

**SOIL RESOURCES AT
ST MARY THE VIRGIN SCHOOL
CARDIFF**

Report 1535/1

21st March, 2019

**SOIL RESOURCES AT ST MARY THE VIRGIN SCHOOL,
CARDIFF**

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Report 1535/1
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SUMMARY

This report provides information on the soils resources of playing fields at St Mary the Virgin School.

The site is made up of very slightly stony medium clay loam topsoils over made ground of demolition rubble. The topsoil resources are of a high quality for re-use in landscaping schemes. Subsoil for planting would need to be imported and meet British Standards (BS 8601:2013) and the specifications detailed in this report.

1.0 Introduction

- 1.1 This report provides information on the soils of playing fields at St Mary the Virgin School. The report is based on a survey of the land in March 2019.

SITE ENVIRONMENT

- 1.2 The survey area comprises a grass playing field and a garden area. The site is bordered to the north by St Mary's Church, to the east by Bute Street, to the south by residential development and in the west by Canal Parade.

PUBLISHED INFORMATION

- 1.3 1:50,000 scale BGS information records the site to be underlain by Tidal Flat Deposits over Mercia Mudstone.

2.0 Soils

- 2.1 A detailed soil resource and agricultural quality survey was carried out in March 2019. It was based on observations evenly distributed across the playing field and garden. During the survey, soils were examined by augerings to a maximum depth of 35 cm. A log of the sampling points and a map (Map 1) showing their location is in an appendix to this report.
- 2.2 The land comprises medium clay loam topsoils that are very slightly stony and well structured over broken asphalt and/or demolition rubble impenetrable by hand auger.

TOPSOILS

- 2.3 The medium clay loam topsoils are high quality resources for reuse being well structured and friable with a low stone content. They are suitable for use in most landscaping schemes and should be stripped to a depth of **200 mm** and stockpiled carefully for re-use.

SUBSOILS

- 2.4 There is no subsoil resource at site. The current greenspace has been created over demolition rubble which explains the lack of natural subsoil present (observed on historic aerial imagery from 1945). In order for landscape planting to be successful, subsoil must be imported to replicate a natural soil profile. Imported materials should be of loamy or sandy loam texture, less than 18% clay content and low in stone content; they should also meet British Standards for subsoils (BS 8601:2015).



Figure 1: Left – Made ground with large amounts of demolition rubble; Right – Topsoil over asphalt at 25 cm depth

3.0 Soils and landscape design

TREE STANDARDS

- 3.1 900 mm tree planting pits will be backfilled with 600 mm of imported subsoil material (to the specifications detailed in paragraph 2.4 of this report) and 300 mm of site-won topsoil.

AMENITY GRASSLAND

- 3.2 Amenity grassland will use between 150-300 mm of the on site topsoil resource rotovated to a depth of 100 mm.

SHRUB/HEDGE PLANTING

- 3.3 Shrub and hedge planting will involve a 300-450 mm deep trench, backfilled with site won topsoil.

4.0 Soil Handling

- 4.1 All soil resources are easily damaged by being stripped or moved when wet. Consequently, to ensure the topsoil is maintained as a high quality resource, stripping should not take place during or just after (within 24 hours) of heavy rainfall and should be carried out using the excavator and dumper method described by Sheet 1 in the MAFF Good Practice Guide for Handling Soils.
- 4.2 Soil handling will be undertaken when soils are sufficiently dry to be friable and not plastic (this can be judged by whether a 3 mm thick thread can be rolled under current site conditions). All soil handling would be best conducted during dry weather between late May and early September, when the soils are likely to be in their best handling condition.
- 4.3 Construction traffic will be restricted to designated roadways to avoid soil compaction.
- 4.4 Stripped topsoil should be kept in a separate bund to any imported subsoils and not stored any more than 4 m high. The soil stockpiles should be kept grassed and free from construction traffic until required for reuse/ The bunds will be constructed either by excavator or bulldozer (Sheets 2 and 14 in the MAFF Good Practice Guide) avoiding over-compaction. Where in use for greater than six months, they will be sown with grass to help maintain biological activity and prevent water erosion. The Construction Code of Practice for Sustainable Use of Soils on Construction Sites (Defra, 2009) guidance on good practice in soil handling will be fully adhered to.
- 4.5 The soils will be removed from storage (Sheet 3 in the MAFF Good Practice Guide) and replaced by excavator using the loose tipping technique (Sheet 4 in MAFF Good Practice Guide), which avoids traffic on the restored surfaces.

MONITORING

- 4.6 A suitably qualified practitioner will review the imported subsoil material to confirm they meet the specification of this report and are fit for use in the landscaping scheme.

APPENDIX
MAPS AND DETAILS OF OBSERVATIONS

Soils at St Mary the Virgin School: Details of observations at each sampling point

Obs No	Topsoil			Upper subsoil			Lower subsoil			Slope (°)	Wetness Class
	Depth (cm)	Texture	Stones >20 mm (%)	Depth (cm)	Texture	Mottling	Depth (cm)	Texture	Mottling		
1	0-11	MCL	<5	11+	Asphalt / gravel					0	IV
2	0-20	MCL	<5	20+	Asphalt					0	IV
3	0-10	MCL	<5	10+	Asphalt					0	IV
4	0-20	MCL	<5	20+	Asphalt					0	IV
5	0-25	MCL	<5	25+	Asphalt					0	IV
6	0-17	MCL	<5	17+	Asphalt					0	IV
7	0-20	MCL	<5	20-35	SCL sl st	35+	Asphalt			0	IV
8	0-15	MCL	<5	15+	Asphalt					0	IV

Key to table

Mottle intensity:

- o unmottled
- x few to common rusty root mottles (topsoils)
or a few ochreous mottles (subsoils)
- xx common to many ochreous mottles and/or dull structure faces
- xxx common to many greyish or pale mottles (gleyed horizon)
- xxxx dominantly grey, often with some ochreous mottles (gleyed horizon)

a depth underlined (e.g. 50) indicates the top of a slowly permeable layer
(a wavy underline indicates the top of a layer borderline to slowly permeable)

Texture:

- C - clay
- ZC - silty clay
- SC - sandy clay
- CL - clay loam (H-heavy, M-medium)
- ZCL - silty clay loam (H-heavy, M-medium)
- SCL - sandy clay loam
- SZL - sandy silt loam (F-fine, M-medium, C-coarse)
- SL - sandy loam (F-fine, M-medium, C-coarse)
- LS - loamy sand (F-fine, M-medium, C-coarse)
- S - sand (F-fine, M-medium, C-coarse)
- P - peat (H-humified, SF-semi-fibrous, F-fibrous)
- LP - loamy peat; PL - peaty loam
- R - bedrock

Limitations:

- W - wetness/workability
- D - droughtiness
- De - depth
- St - stoniness
- Sl - slope
- F - flooding
- T - topography/microrelief

Texture suffixes & prefixes:

- ca - calcareous: x-extremely, v-very, sl-slightly
- (ca) marginally calcareous
- mn - ferrimanganiferous concentrations
- gn - greenish, yb - yellowish brown, rb - reddish brown
- r - reddish; (v)st - (very) stony; sdst - sandstone; lst - limestone
- dist - disturbed soil layer; mdst - mudstone



Client:

Earth Science Partnership
Consulting Engineers | Geologists | Environmental Scientists

Project:

**St Mary the Virgin,
Cardiff**

Map title:

**Map 1
Survey observations**

KEY

 Survey Observation

 Site Boundary

Scale: 1:2,000

Date: 21/3/2019

**Land
Research**
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