



GRM Development Solutions Ltd
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Our Ref: P6677 VAL
Date: 28th May 2015

United Living
By Email Only

For Attention of Chris Sharp

Dear Chris,

Re: Langtry Road, Liverpool, Capping and Membrane Validation letter – Plots 1 to 7 and 16 to 20

Please find below validation details for the above plots.

Gas Membrane Validation

All plots require gas protection measures commensurate with Traffic Light Amber 1 which comprises a suspended floor with a propriety carbon dioxide gas membrane, underfloor venting and sealed joints and service entries. The membrane in Plots 1 to 7 and 16 to 20 were validated between the 12th and 25th September 2014. In summary the gas protection measures have been installed in line with these recommendations. Photographs of the membrane and GRM Validation sheets are enclosed for reference.

Capping Validation

As set out previously all gardens at the development require a 600mm capping layer. An engineer visited the site on the 12th and 19th May 2015 to validate the thickness of the capping layer. The validation confirmed the presence of at least 300mm topsoil, and an anti-dig layer that could not be fully excavated by hand, however GRM have been informed that 300mm has been installed. Photographs of the topsoil depths (300mm) are enclosed for reference.

Three samples of the topsoil and the anti-dig layer have been analysed, the results (enclosed), when compared with GRMs TACs confirms that the topsoil and the anti-dig layer are suitable for use.

Conclusions

It is considered that the required remediation for Plots 1 to 7 and 16 to 20 has been successfully completed and the residual risk to future homeowners will be minimal.

We trust this is suitable for your current requirements, should you require any further information or would like any clarification of the points raised please do not hesitate to contact us.

Yours sincerely,
for GRM Development Solutions Ltd



George Salloway
Geo-Environmental Scientist

Enc:

GRM Membrane Validation Sheets
Capping Validation Photographs
Membrane Validation Photographs
Chemical Analysis Results

GRM Gas Protection Measures Validation		Rev
Client BULLOCK CONSTRUCTION		Structural 'P' No. 6677
Site Name LANGTRY ROAD LIVERPOOL		Geotechnical 'P' No.
Inspection Information		
Validated by T. JOHNSON	Foundation Dwg Ref. CONTRACTOR'S SITE / BLOCK PLAN	S F report on site -
Inspection Date 3/12/2024	Weather Conditions DRY / SUNNY / TC	S R F on site -
Plot Specific Details		
Plot No. 1	Building use RESIDENTIAL	Building description No of storeys TWO.
Floor type TRAD BEAM + BLOCK	Protection type VISQUEE GAS BARRIER	Design source ref METHANE + CO2
Ventilated Sub-floor		Notes/recommendations RESISTANT
Height of void as per design	☒ Y ☐ N	
Gravel type as per design	☒ Y ☐ N	
Pipe size and spacing as per design	☒ Y ☐ N	
Telescopic vents as per design	☒ Y ☐ N	
Gas Barrier		Notes/recommendations
Membrane type as per design	☒ Y ☐ N	
Membrane coverage as per design	☒ Y ☐ N	
Membrane free of tears/punctures	☒ Y ☐ N	
All joins fully lapped and sealed	☒ Y ☐ N	
Joint tape as per design / manufacturers spec	☒ Y ☐ N	
Top hat details as per design	☒ Y ☐ N	
Full seal provided around service entries	☒ Y ☐ N	
Membrane full sealed to DPM	☒ Y ☐ N	
Non-conformity / variations to design / cost savings / comments / sketches NOTHING TO REPORT REFER TO PHOTOGRAPHS.		
GRM can not be held responsible for changes to installed membranes after the inspection unless given the opportunity to inspect such changes. Our inspection will not discover minute perforations sometimes determined during pressure testing. Signing off of this Form constitutes agreement that the facts contained herein are correct to the best knowledge of the signatories		
Signed Site manager M Walsh	Print name MICHAEL WALSH	
Sign GRM Inspector T. JOHNSON	Print name T. JOHNSON	
GRM Office use only		
Checked by	Invoiced P6677-2 / 12328 / 28-2-15	

GRM Gas Protection Measures Validation		Rev
Client BULLOCK CONSTRUCTION		Structural 'P' No. 6677
Site Name LANGTRY ROAD LIVERPOOL		Geotechnical 'P' No.
Inspection Information		
Validated by T. JOHNSON	Foundation Dwg Ref. CONTRACTOR'S SITE / BLOCK PLAN	S F report on site —
Inspection Date 3/12/2024	Weather Conditions DRY / SUNNY / TC	S R F on site —
Plot Specific Details		
Plot No. 2	Building use RESIDENTIAL	Building description No of storeys TWO
Floor type TRAD BEAM + BLOCK	Protection type VISQUEE GAS BARRIER	Design source ref METHANE + CO2 RESISTANT
Ventilated Sub-floor		Notes/recommendations
Height of void as per design	☒ Y / ☐ N	
Gravel type as per design	☒ Y / ☐ N	
Pipe size and spacing as per design	☒ Y / ☐ N	
Telescopic vents as per design	☒ Y / ☐ N	
Gas Barrier		Notes/recommendations
Membrane type as per design	☒ Y / ☐ N	
Membrane coverage as per design	☒ Y / ☐ N	
Membrane free of tears/punctures	☒ Y / ☐ N	
All joins fully lapped and sealed	☒ Y / ☐ N	
Joint tape as per design / manufacturers spec	☒ Y / ☐ N	
Top hat details as per design	☒ Y / ☐ N	
Full seal provided around service entries	☒ Y / ☐ N	
Membrane full sealed to DPM	☒ Y / ☐ N	
Non-conformity / variations to design / cost savings / comments / sketches		
NOTHING TO REPORT REFER TO PHOTOGRAPHS.		
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Sign GRM Inspector T. JOHNSON	Print name T. JOHNSON	
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GRM Gas Protection Measures Validation		Rev
Client	BULLOCK CONSTRUCTION	
Site Name	LANGTRY ROAD LIVERPOOL	
Inspection Information		Structural 'P' No.
Validated by	Foundation Dwg. Ref.	S / report on site
Inspection Date	Weather Conditions	S R F on site
Plot Specific Details		
Plot No.	Building use	Building description
3	RESIDENTIAL	No of storeys
Floor type	Protection type	Design source ref
TRAD BEAM+BLOCK	VISQUEEN CAS BARRIER	- METHANE
Ventilated Sub-floor	Notes/recommendations	
Height of void as per design	(Y) / N + CO2	
Gravel type as per design	(Y) / N RESISTANT	
Pipe size and spacing as per design	(Y) / N (YELLOW)	
Telescopic vents as per design	(Y) / N	
Gas Barrier	Notes/recommendations	
Membrane type as per design	(Y) / N	
Membrane coverage as per design	(Y) / N	
Membrane free of tears/punctures	(Y) / N	
All joins fully lapped and sealed	(Y) / N	
Joint tape as per design / manufacturers spec	(Y) / N	
Top hat details as per design	(Y) / N	
Full seal provided around service entries	(Y) / N	
Membrane full sealed to DPM	(Y) / N	
Non-conformity / variations to design / cost savings / comments / sketches		
NOTHING TO REPORT. - SEE PHOTOGRAPHS		
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Signed Site manager	Print name	
M. Walsh	M. WALSH	
Sign GRM Inspector	Print name	
T. JOHNSON	T. JOHNSON	
GRM Office use only		
Checked by	Invoiced	
	P 6677-2 / 12328 / 28-2-15	

GRM Gas Protection Measures Validation		Rev
Client BULLOCK CONSTRUCTION		Structural 'P' No.
Site Name LANGTRY ROAD LIVERPOOL		Geotechnical 'P' No. EGT7
Inspection Information		
Validated by T. JOHNSON	Foundation Dwg Ref. SITE/BLOCK PLAN	S / report on site -
Inspection Date 15/12/2014	Weather Conditions RAIN/CLOUD/5C	S R F on site -
Plot Specific Details		
Plot No. 4	Building use RESIDENTIAL	Building description No of storeys
Floor type TRAD BEAM+BLOCK	Protection type VISQUEEN CAS BARRIER	Design source ref - METHANE
Ventilated Sub-floor		Notes/recommendations
Height of void as per design	☒ Y / ☐ N	+CO2
Gravel type as per design	☒ Y / ☐ N	RESISTANT
Pipe size and spacing as per design	☒ Y / ☐ N	(YELLOW)
Telescopic vents as per design	☒ Y / ☐ N	
Gas Barrier		Notes/recommendations
Membrane type as per design	☒ Y / ☐ N	
Membrane coverage as per design	☒ Y / ☐ N	
Membrane free of tears/punctures	☒ Y / ☐ N	
All joins fully lapped and sealed	☒ Y / ☐ N	
Joint tape as per design / manufacturers spec	☒ Y / ☐ N	
Top hat details as per design	☒ Y / ☐ N	
Full seal provided around service entries	☒ Y / ☐ N	
Membrane full sealed to DPM	☒ Y / ☐ N	
Non-conformity / variations to design / cost savings / comments / sketches		
NOTHING TO REPORT. - SEE PHOTOGRAPHS		
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Signed Site manager M Walsh	Print name M WALSH	
Sign GRM Inspector T. JOHNSON	Print name T. JOHNSON	
GRM Office use only		
Checked by [Signature]	Invoiced P6677-2 / 12328 / 28-2-15	

GRM Gas Protection Measures Validation		Rev
Client BULLOCK CONSTRUCTION		Structural 'P' No. 6677
Site Name LANGTRY ROAD LIVERPOOL		Geotechnical 'P' No.
Inspection Information		
Validated by T. JOHNSON	Foundation Dwg Ref. CONTRACTOR'S SITE / BLOCK PLAN	S F report on site -
Inspection Date 3/12/2024	Weather Conditions DRY / SUNNY / 7°C	S R F on site -
Plot Specific Details		
Plot No. 5	Building use RESIDENTIAL	Building description No of storeys TWO
Floor type TRAD BEAM + BLOCK	Protection type VISQUEE GAS BARRIER	Design source ref METHANE + CO2
Ventilated Sub-floor		Notes/recommendations RESISTANT
Height of void as per design	☒ Y ☐ N	
Gravel type as per design	☒ Y ☐ N	
Pipe size and spacing as per design	☒ Y ☐ N	
Telescopic vents as per design	☒ Y ☐ N	
Gas Barrier		Notes/recommendations
Membrane type as per design	☒ Y ☐ N	
Membrane coverage as per design	☒ Y ☐ N	
Membrane free of tears/punctures	☒ Y ☐ N	
All joins fully lapped and sealed	☒ Y ☐ N	
Joint tape as per design / manufacturers spec	☒ Y ☐ N	
Top hat details as per design	☒ Y ☐ N	
Full seal provided around service entries	☒ Y ☐ N	
Membrane full sealed to DPM	☒ Y ☐ N	
Non-conformity / variations to design / cost savings / comments / sketches NOTHING TO REPORT REFER TO PHOTOGRAPHS.		
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Signed Site manager	Print name	
Sign GRM Inspector T. JOHNSON	Print name T. JOHNSON	
GRM Office use only		
Checked by	Invoiced P6677-2/12328/28-2-15	

GRM Gas Protection Measures Validation		Rev
Client BULLOCK CONSTRUCTION		Structural 'P' No. 6677
Site Name LANGTRY ROAD LIVERPOOL		Geotechnical 'P' No.
Inspection Information		
Validated by T. JOHNSON	Foundation Dwg Ref. CONTRACTOR'S SITE / BLOCK PLAN	S R F on site —
Inspection Date 3/12/2014	Weather Conditions DRY / SUNNY / TC	S R F on site —
Plot Specific Details		
Plot No. 6	Building use RESIDENTIAL	Building description No of storeys TWO
Floor type TRAD BEAM + BLOCK	Protection type VISQUEE GAS BARRIER	Design source ref METHANE + CO2
Ventilated Sub-floor	Notes/recommendations RESISTANT	
Height of void as per design	☒ Y ☐ N	
Gravel type as per design	☒ Y ☐ N	
Pipe size and spacing as per design	☒ Y ☐ N	
Telescopic vents as per design	☒ Y ☐ N	
Gas Barrier	Notes/recommendations	
Membrane type as per design	☒ Y ☐ N	
Membrane coverage as per design	☒ Y ☐ N	
Membrane free of tears/punctures	☒ Y ☐ N	
All joins fully lapped and sealed	☒ Y ☐ N	
Joint tape as per design / manufacturers spec	☒ Y ☐ N	
Top hat details as per design	☒ Y ☐ N	
Full seal provided around service entries	☒ Y ☐ N	
Membrane full sealed to DPM	☒ Y ☐ N	
Non-conformity / variations to design / cost savings / comments / sketches NOTHING TO REPORT REFER TO PHOTOGRAPHS.		
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Signed Site manager	Print name	
Sign GRM Inspector T. JOHNSON	Print name T. JOHNSON	
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GRM Gas Protection Measures Validation		Rev
Client BULLOCK CONSTRUCTION		Structural 'P' No.
Site Name LANGTRY ROAD LIVERPOOL		Geotechnical 'P' No. 6677
Inspection Information		
Validated by T. JOHNSON	Foundation Dwg Ref. SITE/BLOCK PLAN	S / report on site -
Inspection Date 15/12/2014	Weather Conditions RAIN/CLOUD/5°C	S R F on site -
Plot Specific Details		
Plot No. 7	Building use RESIDENTIAL	Building description
		No of storeys
Floor type TRAD BEAM+BLOCK	Protection type VISQUEE	Design source ref BARKER - METHANE
Ventilated Sub-floor		Notes/recommendations
Height of void as per design	☒ Y / ☐ N	+CO2
Gravel type as per design	☒ Y / ☐ N	RESISTANT
Pipe size and spacing as per design	☒ Y / ☐ N	(YELLOW)
Telescopic vents as per design	☒ Y / ☐ N	
Gas Barrier		Notes/recommendations
Membrane type as per design	☒ Y / ☐ N	
Membrane coverage as per design	☒ Y / ☐ N	
Membrane free of tears/punctures	☒ Y / ☐ N	
All joins fully lapped and sealed	☒ Y / ☐ N	
Joint tape as per design / manufacturers spec	☒ Y / ☐ N	
Top hat details as per design	☒ Y / ☐ N	
Full seal provided around service entries	☒ Y / ☐ N	
Membrane full sealed to DPM	☒ Y / ☐ N	
Non-conformity / variations to design / cost savings / comments / sketches		
NOTHING TO REPORT.		
SEE PHOTOGRAPHS		
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Signed Site manager [Signature]	Print name M. WALSH	
Sign GRM Inspector [Signature]	Print name T. JOHNSON	
GRM Office use only		
Checked by [Signature]	Invoiced P6677-2/12328/28-2-15	

GRM Gas Protection Measures Validation		Rev
Client BULLOCK CONSTRUCTION		Structural 'P' No. 6677
Site Name LANGTRY ROAD LIVERPOOL		Geotechnical 'P' No.
Inspection Information		
Validated by T. JOHNSON	Foundation Dwg Ref. CONTRACTOR'S SITE / BLOCK PLAN	S1 report on site —
Inspection Date 1/12/2014	Weather Conditions DRY / SUNNY / 7°C	S R F on site —
Plot Specific Details		
Plot No. 16	Building use RESIDENTIAL	Building description
		No of storeys TWO
Floor type TRAD BEAM + BLOCK	Protection type VISQUEE GAS BARRIER	Design source ref METHANE + CO2 RESISTANT
Ventilated Sub-floor		Notes/recommendations
Height of void as per design	☒ Y / ☐ N	
Gravel type as per design	☒ Y / ☐ N	
Pipe size and spacing as per design	☒ Y / ☐ N	
Telescopic vents as per design	☒ Y / ☐ N	
Gas Barrier		Notes/recommendations
Membrane type as per design	☒ Y / ☐ N	
Membrane coverage as per design	☒ Y / ☐ N	
Membrane free of tears/punctures	☒ Y / ☐ N	
All joins fully lapped and sealed	☒ Y / ☐ N	
Joint tape as per design / manufacturers spec	☒ Y / ☐ N	
Top hat details as per design	☒ Y / ☐ N	
Full seal provided around service entries	☒ Y / ☐ N	
Membrane full sealed to DPM	☒ Y / ☐ N	
Non-conformity / variations to design / cost savings / comments / sketches		
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Signed Site manager M. Walsh	Print name MICHAEL WALSH	
Sign GRM Inspector T. Johnson	Print name T. JOHNSON	
GRM Office use only		
Checked by	Invoiced P6677-2/12328/28-2-15	

GRM Gas Protection Measures Validation		Rev
Client BULLOCK CONSTRUCTION		Structural 'P' No. 6677
Site Name LANGTRY ROAD LIVERPOOL		Geotechnical 'P' No.
Inspection Information		
Validated by T. JOHNSON	Foundation Dwg Ref. CONTRACTOR'S SITE / BLOCK PLAN	S R F report on site —
Inspection Date 1/12/2024	Weather Conditions DRY / SUNNY / TC	S R F on site —
Plot Specific Details		
Plot No. 17	Building use RESIDENTIAL	Building description No of storeys TWO
Floor type TRAD BEAM-BLOCK	Protection type VISQUEE GAS BARRIER	Design source ref METHANE + CO2 RESISTANT
Ventilated Sub-floor		Notes/recommendations
Height of void as per design	☒ Y / ☐ N	
Gravel type as per design	☒ Y / ☐ N	
Pipe size and spacing as per design	☒ Y / ☐ N	
Telescopic vents as per design	☒ Y / ☐ N	
Gas Barrier		Notes/recommendations
Membrane type as per design	☒ Y / ☐ N	
Membrane coverage as per design	☒ Y / ☐ N	
Membrane free of tears/punctures	☒ Y / ☐ N	
All joins fully lapped and sealed	☒ Y / ☐ N	
Joint tape as per design / manufacturers spec	☒ Y / ☐ N	
Top hat details as per design	☒ Y / ☐ N	
Full seal provided around service entries	☒ Y / ☐ N	
Membrane full sealed to DPM	☒ Y / ☐ N	
Non-conformity / variations to design / cost savings / comments / sketches NOTHING TO REPORT REFER TO PHOTOGRAPHS.		
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Signed Site manager M. Walsh	Print name MICHAEL WALSH	
Sign GRM Inspector T. JOHNSON	Print name T. JOHNSON	
GRM Office use only		
Checked by	Invoiced P6677-2/12328/28-2-15	

GRM Gas Protection Measures Validation		Rev
Client BULLOCK CONSTRUCTION		Structural 'P' No. 6677
Site Name LANGTRY ROAD LIVERPOOL		Geotechnical 'P' No.
Inspection Information		
Validated by T. JOHNSON	Foundation Dwg Ref. CONTRACTOR'S SITE / BLOCK PLAN	S Report on site —
Inspection Date 1/12/2014	Weather Conditions DRY / SUNNY / TC	S R F on site —
Plot Specific Details		
Plot No. 18	Building use RESIDENTIAL	Building description No of storeys TWO
Floor type TRAD BEAM + BLOCK	Protection type VISQUEE GAS BARRIER	Design source ref METHANE + CO2 RESISTANT
Ventilated Sub-floor	Notes/recommendations	
Height of void as per design	(Y) N	
Gravel type as per design	(Y) N	
Pipe size and spacing as per design	(Y) N	
Telescopic vents as per design	(Y) N	
Gas Barrier	Notes/recommendations	
Membrane type as per design	(Y) N	
Membrane coverage as per design	(Y) N	
Membrane free of tears/punctures	(Y) N	
All joins fully lapped and sealed	(Y) N	
Joint tape as per design / manufacturers spec	(Y) N	
Top hat details as per design	(Y) N	
Full seal provided around service entries	(Y) N	
Membrane full sealed to DPM	(Y) N	
Non-conformity / variations to design / cost savings / comments / sketches NOTHING TO REPORT REFER TO PHOTOGRAPHS.		
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Signed Site manager M. Walsh	Print name M. WALSH	
Sign GRM Inspector T. Johnson	Print name T. JOHNSON	
GRM Office use only		
Checked by	Invoiced P6677-2/12328/28-2-15	

GRM Gas Protection Measures Validation		Rev
Client BULLOCK CONSTRUCTION		Structural 'P' No. 6677
Site Name LANGTRY ROAD LIVERPOOL		Geotechnical 'P' No.
Inspection Information		
Validated by T. JOHNSON	Foundation Dwg Ref. CONTRACTOR'S SITE / BLOCK PLAN	S Report on site —
Inspection Date 1/12/2024	Weather Conditions DRY / SUNNY / TC	S R F on site —
Plot Specific Details		
Plot No. 19	Building use RESIDENTIAL	Building description No of storeys TWO.
Floor type TRAD. BEAM & BLOCK	Protection type VISQUEE GAS BARRIER	Design source ref METHANE + CO2 RESISTANT
Ventilated Sub-floor		Notes/recommendations
Height of void as per design	☒ Y / ☐ N	
Gravel type as per design	☒ Y / ☐ N	
Pipe size and spacing as per design	☒ Y / ☐ N	
Telescopic vents as per design	☒ Y / ☐ N	
Gas Barrier		Notes/recommendations
Membrane type as per design	☒ Y / ☐ N	
Membrane coverage as per design	☒ Y / ☐ N	
Membrane free of tears/punctures	☒ Y / ☐ N	
All joins fully lapped and sealed	☒ Y / ☐ N	
Joint tape as per design / manufacturers spec	☒ Y / ☐ N	
Top hat details as per design	☒ Y / ☐ N	
Full seal provided around service entries	☒ Y / ☐ N	
Membrane full sealed to DPM	☒ Y / ☐ N	
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Sign GRM Inspector T. Johnson	Print name T. JOHNSON	
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GRM Gas Protection Measures Validation		Rev
Client BULLOCK CONSTRUCTION		Structural 'P' No. 6677
Site Name LANGTRY ROAD LIVERPOOL		Geotechnical 'P' No.
Inspection Information		
Validated by T. JOHNSON	Foundation Dwg Ref. CONTRACTOR'S SITE / BLOCK PLAN	S R F report on site —
Inspection Date 1/12/2014	Weather Conditions DRY / SUNNY / TC	S R F on site —
Plot Specific Details		
Plot No. 20	Building use RESIDENTIAL	Building description No of storeys TWO.
Floor type TRAD BEAM + BLOCK	Protection type VISQUEE GAS BARRIER	Design source ref METHANE + CO2 RESISTANT
Ventilated Sub-floor	Notes/recommendations	
Height of void as per design ☒ Y / ☐ N		
Gravel type as per design ☒ Y / ☐ N		
Pipe size and spacing as per design ☒ Y / ☐ N		
Telescopic vents as per design ☒ Y / ☐ N		
Gas Barrier	Notes/recommendations	
Membrane type as per design ☒ Y / ☐ N		
Membrane coverage as per design ☒ Y / ☐ N		
Membrane free of tears/punctures ☒ Y / ☐ N		
All joins fully lapped and sealed ☒ Y / ☐ N		
Joint tape as per design / manufacturers spec ☒ Y / ☐ N		
Top hat details as per design ☒ Y / ☐ N		
Full seal provided around service entries ☒ Y / ☐ N		
Membrane full sealed to DPM ☒ Y / ☐ N		
Non-conformity / variations to design / cost savings / comments / sketches		
NOTHING TO REPORT REFER TO PHOTOGRAPHS.		
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Sign GRM Inspector T. Johnson	Print name T. JOHNSON	
GRM Office use only		
Checked by	Invoiced P6677-2 / 12328 / 28-2-15	

DO NOT SCALE

NOTES:



GRM Development Solutions Ltd
Laurus House, Centrum 100
Burton-on-Trent, Staffs, DE14 2WH
Tel: 01283 551249 Fax 01283 211968
info@grm-uk.com www.grm-uk.com

CLIENT:

United Living

PROJECT:

Langtry Road, Liverpool

TITLE:

Capping Validation
Photographs, Plot 1

SCALE@SIZE

NTS

ISSUE:

Final

DESIGN/DRAWN:

GS

DATE:

May 2015

PROJECT No:

P6677

DRAWING No:

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DO NOT SCALE
NOTES:



GRM Development Solutions Ltd
Laurus House, Centrum 100
Burton-on-Trent, Staffs, DE14 2WH
Tel: 01283 551249 Fax 01283 211968
info@grm-uk.com www.grm-uk.com

CLIENT:

United Living

PROJECT:

Langtry Road, Liverpool

TITLE:

Capping Validation
Photographs, Plot 2

SCALE@SIZE

NTS

ISSUE:

Final

DESIGN/DRAWN:

GS

DATE:

May 2015

PROJECT No:

P6677

DRAWING No:

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DO NOT SCALE
NOTES:



GRM Development Solutions Ltd
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CLIENT:

United Living

PROJECT:

Langtry Road, Liverpool

TITLE:

Capping Validation
Photographs, Plot 3

SCALE@SIZE

NTS

ISSUE:

Final

DESIGN/DRAWN:

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DATE:

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Photographs, Plot 7**

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PROJECT:

Langtry Road, Liverpool

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Photographs, Plot 16

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Langtry Road, Liverpool

TITLE:

Capping Validation
Photographs, Plot 17

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Langtry Road, Liverpool

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Capping Validation
Photographs, Plot 18

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Langtry Road, Liverpool

TITLE:

Capping Validation
Photographs, Plot 19

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Membrane Validation
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PROJECT:

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TITLE:

Membrane Validation
Photographs, Plot 3

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PROJECT:

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TITLE:

Membrane Validation
Photographs, Plot 4

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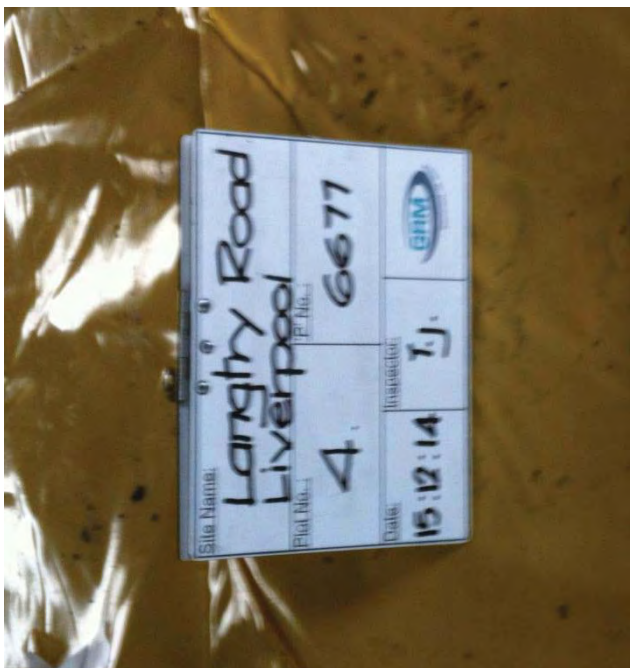
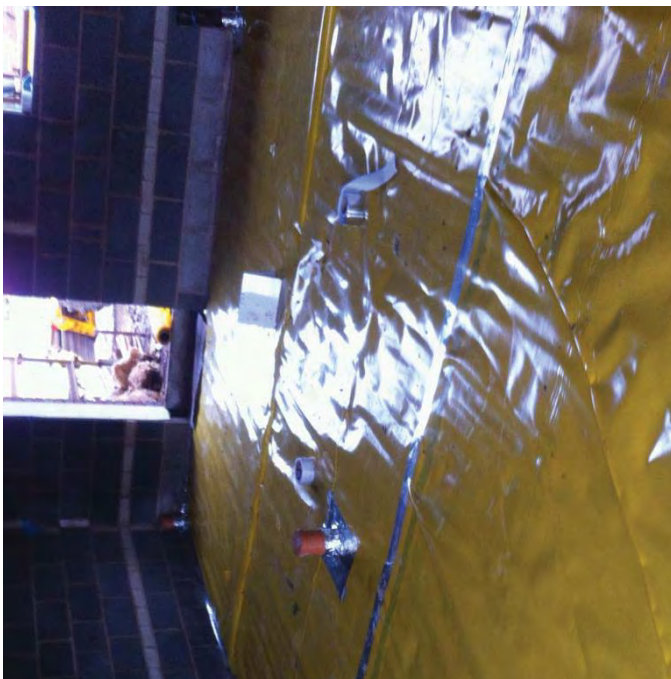
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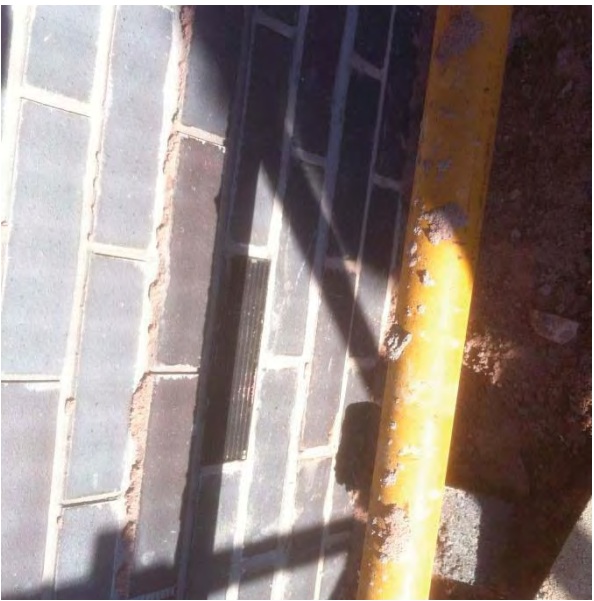
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**Membrane Validation
Photographs, Plot 5**

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TITLE:

**Membrane Validation
Photographs, Plot 6**

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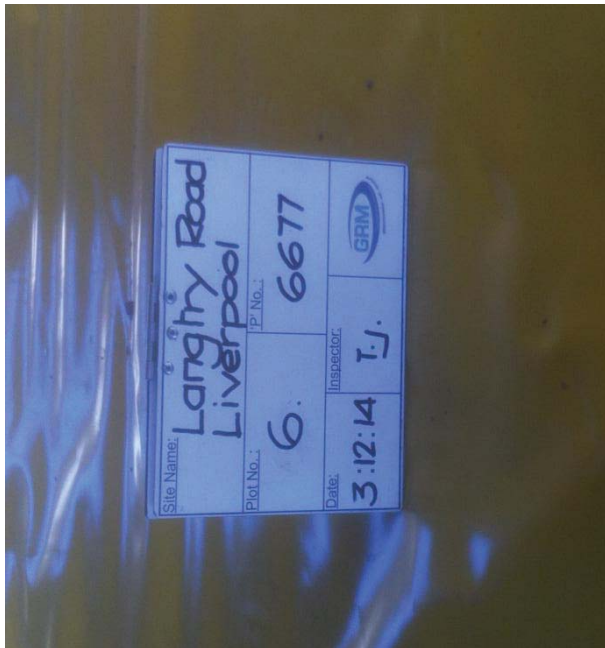
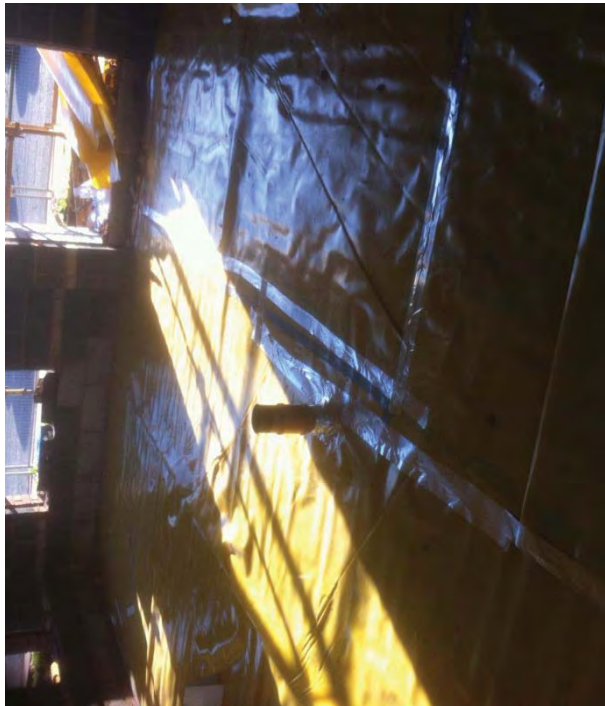
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Membrane Validation
Photographs, Plot 7

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Membrane Validation
Photographs, Plot 16

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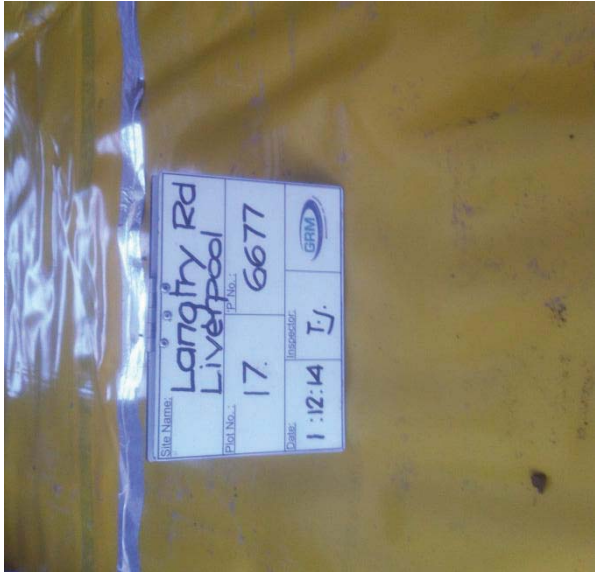
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Site Name:	Langtry Rd	Plot No.:	16	Inspector:	T.J.	GRM
Plot No.:	Liverpool					
Date:	1:12:14					





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Photographs, Plot 17

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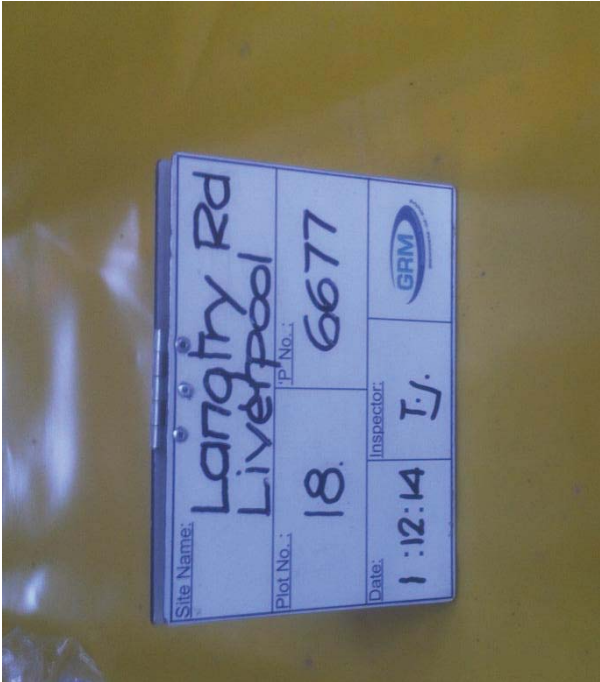
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Membrane Validation
Photographs, Plot 18

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TITLE:

**Membrane Validation
Photographs, Plot 19**

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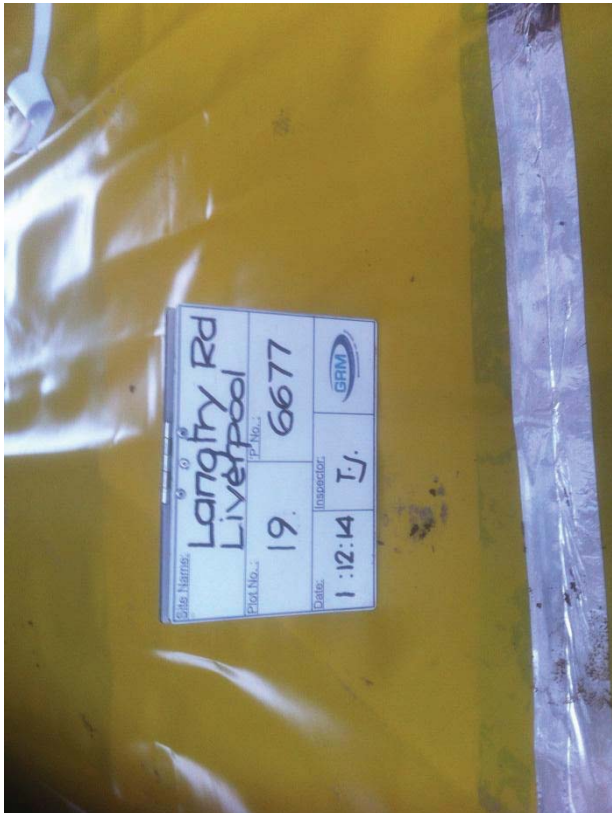
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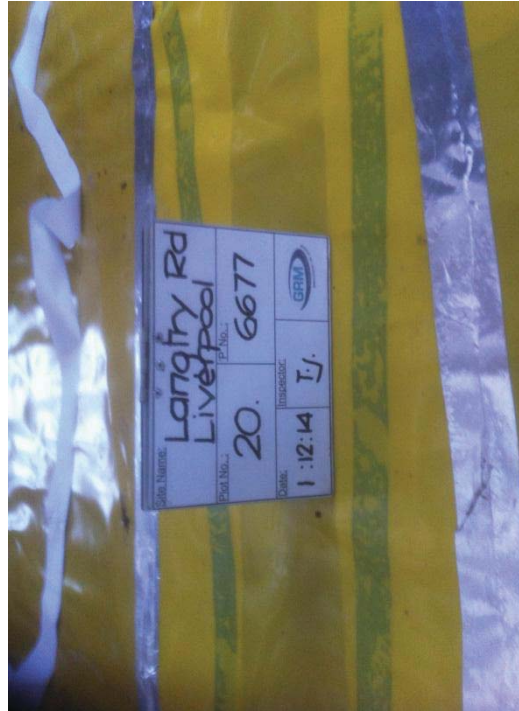
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CLIENT:

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PROJECT:

Langtry Road, Liverpool

TITLE:

Membrane Validation
Photographs, Plot 20

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Leicester
LE1 4DH

GRM Development Solutions

Laurus House
First Avenue
Centrum 100
Burton Upon Trent
Staffs
DE14 2WH

Analytical Test Report: L15/0938/GRM/001

Your Project Reference:	Langtry Road, Liverpool	Samples Received on:	13.05.2015
Your Order Number:	P6677	Testing Instruction Received:	13.05.2015
Report Issue Number:	1	Sample Tested:	13 to 20.05.2015
Samples Analysed:	6 Soils	Report issued:	21.05.2015

Signed

James Gane
Manager - Data Logistics
Nicholls Colton Analytical

Notes:

General

Please refer to Methodologies tab for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report with the exception of the asbestos test portion which is held for 6 months unless otherwise requested.

Moisture Content was determined in accordance with NCA method statement MS - CL - Sample Prep, oven dried at <30°C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Stone Content was determined in accordance with NCA method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

With the exception of Sulphate, which is crushed over the 2mm test sieve, concentrations are reported as a percentage mass of the dry soil passing the 10mm BS test sieve. As received samples have been corrected for moisture content but not stone content.

Samples were supplied by customer.

Asbestos

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

Deviant Samples

Samples were received in suitable containers **Yes**

A date and time of sampling was provided **Yes**

Sample handling times were exceeded prior to analysis of determinants **No**

Where samples do not meet one or more of the above criteria they will be classed as deviant, this means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited

L15/0938/GRM/001

Project Reference - Langtry Road, Liverpool

Analytical Test Results - GRM Soil Suite

NCA Reference			15-12883	15-12884	15-12885	15-12886	15-12887	15-12888
Client Sample Reference			Plot 1	Plot 1	Plot 7	Plot 7	Plot 18	Plot 18
Client Sample Location			Plot 1	Plot 1	Plot 7	Plot 7	Plot 18	Plot 18
Depth (m)			0.20	0.40	0.20	0.40	0.20	0.40
Date of Sampling			07.05.2015	07.05.2015	07.05.2015	07.05.2015	07.05.2015	07.05.2015
Time of Sampling			Not provided	Not provided	Not provided	Not provided	Not provided	Not provided
Sample Matrix			Sand	Sand	Sand	Sand	Sand	Sand
Determinant	Units	Accreditation						
Arsenic	(mg/kg)	MCERTS	< 10	< 10	< 10	< 10	< 10	< 10
Cadmium	(mg/kg)	MCERTS	0.5	0.5	0.8	0.6	0.4	0.5
Chromium (Total)	(mg/kg)	UKAS	12.4	12.6	14.7	16.2	11.7	14.0
Copper	(mg/kg)	MCERTS	35.6	36.4	39.1	75.2	33.4	19.9
Lead	(mg/kg)	MCERTS	84.9	114	123	73.0	68.3	46.8
Mercury	(mg/kg)	UKAS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Nickel	(mg/kg)	MCERTS	13.8	15.3	17.6	19.1	14.2	19.0
Selenium	(mg/kg)	u	< 8	< 8	< 8	< 8	< 8	< 8
Zinc	(mg/kg)	MCERTS	87.4	113	125	118	55.6	60.9
Total Phenols	(mg/kg)	MCERTS	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Cyanide (Total)	(mg/kg)	MCERTS	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
Chromium (Hexavalent)	(mg/kg)	u	<1.1	<1.1	1.5	<1.1	<1.1	<1.1
pH	pH Units	MCERTS	6.6	9.3	8.6	8.0	9.3	9.0
SOM	(%)	MCERTS	5.3	4.3	4.7	5.0	4.7	2.0
Sulphate	(mg/l)	u	200	69	520	1500	96	200
Acenaphthene	(mg/kg)	MCERTS	<0.1	1.3	0.2	0.1	<0.1	<0.1
Acenaphthylene	(mg/kg)	UKAS	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	(mg/kg)	UKAS	0.2	2.4	0.4	0.4	0.1	<0.1
Benzo (a) anthracene	(mg/kg)	MCERTS	1.1	3.3	1.7	1.2	0.5	0.2
Benzo (a) pyrene	(mg/kg)	MCERTS	1.2	3.0	2.0	1.3	0.5	0.3
Benzo (b) fluoranthene	(mg/kg)	MCERTS	1.5	3.3	2.4	1.5	0.6	0.3
Benzo (g, h, i) perylene	(mg/kg)	MCERTS	0.7	1.4	1.1	0.7	0.3	0.1
Benzo (k) fluoranthene	(mg/kg)	MCERTS	0.4	1.1	0.7	0.5	0.2	<0.1
Chrysene	(mg/kg)	MCERTS	1.2	3.4	1.9	1.3	0.6	0.2
Dibenzo (a,h) anthracene	(mg/kg)	MCERTS	<0.1	0.2	0.1	<0.1	<0.1	<0.1
Fluoranthene	(mg/kg)	MCERTS	3.0	8.1	3.9	3.2	1.4	0.9
Fluorene	(mg/kg)	MCERTS	<0.1	1.5	0.1	0.1	<0.1	<0.1
Indeno (1, 2, 3,-cd) pyrene	(mg/kg)	MCERTS	0.7	1.5	1.2	0.7	0.3	0.1
Naphthalene	(mg/kg)	MCERTS	0.2	1.0	0.4	0.2	0.1	<0.1
Phenanthrene	(mg/kg)	MCERTS	1.8	9.9	2.4	2.1	1.0	0.6
Pyrene	(mg/kg)	MCERTS	2.8	7.5	3.7	2.9	1.3	0.8
Total PAH (Sum of USEPA 16)	(mg/kg)	UKAS	15.4	49.1	22.4	16.4	7.3	4.2
Asbestos	-	UKAS	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

L15/0938/GRM/001

Project Reference - Langtry Road, Liverpool

Analytical Test Results - TPH CWG

NCA Reference			15-12883	15-12884	15-12885	15-12886	15-12887	15-12888
Client Sample Reference			Plot 1	Plot 1	Plot 7	Plot 7	Plot 18	Plot 18
Client Sample Location			Plot 1	Plot 1	Plot 7	Plot 7	Plot 18	Plot 18
Depth (m)			0.20	0.40	0.20	0.40	0.20	0.40
Date of Sampling			07.05.2015	07.05.2015	07.05.2015	07.05.2015	07.05.2015	07.05.2015
Time of Sampling			Not provided	Not provided	Not provided	Not provided	Not provided	Not provided
Sample Matrix			Sand	Sand	Sand	Sand	Sand	Sand
Determinant	Units	Accreditation						
Aliphatics								
>C ₅ to C ₆	(mg/kg)	u	0.17	1.05	0.47	2.76	0.21	0.62
>C ₆ to C ₈	(mg/kg)	u	0.23	0.21	0.28	0.47	0.18	0.35
>C ₈ to C ₁₀	(mg/kg)	u	<0.03	<0.03	<0.03	0.11	<0.03	<0.03
>C ₁₀ to C ₁₂	(mg/kg)	u	<11	<11	<11	<11	<11	<11
>C ₁₂ to C ₁₆	(mg/kg)	u	<11	<11	<11	13	<11	<11
>C ₁₆ to C ₂₁	(mg/kg)	u	<11	13	<11	22	<11	<11
>C ₂₁ to C ₃₅	(mg/kg)	u	50	107	88	97	17	26
Aromatics								
>C ₅ to C ₇	(mg/kg)	u	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
>C ₇ to C ₈	(mg/kg)	u	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
>C ₈ to C ₁₀	(mg/kg)	u	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
>C ₁₀ to C ₁₂	(mg/kg)	u	<11	<11	<11	<11	<11	<11
>C ₁₂ to C ₁₆	(mg/kg)	u	<11	12	<11	<11	<11	<11
>C ₁₆ to C ₂₁	(mg/kg)	u	<11	28	15	12	<11	<11
>C ₂₁ to C ₃₅	(mg/kg)	u	78	110	91	125	22	17
Total								
>C ₅ to C ₃₅	(mg/kg)	u	150	292	216	291	61	66



Nicholls Colton Analytical
7 - 11 Harding Street
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LE1 4DH

L15/0938/GRM/001

Project Reference - Langtry Road, Liverpool

Sample Descriptions

NCA Reference	Client Sample Reference	Sample Depth (m)	Description	Moisture Content (%)	Stone Content (%)
15-12883	Plot 1	0.20	Brown silty sandy slightly gravelly sand with crushed rock.	12	0
15-12884	Plot 1	0.40	Brown gravelly sand with crushed rock, organic material and crushed concrete and brick fragments. (Fill)	9.1	52
15-12885	Plot 7	0.20	Dark brown slightly gravelly sand with crushed rock and organic material.	10	0
15-12886	Plot 7	0.40	Brown gravelly sand with crushed rock, organic material and brick fragments. (Fill)	10	49
15-12887	Plot 18	0.20	Dark brown silty slightly gravelly sand.	12	0
15-12888	Plot 18	0.40	Brown slightly gravelly sand with crushed rock, organic material and brick fragments. (Fill)	9.9	24



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Analysis Methodologies

Matrix	Determinant	Sample condition for analysis	Test Method used
Soil	Metals	Air Dried	In house method statement - MS - CL - ICP metals
Soil	PAH	Air Dried	In house method statement - MS - CL - PAH
Soil	Phenols	As Received	In house method statement - MS - CL - Phenols (Skalar)
Soil	Chromium (hexavalent)	As Received	In house method statement - MS - CL - Chromium (Hexavalent)
Soil	Cyanide	As Received	In house method statement - MS - CL - Cyanide by Skalar
Soil	pH	As Received	In house method statement - MS - CL - pH (Soil)
Soil	SOM	Air Dried	In house method statement - MS - CL - TOC
Soil	Sulphate	Air Dried	In house method statement - MS - CL - Anions (Aquakem)
Soil	CWG	As Received	In house method statement - MS - CL - EPH and VPH
Soil	Asbestos	As Received	Fibre identification is in accordance with in house documented methods which are based on the procedure documented in the HSE Document HSG 248 "Asbestos: The analysts guide for sampling, analysis and clearance procedures"