



Omnia
3-6 The Quarterdeck
Port Solent
Portsmouth
PO6 4TP
Tel: 01489 808 088
Email: info@omnia-consulting.co.uk
Web: www.omnia-consulting.co.uk

02nd May 2023

Ref: A11057/230412/L2

Rafal Chodkowski
Berkley Homes (Oxford and Chiltern) Ltd
Berkley House
Farnham Lane
Farnham Royal
SL2 3RQ

By Email only: Rafal.Chodkowski@berkeleygroup.co.uk

Dear Rafal,

RE: Kenavon Drive, Reading - Validation of Clean Cover System within the M4 and M5 areas

Please find attached Omnia Report A11057/230412/L2 detailing the results of the validation works undertaken within areas of soft landscaping within the M4 and M5 areas of the above site, in support of Reading Borough Council planning application Ref. 170509.

If you have any questions, please do not hesitate to contact us.

Yours sincerely,

A handwritten signature in black ink, appearing to read "J. Redstone".

Jacob Redstone
Graduate Geo-environmental Consultant

A handwritten signature in black ink, appearing to read "O. Maxwell".

Olivia Maxwell
Senior Geo-environmental Consultant

Attachments:

- Attachment 1: Limitations
- Attachment 2: Site Figures
- Attachment 3: Topsoil Supply Certificates
- Attachment 4: Photographs
- Attachment 5: Chemical Testing Results
- Attachment 6: Origin of GAC Values

VALIDATION REPORT

Site Address	Kenavon Drive, Reading, Berkshire RG1 3HS
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1.0 Objectives & Terms of Reference

The objective of this report is to provide a Tier 1 human health risk assessment of near-surface soil samples recovered from areas of soft landscaping within the M4 and M5 areas of the above site. Phase M4 and M5 is presented in the site plan provided by the client, reference O.446.ARC.001, and is included as Figure 3.0 within Attachment 2. Validation will be undertaken through on-site observations and chemical testing of soil samples, as set out within the Omnia Phase 2 report (reference: A11057/2.0) and Remediation Method Statement (RMS) (reference: A11057/3.1).

A site location plan is included as Figure 1.0 within Attachment 2. The proposed site layout is included as Figure 2.0 in Attachment 2.

2.0 Background

At present the development at Kenavon Drive, Reading is ongoing with areas of soft landscaping within the area of M4 and M5 requiring validation. At the time of the site visit, the topsoil had been placed in all locations, however turf or planting had yet to be positioned. Samples were taken from areas of soft landscaping and planters along the edges of the apartment building.

The Phase 2 report (reference: A11057/2.0, dated March 2019) indicated the presence of elevated concentrations of asbestos, heavy metals (arsenic, beryllium, and lead), Polycyclic Aromatic Hydrocarbons (PAHs) and Total Petroleum Hydrocarbons (TPH) in near-surface soils across the site.

The subsequent RMS (reference: A11057/3.1) stipulated that impacted soils within all areas of proposed soft landscaping were excavated to a minimum depth of 300mm below finished ground level. Following removal, a clean cover system comprising 300mm of clean, chemically suitable soils should be emplaced and underlain by a marker layer in the form of a high-visibility geotextile membrane. Sampling frequency was at 1 per 1:150m³ with a minimum of 3no. per source.

2.1 Soil Capping System

The agreed RMS (A11057/3.1) stipulated that a clean cover system and high-visibility geotextile should be implemented within all areas of soft landscaping to act as a marker layer and to mitigate the risk from identified contaminants in the underlying soils and to render the pollution pathway inactive.

The RMS stipulated cover system thicknesses as described in Table 2.1 overleaf:

Table 2.1 - Cover System Details

Material	Minimum Depth (mm bgl)
Topsoil Growing Medium	300
High-Visibility Geotextile Marker	300
Tree Pits	900

3.0 Scope of works

3.1 Soil Capping System

The scope of works comprised the validation of all soft landscaped areas through the advancement of hand excavated pits to minimum depths of 300mm bgl at a frequency of 1 per 1:150m³ with a minimum of 3no. per source, to confirm the removal of impacted soils to the specified depth, placement of the high-visibility geotextile and to retrieve samples from the emplaced topsoil. These samples were submitted for laboratory analysis for assessment of their chemical suitability, as specified within Section 4.0 of the RMS (A11057/3.1).

4.0 Site Work and Observations – Soil Capping System – 28th March 2023

The site visit was undertaken on the 28th March 2023 by a consultant from Omnia. At the time of the site visit topsoil had been placed in all areas within Areas of M4 and M5.

During the site visit, three (3no.) hand-excavated pits (A09- HP1, A74- HP1, and A80- HP1) were advanced to a depth ranging between 0.40m and 0.55m bgl. These were utilised to confirm the thickness of the topsoil and to confirm the presence of a high-visibility geotextile at the specified depth, as well as to collect topsoil samples. All three (3no.) soil samples were scheduled for chemical laboratory analysis. Photographs of the areas of soft landscaping inspected during the first site visit are included within Attachment 4.

4.1 Ground Conditions Encountered

A total of three (3no.) hand-excavated pits were advanced to depths of 0.40-0.55m bgl, as shown in Figure 3.0 in Attachment 2. The soil conditions encountered are summarised below:

Topsoil

Topsoil was found within all three (3no.) exploratory hole locations advanced on the 28/03/2023 and generally consisted within A74 HP1 and A80- HP1 of Greenish brown slightly clayey slightly gravelly fine to coarse SAND. Gravel was subangular to subrounded fine to medium red weak sandstone and flint. Within location A09- HP1 topsoil generally consisted of dark brown slightly clayey slightly gravelly fine to coarse SAND with occasional bark.

Topsoil was encountered from ground level to a maximum depth of 0.55m bgl. No subsoil was recorded in any of the locations.

Samples from A09- HP1, -A74- HP1 and A80- HP1 collected on 28/03/2023 and have been considered further in this report.

The topsoil and geotextile depth for the areas of soft landscaping are summarised in Table 4.1.

Table 4.1 - Measured Topsoil Thicknesses & Geotextile Membrane Depths

Visit Date	28/03/2023		
Validation Location	A09- HP1	A74- HP1	A80 HP1
Topsoil Thickness (mm)	400	550	500
Geotextile Membrane Depth (mm bgl)	400	550	500
<u>Validation Pass/Fail</u>	<u>Pass</u>	<u>Pass</u>	<u>Pass</u>

As can be seen from Table 4.1 above, the thicknesses of topsoil placed, together with the depth of emplacement of the high-visibility geotextile meet or exceed the requirements set out within the RMS.

Supply certificates confirming the suitability of the material brought to site are included as Attachment 3.

A photographic record of the validation pits showing confirmation of the capping system thickness is presented as Attachment 4.

4.3 Laboratory Analysis

Soil samples collected were submitted for testing. These samples were submitted to Element Materials Technology under UKAS accreditation for analysis comprising:

- CLEA Metals;
- Banded Polycyclic Aromatic Hydrocarbons (PAHs);
- Banded Total Petroleum Hydrocarbons (TPH);
- Asbestos Fibres in Soil;
- Soluble Sulphate;
- pH;
- Phenols; and,
- Total Cyanide.

Laboratory results are presented as Attachment 5.

4.4 Tier 1 Human Health Risk Assessment

The analytical results have been directly compared to the validation criteria set out in Table 5.2 of the Omnia Remediation Method Statement (ref: A11057v3.1). This comparison is detailed within Table 4.2 overleaf for the three (3no.) samples tested (A09- HP1, A74- HP1, and A80- HP1). The origin of the Tier 1 screening values is presented as Attachment 6.

Table 4.2 - Summary of Inorganic & Hydrocarbon Toxicity Assessment for Imported Soils

Determinant	Units	GAC	n	MC	Location of Exceedance	Pathway	Assessment
Metals							
Arsenic	mg/kg	37	3	39.8	A80-HP1	1	Further Action Required
Beryllium	mg/kg	1.7	3	1.0	N/A	1	No Further Action
Cadmium	mg/kg	11	3	<0.1	N/A	2	No Further Action
Chromium (III)	mg/kg	910	3	70.3	N/A	1	No Further Action
Chromium (VI)	mg/kg	6	3	<0.3	N/A	2	No Further Action
Copper	mg/kg	2,400	3	15	N/A	2	No Further Action
Lead	mg/kg	200	3	28	N/A	1	No Further Action
Mercury	mg/kg	40	3	0.1	N/A	1	No Further Action
Nickel	mg/kg	180	3	23.9	N/A	1,2	No Further Action
Selenium	mg/kg	250	3	<1	N/A	1,2	No Further Action
Zinc	mg/kg	3,700	3	61	N/A	2	No Further Action
General Inorganics							
Asbestos	%	<0.001% Chrysotile	3	Chrysotile (unquantified)	A80-HP1	5	Further Action Required
Total Cyanide *	mg/kg	50	3	0.7	N/A	1	No Further Action
Organics							
General Organics							
Phenol	mg/kg	280	3	<0.15	N/A	2	No Further Action
PAH							
Naphthalene	mg/kg	2.3	3	<0.04	N/A	2	No Further Action
Acenaphthylene	mg/kg	170	3	<0.03	N/A	2	No Further Action
Acenaphthene	mg/kg	210	3	<0.05	N/A	2	No Further Action
Fluorene	mg/kg	170	3	<0.04	N/A	2	No Further Action
Phenanthrene	mg/kg	95	3	0.07	N/A	2	No Further Action
Anthracene	mg/kg	2,400	3	<0.04	N/A	2	No Further Action
Fluoranthene	mg/kg	280	3	0.16	N/A	1,2	No Further Action
Pyrene	mg/kg	620	3	0.12	N/A	1,2	No Further Action
Benzo(a)Anthracene	mg/kg	7.2	3	0.09	N/A	1	No Further Action
Chrysene	mg/kg	15	3	0.07	N/A	1	No Further Action
Benzo(b)Fluoranthene	mg/kg	2.6	3	0.09	N/A	1	No Further Action
Benzo(k)Fluoranthene	mg/kg	77	3	0.03	N/A	1	No Further Action
Benzo(a)Pyrene	mg/kg	2.2	3	<0.04	N/A	1	No Further Action
Indeno(123-cd)Pyrene	mg/kg	27	3	<0.04	N/A	1	No Further Action
Dibenzo(ah)Anthracene	mg/kg	0.24	3	<0.04	N/A	1	No Further Action
Benzo(ghi)Perylene	mg/kg	320	3	<0.04	N/A	1	No Further Action
Banded TPH							
TPH EC 5-6**	mg/kg	42	3	<0.1	N/A	4	No Further Action
TPH EC >6-8**	mg/kg	100	3	<5	N/A	4	No Further Action
TPH EC >8-10**	mg/kg	27	3	<5	N/A	4	No Further Action
TPH EC > 10-12**	mg/kg	74	3	<10	N/A	2	No Further Action
TPH EC > 12-16**	mg/kg	140	3	<10	N/A	2	No Further Action
TPH EC > 16-21**	mg/kg	260	3	19	N/A	1	No Further Action
TPH EC > 21-35**	mg/kg	1,100	3	252	N/A	1	No Further Action
TPH EC > 35-44**	mg/kg	1,100	3	23	N/A	1	No Further Action

Notes

Main Exposure Pathways: 1 = Ingestion of Soil & Indoor Dust, 2 = Consumption of Homegrown Produce & Attached Soil; 3 = Dermal Contact (Indoor & Outdoor); 4 = Inhalation of Vapour (Indoor & Outdoor); 5 = Inhalation of Dust (Indoor & Outdoor), 6 = Inhalation of Fibres.

Notes (continued)

Abbreviations: GAC = General Assessment Criteria, n = number of samples, MC = Maximum Concentration

* Total cyanide Tier 1 GAC is taken from the Dutch Intervention Value (2010) for complex cyanide.

** The Tier 1 GAC for the banded hydrocarbon fraction is derived from the CIEH/S4UL assessment for petroleum hydrocarbons Criteria Working Group (CWG) for both aliphatic and aromatic compounds. OEC has utilised the lowest of the aliphatic and aromatic chain lengths in order to adopt a conservative approach, which is considered satisfactory for the protection of human health.

Laboratory results were also compared to the BS3882:2015 phytotoxic screening criteria and are summarised in Table 4.3 below.

Table 4.3 – BS3882:2015 Chemical Suitability Criteria for Potentially Phytotoxic Elements

Determinant	Units	pH >7.0	No	MC	Assessment
Copper	mg/kg	<300	3	15	No Further Action
Nickel	mg/kg	<200	3	23.9	No Further Action
Zinc	mg/kg	<110	3	61	No Further Action

With reference to Tables 4.2 and 4.3, it can be seen that all recorded concentrations comply with the adopted screening level for the protection of Human Health and the phytotoxic suitability criteria for A09-HP1 and A74-HP1, however the concentrations for Arsenic and Asbestos do not meet the required screening criteria for A80-HP1. The laboratory results are presented within Attachment 5 with the origin of the Tier 1 screening values presented in Attachment 6.

5.0 Replacement of Soils – A79 & A80

Given that soils from A80 did not pass the screening criteria, it was considered all soils from this load required removal from site, and clean imported soils brought in to replace them. Site informed Omnia that soils from A79 and A80 were from the same load, and therefore these 2 plots required removal and replacement as per Figure 4.0.

Soils were imported from the same source, and therefore 1no. additional sample was required following the placement of the soils.

5.1 Site Work and Observations – Soil Capping – 20th April 2023

A follow-up site visit was undertaken on the 20th April 2023 by a consultant from Omnia, to re-validate the soils at A80 following their chemical un-suitability from the initial visit on 28th March 2023. At the time of the site visit topsoil had been placed in all areas of M4 and M5.

During the site visit, one (1no.) hand-excavated pit (A80) was advanced to a depth of 0.70m bgl. This was utilised to confirm the thickness of the topsoil and to confirm the presence of a high-visibility geotextile at the specified depth, as well as to collect a topsoil sample. The sample taken from A80 was scheduled for chemical laboratory analysis. Photographs of the areas of soft landscaping inspected during the second site visit are included within Attachment 4.

5.2 Ground Conditions Encountered

One (1no.) hand-excavated pit was advanced to a maximum depth of 0.70m bgl, as shown in Figure 3.0 in Attachment 2. The soil conditions encountered are summarised below:

Topsoil

Topsoil was found to the full depth of the trial pit at A80 and comprised dark brown slightly gravelly slightly silty fine to coarse SAND. Gravel is subangular to subrounded, fine, flint with occasional wood/bark.

Topsoil was encountered from ground level to a maximum depth of 0.70m bgl. No subsoil was recorded.

One (1no.) sample taken from A80 was collected on 20th April 2023 and has been considered further in this report.

The topsoil and geotextile depth for the areas of soft landscaping are summarised in Table 4.1.

Table 5.1 - Measured Topsoil Thicknesses & Geotextile Membrane Depths

Visit Date	20/04/2023
Validation Location	A80 HP2
Topsoil Thickness (mm)	700
Geotextile Membrane Depth (mm bgl)	700
<u>Validation</u> <u>Pass/Fail</u>	<u>Pass</u>

As can be seen from Table 5.1 above, the thicknesses of topsoil placed, together with the depth of emplacement of the high-visibility geotextile meet or exceed the requirements set out within the RMS.

Supply certificates confirming the suitability of the material brought to site are included as Attachment 3.

A photographic record of the validation pits showing confirmation of the capping system thickness is presented as Attachment 4.

5.3 Laboratory Analysis

Soil samples collected were submitted for testing. These samples were submitted to Element Materials Technology under UKAS accreditation for analysis comprising:

- CLEA Metals;
- Banded Polycyclic Aromatic Hydrocarbons (PAHs);
- Banded Total Petroleum Hydrocarbons (TPH);
- Asbestos Fibres in Soil;
- Soluble Sulphate;
- pH;
- Phenols; and,
- Total Cyanide.

Laboratory results are presented as Attachment 5.

5.4 Tier 1 Human Health Risk Assessment

The analytical results have been directly compared to the validation criteria set out in Table 5.2 of the Omnia Remediation Method Statement (ref: A11057v3.1). This comparison is detailed within Table 5.2

overleaf for the one (1no.) sample collected from A80 on 20th April 2023. The origin of the Tier 1 screening values is presented as Attachment 6.

Table 5.2 - Summary of Inorganic & Hydrocarbon Toxicity Assessment for Imported Soils

Determinant	Units	GAC	n	MC	Location of Exceedance	Pathway	Assessment
Metals							
Arsenic	mg/kg	37	1	13.7	A80	1	No Further Action
Beryllium	mg/kg	1.7	1	0.9	N/A	1	No Further Action
Cadmium	mg/kg	11	1	<0.1	N/A	2	No Further Action
Chromium (III)	mg/kg	910	1	66.1	N/A	1	No Further Action
Chromium (VI)	mg/kg	6	1	<0.3	N/A	2	No Further Action
Copper	mg/kg	2,400	1	14	N/A	2	No Further Action
Lead	mg/kg	200	1	19	N/A	1	No Further Action
Mercury	mg/kg	40	1	<0.1	N/A	1	No Further Action
Nickel	mg/kg	180	1	17.9	N/A	1,2	No Further Action
Selenium	mg/kg	250	1	<1	N/A	1,2	No Further Action
Zinc	mg/kg	3,700	1	50	N/A	2	No Further Action
General Inorganics							
Asbestos	%	<0.001% Chrysotile	1	NAD	A80	5	No Further Action
Total Cyanide *	mg/kg	50	1	<0.5	N/A	1	No Further Action
Organics							
General Organics							
Phenol	mg/kg	280	1	<0.15	N/A	2	No Further Action
PAH							
Naphthalene	mg/kg	2.3	1	<0.04	N/A	2	No Further Action
Acenaphthylene	mg/kg	170	1	<0.03	N/A	2	No Further Action
Acenaphthene	mg/kg	210	1	<0.05	N/A	2	No Further Action
Fluorene	mg/kg	170	1	<0.04	N/A	2	No Further Action
Phenanthrene	mg/kg	95	1	<0.03	N/A	2	No Further Action
Anthracene	mg/kg	2,400	1	<0.04	N/A	2	No Further Action
Fluoranthene	mg/kg	280	1	0.12	N/A	1,2	No Further Action
Pyrene	mg/kg	620	1	0.08	N/A	1,2	No Further Action
Benzo(a)Anthracene	mg/kg	7.2	1	<0.04	N/A	1	No Further Action
Chrysene	mg/kg	15	1	0.07	N/A	1	No Further Action
Benzo(b)Fluoranthene	mg/kg	2.6	1	0.09	N/A	1	No Further Action
Benzo(k)Fluoranthene	mg/kg	77	1	0.03	N/A	1	No Further Action
Benzo(a)Pyrene	mg/kg	2.2	1	<0.04	N/A	1	No Further Action
Indeno(123-cd)Pyrene	mg/kg	27	1	0.05	N/A	1	No Further Action
Dibenzo(ah)Anthracene	mg/kg	0.24	1	<0.04	N/A	1	No Further Action
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Banded TPH							
TPH EC 5-6**	mg/kg	42	1	<0.1	N/A	4	No Further Action
TPH EC >6-8**	mg/kg	100	1	<0.1	N/A	4	No Further Action
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TPH EC > 16-21**	mg/kg	260	1	18	N/A	1	No Further Action
TPH EC > 21-35**	mg/kg	1,100	1	295	N/A	1	No Further Action
TPH EC > 35-44**	mg/kg	1,100	1	31	N/A	1	No Further Action

Notes

Main Exposure Pathways: 1 = Ingestion of Soil & Indoor Dust, 2 = Consumption of Homegrown Produce & Attached Soil; 3 = Dermal Contact (Indoor & Outdoor); 4 = Inhalation of Vapour (Indoor & Outdoor); 5 = Inhalation of Dust (Indoor & Outdoor), 6 = Inhalation of Fibres.

Notes (continued)

Abbreviations: GAC = General Assessment Criteria, n = number of samples, MC = Maximum Concentration

* Total cyanide Tier 1 GAC is taken from the Dutch Intervention Value (2010) for complex cyanide.

** The Tier 1 GAC for the banded hydrocarbon fraction is derived from the CIEH/S4UL assessment for petroleum hydrocarbons Criteria Working Group (CWG) for both aliphatic and aromatic compounds. OEC has utilised the lowest of the aliphatic and aromatic chain lengths in order to adopt a conservative approach, which is considered satisfactory for the protection of human health.

Laboratory results were also compared to the BS3882:2015 phytotoxic screening criteria and are summarised in Table 5.3 below.

Table 5.3 – BS3882:2015 Chemical Suitability Criteria for Potentially Phytotoxic Elements

Determinant	Units	pH >7.0	No	MC	Assessment
Copper	mg/kg	<300	3	14	No Further Action
Nickel	mg/kg	<200	3	17.9	No Further Action
Zinc	mg/kg	<110	3	50	No Further Action

With reference to Tables 5.2 and 5.3, it can be seen that all recorded concentrations comply with the adopted screening level for the protection of Human Health and the phytotoxic suitability criteria for A80. The laboratory results are presented within Attachment 5 with the origin of the Tier 1 screening values presented in Attachment 6.

5.5 Discussion

Following the replacement of previously unsuitable soils, laboratory testing of soil samples collected from emplaced soils within areas of soft landscaping at A80 did not show any exceedances of the assessment criteria set out within the agreed RMS (A11057/3.1). The topsoil is therefore considered to be suitable for use as a clean capping system within areas of communal soft landscaping in these areas.

The validation in areas of soft landscaping undertaken by Omnia, as shown in Table 5.1, confirms that the thickness of the installed clean cover system complies with Section 4.0 of the agreed RMS (A11057/3.1).

6.0 Conclusion

Based on the findings of this topsoil validation, which consisted of verifying topsoil thickness, the presence of, and depth to, a geotextile membrane, and chemical testing of soil samples; it is concluded that all emplaced soils at the site conform with the specifications established within Section 4.0 of the agreed RMS (A11057/3.1).

END OF REPORT

Attachment 1

Limitations

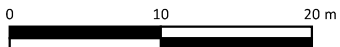
-
1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between OE Ltd and the Client as indicated in Section 1.2.
 2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is 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 been 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.
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 10. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.
-

Attachment 2

Figures

Key

- M4 and M5 Area
- M4 and M5 Locations



Scale
1:500

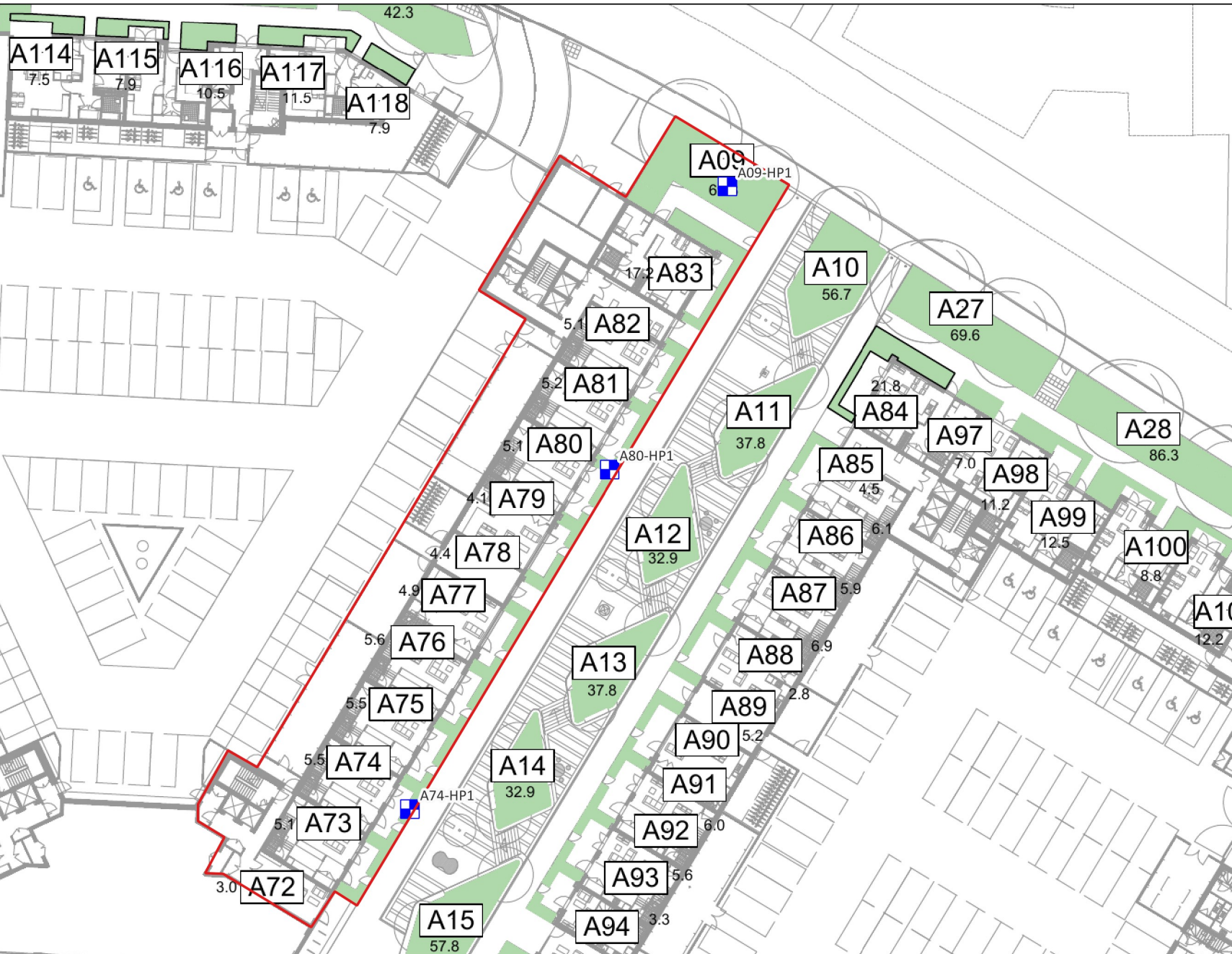
Paper Size
A4

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Omnia Consulting, 3-6 The Quarterdeck, Port Solent,
Portsmouth, Hampshire, PO6 4TP
T: (01489) 808 088
E: info@omnia-consulting.co.uk
W: www.omnia-consulting.co.uk



Job Title:
Kenavon Drive, Reading

Client: Berkeley Homes
(Oxford & Chiltern) Ltd

Project Number:
A11057-2

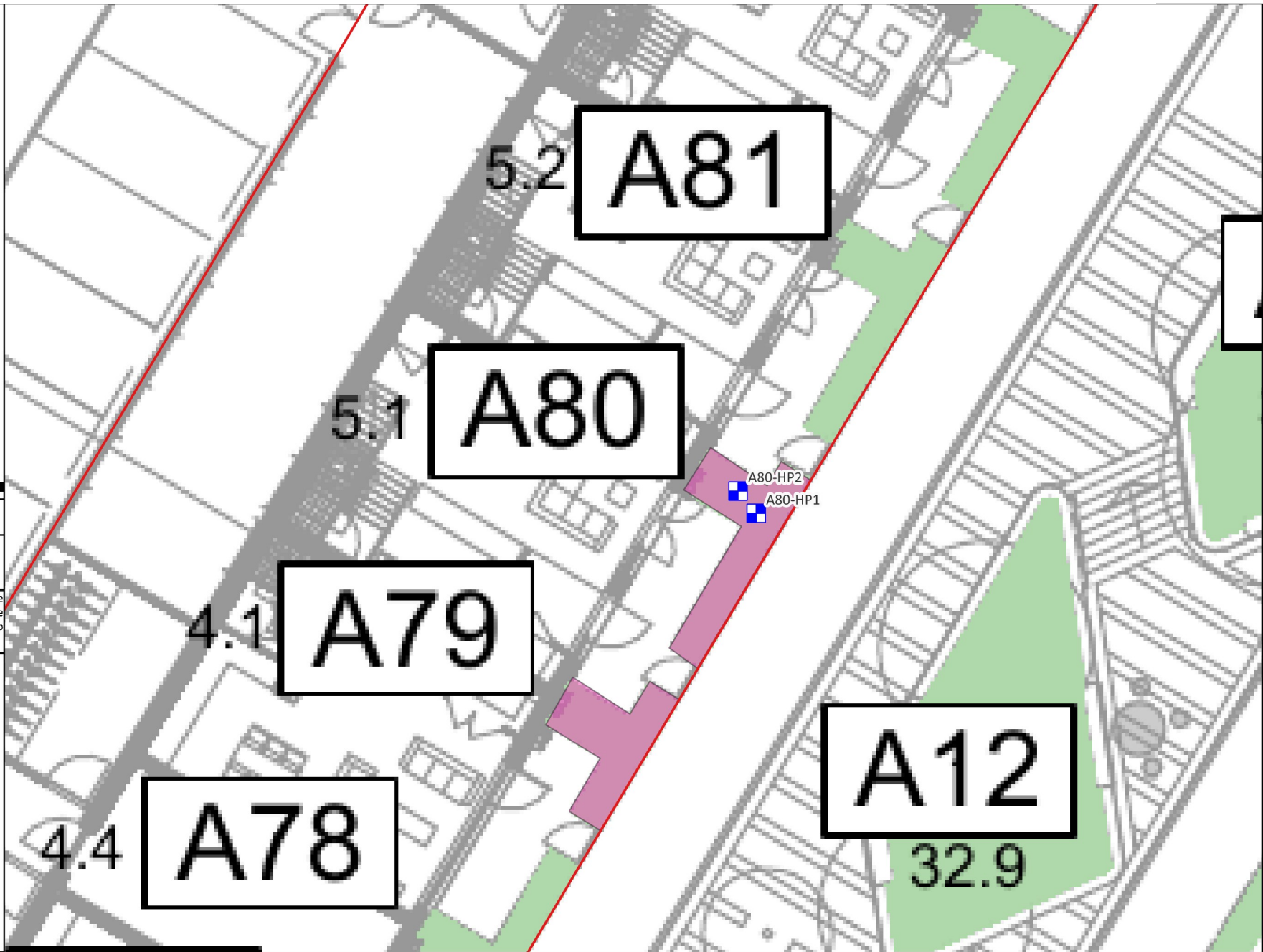
Drawn By:
H. Spurling

Date:
14/04/2023

Authorised By:
O. Maxwell

Drawing Title:
Figure 3.0
Intrusive Location Plan (M4
and M5)

Key M4 and M5 Area M4 and M5 Locations	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;"> Scale 1:125 </td> <td style="width: 50%; padding: 5px;"> Paper Size A4 </td> </tr> </table> Contains Contains OS data © Crown copyright and database right 2021. Contains Environment Agency Lidar Data available under the Open Government Licence (OGL). © OpenStreetMap contributors The client must not amend any drawing, design or other intellectual property produced by Omnia without permission in writing from Omnia in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made Omnia shall not be liable for any damage and/or losses incurred as a result of the amended drawing, design or intellectual property. Omnia Consulting, 3-6 The Quarterdeck, Port Solent, Portsmouth, Hampshire, PO6 4TP T: (01489) 808 088 E: info@omnia-consulting.co.uk W: www.omnia-consulting.co.uk	Scale 1:125	Paper Size A4
Scale 1:125	Paper Size A4		



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Drawn By:
H. Spurling

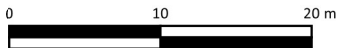
Date:
02/05/2023

Authorised By:
O. Maxwell

Drawing Title:
Figure 3.1
Intrusive Location Plan
(A80-HP2)

Key

- M4 and M5 Area
- Extent of soils to be replaced



Scale
1:500

Paper Size
A4

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Omnia Consulting, 3-6 The Quarterdeck, Port Solent,
Portsmouth, Hampshire, PO6 4TP
T: (01489) 808 088
E: info@omnia-consulting.co.uk
W: www.omnia-consulting.co.uk



Job Title:
Kenavon Drive, Reading

Client: Berkeley Homes
(Oxford & Chiltern) Ltd

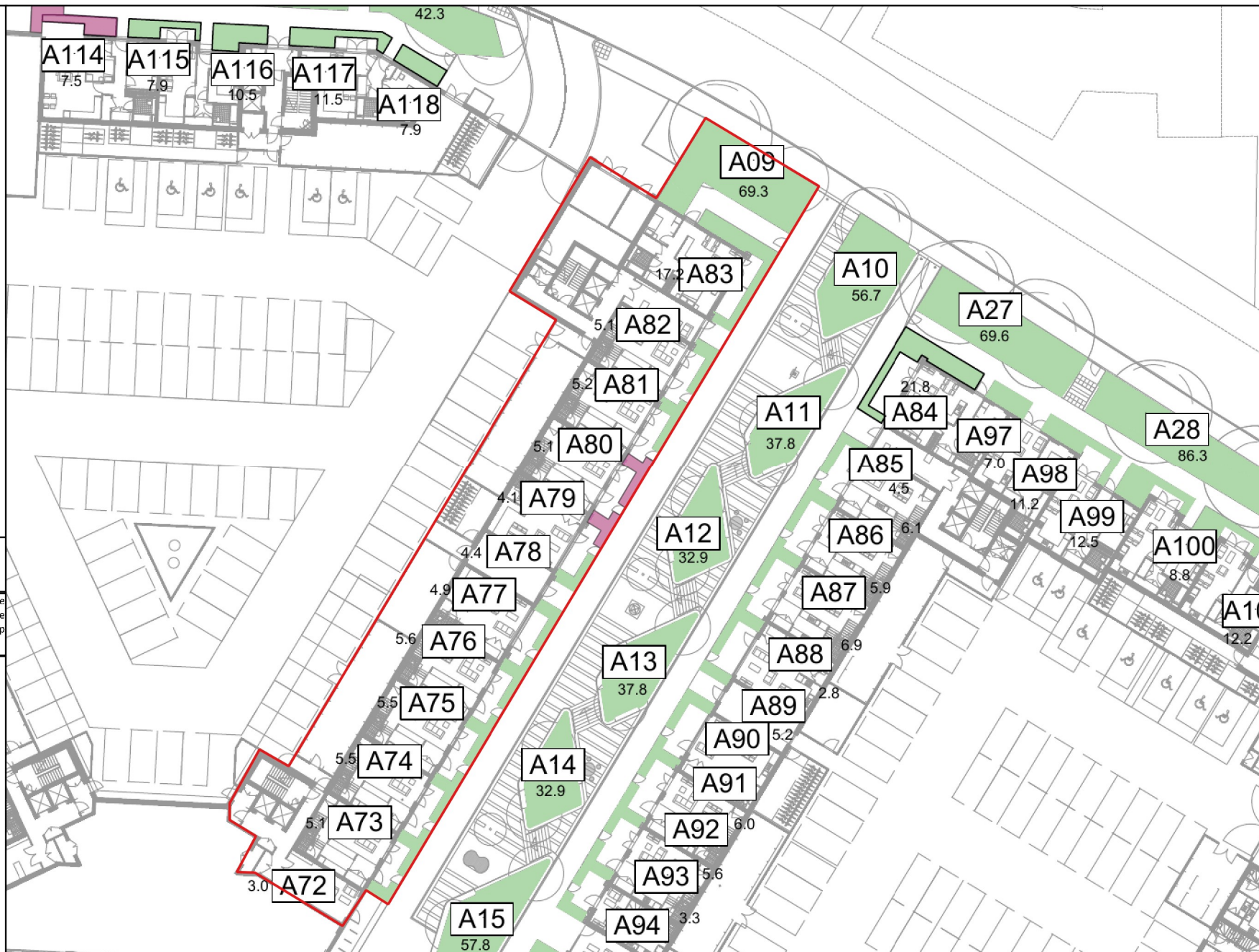
Project Number:
A11057-2

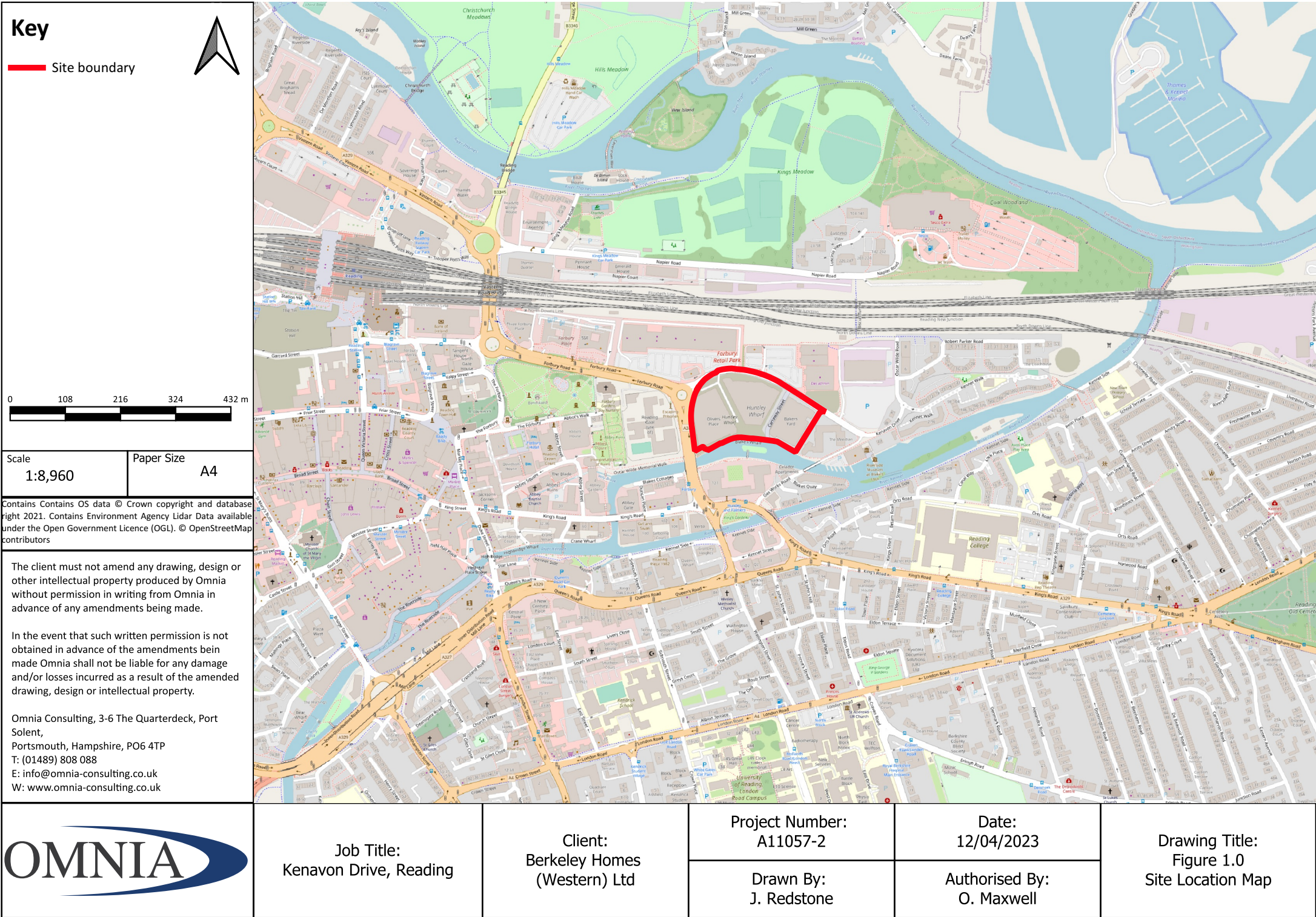
Drawn By:
H. Spurling

Date:
14/04/2023

Authorised By:
O. Maxwell

Drawing Title:
Figure 4.0
Extent of soils to be replaced
(M4 and M5)





Attachment 3

Topsoil Import Tickets and Topsoil Certificates

Material: 10mm TS6 Topsoil
Source: Bourne Amenity Ltd
Date Tested: 28/10/2022
Tested Against: BS3882:2015 Multipurpose Grade
Tested By: Tim O'Hare Associates (Report ID TOHA/22/7709/SS)

Parameter	Unit	BS3882:2015 Multipurpose Range	Result	Compliance
Texture:				
Clay (<0.002mm)	% w/w	5 - 30%	13	Yes
Silt (0.002 - 0.05mm)	% w/w	0 - 65%	3	Yes
Sand (0.05 - 2.0mm)	% w/w	20 - 90%	84	Yes
Textual Class:		Loamy Sand		
Stones (2 - 20mm)	% w/w DW	0 - 30%	1	Yes
Stones (20-50mm)	% w/w DW	0 - 10%	0	Yes
Stones (>50mm)	% w/w DW	0%	0	Yes
Sand Fraction (USGA Sieve Sizes):				
Very Fine Sand (0.05 - 0.15mm)	% w/w	n/a	8	--
Fine Sand (0.15 - 0.25mm)	% w/w	n/a	11	--
Medium Sand (0.25 - 0.50mm)	% w/w	n/a	33	--
Coarse Sand (0.50 - 1.0mm)	% w/w	n/a	23	--
Very Coarse Sand (1.0 - 2.0mm)	% w/w	n/a	9	--
Organic Matter (LOI)	% w/w	3.0 - 20.0	6.4	Yes
Ph		5.5 - 8.5	8.1	Yes
Exchangeable Sodium Percentage	%	< 15%	3.5	Yes
Phytotoxic Contaminants:				
Total Zinc (BS3882:2015)	mg/kg	< 300	54	Yes
Total Copper (BS3882:2015)	mg/kg	< 200	11	Yes
Total Nickel (S4UL)	mg/kg	< 180	16	Yes
Available Nutrients:				
Nitrogen	mg/l	>0.15	0.24	Yes
Phosphorus	mg/l	16 - 140	31	Yes
Potassium	mg/l	121 - 1500	1336	Yes
Magnesium	mg/l	51 - 600	152	Yes
Carbon:Nitrogen Ratio	:1	< 20:1	15	Yes
Additional Analysis:				
Electrical Conductivity (1:2.5 water extract)	µS/cm	1500	946	Yes
Electrical Conductivity (1:2 CaSO4 extract)	µS/cm	3300	2890	Yes
Saturated Hydraulic Conductivity	mm/hr	--	39.5	--
Visible Contaminants:				
Plastics (>2.0mm)	% w/w	< 0.5	0.0	Yes
Sharps (>2.0mm)	% w/w	< 0.25	0.00	Yes

Parameter	Unit	Guidelines	Value	Result	Compliance
Heavy Metals and Hydrocarbons					
Total Arsenic (As)	mg/kg	S4UL	<37	14	Yes
Total Cadmium (Cd)	mg/kg	S4UL	<11	<0.2	Yes
Total Chromium III (Cr)	mg/kg	S4UL	<910	23	Yes
Hexavalent Chromium (Cr VI)	mg/kg	S4UL	<6	<1.8	Yes
Total Cyanide (Cn)	mg/kg	Dutch Action Value (DAV)	<20	<1.0	Yes
Total Lead (Pb)	mg/kg	SP1010 (Defra Category 4)	<200	32	Yes
Total Mercury (Hg)	mg/kg	S4UL	<1.2	<0.3	Yes
Total (mono) Phenols	mg/kg	S4UL^	<550	<1.0	Yes
Total Selenium (Se)	mg/kg	S4UL	<250	<1.0	Yes
Water Soluble Boron (B)	mg/kg	S4UL	<290	1.4	Yes
Acenaphthylene	mg/kg	S4UL^	<420	<0.05	Yes
Acenaphthene	mg/kg	S4UL^	<510	<0.05	Yes
Anthracene	mg/kg	S4UL^	<5400	<0.05	Yes
Benzo (a) Anthracene	mg/kg	S4UL^	<11	0.19	Yes
Benzo (a) Pyrene	mg/kg	S4UL^	<2.7	<0.05	Yes
Benzo (b) Fluoranthene	mg/kg	S4UL^	<3.3	<0.05	Yes
Benzo (g,h,i) Perylene	mg/kg	S4UL^	<340	<0.05	Yes
Benzo (k) Fluoranthene	mg/kg	S4UL^	<93	<0.05	Yes
Chrysene	mg/kg	S4UL^	<22	0.21	Yes
Dibenzo (a,h) Anthracene	mg/kg	S4UL^	<0.28	<0.05	Yes
Fluoranthene	mg/kg	S4UL^	<560	0.37	Yes
Fluorene	mg/kg	S4UL^	<400	<0.05	Yes
Indeno (1,2,3-cd) Pyrene	mg/kg	S4UL^	<36	<0.05	Yes
Naphthalene	mg/kg	S4UL^	<5.6	<0.05	Yes
Phenanthrene	mg/kg	S4UL^	<220	<0.05	Yes
Pyrene	mg/kg	S4UL^	<1200	0.3	Yes
Aliphatic TPH (C5 - C6)	mg/kg	S4UL^	<78	<0.001	Yes
Aliphatic TPH (C6 - C8)	mg/kg	S4UL^	<230	<0.001	Yes
Aliphatic TPH (C8 - C10)	mg/kg	S4UL^	<65	<0.001	Yes
Aliphatic TPH (C10 - C12)	mg/kg	S4UL^	<330	<1.0	Yes
Aliphatic TPH (C12 - C16)	mg/kg	S4UL^	<2400	<2.0	Yes
Aliphatic TPH (C16 - C21)	mg/kg	S4UL^	<92000	<8.0	Yes
Aliphatic TPH (C21 - C35)	mg/kg	S4UL^		<8.0	Yes
Aliphatic TPH (C5 - C35)	mg/kg	S4UL^	<92000	<10	Yes
Aromatic TPH (C5 - C7)	mg/kg	S4UL^	<140	<0.001	Yes
Aromatic TPH (C7 - C8)	mg/kg	S4UL^	<290	<0.001	Yes
Aromatic TPH (C8 - C10)	mg/kg	S4UL^	<83	<0.001	Yes
Aromatic TPH (C10 - C12)	mg/kg	S4UL^	<180	<1.0	Yes
Aromatic TPH (C12 - C16)	mg/kg	S4UL^	<330	<2.0	Yes
Aromatic TPH (C16 - C21)	mg/kg	S4UL^	<540	<10	Yes
Aromatic TPH (C21 - C35)	mg/kg	S4UL^	<1500	<10	Yes
Aromatic TPH (C5 - C35)	mg/kg	S4UL^	<1500	<10	Yes
Benzene	mg/kg	S4UL^	<0.17	<0.001	Yes
Toluene	mg/kg	S4UL^	<290	<0.001	Yes
Ethylbenzene	mg/kg	S4UL^	<110	<0.001	Yes
O-xylene	mg/kg	S4UL^	<140	<0.001	Yes
M-xylene	mg/kg	S4UL^	<140	<0.001	Yes
P-xylene	mg/kg	S4UL^	<130		Yes
MTBE	mg/kg	Sail Guideline Values	<470	<0.001	Yes
Asbestos	mg/kg	Control of Asbestos Regulations 2006	Absent	Absent	Yes

**MARK LUCK LIMITED**

Mark Luck Haulage Yard

Railway Sidings Wested Lane Swanley Kent BR8 8EE

Telephone: (01322) 613355 Fax: (01322) 613265

Website: www.markluckltd.co.uk

E-mail: info@markluckltd.co.uk

All Aggregates - Recycled Materials - Site Clearance - T/Soils

CONVEYANCE/CONTROLLED WASTE TRANSFER NOTE**Nº 871611****Section A.**

Description of Waste/Material

TS6 Top Soil
Grab

Vehicle Reg. No.

GDISDUY

Cubic Metres

In Words

1x Grab load

GROSS

TARE

NETT

Driver's Name

D. Phipps

CLIENT
SIC☐☐☐☐☐☐

EWC

☐☐☐☐☐☐**Section B. Current Holder of Waste/Material/Collection Point**

Name

Bourne Amenities

Address

Blockade
TN16

Waste Reg. No (if applicable)

Section C. Person Collecting Waste

MARK LUCK LIMITED

SIC Code 49.41

Registered Waste Carrier No. CBDU90780

Issued by KENT COUNTY COUNCIL

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011

Section D. Authorised Tip / Delivery Point / Daywork

Name

Hulloran and O'Brien, Huntley Wharf

Address

Kenavon Drive, Reading, RG1 3DH

Authorised Tip No. (if applicable)

Waiting time on Site/Daywork

Arrival Time

Departure Time

Allowance/TT

Hours Chargeable

Signed on behalf of Customer

PRINT NAME

N.B. To Customers, Authorised Agents, Representatives, or Responsible Persons signing this Delivery Ticket. This is in your interest - Please read this ticket fully and inspect material, agreeing quantity, quality and that everything is to your satisfaction, before finally signing this receipt note. We regret we cannot under any circumstances entertain any claims concerning quantity or quality, once the vehicle has left the site and a clear signature has been given. We Cannot accept responsibility for damage caused by our vehicles while delivering material to your site.

Signed by Driver

Signed on behalf of Customer

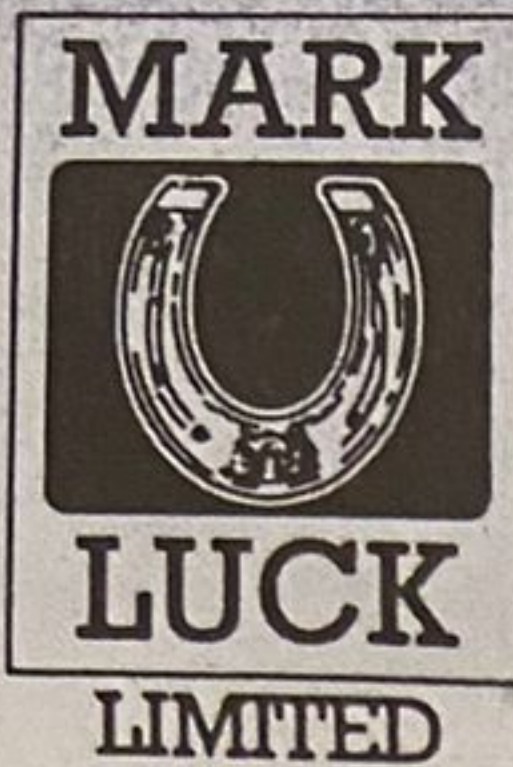
Date

22/2/23

PLEASE PRINT

1.5 AUG 21

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MARK LUCK LIMITED

Mark Luck Haulage Yard

Railway Sidings Wested Lane Swanley Kent BR8 8EE

Telephone: (01322) 613355 Fax: (01322) 613265

Website: www.markluckltd.co.uk

E-mail: info@markluckltd.co.uk

All Aggregates - Recycled Materials - Site Clearance - T/Soils

CONVEYANCE/CONTROLLED WASTE TRANSFER NOTE

Nº 918161



Section A.

Description of Waste/Material

1x TSB
TOP SOIL

Vehicle Reg. No.

GF17 UJK

Cubic Metres

Grab

In Words

load.

GROSS

31-940

TARE

16-620

NETT

15-320

Driver's Name

Dave

Section B. Current Holder of Waste/Material/Collection Point

Name

Boorne amenity / Blockade

Address

Waste Reg. No (if applicable)

West Erham

Section C. Person Collecting Waste

MARK LUCK LIMITED

SIC Code 49.41

Registered Waste Carrier No. CBDU90780

Issued by KENT COUNTY COUNCIL

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011

Section D. Authorised Tip / Delivery Point / Daywork

Name

Boorne amenity / O'halloran O'Brien

Address

Huntley wharf, Kenavendrive

Authorised Tip No. (if applicable)

Waiting time on Site/Daywork

Reading

Arrival Time

Departure Time

Allowance/TT

Hours Chargeable

Signed on behalf of Customer

PRINT NAME

N.B. To Customers, Authorised Agents, Representatives, or Responsible Persons signing this Delivery Ticket. This is in your interest - Please read this ticket fully and inspect material, agreeing quantity, quality and that everything is to your satisfaction, before finally signing this receipt note. We regret we cannot under any circumstances entertain any claims concerning quantity or quality, once the vehicle has left the site and a clear signature has been given. We Cannot accept responsibility for damage caused by our vehicles while delivering material to your site.

Signed by Driver

Dave

Signed on behalf of Customer

Date

8-3-23.

PLEASE PRINT

PAVL

Customers ordering vehicles off the public roads do so entirely at their own risk



MARK LUCK LIMITED

Mark Luck Haulage Yard

Railway Sidings Wested Lane Swanley Kent BR8 8EE

Telephone: (01322) 613355 Fax: (01322) 613265

Website: www.markluckltd.co.uk

E-mail: info@markluckltd.co.uk

All Aggregates - Recycled Materials - Site Clearance - T/Soils

Nº 909119



Section A.

Description of Waste/Material

SOIL

CLIENT
SIC

☐☐☐☐☐☐

EWC

☐☐☐☐☐☐

Vehicle Reg. No.

GL67 LCK

Cubic Metres

In Words

1 X GRAB

GROSS

TARE

NETT

Driver's Name

LAWRENCE

Section B.

Current Holder of Waste/Material/Collection Point

Name

Address

Waste Reg. No (if applicable)

Section C.

Person Collecting Waste

MARK LUCK LIMITED

SIC Code 49.41

Registered Waste Carrier No. CBDU90780

Issued by KENT COUNTY COUNCIL

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011

Section D.

Authorised Tip / Delivery Point / Daywork

Name

Address

Authorised Tip No. (if applicable)

Waiting time on Site/Daywork

Arrival Time

Allowance/TT

Departure Time

Hours Chargeable

Signed on behalf of Customer

PRINT NAME

N.B. To Customers, Authorised Agents, Representatives, or Responsible Persons signing this Delivery Ticket. This is in your interest - Please read this ticket fully and inspect material, agreeing quantity, quality and that everything is to your satisfaction, before finally signing this receipt note. We regret we cannot under any circumstances entertain any claims concerning quantity or quality, once the vehicle has left the site and a clear signature has been given. We Cannot accept responsibility for damage caused by our vehicles while delivering material to your site.

Signed by Driver

Signed on behalf of Customer

Date

23/3/23

PLEASE PRINT

I. SAUGA

Customers ordering vehicles off the public roads do so entirely at their own risk