, m-xylene 3500mg/kg) and is capped by its solubility

(vi) The Tier 1 GAC for the hydrocarbon fraction is derived from the CIEH assessment for petroleum hydrocarbons Criteria Working Group (CWG) for both aliphatic and aromatic compounds. E3P has utilised the Tier 1 values for aliphatic compounds for the volatile and semi volatile fractions (C5-C12) and the Tier 1 values for aromatic compound for the non volatile fractions (C12-C35). The comparison of a total (aliphatic/aromatic) compounds to an individual fraction is considered to be a conservative approach and satisfactory for the protection of human health.
(vii) Value derived from C4SL.

CONSTITUENT	ORIGIN OF RISK ASSESSMENT VALUE
Arsenic	PC4SL
Cadmium	P4CSL
Chromium	LQM CIEH 2nd Edition 2009
Lead	PC4SL
	PC4SL
Mercury	2009 SGV
Nickel	2009 SGV
Selenium	Soil guideline value, DEFRA/Environment Agency
Copper	LQM CIEH 2nd Edition 2009
Zinc	LQM CIEH 2nd Edition 2009
Cyanide - Total	CLEA 1.06 Derived Value
Phenols - Total.	LQM CIEH 2nd Edition 2009 – 1% SOM
Naphthalene	General Assessment Criteria (GAC) developed by CIEH / LQM the using CLEA 1-06 with supporting data from SR3, SR7 and existing Tox report where applicable. 1% SOM S4UL's
Acenaphthylene	
Acenaphthene	
Fluorene	
Phenanthrene	
Anthracene	
Fluoranthene	
Pyrene	
Benzo(a)Anthracene	
Chrysene	
Benzo(b/k)Fluoranthene (iii)	
Benzo(a)Pyrene	PC4SL
Indeno(123-cd)Pyrene	S4ULs – 2015- General Assessment Criteria (GAC) developed by CIEH / LQM the using CLEA 1-06 with supporting data from SR3, SR7 and existing Tox report where applicable. 1% SOM.
Dibenzo(a,h)Anthracene	
Benzo(ghi)Perylene	
TPH C_5-C_6 (aliphatic)	
TPH C_6-C_8 (aliphatic)	
TPH C_8-C_{10} (aliphatic)	
TPH C_{10}-C_{12} (aliphatic)	
TPH C_{12}-C_{16} (aromatic)	
TPH C_{16}-C_{21} (aromatic)	
TPH C_{21}-C_{35} (aromatic)	

CONSTITUENT	ORIGIN OF RISK ASSESSMENT VALUE
1.2 Dichloroethene	S4ULs – 2015- General Assessment Criteria (GAC) developed by CIEH / LQM the using CLEA 1-06 with supporting data from SR3, SR7 and existing Tox report where applicable. 1% SOM.
Trichloroethane	
Tetrachloroethane	
Tetrachloroethene	
Tetrachloromethane	
Trichloroethene (TCE)	
Trichloromethane	S4ULs – 2015- General Assessment Criteria (GAC) developed by CIEH / LQM the using CLEA 1-06 with supporting data from SR3, SR7 and existing Tox report where applicable. 1% SOM
Chloroethene (VC)	

Remediation Targets – Comparison of Leachate Analysis with Tier 1 Screening Levels

DETERMINAND	UNITS	EQS
Arsenic	µg/l	50
Cadmium	µg/l	5
Chromium	µg/l	2
Copper	µg/l	5
Total Cyanide	µg/l	-
Lead	µg/l	4
Mercury	µg/l	1
Nickel	µg/l	8
Selenium	µg/l	-
Zinc	µg/l	30
pH	-	6-9
Naphthalene	µg/l	2.4
Benzo(a)pyrene	µg/l	0.05
benzo[b/k]fluoranthene	µg/l	0.03
benzo[g,h,i]perylene & indeno(1,2,3-cd]pyrene	µg/l	0.02
TPH Aliphatic C5-C6	µg/l	50
TPH Aliphatic C6-C8	µg/l	50
TPH Aliphatic C8-C10	µg/l	50
TPH Aliphatic C10-C12	µg/l	50
TPH Aliphatic C12-C16	µg/l	50
TPH Aliphatic C16-C35	µg/l	50

Notes

\# Solubility <0.01µg/l

1. Council Directive of 4 May 1976 on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community (76/464/EEC). Official Journal of the European Communities 18.5.76 L129/23
2. The Surface Waters (Dangerous Substances) (Classification) Regulations 1989. SI 2286/89
3. The Surface Waters (Dangerous Substances) (Classification) Regulations 1992. SI 337/92
4. These represent non-statutory changes made in the 1990's which may be used by regulatory authorities. They are more conservative than the original 1985 values.
5. EC Dangerous Substances - List 1 parameters
6. EC Dangerous Substances - List 2 parameters as listed in Dangerous Substances Regulations of 1997 and 1998, and the DoE Circular 7/89
7. Circular from the Department of the Environment (7/89) and the Welsh Office (SI 16/89). 30 March 1989. Water and the Environment: The implementation of European Community Directives on pollution caused by certain dangerous substances discharged into the aquatic environment
8. The Surface Waters (Dangerous Substances) (Classification) Regulations 1997. SI 2560/97
9. The Surface Waters (Dangerous Substances) (Classification) Regulations 1998. SI 389/98
10. WHO DWS for Toluene and Ethylbenzene – odour/taste/colour (Human Health Risk)
11. Specified compounds are benzo[b]fluoranthene (CAS 205-99-2), benzo[k]fluoranthene (CAS 207-08-9), benzo[g,h,i]perylene (CAS 191-24-2) and indeno[1,2,3-c,d]pyrene (CAS 193-39-5). The parametric value applies to the sum of the concentrations of the individual compounds detected and quantified in the monitoring process.

APPENDIX V

PLANNING PERMISSION

Certificate issued to:-
Countryside Properties (UK) Ltd & SLH Group
Lakeside Drive
Centre Park
Warrington
Cheshire
WA1 1RW

Application No: **13F/1895**
Date Issued: 8 February 2016

TOWN AND COUNTRY PLANNING ACT 1990
TOWN AND COUNTRY PLANNING (GENERAL DEVELOPMENT PROCEDURE) ORDER 1995

Location: **The Crescent off Speke Town Lane , Speke Church Road, Liverpool, L24**

Proposal: **To erect 28 dwellinghouses and 2 retail units with associated infastructure and landscaping.**

Applicant: **Countryside Properties (UK) Ltd & SLH Group**
Lakeside Drive
Centre Park
Warrington
Cheshire
WA1 1RW

Date Valid: **19/11/2015**

In pursuance of its powers under the above-mentioned legislation, the Local Planning Authority on **08 February 2016 GRANTED** planning permission for the above-mentioned development in accordance with your application, subject to the compliance with the conditions specified on the attached schedule, for the reasons stated.

(see attached)

D A Hughes

Head of Planning

Liverpool City Council, Regeneration, Planning,
Municipal Buildings, Dale Street, Liverpool L2 2DH
T: 0151 233 3021
E: planningandbuildingcontrol@liverpool.gov.uk www.liverpool.gov.uk

SCHEDULE OF CONDITIONS AND REASONS

Condition No	Condition
1	The development hereby permitted shall be commenced before the expiration of 3 years from the date of this permission. REASON: To comply with Section 91 (as amended) of the Town and Country Planning Act 1990.
2	The development hereby approved shall be carried out in accordance with the following drawings and documents unless otherwise agreed in writing by the local planning authority: (i) Drawing Numbers DFD/SP/L10 Rev C - Landscaping Scheme SK336-CRES-SS-01 Rev B - Proposed Streetscenes SK336-CRES-100 Rev F - Proposed Retail Units Plans & Elevations SK336-CRES-PL01 Rev B Proposed Site Layout LIFE-2B3P(61) Floor Plan Rev A LIFE-2B3P(61) Elevations (6.0) LIFE-2B3P(70) Floor Plans Rev A LIFE-2B3P(70) Elevations (6.0) Rev A LIFE-2B4P(77) SA Floor Plans LIFE-2B4P(77) SA Elevations 6.1 LIFE-2B4P(77)-01 - Floor Plans LIFE-2B4P(77)-02 - Elevations (6.0) LIFE-2B4P(77)-03 - Elevations (6.1) (ii) Supporting Documents Design & Access Statement November 2015 SK336/CRES/MAT Rev C -Materials Schedule The Crescent LCC Lifetime Homes Developers Checklist Nov 2015 REASON: To ensure that the development is carried out in accordance with the approved plans and within the parameters of the grant of planning permission.
3	Prior to implementation, samples or specifications of all materials to be used in the external construction of this development shall be submitted to and approved in writing by the local planning authority. The scheme shall be implemented in accordance with the approved details to the satisfaction of the local planning authority before the development is occupied/brought into use.

	REASON: To ensure a satisfactory external appearance.
4	i) The approved landscaping scheme shall be completed either (a) not later than the first planting season following completion of the development or (b) during the appropriate planting season progressively as the development proceeds, in accordance with a programme to be agreed in writing with the local planning authority. (ii) Any trees or shrubs which die, become diseased, damaged or are removed within 3 years of planting shall be replaced with trees and shrubs of similar sizes and species or as may otherwise be agreed with the local planning authority in the first available planting season thereafter, all works to be carried out to BS 4428: 1989 "Code of Practice for General Landscape Operation". REASON: It is in the interests of visual amenity.
5	Within 4 weeks form the commencement of development, a scheme for the disposal of foul and surface waters shall be submitted to and approved in writing by the local planning authority. The scheme shall be implemented in accordance with the approved details and completed to the satisfaction of the local planning authority before the development is occupied/brought into use. REASON: To ensure a satisfactory means of drainage.
6	No part or phase of the development hereby permitted shall commence until; a) An investigation and assessment methodology, including analysis suite and risk assessment methodologies has been completed and submitted to and approved by the LPA in writing, prior to any site investigations. b) A site investigation and assessment has been carried out by competent persons to determine the status of contamination including chemical, radiochemical, flammable or toxic gas, asbestos, biological and physical hazards at the site and submitted to the LPA. The investigations and assessments shall be in accordance with current Government and Environment Agency recommendations and guidance and shall identify the nature and extent of any contaminants present, whether or not they originate on the site, their potential for migration and risks associated with them. The assessment shall consider the potential risks to: i. human health, ii. controlled waters, iii. property (existing or proposed) including buildings, crops, livestock, pets, woodland and service lines and pipes, iv. adjoining land, v. ecological systems, and vi. Archaeological sites and ancient monuments. c) A detailed remediation scheme (if required), has been submitted to and agreed in writing with the LPA. This scheme shall include an appraisal of remedial options, implementation timetable, works schedule, site management objectives, monitoring proposals and remediation validation methodology. The scheme once completed must ensure that the site will not qualify as contaminated land under Part IIA of the Environmental Protection Act 1990 in relation to its intended use. REASON: To ensure that risks from land contamination to future users of the land and neighbouring land are minimised, and to ensure that the development can be carried out safely without unacceptable risks to workers, neighbours and other offsite receptors.
7	After development commences and prior to occupation;

	a) Following completion of the measures identified in the approved remediation scheme and prior to occupation of any part of the development, a verification report which shall confirm the adequacy of remediation must be prepared and submitted to and approved in writing by the LPA before this condition will be discharged. If a phased approach to the development is being proposed, then a validation/completion report for an agreed number of plots within each of the proposed phases shall be submitted to the Local Planning Authority and approved in writing before the condition relating to the phase in question shall be discharged. b) If any potentially contaminated (unusual/suspect) material or flammable/toxic gas not previously identified is discovered, this must be reported in writing to the LPA and a further assessment and a revised remediation scheme will be required by the LPA. If no contamination is found then this should be detailed in the remediation verification report. REASON: To ensure that risks from land contamination to future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems, and to ensure that the development can be carried out safely without unacceptable risks to workers, neighbours and other offsite receptors.
8	Any waste generated to be discarded as refuse or recycled shall be kept within the curtilage of the premises and shall only be placed outside the premises on such days as trade refuse collection will occur. REASON: To safeguard amenity and maintain the quality of the street environment.
9	The premises shall not be open for business outside the hours of 0800 and 2200. REASON: To ensure that nearby occupiers are not adversely affected by the development.
10	Within 4 weeks of works commencing on site, a scheme which details the following off-site highway works required to accommodate the development, together with a programme for completion of the works shall be submitted to and approved in writing by the local planning authority. The off-site highway works shall be implemented in accordance with the approved details and completed to the satisfaction of the local planning authority before the development is occupied/brought into use. (i) Upgrading all footways contiguous with the site to adoption standards including provision of dropped kerbs and tactile paving at junctions; (ii) Upgrade of street lighting where required; REASON: In the interests of highway and pedestrian safety.
11	Within 4 weeks of commencement of development, a management plan for the continuous maintenance of all trees and soft landscaping (i.e those areas outside of the curtilage of residential properties), in perpetuity for the lifetime of the development, shall be submitted to and approved in writing by the local planning authority, which shall include measures for the maintenance of all trees to be located within the application site; the management plan shall be implemented in full, to the satisfaction of the local planning authority, at nil cost to the City Council, and shall include the following details: (i) locations of all new trees (ii) size, species and methods of root containment of all new trees (iii) tree pit specification including size, soil type, irrigation, aeration, method of

	staking/anchorage, surface treatment (iv) post planting maintenance regime, and (v) financial arrangements concerning post adoption routine maintenance obligations. REASON: To safeguard visual and residential amenity, and highway safety in accordance with Policy HD18 of the Liverpool Unitary Development Plan.
12	Prior to commencement of development, including any works of demolition, a detailed construction method statement shall be submitted to and approved in writing by the local planning authority. The statement shall include: (i) commencement and completion dates (ii) hours of operation for construction work (iii) measures to control noise and dust (iv) details of site compounds, storage of plant and materials (v) temporary highway works or closures (vi) access for construction traffic (vii) parking of vehicles of site operatives and visitors (viii) wheel washing facilities (ix) a scheme for recycling/disposing of waste resulting from demolition and construction works. The scheme shall be implemented in accordance with the approved statement and completed to the satisfaction of the local planning authority before the development is occupied/brought into use. REASON: It is in the interests of the amenity of the surrounding occupiers and in accordance with Policy GEN8 of the Liverpool Unitary Development Plan.

INFORMATIVES

For those new highways to be adopted and maintained at public expense, the developer shall be required to enter into an agreement with Liverpool City Council pursuant to section 38 of the Highways Act 1980; all works and associated legal agreements shall be at the developer's cost and at nil cost to the City Council.
The Environment Agency The Environment Agency strongly recommends that chemical testing of soils for site investigation, verification of remediation and long-term site monitoring should be undertaken by laboratories with accreditation to the Environment Agency's Monitoring Certification Scheme (MCERTS) performance standard for soils. Liverpool City Council also recommend the adoption of these standards when the above mentioned activities are undertaken in accordance with planning requirements or as part of a voluntary remediation scheme. Further information on the standard is available on the Environment Agency's website at www.environment-agency.gov.uk/mcerts. Liverpool City Council Liverpool City Council guidance relating to the re-development of potentially-contaminated land is available at http://www.liverpool.gov.uk/Business/Environmental-health/contaminated-land/. This sets out general advice for Developers, the responsibilities of all involved parties, and detailed technical requirements for Environmental Consultants preparing information for regulatory submission. The Developer & Consultants' Guide, in particular, should be followed during the preparation and reporting of investigations so as to ensure of their adequacy, and allow swift, informed decisions to be made on the suitability of a proposed development and any remediation

schemes put forward. We stress that failure of an appointed Environmental Consultant to submit adequate information is likely to result in requests for further information, may delay the commencement of a development, or prevent the discharge of associated Planning Conditions.
During the site works the contractor shall pay full regard to the best practicable means available in respect of the control of noise and dust from the site. In addition, no operations which are audible at the site boundary shall be carried out: (i) outside the hours of 0800 to 1800 weekdays (ii) outside the hours of 0800 to 1300 Saturdays, and (iii) at any time on Sundays or Bank Holidays.
The applicant is advised that all necessary off-site highway works shall be carried out by means of a Section 278 Highways Agreement and all highway materials removed shall be reclaimed by the City Council. In this respect, the applicant should contact the Council's Highway Management Section on telephone number 0151 233 5241.
Reasons for Approval - Positive Planning The decision to grant permission and impose any conditions has been taken having regard to the relevant policies and proposals in the Liverpool Unitary Development Plan 2002. The Local Planning Authority have worked with the applicant in a positive and proactive manner based on seeking solutions to problems arising in relation to dealing with a planning applications and have implemented the requirement in NPPF para 187.
Liverpool City Council is the street name and numbering authority and has the responsibility of allocating postal addresses to new properties and existing properties converted to residential. All street name and numbering must be managed and agreed appropriately in accordance with LCC standards and policy. Please contact Miss Zita Carroll on 0151 233 5240 to progress these works.

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NOTES FOR PLANNING DECISION NOTICES

OTHER CONSENTS

This permission refers only to that required under the Town and Country Planning Acts and does not include any consent or approval under any other enactment, byelaw, order or regulation. In particular, if building alterations are involved these may also require consent under the Building Regulations and before commencing work this aspect should be discussed with Building Control (Email: building.control@liverpool.gov.uk Tel: 0151 233 4458/ 4467). Where a building regulations approval is obtained and this requires changes from your planning permission, revised drawings must be submitted to the Divisional Manager Planning.

COMPLIANCE WITH THE PERMISSION/CONSENT

It is important that this permission/consent is implemented strictly in accordance with the plans approved by the consent. Where a planning permission is granted subject to conditions it is important that these are fully complied with. Non-compliance with the conditions of the permission/consent may well result in a Breach of Condition Notice being served on you or any other appropriate enforcement action required to remedy the breach of planning control.

APPEALS TO THE PLANNING INSPECTORATE

If you are aggrieved by the decision of the city council as local planning authority then you can appeal to the Planning Inspectorate. *Please note, only the applicant possesses the right of appeal.*

If you want to appeal, then you must do so within **six months** of the date of issue of this notice.
The Planning Inspectorate have introduced an online appeals service which you can use to make your appeal online. You can find the service through the Appeals area of the Planning Portal – see www.planningportal.gov.uk/pcs. The Inspectorate will publish details of your appeal on the internet (on the Appeals area of the Planning Portal). This may include a copy of the original planning application form and relevant supporting documents supplied to the local authority by you or your agent, together with the completed appeal form and information you submit to the Planning Inspectorate. Please ensure that you only provide information, including personal information belonging to you that you are happy will be made available to others in this way. If you supply personal information belonging to a third party please ensure you have their permission to do so. More detailed information about data protection and privacy matters is available on the Planning Portal.
If you do not have access to this service, forms can be obtained from the Planning Inspectorate at 315a Eagle Wing, Temple Quay House, 2 The Square, Temple Quay Bristol, BS1 6PN. (Tel: 0117 372 6372 or e-mail: enquiries@planning-inspectorate.gsi.gov.uk). *You must use a Planning Appeal Form when making your appeal. If requesting forms from the Planning Inspectorate, please state the appeal form you require.*

PURCHASE NOTICES

If the local planning authority or the Office of the Deputy Prime Minister refuses to grant permission to develop land or grants it subject to conditions, the owner may claim in certain circumstances that the land has become incapable of development. In these circumstances, the owner may serve a Purchase Notice on the Council under Part VI of the Town and Country Planning Act 1990, requiring the Council to purchase the owners interest in the land.

COMPENSATION

In certain limited circumstances, a claim must be made against the local planning authority for compensation. The circumstances in which compensation is payable are set out in Parts VI and V of the Town and Country Planning Act 1990.

NEW RESIDENTIAL DEVELOPMENT

In order to ensure that minimum disruption occurs once a development is completed; developers are asked to contact all the public utilities to ensure that adequate services are provided at the outset. In particular developers are asked to contact the Cable TV provider

PUBLIC NOTICE – PARTY WALL ETC. ACT 1996

From the 1 July 1997 any person intending to carry out works affecting party walls or involving excavations for foundations adjacent to a party wall will be required to serve notice on all adjoining owners before work commences. You are advised to engage the services of a private surveyor to act on your behalf in any formal private procedures and agreements that you are now required, by The Party Wall etc. Act 1996, to enter into.
Failure to comply with the Act may result in civil action being taken against you.