



Waste Recovery Plan June 2016

Llanwern East Waste Management Site
Tata Steelworks Llanwern

Cuddy Remediation Ltd

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Contents

1. Introduction
2. Site Details
 - 2.1. Site status prior to Cuddy works – December 2014
 - 2.2. Post closure aftercare and restoration
 - 2.3. Current site status – June 2016
 - 2.4. Planning Status
3. Waste Acceptance
4. Suitability of waste for its intended purpose
 - 4.1 Unsuitable Waste
5. Waste amounts used
6. Is the waste being used as a substitute for non-waste material?
7. Standard of Works

Appendix:

A – Planning Permission for the site

B - MMP for the site

Figures

1. Imported soils acceptance
2. Site Location Plan
3. Re-graded surface topography
4. Final restoration topography
5. Restoration soil details
6. Restoration soil detail with surface water and gas pipework
7. CQA plan title page.

1.0 Introduction

Llanwern Eastern Waste Management Site (LEWMS) is located at Ordnance Survey Grid Reference ST 397 864, as shown on Figure 1 and Figure 2. Figure 2 also shows the permitted area of the landfill. The site lies at the eastern edge of the Tata Steel Limited (Tata) Llanwern Steelworks and has accepted steelmaking and general wastes from the Llanwern site for four decades. The waste management site is a land raise, with wastes being deposited initially into very shallow excavations (circa 1 metre) onto natural ground.

Disposal has developed a raised landform that now reaches 15m above Ordnance Datum (AOD), or some 10m above surrounding ground level. Figure 2 shows a location plan of the site.

The site occupies an area of 197,835m² (19.78 Ha) which is fully occupied by deposited wastes. The landform of the site comprised a steep sided plateau, with only 1m of relief across the top of the land raise. LEWMS measures approximately 830m long by 300m wide with the long axis oriented north to south. In the northern half of the site, the boundary tapers to a point whilst the southern half of the site boundary is a uniform rectangle measuring 300m wide by 400m long.

To the east, the landform slopes gently down to the steelworks boundary at Hundred Perches Reen, a slow flowing man-made ditch draining the surrounding levels. Mature vegetation has established itself along the eastern batter of the landfill, forming a tree and vegetation screen to the land raise. The western and southern boundaries of the site were steep waste slopes which dropped from the waste plateau to site roads within the steel plant. These boundaries have leachate collection ditches running along 50% of their length, set between the toe of the waste slope and the site roads. Surface water flows within the open collection ditches are directed into Drain 10 of the works effluent treatment system.

The north-eastern boundary of the site is marked by a shunting spur to the works railway system. Between the toe of the waste slope and the railway, a ditch has been excavated to collect leachate moving through the slag starter layer beneath the waste. Leachate from this ditch is piped into Drain 9 of the works effluent treatment system.

With the exception of the eastern batter, each of the existing slopes comprise waste materials (principally steel slag) with a thin, impersistent covering of dredgings from the water courses around the plant.

The land surrounding LEWMS is flat lying, and forms part of the Gwent levels. This is an area of reclaimed coastal marshland that extends through several counties surrounding the Severn Estuary. The site is 3.5km from the current estuary boundary which is due to extensive land drainage and sea flood defences maintenance since Roman times. Land use comprises low grade arable and grazing land in a system of fields separated by drainage ditches or reens. The reens form an inter-bedded network of drainage ditches with levels controlled by a series of sluices at the sea defence to the south of the site. Surface water discharges at low tide and at periods of high water the sluices are closed to prevent seawater incursion into the reen system. The nominal elevation of the ground surface surrounding the site is 5m AOD with a reen water level of 2.3m AOD.

2.0 Site Details

Site Details	
Name of the applicant	Cuddy Demolition & Dismantling Ltd
Activity address	Llanwern East Waste Management Site Tata Steelworks Llanwern Queensway Newport NP26 3WN
National grid reference	Eastings: 339546 Northings: 186539

2.1 Site Status Prior to Cuddy works – December 2014

LEWMS has ceased accepting wastes as it was not able to secure an Environmental Permit for waste disposal because it fails to meet the technical requirements set out in the Landfill Regulations. This was largely because the site is not underlain by a liner and does not have an effective leachate drainage system. The Environment Agency considered that the lack of required engineering control systems and the potential for groundwater contamination close to an ecologically sensitive environment were grounds to require the site to close. The site has now formally closed though its Environmental Permit requires that the site is still actively managed to prevent pollution or to prevent nuisance.

2.2 Post Closure Aftercare and Restoration

Natural Resources Wales has required Tata to produce a Closure Report for the site so that the long term post-closure aftercare of the site can be specified. Risk assessments carried out to support this have identified that the long term risks to the local environment can only be properly addressed by constructing a fully engineered capping system. The objective of engineered capping is to prevent the ingress of rainwater into the waste mass thereby arresting the generation of polluting leachate. This can most easily be achieved over the very large areas under consideration by covering the site with a fully welded polymeric membrane. Restoration soils are placed above the membrane so that the appearance of the site is acceptable in the long term, with tree planting and the establishment of a grass sward.

2.3 Current Site Status – June 2016

The site has been ongoing for 18 months at the time of writing this document. The steep slopes have been re-profiled around the site and it is ready for the restoration and capping works. Soil has been imported to the site through the CL:AIRE Direct Transfer route and Lining and capping works have begun on the Southern phase of the site.

2.4 Planning Status

Planning approval was approved for the project in by Newport City Council and is shown in Appendix A.

3.0 Waste Acceptance

Figure 1 shows the testing requirements for material to be used in the capping of the site. Only Inert wastes that meet the chemical criteria in Figure 1 will be considered for the project. Part of the bespoke permit application is the Treatment of soils, this would enable screening of the imported waste soils to achieve the geotechnical specification laid out in Figure 1. As part of the validation works for the site, testing will be carried out after the treatment process to ensure the soils can be laid down without causing any negative effects to the lining system beneath.

4.7.2 Testing of Restoration Soils

The testing requirements for the restoration soils discussed in the previous section is formalised in the following flow chart and Tables 4-11 and 4-12 shown below:

Flowchart - Minimum Testing Schedule for Materials to be Considered for use at East Waste Management Site

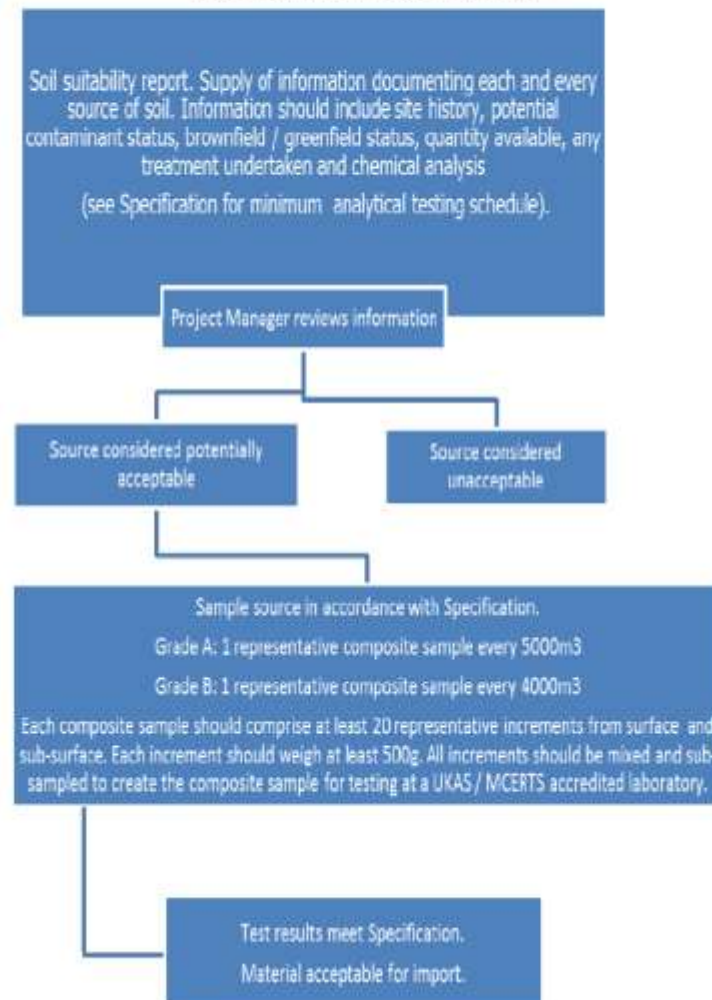


Table 4-11 Chemical testing schedule for evaluation of materials to be considered for use in landfill restoration

Minimum Testing Requirements and Specification for Chemical Quality (all values mg/kg unless specified)			
	Testing Frequency	Specification	
		A Grade	B Grade
pH (unitless)	Grade A: 1 composite sample every 5000m ³	5.5 – 8.5	5.5 – 8.5
Total Petroleum Hydrocarbons (C6 - C40)		500	1000
Total PAH		100	Speciated (see below)
Total BTEX		6	Speciated (see below)
Polychlorinated Biphenyls (PCBs)		1	1
TOC (%)			
Total phenol		420	2000
Asbestos (% w/w)		Non detect	Non detect
Arsenic		43	400
Beryllium		55	400
Boron Water Soluble		45	5000
Cadmium		1.8	150
Cr III		8000	8000
Cr VI		2.1	20
Copper		500	500
Lead			500
Mercury (Inorganic)		80	100
Nickel		230	1500
Selenium		120	10000
Vanadium		18	2500
Zinc		618	2000
Sulphate (g/l)	Grade B: 1 composite sample every 4000m ³	0.4	0.4
Total Cyanide		10	10
Benzene			50
Toluene			50
Ethylbenzene			50
Xylene (o, m & p)			50
Acenaphthene			50
Acenaphthylene			50
Anthracene			50
Benz(a)anthracene			8
Benzo(a)pyrene			8
Benzo(b)fluoranthene			10
Benzo(ghi)perylene			50
Benzo(k)fluoranthene			18
Chrysene			8
Dibenzo(ah)anthracene			2
Fluoranthene			50
Fluorene			50
Indeno(123cd)pyrene			5
Naphthalene			18
Phenanthrene			50
Pyrene			50

NOTE
 PM – Project Manager
 Exceedance of Specification may be acceptable following review by PM and consultation with Tata and NRW.
 Material may be rejected even if chemical specification is satisfied if PM considers visual or olfactory observations are unsatisfactory.
 If material is a waste it must not be classified as hazardous waste
 Other parameters may need to be tested and leachate tests performed depending upon soil source.

Table 4-12 Geotechnical testing schedule for evaluation of materials to be considered for use in landfill restoration

Minimum Testing Requirements and Specification for Physical Quality of Soil		
	Testing Frequency	Specification
Particle Size Distribution BS 1377 Part 2 Method 9	1 per 5000m ³ / minimum 1 per source	100% passes 125mm, 90%-100% passes 63mm, 15% to 100% passes 2mm, >15% passes 0.063mm
Un-drained Shear Strength of Remoulded material	1 per 5000m ³ / minimum 1 per source	>45kPa
Direct Shear using Large Shear Box Test to determine interface shear strength parameters of soil against Pozidrain 6S250D.NW8	Per source	Low normal stress distribution of 10, 15 and 20 kPa to applied for test. Testes to be completed under dry conditions with remoulded soil at natural (as placed) moisture conditions
Contraries (e.g. metal, wood, glass, plastic)	1 per 5000m ³ / minimum 1 per source	<1% w/w contraries. Contraries must not compromise grading
Inspection for visible invasive weeds and fibres & olfactory signs of contamination	Visual inspection of all sources	No invasive weeds or fibres visible and no olfactory signs of contamination
Sharp objects that may comprise capping system	Visual inspection of all sources	No visible sharp objects capable of potentially damaging capping systems
NOTE Material will be inspected at source and upon arrival. Material found to be potentially unacceptable will be quarantined pending further evaluation.		

All testing is to be undertaken in an UKAS accredited Quality Assurance Laboratory.

The results of all the testing shall be provided to the Engineer prior to the placement of any soils on the capping project.

Figure 1: Detailed specification for the requirements of imported soils for the Llanwern East Waste Management Site.

The project was originally designed to make use of a handful of large soil sources. As this has not been the case as the site has developed and mostly smaller scale sources have been found the testing regime was amended slightly to the below:

Continue testing each source for chemistry and evaluating site history to ensure that no contaminated soils are received for the project. The sampling frequency and testing is amended from the original Specification to the following:

“Sources <5000 tonnes = for chemical analysis as per Figure 1 - minimum 1 composite soil sample regardless of quantity”

“Sources >5000 tonnes = for chemical analysis as per Figure 1 - as required 1 per 5000 tonnes or part thereof”

“For soil sources less than 5000 tonnes, only a Particle Size Distribution Test will be required, with the soil designated for placement on the plateau area of the cap.”

“For soil sources in excess of 5000 tonnes, the full geotechnical suite as described in the Figure 1 shall be completed.”

As shown above, geotechnical testing is reduced to just particle size distribution (PSD) for testing for soils to be placed on the stable plateau of the landfill. This will reduce the amount of testing the Contractor will need to do for small sources whilst still providing Tata with some control over the soil properties. The full testing

schedule as proposed in the Specification would have to be applied to soil to be used on the side slopes. In brief, each soil source would still as a minimum have:

- a) A chemical analysis completed
- b) A Particle Size Distribution test

The Contractor would still need to stockpile each source separately at site as per the original Specification.

On behalf of Tata, the CQA Engineer would continue to evaluate the nature and quantities of each soil source delivered and implement composite sampling for validation chemical testing where applicable.

For geotechnical validation the CQA Engineering staff would visually inspect the material to evaluate its size fractions, based on the provided PSD.

4.0 Suitability of Waste for its intended use.

The European Waste Code for the materials intended to be brought to LEWMS is:

17 05 04 – Soil and stones other than those mentioned in 17 05 03, soils from contaminated sites will not be considered for reuse on this project.

The imported waste will meet the chemical criteria outlined in Figure 1. If necessary the imported material will be screened on site to meet the grading requirements in Figure 1. Treatment of waste soils will only be for grading improvement, not chemical treatment.

Testing of any soil sources will be carried out initially at the source site in the frequency given in Figure 1, then sent to the Project Engineers for approval. When the soil is imported, Validation samples will be taken by the Project Engineer and tested for the chemical suite in Figure 1. If the results come back meeting the specification then the soil will be placed down as capping. The Material Management Plan for the site is provided in Appendix B.

The Recovery codes for the waste on site are:

R10 - Land treatment resulting in benefit to agriculture or ecological improvement

R11 - Use of waste

4.1 Unsuitable Material

The Project Engineer (Geotechnology Ltd) reserves the right to refuse tipping of any materials that fail to meet the required specification. The wagon will be turned away and sent back to the source site if the material is unacceptable.

5.0 Waste amounts used

Figures 3-6 show detailed drawings of the restoration scheme:

Figure 3 shows the re-graded topography, which has already been achieved on site.

Figure 4 shows the Final Restoration Topography of the site

Figure 5 shows the Restoration Soil Details including the geomembrane and geo-composite layers of the lining system.

Figure 6 shows the soil details with detail of the gas and water pipework around the crest of the tip slopes.

The site is a total of 197,835m², the whole site is to be capped off with a minimum thickness of 600mm of soil and a maximum thickness of 1m, as the thickness of capping soil will be slightly thicker towards the toe of the batter the total amount of imported material required to complete the scheme is a maximum of 200,000m³. With a conversion factor of 2 tonnes per cubic metre, the total tonnage required is 400,000.

6.0 Is the waste being used as a substitute for non-waste material?

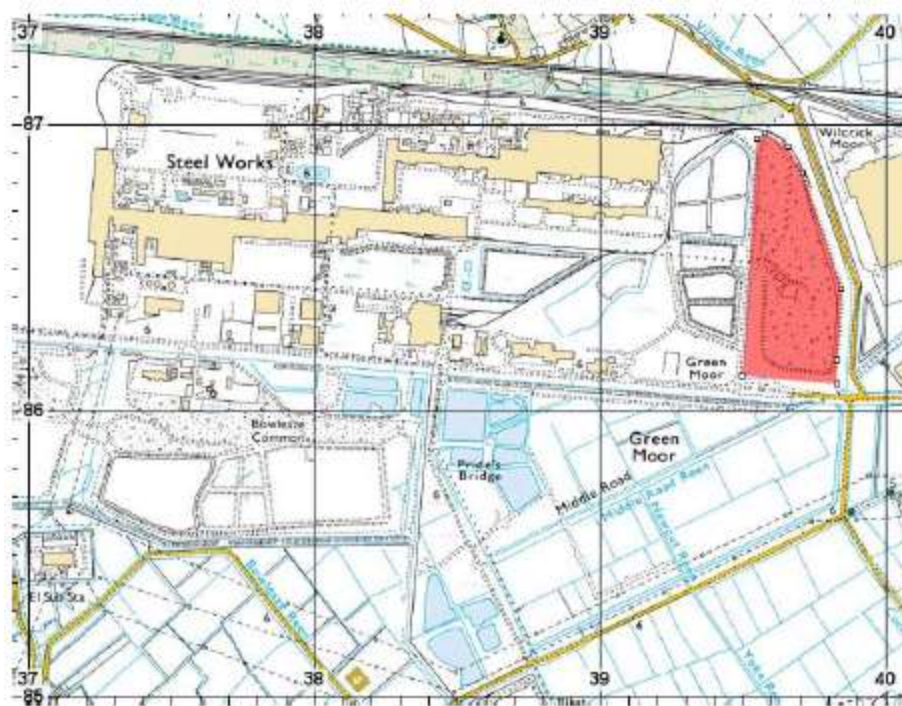
There is a requirement by Natural Resources Wales for the capping scheme to be completed regardless. If waste was not considered for use as capping soils in the project there would still be a requirement to import 400,000 tonnes of virgin soil from Greenfield sources. The project would be considered a recovery operation due to the fact that non-waste material would be used to complete the scheme. The final formation of the site is to be left as a restored landfill with no future developments other than an access road to allow periodic gas monitoring and maintenance by Tata.

By using recovered waste in the project the amount of brownfield soils from local sites heading to landfill will be significantly reduced. The imported wastes will be tested to ensure it meets the specification for the capping soils and would be placed on the capping in the same manner as any non-waste material brought to the site.

7.0 Standard of works

The works will be overseen by Project Engineers, Geotechnology Ltd. They will be carrying out the role as CQA (Construction Quality Assurance) Engineers for the project, the title page for the CQA plan is shown in Figure 7 and the full CQA plan is attached along with this document. Each stage of the works will be signed off by the CQA Engineers and approved by Tata to ensure all of the work continuously being completed to the highest standard.

Figure 1 Site Location Plan



Reproduced from the Ordnance Survey Land Ranger Map
with the permission of The Controller of Her Majesty's Stationery Office
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Figure 2: Ordnance Survey Location plan of the LEWMS site.

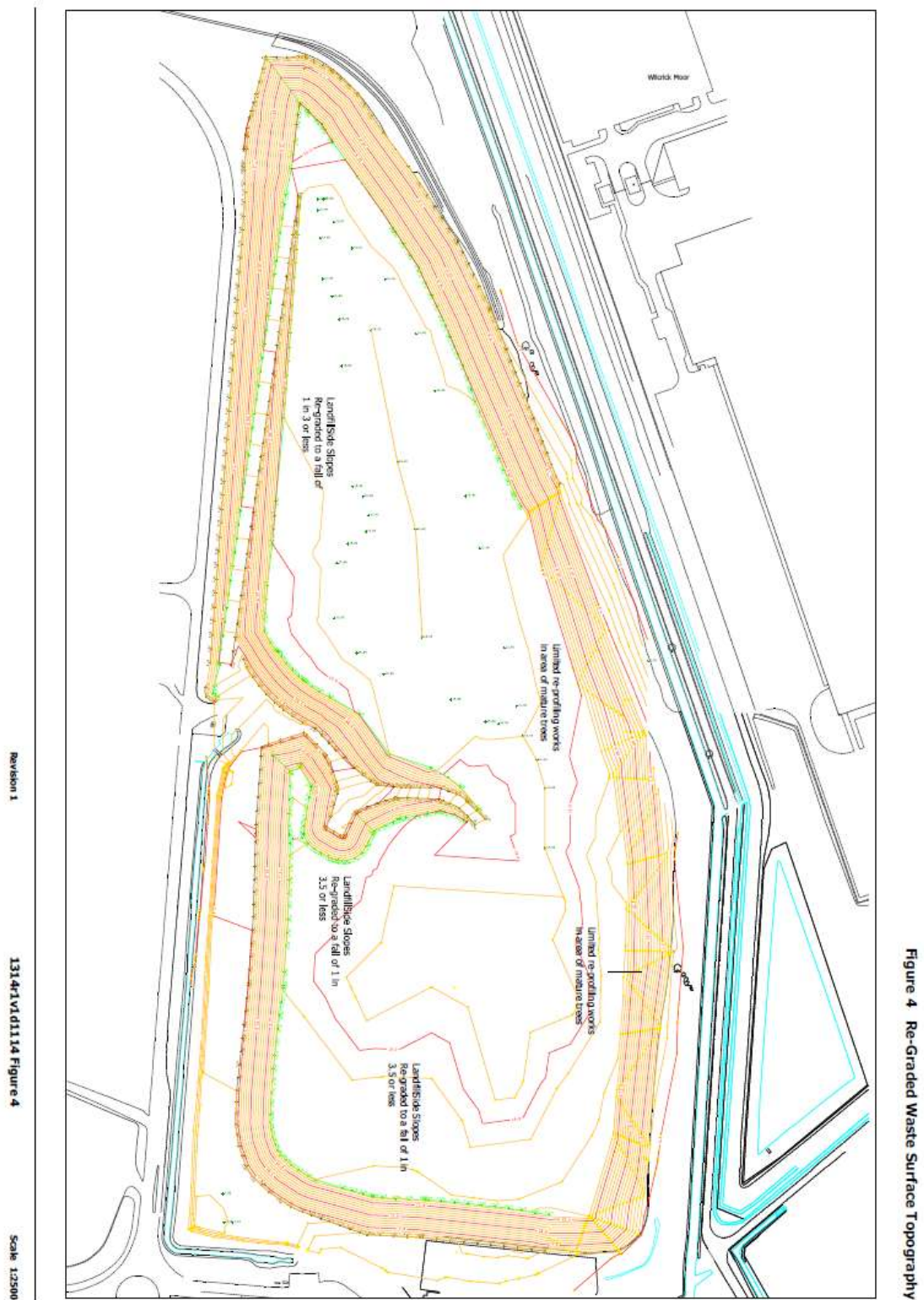


Figure 4 Re-Graded Waste Surface Topography

Figure 3: Re-graded waste surface topography of the site.



Figure 4: Final Restoration Topography of the site.

Figure 11 Restoration Soil Details

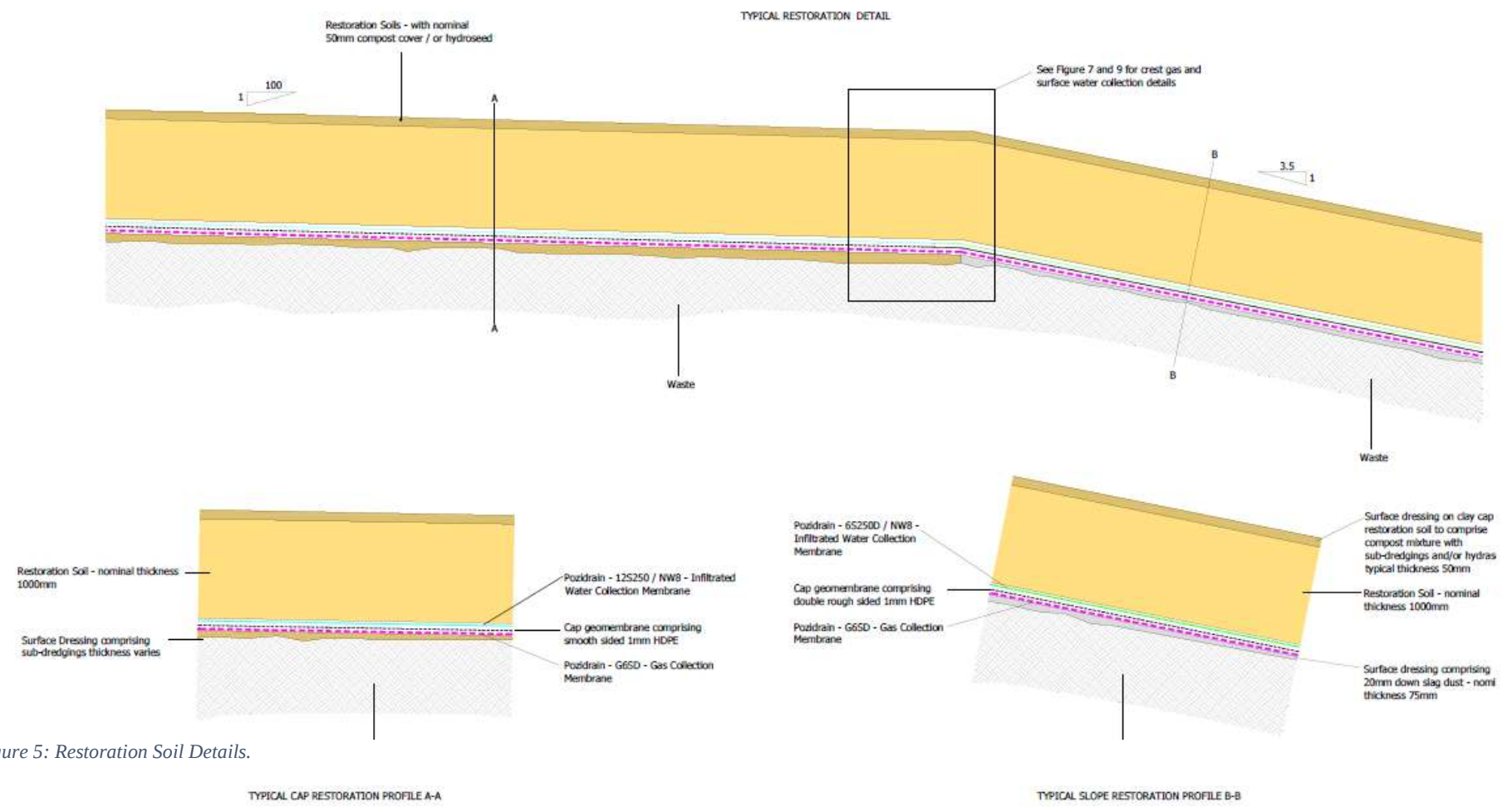


Figure 5: Restoration Soil Details.

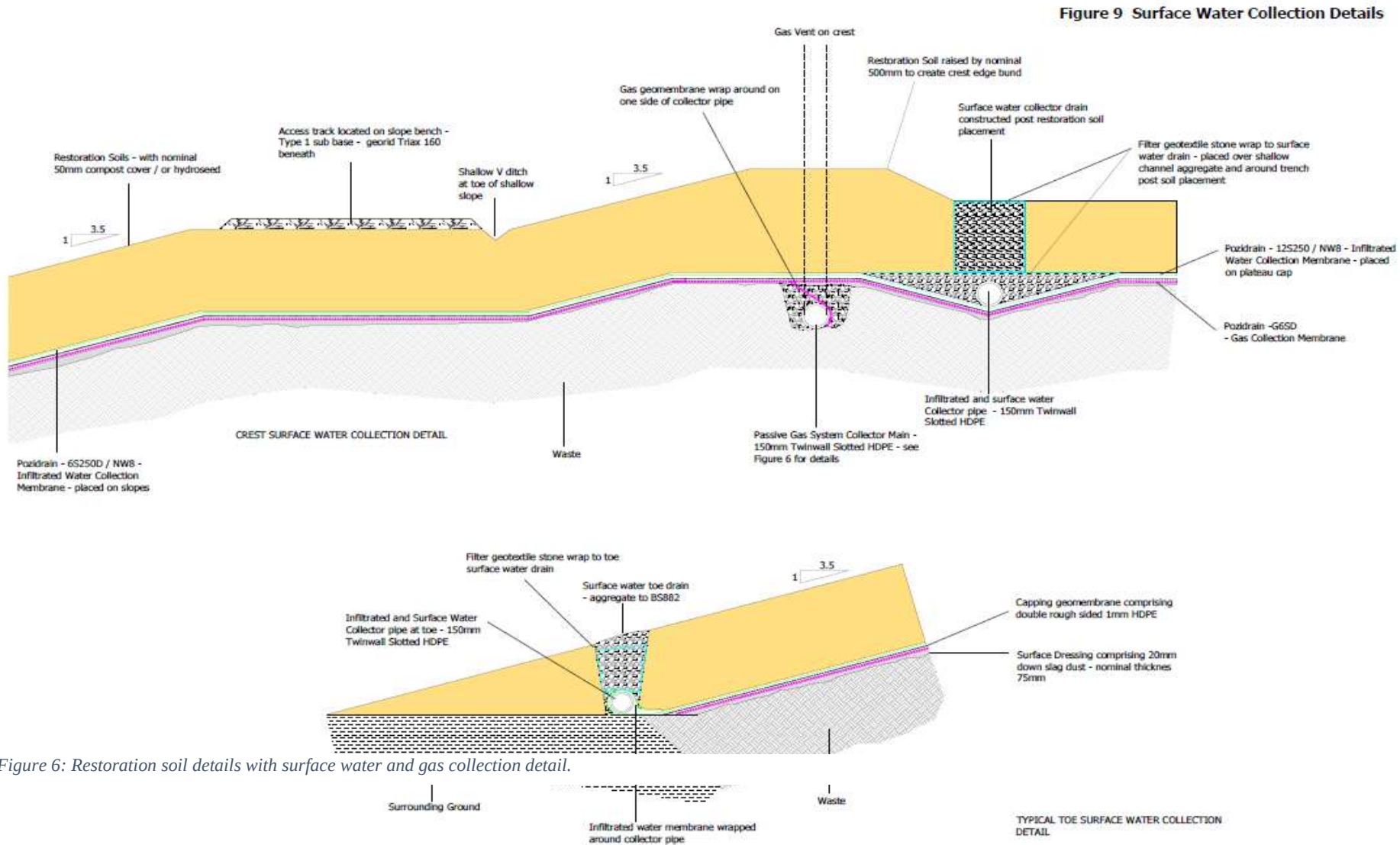


Figure 6: Restoration soil details with surface water and gas collection detail.

**LLANWERN EAST WASTE
MANAGEMENT SITE
TATA STEEL
LLANWERN**

Construction Quality
Assurance Plan
Report Number 1314r2v1d1114

Commissioned by
Tata Steel UK Ltd.
Port Talbot Works
Margam
Port Talbot
SA13 2NG

FILE REF: U:\Data 1300-1350\1314 LEWMS Design\ Reports\Report 2
CQA\1314r2v1d1114.doc

NOVEMBER 2014

Figure 7: Title page of the CQA plan for the site.

Appendix B – Planning
Consent for the site.

IMPORTANT - This decision notice affects your property and should be placed with the Title Deeds of the property.

APPLICATION No. 1/12318

Llanwrst Steel Corporation
c/o R Steiner
Llanwrst Vale Works
Llanwrst Vale
Gwent

**BOROUGH OF NEWPORT
TOWN AND COUNTRY PLANNING ACT, 1971**

NOTICE OF GRANT OF PLANNING PERMISSION

In pursuance of its powers under the above Act, the Council of the Borough of Newport hereby grants permission for the following development proposed in your application and shown on the plan(s) accompanying such application:-

dated 21.10.83

Extension of existing waste tip by increasing height by 10 feet
at
Llanwrst Steelworks, Newport, Gwent

Subject to the following conditions:-

1. The development must be begun not later than the expiration of five years beginning with the date of this permission.
2. The development shall be carried out in its entirety at one and the same time and fully in accordance with the proposals shown in the application and in the plans and particulars accompanying such application as varied or amended by this permission and the conditions set out hereunder:-
3. Within 3 months of tipping attaining the permitted levels the site shall be graded and covered with a minimum depth of 150 mm topsoil on 1m of clean subsoil. The approved landscaping scheme shall be carried out thereafter and not later than the next following planting season. Any planted material which dies within 2 years of planting shall be replaced with similar stock not later than the next following planting season.

for the reasons stated below:-

1. To conform with the requirements of Section 41 of the Town and Country Planning Act 1971.
2. To ensure that the development is carried out as a whole and not in part only.
3. To enhance the appearance of the development.

18 JAN 1984

e.c.r.

Chief Executive,
Civic Centre,
Newport,
Gwent, NPT 4UR.

PLEASE CHECK

DO NOT START DEVELOPMENT
UNTIL YOU HAVE RECEIVED BUILDING REGS. APPROVAL

Appendix B – MMP for the site
written by Cuddy in December
2014.



Material Management Plan

Llanwern East Waste Management Site

Table of Contents

1	Project Details	2
1.1	Introduction	2
1.2	Site Background	2
1.3	Summary and Objectives	2
2	Material Specification	3
2.1	Material Details and Quantities	3
2.2	Testing	3
2.3	Waste and Non-waste Sources	3
3	Onsite Operations	4
3.1	Transport	4
3.2	Storage of imported Soils	4
3.3	Grade 'A' and 'B' Soils	4
3.4	Construction Phases	5
3.5	Site Operations	5
4	Verification	5
4.1	Watching Brief	5
4.2	Control Procedures	6
4.3	Record Keeping	6
4.4	Verification Plan	6
	Appendix A	7
	Imported Material Specification	

Llanwern EWMS – Materials Management Plan for the importation of soils for restoration

1 Project Details

1.1 Introduction

Cuddy Remediation (Cuddy) have been appointed by Tata Steel UK (Tata) to carry out restoration works on the Llanwern Eastern Waste Management Site (LEWMS). It is anticipated that this project will take a minimum of three and a half years until completion. Cuddy will be the principal contractor working to Geotechnology Ltd's design. The project has received approval from Natural Resources Wales (NRW), Newport City Council and Tata.

1.2 Site Background

LEWMS is located at Ordnance Survey Grid Reference ST 339537 186568 at the eastern edge of the Tata Llanwern Steelworks. The site has accepted steelmaking and general wastes from the Llanwern site for four decades. The waste management site is a land raise, with wastes being deposited initially into very shallow excavations (circa 1 metre) onto natural ground. Disposal has developed a raised landform that now reaches some 10m above surrounding ground level.

The site covers an area of 197,835m² (19.78 Ha) which is fully occupied by deposited wastes.

LEWMS stopped accepting wastes as it could not secure an environmental permit due to it failing to meet the technical specifications of the landfill regulations. The site is not underlain by a liner and does not have an effective leachate drainage system.

1.3 Summary and Objectives

Natural Resources Wales has required Tata to specify long term post-closure aftercare of the site. Risk assessments carried out by Tata and Geotechnology have shown that construction of a fully engineered capping system is the only way to properly address the long term risks to the local environment. This capping will prevent ingress of rainwater into the waste mass and stop the generation of leachate.

This capping system will be achieved by covering the site with a fully welded polymeric membrane and a minimum thickness of one metre restoration soils on top of the membrane. This capping scheme has been developed by Geotechnology and Tata and agreed by NRW.

2 Material Specification

2.1 Material Details and Quantities

A total of 400,000 tonnes of material is required to be imported to the site to be laid over a membrane at a thickness of 1m across the entire landfill area.

100,000 tonnes will be classified as 'Grade A' material according to the specification in Appendix A and 300,000 tonnes will be classified as 'Grade B' material.

The material intended for the restoration project will be sourced from many different sites in close proximity to Llanwern. A soil suitability report will be written for each individual source highlighting: History and location of the site source, contaminant status, Greenfield or Brownfield sources, quantity of soil available, previous treatment undertaken, chemical analysis results and geotechnical suitability. Until this information is compiled and issued a source will not be considered fit for purpose.

2.2 Testing

As per Appendix A, one representative composite sample will be taken from every 5000m³ in Grade A soils. For Grade B soils one representative composite sample will be taken from every 4000m³, geotechnical tests will be carried out per every 5000m³.

The test results of each material will be included in the individual soil suitability report for each source and made available to all parties concerned. The material will be visually checked before it comes to the site to ensure it is a suitable quality and representative samples will be taken. No material will be brought onto site without having previously been tested for contamination and found to meet the required specification outlined in Appendix A.

It is anticipated that there will be a large amount of testing results taken and made available for each soil source. The intention is for the same laboratory to carry out the testing throughout the duration of the project, this will give consistent results and continuity. Each source will be given a specific three letter code for labelling to be able to quickly identify results. The testing results will be stored onsite and be available for view at any time.

The purpose of the geotechnical testing will be to evaluate the soils frictional interaction with any underlying geomembrane to ensure the stability of the capping. The testing will ensure the restoration soils are cohesive in nature and free from excessive amounts of granular materials.

2.3 Waste and Non-waste Sources

There is not currently a registered environmental permit in place at Llanwern EWMS to import any soil that is classified as a waste. If it is the intention to use waste soils the soil must be inert waste and free from contamination.

A material management plan will be written under the Cilaire code of practice. This plan will then sent to a registered Qualified Person for verification and to be signed off before being submitted to Cilaire and NRW.

Information on this progress will be made available to all parties and no soil will be imported to the site before approval is received from NRW and the relevant fees are paid. This process will be carried out individually for each soil source that is fit for purpose.

Non-waste sources of soils, such as soil treatment facilities will not undergo the same procedure. The only requirements of non-waste soils are that they meet the required specifications and are approved by all parties.

When soil is brought into site each source will be stockpiled separately to avoid verification issues.

3 Onsite Operations

3.1 Transport Details

Imported soils will generally be transported using Cuddy Demolition and Dismantling Ltd. A waste carrier's licence is in place, number: CB / YE5436KA.

If any other soil carriers are used checks will be made to ensure the appropriate documentation and licences are in place.

3.2 Storage of Imported Soils

When material enters the site it will be placed directly onto a prepared plateau. Geotechnology have agreed that this will not cause any adverse effects with the waste matter and contained gases if it is no more than three metres in height and no closer than 15 metres to the crest of the slope edge.

When there is not sufficient space available on the waste mass the imported materials will be directed to the concrete hard standing at the southern end of the site. The soil will then be stockpiled and different sources will be segregated. The soil will be sealed off and made available to Geotechnology should any further testing be required. Space will be left between the boundary fence and the soil stockpiles and the material will not be stored near to any existing groundwater monitoring points.

3.3 Grade 'A' and 'B' Soils

The different grades of soils will be kept separate when they are brought onto site. This is to allow any further testing if it is deemed required. For ease of identification sign posts will be placed into each separate source pile to ensure the correct verification and testing of the sources takes place.

When the soil is placed as capping onto the waste mass its location will be surveyed in and plotted onto a drawing of the site. The required levels and re-profiling will relate to the digital terrain model provided by Geotechnology.

3.4 Construction Phases

The capping system covering the site will start from the southern end and work northward. The imported soil will be placed directly onto the re-profiled slopes from the toe upwards. Cuddy will have a responsibility to survey the imported material and embankment slopes to ensure they are consistent with Geotechnology's design. Cuddy and Geotechnology will work together to confirm the capping layer achieves the required design levels and profile. Site drawings will be updated weekly to reflect the dynamic nature of the site. Material management plan drawings will be produced to show progress in each phase of the restoration works and issued to all parties at monthly onsite meetings.

3.5 Site operations

The landfill material will be re-profiled by conventional earth moving machinery (Excavators, Dozers and Dump trucks) driven by trained competent operators. The welded polymeric membrane will be installed by a specific lining contractor and will be visually checked by Geotechnology before being placed on top of the waste mass with the imported restoration soils capping it all off.

4 Verification

4.1 Watching Brief

A watching brief will be carried out continuously by Cuddy Remediation as materials are brought to the site. This will ensure only materials fit for purpose are brought onto site and any materials that do not meet the specification will be removed from the site in a suitable manner and sent back to the source. Geotechnology can take further samples for testing once the material is onsite should they require.

4.2 Control Procedures

As wagons enter into the Tata Llanwern site they will be weighed on the weighbridge and issued with a ticket. Each wagon will again be weighed upon exiting the site and issued with a second ticket. These tickets will be logged to give an accurate tonnage of imported soils.

Material will be sampled and tested at source to ensure it meets the requirements laid down in the specification. These samples will be sent to the same UKAS accredited lab throughout the duration



of the project. No material will be sent to site without approval by Geotechnology and Tata. Unloading of Imported material will be controlled and observed on the site by Cuddy.

If any material is found to contain unsatisfactory visual or olfactory observations then it may be rejected from the site even if it meets the specification and returned to the source. This will be Cuddy's responsibility as the contractor and licensed waste carrier.

In the case that testing of the Imported material exceeds the specification written by Geotechnology in Appendix A then the project manager will consult with Tata and Natural Resources Wales. Some chemical exceedances may be accepted depending on the source size and exceedance.

4.3 Record Keeping

All Imported material will come onto site with a ticket from the wagon driver and a ticket from the weighbridge at Tata's entrance. A record of these tickets will be kept on site and noted down on a log. The original tickets will be kept by Tata for their records for the duration of the project.

All testing results and documentation relating to source materials will be filed and kept on site for the duration of the project and made available to all parties.

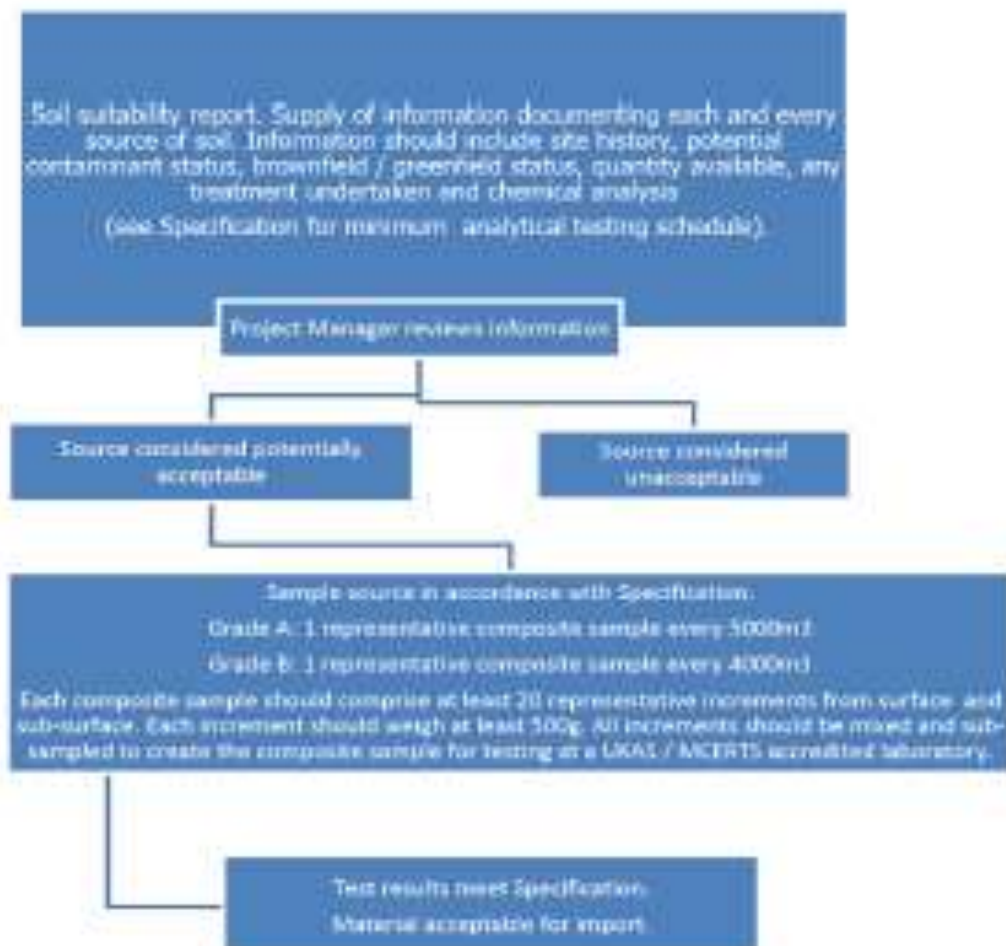
4.4 Verification Plan

The locations of the Imported material will be marked out on maps onsite along with the dates of completion as accurately as possible. Mixing of different sources of material is inevitable when it is used as capping, this will not be an issue as each soil will have be approved before it is placed in the final location.

Site plans and drawings will be made available as the project progresses and material is placed on each area as capping. Monthly meetings will take place onsite between all parties to ensure operations are carried out in accordance with the protocols and the health and safety aspects of the project are always considered.

Appendix A: Imported Material Specification:

Target Quality for Imported Soils
Minimum Testing Schedule for Materials to be Considered for use at East Waste Management Site



Target Quality for Imported Soils

Minimum Testing Requirements and Specification for Physical quality of soil		
	Testing Frequency	Specification
Particle Size Distribution BS 1327 Part 3 Method 1	1 per 500m ³	100% passes 125mm, 94%–100% passes 63mm, 15% to 100% passes 2mm, >10% passes 0.063mm
Un-drained shear strength of Remoulded material	1 per 500m ³	>45kPa
Contraries (e.g. metal, wood, glass, plastic)	1 per 500m ³	<1% w/w contraries. Contraries must not compromise grading.
Inspection for visible invasive weeds and fibres & olfactory signs of contamination	Visual inspection of all sources	No invasive weeds or fibres visible and no olfactory signs of contamination
Sharp objects that may comprise rapping system	Visual inspection of all sources	No visible sharp objects capable of potentially damaging rapping systems
NOTE: Material will be inspected at source and upon arrival. Material found to be potentially unacceptable will be quarantined pending further evaluation.		

Target Quality for Imported Soils

Minimum Testing Requirements and Specification for Chemical Quality [all values mg/kg unless specified]			
	Testing Frequency	Specification	
		A Grade	B Grade
pH (unitless)		5.5 – 8.5	5.5 – 8.5
Total Petroleum Hydrocarbons (C6 - C40)		500	1000
Total PAH		100	Specified (see below)
Total BTEX		4	Specified (see below)
Polyhalogenated Biphenyls (PBs)		1	1
DOC (%)			
Total phenol		430	1000
Asbestos (As w/o)		Non detect	Non detect
Arsenic		40	400
Barium		50	400
Boron Water Soluble		45	1000
Cadmium		1.8	150
Cr III		8000	1000
Cr VI		2.7	20
Copper		500	500
Lead			500
Mercury (Inorganic)		80	100
Nickel	Grade A: 1 composite sample every 5000m ³	230	1500
Selenium		120	2000
Vanadium		18	2500
Zinc		620	1000
Sulphate (SO ₄)		0.4	0.4
Total Cyanide		10	20
Benzene	Grade B: 1 composite sample every 4000m ³		50
Toluene			50
Ethylbenzene			50
Xylene (o, m & p)			50
Acenaphthene			50
Acenaphthylene			50
Anthracene			50
Benzo(a)fluorene			8
Benzo(a)pyrene			8
Benzo(b)fluoranthene			20
Benzo(g,h,i)perylene			30
Benzo(k)fluoranthene			35
Chrysene			8
Dibenz(a,h)anthracene			2
Fluoranthene			50
Fluorene			50
Indeno(1,2,3-cd)pyrene			5
Naphthalene			28
Phenanthrene			50
Pyrene			50
NOTE PM – Project Manager Exceedance of Specification may be acceptable following review by PM and consultation with Tata and RRII. Material may be rejected even if chemical specification is satisfied if PM considers visual or olfactory observations are unsatisfactory. If material is a waste it must not be classified as hazardous waste. Other parameters may need to be tested and include tests performed depending upon soil source.			