

DO NOT SCALE FROM THIS DRAWING



LEGEND

- Site Boundary
- BaP
- Arsenic
- Lead

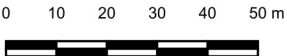
Notes:
Base plan provided by the Client
Drawing Ref.: 17100-HGP-XX-XX-D-A-0102 'Proposed Site Layout'

C01	22.05.25	First Issue	MW	SH	SH
Rev	Date	Amendment	Drawn	Chkd	Appd



1 Forest Park Way, Pease Pottage,
West Sussex, RH11 9ZG

Client Muse Places Ltd		
Project Name Horsham Enterprise Park (previously Novartis)		
Description Exceedances of resi HGP GACs LP2441		
Project ID 3750963	Drawing no. 24101	Revision C01
File name 3750963-LW-241-XX-D-G-24101-C01		
Dimensions m	Scale 1:1,500	Size A3



APPENDIX C – SPECIFICATION FOR IMPORTED AND SITE WON SOILS

LEAP SPECIFICATION FOR PLACEMENT OF IMPORTED FILLS AND PROCUREMENT OF IMPORTED TOPSOIL AND SUBSOIL

I Fills

I.1 General

Filling shall be carried out in accordance with the recommendations of BS 6031:2009¹ and the CL:AIRE Definition of Waste Code of Practice (DoWCoP)².

Fill shall be maintained and protected in a satisfactory condition at all times until final completion.

Any material rendered unsuitable or unsatisfactory after being placed in the works shall be replaced as appropriate so that all the completed filling is in accordance with the specification.

I.2 Dimensions

Fills shall be constructed to achieve the finished levels of the development with an allowance for shrinkage and consolidation of the material subsequent to completion, and in order that the minimum clean cover as specified in the remediation method statement is achieved.

The excavated levels shall be recorded before the commencement of filling. The level of the filled areas shall be taken and recorded after filling.

2 Types of Fill

There are potentially two types of fill to be used. These are as follows:

- Topsoil
- Subsoil

The capping of landscaped areas will comprise a minimum of 150 mm of topsoil and a maximum of 300 mm to finished garden or landscaped area level. Underlying subsoil thicknesses will be as required to achieve the overall finished levels and to provide the required cover layer thicknesses as detailed in the main body of this report.

¹ BS6031:2009 Code of practice for earthworks

² CL:AIRE The Definition of Waste: Development Industry Code of Practice Version 2, March 2011

2.1 Topsoil

It is recommended that imported topsoil complies with the requirements of BS 3882:2015³ for a Multipurpose Purpose Grade material.

The topsoil shall be free from fragments of glass, bricks, concrete, wire or other potentially hazardous matter.

Manufactured topsoil shall not be made from waste materials.

The topsoil shall be subject to the additional limitations set out below.

2.2 Subsoil

Imported manufactured or modified subsoil shall comprise certified clean material which satisfies the conditions set out in BS8601:2013⁴. Subsoil arising from site or from a certified direct transfer (e.g. under DoWCoP) shall comprise clean natural arisings from construction activities which have been confirmed acceptable by the Engineer.

2.3 Sources of Materials

Imported materials may be obtained from any source unless otherwise stated in the Drawings or in the Specification.

It shall remain the responsibility of the Contractor to obtain only fill material complying with the Specification and Method Statement, notwithstanding any tests which may be accepted by the Engineer.

The Contractor shall demonstrate to the Validation Engineer's satisfaction that the fill materials from each source are uncontaminated by submitting to the Validation Engineer a chemical analysis of material or evidence of such other tests as the Validation Engineer may require for all proposed sources of fill, and if necessary sampling and analysing materials as they are delivered to stockpiles or the fill location on site.

Sampling rates shall be a typical of one sample per 150 cubic metres of imported soil – as per the frequencies stated in the main body of the report - with a minimum of three samples per source of material, unless otherwise agreed with the Engineer. Such tests for chemical composition as may be agreed by the Engineer shall be carried out on each sample and the results of tests shall be forwarded to the Engineer. Testing for contamination on samples taken shall be carried out at a testing laboratory approved by the Engineer and shall be to appropriate MCERTS standards. The Contractor shall maintain records of the location in the Works of fill from each source and the date of delivery to the site and shall submit these records to the Engineer as requested. Chemical analysis on the imported fill material shall include testing for the contaminants listed in Table I as a minimum. Contaminant

³ BS3882:2015 Specification for topsoil

⁴ BS8601:2013 Specification for subsoil and requirements for use

concentrations shall be below those listed in Table I (attached) unless agreed otherwise by the Engineer. Additional analyses may be requested depending on the source and nature of the material. The concentrations in Table I are derived from available assessment criteria which are considered to represent uncontaminated concentrations of soil - Suitable for Use Levels (S4ULs)⁵ for a residential land use with private gardens where produce may be grown and, in the case of the phytotoxic metals copper, nickel and zinc, the topsoil specification in BS3882:2015. The concentrations in Table I assume that no significant contaminant linkage to controlled waters exists that could pose an unacceptable risk.

The S4ULs represent near-minimal risk to human health. In the case of cadmium, hexavalent chromium and benzo(a)pyrene, Category 4 Screening Levels (C4SLs)⁶ also exist which are higher than minimal risk but are still strongly precautionary. In instances of persistent failures of the S4ULs for these chemicals, regulators may allow the C4SL to be used instead. This approach shall require regulatory agreement before being implemented. In addition, the following shall be deemed as unacceptable for replacement fills:

- Peat, materials from swamps, marshes and bogs.
- Logs, stumps and perishable material.
- Materials in a frozen condition.
- Clay having a liquid limit determined in accordance with BS17892-12:2018⁷, exceeding 90% or plasticity index determined in accordance with BS17892-12:2018, exceeding 65%.
- Material susceptible to spontaneous combustion.

2.4 Practical Considerations

2.4.1 Formation Level / Subgrade Testing

Where made ground from previous site usage remains present at formation level then subgrade / formation level testing will be required to confirm the necessary thickness of subsoil and / or topsoil to be placed, as per the agreed remediation method statement. Sufficient time should be allowed in the programme for this testing to be completed prior to the requirement for clean cover to be laid. The standard turnaround for laboratory testing is 5 working days from the date of receipt at the laboratory.

2.4.2 Preparation of Subgrade

All pile mat, scaffold base and/or waste materials must be removed in their entirety from the surface of areas to become gardens or public open space / soft landscaping prior to the application of clean cover soils. This aspect of the works will be inspected and validated by the Engineer.

⁵ The LQM/CIEH S4ULs for Human Health Risk Assessment, Nathaniel P et al, 2015. Copyright Land Quality Management Ltd, reproduced with permission: Publication Number S4UL3509

⁶ Defra 'SPI010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document' December 2014.

⁷ BS EN ISO 17892 Geotechnical investigation and testing. Laboratory testing of soil. Determination of liquid and plastic limits

2.4.3 Out of Specification Materials

Notwithstanding the specification for maximum allowable contaminant concentrations provided in Table I, no materials will be accepted that are odorous, stained or contain visible product as is required by DoWCoP.

Should the Contractor proceed with stockpiling or spreading of fill prior to receiving approval from the Engineer of results for the above tests, and the results of such tests show that the fill is contaminated above acceptable levels, the Contractor shall remove all contaminated material and replace it with acceptable material at his own cost as part of the main contract.

2.4.4 Suitability of Materials in Gardens

Materials laid as clean cover in private gardens must not only meet the requirements to be protective against land contamination but they must also be suitable for gardening. Hence, topsoil should not contain more than the British Standard-specified percentage of clay as exceeding this value may result in poor drainage and the failure of turf to establish. Subsoil should contain sufficient nutrition and be of sufficient depth to allow for the establishment of larger shrubs and trees and hence, a subsoil exceeding the British Standard-specified percentage of sand (i.e. an as-dug sand) would be unsuitable.

**TABLE 1: CHEMICAL CONTAMINANT SPECIFICATION FOR
IMPORTED / SITE WON SOILS**

Determinant	Assessment Criteria Private Gardens (Resi_{WHGP}) mg/kg	Assessment Criteria Soft Landscaping (POS_{resi}) mg/kg
Arsenic	37	79
Cadmium	22	220
Trivalent Chromium	910	1,500
Hexavalent Chromium	21	21
Copper	2,400	12,000
Lead	200	630
Mercury (inorganic)	40	120
Nickel	130	230
Selenium	250	1,100
Zinc	3,700	81,000
Benzo(a)pyrene ²	5.0	10
Naphthalene ²	2.3	4,900
Asbestos	No asbestos detected	No asbestos detected

Notes to table

1. Surrogate markers for all PAHs.
2. Higher assessment criteria are possible and may be agreed with the regulator on a case by case basis, for example, depending on the Soil Organic Matter content of the imported material.

Determinant	Assessment Criteria	Assessment Criteria
TPH Series	Private Gardens (Resi_{WHGP}) mg/kg	Soft Landscaping (POS_{resi}) mg/kg
Aliphatic EC5-6	42	70,000
Aliphatic EC6-8	100	600,000
Aliphatic EC8-10	27	13,000
Aliphatic EC10-12	130	13,000
Aliphatic EC12-16	1,100	13,000
Aliphatic EC16-35	65,000	250,000
Aliphatic EC35-44	65,000	250,000
Aromatic EC5-7	70	56,000
Aromatic EC7-8	130	56,000
Aromatic EC8-10	34	5,000
Aromatic EC10-12	74	5,000
Aromatic EC12-16	140	5,100
Aromatic EC16-21	260	3,800
Aromatic EC21-35	1,100	3,800
Aromatic EC35-44	1,100	3,800
Aliphatic & Aromatic EC >44-70	1,600	3,800