



Technical Note

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Turnkey ref: 0112-TN003i5

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Title: CTC, Hayes – Blocks C, E and F Addendum Verification Report

1 Introduction

JJ Rhatigan instructed Turnkey Regeneration Limited (Turnkey) to prepare an addendum Verification Report at their CTC Hayes site. This report is 'Issue 5', following further import of topsoil to Block C and assessment of chemical data from imported topsoil used in Blocks C, E & F.

This addendum report is specific for Blocks C, E and F and provides an update to the site-wide Verification Report referenced below:

- Turnkey Verification Report (Final). Crown Trading Centre, Hayes. Ref: 0112-R002i3. Dated: March 2025

As part of the requirements set out in the Remediation Method Statement (RMS)¹, verification of the clean cover to be placed as part of soft landscaping is required, underlain by a marker layer when at ground level. Landscaping is subject to the ground level and also at podium level in planters – the layouts, also showing block areas, is presented in Appendix A for these levels. The landscaping to the west of Block E will be fenced off (inaccessible to future residents as it will be part of the construction site) and handed over with another block; this slight variation to the block plan is shown in Appendix A (see third drawing).

For clarity, all works regarding contamination-related conditions are complete for these three blocks.

1.1 Regulatory Context

The primary objective of this addendum Verification Report is to seek partial discharge of Planning Condition 36iii and iv (Ref: Hillingdon 73955/APP/2022/3516) for the CTC Hayes development as outlined below:

(iii) Upon completion of the approved remedial works, this condition will not be discharged until a comprehensive verification report has been submitted to and approved by the LPA. The report shall include the details of the final remediation works and their verification to show that the works for each phase have been carried out in full and in accordance with the approved methodology.

(iv) No contaminated soils or other materials shall be imported to the site. All imported soils for landscaping purposes shall be clean and free of contamination.

Before any part of the development is occupied, all imported soils shall be independently tested for chemical contamination, and the results of this testing shall be submitted and approved in writing by the Local Planning Authority. All soils used for gardens and/or landscaping purposes shall be clean and free of contamination.

¹ Turnkey Remediation Statement (Final). Crown Trading Centre, Hayes. Ref: 0097-R002i3. Dated: May 2023

REASON

To ensure that risks from land contamination to the future users of the land and neighbouring land are minimised, together with those to controlled waters, property and ecological systems and the development can be carried out safely without unacceptable risks to workers, neighbours and other offsite receptors in accordance with 'Hillingdon Local Plan: Part 2 (January 2020) Policies – DMEI 11: Protection of Ground Water Resources and DMEI 12: Development of Land Affected by Contamination'

Planning Condition 36i was discharged in 2023 and it is understood that Turnkey's recent verification report discharged Planning Condition 36ii.

1.2 Objectives

The objectives of this addendum Verification Report are summarised below:

- Partial discharge of Planning Condition 36ii, iii & iv of planning permission 73955/APP/2022/3516 (wording updated via Non Material Amendment reference: 73955/APP/2025/604).
- ensure any identified potential pollutant linkages are broken or will be broken on completion of the works across sectional areas; and
- comply with all relevant planning conditions and ensure works are carried out in a suitable manner to discharge relevant planning conditions.

The report has been completed in accordance with Land Contamination: Risk Management (issued October 2020 and updated July 2023 and June 2025).

2 Topsoil and Soft Landscaping Verification

Topsoil to be utilised within Blocks C, E and F as a clean cover layer comprises is supplied from two sources:

- Boughton Loam Ltd. Telford Way. Kettering. Northamptonshire NN16 8UN
- Springfield Direct Ltd. Denham. Middlesex UB9 4DF

Supplier documentation is presented in Appendix A. JJ Rhatigan also supplied Turnkey with certification from the supplier confirming that the soils complied with the chemical thresholds set in the verification criteria and those set out in BS3882 Specification for Topsoil.

The imported topsoil is to be used within plant boxes and soft landscaping areas within Blocks C, E and F.

To refresh on the frequency of sampling, 1 sample per 100m³ for the first 500m³ and then every 500m³ for further import, should the source be consistent. The sources have proven to be consistent.

2.1 Verification Testing of Imported Soil

The following sections are reported in the chronological order that topsoil was imported.

2.1.1 Block F

Based on information provided by JJ Rhatigan, the volume of topsoil imported for use in Block F was 275m³. An initial 6 no. samples of the topsoil so far delivered to site were collected for testing (3 no. from each source, meaning there was flexibility on where each was used and represent adequate quota to also partially represent topsoil used in Block E). The contractor deemed these to be representative of the Block F topsoil, i.e. negating the need for further sampling/testing.

The samples were analysed for the suite of contaminants listed in the RMS including heavy metals, polycyclic aromatic hydrocarbons (PAHs), speciated total petroleum hydrocarbons (TPH), other organics and asbestos. This is with the exception of 1 no. sample (TS3-03) where a marginal exceedance of vanadium (84mg/kg vs screening criteria of 82mg/kg) was recorded. This is not considered a significant issue (see Section 2.2 for further justification). Asbestos was not identified in any of the samples analysed.

The analytical data was screened against the RMS verification criteria for imported material with no exceedances identified in majority of the samples. This is with the exception of 2 no. samples (TS2-01 and TS2-03) from the same source where very marginal exceedances of boron (3.1mg/kg vs screening criteria of 3.0mg/kg) was recorded. This is not considered to be a significant issue (see Section 2.2 for further justification). Asbestos was not identified in any of the samples analysed.

The verification screening exercise is reported in Appendix B with the laboratory certificates of analysis provided in Appendix C.

2.1.2 Block E

The maximum volume of topsoil imported for use in Block E is ~380m³, as confirmed by JJ Rhatigan. To build on what was sampled to represent Block F, a further 3 no. samples of the material were collected that the contractor deemed to be representative of the Block E topsoil material, thus negating the requirement for further sampling/testing. In addition, some imported sand was utilised in planters at podium level and therefore 1 no. representative sample (sample ref. SS01-01) of this material was collected for record purposes².

The samples were analysed for the suite of contaminants listed in the RMS including heavy metals, PAHs, speciated TPH, other organics and asbestos.

The analytical data was screened against the RMS verification criteria for imported material with no exceedances identified in majority of the samples.

The verification screening exercise is reported in Appendix B with the laboratory certificates of analysis provided in Appendix C.

2.1.3 Block C

The maximum volume of topsoil imported for use in Block C is ~640m³, as confirmed by JJ Rhatigan. The topsoil areas are shown in a drawing presented in Appendix A. To build on what was sampled to represent Blocks E and F, a further 4 no. samples of the material were collected that the contractor deemed to be representative of the Block C topsoil material, thus negating the requirement for further sampling/testing.

The samples were analysed for the suite of contaminants listed in the RMS including heavy metals, PAHs, speciated TPH, other organics and asbestos.

The analytical data was screened against the RMS verification criteria for imported material with no exceedances identified in majority of the samples. This is with the exception of 2 no. samples (TS1-04 and TS1-07) from the same source where very marginal exceedances of boron (3.2mg/kg and 3.4mg/kg vs screening criteria of 3.0mg/kg) was recorded. This is not considered to be a significant issue (see Section 2.2 for further justification). Asbestos was not identified in any of the samples analysed.

The verification screening exercise is reported in Appendix B with the laboratory certificates of analysis provided in Appendix C.

2.2 Justification for use of topsoil with marginal boron and vanadium exceedances

Following the marginal exceedances recorded for boron and vanadium (as indicated in Section 2.1), it is imperative to provide justification to show that these exceedances are not detrimental to human health – these points are outlined below.

2.2.1 Statistical analysis

It is possible to undertake statistical analysis under planning using the UCL95 approach in line with the CL:AIRE Statistical Guidance³, which is a conservative approach (e.g. when compared to Part 2A, which

² This material does not constitute part of the required thickness of topsoil in locations where it was used.

³ CL:AIRE (2008); Guidance on Comparing Soil Contamination Data with a Critical Concentration

uses LCL95). This assessment was undertaken for the two contaminants (boron and vanadium), which recorded exceedances of the RMS verification criteria for imported material. The outputs from the calculations are outlined below:

- Boron – UCL95 = 2.86mg/kg versus screening criteria of 3.0mg/kg
- Vanadium – UCL95 = 45.59mg/kg versus screening criteria of 82mg/kg

From the above, the UCL95 values are below the RMS verification criteria. This means that the topsoil is suitable for its intended use without further action.

Additional information on the assessment is presented in Appendix B.

2.2.2 Derivation of cover layer and import verification criteria

Under typical circumstances, in order to identify potential contaminants of concern (CoC), soil analytical data is screened against Land Quality Management Suitable 4 Use Levels (S4UL)^{4,5} generic assessment criteria (GAC) for public open space – residential⁶ (POSresi) and residential - with homegrown produce (Resi hgp)⁷ end use.

However, in order to be conservative and reduce the potential for increasing the contaminant load on the site (via importation of material with high concentrations), some of the RMS verification criteria were derived using historic concentrations recorded at the site, i.e. lower than the S4UL GAC. This rationale is presented in Appendix C2 of the Remediation Statement. The criteria for boron and vanadium were based on “twice site-wide average” of concentrations recorded on the site.

For completeness, the topsoil concentrations have now also been screened against the S4UL GACs for both POSresi and Resihgp, with no exceedances recorded (including for the two compounds under consideration).

In addition, the mean concentrations for each compound were also calculated with the resulting concentrations below all the screening criteria, including the RMS verification criteria and the S4UL for POSresi and Resihgp.

A breakdown of the comparison for boron and vanadium is outlined in Table 2.1 below with the full screening spreadsheet provided in Appendix B.

⁴ LQM/CIEH S4ULs (2015) for Human Health Risk Assessment (Copyright Land Quality Management Limited reproduced with permission); publication number S4UL3759.

⁵ Category 4 Screening Levels (C4SL) will sometimes be considered in screening contaminant concentrations but there are no C4SL values for a number of contaminants (including boron and vanadium) and therefore S4UL is generally utilised.

⁶ This is the end use of the development based on conceptual site model submitted for Planning

⁷ This is considered the most conservative S4UL GAC

Table 2.1: Boron and vanadium comparison against various screening criteria

Contaminant	Recorded Concentration (mg/kg)	UCL (mg/kg)	Mean Concentration (mg/kg)	Site Derived GAC (mg/kg)	S4UL GAC (POSresi) ⁸ mg/kg	S4UL GAC (Reshgp) ⁸ mg/kg
Boron	3.1	2.86	2.46	3.0	290	21,000
Vanadium	84	45.59	33.71	82	410	2000


Based on the above evidence, we can conclude that the topsoil utilised in the development is suitable for intended use with no detriment to human health.

2.3 Verification of Thickness of Clean Cover

There is a requirement to confirm that 600mm thickness of clean cover (i.e. imported topsoil) was installed within soft landscaping areas in Blocks C, E and F, as indicated in the RMS. Where laid on site won soils, a marker layer (e.g. terram) should be laid prior to topsoil being laid.

The contractor has verified that the recommended 600mm thick topsoil was placed across the soft landscaping areas. Example photos are presented in Appendix D. The only exception to this is within the footprint of installed below ground utilities where a reduced thickness of topsoil has been installed (typically 300-450mm).


Site photographs showing the topsoil and marker layer placement is presented in Appendix D.



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⁸ The screening criteria was developed with the following assumptions which have been changed from the CLEA default parameter set. Soil type is a sandy loam with an organic matter content of 1%. The is considered to be more conservative than the CLEA default of 6%.

Third-Party Disclaimer

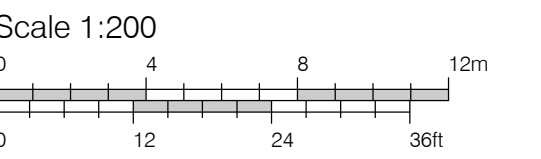
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Appendix A – Supporting Documentation

GENERAL NOTES

- DO NOT SCALE FROM THIS DRAWING
- ALL DIMENSIONS TO BE CHECKED ON SITE
- ANY DISCREPANCIES SHOULD BE REPORTED TO THE ARCHITECT - CONTRACT ADMINISTRATOR



Key

- Section 1 - Block F Show Flats
- Section 2 - Block F
- Section 3 - Block E
- Section 4 - Block C
- Section 5 - Block A Show Flats
- Section 6 - Block B
- Section 7 - Block A
- Section 8 - Block D & Energy Centre

P01 09.09.2022 Stage 3B Issue - Scheme adjusted to 2 stairs per core

Rev	Date	Description
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CLIENT
Greystar

PROJECT
CTC - Stage 3B (SEP 2022)

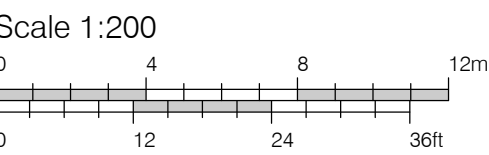
DRAWING NAME
Stage 3B - Ground Floor - GA Plan

STATUS			DATE
TENDER			MAY 2022
DRAWN BY JM	CHECK BY AD	SCALE 1 : 200	SIZE A1
JOB NO. 1140	DRAWING NO. 010101	REVISION P01	

1140CTC-FRA-ZZ-00-DR-A-010101

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Key

- Section 1 - Block F Show Flats
- Section 2 - Block F
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- Section 5 - Block A Show Flats
- Section 6 - Block B
- Section 7 - Block A
- Section 8 - Block D & Energy Centre

P01 09.09.2022 Stage 3B Issue - Scheme adjusted to 2 stairs per core

Rev	Date	Description	©
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CLIENT
Greystar

PROJECT
CTC - Stage 3B (2022)

DRAWING NAME
Stage 3B - First Floor

STATUS			DATE
TENDER			MAY 2022
DRAWN BY JM	CHECK BY AD	SCALE 1 : 200	SIZE A1
JOB NO. 1140	DRAWING NO. 010103	REVISION P01	

1140CTC-FRA-ZZ-01-DR-A-010103