

## North Street development, Emsworth





Parchow Groundworks Ltd

31A North St, Emsworth, PO10 7DA

Cover system validation report

Prepared:

28<sup>th</sup> September 2023

Report reference:

PGW001

Client Name: CHS Ltd

Reference: PGW001

Issue: FINAL

Date: 29<sup>th</sup> September 2023

Approval Status: Works

completed to specification  
agreed with the LPA and the  
lead designer

Prepared By: A J

Musselwhite

Checked By: A J Musselwhite

Position: Technical Manager

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## 1. Introduction

### 1.1 Purpose

The Geo-environmental report previously undertaken and submitted to the LPA identified contaminants in the existing sub-surface that were considered a possible latent risk to human health. To mitigate the consultant proposed a cover system to the greenspace areas to protect those who live in the properties or who may carry out conventional works on the properties garden areas.

### 1.2 Scope

Upon further discussion with the lead design team, PWP Architects, and the LPA the original cover system brief has seen the biotic layer replaced along with the sub-soil material. The section detail shows sub-soil being used but as BS8601:2013 sub-soil is virtually impossible to procure commercially after discussion the decision was made to replace with topsoil. In place of both elements is the use of fully accredited BS:3882 topsoil. The original system was 150mm biotic/300mm sub-soil/150mm topsoil. This is now 600mm of accredited topsoil. This is in no way an expediency as the use of this material was commercially less attractive but practically better and gave assurance on the materials used.

The no-dig membrane remains as a visual deterrent to deter any excavations into the risk strata at depths below the cover system.

### 1.3 Evidence

Appended are the images and documents that corroborate the proposal and implementation of the works at the various stages of the project.

- PWP section detail showing the proposed section detail.
- Conveyance invoicing for topsoil deliveries
- BS3882 matrix pyramid testing proof of topsoil origin and provenance
- Survey of the formation level at former biotic level
- Images of the works in progress
- Images of the completed garden areas



# PARCHOW

## GROUNDWORKS LTD



Invoice 69168  
TJ Transport Limited  
127 Wickham Road  
Fareham  
Hampshire  
PO17 5BP

Tel: 01329226446  
Email: [enquiries@tj-transport.co.uk](mailto:enquiries@tj-transport.co.uk)  
Web: [www.tj-transport.co.uk/](http://www.tj-transport.co.uk/)

|                             |                  |                          |
|-----------------------------|------------------|--------------------------|
| To :                        | Site :           | Invoice                  |
| Parchow Groundworks Limited | 31A North Street | Date Created 14-Jun-2023 |
|                             | Emsworth         | Account No. PAR005       |
| New Down Lane               | PO10 7DA         | Invoice No. 69168        |
| Waterlooville               |                  |                          |
| Hampshire                   |                  |                          |
| PO7 5SE                     |                  |                          |

| Date        | Order No    | Description                                                               | Rate   | Amount  |
|-------------|-------------|---------------------------------------------------------------------------|--------|---------|
| 14-Jun-2023 | 406/6/45/SC | Material delivery, Ticket : 356060, 16.82 Tonnes, 15/20mm BS3882 Topsoil, | £26.95 | £453.30 |

|                 |         |
|-----------------|---------|
| Net Total       | £453.30 |
| Value Added Tax | £90.66  |
| Total           | £543.96 |

Registered No: 2889704 VAT  
Reg No: 619996475

Standard payment terms are  
30 days EOM

Sort Code : 40-61-35  
Account No : 03006087  
Bank : HSBC  
Payment Terms : 30 Day EOM



TJ Transport Limited  
127 Wickham Road  
Fareham  
Hampshire  
PO17 5BP

Tel: 01329226446  
Email: enquiries@tj-transport.co.uk  
Web: www.tj-transport.co.uk/

### Conveyance Note

| Description of Transfer           |                        | Driver                      |                                                                                      |
|-----------------------------------|------------------------|-----------------------------|--------------------------------------------------------------------------------------|
| Ticket Number                     | 356060                 | Full Name                   | Denis Harrison                                                                       |
| Material Description              | 15/20mm BS3882 Topsoil | Company Name and Address    | TJ Transport Limited<br>127 Wickham Road,<br>Fareham, Hampshire, PO17 5BP            |
| Quantity in Tonnes                | 16.82 Tonnes           |                             |                                                                                      |
| Transfer Date and Time            | 14-Jun-2023 09:31:09   | Driver Signature            |  |
| Waste Carrier Registration Number | CBDU133054             | Vehicle Registration Number | E5 TJT                                                                               |
| Order Number                      | 406/6/45/SC            |                             |                                                                                      |

| From:                    |                                                                                       | To:                      |                                                                         |
|--------------------------|---------------------------------------------------------------------------------------|--------------------------|-------------------------------------------------------------------------|
| Full Name                | Weigh bridge                                                                          | Full Name                | Spider A                                                                |
| Weighbridge number       | D0752307                                                                              | Weighbridge number       | D0752307                                                                |
| SIC Code                 |                                                                                       |                          |                                                                         |
| Company Name and Address | Woodhorn Group Ltd<br>Woodhorn - Tangmere<br>Cityfields Way<br>Chichester<br>PO20 2FT | Company Name and Address | Parchow Groundworks Limited<br>31A North Street<br>Emsworth<br>PO10 7DA |
| Time and Date            | 14-Jun-2023 09:31:09<br>50.84203338623<br>-0.695811986923                             | Time and Date            | 14-Jun-2023 10:14:17<br>50.841709136963<br>-0.851763308048              |
| Signature                |    | Signature                | SPIDER                                                                  |

**Invoice To:**

Parchow Groundworks Ltd  
New Down Lane  
Waterlooville  
PO7 5SE

**Invoice Date**

15/06/2023

**Due Date**

15/07/2023

**Customer Code**

PG01

**Invoice Number**

SI-22499

**SALES INVOICE**

| Code          | Description       | Qty/Hrs | Price/Rate | VAT % |
|---------------|-------------------|---------|------------|-------|
| 8wh<br>Tipper | Muck Away Haulage | 3.00    | 95.00      | 20.00 |

| VAT Rate                 | Net     | VAT    |
|--------------------------|---------|--------|
| Standard 20.00% (20.00%) | £285.00 | £57.00 |

|              |                |
|--------------|----------------|
| Total Net    | 285.00         |
| Total VAT    | 57.00          |
| <b>TOTAL</b> | <b>£342.00</b> |

**Notes:**

Horndean to North Street, Emsworth Top Soil Haulage Ticket 69452/64529/65566



Invoice 68993  
TJ Transport Limited  
127 Wickham Road  
Fareham  
Hampshire  
PO17 5BP

Tel: 01329226446  
Email: [enquiries@tj-transport.co.uk](mailto:enquiries@tj-transport.co.uk)  
Web: [www.tj-transport.co.uk/](http://www.tj-transport.co.uk/)

| To :                        | Site :           | Invoice                  |
|-----------------------------|------------------|--------------------------|
| Parchow Groundworks Limited | 31A North Street | Date Created 12-Jun-2023 |
| New Down Lane               | Emsworth         | Account No. PAR005       |
| Waterlooville               | PO10 7DA         | Invoice No. 68993        |
| Hampshire                   |                  |                          |
| PO7 5SE                     |                  |                          |

| Date        | Order No    | Description                                                               | Rate   | Amount  |
|-------------|-------------|---------------------------------------------------------------------------|--------|---------|
| 12-Jun-2023 | 406/6/45/SC | Material delivery, Ticket : 356059, 17.74 Tonnes, 15/20mm BS3882 Topsoil, | £26.95 | £478.09 |

|                 |         |
|-----------------|---------|
| Net Total       | £478.09 |
| Value Added Tax | £95.62  |
| Total           | £573.71 |

Registered No: 2889704 VAT  
Reg No: 619996475

Standard payment terms are  
30 days EOM

Sort Code : 40-61-35  
Account No : 03006087  
Bank : HSBC  
Payment Terms : 30 Day EOM

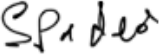


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Web: [www.tj-transport.co.uk/](http://www.tj-transport.co.uk/)

### Conveyance Note

| Description of Transfer           |                        | Driver                      |                                                                                      |
|-----------------------------------|------------------------|-----------------------------|--------------------------------------------------------------------------------------|
| Ticket Number                     | 356059                 | Full Name                   | Martin Wallace                                                                       |
| Material Description              | 15/20mm BS3882 Topsoil | Company Name and Address    | TJ Transport Limited<br>127 Wickham Road,<br>Fareham, Hampshire, PO17 5BP            |
| Quantity in Tonnes                | 17.74 Tonnes           |                             |                                                                                      |
| Transfer Date and Time            | 12-Jun-2023 09:18:40   | Driver Signature            |  |
| Waste Carrier Registration Number | CBDU133054             | Vehicle Registration Number | E4 TJT                                                                               |
| Order Number                      | 406/6/45/SC            |                             |                                                                                      |

| From:                    |                                                                                       | To:                      |                                                                                       |
|--------------------------|---------------------------------------------------------------------------------------|--------------------------|---------------------------------------------------------------------------------------|
| Full Name                | Woodhorns Weighbridge                                                                 | Full Name                | Spider                                                                                |
| Weighbridge number       | 752098                                                                                | Weighbridge number       | 752098                                                                                |
| SIC Code                 |                                                                                       |                          |                                                                                       |
| Company Name and Address | Woodhorn Group Ltd<br>Woodhorn - Tangmere<br>Cityfields Way<br>Chichester<br>PO20 2FT | Company Name and Address | Parchow Groundworks Limited<br>31A North Street<br>Emsworth<br>PO10 7DA               |
| Time and Date            | 12-Jun-2023 09:18:40<br>50.842029571533<br>-0.696237504482                            | Time and Date            | 12-Jun-2023 10:07:11<br>50.84924697876<br>-0.937583327293                             |
| Signature                |    | Signature                |  |

Topsoil testing



TIM O'HARE ASSOCIATES  
SOIL & LANDSCAPE CONSULTANCY

Mr Mike Jupp  
The Woodhorn Group  
Woodhorn Business Centre  
Woodhorn Lane  
Oving  
Chichester  
West Sussex PO20 2BX

24<sup>th</sup> April 2023  
Our Ref: TOHA/23/7915/SS  
Your Ref: PO 25519

Dear Sirs

**Topsoil Analysis Report: Tangmere Composting Site, Chichester – Batch J9**

We have completed the analysis of the soil sample recently submitted, referenced *Tangmere BS3882 Topsoil (BATCH J9)*, and have pleasure reporting our findings.

The purpose of the analysis was to determine the suitability of the sample for general landscape purposes (trees, shrubs, amenity grass). In addition, this sample has been assessed to determine its compliance with the requirements of the British Standard for Topsoil (BS3882:2015 – *Specification for Topsoil – Table 1, Multipurpose Topsoil*).

This report presents the results of analysis for the sample submitted to our office, and it should be considered 'indicative' of the topsoil source. The report and results should therefore not be used by third parties as a means of verification or validation testing or waste designation purposes, especially after the topsoil has left the Woodhorn Group site.

**SAMPLE EXAMINATION**

The sample was described as a dark olive brown (Munsell Colour 2.5Y 3/3), slightly moist, friable, very slightly calcareous SANDY LOAM with a weakly developed, very fine to fine granular and subangular blocky structure\*. The sample was slightly stony and contained a moderate proportion of organic fines and occasional woody fragments. No unusual odours, deleterious material, roots or rhizomes of pernicious weeds were noted.

\*This appraisal of soil structure was made from examination of a disturbed sample. Structure is a key soil characteristic that may only be accurately assessed by examination in an in-situ state.

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Registered in England No. OC324049 Registered Office: The Innovation Centre, Howbery Park, Wallingford, Oxfordshire OX10 8BA

### Phytotoxic Contaminants

Of the phytotoxic (toxic to plants) contaminants determined (copper, nickel, zinc), none was found at levels that exceeded the maximum permissible levels specified in BS3882:2015 – Table 1.

### CONCLUSION

The purpose of the analysis was to determine the suitability of the topsoil sample for general landscape purposes. The analysis has also been undertaken to determine the sample's compliance with the requirements of the British Standard for Topsoil (BS3882:2015 – Specification for Topsoil – Table 1, Multipurpose Topsoil).

From the soil examination and subsequent laboratory analysis, the sample was described as a strongly alkaline, non-saline, very slightly calcareous, sandy loam with a weakly developed structure and very low stone content. The sample was adequately to well supplied with organic matter and all major plant nutrients. Of the potential contaminants determined, none exceeded their respective guideline values.

To conclude, based on our findings, the topsoil represented by this sample would be considered suitable for general landscape purposes (trees, shrubs and amenity grass), provided species with a wide pH tolerance or those known to prefer alkaline soils are selected and the soil's physical condition is satisfactory.

The topsoil was also fully compliant with the requirements of the British Standard for Topsoil (BS3882:2015 – Specification for Topsoil – Table 1, Multipurpose Topsoil).

### RECOMMENDATIONS

#### Soil Handling Recommendations

It is important to maintain the physical condition of the soil and avoid structural damage during all phases of soil handling (e.g. stockpiling, resspreading, cultivating, planting, seeding or turfing). As a consequence, soil handling operations should be carried out when soil is reasonably dry and non-plastic (friable) in consistency.

It is important to ensure that the soil is not unnecessarily compacted by trampling or trafficking by site machinery, and soil handling should be stopped during and after heavy rainfall and not continued until the soil is friable in consistency. If the soil is structurally damaged and compacted at any stage during the course of soiling or landscaping works, it should be cultivated appropriately to relieve the compaction and to restore the soil's structure prior to any planting, turfing or seeding.

Further details on soil handling are provided in Annex A of BS3882:2015.

We hope this report meets with your approval and provides the necessary information. Please do not hesitate to contact the undersigned if we can be of further assistance.

Yours faithfully



**Zoe Duffin**  
MBiol  
Graduate Soil Scientist



**Aaron Cross**  
BSc MSc  
Soil Scientist

For & on behalf of Tim O'Hare Associates LLP



TIM O'HARE ASSOCIATES  
SOIL & LANDSCAPE CONSULTANCY

|             |                                    |
|-------------|------------------------------------|
| Client:     | The Woodhorn Group                 |
| Project:    | Tangmere Compost Site - Chichester |
| Job:        | Topsoil Analysis - BS3882:2015     |
| Date:       | 24/04/2023                         |
| Job Ref No: | TOHA/23/7915/SS                    |

| Sample Reference                  | Accreditation |
|-----------------------------------|---------------|
| Clay (<0.002mm)                   | % UKAS        |
| Silt (0.002-0.05mm)               | % UKAS        |
| Total Sand (0.05-2.0mm)           | % UKAS        |
| Texture Class (UK Classification) | -- UKAS       |
| Stones (2-20mm)                   | % DW GLP      |
| Stones (20-50mm)                  | % DW GLP      |
| Stones (>50mm)                    | % DW GLP      |

|                                                         |       |      |
|---------------------------------------------------------|-------|------|
| pH Value (1:2.5 water extract)                          | units | UKAS |
| Electrical Conductivity (1:2.5 water extract)           | uS/cm | UKAS |
| Electrical Conductivity (1:2 CaSO <sub>4</sub> extract) | uS/cm | UKAS |
| Exchangeable Sodium Percentage                          | %     | UKAS |
| Organic Matter (LOI)                                    | %     | UKAS |
| Total Nitrogen (Dumas)                                  | %     | UKAS |
| C : N Ratio                                             | ratio | UKAS |
| Extractable Phosphorus                                  | mg/l  | UKAS |
| Extractable Potassium                                   | mg/l  | UKAS |
| Extractable Magnesium                                   | mg/l  | UKAS |

|                             |       |        |
|-----------------------------|-------|--------|
| Total Arsenic (As)          | mg/kg | MCERTS |
| Total Cadmium (Cd)          | mg/kg | MCERTS |
| Total Chromium (Cr)         | mg/kg | MCERTS |
| Hexavalent Chromium (Cr VI) | mg/kg | MCERTS |
| Total Copper (Cu)           | mg/kg | MCERTS |
| Total Lead (Pb)             | mg/kg | MCERTS |
| Total Mercury (Hg)          | mg/kg | MCERTS |
| Total Nickel (Ni)           | mg/kg | MCERTS |
| Total Selenium (Se)         | mg/kg | MCERTS |
| Total Zinc (Zn)             | mg/kg | MCERTS |
| Water Soluble Boron (B)     | mg/kg | MCERTS |
| Total Cyanide (CN)          | mg/kg | MCERTS |
| Total (mono) Phenols        | mg/kg | MCERTS |

|                          |       |        |
|--------------------------|-------|--------|
| Naphthalene              | mg/kg | MCERTS |
| Acenaphthylene           | mg/kg | MCERTS |
| Acenaphthene             | mg/kg | MCERTS |
| Fluorene                 | mg/kg | MCERTS |
| Phenanthrene             | mg/kg | MCERTS |
| Anthracene               | mg/kg | MCERTS |
| Fluoranthene             | mg/kg | MCERTS |
| Pyrene                   | mg/kg | MCERTS |
| Benz(a)anthracene        | mg/kg | MCERTS |
| Chrysene                 | mg/kg | MCERTS |
| Benzo(b)fluoranthene     | mg/kg | MCERTS |
| Benzo(k)fluoranthene     | mg/kg | MCERTS |
| Benzo(a)pyrene           | mg/kg | MCERTS |
| Indeno(1,2,3-cd)pyrene   | mg/kg | MCERTS |
| Dibenzo(a,h)anthracene   | mg/kg | MCERTS |
| Benzo(g,h,i)perylene     | mg/kg | MCERTS |
| Total PAHs (sum USEPA16) | mg/kg | MCERTS |

|                          |       |        |
|--------------------------|-------|--------|
| Aliphatic TPH >C5 - C6   | mg/kg | MCERTS |
| Aliphatic TPH >C6 - C8   | mg/kg | MCERTS |
| Aliphatic TPH >C8 - C10  | mg/kg | MCERTS |
| Aliphatic TPH >C10 - C12 | mg/kg | MCERTS |
| Aliphatic TPH >C12 - C16 | mg/kg | MCERTS |
| Aliphatic TPH >C16 - C21 | mg/kg | MCERTS |
| Aliphatic TPH >C21 - C35 | mg/kg | MCERTS |
| Aliphatic TPH (C5 - C35) | mg/kg | MCERTS |
| Aromatic TPH >C5 - C7    | mg/kg | MCERTS |
| Aromatic TPH >C7 - C8    | mg/kg | MCERTS |
| Aromatic TPH >C8 - C10   | mg/kg | MCERTS |
| Aromatic TPH >C10 - C12  | mg/kg | MCERTS |
| Aromatic TPH >C12 - C16  | mg/kg | MCERTS |
| Aromatic TPH >C16 - C21  | mg/kg | MCERTS |
| Aromatic TPH >C21 - C35  | mg/kg | MCERTS |
| Aromatic TPH (C5 - C35)  | mg/kg | MCERTS |

|                                    |       |        |
|------------------------------------|-------|--------|
| Benzene                            | mg/kg | MCERTS |
| Toluene                            | mg/kg | MCERTS |
| Ethylbenzene                       | mg/kg | MCERTS |
| p & m-xylene                       | mg/kg | MCERTS |
| o-xylene                           | mg/kg | MCERTS |
| MTBE (Methyl Tertiary Butyl Ether) | mg/kg | MCERTS |

|                 |      |           |
|-----------------|------|-----------|
| Asbestos Screen | ND/D | ISO 17025 |
|-----------------|------|-----------|

SL = SANDY LOAM

#### Visual Examination

The sample was described as a dark olive brown (Munsell Colour 2.5Y 3/3), slightly moist, friable, very slightly calcareous SANDY LOAM with a weakly developed, very fine to fine granular and subangular blocky structure. The sample was slightly stony and contained a moderate proportion of organic fines and occasional woody fragments. No unusual odours, deleterious material, roots or rhizomes of pernicious weeds were noted.

Results of analysis should be read in conjunction with the report they were issued with

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#### Batch J9

|    |
|----|
| 12 |
| 12 |
| 76 |
| SL |
| 1  |
| 0  |
| 0  |

|      |
|------|
| 8.2  |
| 906  |
| 2784 |
| 4.5  |
| 6.1  |
| 0.21 |
| 17   |
| 47   |
| 1142 |
| 197  |

|       |
|-------|
| 6     |
| < 0.2 |
| 11    |
| < 1.8 |
| 11    |
| 12    |
| < 0.3 |
| 22    |
| < 1.0 |
| 34    |
| 1.6   |
| < 1.0 |
| < 1.0 |

|        |
|--------|
| < 0.05 |
| < 0.05 |
| < 0.05 |
| < 0.05 |
| < 0.05 |
| < 0.05 |
| 0.07   |
| 0.09   |
| < 0.05 |
| < 0.05 |
| < 0.05 |
| < 0.05 |
| < 0.05 |
| < 0.05 |
| < 0.05 |
| < 0.05 |
| < 0.80 |

|         |
|---------|
| < 0.001 |
| < 0.001 |
| < 0.001 |
| < 1.0   |
| < 2.0   |
| < 8.0   |
| < 8.0   |
| < 10    |
| < 0.001 |
| < 0.001 |
| < 0.001 |
| < 1.0   |
| < 2.0   |
| < 10    |
| < 10    |
| < 10    |

|         |
|---------|
| < 0.005 |
| < 0.005 |
| < 0.005 |
| < 0.005 |
| < 0.005 |
| < 0.005 |

Not Detected



Zoe Duffin  
MBiol  
Graduate Soil Scientist

### ANALYTICAL SCHEDULE

The sample was submitted to a UKAS and MCERTS accredited laboratory for a range of physical and chemical tests to confirm the composition and fertility of the soil, and the concentration of selected potential contaminants. The following parameters were determined:

- particle size analysis (sand, silt, clay);
- stone content (2-20mm, 20-50mm, >50mm);
- pH and electrical conductivity values;
- exchangeable sodium percentage;
- major plant nutrients (N, P, K, Mg);
- organic matter content;
- C:N ratio;
- heavy metals (As, B, Cd, Cr, Cu, Pb, Hg, Ni, Se, Zn);
- total cyanide and total (mono) phenols;
- speciated PAHs (US EPA16 suite);
- aromatic and aliphatic TPH (C5-C35 banding);
- benzene, toluene, ethylbenzene, xylene (BTEX);
- asbestos screen.

The results are presented on the attached Certificate of Analysis and an interpretation of the results is given below.

### RESULTS OF ANALYSIS

#### Particle Size Analysis and Stone Content

The sample fell into the *sandy loam* texture class, which is usually considered suitable for general landscape applications provided the soil's physical condition is satisfactory.

The sample was virtually stone-free and as such, stones should not restrict the use of the soil for general landscape purposes.

#### pH and Electrical Conductivity Values

The sample was strongly alkaline in reaction (pH 8.2). This pH value would be considered suitable for general landscape purposes provided species with a wide pH tolerance or those known to prefer alkaline soils are selected for planting, turfing and seeding.

The electrical conductivity (salinity) value (water extract) was moderate, which indicates that soluble salts should not be present at levels that would be harmful to plants.

The electrical conductivity value by CaSO<sub>4</sub> extract (BS3882 requirement) fell below the maximum specified value (3300 µS/cm) given in BS3882:2015 – Table 1.

#### Organic Matter and Fertility Status

The sample was adequate to well supplied with organic matter and all major plant nutrients.

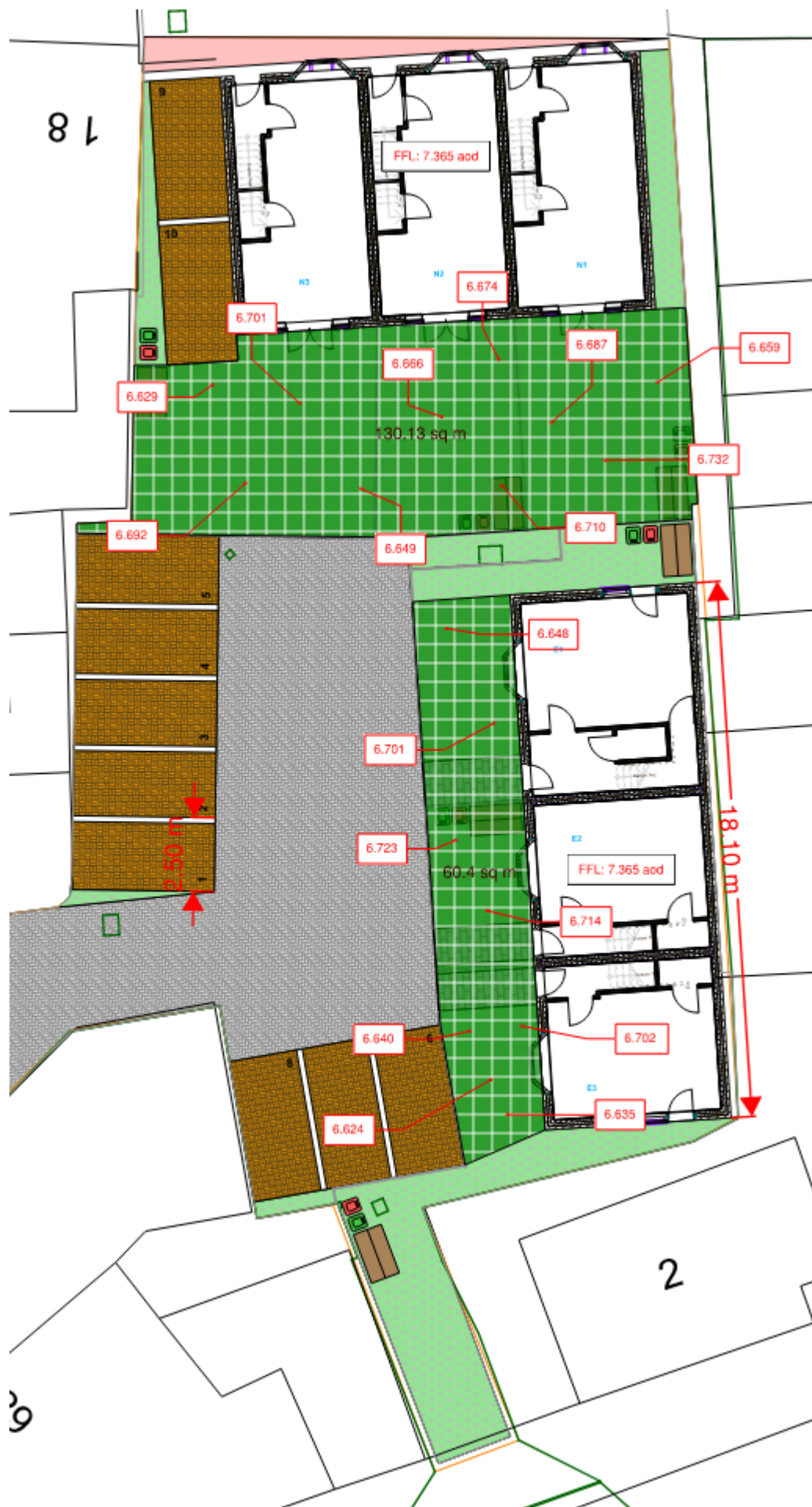
The C:N ratio of the sample was acceptable for general landscape purposes.

#### Potential Contaminants

With reference to BS3882:2015 - Table 1: Notes 3 and 4, there is a requirement to confirm levels of potential contaminants in relation to the topsoil's proposed end use. This includes human health, environmental protection and metals considered toxic to plants. In the absence of site-specific assessment criteria, the concentrations that affect human health have been compared with the *residential with homegrown produce* land use in the Suitable For Use Levels (S4ULs) presented in *The LQM/CIEH S4ULs for Human Health Risk Assessment* (2015) and the DEFRA SP1010: *Development of Category 4 Screening Levels (C4SLs) for Assessment of Land Affected by Contamination – Policy Companion Document* (2014).

Of the potential contaminants determined, none exceeded their respective guideline values.

Survey information



## Works images













20230609\_1433205  
69\_iOS.mp4



20230608\_1513121  
27\_iOS.mp4











## Completed gardens











