Phase 3 Remediation Method Statement

Lilac Avenue / Sandhouse Crescent, Scunthorpe

Produced for Ross Davy Associates c/o Ongo Homes

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Document control

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Client:	Ross Davy Associates c/o Ongo Homes
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0.0	Document for issue	*D Driver* *Director*	R Lester *Geo-environmental Engr*	September 2019
1.0	Method of cover system revised to a all hardstanding approach	*D Driver* *Director*	R Lester *Geo-environmental Engr*	October 2019

PHASE 3 REMEDIATION METHOD STATEMENT

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1.0 Introduction

This document is produced for Ross Davy Associates and their client Ongo Homes as the method to be employed in the remediation of the former residential garages located on the junction of Lilac Avenue and Sandhouse Crescent, Scunthorpe. The remediation strategy is based on a cover system as recommended in the site investigation intrusive report from the investigations of the site. The proposed development is for residential housing with a rear garden area.

The site has been the subject of a phase 1 desktop study and a phase 2 intrusive survey. This document is intended to be a working document of the procedures employed by all parties concerned with the remediation of the site as a housing development.

The aim of the works is to provide a barrier of 175mm of clean inert granular fill, with a geotextile to garden area which will include 25mm of bedding sand and artificial grass at the surface. This will give a total hardstanding depth of 200mm within the proposed garden area. The previous investigation highlighted elevated levels of Arsenic within the rear garden area of the site. The use of a barrier system is intended to sever the source from the pathway and receptor, so the site does not pose a risk to human health when it is developed for residential usage.

Reference has been and will be made to the Yorkshire and Lincolnshire Pollution Advisory Group (YALPAG) document – Verification requirements for cover systems and technical guidance for developers, landowners and consultants.

The success of the remediation is dependent on good operational procedures. It is essential that good communication links are maintained and that verification for the works is obtained. There is an obligation to keep the local authority informed of any problems or requests for variations to this method statement.

This method statement is produced solely for Ross Davy Associates and should only be copied in full. When transmitted electronically the definitive copy of the report is held by Humberside Materials Laboratory Ltd.

2.0 Site Description

2.1 Location and size

The site is situated on land off Lilac Avenue at the junction with Sandhouse Crescent in Scunthorpe, North Lincolnshire. The total site area is about 0.033 hectares. Site access will be from Sandhouse Crescent. A site location plan is included in Appendix A.

2.2 Site features

The surface of the site is a mix of concrete assumed as bases for the previous garages and macadam surfacing as the access to the garages from Sandhouse Crescent. The surface of the concrete appears sound with some surface disintegration to the macadam surfacing. Six number concrete bollards with steel tube fencing is located on the corner to prevent vehicle access. Evidence of the previous residential garages is noted via the concrete bases, no evidence of the garages remains on site above existing ground level. Photographs of the site are presented in the Phase 2 report.

2.3 Adjacent land use

- North: Lilac Avenue then residential properties
- East: Residential properties
- South: Residential properties
- West: Sandhouse Crescent then residential properties

2.4 Site topography

The site is relatively flat at 35m above ordnance datum (AOD). The local topography beyond the site falls to the west and rises to the east.

2.5 Proposed development

It is proposed to develop the site for residential use. The proposed layout is included in appendix A. It is proposed to develop the site with residential housing with all hardstanding garden areas.

3.0 Remediation Overview

Material is to be removed to 200mm below finished ground level in the previously proposed garden area. An up to date proposal for the rear garden is to include a hardstanding garden area in the form of artificial grass. A geotextile membrane below the imported granular fill is included as a marker layer, this will be overlain by 175mm of granular fill and then 25mm of bedding sand and artificial grass to create the 200mm hardstanding cover system.

Any material removed for the excavations of foundations etc adjacent to the rear garden area are considered not suitable for inclusion within the cover system.

Remediation works are to be verified by an independent engineer. Photographs are to be taken to validate the works. Documentation shall be provided as proof of this, including consignment notes for materials removed and imported. On completion, a report of the validation will be submitted to the local authority.

Standard PPE is considered suitable for all operatives involved in the works. A good standard of hygiene should be maintained by all involved on the site.

4.0 Pre-contract works

The site is to be secure when work is not being undertaken on site, once construction has started.

Client and project manager for the site:
Matthew Deakins Ross Davy Associates

Appointed Independent Consultant for remediation works:
Mr D Driver Humberside Materials Laboratory Ltd.
Mr M Green Humberside Materials Laboratory Ltd

The licenced landfill site for material removed from site is to be confirmed.

Source of imported granular fill is to be confirmed and should comply with YALPAG verification requirements for cover systems.

5.0 Remediation Methods

The structural works are to be completed prior to remediation of the garden. Any fill material below the structure adjacent to the rear garden will be excavated down to 200mm below current ground level and removed from site and must not be used to increase levels on any part of the site. Standard construction materials will be used below the houses, pathways and drives from the excavated depths.

Once the structure is in place it is proposed that 200mm from the final garden area level is removed. This is to be excavated and loaded into vehicles for transport to an appropriate licenced landfill site, subject to classification and approval from the accepting landfill site.

Any material excavated not removed directly from site will be stockpiled within the site separately from all other materials, until disposal is arranged. This will be on a plastic sheet to stop migration of potential contaminants.

A geotextile, Fastrack 1800 or similar will be placed over the hardstanding garden area prior to the laying of imported granular fill, sand and artificial grass. A hardstanding layer of 175mm of granular material and 25mm of bedding sand and artificial grass will be placed within the garden area. This granular fill is recommended to be from a virgin quarried material with at least one sample analysed for standard metal/metalloids.

Table 1: Testing analyses required for imported materials

Source	*Metals/ Metalloids*	*PAH EPA16*	*Asbestos*	*TPH CWG*
Greenfield soil	**P**	**P**	**P**	
Brownfield soil	**P**	**P**	**P**	**P**
Virgin Quarried Material	**P**			
Crushed Hardcore	**P**	**P**	**P**	

Imported granular fill will be deposited within the site in such a manner that it cannot be cross contaminated by any other materials. If the granular fill cannot be directly deposited at the location required it should be placed on a plastic sheet and loaded into dumpers and transported for deposition and levelling in the garden area to the required finished level. Again, photographs will be taken as evidence of the thickness throughout.

6.0 Validation

Chemical assessment of the imported virgin quarried granular fill is required in the form of a metal/metalloids suite to prove the inert nature of the material. An appropriate assessment criteria would be domestic gardens without plant uptake, assessment limits are noted below in *table 2*.

Table 2: assessment criteria	
Element	Residential without plant uptake GAC
Arsenic	40
Cadmium	150
Chromium III	910
Chromium VI	21
Lead	310
Mercury element	1.2
Mercury inorganic	56
Mercury methyl	15
Selenium	430
Copper	7100
Nickel	180
Zinc	40000

The validation report will include and with reference to the Yorkshire and Lincolnshire Pollution Advisory Group (YALPAG) document – Verification requirements for cover systems.

a) Diary of events and tonnage of soils delivered and removed.
b) Photographs showing the levels at each stage for geotextile placement and granular fill.
c) Sources of imported granular fill.
d) Test data at the prescribed rate to prove the inert nature of imported granular fill.
e) Consignment notes for any soil materials removed from site and the landfill site taken to.
f) Delivery notes for material imported to site.

Copies of the validation report will be submitted to the local authority.

7.0 Conclusion

This document provides a working method for the remediation and requirements to validate the remediation of the site to make it suitable for residential development. It employs best practices to ensure a cost-effective solution to achieve the objectives by provision of a barrier system.

The success of the remediation is dependent on good operational procedures. It is essential that good communication links are maintained, and that the independent consultant is in attendance on a regular basis. Order of the works is: -

- Secure site
- House construction
- Remove 200mm bgl within hardstanding rear garden area
- Placement of geotextile
- Placement of 175mm in depth of virgin quarried granular fill
- Placement of bedding sand and artificial grass

There is an obligation to inform North Lincolnshire Council environmental health department of any variations from this method statement or unexpected conditions. On completion, copies of the validation report shall be submitted to North Lincolnshire Council.

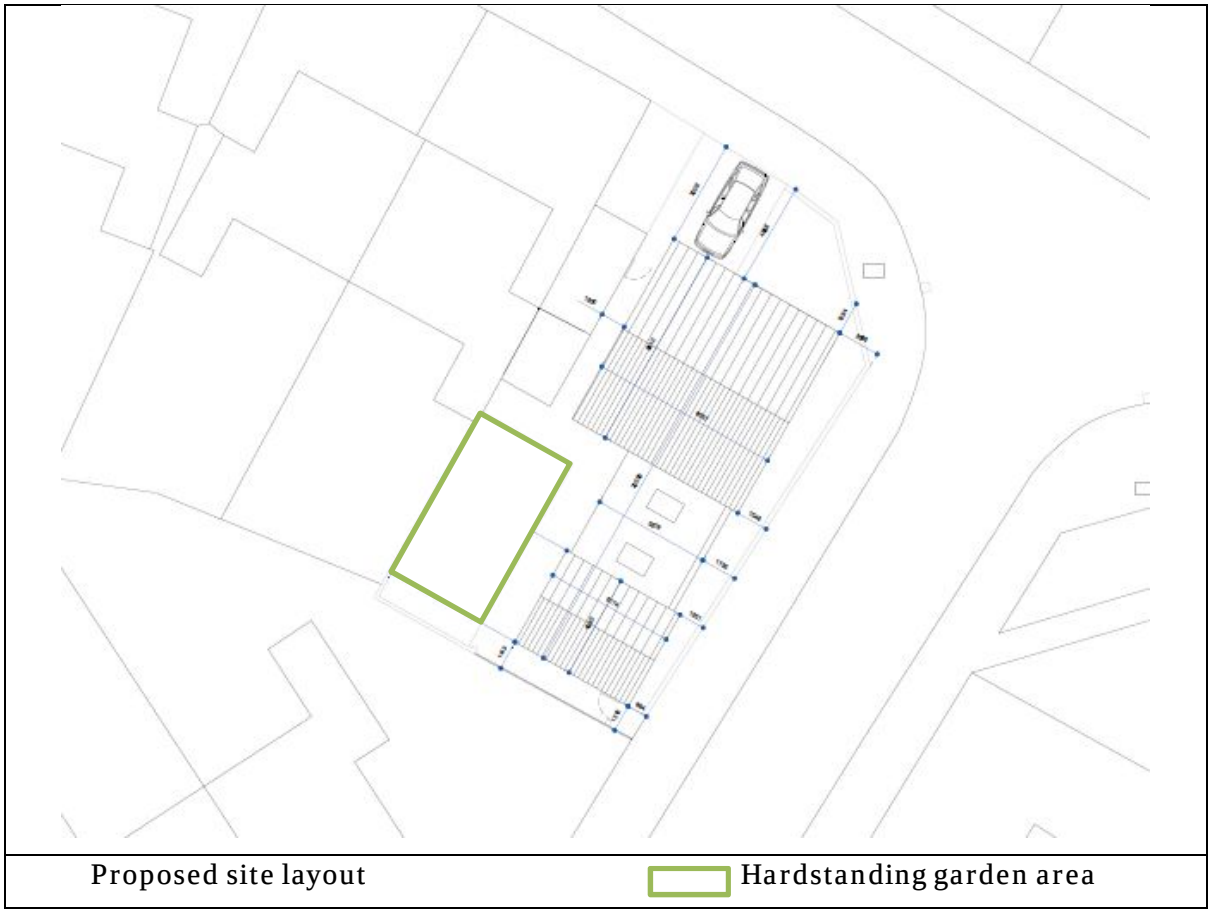
Any unforeseen contamination encountered during the works will result in work in that area is halted. The local authority will be informed, and the contamination will be assessed, and a proposal given to manage or remediate the contamination to the satisfaction of the local authority.

D.A. Driver - Director

Appendix A
Site plans

Site location – aerial veiw

Site location plan



Proposed site layout

Hardstanding garden area