Caulmert Limited

Engineering, Environmental & Planning Consultancy Services

Pwllfawatkin Landfill Site

FCC Waste Services (UK) Limited

Environmental Permit Variation Application

Waste Recovery Plan

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Waste Recovery Plan

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1.0 INTRODUCTION

1.1 Overview

1.1.1 Caulmert Limited have been appointed by FCC Waste Services (UK) Limited ('the operator'), (who are a wholly owned subsidiary of FCC Environment (UK) Limited) to prepare a Waste Recovery Plan (WRP) as part of an Environmental Permit Variation Application to include waste recovery activity (R5) in their permit ref. EPR/BU8819IV for Pwllfawatkin Landfill Site.

1.1.2 As per Natural Resources Wales (NRW) guidance, this WRP is written in accordance with 'Prepare a waste recovery plan' (last updated 28th December 2022), with reference to NRW's 'Check waste types used in a typical deposit for recovery' waste list (last updated 1st February 2023). This WRP details the proposed waste recovery operations at the site and is used to determine whether the operation is recovery or disposal.

1.2 Proposed Operations

1.2.1 Pwllfawatkin Landfill Site is located approximately 5km to the north of Pontardawe, at National Grid Reference (NGR) 269817, 208799 and is currently permitted as a landfill to accept non-hazardous waste and also to accept wastes for capping, restoration and engineering works. This Waste Recovery Plan proposes a recovery operation for the importation of suitable materials derived from waste to restore and cap the remaining areas of the landfill (hereafter referred to as 'the site'), in accordance with a revised restoration scheme within the existing permit boundary of Pwllfawatkin Landfill Site.

1.2.2 The restoration scheme for the site has been revised due to shortfalls in expected waste input volumes at Pwllfawatkin Landfill Site. This is because of a number of factors including, but not limited to, the combined success of Welsh Government policy to reduce the amount of waste material that is sent to landfill for disposal, the increased recycling and recovery rates of waste materials across the country, an economic slowdown in the past decade, and disruption caused by the COVID pandemic. Landfills in Wales are experiencing reduced waste inputs and there is a reduction in the reliance on landfills as a waste management option.

1.2.3 A Planning Application was submitted to Neath Port Talbot Council (ref. P2021/1277) for a revised restoration scheme for Tip 890 at Pwllfawatkin Landfill Site, with the aim to safely closing the landfill by October 2023, and with a further 2 years following to complete restoration and capping works.

1.2.4 Planning consent for the scheme was finally approved on the 24th May 2023 (Ref P2021/1277), a copy of the consent is provided within Appendix 3.

1.2.5 The area of land covered by the planning application is shown in attached drawing ref. WR7816/12/02. The red line on this drawing is the planning application boundary for the future operational area of Tip 890 and is not the entire boundary of Tip 890. The blue line is boundary of the entire FCC landfill landholding and not the environmental permit boundary.

1.2.6 The revised restoration scheme for the site includes restoring the landfill to a revised and reduced restoration profile to that already approved, as shown in attached cross-section drawings ref. WR7816/12/06 and WR7816/12/07. The restoration scheme also requires the construction of a capping support soils buttress as part of capping works for Cell 4 in the southern area of Tip 890, as shown in attached drawing ref. WR7842/02/01, however this will use non-waste materials derived on-site and is not part of the waste recovery. It is proposed to undertake the restoration of the site in several phases (1-5), as shown in drawing ref. WR7816/12/03. The following drawings present the proposed restoration contours of the landfill (pre- and post-settlement), and final restored surface to grassland, scrubland and woodland habitats:

- WR7816/12/04 Rev2 Pre-Settlement Waste Contours Plan
- WR7816/12/05 Post-Settlement Waste Contours Plan
- WR7816/12/08 Proposed Restoration Plan

1.2.7 With reference to attached drawing ref. 4962-CAU-XX-XX-DR-V-1800, the revised restoration scheme will require an estimated total of 104,452 cubic metres (m^3) of soils to complete the final landform, of which the operator will use an estimated 9,568 m^3 of soils already present on site which are non-waste materials derived on-site, ready for using in the areas shaded red and blue on the drawing. Therefore, an estimated 94,884 m^3 of suitable waste materials for restoration will need to be imported to site to complete the remaining areas by capping and restoration, which this WRP covers. It is proposed to import the waste types as detailed in Table 4 of this report, which includes the addition of waste codes 19 12 09 (minerals e.g. sand, stones) and 19 02 06 (sludges from physico/chemical treatment), which the operator proposes to add to Table S3 of the permit as part of this permit variation application. The waste types in Table 4 have been discussed and approved verbally with the local Natural Resources Wales (NRW) officer Ffion Thomas and also during discussions the Welsh Revenue Authority (WRA).

1.2.8 Of the 94,844 m^3 of soils required to be imported onto site, 5,000 m^3 of this material will be used for a soils buttress, which is required in order to extend the width of the bund of the Cell 4 Sidewall Extension by an additional 6 m to allow for restoration soils to be placed above the geosynthetic cap on the Cell 4 capping system. The buttress is shown in drawing ref. WR7842/02/01 and is included in the total estimated soils volume required for the green area of drawing ref. 4962-CAU-XX-XX-DR-V-1800. A Stability Risk Assessment has been completed by Sirius Environmental Limited for the soils buttress and submitted to Natural Resources Wales (NRW) by the operator, as letter report ref. WR7842/JD/01 (attached as Appendix 2). This states the buttress will have a 1 in 3 outer slope gradient and shall extend from an elevation of 169.5 mAOD down to a level of approximately 163.5 mAOD. The buttress will only be constructed once the existing surface water lagoon at the proposed location has been drained to the base of the lagoon (approx. 163.5 mAOD) and any soft weathered surface material removed. The final formation profile of the proposed soils buttress will be completed, where required, by excavating in-situ materials and by placing engineered fill to the proposed formation levels, as shown in drawing ref. WR7842/02/01. Once completed the existing lagoon will be allowed to rise back to original levels (approx. 166 mAOD).

1.2.9 The stability of the buttress on the front of Cell 4 was the only area assessed as this was a variation to the final profile which required additional import for access to allow the capping to be completed. The remaining restoration of the site will be undertaken as per the original permit application submission for the site so the existing SRA should apply to all other areas of capping and restoration.

1.2.10 With reference to the Planning Application ref. P2021/1277, it estimated that assuming 7,000 to 8,000 tonnes per month of restoration materials are deposited at the site, then an end date for waste importations is 31st October 2023. A further two years will be required thereafter to complete the restoration of the site into new areas of woodland, grassland and scrubland habitats, with some existing access tracks, ponds, grassland and woodland retained.

1.3 Site Setting & History

1.3.1 Pwllfawatkin Landfill Site was granted environmental permit ref. EPR/BU8819IV in 2005 and several variations have since been issued. The landfill site is permitted to accept non-hazardous waste to landfill and wastes for restoration, capping and engineering works, with Directly Associated Activities listed as combustion of landfill gas, leachate management prior to off-site disposal, flaring of landfill gas, discharging surface water to controlled waters and storing fuel. The permit regulates operations at the site to ensure there is no significant risk of pollution of the environment, harm to human health, or detriment to amenity.

1.3.2 The site as a whole is composed of 3 former coal spoil tips of the former Abernant Colliery, which is the majority of the operator's landholding at the site. Two of these tips, 891 and 890 are located to the north of Baran Road, and the third tip, Tip 871, is located to the south of Baran Road. Of these, Tip 890 is still accepting non-hazardous waste for landfill, and Tip 871, where necessary, is used as a source of engineering material for Tip 890. Tip 891 has been restored for some time now.

1.3.3 The site location is shown below in Figure 1:

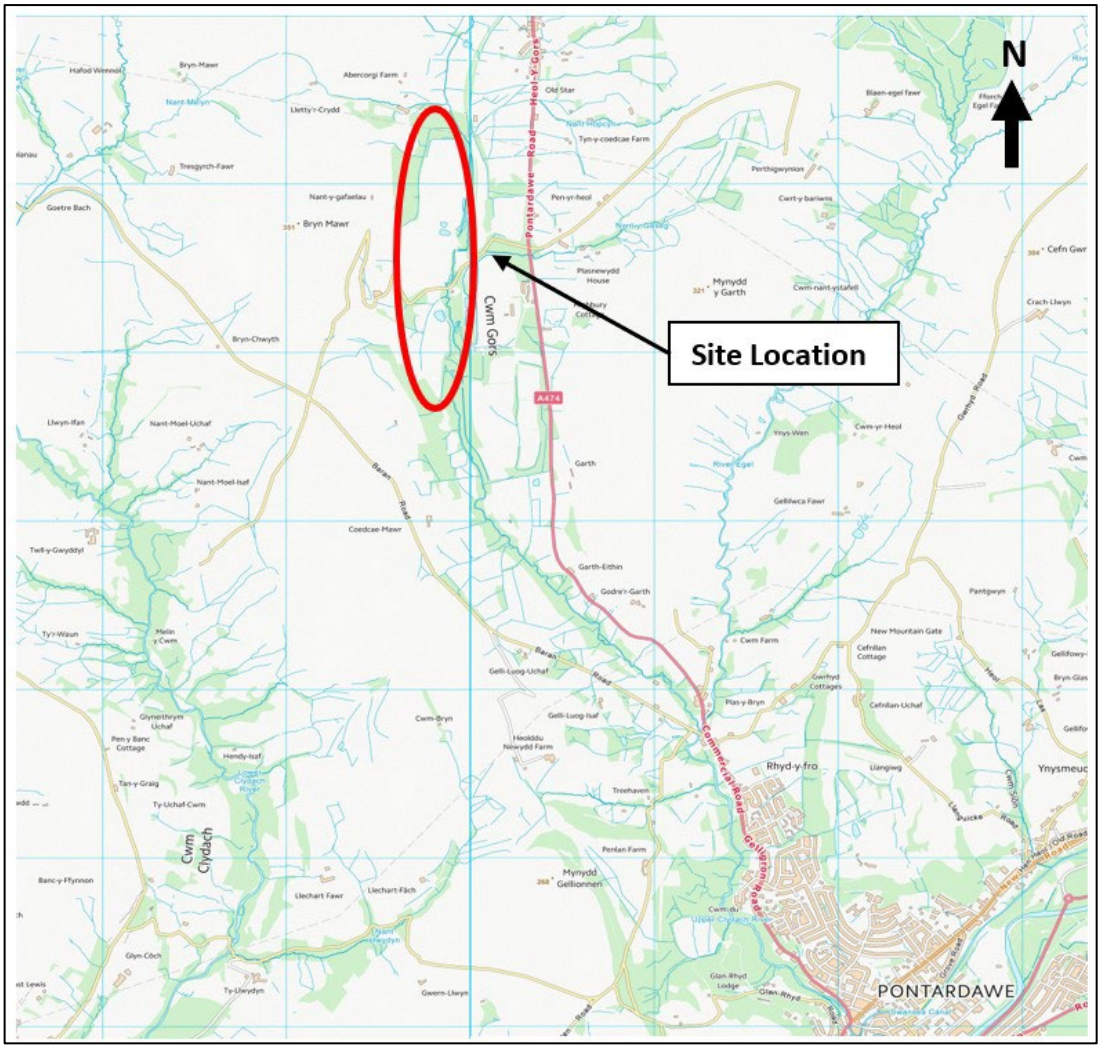

Figure 1 – Site Location

1.3.4 Two previous planning consents for the restoration of Tip 890 and 871 expired on 30th September 2018 with the site not being fully restored. Planning permission ref. P2002/1016 granted in 2005 (see Appendix 3) covered all three tips 890, 891 and 871. In December 2011 planning permission P2011/0537 was granted allowing the continued restoration of Tip 871 and superseded the previous 2005 planning permission, however only for Tip 871. This was updated in 2016 to amend the surface water scheme. A planning application for Tip 890 was submitted in 2018 (ref. P2018/0512) to the then Neath Port Talbot County Borough Council to vary conditions to allow an extension of time and a revised restoration profile for Tip 890, that reduced the remaining site void from that previously consented. This was refused in December 2020 by the planning committee (against officer recommendation for approval) on odour nuisance grounds.

1.3.5 Therefore, a more recent planning application (ref. P2021/1277) was submitted to Neath Port Talbot Council dated December 2021 for a revised restoration profile of Tip 890 including the continuation of waste importation to 31st October 2023, with restoration of the site proposed to be completed by 31st October 2025. Planning consent was granted on 24th May 2023 (ref. P2021/1277).

1.4 Restoration

1.4.1 It is necessary for the site to be completed and restored to a designated profile to ensure the long-term stability of the landfill site, to avoid unwanted differential or excessive settlement, to protect the capping integrity and for the long-term function of the environmental monitoring and management systems across the site for gas, leachate, groundwater and surface water. This in turn is important for the final restoration and after-use of the site, reducing the likelihood of needing to return to site at a later date to correct any differential settlement or other issues.

1.4.2 The revised restoration scheme (ref. P2021/1277), when compared to the previously consented scheme (ref. P2002/1016) will incorporate the following:

- Revised restoration contours (covering a reduced area than previously consented) to complete the restoration of Tip 890 by constructing a sidewall extension to the operational Cell 4 and not developing the previously consented Cell 5;
- A reduction in void space from that previously consented;
- An amended surface water management scheme to account for the revised restoration profile (the current scheme relies on a gravity drainage system and ditch collection system, feeding attenuation and settlement ponds before discharge to the Upper Clydach River. The area of land to be drained is not increasing and so surface water management will not alter significantly from the current scheme – see drawing ref. WR7470/01/01);
- An amended phasing scheme; and,
- An amended scheme of landscaping.

1.4.3 The proposed restoration enables a domed shaped profile meeting the minimum requirements for slope gradients on landfills and allows surface water to be naturally shed off the capping system under gravity into the surrounding surface water ditches, as opposed to an alternative flatter profile which was considered and rejected. The modified profile will facilitate the safe early closure of Tip 890 of the landfill and will provide a continued disposal resource for the local area in the meantime, eventually restoring the site to a beneficial after-use, with enhanced landscaping and biodiversity.

1.4.4 The previous consent allowed for five containment cells to be constructed across Tip 890, however under the revised restoration scheme, the operator will reduce the number of cells to four and include a sidewall extension to Cell 4 instead. The footprint of Cell 5 will instead be graded to tie into surrounding levels with remaining in situ materials and soils.

1.4.5 The proposed capping support soils buttress is required in order to extend the width of the bund in Cell 4 Sidewall Extension by an additional 6m to allow for restoration soils to be placed above the geosynthetic cap on the Cell 4 capping system. The buttress is shown in drawing ref. WR7842/02/01 and the volumes of soils required is included in the total estimated soils volume required for the green area of drawing ref. 4962-CAU-XX-XX-DR-V-1800. The soils buttress will require 5,000 m^3 of imported soils to complete. A Stability Risk Assessment has

been completed by Sirius Environmental Limited for the soils buttress and submitted to Natural Resources Wales (NRW) by the operator, as letter report ref. WR7842/JD/01 (attached as Appendix 2). This states the buttress will have a 1 in 3 outer slope gradient and will be constructed from low permeability engineered fill. The proposed buttress shall extend from an elevation of 169.5 mAOD down to a level of approximately 163.5 mAOD. The buttress will only be constructed once the existing surface water lagoon at the proposed location has been drained to the base of the lagoon (approx. 163.5 mAOD) and any soft weathered surface material removed. The final formation profile of the proposed soils buttress will be completed, where required, by excavating in-situ materials and by placing engineered fill to the proposed formation levels, as shown in drawing ref. WR7842/02/01. Once completed the existing lagoon will be allowed to rise back to original levels (approx. 166 mAOD).

1.4.6 The main restoration and capping elements of the previously consented scheme have been retained in the revised scheme. Therefore, the proposed restored landform will keep the approximate field pattern, size and distribution to the previous scheme and the proposed hedgerows, woodland and scrubland distribution. The revised scheme comprises areas of species-rich grassland separated by hedgerows, with large areas of native woodland towards the centre of the site, and scrubland around the edges of the site, with existing waterbodies and infrastructure features retained, including access roads. This will merge with areas of existing wet scrubland on the eastern boundary and the existing woodland that surrounds the site, as illustrated on drawing ref. WR7816/12/08.

1.4.7 Currently the landform is below approved restoration levels and therefore not in accordance with planning (ref. P2002/1016), based on recent topographical surveys of Cells 3 and 4 which show the current profile of the cells is lower than the previously approved levels. The difference in height is up to 2m in some places and this is largely due to differential settlement within the waste mass. The restoration plan for the site shows that the maximum proposed restoration levels are to be approximately 192 mAOD. Soils will be used to complete capping and achieve restoration contours under the requirements of restoration and aftercare as per the previous consent.

1.4.8 In light of this, this Waste Recovery Plan proposes the importation of 94,884 m^3 of suitable waste recovery materials, together with an estimated 9,568 m^3 of non-waste soils already present on site (not included in the waste recovery), to be placed within the uncompleted areas of the landform and to ensure a stable profile in compliance with the restoration landform as obligated by planning. Estimated quantities of waste materials required to complete the restoration scheme have been calculated and are discussed further in Section 2.2 of this WRP ('Quantity of waste used'). This provides the minimum fill requirements to achieve the final restoration landform. As part of the restoration, there will be a requirement to import engineering material for the cap and general restoration materials, with no infilling required. Restoration will be achieved via a phased approach (phases 1-5) as shown in drawing ref. WR7816/12/03 'Proposed Phasing Plan'.

1.4.9 Therefore, this Waste Recovery Plan (WRP) proposes the importation of restoration materials, in addition to non-waste restoration materials already present on site, to complete the revised

landform of Tip 890, in accordance with contours and levels shown in the proposed restoration scheme. This revised scheme will utilise suitable materials already on site (non-waste) and imported wastes for recovery to undertake the restoration and capping works as listed in Table 4 of this report, and will also include importing additional waste code 19 12 09 (minerals e.g. sand, stones) , which the operator proposes to add to the permit as part of this permit variation application. An estimated total of 94,884 m^3 waste materials will be imported onto site and an estimated 9,568 m^3 of soils already on-site will be used, bringing the total volume of restoration materials required to complete the restoration profile to approximately 104,452 m^3.

1.5 Habitats and Environmental Receptors

1.5.1 A search of sensitive receptors within a 1km radius of the activity boundary at Tip 890 of Pwllfawatkin Landfill Site was conducted using the DEFRA Magic Maps[1] website and other publicly available information sources, and the receptors are identified below in Table 1, and shown on drawing ref. 4962-CAU-XX-XX-DR-V-1801.

1.5.2 The site is situated amongst predominantly agricultural land and woodland and is approximately 350m to the west of Pontardawe Road (A474). The nearest main river feature is the Upper Clydach River which is oriented in a north-south direction and flows along the eastern boundary of the site. This is fed by numerous field drains surrounding the site, and the River Garnant and the Nant Melyn brook appear to converge with the Upper Clydach River on the north-eastern corner of the site boundary. A spring is also located on the south-western boundary of the site.

1.5.3 Access to the landfill site is off the A474 to the west of the site along an unnamed road. The A474 runs north to south and connects Pontardawe and the more urbanised Swansea Valley to the south, and the more rural Ammanford in Carmarthenshire to the north.

1.5.4 There are very few residential properties situated within close proximity to the site, with the nearest, Nant y Gafaelau, located approximately 240m to the west, and three residential properties on the eastern side of the A474 located approximately 340m to the east of the site boundary. The area of Tip 890 is located immediately to the north of Baran Road, in the central portion of the site. Bryn Mawr, a summit standing at 351m above sea level, is located 500m to the west of the site.

1.5.5 The underlying bedrock geology of the site comprises predominantly of mudstone, siltstone and sandstone of the Lynfi Member and sandstone of the Rhondda Member, both formed in the Carboniferous Period, interbedded with coal seams. The superficial deposits that lie on top of the bedrock consist largely of clay, silt, sands and gravels from Glacial Till and Alluvium deposits. The bedrock below the site is classed as a Secondary A Aquifer, defined by Defra as 'permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally

[1] DEFRA Magic Maps website, 2022: https://magic.defra.gov.uk/MagicMap.aspx

aquifers formerly classed as minor aquifers'. There are no Source Protection Zones (SPZs) within 2km of the site.

1.5.6 There are no Sites of Special Scientific Interest (SSSIs) within 1km of the site. The closest is Haffod Wennol Grasslands SSSI is located 1.7km to the northwest of the site.

1.5.7 Except for the SSSI mentioned above, there are no designated or sensitive habitats within 2km of the site, including Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar (wetland) sites, Local Nature Reserves (LNR), Ancient Woodlands, National Nature Reserves (NNR), Areas of Outstanding Natural Beauty (AONBs), Scheduled Monuments, Listed Buildings or other Protected Habitats or Species.

Table 1 – Sensitive Receptors within 1km of the site

Receptor	Receptor Type	Distance & Direction
Bedrock – Secondary A Aquifer	Groundwater	0m below site
Field drains	Surface Water	<10m SE, 125m NW
Minor Road (site access)	Public Road	<10m E
Broadleaved Deciduous Woodland	Habitat	20m W, 50m SE, 125m E, 200m N
Upper Clydach River	Surface Water	40m E
Agricultural Land	Agricultural	165m E, 390m N,
Baran Road	Public Road	180m SE
Nant-y-Gafaelau	Residential	240m W
Pontardawe Road (A474)	Public Road	350m E
Unnamed Road	Public Road	350m N
Three Residential Properties	Residential	360m E
Nant Melyn Stream	Surface Water	380m N
Old Star	Residential	500m NE
Abercorgi Farm	Residential	555m NW
Plasnewydd House	Residential	555m ESE
Abernant Centre for Enterprise	Commercial	570m SE
Cwym Gors residential area	Residential	600m NE
Tyn-y-coedcae Farm	Residential	620m NE
Highbury Cottage	Residential	630m SE
Pen-yr-heol	Residential	740m E
Nant Hopcyn	Residential	750m NE
Letty'r-Crydd	Residential	830m NW

2.0 WASTE RECOVERY PLAN PROPOSAL

2.1 Purpose of Work

2.1.1 The restoration scheme for the site has been revised due to shortfalls in expected waste input volumes at Pwllfawatkin Landfill Site. This is because of a number of factors including, but not limited to, the combined success of Welsh Government policy to reduce the amount of waste material that is sent to landfill for disposal, the increased recycling and recovery rates of waste materials across the country, an economic slowdown in the past decade, and disruption caused by the COVID pandemic. Landfills in Wales are experiencing reduced waste inputs and there is a reduction in the reliance on landfills as a waste management option. Therefore, a recent planning application has been submitted to Neath Port Talbot Council (ref. P2021/1277) for a revised restoration scheme for Tip 890 at Pwllfawatkin Landfill Site, with the aim to safely closing the landfill by October 2023, and with a further 2 years following to complete restoration works. Planning consent was granted on 24th May 2023 (ref. P2021/1277).

2.1.2 It is proposed to undertake waste recovery activities at Tip 890 of Pwllfawatkin Landfill Site in order to complete the revised landform to the proposed contours shown in the following drawings:

- WR7816/12/04 Rev 2 Pre-Settlement Waste Contours Plan
- WR7816/12/05 Post-Settlement Waste Contours Plan
- WR7816/12/06 Cross-Section Location Plan
- WR7816/12/07 Cross-Sections Through Proposed Landform
- WR7816/12/08 Proposed Restoration Plan

2.1.3 It is necessary for the site to be completed and restored to a designated profile to ensure the long-term stability of the landfill site, to avoid unwanted differential or excessive settlement, to protect the capping integrity and for the long-term function of the environmental monitoring and management systems across the site for gas, leachate, groundwater and surface water. This in turn is important for the final restoration and after-use of the site, reducing the likelihood of needing to return to site at a later date to correct any differential settlement or other issues.

2.1.4 The revised restoration scheme (ref. P2021/1277), when compared to the previously consented scheme (ref. P2002/1016) will incorporate the following:

- Revised restoration contours (covering a reduced area than previously consented) to complete the restoration of Tip 890 by constructing a sidewall extension to the operational Cell 4 and not developing the previously consented Cell 5;
- A reduction in void space from that previously consented;
- An amended surface water management scheme to account for the revised restoration profile (the current scheme relies on a gravity drainage system and ditch collection system, feeding attenuation and settlement ponds before discharge to the

Upper Clydach River. The area of land to be drained is not increasing and so surface water management will not alter significantly from the current scheme – see drawing ref. WR7470/01/01);

- An amended phasing scheme; and,
- An amended scheme of landscaping.

2.1.5 The purpose of this Waste Recovery Plan (WRP) is for the importation of an additional estimated 94,884 m^3 of restoration materials to be imported to site to complete the final landform. It is proposed to import suitable waste types listed in Table 4 of this report. It is estimated waste materials will be imported to site at a rate of 7,000-8,000 tonnes per month until October 2023, and then the following 2 years will be required after that to complete the restoration of the site into a variety of new habitats to compliment the already existing woodland, scrubland and grassland areas.

2.1.6 A phased scheme of restoration will be carried out of the Tip 890, as shown in attached drawing ref. WR7816/12/03 'Proposed Phasing Plan'. The site will be worked in five phases and progressively restored to woodland, grassland and scrubland habitats, with significant biodiversity gain. The final depths of waste and cross sections showing soil profiles are detailed in drawing refs. WR7816/12/06 and WR7816/12/07. The estimated materials required to complete the final landform is shown in drawing ref. 4962-CAU-XX-XX-DR-V-1800, with a grand total of 104,452 cubic metres (m^3) of soils required. Of this the operator has an estimated 9,568 m^3 of soils already present on site ready for using in the areas shaded red and blue on the drawing, and therefore, an estimated 94,884 m^3 of waste materials will need to be imported to site to complete the remaining areas. With reference to attached drawing ref. 4962-CAU-XX-XX-DR-V-1800, the planned restoration works are detailed in Table 2 below:

Table 2 – Progressive Restoration Works

Area on Drawing ref. 4962-CAU-XX-XX-DR-V-1800	Location	Restoration/ Capping Works	Comment	Total Estimated Volume Material Required	Total Approx. Area to be Restored
Red Area	North restoration soils completion	April/May 2022	1m of soils being placed to completion of area	5,814 m^3 (soils available on site)	6,281 m^2
Blue Area	East/ Central restoration soils completion	Approx. 2025	1m of soil to be placed to completion of area and full capping spec –	39,638 m^3 (of which 3,754 m^3 soils	34,683 m^2

			soils available on-site	available on site)	
		Approx. 2025	1m soils to be placed to completion and full capping spec – soils to be imported		
Green Area	Southern area – capping support soils buttress	Approx. 2025	Construction of soils buttress requiring approx. 5,000 m^3 soils to be imported	59,000 m^3 (to be imported)	34,052 m^2
	Further areas to be restored to meet design	Approx. 2025	Restoration soils to be imported – approx. 54,000 m^3 required		

2.1.7 This WRP has been submitted together with a bespoke permit variation application to Natural Resources Wales (NRW) to seek agreement that the operation can be regarded as a recovery operation in line with the latest NRW guidance 'Prepare a waste recovery plan' (last updated 28 December 2022).

2.2 Quantity of waste used – volume of material required

2.2.1 The revised restoration scheme, as detailed in planning application ref. P2021/1277, will require an estimated total of 104,452 cubic metres (m^3) of soils to complete the final landform. Of this the operator has an estimated 9,568 m^3 of soils already present on site ready for using in the red and blue areas shown on the attached drawing ref. 4962-CAU-XX-XX-DR-V-1800. Therefore, an estimated 94,884 m^3 of restoration materials, which will be suitable waste materials as listed in Table 4 of this report, will need to be imported to site to complete the remaining areas.

2.2.2 Based on the estimated volumes (in m^3) of imported restoration materials provided by the operator (presented in Table 2 above) and using a conversion factor of 1.8 tonnes per every m^3 of restoration material (assuming it is a material similar to sandy, gravelly clay), it is possible to estimate tonnages expected to be required at site to complete the restoration profile. Tonnage calculations are presented in Table 3 below and should be used as a guide until actual material tonnages have been confirmed during the works.

Table 3 - Quantity of Waste Proposed for Imported Restoration Materials

	Red Area		Blue Area		Green Area	
	Cubic metres (m^3)	Tonnes	Cubic metres (m^3)	Tonnes	Cubic metres (m^3)	Tonnes
Total required	5,814	10,465.2	39,638	71,348.4	59,000	106,200
Available material on site						
Soils	5,814	10,465.2	3,754	6,757.2	N/A	N/A
Material required to be imported						
Soils	N/A	N/A	35,884	64,591.2	59,000	106,200
Total Material Required	104,452 m^3 188,013.6 tonnes					
Overall Total Imported Material Required	**94,884 m^3 170,791.2 tonnes**					

2.3 Suitability of Waste Materials

2.3.1 The Operator proposes to import an estimated 94,884 m^3 (approx. 170,791.2 tonnes) of restoration materials to site to complete the restoration of the site to final contours within the revised restoration scheme. Imported materials to be used will be suitable waste types (see Table 4 below) as permitted by the environmental permit for the site and is an opportunity to recover the material for restoration, rather than disposal.

2.3.2 It is considered that the restoration materials to be imported to site will be suitable both physically and chemically for restoration as it will be well characterised and will go through strict waste acceptance procedures before being accepted onto site. Restoration materials considered for the capping support soils buttress were assessed in the Stability Risk Assessment (SRA) prepared by Sirius Environmental Limited ref. WR7842/JD/01. Calculative design and modelling from the SRA concluded that the use of restoration materials would be suitable for creating a stable buttress with required maximum slope gradient of 1 in 3, both during construction and post-construction.

2.3.3 The restoration landform construction area will be inspected daily before works start to ensure that any significant changes are identified that could impact upon the overall stability of the working area.

2.3.4 Materials will be well characterised through FCC's 'Soils for restoration assessment' procedure and 'Waste Pre-Acceptance Procedure' as detailed in Appendix 1 and strict waste acceptance procedures will be adhered to on site.

Chemical suitability

2.3.5 Characterisation (and where required, source testing and compliance testing) will be carried out to adequately characterise the imported materials to show they have no significant leaching potential.

2.3.6 The list of wastes which will be used to achieve site restoration are included in Table 4 below. The waste types listed are selected on the basis that they are considered to be low risk waste types, with negligible leaching and contamination potential.

2.3.7 To ensure their chemical suitability for waste recovery operations, only wastes listed in Table 4 below will be accepted onto site for use in the restoration, engineering and capping works. The majority of these wastes are listed in 'Table S3' of the Environmental Permit ref. EPR/BU8819IV for Pwllfawatkin Landfill Site as being suitable for use in restoration, capping and engineering works and are separate to the waste types accepted at the site for non-hazardous landfill. These waste types have been selected to be in accordance with the approved waste types for deposit for recovery in the Natural Resources Wales (NRW) guidance for 'Check waste types used in a typical deposit for recovery activity' (last updated 1st February 2023).

2.3.8 It is not intended to include ameliorants within the waste list and they are not considered further in this restoration plan. If in the future a need for enhancing soil fertility is identified, this would be carried out under a suitable mobile plant permit and an agricultural and/or ecological benefit statement will be carried out to calculate appropriate rates of application at that time based on the soils deposited under this recovery activity.

Table 4 - List of Wastes for Recovery

Waste code:	Description:
01	WASTES RESULTING FROM EXPLORATION, MINING, QUARRYING AND PHYSICAL AND CHEMICAL TREATMENT OF MINERALS
01 01	**waste from mineral excavation**
01 01 02	wastes from non-metalliferous excavation
01 04	**wastes from physical and chemical processing of non-metalliferous minerals**
01 04 08	waste gravel and crushed rocks other than those mentioned in 01 04 07
01 04 09	waste sand and clays
16	WASTES NOT OTHERWISE SPECIFIED IN THE LIST
16 01	**end-of-life vehicles from different means of transport (including off-road machinery) and wastes from dismantling of end-of-life vehicles and vehicle maintenance (except 13, 14, 16 06 and 16 08)**
16 01 03	end-of-life tyres
17	CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)
17 01	**concrete, bricks, tiles and ceramics**
17 01 01	concrete
17 01 02	bricks
17 01 03	tiles and ceramics

17 05	**soil (including excavated soil from contaminated sites), stones and dredging spoil**
17 05 04	soil and stones other than those mentioned in 17 05 03
17 05 06	dredging spoil other than those mentioned in 17 05 05
17 05 08	track ballast other than those mentioned in 17 05 07
19	WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION/INDUSTRIAL USE
19 02	**wastes from physico/chemical treatments of wastes (including dechromatation, decyanidation, neutralisation)**
19 12	**wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified**
19 12 09	minerals (for example sand, stones)
19 12 12	other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11
20	MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS
20 02	**garden and park wastes (including cemetery wastes)**
20 02 02	soil and stones

2.3.9 By definition, such waste material for restoration and capping will not be capable of generating a leachate that could pose a risk to the groundwater or surface water environment. The potential impact from the placement of restoration soils at the site is considered to be negligible and the materials are classed as suitable in line with the NRW guidance on 'Prepare a waste recovery plan' (last updated 28th December 2022) and 'Check waste types used in a typical deposit for recovery activity' (last updated 1st February 2023).

2.3.10 All soils brought for restoration will be subject to strict waste acceptance procedures at the site and subject to FCC's 'Soils for restoration assessment' procedure and 'Pre-Acceptance Procedure' as detailed in Appendix 1 and undergo analysis where required.

2.3.11 All EWC codes listed that are mirror entries will be tested in line with requirements of FCC's 'Soils for restoration assessment procedure' and technical guidance WM3 to confirm if the waste is hazardous or non-hazardous. Only wastes confirmed as non-hazardous properties will be accepted to site.

Physical Suitability

2.3.12 All incoming waste materials will be subject to strict waste acceptance procedures (Appendix 1) which will include assessment of the documentation accompanying the load, e.g. Waste Transfer Note. Details including the source of waste, type of waste and any Waste Acceptance testing and number of loads.

2.3.13 All wastes used for the purpose of recovery activity will be accordance with the requirements of the Duty of Care. An assessment will be made on each waste as part of the pre-acceptance procedures:

- The source and origin of waste;
- The Standard Industry Classification (SIC) code for the process that produced the waste (include a description and the characteristics of materials and products);
- Any description if the waste has undergone treatment;
- Any testing information provided where relevant;
- Description of the appearance of the waste (smell, colour and physical form);
- The EWC code;
- For hazardous and mirror entry hazardous waste, the hazardous property code;

2.3.14 'Soils for restoration assessment' procedure as detailed in Appendix 1 will be applied to the materials received for recovery so that only suitable material is accepted. These procedures will ensure that accepted materials are fit for purpose and meet the quality standards for the site development without causing any significant environmental impact. Waste acceptance procedures will include visual observations and waste descriptions that will ensure that only physically and chemically suitable wastes listed in Table 4 are accepted. It is considered that with source testing (where required) and robust waste acceptance procedures in place, only limited on-going compliance testing (chemical analysis) will be required.

2.3.15 The Operator as a minimum will obtain information about the characteristics of each waste stream prior to receiving the waste at the site to ensure physical, chemical and biological suitability, details are included in the Soils for restoration assessment (Appendix 1). Soils brought in for restoration will be subject to FCC's 'Soils for restoration assessment – assessment procedure of for accepting soils for use in restoration' (Appendix 1).

2.3.16 Further details on meeting quality standards for these waste types are detailed in Section 2.4 below. To ensure their chemical suitability for waste recovery operations, only wastes listed as suitable for restoration and capping in Table 4 will be accepted on site.

2.3.17 The proposed waste types will be physically similarly to aggregates and inert soils, the proposed waste types are capable of being sufficiently compacted and will be bladed out in layers using mechanical plant so that they can form a stable landform for the medium and long term and would undergo consolidation rapidly to reduce the risk of short-term instability.

2.3.18 The producer/carrier has a legal duty (issued under duty of care, Section 34(7) of the Environmental Protection Act 1990) to accurately describe the restoration materials and they will be asked about the nature of the materials intended for site. Principles for the use of soils for restoration activities in Appendix 1 will be used in the assessment procedure to determine whether incoming materials are suitable for use in restoration. These include:

1) Non-hazardous – for any soils used in the restoration activity, the soil must be classified as non—hazardous in accordance with the Hazardous Waste (England &

Waste) Regulations 2005 (as amended) which implements the definition of 'hazardous waste' in the revised Waste Framework Directive (2008/98/EC).

2) Suitability for used without signification risk of pollution.

3) Consideration of the end use of the restored site – guideline concentrations detailed in Appendix 1.

2.3.19 The assessment process for each and every restoration soil stream will follow a series of steps as detailed in Appendix 1 to determine whether the incoming restoration soils are suitable. Details include:

1) Initial confirmation requirements.
2) Confirm that the restoration soils are not classified as hazardous.
3) Determine whether there is a requirement for any site-specific assessment.
4) Assessment of chemical constituents (use of decision tree detailed in Appendix 1 to assess suitability of restoration materials).

2.3.20 A site-specific assessment of the suitability of any soil for restoration will be undertaken for any waste where a different and specific end-use is proposed and/or the sites are located nearby any protected sites (e.g. European Sites or SSSI) or other vulnerable receptors.

2.3.21 The Duty of Care documentation for all deliveries of restoration materials will be inspected and compared with the relevant contract that is set up on the FCC system. No restoration materials will be accepted for restoration unless approved by FCC's Compliance Team and a relevant contract has been arranged. Visual inspections will be carried out on every load to identify any non-conformances e.g. unexpected components (paper, plastic metals etc), any obvious contaminants with the soils, of if the materials are odorous and or excessively dusty. Any non-conforming loads will be handled as per the requirements detailed in Appendix 1.

2.3.22 Any restoration materials requiring sampling will be carried out as per the 'sampling requirements' detailed in Appendix 1. All checks detailed in Appendix 1 will ensure that only wastes listed in Table 4 are accepted to site. Any persons undertaking assessments will be trained in the 'Soils for restoration assessment' procedure (Appendix 1) and in the characterisation and assessment of restoration materials. Any soil enquiry that does not meet the requirements as laid out in procedure detailed in Appendix 1, or where any concerns with making a determination exist, the restoration materials must not be used for restoration on site.

2.3.23 It is considered that the restoration materials proposed to be used as part of the waste recovery operations in Tip 890 at Pwllfawatkin Landfill Site are physically and chemically suitable.

2.4 Waste Acceptance Procedures

2.4.1 Restoration waste will only be accepted at the site if it is of a type listed in Table 4 and in accordance with the approved restoration plan and FCC waste acceptance procedures.

2.4.2 FCC operates under an accredited Environmental Management System (EMS). The EMS includes waste acceptance procedures and so all wastes will be subject to FCC's pre-acceptance screening process for soils and restoration waste.

2.4.3 The waste acceptance procedures include the following:

- Level 1 Basic Characterisation Testing
- Level 2 Compliance Testing
- Level 3 On-site Verification of Wastes
- Rejection and Quarantine Procedures
- Recording and Reporting Procedures

Level 1 Basic Characterisation Testing

2.4.4 Level 1 basic characterisation of wastes constitutes a thorough determination, according to standardised analysis of the characteristic properties of waste and is technical assessment undertaken at the initial waste enquiry stage.

2.4.5 Other than in the prescribed circumstances outlined below, all wastes accepted for restoration at the site will undergo basic characterisation testing by, or on behalf of, the waste holder/producer before use in restoration. Basic characterisation testing will be used to determine the following:

- Source and origin of the waste;
- Information on the process producing the waste (description, including SIC code,
- and characteristics of raw materials and products);
- Description of waste treatment applied to the waste or reasons why treatment is
- not considered necessary;
- Data on composition of waste;
- Appearance of the waste (smell, colour and physical form);
- The waste's European Waste Catalogue (EWC) code; and,
- Any additional precautions to be taken at the site.

2.4.6 Basic characterisation will focus on identifying whether a waste is suitable for acceptance to be used in restoration. This will be by comparison of the wastes composition data against the limits presented in Appendix 1, and checking the permit allows for the waste to be accepted.

2.4.7 In the event that the initial information supplied with a waste enquiry is insufficient to complete the assessment additional information will be requested. This may include direct liaison with the waste producer to provide further information with regard to the waste source/origin, method of production, further compositional data etc.

2.4.8 Final technical approval to accept the waste for restoration will only be given when all necessary information has been obtained.

2.4.9 The technical assessment records will be maintained under review to ensure that basic characterisation and compliance testing is carried out at the intervals identified in the initial technical assessment.

2.4.10 The only prescribed circumstance where basic characterisation of restoration materials is not required is where all necessary information required is already known from prior basic characterisation. (This will usually only apply to wastes that are regularly generated by a consistent process at the same site).

Level 2 Compliance Testing

2.4.11 Level 2 Compliance Testing constitutes periodical testing to determine whether the waste complies with the results of the basic characterisation, the acceptance criteria and the site-specific conditions of the permit. This test will focus on key parameters identified by Basic Characterisation and will be carried out as a minimum at least once a year for each waste stream that undergoes Level 1 Basic Characterisation.

2.4.12 The relevant parameters to be checked will be determined from the results of the Basic Characterisation. The parameters, and reasons for their selection, will be documented, and the results of the tests will be maintained on site.

Level 3 On-Site Verification of Wastes

2.4.13 Level 3 On-site Verification constitutes rapid check methods to confirm that a waste is the same as is described in the documentation accompanying the waste.

2.4.14 The evidence required to be provided by the waste producer includes the information provided on the Waste Transfer Note (for non-hazardous waste):

- Waste classification
- Waste description
- Basic characterisation
- Results of any basic characterisation or compliance testing (where appropriate)
- Waste quantity
- Nature of waste
- If the waste is loose or contained
- If contained the type of container
- Time and place of transfer
- SIC code of current waste holder
- Name and address of transferor and transferee and their signatures
- The capacity in which the transferor and transferee are acting e.g. as producer, importer, registered waste carrier, broker or dealer

- The transferor and transferee's relevant authorisations e.g. permit number or registration number

2.4.15 A visual inspection to satisfy the Level 3 On-site Verification requirements will be carried out on all wastes for restoration deposited at the site. Preliminary verification, including checking of the paperwork (information on the waste transfer note), and a visual inspection, if possible, will take place before vehicles carrying waste are allowed to proceed to the deposit area and final checking is carried out at the point of discharge.

2.4.16 This visual inspection is intended to confirm the waste is as described in the accompanying documentation and is permitted for deposit for use in restoration. In this respect, the person inspecting the waste will be looking for both visual and olfactory evidence of contaminants/characteristics within the waste, which do not match the Duty of Care transfer note and/or are not permitted under the terms of the permit.

2.4.17 No wastes are to be accepted for restoration unless approved by the FCC Compliance Team and a relevant contract has been arranged.

2.4.18 Testing will determine the suitability and the application rates required for the site restoration. Testing will be carried out at a UKAS accredited laboratory.

Importation of Restoration Wastes

2.4.19 All deliveries to the site will be made by registered waste carriers. This documentation will be checked prior to waste acceptance by FCC Environment.

2.4.20 Deliveries will be made according to the haulage routes specified in the agreed planning permission for the site.

2.4.21 Bulk loads will be appropriately sheeted where necessary to control dust and/or odour.

2.4.22 Sealed loads will be directed to a dedicated unloading area for inspection by an experienced and trained member of staff**.**

2.4.23 Any non-conforming loads will be rejected from site.

2.4.24 Where non-conforming loads have been deposited on-site, they will be transferred to a quarantine area prior to removal from site. If loads are particularly dusty, they will be covered and/or dampened down where necessary.

Records

2.4.25 FCC Environment will maintain records for all restoration waste deliveries which:

a. Will be legible.

b. Will be made as soon as reasonably practicable.

c. If amended, will be amended in such a way that the original and any subsequent amendments remain legible or are capable of retrieval.

d. Be retained, unless otherwise agreed by NRW, for at least 2 years from the date when the records were made, or in the case of the following records until permit surrender: (i) off-site environmental effects; and (ii) matters which affect the condition of land and groundwater.

e. Will be prepared with reference to Duty of Care and relevant sector guidance notes.

Storage of Restoration Wastes

2.4.26 Timing of deliveries and phasing of re-instatement will determine how the waste is used at the site.

2.4.27 Where practicable, restoration wastes will be directly placed in restoration areas and will not be stored on-site.

2.4.28 Where materials are temporarily stored, they should be stored in as small a footprint as possible and be located no less than:

- 10 metres from any watercourse (e.g. rivers, streams, sea, ditches) and/or land drains;
- 50 metres from any spring, well or borehole not used to supply water for domestic or food production purposes;
- 250 metres from any borehole used to supply water for domestic or food production purposes; and,
- 250m from any sensitive residential receptors.

2.5 Meeting quality standards – method of placement

2.5.1 It is proposed to place waste recovery materials to the final landform levels detailed in accordance with drawing ref. WR7816/12/04 Rev2 'Pre-Settlement Waste Contours Plan'. Restoration will be achieved via a phased approach as shown in drawing ref. WR7816/12/03 'Proposed Phasing Plan'.

2.5.2 Restoration materials will be delivered to site either using appropriate road going vehicles or dumpers if it is possible to access site directly from the source site. The materials will then be bladed out in layers and compacted using mechanical plant used for the spreading activities. The depth of materials will be placed and vary accordingly as shown in the cross-sectional drawing ref. WR7816/12/07. The depth of soil will conform to best practices and the requirements of the planning permission.

2.5.3 Restoration wastes may also be used in ancillary uses such as track surfacing, hardstanding, drainage works or levelling of post re-instatement settlement.

2.5.4 It is not proposed to differentiate between the soils accepted in the various areas and all wastes will be accepted in accordance with the standard waste acceptance procedures and soils acceptance criteria detailed within this section.

2.5.5 There are no proposals to manufacture or blend soils at this stage.

2.5.6 The site will operate according to the 'Soils for restoration assessment' procedure as detailed in Appendix 1 to ensure that all incoming and received wastes are fit for purpose, suitable for design and construction. Final ground levels and landscaping will ensure that the site does not result in any environmental problems including soil erosion, pollution or flooding.

Environmental Issues

2.5.7 It is maintained that the proposed restoration works will not result in significant or adverse environmental effects due to the nature and scale of the operations. In terms of landscape setting, the restored site will provide net gains for biodiversity and enhance the landscape and surrounding area once complete.

2.5.8 As stated in the most recent December 2021 planning application ref. P2021/1277, the revised restoration scheme will decrease the final landform elevations and therefore will have a smaller visual impact than the proposed restored landform previously consented. A visual impact assessment and environmental impact assessment undertaken as part of the application concluded that the revised restoration of Pwllfawatkin Landfill Site will not result in any adverse landscape or visual impacts during and after construction.

2.5.9 This Waste Recovery Plan (WRP) is part of a bespoke permit variation application for the deposit of waste as a recovery operation for the Pwllfawatkin Landfill Site permit ref. EPR/BU8819IV. An Environmental Risk Assessment has been undertaken as document ref. 4962-CAU-XX-XX-RP-V-0305 (Amenity & Accidents Risk Assessment) for the area requiring restoration to demonstrate that there are no unacceptable impacts on local and sensitive receptors in terms of odour, noise, dust and fugitive emissions. A review of the surrounding area has identified that there are no designated protected habitat sites within 1km and the nearest residential property to the site boundary is located 240m west, but with a prevailing wind direction to the northeast. A Stability Risk Assessment has also been produced for the capping support soils buttress by Sirius Environmental Limited, as report ref. WR7842/JD/01 which assesses the material placement of the buttress to ensure that it meets stability parameters.

2.5.10 In addition, a revised Hydrogeological Risk Assessment Review (HRAR) has been produced as document ref. 4962-CAU-XX-XX-RP-C-0302. This HRA Review reflects the changes in the conceptual model of the site as part of the revised restoration scheme of Tip 890.

2.5.11 The restoration scheme will only use suitable restoration materials. Therefore, it is expected gas will not be produced at the site once restoration is complete. If any gas borehole infrastructure is required to be installed, it will be outlined in the aftercare plan for the site. An updated Landfill Gas Risk Assessment (LFGRA) has been produced to reflect the change in

the conceptual site model, as document ref. 4962-CAU-XX-XX-RP-V-0304, including an assessment of risks associated with placement of restoration materials on waste slopes with additional management recommendations. The assessments will identify the potential for environmental issues as part of the recovery operation.

2.5.12 The site is not within a Flood Risk zone from Rivers or the Sea (classed as at Very Low Risk), and the site is within a Low Risk Zone for surface water flooding.

2.5.13 It is considered that given the waste types to be accepted on site for restoration, the leaching potential and risk of contaminants entering nearby surface waters and groundwaters are considered negligible. The nature of the imported materials is unlikely to result in any significant environmental pollution. The site is located upon a Secondary A Aquifer within the bedrock below the site. However, controlled waters are unlikely to be significantly adversely affected by the restoration materials. No waste recovery activities will take place within any designated/habitat areas (the closest is a Site of Special Scientific Interest (SSSI) over 1.7km to the northwest) and all recovery works, and wastes accepted will be subject to FCC's 'Soils for restoration assessment' procedure as detailed in Appendix 1, to ensure the impact to the environment is minimal. Adequate operational procedures will be in place to ensure that there are no silt loadings discharged to nearby surface water bodies.

3.0 WASTE RECOVERY ACTIVITIES: RECOVERY VS DISPOSAL

3.1 Overview

3.1.1 The core function of the waste recovery activity at Pwllfawatkin Landfill Site is to allow for the importation of suitable restoration materials to restore the site to the revised restoration scheme as detailed in planning application ref. P2021/1277, recently submitted to Neath Port Talbot Council. The revised restoration scheme is an update to the currently approved restoration scheme (planning reference P2002/1016 in Appendix 3) and proposes the importation of restoration materials to complete a revised and slightly reduced landform by October 2023, with a view to finalising restoration of the site in the two years following. The restored areas will ensure a stable final profile which is capable of draining effectively and producing net gains for biodiversity in the area.

3.1.2 This section determines whether the proposed activity, which involves the permanent deposit of restoration soils derived from waste, complies with the criteria for 'Waste Recovery'. The Waste Framework Direction defines a 'recovery' operation as:

'a waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function'.

3.1.3 The Directive provides a clear aim to encourage the re-use of waste materials to conserve natural resources. The specified works require a physically and chemically specified criteria of which is available in the waste market. The use of wastes can conserve high quality primary aggregates and so preserve resources.

3.2 Assessment of Waste Recovery

3.2.1 The GOV.UK Guidance document 'Waste recovery plans and deposit for recovery permits' requires operators to demonstrate, with evidence, that the proposed operations to deposit waste on land as a recovery activity can be undertaken using non- waste materials:

"your plan must show that if you could not use a waste material you would do work to get the same outcome using non-waste materials".

3.2.2 The guidance provides three options in which evidence can be used to demonstrate that waste is being used in place of non-waste, of which only one needs to be successfully demonstrated:

- Financial Gain by using non-waste materials;
- Funding to use non-waste;
- Obligations to do work.

3.2.3 It is proposed to undertake the restoration under an 'obligation to do work', where a planning obligation is already in place to restore Pwllfawatkin Landfill Site in accordance with the revised restoration scheme produced as part of a recent planning application ref. P2021/1277,

to which the operator proposes to restore the site to. Planning consent was granted on 24th May 2023 (ref. P2021/1277).

3.3 Obligations to do work: Evidence

3.3.1 The operator for Pwllfawatkin Landfill Site is required by planning permission (ref. P2021/1277 in Appendix 3) to restore the site in accordance with approved final restoration landform to reduced levels, when compared to the previously consented scheme that incorporates the following:

- Revised restoration contours (covering a reduced area than previously consented) to complete the restoration of Tip 890 by constructing a sidewall extension to the operational Cell 4 and not developing the previously consented Cell 5;
- A reduction in void space from that previously consented;
- An amended surface water management scheme to account for the revised restoration profile (the current scheme relies on a gravity drainage system and ditch collection system, feeding attenuation and settlement ponds before discharge to the Upper Clydach River. The area of land to be drained is not increasing and so surface water management will not alter significantly from the current scheme – see drawing ref. WR7470/01/01);
- An amended phasing scheme; and,
- An amended scheme of landscaping.

3.3.2 Pre Settlement contours are shown on Drawing WR7816/12/04 Rev 2.

3.3.3 The final restoration plan for the site shows that the maximum proposed restoration levels are approximately 190 mAOD ('Post-Settlement Contours' drawing ref. WR7816/12/05).

3.3.4 This Waste Recovery Plan (WRP) proposes the importation of suitable restoration materials to restore the site to meet the revised restoration levels as submitted to the Council in planning application ref. P2021/1277 and to provide stability of the final restored landform. It is considered that the proposals demonstrated in this Waste Recovery Plan can be accepted under the principles of 'Obligations to do the work' imposed by planning. Planning consent was granted on 24th May 2023 (ref. P2021/1277).

3.4 Funding to use non-waste: Evidence

3.4.1 Not proposed.

3.5 Financial gain by using non-waste materials: Evidence

3.5.1 Not proposed.

4.0 CONCLUSION

4.1 Conclusions

4.1.1 Due to a decline in incoming residual wastes to the landfill site in recent years the site landform is currently below the approved restoration levels and therefore was not in accordance with the approved planning conditions, and so the revised restoration scheme was proposed to reduce the final levels and use suitable restoration materials to achieve this.

4.1.2 Following submission of a Planning Application, a revised restoration scheme has recently been approved with planning consent granted on 24th May 2023 (ref. P2021/1277), and the operator proposes to cap and restore Tip 890 of Pwllfawatkin Landfill Site in accordance with this revised restoration landform.

4.1.3 In response, this Waste Recovery Plan proposes the importation of 94,884 m^3 of suitable waste restoration materials to complete the final restored landform of Tip 890 in line with the revised restoration levels. In addition an estimated 9,568 m^3 of non-waste soils already present on site will be used. This means a grand total of approximately 104,452 m^3 of soils will be used to complete the final landform. The placement of the restoration materials will provide a stable landform and the capping support soils buttress will allow for restoration soils to be placed above the geosynthetic cap on the Cell 4 capping system. The operator aims to achieve the approved final landform profile by October 2023, with further restoration of the site completed in the two years following.

4.1.4 It is proposed that imported restoration materials are of waste types as listed in Table 4, which includes the addition of two additional waste codes 19 12 09 (minerals e.g. sand, stones) and 19 02 06 (sludges from physico/chemical treatment), proposed to be added to the permit as part of this permit variation application. It is considered that the imported and on-site materials to be used for restoration will be suitable both physically and chemically for restoration. The waste types in Table 4 have been discussed and approved verbally with the local Natural Resources Wales (NRW) officer and the Welsh Revenue Authority (WRA).

4.1.5 Strict waste acceptance procedures as details in FCC's 'Soils for restoration assessment' procedure and 'Waste Pre-Acceptance Procedure', attached in Appendix 1, will be applied to the materials received onto site for recovery so that only suitable material is accepted. These procedures will ensure that accepted materials are fit for purpose and meet the quality standards for the site development without causing any significant environmental impact. Waste acceptance procedures will include visual observations and waste descriptions that will ensure that only physically and chemically suitable wastes listed in Table 4 are accepted. It is considered that with source testing (where required) and robust waste acceptance procedures in place, only limited on-going compliance testing (chemical analysis) will be required.

4.1.6 Overall, the aim of this Waste Recovery Plan for the site is to restore the landform to the revised restoration levels proposed in planning application ref. 2021/1277 using a total of 104,452 m^3 restoration materials, of which 94,884 m^3 will be imported restoration materials.

4.1.7 The recovery plan replaces non-waste material that would have been used in the operation with restoration materials that perform the same function, thus reserving natural resources and utilising waste for a useful purpose.

4.1.8 In conclusion, this Waste Recovery Plan has provided evidence that a planning obligation is in place for the site (planning consent granted on 24th May 2023, ref. P2021/1277), and the use of imported restoration materials is an environmentally sustainable solution to completing the restoration works at the site.

DRAWINGS

WR7816/12/02 Planning Application Boundary and Land under the Applicants Control
WR7816/12/03 Proposed Phasing Plan
WR7816/12/04 Rev2 Pre-Settlement Waste Contours Plan
WR7816/12/05 Post-Settlement Waste Contours Plan
WR7816/12/06 Cross-Section Location Plan
WR7816/12/07 Cross-Sections Through Proposed Landform
WR7816/12/08 Proposed Restoration Plan
WR7470/01/01 Proposed Surface Water Management Plan
WR7842/02/01 Proposed Buttress
4962-CAU-XX-XX-DR-V-1800 Soil Placement Reprofiling and Restoration Areas
4962-CAU-XX-XX-DR-V-1801 Sensitive Receptor Plan

CLIENT

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NOTES

1. ALL DIMENSIONS IN MILLIMETRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM.

2. DO NOT SCALE FROM THIS DRAWING.

3. ANY ANOMALIES IDENTIFIED WITH THE DETAILS SHOWN ON THIS DRAWING ARE TO BE BROUGHT TO THE ATTENTION OF SIRIUS ENVIRONMENTAL PRIOR TO CONSTRUCTION WORKS COMMENCING.

KEY

- Site Boundary
- Planning Application Boundary
- Phase 1
- Phase 2
- Phase 3
- Phase 4
- Phase 5

REV	DESCRIPTION	DATE	BY
1	REVISED WITH OCTOBER 2024 SURVEY	09.10.24	MCC

JOB TITLE

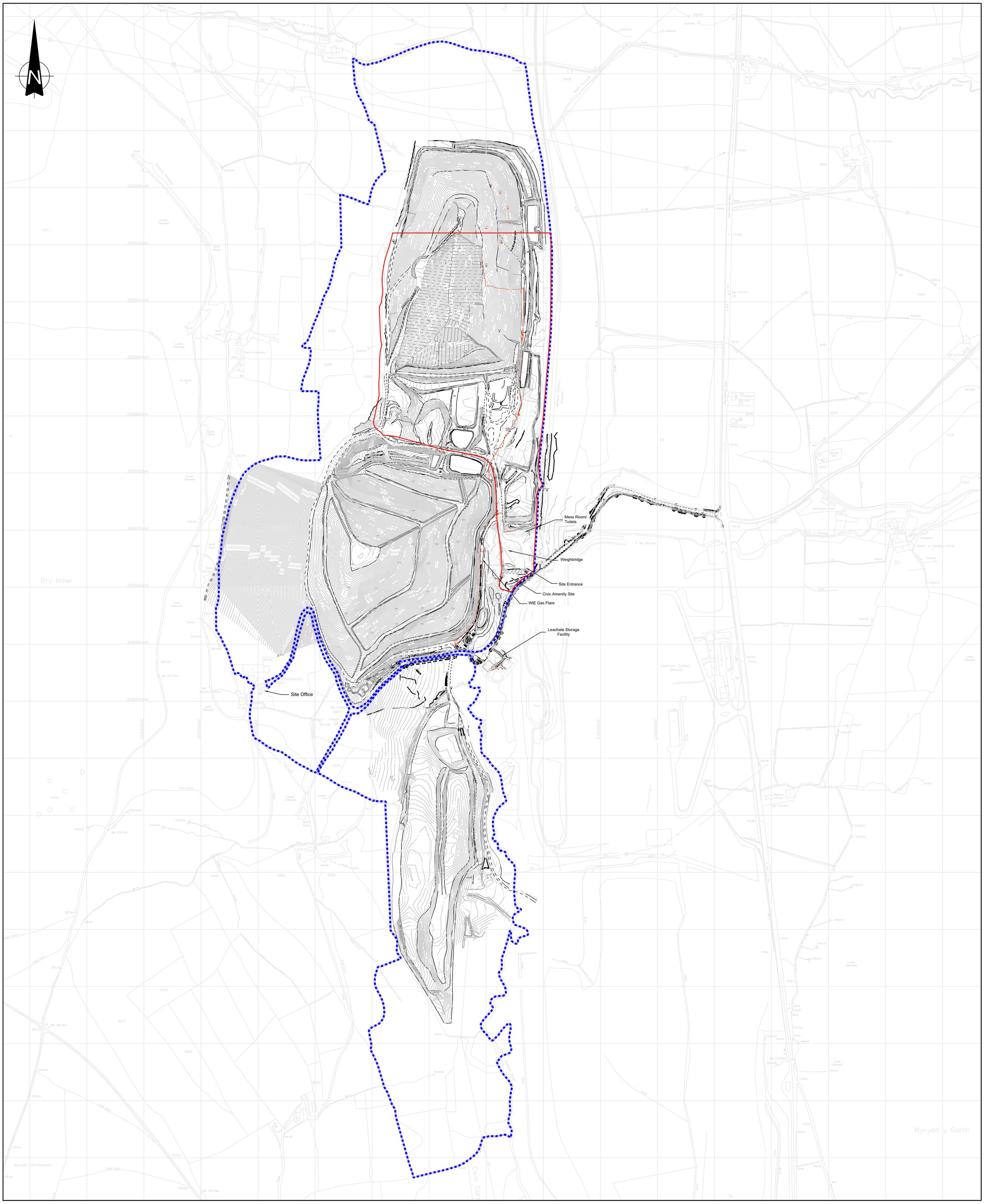
PWLLFAWATKIN
LANDFILL SITE

DRAWING TITLE

Proposed Phasing Plan

DRAWN	DATE	APPROVED	DATE
M.C	02/11/2021	F.W	02/11/2021

SCALE	SHEET	DRAWING NUMBER	REVISION
1:1000	A1P	WR7816/12/03	1



CLIENT

FCC Environment (UK) Limited
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4245 Park Approach, Thorpe Park, Leeds. LS15 8GB. 0113 264 9960

NOTES

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KEY

Land Under The Applicants Control

Planning Application Boundary

REV	DESCRIPTION	DATE	BY
1	REVISED WITH OCTOBER 2024 SURVEY	09.10.24	MCC

JOB TITLE

PWLLFAWATKIN
LANDFILL SITE

DRAWING TITLE

Planning Application Boundary and
Land Under the Applicants Control

DRAWN	DATE	APPROVED	DATE
M.C	02/11/2021	F.W	02/11/2021

SCALE	SHEET	DRAWING NUMBER	REVISION
1:3000	A1P	WR7816/12/02	1

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NOTES

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KEY

Site Boundary

Planning Application Boundary

30.0 Pre-settlement Waste Contours

REV	DESCRIPTION	DATE	BY
2	REVISED WITH OCTOBER 2024 SURVEY	09.10.24	MCC
1	UPDATED TO REFLECT CURRENT SITE POSITION AND FUTURE PROPOSAL	10.07.2023	ARK

JOB TITLE

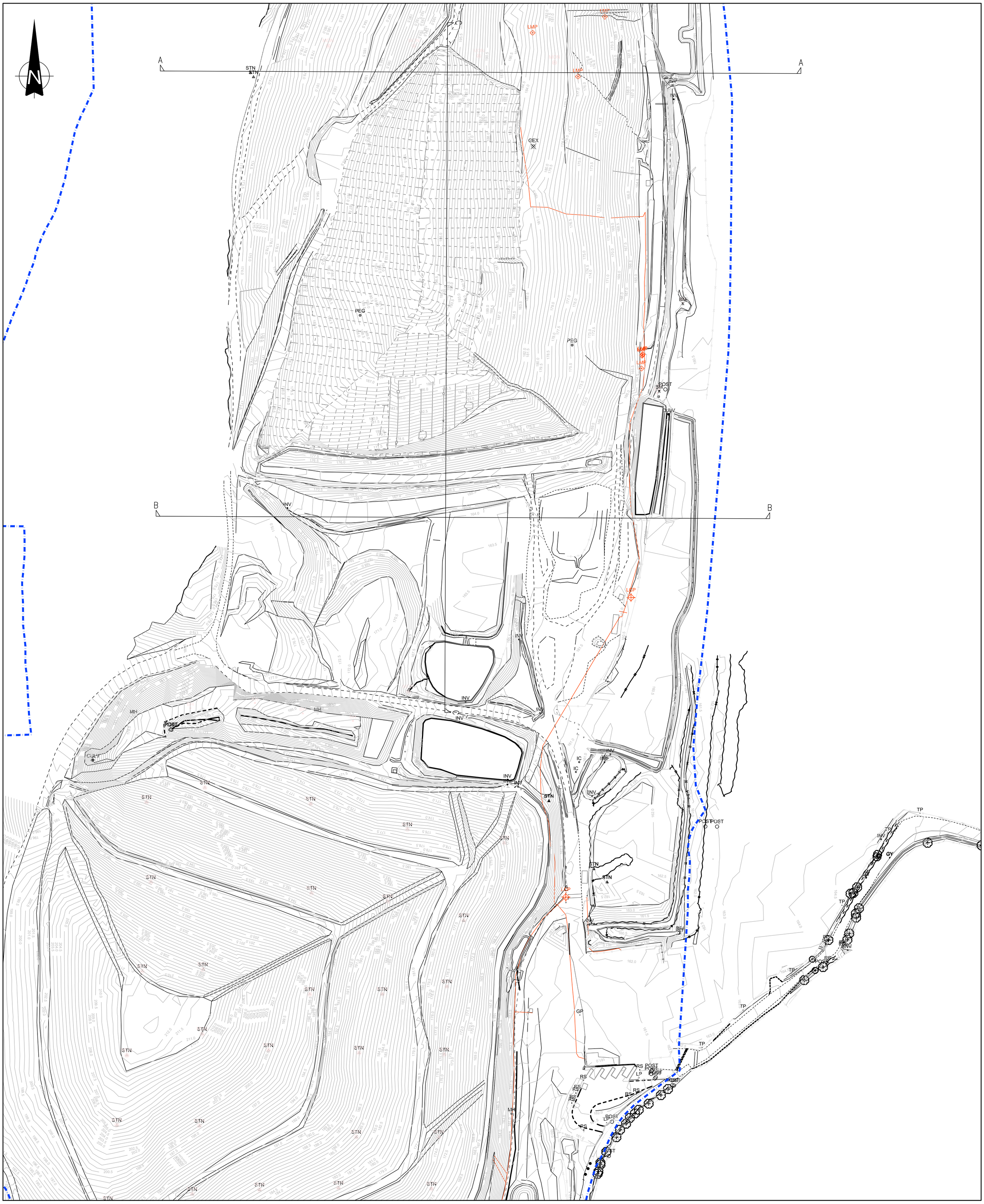
PWLLFAWATKIN
LANDFILL SITE

DRAWING TITLE

Pre-Settlement Waste
Contours Plan

DRAWN	DATE	APPROVED	DATE
M.C	02/11/2021	F.W	02/11/2021

SCALE	SHEET	DRAWING NUMBER	REVISION
1:2000	A2P	WR7816/12/04	2



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KEY

Site Boundary

Planning Application Boundary

REV	DESCRIPTION	DATE	BY
1	REVISED WITH OCTOBER 2024 SURVEY	09.10.24	MCC

JOB TITLE

PWLLFAWATKIN
LANDFILL SITE

DRAWING TITLE

Section Location Plan

DRAWN	DATE	APPROVED	DATE
M.C	02/11/2021	F.W	02/11/2021

SCALE	SHEET	DRAWING NUMBER	REVISION
1:2500	A1P	WR7816/12/06	1

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NOTES

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KEY

- Site Boundary
- Planning Application Boundary
- 30.0 — Post-settlement Waste Contours
- Restored Areas
- Long Term Access Tracks

REV	DESCRIPTION	DATE	BY
1	REVISED WITH OCTOBER 2024 SURVEY	09.10.24	MCC

JOB TITLE

PWLLFAWATKIN
LANDFILL SITE

DRAWING TITLE

Post-Settlement Waste Contours Plan

DRAWN	DATE	APPROVED	DATE
M.C	02/11/2021	F.W	02/11/2021

SCALE	SHEET	DRAWING NUMBER	REVISION
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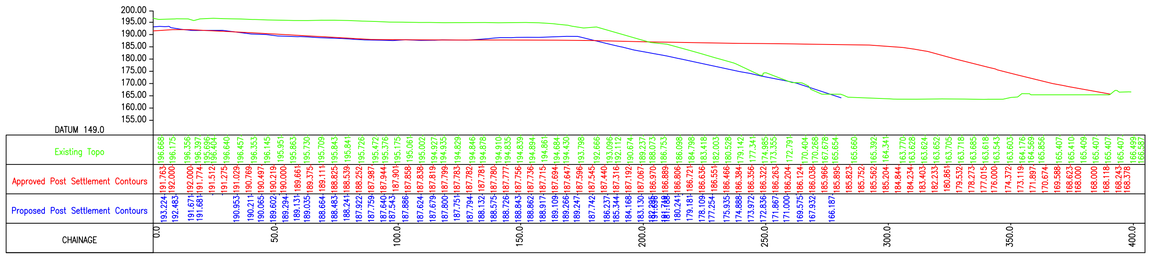
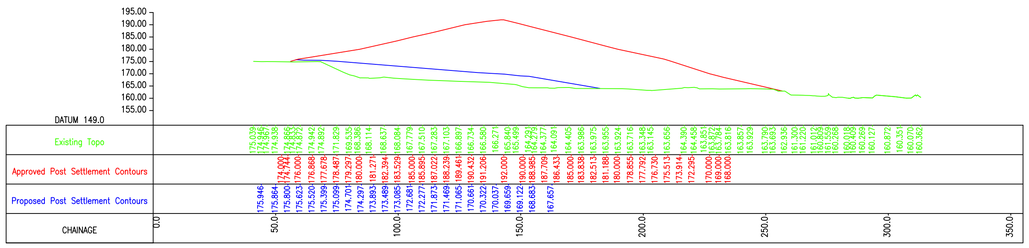


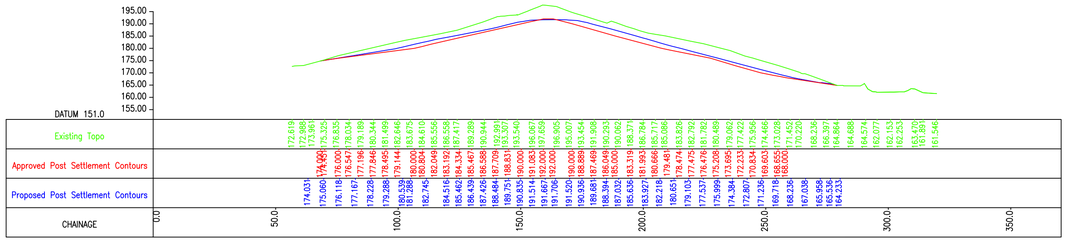
SECTION C–C

SCALE 1:1250



SECTION B–B

SCALE 1:1250



SECTION A– A

SCALE 1:1250

NOTES

1. ALL DIMENSIONS IN MILLIMETRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM.

2. DO NOT SCALE FROM THIS DRAWING.

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KEY

- Existing Topo Survey
- Approved Post Settlement Contours
- Proposed Post Settlement Contours

REV	DESCRIPTION	DATE	BY
1	REVISED WITH OCTOBER 2024 SURVEY	09.10.24	MCC

CLIENT

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Sirius Planning

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JOB TITLE

PWLLFAWATKIN LANDFILL SITE

DRAWING TITLE

Sections Through Proposed Landform

DRAWN	DATE	APPROVED	DATE
M.C	22/11/2021	F.W	22/11/2021

SCALE	SHEET	DRAWING NUMBER	REVISION
1:1250	A1L	WR7816/12/07	1

CLIENT

FCC Environment

SiriUS Planning

KEY

- Site Boundary
- Planning Application Boundary
- Post-settlement Surface Contours (30.0)
- Proposed Native Woodland
- Proposed Scrubland Restoration
- Proposed Hedgerows
- Proposed Species Rich Grassland
- Pond / Lagoon
- Existing Wet Scrubland
- Existing Rough Grassland
- Existing Pasture Grassland
- Existing Woodland and Scrub
- Access Tracks Retained

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REV	DESCRIPTION	DATE	BY
A	ADDITIONAL OF CELL 5 (PARTIAL)	07/08/19	AS

JOB TITLE

PWLLFAWATKIN LANDFILL SITE

DRAWING TITLE

PROPOSED RESTORATION PLAN

DRAWN	DATE	APPROVED	DATE
A.S	18/11/2021	J.C	18/11/2021

SCALE	SHEET	DRAWING NUMBER	REVISION
1:2,000	1	WR7816/12/08	-

Issues

IL : 165.500mAOD
CL : 166.000mAOD

EXISTING SETTLEMENT LAGOON
IL : 163.500mAOD
CL : 166.000mAOD

PIPE 1.001

PIPE 2.000

EXISTING DITCH TO BE CLEARED AND RECUT WITH 1:2 SIDE SLOPES DITCH TO BE 500mm x 500mm

EXISTING DITCH TO BE CLEARED AND RECUT WITH 1:2 SIDE SLOPES

EXISTING 225mm CULVERT
PIPE 1.002
IL : 163.500mAOD
CL : 166.000mAOD

IL : 163.500mAOD
CL : 164.000mAOD

EXISTING SETTLEMENT LAGOON
IL : 162.400mAOD
CL : 164.000mAOD

DITCH 500mm WIDE BASE X 500mm DEEP WITH A MINIMUM 1:250 FALL PIPE 1.000

EXISTING 225mm CULVERT
PIPE 1.003
NEW 178mm ORIFICE PLATE TO BE INSTALLED TO HEADWALL
IL : 162.400mAOD
CL : 164.000mAOD

EXISTING 500mm X 500mm SURAFCE WATER DITCH THROUGH WETLAND AREA
PIPE 1.004

IL : 166.000mAOD
CL : 166.500mAOD

Collects
NEW SURFACE WATER DITCH 500mm X 500mm
IL : 173.500mAOD
CL : 174.000mAOD

NEW SURFACE WATER DITCH
500mm X 500mm
IL : 167.000mAOD
CL : 167.500mAOD

PIPE 4.000

PIPE 5.000

EXISTING DITCH AND MINE ADIT COLLECTING LANDFILL AND OFFSITE FLOWS

IL : 173.500mAOD
CL : 174.000mAOD

EXISTING SETTLEMENT LAGOON
IL : 164.500mAOD
CL : 166.500mAOD

NEW 300mm CULVERT TO BE FITTED WITH ALTHON H3C PC INLET HEADWALL WITH ISOLATION PENSTOCK AND CONCRETE SANDBAG OUTLET HEADWALL. PIPEWORK TO FALL AT A MINIMUM OF 1:225 WITH A 200mm ORIFICE PLATE
IL : 164.500mAOD
CL : 166.500mAOD

EXISTING 300mm CULVERT
IL : 165.400mAOD
CL : 166.500mAOD

EXISTING SETTLEMENT LAGOON
IL : 165.400mAOD
CL : 166.500mAOD

Ex. 300mm CULVERT

Ex. 300mm CULVERT TO BE BLOCKED

PIPE 3.001

Ex. 300mm CULVERT

EXISTING CAP DEFLECTION BUND

EXISTING CAP DEFLECTION BUND

EXISTING SETTLEMENT LAGOON
IL : 164.000mAOD
CL 160.000mAOD

NEW 300mm CULVERT WITH ALTHON H3C PC INLET HEADWALL WITH ISOLATION PENSTOCK AND CONCRETE SANDBAG OUTLET HEADWALL. PIPEWORK TO FALL AT A MINIMUM OF 1:225 WITH A 257mm ORIFICE PLATE
IL : 164.000mAOD
CL : 166.000mAOD

PIPE 6.001

IL :159.600mAOD
CL : 161.000mAOD

NEW 500mm ISOLATION STOP LOG

1200mm CATCHPIT

Ex. 300mm CULVERT

EXISTING 500mm CULVERT
PIPE 1.005

EX. GRAVEL TRAP

EX. GRAVEL TRAP

EXISTING CAPPED SITE TO BE BUNDED TO PREVENT SURFACE WATER RUNOFF GETTING TO THE HAUL ROAD. CAP BUND TO EXTEND AROUND THE CAP CONTOURS FALLING TO THE EXISTING MAIN SITE SETTLEMENT LAGOONS ON THE NORTHERN SIDE.

WP13

PERMITTED OUTFALL

EXISTING APPROVED OUTFALL TO THE UPPER CLYDACH RIVER

Upper Clydach River

Drain

Drain

NOTES:

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LEGEND:

- 18.5 — EXISTING SITE SURVEY
- 19.5 — PROPOSED WASTE CONTOURS
- EXISTING CAP DIVERSION BUND
- PROPOSED DITCH 500mm DEEP
- ① EXISTING SETTLEMENT LAGOON, IL 163.50, GL 166.00 WITH 225 CULVERT TO LAGOON 2
- ② EXISTING SETTLEMENT LAGOON, IL 162.00, GL 163.70 WITH 225 CULVERT
- EXISTING WETLAND TO BE RETAINED
- ④ EXISTING SETTLEMENT LAGOON OVERFLOWING INTO LAGOON 7 IL 164.50, GL 166.5
- ⑤ EXISTING SETTLEMENT LAGOON OVERFLOWING INTO THE MAIN LAGOON 4 IL 164.60, GL 166.00
- ⑥ EXISTING SETTLEMENT LAGOON WITH NEW OUTLET CULVERT IL 164.20, GL 166.00
- ⑦ EXISTING SETTLEMENT LAGOON, IL 159.65, GL 161.00
- PROPOSED 0.5m CAP DIVERSION BUND
- NEW CULVERT
- EXISTING SURFACE WATER DISCHARGE POINT
- PROPOSED SURFACE WATER DISCHARGE POINT

REV	DESCRIPTION	DATE	BY
H	REVISED TOPO ADDED, PROPOSED WASTE CONTOURS ADDED, MINOR AMENDMENTS	07/10/21	M.C
G	INVERT LEVELS AND PIPE NUMBERS ADDED	23/09/19	M.C
F	PROPOSED LAGOON EXTENSION ADD. NEW SURFACE WATER DITCH ADDED ON BUND OF REVISED CELL 5 DESIGN	16/08/19	M.C
E	WESTERN AND SOUTHERN DITCH MOVED DUE TO CELL 5	23/05/19	J.D

PLAN 01
PLAN 02
PLAN 03

CLIENT

FCC Environment

SiriUS Environmental

4245 Park Approach, Thorpe Park, Leeds. LS15 8GB. 0113 264 9960

JOB TITLE

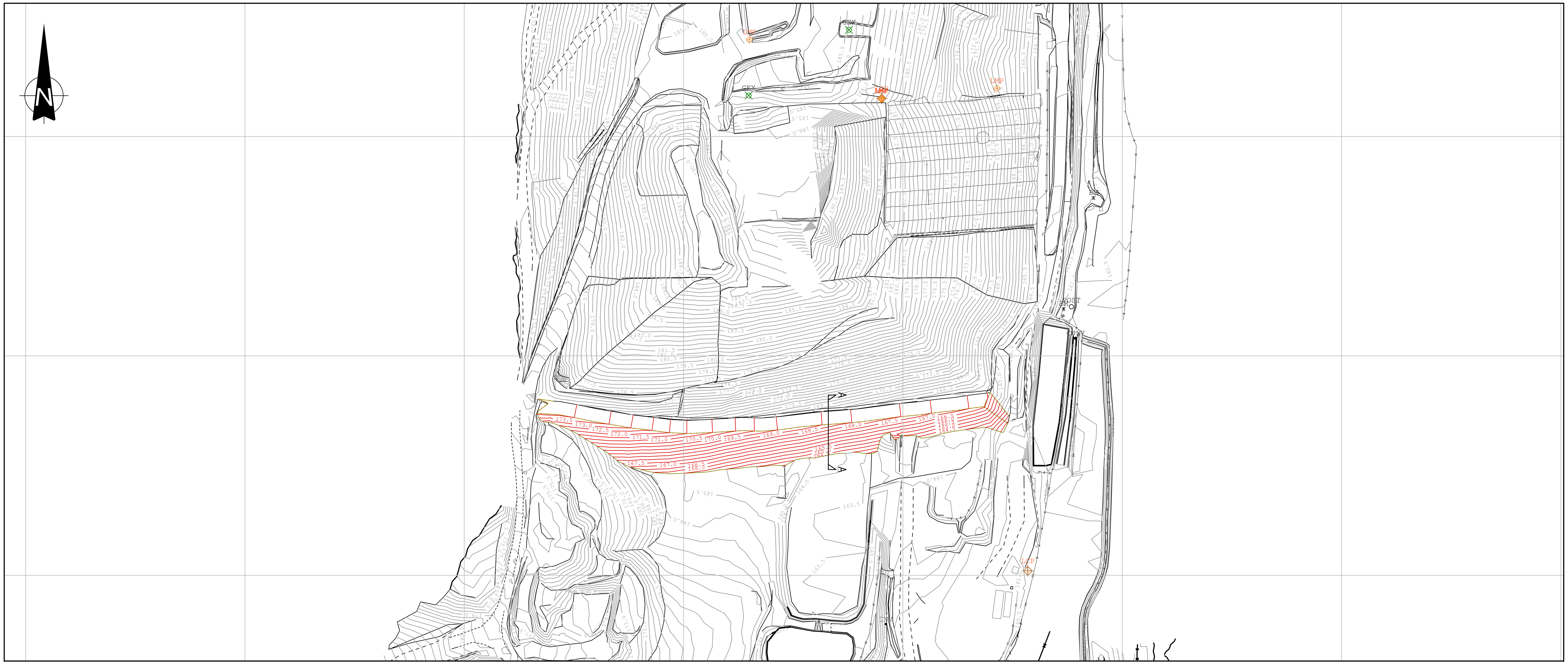
PWLLFAWATKIN SWM

DRAWING TITLE

Proposed Haul Road and Tip 871 Drainage Improvements

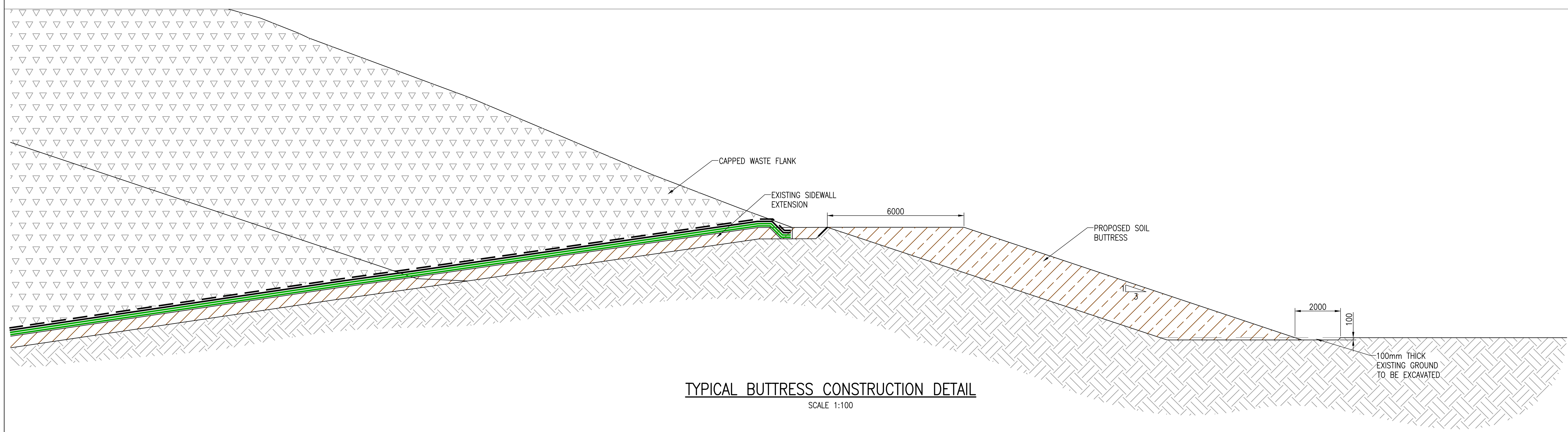
DRAWN	DATE	APPROVED	DATE
ARK	06/06/2018	ARK	06/06/2018

SCALE	SHEET	DRAWING NUMBER	REVISION
1:1000	1	WR7470 01 01	G



PROPOSED BUTTRESS LEVELS AND SECTION LOCATION

SCALE 1:1000



TYPICAL BUTTRESS CONSTRUCTION DETAIL

SCALE 1:100

NOTES

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4. THE CAPPING SYSTEM SHALL NOT BE PLACED ON ANY SLOPE STEPPER THAN 1(V):3(H).

KEY

18.5 (grey)	SITE SURVEY
18.5 (red)	PROPOSED SOIL BUTTRESS CONTOURS

REV	DESCRIPTION	DATE	BY

CLIENT

FCC Environment

FCC Environment (UK) Limited
Ground Floor West, 900 Pavilion Drive, Northampton Business Park, Northampton, NN4 7RG

sirius Environmental

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JOB TITLE
PWLLFAWATKIN LFS
2022 Capping Works

DRAWING TITLE
Proposed Buttress

DRAWN	DATE	APPROVED	DATE
M.C	29/03/2022	A.K	29/03/2022

SCALE	SHEET	DRAWING NUMBER	REVISION
As Shown	A1L	WR7842/02/01	0

APPENDIX 1

FCC 'Soils for Restoration Assessment' procedure for accepting soils for use in restoration

Assessment procedure for accepting soils for use in restoration

PURPOSE

The purpose of this procedure is to ensure that a consistent approach is undertaken for the assessment of soils for the potential use in reclamation and restoration of sites within FCC Environment.

This procedure does not directly apply to any wastes other than soils. For all other types of wastes a site and waste specific assessment will be required to determine the suitability for use in restoration activities and acceptability under the site's environmental permit.

A further purpose of this procedure is to outline a consistent approach to the sampling requirements for compliance testing undertaken at a FCC landfill site following the receipt of any soil wastes used in restoration.

PRINCIPLES OF THE USE OF SOILS FOR RESTORATION ACTIVITIES

The following overarching principles will be used in the assessment procedure for the determination of whether a soil waste is suitable for use in restoration and reclamation:

- **NON-HAZARDOUS**
  For any soil waste used in a restoration activity the soil must be classified as non-hazardous in accordance with the Hazardous Waste (England & Wales) Regulations 2005 (as amended) which implements the definition of 'hazardous waste' in the revised Waste Framework Directive (2008/98/EC)

- **SUITABILITY FOR USE WITHOUT SIGNIFICANT RISK OF POLLUTION**
  For any soil waste to be used in restoration and reclamation the potential contaminants of any soil waste must, by prior chemical analysis and assessment, be suitable for the intended use without significant risk of pollution.

  ** A table of guideline concentrations below which a soil waste would be classified as suitable for restoration is used within the assessment procedure. This has been developed for a range of common analysis determinants of soil. The table of guideline concentrations and the principles used to develop the guideline concentrations are provided in Appendix A.*

- **GENERIC CONSIDERATION OF THE END USE OF THE RESTORED SITE**
  The guideline concentrations in Appendix A have been derived from published sources and take into account the risk posed by a generic proposed end-use of a site following restoration. For these guideline concentrations to be appropriate it is proposed that grassland and trees/shrubs are planted on the restoration area for the foreseeable future and that it will never be used for any crops entering the food chain. The guideline concentrations are also considered to be appropriate for the planting of energy to waste grasses/crops (such as miscanthus crops).

  A site-specific assessment of the suitability of any soil for restoration must be undertaken for any sites where a different and specific end-use is proposed and/or the sites are located nearby any protected sites (such as a European Site or a Site of Special Scientific Interest) or other vulnerable receptors.

RESPONSIBILITY

It is the responsibility of nominated managers of any staff performing waste assessments to ensure that their staff carry out the requirements of this procedure and ensure assessments are recorded as necessary.

Any soil waste enquiry that does not meet the requirements as laid out in this procedure, or where any concerns with making such a determination exist, the soil waste must not be used for restoration or reclamation purposes.

TRAINING / COMPETENCE

Any person undertaking waste and soil assessments that should be applied to a waste must be trained in following this procedure and in the characterisation and assessment of wastes.

The waste assessor must have a comprehensive understanding of the following technical aspects of soil waste assessments:

- Review of site investigation reports
- Reviewing laboratory analytical reports
- Hazardous properties and hazardous waste assessment
- List of Wastes (LoW) code assessment
- Waste and soil sampling objectives and requirements
- Waste acceptance criteria suite and results

A record of the induction and training on this procedure must be made.

SOILS USED IN RESTORATION - ASSESSMENT PROCESS

The assessment process for each and every soil waste stream must follow a series of steps as detailed in the decision tree within this procedure. The decision tree describes the steps that must be taken during the determination of whether a soil waste is suitable for restoration or reclamation purposes.

This procedure does not cover the standard assessment steps that must be taken for all wastes to ensure the waste is acceptable to FCC Environment. The steps not covered include the requirements for basic characterisation of the waste, the hazardous waste assessment and any site specific requirements.

1. Use of soils for restoration – Initial confirmation requirements

a. Confirm that the soil waste is not classified as hazardous.

- If the soil waste arises from a site which includes both hazardous and non-hazardous classified soils and wastes then any hazardous waste must be able to be appropriately segregated from all non-hazardous waste.
- Confirmation of such segregation must be obtained as evidence.
- Only analysis and information representative of the non-hazardous soils is suitable for use in the determination for restoration use for the non-

hazardous soils. If insufficient analysis or information available for the segregated non-hazardous waste to make an adequate assessment - then the waste must not be approved as suitable for restoration uses unless further information and/or analysis is provided (and subsequently determined as acceptable for restoration uses).

b. *Determine whether there is a requirement for any site-specific assessment of suitability for use in restoration.*

- Due to generic aspect of this procedure and the guideline concentrations developed there must be consideration of the potential sites that the soil may be used for restoration. Site specific assessment will be required for the following:
  - Sites near vulnerable receptors – such as SSSIs and European Sites;
  - Sites for which the proposed end-use does not fit within the generic proposed end-use (open space end-use such as grassland and/or trees/shrubs and/or the use of energy to waste crops).

2. Assessment of chemical constituents of a soil waste

Following appropriate confirmations as detailed in section 1 the soil for restoration assessment decision tree below should be used to assess whether the soil waste is suitable for use as restoration material.

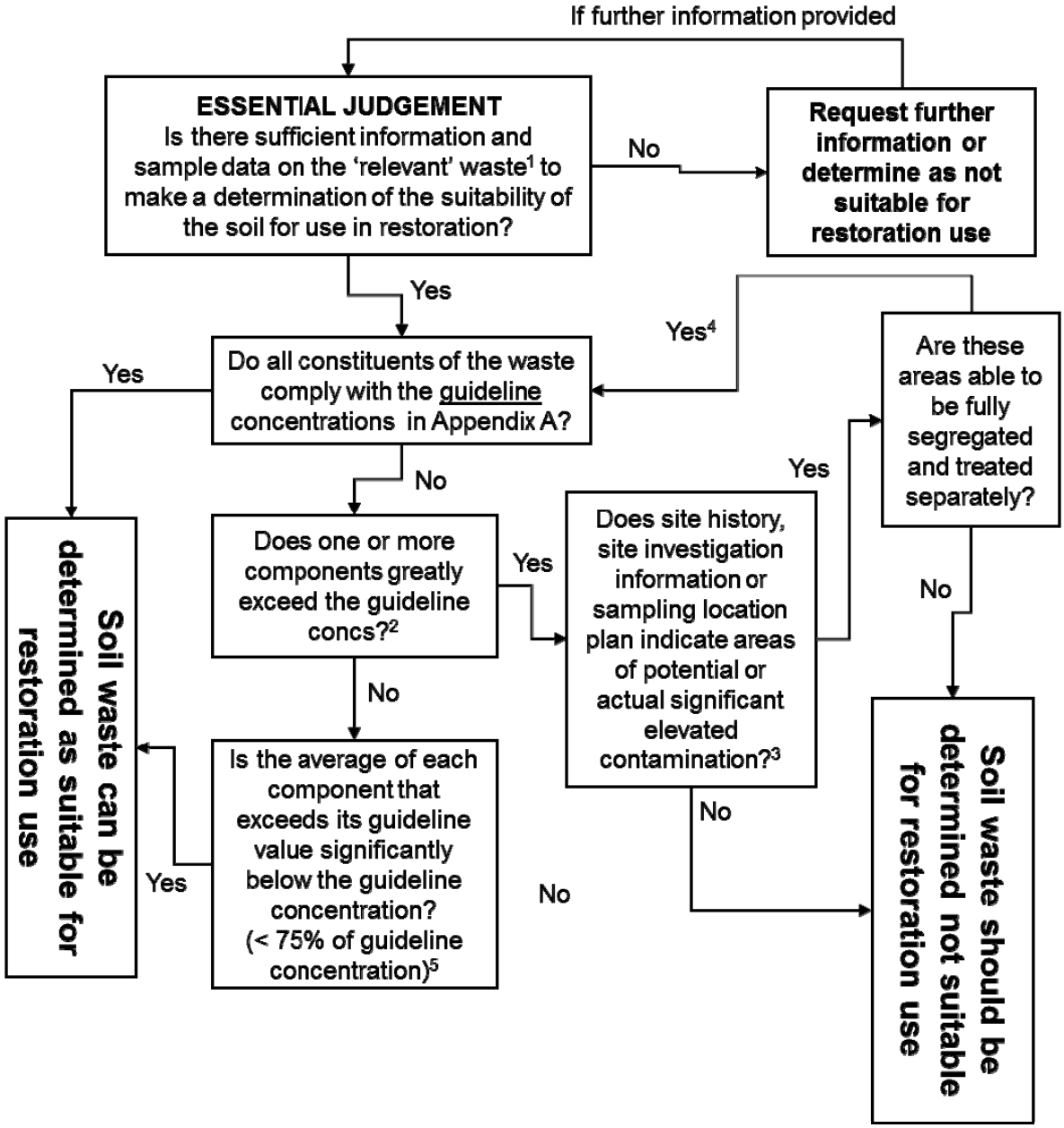
This assessment decision tree is used to assess the suitability for use in restoration based on the analytical data accompanying the waste.

A judgement of the adequacy of the information provided must be made prior to the determination. For any determination as 'suitable for restoration' there must be sufficient information available that can be retained as evidence to justify such a decision.

The assessment requires consideration of the different constituents in the waste and whether the presence of these constituents is likely to be contrary to any of the principles for determination of the suitability for restoration use (described above). The assessment uses some guideline concentrations for specific constituents.

If these guideline concentrations are exceeded then, for some of the constituents, further assessment options of the data are provided.

Soil for restoration assessment decision tree



Notes to the use of the soil for restoration Decision Tree:

1. Relevant waste – refers to the specific volume of waste from any site that is specifically being assessed for its suitability for use in restoration. Information for any soils remaining on site or soils classified as hazardous is not suitable for use within the determination.
2. A component will be considered to greatly exceed a guideline concentration if one or more of the concentrations are at or above 125% of the guideline concentration. **This does not include guideline concentrations that approach the hazardous waste thresholds for the constituent – which must not be exceeded.**

Note a – ensure the waste is not classified as hazardous due to sum of all dangerous compounds (especially with respect to H14 ecotoxic property).

Note b – the guideline concentrations for the potentially phytotoxic metals of copper and zinc may be elevated above their lower guideline concentration for soils where there is comprehensive evidence that the pH is at or greater than 7.

3. Does the site history, site investigation or sampling location plan provide any indication why one or more samples maybe showing greatly elevated concentrations of any component? The potential source of contamination may be different across the site (such as different locations for a diesel tank, an industrial processing area, a car parking area or waste storage area etc). Information on the sampling locations will allow assessment of the different areas on the site to determine whether some areas show elevated concentrations of specific components and whether these areas can be fully segregated. This would allow assessment of the suitability for restoration of those soils not exhibiting greatly elevated concentrations of any constituent.
4. If areas of greatly elevated concentrations of components are able to be segregated then the reminder of the waste will need to follow the full assessment process to confirm whether suitable for use in restoration. Confirmation of such segregation must be obtained as evidence.
5. The assessment of the average of any components exceeding the guideline concentrations do not include those constituents with guideline concentrations approaching their hazardous waste threshold – which must not be exceeded. Note – the averaging and comparing to a figure < 75% of the guideline value is an arbitrary but a conservative approach. This approach would indicate that, even if some elevated components exist above the guideline threshold, then these are unlikely to pose a significant risk of pollution as the entire waste stream, on average, is well within the guideline restoration concentrations.

ON-SITE SAMPLING REQUIREMENTS FOR RESTORATION SOIL WASTES

Inspection of restoration soil wastes – General requirements

a. Each site accepting soil wastes to be used in restoration must ensure compliance with those conditions of the Environmental Permit that detail waste inspections and waste monitoring.

b. The Duty of Care paperwork for all deliveries of restoration soil wastes must be inspected and compared with the relevant contract set up on the system. No soil wastes are to be accepted for restoration unless approved by the Compliance Team and a relevant contract has been arranged.

c. Staff at the reception and deposit point *must be aware of classification of the soil waste* in order for them to carry out a visual inspection, to determine any potential non-conformance with respect to:

   i. Load security and containment;
   ii. Unexpected components of the waste *(e.g. paper, plastic, metals etc), the appearance of obvious contaminants within the soil*, hazardous items, etc)*;
   iii. Health & Safety and Environmental impact considerations *(including any nuisance such as odour and/or dust)*;

iv. Compliance with the Duty of Care paperwork and the Environmental Permit.

* Soils that comply with the guideline concentrations are unlikely to appear 'contaminated' due to dangerous components (such as organics or heavy metals, for example). If any specific soil has an incidental amount of contamination that causes the soil to appear contaminated then this information must be fully detailed on the contract and information provided to the site operatives undertaking visual inspections.

d. When this visual inspection results in the discovery of non-conforming waste (i.e. waste that is not suitable for use in restoration) the procedure(s) for dealing with, investigating and recording non-conformances must be followed.

Inspection of restoration soil wastes at landfills – sampling requirements

The sampling requirements for soil wastes classified and accepted as suitable for restoration will be determined by the Compliance Team on a waste stream by waste stream basis. The testing requirements for any soil samples taken will be detailed on the waste assessment.

However, the sampling requirements should be based on the following principles:

- Each site accepting restoration soil wastes must ensure compliance with those conditions of the Environmental Permit that detail waste inspections and waste monitoring including any sampling requirements.

- A soil waste regularly generated in the same process (for example soil treatment facility outputs) will require regular compliance sampling to determine the classification of the soil waste and whether sable for use in restoration. The frequency of compliance sampling will be determined on a waste by waste basis by the Compliance Team, although, for such regularly generated soil wastes, the sampling may either be:
  - undertaken at the landfill site by FCC, or
  - undertaken by the waste producer at the site of production - in accordance with an agreed protocol and sampling plan with FCC.

- A soil waste that is a 'one-off' waste stream* and for which comprehensive characterisation has been undertaken, does not require any compliance sampling at the landfill site. During the technical assessment of the soil waste, the Compliance Team will determine whether the soil waste has undergone such comprehensive characterisation.

  * Such as soil arising from the remediation of a contaminated land site for which a comprehensive site investigation or stockpiling and testing has been undertaken and provided with the waste enquiry.

- Sampling of the soil waste should be undertaken where there exists any suspicion of contamination (either from visual inspection or an uncertainty of the origin of the waste).

PROCEDURE REVIEW

This procedure will be reviewed on an annual basis to ensure that it remains relevant, complaint with current guidance and hazardous waste determination and takes into account practical experiences from its use.

Appendix A – Guideline concentrations table for soil wastes used in restoration

Component	Proposed guideline concentrations for soils used in landfill restoration	Source and comments
Arsenic	100	Less than Atkins ATRISK soil SSV (for open spaces)
Cadmium	50	Less than Atkins ATRISK soil SSV (for open spaces)
Chromium (not hexavalent)	1000	Less than Atkins ATRISK soil SSV (for open spaces)
Chromium (hexavalent)	200	Less than Atkins ATRISK soil SSV (for open spaces)
Copper	500 *[2]	Possible phytotoxic substances - significantly less than Atkins ATRISK soil SSV (for open spaces)
Lead	800	Less than Atkins ATRISK soil SSV (for open spaces)
Mercury	20	Less than Atkins ATRISK soil SSV (for open spaces)
Nickel	400	Possible phytotoxic substances - significantly less than Atkins ATRISK soil SSV (for open spaces) and approximately 20% below hazardous waste threshold for worst-case compound.
Selenium	500	Less than Atkins ATRISK soil SSV (for open spaces)
Zinc	500 *[2]	Possible phytotoxic substances - significantly less than Atkins ATRISK soil SSV (for open spaces)
Boron (water soluble)	3	Former ICRCL limit - no SSVs determined for open spaces
pH	5 - 10	Guideline values to avoid extreme acidic or alkaline conditions
Sulphate (water soluble)	2000	Former ICRCL limit - no SSVs determined for open spaces
Free cyanide	30	Less than Atkins ATRISK soil SSV (for open spaces)
Phenol	2000	Less than Atkins ATRISK soil SSV (for open spaces)
Total Petroleum Hydrocarbons / mineral oil (UNSPECIATED)	800	Significantly less than Atkins ATRISK soil SSV (for open spaces) and 20% below hazardous waste threshold.
Petroleum Range Organics (PRO) (C6-C10)	450	Less than Atkins ATRISK soil SSV (for open spaces) for aliphatic PRO C8-C10.
Diesel Range Organics (DRO) (C10-C25)	1000	Significantly less than Atkins ATRISK soil SSV (for open spaces) and an order of magnitude below the hazardous waste threshold.
Unknown lubricating / other oil (not fuel) (inc C25-C40) (no PAH speciation)	800	Significantly less than Atkins ATRISK soil SSV (for open spaces) and 20% below hazardous waste threshold.
PAHs (total) - unspeciated (must be non-hazardous*[1])	900	Less than former ICRCL limit (for landscaped areas) - no SSVs determined for open spaces for total PAHs. **Any total PAH analysis exceeding 100mg/kg requires speciation and compliance with individual PAH guideline concentrations (at or below SSVs for open spaces) as described in the table below.**

All thresholds for metals stated in mg/kg dry weight

[1] *All PAHs must individually be classified as non-hazardous. This is especially relevant for any PAHs which have assigned a substance specific hazardous threshold (used for H14 ecotoxic hazardous property assessment).*

[2] *The acceptable concentration of the potentially phytotoxic metals of copper and zinc may be elevated to 800mg/kg (dry weight) for soils where there is comprehensive evidence that the pH is at or greater than 7.*

Note – for soil wastes expected to have a potential for elevated conductivity (such as soils containing ashes, dredgings, silts etc) then there is a requirement to determine the conductivity of

the soil wastes. The guideline concentration to be used for conductivity is 2000µS/m.

Individual PAH guideline concentrations for restoration use

Acenaphthene	250	Less than Atkins ATRISK soil SSV for open spaces
Acenapthylene	250	Less than Atkins ATRISK soil SSV for open spaces
Anthracene	250	Less than Atkins ATRISK soil SSV for open spaces
Benzo(a)anthracene	20	Less than Atkins ATRISK soil SSV (for open spaces) and 20% below hazardous waste threshold.
Benzo(a)pyrene	4.2	Atkins ATRISK soil SSV for open spaces
Benzo(b)fluoranthene	35	Less than Atkins ATRISK soil SSV for open spaces
Benzo(ghi)perylene	250	Less than Atkins ATRISK soil SSV for open spaces
Benzo(k)fluoranthene	250	Less than Atkins ATRISK soil SSV for open spaces
Chrysene	250	Less than Atkins ATRISK soil SSV for open spaces
Dibenz(ah)anthracene	4.5	Atkins ATRISK soil SSV for open spaces
Fluoranthene	250	Less than Atkins ATRISK soil SSV for open spaces
Fluorene	250	Less than Atkins ATRISK soil SSV for open spaces
Indeno(1,2,3,cd)pyrene	35	Less than Atkins ATRISK soil SSV for open spaces
Naphthalene	250	Less than Atkins ATRISK soil SSV for open spaces
Phenanthrene	250	Less than Atkins ATRISK soil SSV for open spaces
Pyrene	250	Less than Atkins ATRISK soil SSV for open spaces

Notes on the development of restoration soil guideline concentrations

There are a range of criteria that can be justifiably applied to soil chemical characteristics for the use of soils in restoration and reclamation but, as yet, there are no industry standards. For instance, levels of metals in soils applied to the use of sewage sludge use differ to those specified by contaminated land guidance. Conflict can arise between the need to assess soil analytical results for the purposes of waste management and/or disposal (e.g. waste acceptance criteria for landfill) and the need to retain or create viable soil materials for intensive and non-intensive restoration uses.

The proposed restoration soil guideline concentrations to be imported to a 'generic' restoration activity* are set out in the table above and are derived from screening values based on an Open Space end-use with fairly limited public access. These Soil Screening Values have been derived by Atkins and their ATRISK guidance (March 2011). The Atkins ATRISK SSVs are calculated by using the current Contaminated Land Exposure Assessment protocol (CLEA).

The Atkins ATRISK SSVs are available on-line and have been purchased by FCC to aid in the development of a consistent decision-making tool for soils to be used in restoration.

For the majority of components the guideline concentration has been set at a value significantly lower than the SSV to ensure a conservative approach has been taken and also to ensure that the hazardous waste threshold for any component will not be exceeded. For the potential phytotoxic metals of copper and zinc a lowered guideline concentration has been applied unless evidence is available that the soil waste is not acidic.

** The proposed generic end-use of a restoration activity is that grassland and trees/shrubs are planted on the restoration area for the foreseeable future and that it will never be used for any crops entering the food chain. The guideline concentrations are also considered to be appropriate for the planting of energy to waste grasses/crops (such as miscanthus).*

The procedure makes it clear that a site-specific assessment for the suitability for restoration must be undertaken for any site near vulnerable receptors or for sites with proposed end-uses different from the generic proposed end-use.

This list is not exhaustive and the guideline concentrations are not necessarily absolute upper limits as there may be instances where less stringent soil limits may be applied, particularly when compared to the likely risk associated with extensive uses such as forestry or for lower soil layers (>1.0m depth below final level), where the risk of exposure to contaminants is less likely. Thus, existing guidance and contaminated land methodologies can be tailored specifically to a site and proposed soil uses.

These guideline concentrations do not specifically consider the requirement for plant nutrients in the soils accepted. For site specific cases or for the final layers of a restoration scheme the availability of plant nutrients within the soil waste may need to be determined and used within the assessment approach.

Guideline concentrations for other components will need to be developed on a case-by-case basis.

APPENDIX 2

Stability Risk Assessment report ref. WR7842/JD/01

Sirius Environmental Ltd
4245 Park Approach
Thorpe Park
Leeds
LS15 8GB

0113 264 9960
www.thesiriusgroup.com

Graham Cherrill
FCC Environment Limited
3 Sidings Court
White Rose Way
Doncaster
DN4 5NU

Date: 15/03/2022

Our Ref: WR7842/JD/01

Dear Graham
Re: Pwllfawatkin Landfill Site – Cell 4 Capping Soils Buttress Design Stability

Introduction

Sirius Environmental Limited were requested by FCC Waste Services (UK) Limited, who are the permit holders for the site but are a subsidiary of the FCC Environment Limited, to undertake a stability risk assessment (SRA) on the proposed soil buttress that is needed to be constructed to extend the width of the bund to allow for restoration soils to be placed above the geosynthetic cap.

Geometry and Model Parameters

The geometry of the waste profile for Cell 4 has been based on the latest survey undertaken for the area and has a gradient of 1 in 2.8. The soils buttress is proposed to extend the width of bund by an additional 6m and is proposed to have an outer slope gradient of 1 in 3. The proposed soils buttress shall extend from an elevation of 169.500mAOD down to a level of approximately 163.500mAOD.

The model geometry used within this stability modelling is presented in **Appendix SRA2**. A drawing showing the section position is presented in **Appendix SRA1**.

The modelling for this stability assessment has been undertaken in **Plaxis (2D) 2021**. **Plaxis** is a two-dimensional finite element (FE) programme intended for the analysis of deformation and stability in geotechnical engineering. It is equipped for the simulation of non-linear, time dependent, and anisotropic behaviour of soils and rock. In addition, since soil is a multi-cell material, special procedures are required to deal with hydrostatic and non-hydrostatic pore pressures in the soil. As a result of this, Plaxis is therefore well suited for application of this stability assessment for the proposed soil buttress construction at Pwllfawatkin Landfill Site.

The geotechnical parameters selected and utilised in this stability risk assessment have been derived from previous knowledge of the site, previous stability risk assessments for the site, and Sirius's recent experience with similar material and assessments. Engineering properties for the waste were obtained using guidance from **Environment Agency R&D Technical Report P1385/TR1**.

Table SRA1 below, shows the model parameters used within this stability assessment.

TABLE SRA1: SUMMARY OF MATERIAL PARAMETERS USED FOR FINITE ELEMENT MODELLING

Material	Unit Weight	Effective Cohesion	Effective Angle of Friction	Permeability	E_{50}	E_{oed}	E_{ur}	power
	kN/m³	kN/m²	°	m/s	kN/m²	kN/m²	kN/m²	(m)
Coal Measures	22.0-23.0	1.0	26.0	K=1E-9	4,000	4,000	12,000	0.750
Colliery Spoil	20.0-20.5	5.0	25.0	K1E-9	3,500	3,500	10,500	1.000
Engineered Fill	19.0-20.0	5.0	25.0	K=1E-9	5,000	5,000	15,000	0.900
Engineered Clay Liner	19.0-20.0	5.0	25.0	K=5E-10	7,000	7,000	21,000	0.900
Waste	10.0-10.5	5.0	25.0	K=1E-7	6,000	6,000	18,000	0.500

The full material parameters are presented in **Appendix SRA2**.

The extending of the buttress by 6m requires this to be constructed in an area which is currently occupied by water. Therefore it is important to include this in the model to ensure that it is representative of a worst case scenario. As a result, in the phases prior to the buttress being constructed the water level in the lagoon has been set at 166.000mAOD. When the buttress is being constructed the water level has been set at the base of the lagoon, at 163.500mAOD. Following completion of the buttress, the water level has been allowed to rise to 166.000mAOD.

Stability Analysis

Table SRA2 below shows the results of the stability assessment for the proposed buttress.

TABLE SRA2: SUMMARY OF PHI-C REDUCTION RUNS PROPOSED BUTTRESS STABILITY

Description	Critical slope identified during analysis	Factor of Safety
Construction of the Buttress	Circular failure through proposed buttress and subgrade.	1.365
Water Level in Lagoon Rise following construction	Circular failure through waste, lining system, subgrade and proposed buttress, with largest displacement noted in toe of buttress.	1.651

Graphical representation of the stability analyses is presented in **Appendix SRA3**.

Stability Assessment

Table SRA2 above document the factors of safety achieved for the proposed buttress both during construction and following the water in the lagoon being allowed to rise to the existing level. The factors of safety reported range from 1.365 to 1.651.

The modelling has found that the lowest factors of safety are reported during the construction of the proposed buttress. This is to be expected, as the material that shall be used in the buttress is likely to comprise low permeability material. As this material is placed and compacted there is a build up of positive excess pore water pressures within the material, which means that there is no increase in the effective stress of the material and as a result no increase in effective shear strength until these begin the dissipate.

Although, there is build up of positive excess pore water pressures within the proposed buttress, this is limited to an acceptable limit which results in a factor of safety greater than 1.3 and therefore the stability of the proposed buttress shall be maintained.

Following construction of the buttress and as the water level is allow to rise in the lagoon the factor of safety increases from 1.365 to 1.651. This is due to the dissipation of the excess pore water pressures which developed during construction, resulting in an increase in the effective stress of the material. The above factor of safety shows the stability of the buttress shall be maintained as the water level in the lagoon returns to normal.

This stability analyses has been based on the buttress being constructed on a suitably firm surface with no soft spots. Therefore should any soft spots be encountered on the formation surface for the buttress, once the lagoon has been drained down, this material shall be removed and replaced with suitable engineered fill, to provide a suitable formation surface.

Conclusion

This stability risk assessment has assessed the stability of the proposed buttress both during construction and following the rise of the water level in the lagoon to the existing level.

This stability risk assessment has found that factors of safety of greater than 1.3 are returned for all phases assessed as part of this stability risk assessment and are therefore deemed acceptable and the stability is maintained provided the following timeframe is followed. The proposed buttress shall be constructed in a minimum of 30 days and following completion of the buttress works the water level in the lagoon shall be raised to the existing level in a minimum of 6 months (182.5 days).

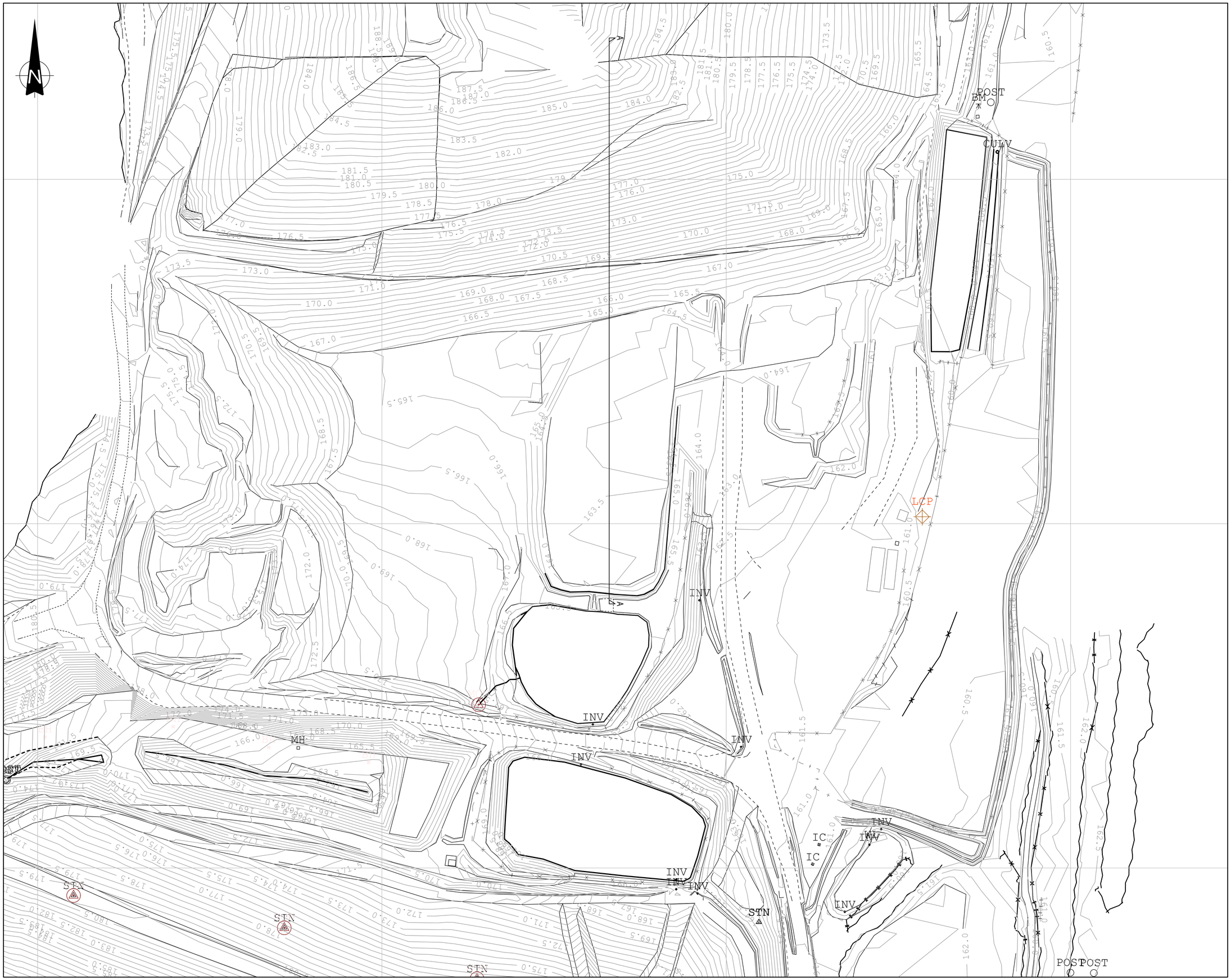
It is advised that if there are any changes to the geometry or, during construction, the characteristics of the material change, this stability risk assessment should be reran to ensure satisfactory factors of safety are still returned.

Yours sincerely

J. Davies

Jack Davies
Principal Engineer
For and on behalf of Sirius Environmental Ltd

APPENDIX SRA1
DRAWINGS



NOTES

1. ALL DIMENSIONS IN MILLIMETRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM.

2. DO NOT SCALE FROM THIS DRAWING.

3. ANY ANOMALIES IDENTIFIED WITH THE DETAILS SHOWN ON THIS DRAWING ARE TO BE BROUGHT TO THE ATTENTION OF SIRIUS ENVIRONMENTAL PRIOR TO CONSTRUCTION WORKS COMMENCING.

KEY

—18.5— SITE SURVEY

REV	DESCRIPTION	DATE	BY

CLIENT

FCC Environment

FCC Environment (UK) Limited
Ground Floor West, 900 Pavilion Drive, Northampton Business Park, Northampton, NN4 7RG

Sirius Environmental

4245 Park Approach, Thorpe Park, Leeds. LS15 8GB. 0113 264 9960

JOB TITLE

PWLLFAWATKIN LFS
Soil Buttress Stability

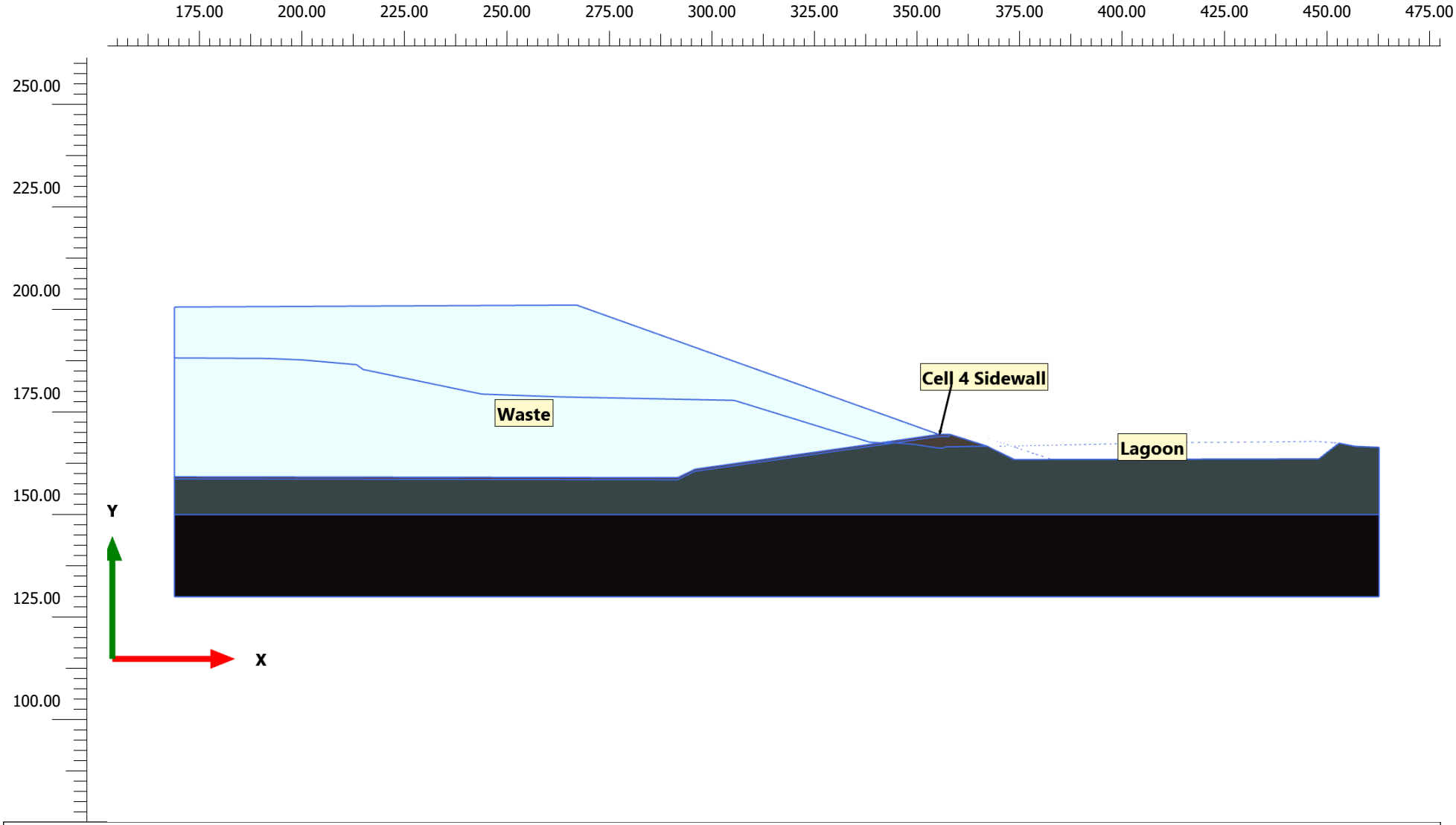
DRAWING TITLE

SRA Section Location

DRAWN	DATE	APPROVED	DATE
M.C	16/03/2022	A.K	16/03/2022

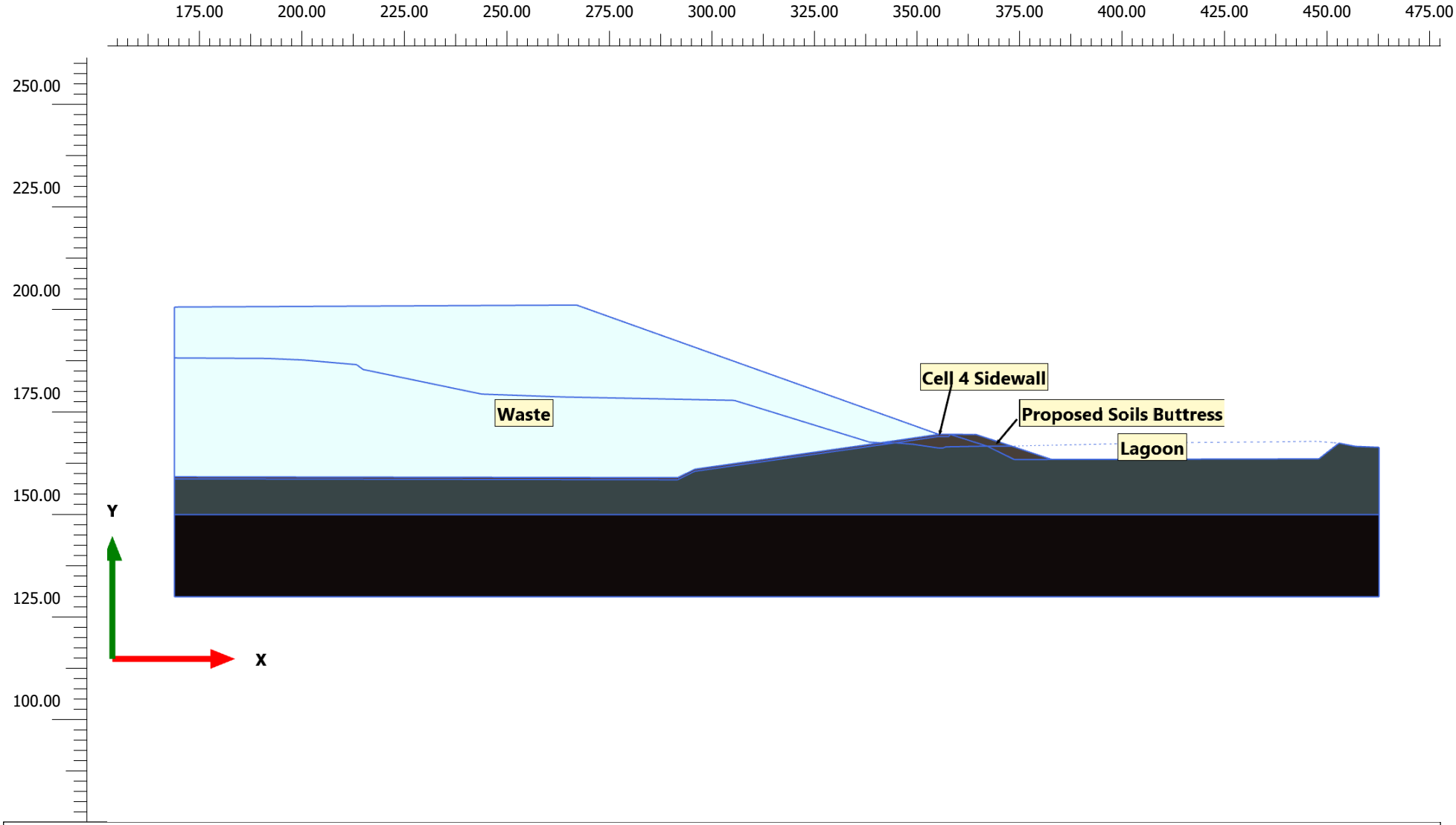
SCALE	SHEET	DRAWING NUMBER	REVISION
1:500	A1L	WR7842 /SRA/01	0

APPENDIX SRA2
MODEL GEOMETRY AND PARAMETERS



Connectivity plot

Sirius Environmental	*Project description* Pwllfawatkin Capping - Current Annotated Geometry		*Date* 16/03/2022
	Project filename Pwllfawatkin Capping - Re ...	*Step* 38	*Company* Sirius Environmental Ltd



Connectivity plot

sirius Environmental	*Project description* Pwllfawatkin Capping - Proposed Soils Buttress Annotate ...		*Date* 16/03/2022
	Project filename Pwllfawatkin Capping - Re ...	*Step* 40	*Company* Sirius Environmental Ltd

Material set				
Identification number		1	2	3
Identification		Colliery Spoil	Liner	Engineered Fill
Material model		Hardening soil	Hardening soil	Hardening soil
Drainage type		Undrained (A)	Undrained (A)	Undrained (A)
Colour		RGB 54, 67, 69	RGB 87, 47, 15	RGB 69, 60, 54
Comments				
General properties				
γ_{unsat}	kN/m³	20.00	19.00	19.00
γ_{sat}	kN/m³	20.50	20.00	20.00
Advanced				
Void ratio				
Dilatancy cut-off		No	No	No
e_{init}		0.5000	0.5000	0.5000
e_{min}		0.000	0.000	0.000
e_{max}		999.0	999.0	999.0
Damping				
Rayleigh α		0.000	0.000	0.000
Rayleigh β		0.000	0.000	0.000
Stiffness				
E_{50}^{ref}	kN/m²	3500	7000	5000
E_{oed}^{ref}	kN/m²	3500	7000	5000
E_{ur}^{ref}	kN/m²	10.50E3	21.00E3	15.00E3
power (m)		1.000	0.9000	0.9000
Alternatives				
Use alternatives		No	No	No
C_c		0.09857	0.04929	0.06900
C_s		0.02957	0.01479	0.02070
e_{init}		0.5000	0.5000	0.5000
Strength				
c_{ref}	kN/m²	5.000	5.000	5.000
φ (phi)	°	25.00	25.00	25.00
ψ (psi)	°	0.000	0.000	0.000

Identification		Colliery Spoil	Liner	Engineered Fill
Advanced				
Set to default values		Yes	Yes	Yes
Stiffness				
v_{ur}		0.2000	0.2000	0.2000
p_{ref}	kN/m²	100.0	100.0	100.0
K_0^{nc}		0.5774	0.5774	0.5774
Strength				
c_{inc}	kN/m²/m	0.000	0.000	0.000
y_{ref}	m	0.000	0.000	0.000
R_f		0.9000	0.9000	0.9000
Tension cut-off		Yes	Yes	Yes
Tensile strength	kN/m²	0.000	0.000	0.000
Undrained behaviour				
Undrained behaviour		Standard	Standard	Standard
Skempton-B		0.9866	0.9866	0.9866
v_u		0.4950	0.4950	0.4950
$K_{w,ref}$ / n	kN/m²	430.2E3	860.4E3	614.6E3
Stiffness				
Stiffness		Standard	Standard	Standard
Strength				
Strength		Rigid	Rigid	Rigid
R_{inter}		1.000	1.000	1.000
Consider gap closure		Yes	Yes	Yes
Real interface thickness				
δ_{inter}		0.000	0.000	0.000
Groundwater				
Cross permeability		Impermeable	Impermeable	Impermeable
Drainage conductivity, dk	m³/day/m	0.000	0.000	0.000
Thermal				
R	m² K/kW	0.000	0.000	0.000

Identification		Colliery Spoil	Liner	Engineered Fill
K0 settings				
K_0 determination		Automatic	Automatic	Automatic
$K_{0,x} = K_{0,z}$		Yes	Yes	Yes
$K_{0,x}$		0.5774	0.5774	0.5774
$K_{0,z}$		0.5774	0.5774	0.5774
Overconsolidation				
OCR		1.000	1.000	1.000
POP	kN/m²	0.000	0.000	0.000
Model				
Data set		Standard	Standard	Standard
Soil				
Type		Coarse	Coarse	Coarse
< 2 µm	%	10.00	10.00	10.00
2 µm - 50 µm	%	13.00	13.00	13.00
50 µm - 2 mm	%	77.00	77.00	77.00
Flow parameters				
Use defaults		None	None	None
k_x	m/day	0.08640E-3	0.04320E-3	0.08640E-3
k_y	m/day	0.08640E-3	0.04320E-3	0.08640E-3
$-\psi_{unsat}$	m	10.00E3	10.00E3	10.00E3
e_{init}		0.5000	0.5000	0.5000
S_s	1/m	0.000	0.000	0.000
Change of permeability				
c_k		1000E12	1000E12	1000E12

Identification		Colliery Spoil	Liner	Engineered Fill
Parameters				
c_s	kJ/t/K	0.000	0.000	0.000
λ_s	kW/m/K	0.000	0.000	0.000
ρ_s	t/m³	0.000	0.000	0.000
Solid thermal expansion		Volumetric	Volumetric	Volumetric
α_s	1/K	0.000	0.000	0.000
D_v	m²/day	0.000	0.000	0.000
f_{Tv}		0.000	0.000	0.000
Unfrozen water content		None	None	None

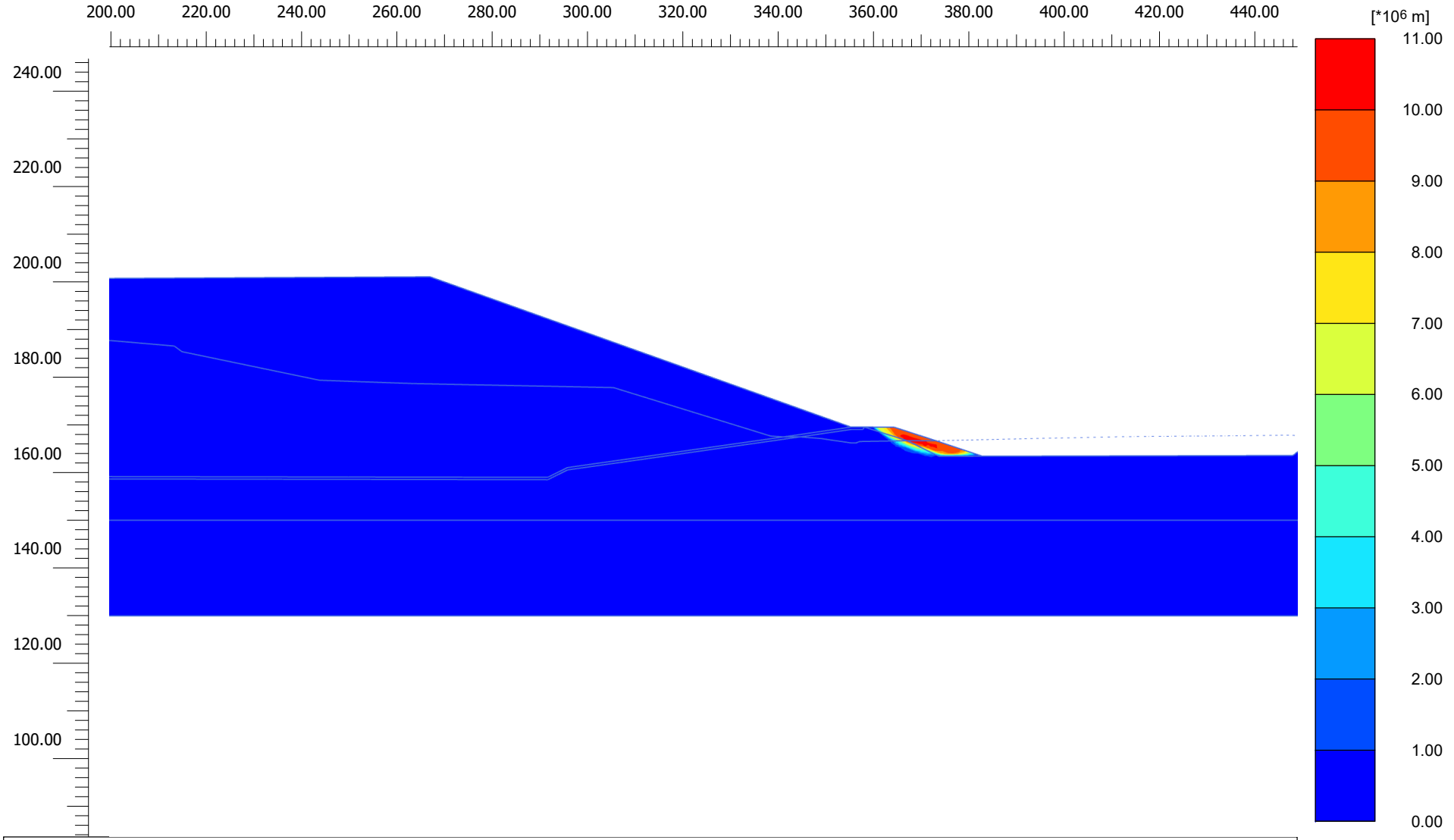
Material set				
Identification number		4	5	6
Identification		Coal Measures	Waste	Restoration Soils
Material model		Hardening soil	Hardening soil	Hardening soil
Drainage type		Undrained (A)	Undrained (A)	Undrained (A)
Colour		RGB 6, 4, 4	RGB 226, 248, 245	RGB 144, 86, 65
Comments				
General properties				
γ_{unsat}	kN/m³	22.00	10.00	19.00
γ_{sat}	kN/m³	23.00	10.50	20.00
Advanced				
Void ratio				
Dilatancy cut-off		No	No	No
e_{init}		0.5000	0.5000	0.5000
e_{min}		0.000	0.000	0.000
e_{max}		999.0	999.0	999.0
Damping				
Rayleigh α		0.000	0.000	0.000
Rayleigh β		0.000	0.000	0.000
Stiffness				
E_{50}^{ref}	kN/m²	4000	6000	4000
E_{oed}^{ref}	kN/m²	4000	6000	4000
E_{ur}^{ref}	kN/m²	12.00E3	18.00E3	12.00E3
power (m)		0.7500	0.5000	0.7500
Alternatives				
Use alternatives		No	No	No
C_c		0.08625	0.05750	0.08625
C_s		0.02587	0.01725	0.02587
e_{init}		0.5000	0.5000	0.5000
Strength				
c_{ref}	kN/m²	1.000	5.000	3.000
φ (phi)	°	26.00	25.00	22.00
ψ (psi)	°	0.000	0.000	0.000

Identification		Coal Measures	Waste	Restoration Soils
Advanced				
Set to default values		Yes	Yes	Yes
Stiffness				
v_{ur}		0.2000	0.2000	0.2000
p_{ref}	kN/m²	100.0	100.0	100.0
K_0^{nc}		0.5616	0.5774	0.6254
Strength				
c_{inc}	kN/m²/m	0.000	0.000	0.000
y_{ref}	m	0.000	0.000	0.000
R_f		0.9000	0.9000	0.9000
Tension cut-off		Yes	Yes	Yes
Tensile strength	kN/m²	0.000	0.000	0.000
Undrained behaviour				
Undrained behaviour		Standard	Standard	Standard
Skempton-B		0.9866	0.9866	0.9866
v_u		0.4950	0.4950	0.4950
$K_{w,ref}$ / n	kN/m²	491.7E3	737.5E3	491.7E3
Stiffness				
Stiffness		Standard	Standard	Standard
Strength				
Strength		Rigid	Rigid	Rigid
R_{inter}		1.000	1.000	1.000
Consider gap closure		Yes	Yes	Yes
Real interface thickness				
δ_{inter}		0.000	0.000	0.000
Groundwater				
Cross permeability		Impermeable	Impermeable	Impermeable
Drainage conductivity, dk	m³/day/m	0.000	0.000	0.000
Thermal				
R	m² K/kW	0.000	0.000	0.000

Identification		Coal Measures	Waste	Restoration Soils
K0 settings				
K_0 determination		Automatic	Automatic	Automatic
$K_{0,x} = K_{0,z}$		Yes	Yes	Yes
$K_{0,x}$		0.5616	0.5774	0.6254
$K_{0,z}$		0.5616	0.5774	0.6254
Overconsolidation				
OCR		1.000	1.000	1.000
POP	kN/m²	0.000	0.000	0.000
Model				
Data set		Standard	Standard	Standard
Soil				
Type		Coarse	Coarse	Coarse
< 2 µm	%	10.00	10.00	10.00
2 µm - 50 µm	%	13.00	13.00	13.00
50 µm - 2 mm	%	77.00	77.00	77.00
Flow parameters				
Use defaults		None	None	None
k_x	m/day	0.08640E-3	8.640E-3	0.8640E-3
k_y	m/day	0.08640E-3	8.640E-3	0.8640E-3
$-\psi_{unsat}$	m	10.00E3	10.00E3	10.00E3
e_{init}		0.5000	0.5000	0.5000
S_s	1/m	0.000	0.000	0.000
Change of permeability				
c_k		1000E12	1000E12	1000E12

Identification		Coal Measures	Waste	Restoration Soils
Parameters				
c_s	kJ/t/K	0.000	0.000	0.000
λ_s	kW/m/K	0.000	0.000	0.000
ρ_s	t/m³	0.000	0.000	0.000
Solid thermal expansion		Volumetric	Volumetric	Volumetric
α_s	1/K	0.000	0.000	0.000
D_v	m²/day	0.000	0.000	0.000
f_{Tv}		0.000	0.000	0.000
Unfrozen water content		None	None	None

APPENDIX SRA3
PLAXIS STABILITY PRINTOUTS

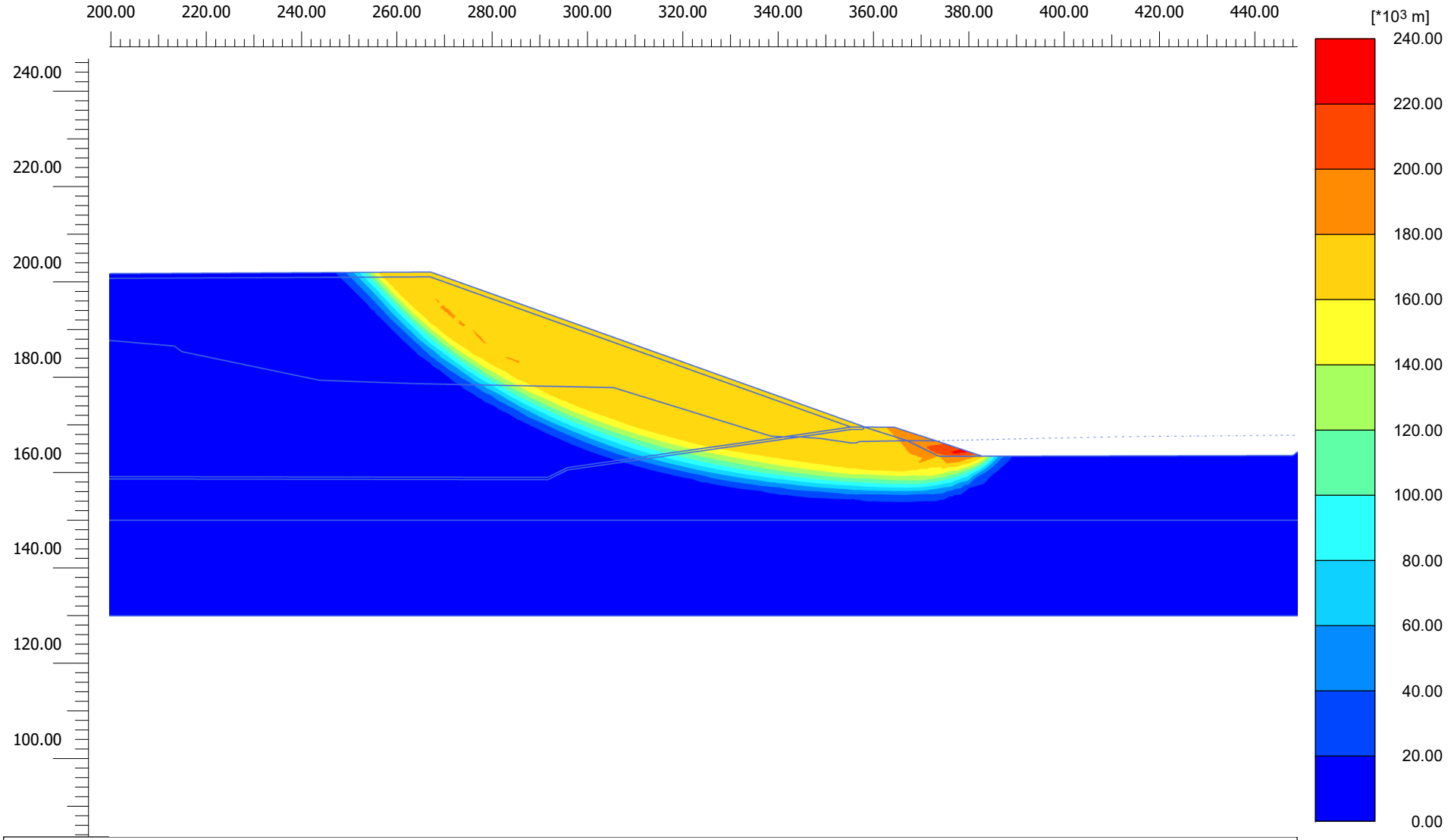


Incremental displacements |Δu| (scaled up 0.500*10^{-6} times)

Maximum value = 10.33*10^{6} m (Element 1432 at Node 17711)

Sirius Environmental	*Project description* Pwllfawatkin Capping - Restoration Soils Buttress Constr ...		*Date* 16/03/2022
	Project filename Pwllfawatkin Capping - Re ...	*Step* 140	*Company* Sirius Environmental Ltd

Step info				
Phase	FLS [Phase_4]			
Step	Initial			
Calulation mode	Classical mode			
Step type	Safety			
Updated mesh	False			
Solver type	Picos			
Kernel type	64 bit			
Extrapolation factor	2.000			
Relative stiffness	-1.976E-15			
Multipliers				
Soil weight			ΣM_{Weight}	1.000
Strength reduction factor	M_{sf}	1.559E-3	ΣM_{sf}	1.365
Time	Increment	0.000	End time	960.0
Staged construction				
Active proportion total area	M_{Area}	0.000	ΣM_{Area}	0.9702
Active proportion of stage	M_{Stage}	0.000	ΣM_{Stage}	0.000
Forces				
F_X	0.000 kN/m			
F_Y	0.000 kN/m			
Consolidation				
Realised $P_{Excess,Max}$	186.3 kN/m^2			



Incremental displacements |Δu| (scaled up 0.0500*10^{-3} times)

Maximum value = 223.2*10^{3} m (Element 1526 at Node 17408)

Sirius Environmental	*Project description* Pwllfawatkin Capping - Restoration Soils Buttress Water ...		*Date* 16/03/2022
	Project filename Pwllfawatkin Capping - Re ...	*Step* 252	*Company* Sirius Environmental Ltd

Step info				
Phase	LRS [Phase_8]			
Step	Initial			
Calulation mode	Classical mode			
Step type	Safety			
Updated mesh	False			
Solver type	Picos			
Kernel type	64 bit			
Extrapolation factor	2.000			
Relative stiffness	-0.02238E-12			
Multipliers				
Soil weight			ΣM_{Weight}	1.000
Strength reduction factor	M_{sf}	-6.493E-6	ΣM_{sf}	1.651
Time	Increment	0.000	End time	1173
Staged construction				
Active proportion total area	M_{Area}	0.000	ΣM_{Area}	0.9822
Active proportion of stage	M_{Stage}	0.000	ΣM_{Stage}	0.000
Forces				
F_X	0.000 kN/m			
F_Y	0.000 kN/m			
Consolidation				
Realised $P_{Excess,Max}$	4439 kN/m^2			

APPENDIX 3

Planning Consent

NEATH PORT TALBOT COUNTY BOROUGH COUNCIL
CYNGOR BWRDEISTREF SIROL CASTELL-NEDD PORT TALBOT

TOWN AND COUNTRY PLANNING ACT 1990
THE TOWN AND COUNTRY PLANNING (DEVELOPMENT MANAGEMENT PROCEDURE)(WALES) ORDER 2012

APPROVAL OF FULL PLANNING PERMISSION

Name and address of the applicant
Mr Mat Nicholson
FCC Waste Services (UK) Limited
3 Sidings Court
White Rose Way
Doncaster
DN4 5NU

Name and address of the agent
Mr James Cook
Sirius Planning
4245 Park Approach
Thorpe Park
Leeds
LS15 8GB

DATE REGISTERED: 2 February 2022

APPLICATION NO: P2021/1277

LOCATION: Pwllfawatkin Refuse Tip , Pontardawe Link Road To Baran Road, Pontardawe SA8 4RX

PROPOSAL: Revised restoration profile of Tip 890 including continuation of waste importation to 31st October 2023 with restoration completed by 31st October 2025.

NEATH PORT TALBOT COUNTY BOROUGH COUNCIL as the Local Planning Authority in pursuance of its power under the above mentioned Act and Order hereby **GRANTS PLANNING PERMISSION** for the development as described above to be carried out in accordance with the application and the plans submitted therewith, subject to compliance with the following conditions:

Conditions:-

Time Limit Conditions

1 The deposit of waste at the site (Tip 890) shall cease by no later than 31st October 2023. Restoration shall be completed no later than the 31st October 2025.

Reason
To provide a period which takes into account of the needs of the operator as well as other planning considerations.

List of Approved Plans

2 Unless modified by other conditions of this permission, the working, phasing, landscaping, restoration, and aftercare of the site shall be carried out substantially in accordance with the following plans and documents:

a) WR7816/12/01 Site Location Plan 1:50,000
b) WR7816/12/02 Planning Application Boundary and Ownership Plan 1:2,500
c) WR7816/12/03 Proposed Phasing Plan 1:2,500
d) WR7816/12/04 Pre-Settlement Waste Contours 1:2,500
e) WR7816/12/05 Post-Settlement Waste Contours 1:2,500
f) WR7816/12/06 Site Sections Location Plan 1:2,500
g) WR7816/12/07 Site Sections Through Proposed Landform 1:1,250
h) WR7816/12/08 Proposed Restoration Plan 1:2,000
i) WR7470/01/01 RG Surface Water Management Scheme 1:1,000
j) Planning support statement, report ref WR7816/PS
k) Dust Management Plan dated October 2021

Reason
To enable the Local Planning Authority to adequately control the development and to minimise its impact on the amenities of the local area.

Action Conditions

3 A survey shall be carried out on the final achievement of the restoration levels (as detailed in WR7816/12/04) at Tip 890. This survey shall be completed within 1 month of the date the restoration levels are achieved, and a copy of the survey shall be submitted to the Local Planning Authority within 28 days of the survey being undertaken.

Reason
To ensure the proper restoration of the site in accordance with submitted plans and to accord with Policies EN8 and W2 of the Local Development Plan.

4 The Scheme for the periodic monitoring and review of the biodegradable faction of waste deposited at the site, approved under planning reference P2005/0607, shall be implemented, as approved, at all times throughout the lifetime of the site.

Reason
To ensure that restoration levels pay regard to changes in settlement rates that might be achieved over the period of landfill and to accord with Policies W2 and EN8 of the Local Development Plan

5 The developer shall notify the Local Planning Authority in writing within 7 days of the date of the following.

- The completion of each landfill phase.
- The completion of restoration of each landfill phase.
- The completion of final restoration under this planning permission.

Reason
To enable the Local Planning Authority to control the development and to accord with Policy SP19 of the Local Development Plan

6 The local planning authority shall be given a minimum of 48 hours prior notice in writing of any soil stripping operations.

Reason
In the interest of soil conservation and to accord with Policies W2, BE1 and EN8 of the Local Development Plan

7 Within 6 months of the date of this permission or prior to the cessation of landfilling operations on site, whichever is the sooner, the applicant shall submit a drainage scheme (covering the landfill site north of Barran Road) for the approval of the Local Planning Authority, this scheme shall include, inter alia:

- Details for the disposal of water from the site using gravity connections
- Detailed plans showing contours and flow routes
- Engineering plans showing drainage pipes, manholes, hydro brakes (if applicable)
- Discharge rates and storage attenuation
- Storage capacity for any lagoons and discharge rates
- Measures to prevent or mitigate any potential exceedance of water

The scheme shall be implemented as approved

Reason
To ensure effective drainage at the site following the cessation of operations at the site and in order to minimise potential for the contamination of nearby watercourses and to accord with Policies W2 and EN8 of the Local Development Plan

8 The crossroads on Barran Road, between Tip 871 and the current landfill site shall be monitored weekly, from the date of this permission, (to include a weekly photographic record) for a 6 month period, to ensure surface water drainage is not leaving the landfill site and flowing onto the public highway. The results of this monitoring shall be submitted to the Local Authority on a monthly basis.

Should surface water run off leave the site and flow onto the public highway then the applicant shall submit details, for the approval of the Local Authority (within 1 month of any incident being identified) to include remedial measures to be put in place to clear the highway of any deleterious material and any additional drainage measures to ensure on site drainage does not continue to flow onto the public highway. The additional works shall be carried out as agreed for the duration of operations at the site

Reason
For the safety of users of the public highway and to prevent potential contamination of nearby watercourses and to accord with Policies W2, EN8 and TR2of the Local Development Plan

9 No development with the potential to impact on otter and great crested newts, shall commence until a pre-construction species survey has been carried out for the development. If the survey confirms the presence of otter or great crested newts the results of the survey together with proposed mitigation measures shall be submitted to and approved in writing by the Local Planning Authority. The measures shall be carried out in accordance with the approved details.

Reason
To ensure the potential presence of otter and great crested newt is confirmed prior to construction and where necessary remedial measures are implemented for their protection and to accord with Policies W2, EN6 and EN7 of the Local Development Plan.

10 Within 6 months of the date of this permission, or prior to the commencement of any restoration planting works, whichever is the sooner, an Ecological Management and Monitoring Plan will be submitted to and agreed with NPTCBC. This will include:

a) details of the creation of the new habitats to include a species rich grassland; a revised plant schedule to reflect the long term aim of a biodiverse rich site; details of maintenance and contingency for failures.
b) details of the long term management.
c) a monitoring schedule.
d) a mechanism for the monitoring to feed into future actions.

Reason
To comply with the proposals set out in the Ecological Appraisal section 6 and to ensure compliance with the Environment Wales Act 2016 and to accord with Policies W2, EN6 andf EN7 of the Local Development Plan

11 Where it is necessary to undertake any works to any waterbodies that are to be retained details of restoration works and planting shall be submitted to the Local Planning Authority for approval. The works shall be implemented as approved.

Reason
To comply with the proposals set out in the Ecological Appraisal section 6.32 to conserve S7 habitats and to ensure compliance with the Environment Wales Act 2016 and to accord with Policies W2, EN6 and EN7 of the Local Development Plan

12 Where it is necessary to remove a waterbody, works will be undertaken outside of the breeding season for amphibians. Works will be limited to between September and January.

Reason
To comply with the proposals set out in the Ecological Appraisal section 6.30 to protect Common Toad (S7 species) and to ensure compliance with the Environment Wales Act 2016 and to accord with Policies W2, EN6 and EN7 of the Local Development Plan

13 Prior to commencement of any works within 7m of a watercourse or waterbody, the area shall be subject to a precautionary check for otter and water voles by an Ecologist. If any such species are discovered, appropriate mitigation will be agreed in writing with the local planning authority and where necessary a licence from NRW

obtained prior to any works being implemented. Works will be undertaken strictly in line with the agreed mitigation and licence conditions (where relevant).

Reason
To comply with the proposals set out in the Ecological Appraisal section 6.40 and to ensure compliance with the Conservation of Habitats and Species Regulations 2010 and the Wildlife and Countryside Act 1981 (as amended) and to accord with Policies W2 and EN6 and EN7 of the Local Development Plan

14 Prior to any restoration works being undertaken in furtherance of this permission all areas of Section 7 habitats as identified in the Ecological Appraisal submitted with this application, will be appropriately demarcated to prevent encroachment, and retained as existing.

Reason
To ensure appropriate protection of S7 habitats and compliance with the Environment Wales Act 2016 and to accord with Policies W2 and EN6 and EN7 of the Local Development Plan

15 Within 6 months of the date of this permission, or prior to the completion of the final restoration levels, as shown on WR7816/12/04 Pre-Settlement Waste Contours 1:2,500, whichever is the sooner, the applicant shall submit a detailed restoration and aftercare scheme for phases 3 - 4 (inclusive of the sidewall extension detailed in this application) and any areas requiring restoration and aftercare works not included within previous planning approvals. Works shall be carried out in accordance with the approved scheme, the scheme shall include, inter alia;

1. Restoration

a) the removal of any buildings, plant and machinery and the reinstatement of the site and access roads by clearing plant, buildings, machinery, road base, concrete or brickwork.
b) details of respreading of overburden, subsoil and topsoil previously stripped from the site, specifying depth and placement.
c) the ripping of any compacted layers of final cover to ensure adequate drainage and aeration.
d) the machines to be used in soil respreading operations.
e) he final levels of the reclaimed land and the gradient of the slopes which shall be graded to prevent ponding or erosion of surface water.
f) the drainage of the reclaimed land including the formation of suitably graded contours to promote natural drainage and the installation of artificial drainage where necessary, and the position of main outflow ditches and watercourses.
g) the position and erection of fencing, hedge on bank constructions and gates as necessary.
h) the creation of any ponds or water features.
i) The final contours proposed under the above scheme shall not exceed the post settlement contours as indicated on Approved Drawing No. WR7816/12/05 Post-Settlement Waste Contours 1:2,500

2. Aftercare

The aftercare scheme shall set out in detail the requirements as may be necessary to bring the land to the required standard for the use for amenity i.e. when it is reasonably fit for those uses, and the scheme shall include, inter alia, details of the following.

a) the timing and pattern of vegetation establishment including species to be planted, grass seeding mixture, stock type and size, spacing, method and position of planting.
b) cultivation practices for the preparation of the soils, subsoils, colliery shale etc. secondary treatments such as moling, subsoiling, discing, stone picking as necessary.drainage including timing of installation work, maintenance works or temporary drainage measures.
c) fertilizer and weed control to improve soil fertility and control of weed to be based on soil/shale sampling and analysis.
d) a detailed Annual Programme for the first and subsequent years for the Aftercare of the site which shall include, inter-alia, the following information:
    i. Identify the person(s) responsible for the succeeding year's programme.
    ii. Vegetation establishment and layout.
    iii. Secondary treatments such as further moling, subsoiling or fertilizing requirements.
    iv. Field drainage requirements and maintenance.
e) Tree and hedge establishment for the years including maintenance such as beating up, weed control, fertilizer application, cutting or pruning.

The scheme shall be implemented as approved.

Reason
In the interest of the satisfactory phasing of restoration and aftercare and to accord with Policies W2 and EN8 of the Local Development Plan

16 Any additional settlement lagoons or drainage works to be carried out within the extension site (tip 890) shall be carried out in accordance with the details within the Ecological Management Plan, approved under planning reference P/2005/0609

Reason

To ensure appropriate mitigation and enhancement of areas of ecological interest and the provision of additional nature conservation habitat and wildlife in areas not affected by the proposed development and to accord with Policies W2 and EN8 of the Local Development Plan

17 Drainage ditches, settling ponds and lagoons shall be regularly desilted and maintained in such condition that they are able to perform effectively and efficiently the purpose for which they have been provided.

Reason
To ensure that these facilities continue to function effectively and efficiently throughout the operational, restoration and after-care period and to accord with Policies W2 and EN8 of the Local Development Plan

18 Any facilities for the storage of oils, fuels or chemicals shall be on impervious bases and surrounded by impervious bund walls. The volume of the bunded compound should be at least equivalent to the capacity of the tank plus 10%. If there is multiple tankage, the compound should be at least equivalent to the capacity of the largest tank, or the combined capacity of interconnected tanks, plus 10%. All filling points, vents, gauges, and sight glasses must be located

within the bund. The drainage system of the bund shall be sealed with no discharge to any watercourse, land, or underground strata. Associated pipework should be located above ground and protected from accidental damage. All filling points and tank overflow pipes should be detailed to discharge downwards into the bund.

Reason
To prevent pollution of watercourses and to accord with Policies W2 and EN8 of the Local Development Plan

19 Within one week of the Local Planning Authority making a request in writing following receipt of a justified complaint, the operator shall conduct a full investigation into the causes of the odour and report in writing to the Local Planning Authority the results of its investigation along with an Action Plan to address any identified issues. The report should contain as a minimum;

a) Evidence of the examination of all potential odorous activities detailed in the current approved Odour Management Plan and the conclusions of those investigations
b) Details of any pre-notified or refused odorous materials identified at the weighbridge
c) Details of landfill odour monitoring including calibration certificates for monitoring equipment
d) Copies of all Daily Odour Inspection Forms for the relevant period
e) Copies of the Site Diary as detailed in the Odour Management Plan for the relevant period
f) Copies of Olfactory Odour Assessments for the relevant period
g) Copies of Odour Diaries received from local residents for the relevant period
h) Copies of Sniff Test Report forms for the relevant period
i) Copies of Odour Complaint Report Forms for the relevant period
j) Details of proactive gas and leachate infrastructure checks for the relevant period

In the event that the operator fails to undertake and submit the required investigation within the above timescales, (without having first agreed, in writing, an extension of time with the LPA to provide this information) or the Local Planning Authority notifies the operator in writing that they have failed to accord with the agreed Action Plan, all operations at the site shall cease until such time as the Local Planning Authority has confirmed in writing their agreement of the implementation of the action plan and a revised Odour Management Plan.

Reason
To ensure that robust procedures are in place to swiftly address any odour issues arising from justified complaints in the interests of residential and local amenity, and to comply with Policy EN8 of the Local Development Plan.

20 No later than twelve months after the date of this consent (and every twelve months thereafter), the operator shall undertake a review of the Odour Management Plan. Such review shall consider the effectiveness of measures within the OMP, include details of all complaints received and actions taken, and make recommendations for any necessary improvements. The review and any necessary amendments to the Odour Management Plan shall be submitted for the written approval of the LPA no later than one month after the review date. In the event that the operator fails to undertake and submit the required review within the above timescales, or the Local Planning Authority refuses to accept the recommendations within the review, all operations at the site shall cease until such time as the Local Planning Authority has confirmed in writing their agreement of a revised Odour Management Plan.

Reason
To ensure that an up-to-date Odour Management Plan is in place which provides the necessary degree of control over activities at the site in order to minimise odour impacts in the interests of residential and local amenity, and to comply with Policy EN8 of the Local Development Plan.

21 Dust monitoring and suppression, shall be carried out in accordance with the dust management plan (dated Oct 2021) or any subsequent revisions to the plan that have been agreed in writing with the Local Planning Authority. The measures outlined within the relevant dust management plan shall be carried out at the site until landfilling and restoration have been completed.

Reason
To protect the amenities of the locality from the effects of any dust arising from the development and to accord with Policies W2 and EN8 of the Local Development Plan.

22 All vehicles, plant and machinery operated at the site shall be maintained in accordance with the manufacturers specification at all times and shall be fitted with and use effective silencers.

Reason
To ensure minimum disturbance from operations and avoidance of nuisance to the local community and to accord with Policies W2 and EN8 of the Local Development Plan.

23 Before entering onto the public highway, the wheels, undersides, and bodies of all vehicles travelling from the site shall be cleaned and in such a condition as to avoid the deposit of slurry, mud, or other material upon the public highway.

Reason
To ensure that such reasonable precautions are taken, and provisions made as is necessary to prevent the exit of vehicles onto the public highway which would be likely to deposit material on the public highway to the detrimental highway safety and to accord with Policies W2 and EN8 of the Local Development Plan.

24 Any plant and machinery that may be retained on site for landfill gas control or treatment following restoration of the site, shall be removed from the site within 6 months of its effective decommissioning. The area occupied by such plant and

equipment shall be restored in accordance with details to be submitted to and approved by Local Planning Authority.

Reason
To secure the eventual satisfactory restoration of the site and to accord with Policies W2 and EN8 of the Local Development Plan.

25 Within six months of any leachate treatment facility ceasing to be operated for any 12-month period, the facility shall be decommissioned and demolished and the site restored in accordance with details to be submitted to and approved by the Local Planning Authority

Reason
To secure the eventual satisfactory restoration of the site and to accord with Policies W2 and EN8 of the Local Development Plan

26 On the completion of landfilling the last layer of waste in each phase, the surface levels shall be ascertained by a competent surveyor and any discrepancy between actual levels and those approved shall be immediately made known to the Local Planning Authority. Markers shall be placed to indicate the approved pre settlement reclamation levels, and these shall be retained until completion of final restoration.

Reason
To ensure the proper reclamation of the site in accordance with the submitted plans and to accord with Policies W2 and EN8 of the Local Development Plan

27 Any leachate treatment facility constructed at the site shall be used solely for the processing and treatment of landfill leachate which has been generated by the Pwllfawatkin Landfill site. At no time shall any other leachate, effluent, or liquor, be imported to the facility for processing or treatment.

Reason
In the interest of highway safety and in the interest of the amenity of the area and in order to secure the eventual restoration of the site and to accord with Policies W2 and EN8 of the Local Development Plan

28 In the event of a cessation of operations, for a period exceeding 6 months, at any time before the development is completed, a reinstatement and restoration scheme shall be submitted to the Local Planning Authority for approval within 1 month of the end of the 6 month period. The scheme shall provide revised details of final levels, restoration, capping, landscaping, and a timescale for the implementation of the scheme and each element within it. The approved scheme shall be carried out in accordance with the approved timescale.

Reason
To secure the proper restoration of the site within a reasonable and acceptable timescale and to accord with Policies SP19, SP16 of the Local Development Plan

<u>Regulatory Conditions</u>

29 Every 3 months until the completion of waste importation into the site, a record of the origin and total tonnage of waste imported into the site for each 3 month interval and

the aggregated total of all waste imported into the site shall be provided in writing to the local planning authority.

Reason
In order that the planning authority can monitor the compliance of planning controls and other planning considerations and to accord with Policies W2 and EN8 of the Local Development Plan

30 The highways improvement works, carried out in compliance with planning permission P2005/0715 shall be retained in a condition fit for their purpose for the duration of operations at the site

Reason
In the interest of highway safety and to accord with Policies W2 and TR2 of the Local Development Plan

31 The ground levels at Tip 890 shall not exceed the pre-settlement contours as shown on plan WR7816/12/04 Pre-Settlement Waste Contours 1:2,500

Reason
In the interest of clarity and to establish an early indication of the contours to be achieved to accord with restoration proposals and to accord with Policies W2 and EN8 of the Local Development Plan

32 Soil stripping shall only be carried out when the soil is in a dry and friable condition and between the months of April and September inclusive.

Reason
In the interest of soil conservation and to accord with Policies W2 and EN8 of the Local Development Plan

33 In order to minimise compaction of soils, only those vehicles involved in loading soils shall be permitted on unstripped areas and then only restricted to the minimum necessary to recover the soils. Vehicles used in transporting soils shall only travel over areas of ground that have previously been stripped of topsoil, subsoil, and shallow soil-forming material.

Reason
In the interest of soil conservation and to accord with Policies W2, EN6 and EN7 of the Local Development Plan

34 No highly malodorous waste shall be imported into Tip 890 without the prior approval of the Local Planning Authority, as detailed in the scheme approved under planning permission P2005/0601

Reason
To control the level of highly malodorous wastes in the interest of amenity and to accord with Policies W2 and EN8 of the Local Development Plan

35 Lighting at the site shall be maintained in accordance with the details, approved under planning permission P2005/0604, for the lifetime of operations at the site

Reason
In the interest of amenity and to accord with Policies W2 and EN8 of the Local Development Plan

36 Technical Working Party meetings shall continue to be held, in accordance with the scheme approved under planning permission P2005/0606, for the lifetime of operations at the site (to include the restoration and aftercare phases).

Reason
To assist in the control and monitoring of the environmental effects of the development and to accord with Policies W2 of the Local Development Plan

37 Site Liaison Committee meetings shall continue to be held, in accordance with the scheme approved under planning permission P2006/0173, for the lifetime of operations at the site (to include the restoration and aftercare phases).

Reason
To assist in the control of and assessment of monitoring of the environmental effects of the development and to accord with Policies W2 of the Local Development Plan

38 A copy of this Permission including all documents hereby approved and any other documents subsequently approved in accordance with this permission shall be permanently maintained and available for inspection at the site office.

Reason
To ensure that the operators of the site and any appropriate officer of the local planning authority has access to such approvals on site and to accord with Policies W2 and EN8 of the Local Development Plan

39 The signage improvement works carried out in accordance with the approved scheme (planning permission ref P/2005/0713) shall be maintained for the lifetime of operations at the site

Reason
In the interest of highway safety and to accord with Policies W2 and TR2 of the Local Development Plan

40 The road improvement works carried out in accordance with the approved scheme (planning permission ref P/2005/0707) shall be maintained for the lifetime of operations at the site.

Reason
In the interest of highway safety and to accord with Policies W2 and TR2 of the Local Development Plan

41 The signage, road markings and drainage works approved under planning permission P/2005/0706 shall be maintained for the lifetime of operations at the site

Reason
In the interest of highway safety and to accord with Policies W2 and TR2 of the Local Development Plan

42 Operations at the site shall be carried out in accordance with the details provided within the scheme for noise monitoring and suppression approved under planning permission P2005/0610) at all times for the lifetime of operations at the site

Reason
To ensure adequate arrangements are in place for the monitoring of noise associated with the site and to accord with Policies W2 and EN8 of the Local Development Plan

43 Operations at the site shall be carried out in accordance with the recommendations outlined in Chapter 8 (ecology) of 'Environmental Statement Vol 1- Amended Restoration Profile, Pwllfawatkin Landfill dated Nov 21 by Sirius Planning' at all times for the lifetime of operations at the site (inclusive of restoration and aftercare phases).

Reason
To comply with the proposals set out in the Ecological Appraisal section 6 and to ensure compliance with the Environment Wales Act 2016 and to accord with Policies W2, EN6 and EN7 of the Local Development Plan

44 No lighting will be installed on site that is additional to the existing approved lighting scheme for the site.

Reason
To ensure nocturnal wildlife are not adversely affected or disturbed by the lighting of the site and to ensure compliance with the Conservation of Habitats and Species Regulations 2010, the Wildlife and Countryside Act 1981 (as amended) and to comply with the proposals set out in the Ecological Appraisal section 6.21 and to accord with Policies W2 and EN6, EN7 of the Local Development Plan

45 All mature native trees within and bounding the site shall be retained.

Reason
To conserve habitats that support species such as birds and bats; and to ensure compliance with the Conservation of Habitats and Species Regulations 2010 and the Wildlife and Countryside Act 1981 (as amended). To comply with the proposals set out in the Ecological Appraisal section 6.22.and to accord with Policies W2, EN6 and EN7 of the Local Development Plan

46 The aftercare of Phase 1 and 2 shall be carried out in accordance with the details approved under planning permission P2012/0072

Reason
In the interest of the satisfactory phasing of restoration and aftercare and to accord with Policies W2 and EN8 of the Local Development Plan

47 With the exception of the construction of water treatment facilities and associated drainage, the leachate and landfill gas compound, and the erection of fencing, no

other engineering works or landfilling shall occur within 40 metres of the Upper Clydach River within the Landfill Extension site (Tip 890)

Reason
In the interest of nature conservation and to accord with Policies W2 and EN8 of the Local Development Plan

48 All surface water drainage from parking areas and hardstanding's shall be passed through an oil interceptor designed and constructed to have a capacity and details compatible with the site being drained prior to discharge into any watercourse. Roof water shall not pass through the interceptor.

Reason
To prevent pollution of watercourses and to accord with Policies W2 and EN8 of the Local Development Plan

49 The Landscaping Scheme approved under planning reference P2005/0609, shall be implemented and maintained throughout the remaining lifetime of the site (to include the restoration and aftercare periods), as approved.

Reason
To minimise the visual impact of the development by ensuring that areas disturbed, including faces of excavations and slopes of fill, in the initial development of the site but which are then no longer required for continuing operational purposes are landscaped at the earliest opportunity and to accord with Policies W2, EN6 and EN8 of the Local Development Plan.

50 All operations at the site shall be carried out in full accordance with the approved Odour Management Plan dated June 2022 (as approved dated June 2022 or following review under the condition 22 below) until landfilling and restoration have been completed.

Reason
To ensure that an up-to-date Odour Management Plan is in place which provides the necessary degree of control over activities at the site in order to minimise odour impacts in the interests of residential and local amenity, and to comply with Policy EN8 of the Local Development Plan.

51 The free field noise levels attributable to the construction and removal of water treatment areas, as measured at the boundary of the curtilage of any residential or noise sensitive property shall not exceed 60dB(A) Leq (lhr).

Reason
In the interest of amenity of the area and to accord with Policies W2, BE1 and EN8 of the Local Development Plan

52 Noise levels arising from the development shall not exceed 52 dB (Laeq) (1 hour) free field at any of the noise sensitive properties (identified on Plan A appended to planning permission P2002/1016) following the completion of the deposit of the engineering cap on cell 1 of the proposed landfill extension.

Reason
To protect the amenity of local residents and to accord with Policies W2, BE1 and EN8 of the Local Development Plan

53 Notwithstanding provisions of condition 54 below, operations for the construction and removal of surface water treatment lagoons shall not occur except between the hours of 08.00 and 16.00 Monday to Friday and 08.00 to 14.00 hours Saturdays.

Reason
To control the time of operations at the site in the interest of the amenities of the area and to accord with Policies W2, BE1 and EN8 of the Local Development Plan

54 Except as may be modified under other terms or conditions of this permission, operations for the deposit of waste into the site for landfill disposal shall be restricted to the following periods.

07.00 to 17.00 hours Mondays to Fridays.
07.00 to 13.00 hours Saturdays.
No such operations shall occur on Sundays, Bank or Public Holidays

Operations for the covering of waste or for ancillary operations and restoration works shall be restricted to the following periods

07.00 to 19.00 hours Monday to Friday.
07.00 to 15.00 hours Saturdays.
No such operations shall occur on Sundays, Bank or Public Holidays

Reason:
To control the time of operations at the site in the interest of the amenities of the area and to accord with Policies W2, BE1 and EN8 of the Local Development Plan

55 No more than 125 heavy goods vehicles shall enter the site on any day Mondays to Fridays and no more than 60 such vehicles should enter the site on Saturdays. No such movements shall occur on Sundays, Bank or Public Holidays other than in accordance with the function of the Civic Amenity facility.

Reason
In the interest of highway safety and residential amenity and to accord with Policies W2, BE1 and TR2 of the Local Development Plan

56 Notwithstanding the provision of condition 57 below, the transportation of material between the landfill site and Tip 871 shall be via the access points as marked Y on the previously approved Drg. No. JODA/PW/890/001E (Fig 2.2). No other access point shall be used for such operations.

Reason
To prevent alternative accesses for the transportation of engineering materials or unsuitable spoil that may be inappropriate in highway or amenity terms and to accord with Policies W2 and TR2 of the Local Development Plan

57 In respect to the importation of waste for disposal at the landfill and ancillary operations, the permission hereby granted relates only to the use of the access road and access point marked X on approved Drawing No. WR7816/12/01 (Fig. 22) by vehicles gaining access to or from the site and no other access or access point shall be used

Reason

To provide that any proposed use of alternative access routes and access points can be considered by the local planning authority and to accord with Policies W2 and TR2 of the Local Development Plan

58 No sub or topsoil's originating from on-site soil stripping operations shall be sold or otherwise leave the site

Reason
In the interest of soil conservation and to accord with Policies W2, EN6 and EN7 of the Local Development Plan

59 No more than 180,000 tonnes of waste of any kind shall be imported into the site over any 12-month period.

Reason
To control the scale of development and transportation to a level that is acceptable and in the interest of general amenity and to accord with Policies W2, BE1, TR2 and EN8 of the Local Development Plan

60 No hazardous waste so defined by Article 1(4) of Directive 91/689/EEC(7) (hazardous waste) or any subsequent amendment to this Directive or Landfill (England and Wales) Regulations 2002 redefining that definition shall be deposited into the site.

Reason
To retain adequate control of the development in the interest of amenity and prevent development of a nature not considered within the application and to accord with Policies W2 and EN8 of the Local Development Plan

Informatives:

1 Notes to developer Failure to comply with the approved OMP would amount to a breach of planning for which a Breach of Condition Notice (BCN) could be served. In addition, in the case of a serious odour issue arising from such a breach, the option is also available to issue a Temporary Stop Notice alongside such a BCNWe advise the applicant that, in addition to planning permission, it is their responsibility to ensure they secure all other permits/consents/licences relevant to their development. Please refer to our website for further details. The responsibility of complying with the environmental permit conditions and relevant legislation lies with the landfill operator, and they are ultimately in control and responsible for what happens on site. By applying for an EPR permit, they

have made a commitment to operate lawfully and in line with the conditions within it. There must be no interference, alteration or diversion of any ditch, watercourse, stream or culvert crossing or bordering the site, without prior consultation and agreement with the Authority. Adequate provision shall be made for the drainage of the site, to ensure that the drainage of any adjoining land is not interrupted or otherwise adversely effected by the development during the lifetime of construction.

Reason for Approval
The proposed development is in accordance with Policies SP 19 Waste Management, Policy SP 16 (Environmental Protection), Policy SP 20 (Transport Network), Policy SC1 (Settlement Limits), Policy EN 2 (Special Landscape Areas), Policy EN 7 (Important Natural Features), Policy EN 8 (Pollution and Land Stability) and Policy TR 2 (Design and Access of New Development) of the Neath Port Talbot Local Development Plan, as well as Planning Policy Wales (PPW10) 10th Edition and guidance in Towards Zero Waste - One Wales: One Planet (2010).

Signed: 
Ceri Morris – Head of Planning & Public Protection

Date: 24 May 2023

IMPORTANT:

(1) Please note that for all decisions issued after 16th March 2016 for outline or full planning permission, a revised decision notice will be issued whenever a subsequent consent is given, for example providing details of any Reserved Matters approvals (outline applications only) and/or approval of conditions (including on Reserved Matters). This will ensure that the current status of the conditions applied to a consent is clear. Accordingly you are advised to visit www.npt.gov.uk/planning to view the application documentation to see if this is the current version, or whether it has been superseded by a more up-to-date revision of this Decision Notice. For Reserved Matters approvals the revised Decision Notice will only be shown under the Outline approval.

(2) Please note that this consent is specific to the plans and particulars approved as part of the application. Any departure from the approved plans will constitute unauthorised development and may be liable to enforcement action. You (or any subsequent developer) should advise the Council of any actual or proposed variations from the approved plans immediately so that you can be advised how to best resolve the matter.

(3) In addition, any conditions that the Council has imposed on this consent will be listed above and should be read carefully. It is your (or any subsequent developers) responsibility to ensure that the terms of all conditions are met in full at the appropriate time (as outlined in the specific condition). Please note that any works carried out without compliance with the conditions attached to this approval will be entirely at the risk of the persons involved and may result in formal action being taken by the Local Planning Authority.

(4) The developer should have regard to Sections 4, 7, 8 and 8A of the Chronically Sick and Disabled Persons Act 1970 and to the British Standards Institution's Code of Practice for "Design of buildings and their approaches to meet the needs of disabled people" (BS 8300:2009+A1:2010).

(5) From 1st October 2012 it has been an offence to install a public sewer or lateral drain without having an adoption agreement in place. From the 1st October 2012 the vast majority of all existing private sewers and lateral drains which link with the public sewer network were transferred to Welsh Water. For further details on how this will affect your development please contact: Welsh Water Developer Services, PO Box 3146, Cardiff, CF30 0EH. Telephone No. 0800 9172652 or email: .

(6) Welsh Water Dwr Cymru advise that the planning permission herby granted does not extend any rights to carry out any works to the public sewerage or water supply systems without first having obtained the necessary permissions required by the Water Industry Act 1991.

Please note, in accordance with Construction and Design Management (CDM) Regulations, it is the applicant's responsibility to ensure that any proposed works within their curtilage do not conflict with any underground services and is recommended they review their land registry title deeds for any legal covenants. For Sewers or Watermains that may be present and affected by your proposals, you are advised to contact Dwr Cymru Welsh Water who will be able to explain whether your proposed works will be acceptable as well as any consent required. Prior to commencing works, it is also recommend the applicant review the information and guidance on Building Over Sewers

available on Welsh Water's website at

The applicant is also advised that some public sewers and lateral drains may not be recorded on Welsh Water maps of public sewers because they were originally privately owned and were transferred into public ownership by nature of the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011. The presence of such assets may affect the proposal. In order to assist us in dealing with the proposal the applicant may contact Dwr Cymru Welsh Water to establish the location and status of the apparatus. Under the Water Industry Act 1991 Dwr Cymru Welsh Water has rights of access to its apparatus at all times.

IMPORTANT INFORMATION: TOWN AND COUNTRY PLANNING ACT 1990

The applicant's attention is drawn to the notes below.

(1) If the applicant is aggrieved by the decision of the Local Planning Authority to refuse permission for the proposed development or to grant it subject to conditions, then you can appeal to the Welsh Government under Section 78 of the Town and Country Planning Act 1990 (as amended).

(2) You can also appeal to the Welsh Government against a decision to refuse permission or grant subject to conditions in respect of applications made for :- Listed Building or Conservation Area Consent; Consent under a Tree Preservation Order; Advertisement Consent.

(3) You can also appeal If your application for a Certificate of Lawful Existing Use or Lawful Proposed Use is partly or wholly refused or is granted differently from what you asked for (under Section 195/196) of the Town and Country Planning Act 1990 (as amended).

(4) If you are aggrieved of the LPAs decision, the following deadlines apply for appeals to be submitted to the Welsh Government (from the date of the Council's decision):-

(1) Planning Permission (with the exception of Minor Commercial and Householder applications – see below)	Within 6 Months
(2) Householder Appeal [see endnote i]	Within 12 weeks
(3) Minor Commercial Appeal [see endnote i]	Within 12 weeks
(4) Listed Building or Conservation Area Consent appeals	Within 6 months
(5) Tree Preservation Order (TPO) Consent	Within 28 days
(6) Advertisement Consent	Within 8 weeks
(7) Certificate of Lawfulness of Existing (Section 191) or Proposed (Section 192) Use or Development	Within 6 months
(8) Hazardous Substances Consent	Within 6 months

(5) Appeals must be made on a form which is obtainable from the Planning Inspectorate, Crown Buildings, Cathays Park, Cardiff, CF10 3NQ – Tel 0303 444 5940, or online at www.planningportal.gov.uk/pcs .

(6) The Welsh Government has power to allow a longer period for the giving of notice of appeal but they will not normally be prepared to exercise this power unless there are special circumstances which excuse the delay in giving notice of appeal.

(7) The Welsh Government is not required to entertain an appeal if it appears to them that permission for the proposed development could not have been granted having regard to the statutory requirements to the provisions of the development order, and to any directions given under the Order. They do not in practice refuse to entertain appeals solely because the decision of the Local Planning Authority was based on a direction given by them.

(8) If permission to develop land is refused or granted subject to conditions, whether by the Local Planning Authority or by the Welsh Government, and the owner of the land claims that the land has become incapable of reasonable beneficial use in its existing state and cannot be rendered capable of reasonable beneficial use by the carrying out of any development which has been or would be permitted, he may serve on the County Borough Council, in which the land is situated, as the case may be, a **purchase notice** requiring that Council purchase his interest in the land in

accordance with the provisions of Part VI of the Town and Country Planning Act 1990.

Making an Appeal

(9) Please note that for all applications received by the LPA after 5th May 2017, it is now a requirement that any appeal made to the Planning Inspectorate (other than Householder and Minor Commercial Appeals, and appeals against refusal to grant advertisement consent) must be accompanied by all the information and evidence you intend to rely upon (**a "full statement of case"**). You must also send a copy of the notice of appeal and full statement of case to the LPA.

(10) In addition, for 'planning appeals' an amendment to an application following notice of appeal may only be made to correct an error.

(11) Additional details and information on making an appeal to the Welsh Government is available from the Planning Inspectorate at the above address and website. The relevant documents are entitled "making your planning appeal" and "planning appeals Public Local Inquiries".

(12) Further correspondence regarding this application should bear the reference number quoted on the top of the decision notice.

THIS NOTICE RELATES ONLY TO A PLANNING DECISION AND DOES NOT RELATE TO OTHER LEGISLATION INCLUDING ANY LEGISLATION UNDER:

- BUILDING REGULATIONS – Please contact buildingcontrol@npt.gov.uk or 01639 686820 to discuss all aspects of the service that is offered by Building Control
- HIGHWAY LEGISLATION

IF PLANNING CONSENT HAS BEEN GRANTED IT IS ADVISABLE TO ESTABLISH WHETHER ANY OTHER FORM OF CONSENT IS REQUIRED AND TO OBTAIN SUCH CONSENT BEFORE COMMENCING DEVELOPMENT

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[i] Please see the Town and Country Planning (Referred Applications and Appeals Procedure) (Wales) Regulations 2017 for appeal procedures and for full definitions of:

- *"householder application"* (essentially an application for the enlargement, improvement or other alteration of a dwellinghouse, or development within the curtilage of such a dwellinghouse, or change of use to enlarge the curtilage of a dwelling house)
- *"householder appeal"* means an appeal in relation to a householder application, but excludes an appeal against conditions on the grant of planning permission; or an appeal which is accompanied by an enforcement or listed building consent appeal.
- *"minor commercial application"* (essentially relates to existing buildings of no more than 250 square metres gross external floor space at ground floor level, currently in use for any of the purposes set out in Schedule 1A to The Town and Country Planning (Development Management Procedure) (Wales) (Amendment) Order 2015 which is an application for change of use from Class A1 to A2 or A3; or Class A2 to A3); or the carrying out of building or other operations to a shop front.
- *"minor commercial appeal"* means an appeal in relation to a minor commercial application but excludes an appeal against conditions on the grant of planning permission; or an appeal which is accompanied by an enforcement or listed building consent appeal.

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Caulmert
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