



Laing O'Rourke



Proposed Margam Substation

Soil Resource Management Plan

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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK ADAS Ltd.

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1 INTRODUCTION

1.1 Sope of Works

National Grid Electricity Transmission (NGET) has appointed Laing O'Rourke as the principal contractor for the delivery of a critical infrastructure project in South Wales. Full planning application for the extension of the Margam 275kV substation including the erection of a gas insulated switchgear hall (GIS hall) and the demolition of the existing control and amenities buildings to enable the erection of a new amenities building. The works are to include earthworks, surface water management and drainage infrastructure, lighting, CCTV, boundary treatment, car parking, ecological improvements including a wildlife tower and gabion baskets, improved internal access roads, diesel generator and hardstanding, storage and washroom buildings and water storage tank, flood defence wall including flood gates and appropriate landscaping and other associated engineering operations.

A detailed overview of the proposed works to the existing Margam 275kV substation compound is provided below:

- Construction of a GIS hall to house 275 kV electrical switchgear and ancillary equipment;
- The GIS hall to include up to 12 bays with the provision of up to 3 spare bays;
- Mechanically Switched Capacitor with Damping Network;
- Realignment of the existing downleads and Super Grid Transformer circuits to new bays within the GIS hall;
- New amenities building to include welfare facilities, meeting room and ancillary office space;
- One diesel generator to be used in a backup situation only and hardstanding for a replacement freestanding diesel generator;
- Security fencing;
- Surface water management and drainage infrastructure including internal drainage systems;
- Flood defence wall (1150mm high and depth 1000mm) and flood gates at existing access points into the existing substation;
- Water storage tank (6m high and 6.1m diameter);
- CCTV;
- Lighting to include 6m medium duty, tilt down tubular steel constructure (exact location to be agreed), 27no. 'label C', 18no. 'label E' and 13no. 'label EX1), dark sky approved;
- Creation of new designated car parking area (four standard bays and two accessible bays);
- Landscaping to incorporate native planting / wildflowers; and
- Ecological mitigation to include a wildlife tower and gabion baskets.

The purpose of the development is to provide critical infrastructure requirements in order to support Tata Steelworks UK's development of an Electric Arc Furnace at their Port Talbot site together with other growing electricity demands. Following planning approval (ref P2024-0711), Tata Steel is building a new, large-scale Electric Arc Furnace (EAF) at its Port Talbot steelworks, a £1.25 billion project funded with a £500 million investment from the UK Government. This EAF will replace the site's traditional blast furnaces, significantly reducing carbon emissions by approximately 90% and producing up to three million tonnes of steel annually from recycled scrap. Construction began in July 2025, and the furnace is expected to be commissioned by the end of 2027.

1.2 Purpose of the Soil Resource Management Plan

ADAS have been instructed by Laing O'Rourke to undertake a soil resource survey and produce a Soil Resource Management Plan (SRMP) for the proposed development. An outline Soil Management Plan (oSMP) has been produced previously. The purpose of the SRMP is to:

- ensure the protection and conservation of soil resources on site;
- identify best practice to maintain the physical properties of the soils on site; and
- provide on-site reference on the management of the soil resource for site operators.

The SRMP follows the principles of best practice^{1 2} to maintain the physical properties of the soil, outlining the control measures and monitoring programme to be implemented to minimise the effect on soil quality and surrounding environment. It does not cover dust control or biosecurity.

1.3 Site location

The proposed Margam Substation is located in the Port Talbot suburb of Margam in the Welsh county borough of Neath Port Talbot, South Wales. The site is located in an area characterised by industrial development. To the east, approximately 290 metres away, are the Western Wood Energy Plant and Margam Green Energy Plant. Further east, approximately 823 meters away, are the A48 (Margam Road) and the M4 motorway, with the Margam Moors beyond. Directly to the west lie the Tata Steelworks and the London to Swansea railway. Access to the site is currently available from the north via the A4241 Harbour Way and from the south-east via Heol Cae'r Bont which connects from the roundabout on the A48 Margam Road. The National Grid Reference for the centre of the site is SS 78580 86373. A site location plan is included as Figure 1 below:

1 Defra (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites
<https://www.gov.uk/government/publications/code-of-practice-for-the-sustainable-use-of-soils-on-construction-sites>

2 The Institute of Quarrying (2021) Good Practice Guide for Handling Soils in Mineral Workings.
<https://www.quarrying.org/soils/soilguidance>



Figure 1: Site Location Plan

The existing Margam substation is immediately adjacent on the western boundary of the site.

1.4 Site description

The site is approximately 15.36 ha and is a wetland habitat complex, the majority of which is designated as a local Site of Importance for Nature Conservation. It is a flat, low-lying area typical of coastal regions.

2 METHODOLOGY

A soil survey was carried out in December 2025 using auger boring and pit data. During the survey parts of the area were inaccessible or under water and observation locations were as close as possible to a grid system so as to represent the entirety of the site. A detailed observation location plan is attached as Appendix A and the Auger Log as Appendix B.

Samples of the topsoil and subsoil were taken at the site. These were submitted to NRM laboratories for BS3882:2015 Specification for Topsoil analysis and BS8601:2013 Specification for Subsoil analysis. Full details of the results are included in Appendix C.

3 PUBLISHED INFORMATION

3.1 Geology

1:50,000 scale BGS information³ records one bedrock geological unit: South Wales Middle Coal Measures Formation - mudstone, siltstone and sandstone, sedimentary bedrock formed between 318 and 309.5 million years ago during the Carboniferous period. This is overlain by Tidal Flat Deposits - clay, silt and sand, sedimentary superficial deposits formed between 11.8 thousand years ago and the present during the Quaternary period.

3.2 Soils

One soil association has been mapped on the 1:250,000 scale National Soils Map for the site location (Sheet 2 Wales)⁴. The soil association is:

- **Enborne Association** – deep stoneless fine loamy and clayey soils on flat land variably affected ground water with a risk of flooding.

The Peatlands of Wales Map⁵ showed no peat soil at the site, however a Peat Management Plan was produced for the Margam Substation site by WRC⁶. The report indicates that peat soil was found at the site buried at a variety of depths, with areas of shallow peat starting from 0.2 m below ground level (bgl), with the deepest recorded as starting at 3 m bgl. This situation means that none of the peat deposits present are 'active' and are not actively sequestering carbon as they have no active vegetation layer present. Buried peat such as this remains a carbon store while kept waterlogged and not in contact with oxygen in the atmosphere. The ADAS soil survey examined soil profiles to a depth of 1-1.2 m bgl. No peat was found within these depths by ADAS.

3.3 Flood risk

The Site is located within Flood Zone 3 for rivers (more than 1% annual chance of flooding), Flood Zone 1 for the sea (less than 0.1% annual chance of flooding), and Flood Zones 2 and 3 for surface water and small watercourses (0.1% to more than 1% annual chance of flooding), all accounting for the effects of climate change.

³ British Geological Survey, 2019. *Geology of Britain viewer*. Online resource: <http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html>

⁴ <https://www.landis.org.uk/publications.cfm>

⁵ <https://datamap.gov.wales/maps/peatlands-of-wales-maps/>

⁶ WRC (August 2025) 2488240 - Margam Substation Margam Substation Extension – Peat Management Plan

3.4 Climate

The agricultural climate of this site has been calculated using the Climatological Data for Agricultural Land Classification. The agricultural climate can be a useful guide to planning soil handling operations at a broad scale, but not for decision making on day-to-day operations on the ground. The meteorological parameter - Field Capacity Days - estimates the duration of the period when the soil moisture deficit is zero. At the site soils typically return to field capacity (zero deficit) during the early autumn (late September) and the field capacity period ends in the late spring (mid May) when evapotranspiration exceeds rainfall, the soil becomes drier, and a moisture deficit starts. This commonly varies by 2-3 weeks either side of this period depending on the season. The relevant site data for an elevation of 4 m AOD is given below.

Table 3.4: Agro-climatic variables

Grid Reference	SS 785 863
Altitude(m)	4
Average Annual Rainfall (AAR)	1138 mm
January-June Accumulated Temperature (AT0)	1557 day °C
Field Capacity Days (FCD)	233
Field Capacity Period	Late September – mid May
Moisture Deficit Wheat (MDW)	79 mm
Moisture Deficit Potatoes (MWP)	66 mm

4 SOILS PHYSICAL CHARACTERISTICS

4.1 Soil Unit 1 – Silty clay topsoil over silty clay subsoils

One soil unit covers the entire area. It is characterised by an organic silty clay topsoil over silty clay subsoils. This soil is stoneless. Where an upper subsoil could be identified, these horizons, though not slowly permeable due to a moderate structure, show signs of impeded drainage. The lower subsoil is generally slowly permeable and weakly structured. A detailed description of the soil can be found below from the pit's soil profile:

Pit Profile:	
Topsoil - 0-17cm of:	very dark greyish brown (10YR 3/2) organic silty clay; stoneless; non-calcareous; unmottled; moderately developed medium subangular blocky structure; friable; moist; moderately plastic; common coarse fibrous and fleshy roots; >0.5% biopores >0.5mm diameter; clear smooth boundary to:
Upper subsoil - 17-30cm of:	grey (10YR 5/1) silty clay; stoneless; non-calcareous; many distinct fine mottles; moderately developed coarse subangular blocky structure; firm; moist; very plastic; common coarse fibrous and fleshy roots; >0.5% biopores >0.5mm diameter; clear smooth boundary to:
Lower subsoil - 30-120cm of:	grey (10YR 5/1) silty clay; stoneless; non-calcareous; many distinct fine mottles; weakly developed coarse prismatic structure; firm; moist; moderately plastic; few coarse fibrous and fleshy roots; <0.5% biopores >0.5mm diameter.



Table 4.1: Summary of Soil Unit 1 – typical profiles

Horizon	Average Depth to base of Horizon (cm)	Texture	Drainage	Stones
Topsoil	19	Organic Silty Clay	Freely draining	0%
Upper Subsoil	43 (where present)	Silty Clay	Impeded drainage	0%
Lower Subsoil	100+	Silty Clay	Slowly permeable	0%

5 SUITABILITY OF SOILS FOR LANDSCAPING

The scheme may create soils which are surplus to requirement for the restoration of the land and surplus soils can be used for landscaping of embankments and planting areas.

The soils are heavy textured and imperfectly or poorly drained. As a consequence, they could be prone to slumping and compaction when moved or when restored on level ground. They will be moisture retentive and therefore could be used for establishing wetland areas if consolidated.

5.1 Laboratory results

Soil samples were taken from the pit and sent to NRM Laboratories and analysed according to BS 3882:2015 Specification for topsoil and BS 8601:2013 Specification for subsoil requirements. The analysis results are summarised in Table 5.1 below. Full details of the laboratory analysis are attached in Appendix C.

Texture. The particle size distribution (psd) results showed the topsoil and subsoil to be silty clay. As the topsoil has a high organic matter content (12.1%) the texture can be prefixed by 'organic' i.e. it is an organic silty clay loam. The topsoil texture failed the BS3882 (2015): Specification for topsoil requirements and the subsoil texture failed to meet the specification for BS8601 (2013): Specification for subsoil texture requirements. In practice, meeting BS3882 (2015): Specification for topsoil requirements and BS8601 (2013): Specification for subsoil requirements is of little or no relevance if the soils are to be reused on site, although the results are beneficial for giving a general characterisation of the soil.

Total Nitrogen. The total nitrogen (N) (and carbon:nitrogen ratio) results passed the topsoil requirements for BS3882 (2015): Specification for topsoil for the multipurpose options.

Calcium Carbonate and pH. The topsoil and upper subsoil were slightly acidic with a pH of 5.9 and 5.8 respectively, which is still in the range to meet multipurpose and low fertility options. The lower subsoil's pH is mildly alkaline at 7.9, which as the lower subsoil also contains >1.0% calcium carbonate, means that it is suitable for both multipurpose and calcareous options. The soil topsoil and upper subsoil were non-calcareous so not suitable for a calcareous option requirement.

Available Phosphorus, Potassium and Magnesium in the topsoil. The available phosphorus (P) level is Index 0 (very low). The available potassium (K) level is Index 2-, a moderate level. The available magnesium (Mg) level is high (Index 4) which will reflect the soil parent material having a high magnesium content.

Table 5.1 Summary of laboratory results for Soil Unit 1

Analysis	Topsoil	Upper Subsoil	Lower Subsoil
Texture	Silty clay	Silty clay	Silty clay
Organic Matter (%w/w)	12.1	3.8	1.7
pH	5.9	5.8	7.9
Carbonate (%w/w)	<1	<1	1.4
Total Nitrogen (%w/w)	0.538	-	-
Available Phosphorus (mg/l)	7.8 (0)	3.0 (0)	3.2 (0)
Available Potassium (mg/l)	177.6 (2-)	57.2 (0)	113.6 (1)
Available Magnesium (mg/l)	225.6 (4)	271.8 (5)	665.7 (7)
Carbon:Nitrogen Ratio	13:1	-	-
Exchangeable Sodium Percentage (%)	1.7	2.1	2.2
Available Sodium (mg/l)	30.5	38.0	72.5
Available Calcium (mg/l)	1,085.0	1,035.0	1,685.0
Conductivity (uS/cm)	2,071	2,027	2,113
Zinc (mg/kg)	177	105	103
Copper (mg/kg)	37.3	20.4	6.9
Nickel (mg/kg)	26.9	26.7	29.7
Overall BS compliance	Non-compliant due to texture	Non-compliant due to texture	Non-compliant due to texture

Available Calcium and Sodium, Electrical Conductivity and Exchangeable Sodium Percentage (ESP). The available calcium levels show the soil exchange complex to be dominated by calcium which is good from the aspect of soil structure. The electrical conductivity results are low. The available sodium and ESP levels are low. The ESP results are all well below the 15% at which soil structural instability problems can occur.

Total zinc, copper and nickel. Analysis for these elements is carried out as a 'screen' for whether the soils might have been subject to any contamination. The zinc level (177mg/kg) in the topsoil is above the typical range (38-147mg/kg) in England and Wales soils but not sufficiently high to be a concern. The Code of Practice for Agriculture Use of Sewage Sludge gives a maximum permissible level of 200mg/kg in the soil. The nickel levels are within the typical range (7-42mg/kg) found in England and Wales soils. The copper level of 37.3mg/kg is marginally above the typical range 3-37mg/kg) found in England and Wales soils. No

sample showed any result that would point to the soils represented by the samples having been subject to any contamination.

General comment. The very low available phosphorus level of the topsoil makes it best suited to planting that has a low fertility requirement.

6 SITE AND SOIL MANAGEMENT

6.1 Key Principles

General guidance on best practice is given in this SRMP.

To ensure the physical condition and quality of the soil is preserved all soils should only be handled when in a dry and friable condition. To manage the risk of damage to the soil structure the soil moisture state should be assessed on site by a suitably qualified person prior to any work commencing and after rainfall events (see 6.4 Soil Moisture Assessment).

All machinery should operate and travel on subsoil or access routes. Matting may be required on access routes to contain and reduce soil compaction. All construction materials, plant and equipment will be stored on existing site 'hard standing' or on newly construction site compounds.

No construction materials, plant or equipment will be stored directly on the soil surface.

Should there be any modifications or deviations from the SRMP, a qualified soil scientist will review them and advise the contractors of any resultant specific soil related requirements.

All soil trafficking and handling operations will be undertaken under the supervision of a suitably qualified or trained person. These individuals will advise on and supervise soil handling, including identifying when soils are dry enough to be handled.

Site inspections of the soil condition by suitably trained persons are required prior to vehicle movements across the Site, particularly during wet weather conditions.

6.2 Site Preparation

The site should be constructed with the aim of keeping the soils in store for as short a time as possible, whilst minimising damage to the soil or site.

The site should be cleared of any deposited rubbish ahead of soil stripping and all collected material treated as waste and managed under a Materials Management Plan.

Existing utilities should be clearly marked and protected by 'no dig' areas.

Any hedges, trees and fencing that are to be removed, should be removed from the working area prior to stripping the topsoil.

Prior to any works, root protection zones should be marked out and fenced off for trees that are being retained.

Any vegetative growth should be sprayed off with a systemic herbicide and any growth higher than 10 cm cut and removed from the site prior to topsoil stripping. If species of

invasive vegetation, such as Japanese Knotweed are encountered, they should be treated according to the particular requirements for the species encountered.

Areas for landscaping should be left undisturbed wherever possible and should be fenced off from the works areas to preserve soil quality. These areas should be fenced off from foot traffic as well as vehicles, as repeated pedestrian access can also cause soil compaction.

If any land drains are encountered, advice should be sought from a drainage specialist – See Section 6.6.

If dry weather conditions prevail, spraying areas of the site with water to reduce dust may be required.

6.3 Soil Stripping

Topsoil will be stripped from areas to be permanently sealed and temporary working areas (compound and access tracks) to reduce the risk of damage, contamination or loss. Soil stripping should be designed to keep stripped topsoils and subsoils separate at all times. Topsoil will also be stripped from areas to be permanently sealed and appropriately stored for re-use on site or export if in excess of site requirements.

Where topsoil is stripped it should be stripped as deep as the base of the darker topsoil layer, commonly 100mm to 300mm deep but can often be deeper. The soil survey of this site showed the average depth of topsoil to be 19cm with a range of 10-40cm.

Topsoil stripping should only occur when the soils are as dry as reasonably practicable and only when the moisture content is below the plastic limit. To test for suitable soil moisture conditions before stripping a representative sample of soil should be taken from the area to be stripped. The sample of soil should be formed into a ball and then rolled on a flat surface such as a ceramic plate. If the soil can form a thread thinner than 3mm ($\frac{1}{8}$ inch) it is above the plastic limit and too wet for topsoil stripping.

The stripped topsoil will be stored in bunds. Topsoil bunds should not exceed 3m in height and should be set back from the stripped area by at least 0.5m to prevent the loss of topsoil. Topsoil should be stored on areas from which the topsoil has not been stripped i.e. stored like on like.

Any excavated subsoil will be kept separate from the stored topsoil, normally by placing it on the other side of stripped areas to which topsoil is stored. Subsoils storage mounds will not exceed 5m. Subsoil should be stored on areas from which the topsoil has been stripped i.e. stored like on like.

Subsoil horizons that differ in nature or quality shall be kept separate (e.g. very stony or very different textures). As for topsoil subsoil should only be handled when the moisture content is below the plastic limit. Any material below 1m should be treated as overburden.

Soil stores will be shaped to shed water.

Grass seed will be sown at 5g/m² on soil stores which are to be in place for more than 6 months and pernicious weeds will be sprayed off before they set seed.

Any peat arisings from the Proposed Development should, where possible, be stored as close to the point of excavation as possible and then re-buried as soon as possible, following the provisions in the Peat Management Plan. Other than the provisions of the Peat Management Plan (WRC, 2025), stripping storage and reuse of topsoil should adhere to the guidelines set out with the *Construction Code of Practice for the Sustainable Use of Soils on Construction Sites* (Defra, 2009), as described in the Construction Environmental Management Plan (Laing O'Rourke, 2025) and in this SRMP. As indicated in Section 3.2 the ADAS soil survey examined soil profiles to a depth of 1-1.2 m bgl. No peat was found within these depths by ADAS.

6.4 Soil Moisture Assessment

To minimise the risk of structural damage to the soil, handling of the soil should take place only when it is in a dry and friable condition. The following points should be considered on each occasion that soil handling is proposed:

- topsoil stripping will only occur when the soils are as dry as reasonably practicable (normally below the plastic limit and not normally within 24 hours of significant rainfall (i.e. >10 mm in a 24 hour period))
- during light rainfall events local level decisions to proceed or stop should be based on the current wetness state of the soils being handled
- there should be no surface water standing in the area to be stripped
- the ground should be sufficiently dry for traffic to travel across without forming ruts
- soil should not be moved when the ground is covered by snow or is frozen

To determine the suitability of the soil for handling the following in-field soil moisture test should be undertaken to assess the moisture content of the soil prior to working^{7 8 9}.

If the soil passes the visual test (Table 6.4.1), this is followed by an assessment of the soil consistency (the cohesion and adhesion of the soil) as set out in Table 6.4.2.

Table 6.4.1: Visual Assessment of Soil Moisture (start at Test 1)

Test	Soil Condition		Decision
1	The soil is wet, films of water are visible on the surface of the soil particles or aggregates and/or when a soil sample is squeezed by hand and readily deforms into a 'cohesive' ball	Yes	NO HANDLING
		No	Go to Test 2 (moist soil) or Test 3 (dry soil)
2	The sample is moist (a slight dampness when squeezed by hand) but the soil colour does not darken upon further wetting, and clods/peds readily break up when squeezed in the hand	Yes	HANDLING OK
		No	Go to Table - soil consistency (Test 4)

⁷ MAFF 1982 Reference Book 441 Techniques for measuring soil physical properties HMSO

⁸ Natural England 2021 Planning and aftercare advice for reclaiming land to agricultural use.

⁹ The Institute of Quarrying (2021). Good Practice Guide for Handling Soils Supplementary Note 4 Soil Wetness

3	The soil is dry (e.g. darkens if water is added) and is brittle	Yes	HANDLING OK
		No	Go to Table - soil consistency (Test 4)

Table 6.4.2: Soil Consistency Assessment (start at Test 4)

Test	Procedure	Result	Decision
4	Attempt to mould a soil sample into a ball by hand	Impossible because the soil is too loose and wet	NO HANDLING
		Impossible because the soil is too hard or dry	HANDLING OK
		Impossible because the soil is too loose (dry)	HANDLING OK
		Possible	Go to Test 5
5	Attempt to roll the ball by hand into a thread of 3 mm diameter on a flat non-adhesive surface.	Possible	NO HANDLING
		Impossible because the soil crumbles or disintegrates	HANDLING OK
		NB: It is impossible to roll most coarse loamy and sandy soils into a thread even when they are wet. For these soils, the Visual Assessment of Soil Moisture (Table) alone is to be used.	

6.5 Soil Resilience to Structural Damage

Soils differ in their resilience to structural damage during handling. Soils with a higher clay content have a lower resilience to structural damage during handling (see Table 6.5). The soils at the Margam Substation site have a low resilience to soil structural damage during soil handling due to the high clay content and the FCD in the area. This increases the importance of the soils on the site only being handled when their moisture content is below the plastic limit.

Table 6.5: Soil Resilience Criteria

Soil handling unit (SHU)	Resilience to structural damage during soil handling	Soil texture class
A (Green)	High	Light textured soils: sand (S), loamy sand (LS), sandy loam (SL), sandy silt loam (SZL); where fewer than 225 Field Capacity Days (FCD) and Annual Average Rainfall (AAR) less than 1000mm
B (Orange)	Medium	Above textures where there are more than 225 FCD and (AAR 1000mm or higher Medium textured soils with <27% clay content: silt Loam, medium silty clay loam (MZCL), medium clay loam (MCL), sandy clay loam (SCL); where FCD are 225 or lower and AAR 1000mm or lower. Heavy Textures below where fewer than 150 FCD and AAR 700mm or lower
C (Red)	Low	Medium textures above where FCD are higher than 225 and AAR greater than 1000mm Heavy soils with >27% clay content: heavy silty clay loam (HZCL), heavy clay loam (HCL), sandy clay (SC), silty clay (ZC), clay (C); where FCD are 150 FCD or more (AAR greater than 700mm)

6.6 Drainage

A record of ground conditions during construction works should be kept and any unmarked utilities located during the work should be recorded and protected.

A track-sheet should record any existing drainage features located during soil stripping, including their type, depth, size, angle and condition. This detail will then be available to aid a review of the requirements of post construction remedial drainage.

Any existing drains which are cut off/damaged by the works should be diverted into local drainage traps, to minimise sediment release.

Permanent post construction drainage may be required as part of land reinstatement and existing drainage will be replaced if damaged to ensure continued use.

6.7 Retaining Soil Profiles

Topsoil and subsoil should be stored separately and restored in the same order to retain the original soil profile.

It is possible that a second, clearly different subsoil is encountered during excavations. This lower subsoil is most frequently of poorer quality and, where possible, should be stockpiled separately and restored below the upper subsoil and topsoil to retain the original profile.

6.8 Avoiding Compaction

The most critical factors in avoiding compaction are to:

- Work when soils are dry and friable
- Use low ground pressure vehicles/plant
- Avoiding trafficking of soil by using designated haul routes

6.9 Soil storage

The site should be constructed with the aim of keeping the soils in store for as short a time as possible, whilst minimising damage to the soil or site.

Soils stripped for temporary haul road construction and temporary compound construction will be stored for the short-term; no longer than the duration of the construction phase of the Substation.

Soil storage methods will normally be as specified as in the Institute of Quarrying, Good Practice Guide for Handling Soils in Mineral Workings/Defra Construction Code of Practice for the Sustainable Use of Soils on Construction Sites¹⁰.

Topsoil and subsoil should be stored in the separate soil bunds. Topsoil should be stored in bunds no higher than 3m high and lightly formed to consolidate the surface, to shed water. Any stripped subsoil should be stored in bunds no higher than 5m. Topsoil should be stored on topsoil and subsoil should be stored on subsoil i.e., the topsoil should be removed from below all subsoil storage bunds.

Soil bunds should be located on dry level ground and not disrupt any natural surface drainage. Soil stores should be set back by more than 0.5m from the excavation to prevent soils slumping into the cut. A record should be kept of any soils which are placed in store. All bunds should be labelled with their historic land use, volume and soil type.

6.10 Stockpile Maintenance

All bunds which will be in place for more than 6 months should be sown with a low maintenance grass seed mix at a rate of 5g/m². All soil bunds should be inspected annually (if in place for more than a year) in spring to ensure that the grass cover is intact and to decide if a herbicide is required to control invasive weeds. The species present will determine the most appropriate herbicide or cutting regime.

6.11 Trafficking

On any construction site there exists the risk of soil compaction from the use of heavy machinery and traversing land in unsuitable ground conditions. The aim should be to minimise the risk through appropriate management of site operations.

On areas not to be permanently sealed the management of trafficking on these areas and traversing the land when the soil is in a suitable dry condition is key to managing the risk of soil compaction.

The term Field Capacity is a measure of the duration of climatic wetness when soils hold the maximum amount of water. In a normal year at the site location the soils are likely to return

¹⁰ Defra (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites

to Field Capacity in late September and remain at Field Capacity until mid May. As a general guide planning of the construction works should take this into consideration and either avoid or undertake minimal traversing across the site and soil handling during the period late September to mid May. An on-site inspection of the soil condition prior to any soil handling or trafficking is essential.

Using machinery such as dump trucks fitted with tracks or low ground pressure tyres to spread the weight of the machinery should be used. Use of tracked excavators is considered best practice for stripping soil.

All traffic should keep to defined routes across the site to contain the risk of soil compaction. Soils should be replaced with the minimum of vehicular movement's necessary, to avoid re-compacting the loosened surface. Restoration should start at the furthest point from each site exit to ensure that soils once deposited are not trafficked by earth moving machinery.

Particular care should be taken to minimise re-compaction of the subsoil by carefully controlling traffic movement along defined routes and working only in dry conditions. The defined route will have to be loosened again prior to topsoil placement.

6.12 Ameliorating Compaction

A degree of compaction is likely during operations trafficking on the land or handling soils during the substation installation. This compaction should be ameliorated at an appropriate timing and during suitable conditions.

Details of amelioration methods are given in the next section.

7 TEMPORARY COMPOUNDS AND ACCESS TRACKS

Temporary infrastructure comprising compounds and associated access tracks are likely to be installed as part of the proposed development.

7.1 Construction Methodology

Temporary compounds and access tracks will usually be constructed of compressed aggregate on top of a permeable membrane, which is used to prevent mixing of aggregate and the soil, as shown in Figure 2.



Figure 2: Temporary access track

Topsoils will be stripped to the required depth using an excavator.

Aggregate will be transported to the site and tipped by dumper and spread over the membrane using an excavator. This will then be rolled level using a vibration roller.

An excavator will remove the aggregate at the end of temporary use and farm cultivation equipment used to loosen the soil surface and alleviate compaction prior to topsoil placing.

Topsoil will be reinstated using an excavator.

Alternative information on the construction of working platforms and haul roads is given below. This was extracted from Laing O'Rourke Geochemical Considerations presented in Appendix 10 of the Stantec Margam Port Talbot National Grid Upgrade Works Environmental Impact Assessment Screening Report.

Working Platform

A working platform will be required to support various items of heavy plant, including but not limited to Piling Rigs, Horizontal Directional Drilling (HDD) Rigs and crawler cranes. These will require properly designed working platforms, which for a founding layer of soft TFD clay

are likely to be of significant thickness. Granular fill can then be used as part of the working platform and if the thickness of an unreinforced working platform is exceptionally large, geogrid reinforcement can be included within the granular fill. A layer of firm cohesive fill would also help to improve the ground's bearing capacity, but not to the degree a layer of granular fill would and would not interlock with geogrid. It is understood that the working platform level for the new substation site will be set at +3.775mOD. The thickness required for the working platform may then mean the whole depth of upfill (or the great majority of it) will need to be in platform stone, typically 6F5 stone and there will be little opportunity to use potentially site won clay fill. In view of the considerations given above, it is apparent granular fill holds a number of benefits over cohesive fill. It is then recommended granular fill is used. In order to optimise its usage as working platform stone it is recommended its grading conforms to a minimum of Class 1A well graded granular fill with a maximum particle size of 125mm and potentially 6F5 capping material. It is likely the most suitable material in the area would be quarried stone. Within the working platform, the storage of materials and equipment is to be managed so that unnecessary loading of an area is avoided and any potential longterm impacts of compaction are reduced. This can be accomplished by a rigours programme of works to ensure that only the required materials are brought to site when needed, along with the removal of items once complete. After works are complete and the temporary working area has been de-mobilised, a Landscape and Environmental plan will be put in place to assess the condition of the ground, potential areas of over compaction and outline any recommend remediation actions that can be put in place, such as deep soil aeration, to restore the ground condition.

Haul roads

Temporary haul roads will also be required to enable the construction of the new substation and cable route. The haul roads will be laid on the existing ground and will need to be removed afterwards. In order to prevent long term damage to the flora of the area it is necessary that the amount of compaction of the existing Topsoil is kept to a minimum and the vegetation is allowed to 'breathe' throughout the works. This means providing haul roads (and compound areas) that not only exert low pressures on the soil itself but also spread concentrated loading from plant. The use of lightweight Track Matting should be first considered to provide access to working areas. These matts are laid on the surface to distribute the loading of pedestrian, vehicle, and heavy plant to avoid damage to the ground. A potential option and recommend to use is "GroundGuards Xtreme Mat". Designed for heavyduty applications, this mat combines durability and versatility, making it ideal for constructing temporary roadways capable of supporting the weight of heavy machinery and vehicles. Its high-density polyethylene (HDPE) construction ensures exceptional strength, while its hard foam core adds buoyancy, allowing it to float and remain stable even in marshy, swampy, or waterlogged area, ensuring safe, stable access routes and reducing the risk of environmental damage in sensitive area. Thus, reducing the compressive strength exerted into the topsoil and potential longterm damage caused.



Figure 3: XtremeMat Option

An alternative to track matting is by the use of lightweight aggregates; however, the greater loading comes from the plant travelling on the haul road. An effective method of spreading such loading is to use geocells such as PRS Geoweb. The 3- dimensional geocells are opened up and filled with stone producing a very rigid structure that readily distributes loading. The cells are typically 200mm deep and are topped off with an additional 75mm of stone to protect them from plant. The cells are filled with a highly porous stone to enable air to circulate through them and reach the underlying soil.



Figure 4: PRS GeoWeb Option

Before works are to take place and haul road's established, a review of the Traffic Management Plan will take place with all relevant parties. By minimising the flow of traffic and assigning key routes for high loading items of plant, the long-term impacts can be reduced or localised to specific areas. This can then be identified in the Landscape and Environmental Plan post works completion.

7.2 Soil Management

Soil stripping

Temporary compounds and haul roads to be used during construction of the compound will be prepared firstly through the removal and suitable storage of topsoil, followed by use of a separation layer (e.g. geotextile membrane) prior to preparation of these temporary working areas using lightweight aggregates and/or trackway.

There may be a requirement for subsoil to also be stripped prior to surfacing. These soils will be stored separately from topsoil.

The Site will be cleared of any deposited rubbish ahead of soil stripping and all collected material treated as waste and managed under the Site Waste Management Plan which forms part of the Construction Environmental Management Plan.

Existing utilities will be clearly marked and protected by 'no dig' areas.

Any hedges, trees and fencing that are to be removed, will be removed from the working area prior to stripping the topsoil.

Prior to any works, tree root protection zones will be marked out and fenced off.

Any vegetative growth higher than 10 cm will be cut or sprayed off with a systemic herbicide and removed from site prior to topsoil stripping. If species of invasive vegetation, such as Japanese Knotweed are encountered, they will be treated according to the particular requirements for the species encountered.

If any land drains are encountered, advice will be sought from a drainage specialist.

On areas where the topsoil is to be stripped the topsoil should be stripped as deep as the base of the visibly darker topsoil layer.

Soil stripping will only occur when the soils are as dry and friable as reasonably practicable (and below the plastic limit). However, if handling plastic soils is unavoidable due to operational restrictions, they will be laid out in windrows and not formed into 'sealed' stockpiles until they have dried out and passed plasticity tests - as detailed in the 'Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Defra, 2009), Section 5.4.10' - Ref 11.1.3. A suitably trained person will test the soil plasticity prior to commencing work, following the procedure detailed in Tables 6.4.1 & 6.4.2.

Soil storage

Stripped soil will be stored in designated bunds at locations to be specified. The SRMP will also include a map detailing the different soil types of land to be stripped. Topsoil and subsoil will be stored in separate bunds according to their soil type.

Soil should be dry when put into bunds for storage to avoid any anaerobic activity developing in the soil. If this is not possible, storage practice should follow that outlined in Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Defra, 2009). Topsoil will be stored in bunds no taller than 3m high and lightly formed to consolidate the surface and shed water. Any stripped subsoil will be stored in bunds up to 5m high.

Topsoil will be stored on topsoil and subsoil stored on subsoil i.e. the topsoil will be removed from areas to be used for subsoil storage bunds.

A record of all soils which are placed in store will be kept.

All bunds which will be in place for more than 6 months will be sown with a low maintenance grass seed mix at a rate of 5g/m².

All bunds will be labelled with their historic land use, volume and soil type.

All soil bunds will be inspected annually (if in place for more than 12 months) in the spring to ensure that the grass cover is intact and to decide if an herbicide is required to control invasive weeds. The species present will determine the most appropriate herbicide or cutting regime.

Decommissioning of temporary compounds and access tracks

Following the completion of temporary enabling and construction works within the Margam Site, areas previously supporting reedbed habitat will be restored. Following completion of works, the temporary works areas will be removed, with the separation layer aiding clean removal. Prior to replacement of topsoil, an assessment of ground compaction will be undertaken by the contractor and any over-compacted soil will be remediated. Smaller areas may be restored through the use of a VOGT geoinjector or air spade (as appropriate to the conditions), or a low disturbance sub-soiler may be used for larger areas; the precise methodology is to be determined by the contractor and their suitably qualified specialists, and secured by Condition as part of the delivery of the soil restoration works.

Compressed aggregate will be removed using an excavator, along with any membrane placed on the subsoil surface.

The cleared surface will be soil sampled in any areas at risk of having been contaminated.

Samples will be collected and submitted to a UKAS and MCERTS accredited laboratory for a range of commonly occurring pollutants such as metals, oils and PAHs (polycyclic aromatic hydrocarbons). The results will be assessed by a land contamination specialist and any required remediation advice will be followed.

It is likely that the soil beneath the hard surface will require subsoiling to remove compaction. A soil scientist or suitably trained person will assess the depth and severity of compaction to inform the type and depth of subsoiling operation required.

Subsoiling will be undertaken using tractor mounted farm equipment, such as detailed in Figure 5, below. If space is limited subsoiling may need to be carried out using a tracked excavator with a jib fitted with a ripper tine.



Figure 5: Tractor mounted subsoiler

Subsoiling will only be undertaken when soils are dry, as plastic soils would smear and likely exacerbate the compaction.

At least 2 passes of the subsoiler will be made across each area, at an angle of 45 to 60 degrees to each other in order to fully break up the soil compaction to the required depth.

If required due to damage to an existing drainage system, new drains should be installed into the subsoil, prior to topsoil reinstatement.

Topsoil reinstatement

Once subsoil has been decompacted and suitably prepared, topsoil to be re-used should be spread across the site and graded into smooth contours that are married into existing levels at the edges (refer to drawing MAREXT-STN-XX-XXX-LA-003 for outline specification in Appendix D of Stantec, August 2025, Landscape and Habitat Management Plan report). The confirmed landscape design is anticipated to be subject to Condition, in parallel with the soil restoration proposals and drainage design. The Landscape and Habitat Management Plan should also be reviewed in line with these designs, accordingly.

Approximately a month prior to restoration, soil stockpiles should be strimmed, cuttings removed, and remaining vegetation sprayed with a systemic herbicide as advised by a suitably qualified person.

As with all soil handling operations, stockpiled soils will only be handled when in a suitable condition, to be decided by a suitably trained person. This would usually be between mid May and late September.

Stripped topsoil will be transported to the part of the site to be reinstated using a dumper (ideally equipped with tracks) and tipped with then an excavator used to position the soil across the area to be restored.

Topsoil depth will be checked during restoration. As newly restored soils slump over time, an allowance for this will be made, establishing approximately 10-20% deeper loose topsoil than the final target depth detailed in the SRMP.

The excavator will 'work its way backwards' from the far end of the restoration area, so as not to operate on the newly placed soil. No vehicles should traffic over restored topsoil.

Reinstatement of soil will be monitored by a suitably qualified person and records of operations kept, with photographic evidence.

8 AFTERCARE

A soil aftercare programme should be developed for 1 to 5 years after reinstatement of the soils via a landscape maintenance programme.

On completion of the restoration works the soils will be in a fragile condition and all work should be geared towards stabilising the soil structure by establishing strongly growing vegetation to ensure the best chance of a successful and sustainable restoration.

Timing of cultivation operations will be critical to the success of the restoration with the soils only being worked when in a dry and friable condition.

The condition of field drainage should be assessed and reviewed for any remedial action.

The responsibility for the aftercare programme should be agreed with the landowner before the land is restored.



Title
APPENDIX A
Observation Location & Soil Unit Map

Project
Margam Substation

Client
Laing O'Rourke

Key:

- ◆ Pit
- Augers
- Red Line Boundary

Soil Unit

- Soil Unit 1
- Sealed Soil

Google Hybrid

Date Drawn: 02 / 01 / 2026

Drawn by: Thea Niemann

Scale: 1 : 4,000 at A4

Appendix B - Soil Auger Log

Soil Profile Description											
Auger	Depth (cm)	Texture	Colour	Mottling	FMCs	Gleying	SPL	Stones (%)		Coordinates	
								Total	Litho'	Latitude	Longitude
1	18	ZC	Very dark greyish brown (10yr32)	None	None	No	-	0		51.56500167	-3.75440833
	110	ZC	Grey (10yr61)	Common	None	Yes	Yes	0	-		
2	30	ZC	Very dark greyish brown (10yr32)	Many	None	Yes	-	0		51.56505833	-3.75204667
	50	ZC	Dark grey (10yr41)	Common	None	Yes	Yes	0	-		
	100	ZC	Grey (10yr51)	Common	None	Yes	Yes	0	-		
3	23	ZC	Very dark greyish brown (10yr32)	Many	None	Yes	-	0		51.564225	-3.75449167
	120	ZC	Dark grey (n4)	Common	None	Yes	Yes	0	-		
4	10	ZC	Very dark greyish brown (10yr32)	Few	None	No	-	0		51.56424167	-3.75150833
	33	ZC	Dark grey (10yr41)	Common	None	Yes	Yes	0	-		
	100	ZC	Grey (10yr51)	Common	None	Yes	Yes	0	-		
5	40	ZC	Very dark greyish brown (10yr32)	Common	None	Yes	-	0		51.563455	-3.75116
	100	ZC	Dark grey (n4)	Common	None	Yes	Yes	0	-		
6	17	ZC	Black (10yr21)	None	None	No	-	0		51.56299333	-3.75239333
	100	ZC	Dark grey (n4)	Common	None	Yes	Yes	0	-		
7	10	ZC	Very dark greyish brown (10yr32)	Common	None	No	-	0		51.56209333	-3.75344333
	100	ZC	Grey (10yr51)	Many	Common	Yes	Yes	0	-		

Appendix B - Soil Auger Log

Soil Profile Description											
Auger	Depth (cm)	Texture	Colour	Mottling	FMCs	Gleying	SPL	Stones (%)		Coordinates	
								Total	Litho'	Latitude	Longitude
8	20	ZC	Very dark greyish brown (10yr32)	None	None	No	-	0		51.56217833	-3.750675
	100	ZC	Grey (10yr51)	Common	None	Yes	Yes	0	-		
9	16	ZC	Very dark grey (10yr31)	Common	None	Yes	-	0		51.561515	-3.75265833
	43	ZC	Grey (10yr51)	Common	Few	Yes	Yes	0	-		
	100	ZC	Grey (10yr51)	Many	Common	Yes	Yes	0	-		
10	17	ZC	Very dark grey (10yr31)	Common	None	No	-	0		51.56149833	-3.75102
	100	ZC	Grey (10yr51)	Many	Common	Yes	Yes	0	-		
11	20	ZC	Very dark greyish brown (10yr32)	None	None	No	-	0		51.561535	-3.75006167
	100	ZC	Dark grey (n4)	Common	None	Yes	Yes	0	-		
12	10	ZC	Dark greyish brown (10yr42)	Common	None	Yes	-	0		51.56084167	-3.75125833
	45	ZC	Grey (10yr51)	Many	Few	Yes	Yes	0	-		
	100	ZC	Grey (10yr51)	Many	Common	Yes	Yes	0	-		

Texture		Stone lithology	
C	clay	1	hard rocks or stones
ZC	silty clay	2	soft, medium or coarse-grained sandstones
SC	sandy clay	3	soft 'weathered' igneous or metamorphic rocks or stones
ZCL	clay loam (H - heavy, M - medium)	4	soft oolitic or dolomitic limestones
SCL	silty clay loam (H - heavy, M - medium)	5	soft fine-grained sandstones
SZL	sandy silt loam (F - fine, M - medium, C - coarse)	6	soft, argillaceous or silty rocks or stones
ZL	silty loam	7	chalk or chalk stones
SL	sandy loam (F - fine, M - medium, C - coarse)	8	gravel with non-porous stones
LS	sand (F - fine, M - medium, C - coarse)	9	gravel with porous stones
S	sand (F - fine, M - medium, C - coarse)		
Org	organic		
Pty	peaty		
Pt	peat (S - sandy, L - loamy, H - humified, SF - semi-fibrous, F – fibrous)		
R	bedrock		

CaCO ₃		Other abbreviations	
non	non-calcareous	SPL	slowly permeable layer
v sl ca	very slightly calcareous	FMCs	ferri-manganiferous concretions
sl ca	slightly calcareous		
ca	calcareous		
v ca	very calcareous		

APPENDIX C – LABORATORY SOIL ANALYSIS



Certificate of Analysis

Client: THEA NIEMANN
(L129) RSK ADAS LTD
 ADAS ROSEMAUND
 PRESTON WYNNE
 HEREFORD
 HR1 3PG

Originator: 1010626
 SOIL 04-12-2025
 1010626

Lab ID: 32263 - 777193
Sample ID: MARGAM TS
Sample Weight: 424g

Date Received: 08/12/2025
Date Reported: 23/12/2025

BS 3882 : 2015 SPECIFICATION FOR TOPSOIL Fails BS 3882

				Compliant with range (Y/N)					
				Multi-P	Acid	Calc	Low-F	Low-F Acid	Low-F Calc
Texture:	Clay	% w/w	39						
	Silt	% w/w	55						
	Sand	% w/w	6						
	Textural Class		Silty Clay	N	N	N	N	N	N
				<i>See area of permitted soil textural classes in Fig. 1.</i>					
Organic Matter:		% w/w	12.1						
Coarse	>2 mm	% w/w	0.0	Y	Y	Y	Y	Y	Y
Fragment	>20 mm	% w/w	0.0	Y	Y	Y	Y	Y	Y
Content:	>50 mm	% w/w	0.0	Y	Y	Y	Y	Y	Y
Soil pH:			5.9	Y	N	N	Y	N	N
Carbonate:		% w/w	<1			N			N
Available	Nitrogen	% w/w	0.538	Y	Y	Y			
Plant	Phosphorus	mg/l	7.8 (0)*	N	N	N	Y	Y	Y
Nutrients:	Potassium	mg/l	177.6 (2-)*	Y	Y	Y			
	Magnesium	mg/l	225.6 (4)*	Y	Y	Y			
Carbon:Nitrogen Ratio:		:1	13.0	Y	Y	Y	Y	Y	Y
Exchangeable Sodium Percentage:		%	1.7						
Phytotoxic	Total Zinc	mg/kg	177	Y	Y	Y	Y	Y	Y
Contaminants:	Total Copper	mg/kg	37.3	Y	Y	Y	Y	Y	Y
	Total Nickel	mg/kg	26.9	Y	Y	Y	Y	Y	Y
Visible	> 2mm	% w/w	0.00	Y	Y	Y	Y	Y	Y
Contaminants:	Plastics	% w/w	0.00	Y	Y	Y	Y	Y	Y
	Number of Sharps		0	Y	Y	Y	Y	Y	Y
Additional	Available Sodium	mg/l	30.5						
Analysis:	Available Calcium	mg/l	1085.0						
	Conductivity	uS/cm	2071	Y					
Compliance:				N	N	N	N	N	N

Results are expressed on a dry matter basis.

* Soil indices from RB209

Released by:

Teresa Clyne

Date: 23/12/2025

DECLARATION:

I certify that this sample has been analysed by NRM in accordance with BS 3882 Specification for Topsoil (2015).

NRM Coopers Bridge, Braziers Lane, Bracknell, Berkshire RG42 6NS

Tel: +44 (0) 1344 886338 **Fax:** +44 (0) 1344 890972 **Email:** enquiries@nrm.uk.com **www:** nrm.uk.com

Analytical Report

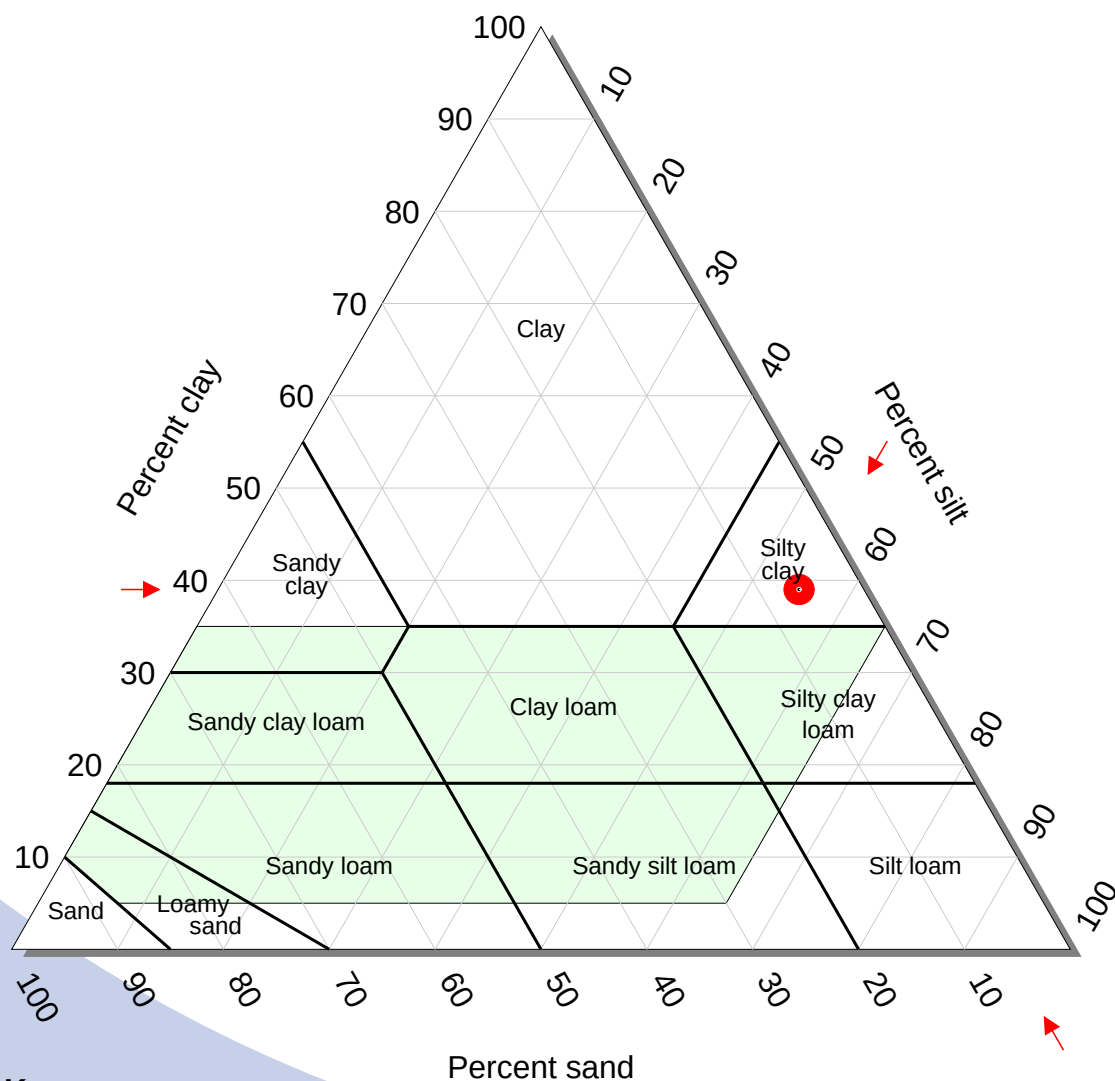
Client: THEA NIEMANN
(L129) RSK ADAS LTD
 ADAS ROSEMAUND
 PRESTON WYNNE
 HEREFORD
 HR1 3PG

Originator: 1010626
 SOIL 04-12-2025
 1010626

Lab ID: 32263 - 777193
Sample ID: MARGAM TS
Sample Weight: 424g

Date Received: 08/12/2025
Date Reported: 23/12/2025

Fig. 1. Textural Class: Silty Clay (non-compliant)



Key

 Area within which texture of topsoil is required to fall.

Analytical Notes

Final page must indicate end of report. Page 3

Accreditation and method details

NRM is a UKAS-accredited testing laboratory (No 2334), accredited to BS EN ISO 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer joint ISO-ILAC-IAF communique dated April 2017). <http://ilac.org/?download=120917>

NRM is accredited for particular determinands in specific matrices as set out in the laboratory's current UKAS schedule of accreditation https://www.ukas.com/wp-content/uploads/schedule_uplds/00002/2334Testing_Multiple.pdf

Accreditation applies to the following parameters in this report and is applicable to SOIL samples only. All other tests within this report are unaccredited.

Test	Analysis SOP	Method Description
Fluoride	JAS-487	Sulphuric acid extraction (1:10 ratio) and determination by ion selective electrode
Arsenic	JAS-510 / JAS-300	Aqua regia digest on hot block and determination by ICP-OES
Barium		
Beryllium		
Cadmium		
Chromium		
Cobalt		
Copper		
Lead		
Molybdenum		
Mercury		
Nickel		
Vanadium		
Zinc		
Selenium	JAS-510 / JAS-455	Aqua regia digest on hot block and determination by AFS

Analysis Notes

Analysis is carried out on the air-dried (<30°C) and ground sample.

The results as reported relate only to the item(s) submitted for testing.

The results are presented on a dry matter basis.

Indices are derived solely from the numerical value and test result without reference to measurement uncertainty.

Document Control

This test report shall not be reproduced, except in full, without the written approval of the laboratory.

We cannot offer interpretation or opinions for results.

Sampling information

BS ISO 18512:2007 (Soil quality – Guidance on long and short-term storage of soil samples) states that for pH the period of stability and therefore holding time for a wet or 'fresh' soil sample is one week from sampling. Other determinants in the fresh sample may be considered stable for up to a month. Once the sample has been dried the sample may then be considered stable for up to 3 years. No records are maintained by NRM on date sampled or date dried so all samples within this report are considered not to be meeting the requirements of this BS / ISO. Consequently, all pH results given are those of the as-received sample and may not reflect the pH value of the sample when taken.

END OF REPORT

Certificate of Analysis

Client: THEA NIEMANN
(L129) RSK ADAS LTD
 ADAS ROSEMAUND
 PRESTON WYNNE
 HEREFORD
 HR1 3PG

Originator: 1010626
 SOIL 04-12-2025
 1010626

Lab ID: 32264 - 777194
Sample ID: MARGAM USS
Fresh Sample Weight: 460 (g)

Date Received: 08/12/2025
Date Reported: 23/12/2025

BS 8601 : 2013 SPECIFICATION FOR SUBSOIL Fails BS 8601

		Unit	Result	Compliant with range (Y/N)		
				Multi-P	Acid	Calc
Texture:	Clay	% w/w	37	<i>See area of permitted soil textural classes in Fig. 1.</i>		
	Silt	% w/w	59			
	Sand	% w/w	4			
	Textural Class		Silty Clay			
Mass Loss on Ignition:		% w/w	3.8	N	N	N
Coarse	>2 mm	% w/w	0.8	Y	Y	Y
Fragment	>20 mm	% w/w	0.0	Y	Y	Y
Content:	>75 mm	% w/w	0.0	Y	Y	Y
Soil pH:			5.8	Y	N	N
Carbonate:		% w/w	<1			N
Exchangeable Sodium Percentage:		%	2.1	Y	Y	Y
Phytotoxic Contaminants:	Total Zinc	mg/kg	105	Y	Y	Y
	Total Copper	mg/kg	20.4	Y	Y	Y
	Total Nickel	mg/kg	26.7	Y	Y	Y
Visible Contaminants:	> 2mm	% w/w	0.00	Y	Y	Y
	Plastics	% w/w	0.00	Y	Y	Y
	Sharps	% w/w	0.00	Y	Y	Y
	Weight of Sharps	g	0.0			
Available Plant Nutrients:	Phosphorus	mg/l	3.0 (0)*			
	Potassium	mg/l	57.2 (0)*			
	Magnesium	mg/l	271.8 (5)*			
Additional Analysis:	Available Sodium	mg/l	38.0			
	Available Calcium	mg/l	1035.0			
	Conductivity	uS/cm	2027			
	Conductivity CaSO4 Adj.	uS/cm	67			
Compliance:				N	N	N

Results are expressed on a dry matter basis.

* Soil indices from RB209

Released by: *Teresa Clyne*

Date: 23/12/2025

DECLARATION: I certify that this sample has been analysed by NRM. in accordance with BS 8601 Specification for Subsoil (2013).

Analytical Report

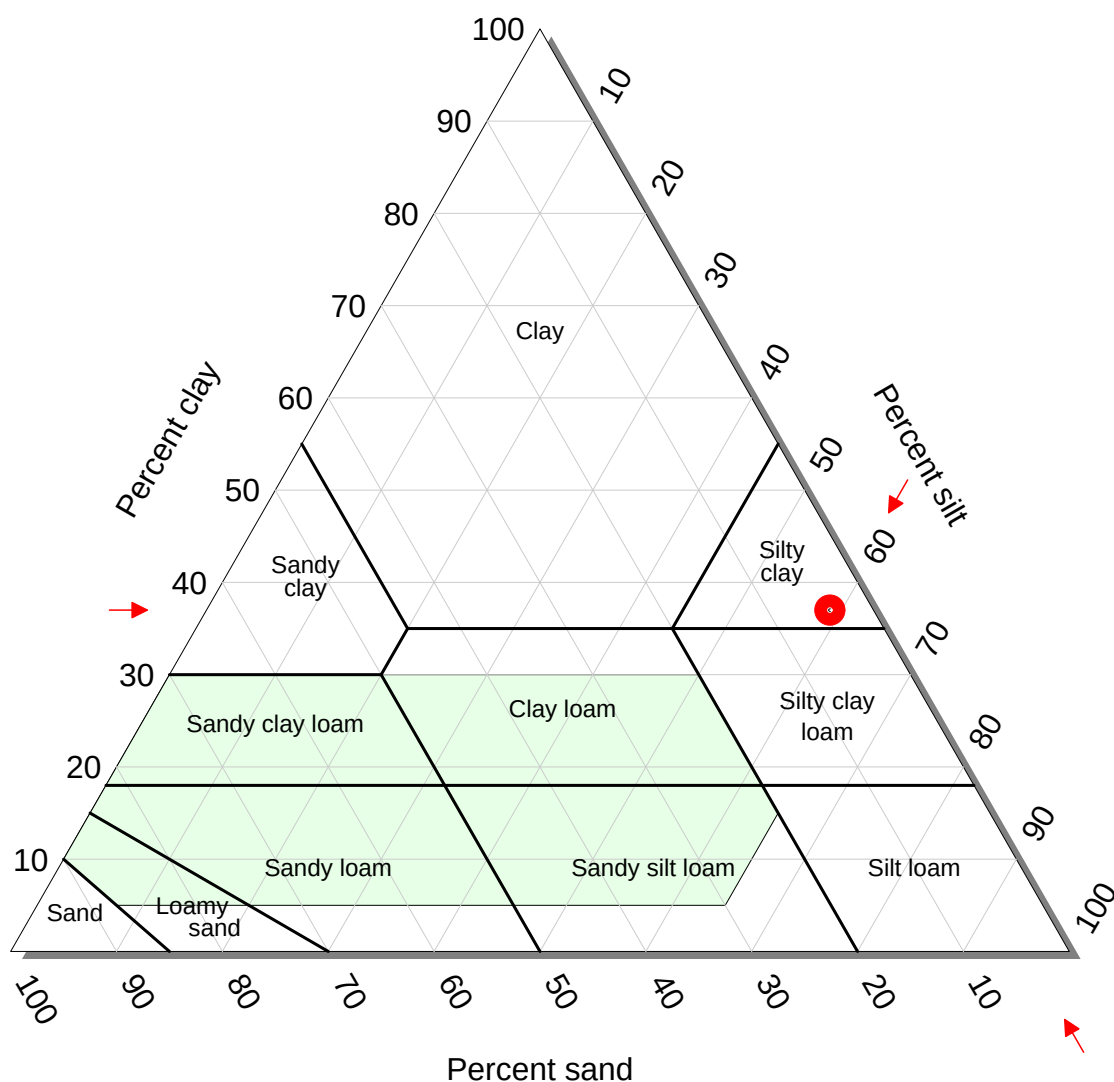
Client: THEA NIEMANN
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Date Received: 08/12/2025
Date Reported: 23/12/2025

Fig. 1. Textural Class: Silty Clay (non-compliant)



Key

 Area within which texture of subsoil is required to fall.

Certificate of Analysis

Client: THEA NIEMANN
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 ADAS ROSEMAUND
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 HEREFORD
 HR1 3PG

Originator: 1010626
 SOIL 04-12-2025
 1010626

Lab ID: 32264 - 777195
Sample ID: MARGAM LSS
 Fresh Sample Weight: 660 (g)

Date Received: 08/12/2025
Date Reported: 23/12/2025

BS 8601 : 2013 SPECIFICATION FOR SUBSOIL Fails BS 8601

		Unit	Result	Compliant with range (Y/N)		
				Multi-P	Acid	Calc
Texture:	Clay	% w/w	39	<i>See area of permitted soil textural classes in Fig. 1.</i>		
	Silt	% w/w	54			
	Sand	% w/w	7			
	Textural Class		Silty Clay			
Mass Loss on Ignition:		% w/w	1.7	Y	Y	Y
Coarse	>2 mm	% w/w	0.5	Y	Y	Y
Fragment	>20 mm	% w/w	0.0	Y	Y	Y
Content:	>75 mm	% w/w	0.0	Y	Y	Y
Soil pH:			7.9	Y	N	Y
Carbonate:		% w/w	1.4			Y
Exchangeable Sodium Percentage:		%	2.2	Y	Y	Y
Phytotoxic Contaminants:	Total Zinc	mg/kg	103	Y	Y	Y
	Total Copper	mg/kg	6.9	Y	Y	Y
	Total Nickel	mg/kg	29.7	Y	Y	Y
Visible Contaminants:	> 2mm	% w/w	0.00	Y	Y	Y
	Plastics	% w/w	0.00	Y	Y	Y
	Sharps	% w/w	0.00	Y	Y	Y
	Weight of Sharps	g	0.0			
Available Plant Nutrients:	Phosphorus	mg/l	3.2 (0)*			
	Potassium	mg/l	113.6 (1)*			
	Magnesium	mg/l	665.7 (7)*			
Additional Analysis:	Available Sodium	mg/l	72.5			
	Available Calcium	mg/l	1685.0			
	Conductivity	uS/cm	2113			
	Conductivity CaSO4 Adj.	uS/cm	153			
Compliance:				N	N	N

Results are expressed on a dry matter basis.

* Soil indices from RB209

Released by: *Teresa Clyne*

Date: 23/12/2025

DECLARATION: I certify that this sample has been analysed by NRM. in accordance with BS 8601 Specification for Subsoil (2013).

Analytical Report

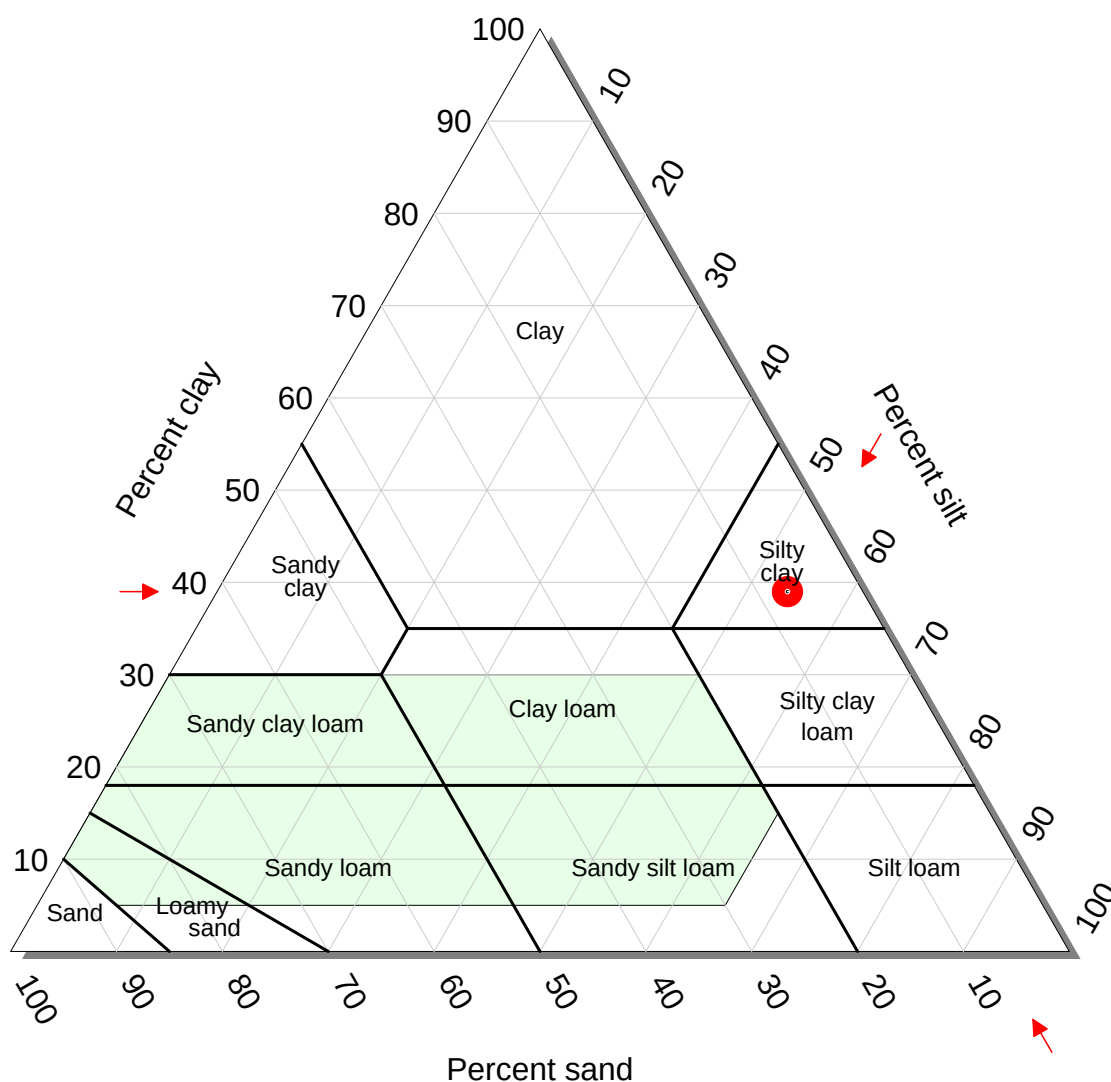
Client: THEA NIEMANN
(L129) RSK ADAS LTD
 ADAS ROSEMAUND
 PRESTON WYNNE
 HEREFORD
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Fig. 1. Textural Class: Silty Clay (non-compliant)



Key

 Area within which texture of subsoil is required to fall.

Analytical Notes

Final page must indicate end of report. Page 5

Accreditation and method details

NRM is a UKAS-accredited testing laboratory (No 2334), accredited to BS EN ISO 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer joint ISO-ILAC-IAF communique dated April 2017). <http://ilac.org/?download=120917>

NRM is accredited for particular determinands in specific matrices as set out in the laboratory's current UKAS schedule of accreditation https://www.ukas.com/wp-content/uploads/schedule_uplds/00002/2334Testing_Multiple.pdf

Accreditation applies to the following parameters in this report and is applicable to SOIL samples only. All other tests within this report are unaccredited.

Test	Analysis SOP	Method Description
Fluoride	JAS-487	Sulphuric acid extraction (1:10 ratio) and determination by ion selective electrode
Arsenic	JAS-510 / JAS-300	Aqua regia digest on hot block and determination by ICP-OES
Barium		
Beryllium		
Cadmium		
Chromium		
Cobalt		
Copper		
Lead		
Molybdenum		
Mercury		
Nickel		
Vanadium		
Zinc		
Selenium	JAS-510 / JAS-455	Aqua regia digest on hot block and determination by AFS

Analysis Notes

Analysis is carried out on the air-dried (<30°C) and ground sample.

The results as reported relate only to the item(s) submitted for testing.

The results are presented on a dry matter basis.

Indices are derived solely from the numerical value and test result without reference to measurement uncertainty.

Document Control

This test report shall not be reproduced, except in full, without the written approval of the laboratory.
We cannot offer interpretation or opinions for results.

Sampling information

BS ISO 18512:2007 (Soil quality – Guidance on long and short-term storage of soil samples) states that for pH the period of stability and therefore holding time for a wet or 'fresh' soil sample is one week from sampling. Other determinants in the fresh sample may be considered stable for up to a month. Once the sample has been dried the sample may then be considered stable for up to 3 years. No records are maintained by NRM on date sampled or date dried so all samples within this report are considered not to be meeting the requirements of this BS / ISO. Consequently, all pH results given are those of the as-received sample and may not reflect the pH value of the sample when taken.

END OF REPORT