DC and IE SHERVINGTON

Ty Mawr Farm, St Brides, Wentlooge, Newport, NP10 8SF.

Restoration of Former Landfill Site

Waste Recovery Plan

Report Reference: CE-TM-0937-RP05-Final, Rev B

Produced by Crestwood Environmental Ltd.

21 September 2017

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1 INTRODUCTION

1.1 BACKGROUND

1.1.1 Crestwood Environmental Ltd has been commissioned by Mr Edd Shervington of DC and IE Shervington **(the Operator)** to prepare a Waste Recovery Plan for the use of inert soils and subsoils to restore part of a former landfill site at Ty Mawr Farm, St Brides, Wentlooge, Newport, NP10 8SF.

1.1.2 The former landfill site was previously operated under a Waste Management Licence (WML) issued to Mr D Shervington on 21 March 1995. Following the death of Mr D Shervington the WML ceased to exist and restoration of part of the site known as Phase 6 remained unfinished and incomplete.

1.1.3 Further to discussions between Mr Damien Downes of Natural Resources Wales (NRW) and Mr Neil Gunther (Senior Planning Enforcement Officer) of Newport City Council Planning Authority it was confirmed that the Planning Permission for the Site (ref 99/0621) (see Appendix 1) is still valid and that the landowner and site operator are required to restore the former landfill site in accordance with the approved Restoration Plan (Drawing No 3231dwg102, Rev C) (see Appendix 2).

1.1.4 A Waste Recovery Plan (our ref CE-TM-0937-RP05) for the site was subsequently submitted to NRW on 30 January 2017.

1.1.5 Following review of the Waste Recovery Plan, NRW raised a number of points one of which was to require further clarification of the site's planning status and whether Newport City Council Planning Authority would enforce the condition requiring site restoration. Further discussions were held with Mr Neil Gunther at Newport City Council who confirmed in an email of 18 May 2017 that *"It is my view that the Local Authority would consider that the remediation would be expedient to pursue. Should the work not take place, the Local Authority would probably serve a breach of condition notice requiring the remediation work to be done* (see Appendix 3).

1.1.6 Internal discussions were then held between the Mr Luke Burton (NRW Permitting Officer) and NRW's legal department. Following these discussions, NRW stated in a letter of 2 June 2017 "Based on the evidence submitted to date we agree that there is a planning requirement to restore the landfill."

1.1.7 This revised Waste Recovery Plan (our ref CE-TM-0937-RP05) takes into account the points raised in the NRW letter of 2 June 2017 (one of which was confirmation of the planning status) and those arising from follow up discussions and an email exchange between Crestwood Environmental and Mr Luke Burton on 7 June 2017 (see Appendix 4).

1.1.8 An Extended Phase 1 Habitat Survey of the Site has been prepared by an experienced and fully qualified Ecologist and is included in the Environmental Permit Application (ref CE-TM-0937, RP03). The report states that of sensitive working methods will ensure that site restoration works will have the use of sensitive working methods as set out in Section 5 below will ensure that Site restoration works do not cause any significant impacts on the SSSI designated areas or nearby Severn Estuary SAC, SPA and Ramsar Site.

1.1.9 A Hydrological and Hydrogeological Assessment (ref CE-TM-0937-RP07) and a H1 Accident and

Amenity Risk Assessment (ref CE-TM-0937-RP06) have also been prepared to support the permit application.

1.2 SITE LEVELS

1.2.1 The approved Restoration Plan (Drawing No 3231dwg102, Rev C) requires that Phase 6 of the former landfill site has a final contour level of 11m AoD, with a centralised local area rising to 11.2m AoD. A topographic survey was undertaken in December 2016 by Landmark Services (Wales) Limited and shows that current Phase 6 levels are in the region of 6.0 to 8.0m AoD (see Appendix 5).

1.2.2 A Waste Recovery Permit application, including this revised Waste Recovery Plan, has therefore been submitted to restore Phase 6 to the approved final contour levels.

1.2.3 The proposed Environmental Permit boundary is shown on Drawing No. CE-TM-0937-DW05.

1.2.4 The results of the topographic survey and the final restoration contours for Phase 6 have been used in 3D KTF modelling to precisely calculate the volume of material required to restore Phase 6 to the approved restoration contours. Cross Sections taken from the model are shown on Drawing No CE-TM-0937.DW05, Figure 2.

1.2.5 The modelling shows that in order to achieve the restoration contours to 11m AoD (with a centralised local area to 11.2m AoD) required by the Planning Permission (and confirmed as obligatory by Newport City Council), 151,793m^3 of inert soils and subsoils will require spreading over the Phase 6 area, which is calculated to be 55,109m^2 in area. This equates to a mean depth of 2.75m. Assuming a density of 1.25 tonnes per m^3, circa 189,741 tonnes of inert soils and subsoils will be required to complete the works.

1.3 REGULATORY GUIDANCE

1.3.1 Regulatory guidance on Waste Recovery Plans is available at https://www.gov.uk/guidance/waste-recovery-plans-and-permits#specific-obligations. This Guidance states that where a Regulator has imposed a planning condition that requires a site to be restored in accordance with an approved plan this can be used as evidence to demonstrate that the use of waste to comply with the legal requirement is a waste recovery activity.

1.3.2 The Guidance also refers to Section 1.4.5 of 'Guidelines on the interpretation of key provisions of Directive 2008/98/EC on waste' to understand the legal definition of waste recovery operations. Section 1.4.5 states "The principal result of a recovery operation is '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, in the plant or in the wider economy."

1.3.3 The Guidance states that there are three main ways to show evidence that waste is being used in place of non-waste. One of the ways is to provide evidence that that there is an obligation to carry out the work. The guidance goes on to say *"This could be because a regulator has imposed a requirement on you. For example, you operate a quarry and are required by planning conditions to restore it according to an approved plan."*

1.3.4 This revised Waste Recovery Plan has been prepared in accordance with the guidance and 'Guidelines on the interpretation of key provisions of Directive 2008/98/EC on waste'. It demonstrates that the use of inert waste to restore the Site in accordance with the approved Restoration Plan meets the obligation criteria set by the Planning Permission and the approved Restoration Plan. It also provides evidence that

- The recovered waste material is suitable for its intended use;
- The minimum amount of waste will be used to meet the obligation;
- The waste will be used as a substitute for non-waste material; and
- The work will be completed to an appropriate standard.

2 WASTE ACCEPTANCE CRITERIA

2.1.1 Only strictly inert waste materials will be used on the Site. Clean soils and subsoils will be processed at the Operator's existing soil treatment facility, which is located to the immediate north east of the Site. The soil treatment facility is operated under a Standard Rules permit (SR2010 No 12), which was issued on 6th December 2013 (permit ref EPR/KB3997TQ). The permit authorises the sorting, screening, crushing and blending of specified wastes to produce soil, soil substitutes and aggregate. Only clean, uncontaminated soil and subsoils from the treatment process will be used in the restoration of the Site and such materials are subject to chemical testing in an independent laboratory to confirm suitability (see below).

2.1.2 The list of wastes to be accepted at the Site is restricted to inert materials are shown in Table 2 below.

Table 2:
Permitted Wastes and Their Use on Site

ECW Code	Description
01 01	**Wastes from mineral excavation**
01 01 02	Wastes from mineral excavation
01 04	**Wastes from physical and chemical processing of non-metalliferous minerals**
01 04 09	Waste sand and clays
17 05	**Soil, stones and dredging spoil**
17 05 04	Soils and stones
19 12	**Wastes from waste water treatment plants not otherwise specified**
19 12 12	Soil substitutes other than that containing dangerous substances
20 02	**Garden and parks wastes (including cemetery wastes)**
20 02 02	Soil and stones

2.1.3 Of the permitted waste types that are listed in Table 2 above, under Council Decision 2003/33/EC, certain waste codes do not require Waste Acceptance Criteria (WAC) testing, provided that they are inert and from a single source only (mixed load from more than one site cannot be accepted without testing). Wastes may be accepted at the site without testing provided they comply with the

restrictions in Council Decision 2003/33/EC are shown in Table 3.

Table 3: Inert Wastes that can be Accepted Without Testing		
ECW Code	Description	Restrictions
17 05 04	Soils and stones	Excluding topsoil, peat; excluding soil and stones from contaminated sites
20 02 02	Soil and stones	Only from garden and parks waste; excluding topsoil, peat

2.1.4 All other permitted wastes received at the Site will be subject to WAC testing in accordance with Council Decision (2003/33/EC), the requirements of which are incorporated into Schedule 10 of the Environmental Permitting (England and Wales) Regulations 2010.

2.1.5 The leaching limit values, calculated at a liquid to solid ratio of 10 l/kg, shown in Table 4 will be applied to those wastes received at the site that are subject to the requirements of WAC testing.

Table 4: Waste Acceptance Criteria Thresholds for Inert Wastes that Require Testing		
Component	*Symbol*	*L/S = 10l/kg* *mg/kg dry substance*
Arsenic	As	0.5
Barium	Ba	20
Cadmium	Cd	0.04
Total Chromium	Cr total	0.5
Copper	Cu	2
Mercury	Hg	0.01
Molybdenum	Mo	0.5
Nickel	Ni	0.4
Lead	Pb	0.5
Antimony	Sb	0.06
Selenium	Se	0.1
Zinc	Zn	4
Chloride	Cl-	800
Fluoride	F-	10
Sulphate(a)	SO42-	1,000
Phenol index	PI	1
Dissolved Organic Carbon(b)	DO	500

Table 4: Waste Acceptance Criteria Thresholds for Inert Wastes that Require Testing		
Total Dissolved Solids(c)	TDS	4,000
(a) This limit value for sulphate may be increased to 6,000 mg/kg, provided that the value of C0 (the first eluate of a percolation test at L/S = 0.1 l/kg) does not exceed 1,500 mg/l. It will be necessary to use a percolation test to determine the limit value at L/S = 0.1 l/kg under initial equilibrium conditions. (b) If the waste does not meet this value for Dissolved Organic Carbon (DOC) at its own pH value, it may alternatively be tested at L/S = 10 l/kg and a pH between 7.5 and 8.0. The waste may be considered as complying with the acceptance criteria for DOC, if the result of this determination does not exceed 500 mg/kg. (c) The value for Total Dissolved Solids can be used alternatively to the values for Sulphate and Chloride.		

2.1.6 In addition, the leaching limit values for organic parameters specified in Table 5 will be applied to wastes received at the Site that requires WAC testing.

Table 5: Additional Waste Acceptance Criteria Thresholds (organic parameters) for Inert Wastes that Require Testing	
Parameter	Value mg/kg
Total Organic Carbon (TOC)(a)	30,000*
BTEX compounds (benzene, toluene, ethyl benzene & xylenes)	6
Polychlorinated biphenyls (PCBs) (7 congeners)	1
Mineral oil (C10 to C40)	500
PAHs (polycyclic aromatic hydrocarbons)	100
(a) In the case of soils, a higher limit value may be permitted by NRW, provided a Dissolved Organic Carbon value of 500 mg/kg is achieved at L/S 10 l/kg at the pH of the soil or at a pH value of between 7.5 and 8.0.	

2.1.7 The conditions regarding the waste acceptance criteria are detailed in the operators Environmental Management System (ref CE-TM-0937-RP04). However, to ensure thoroughness they have been repeated below.

2.1.8 The waste producer will be required to undertake WAC testing, as part of the basic characterisation procedures, on wastes that cannot be accepted without analysis. Such wastes will only be accepted at Ty Mawr Farm where a copy of the analysis is submitted to the Operator for checking and the results are within the relevant limit values detailed in Tables 4 and 5.

2.1.9 Compliance testing of the key variables established during the Basic Characterisation will be carried out on each waste stream at regular intervals.

2.1.10 In addition to the requirement for WAC testing to demonstrate that permitted wastes are strictly inert, additional pre-acceptance procedures will be used to ensure that only suitable waste types are accepted. Customers delivering waste to Ty Mawr Farm will be required to provide the

Operator, in advance, with all necessary information/documentation to satisfy the requirements of the Waste (England and Wales) Regulations 2011 and the Duty of Care.

2.1.11 Only wastes which have been subject to the pre-acceptance procedures detailed above will be accepted at Ty Mawr Farm.

2.1.12 All wastes will be delivered to Ty Mawr Farm by approved contractors. Checks will be made to establish whether any approved contractor is a registered waste carrier or has a valid exemption from registration. Only registered carriers or those who are lawfully exempt from registration will be permitted to use the Site.

2.1.13 All wastes delivered to Ty Mawr Farm will be subject to visual inspection.

2.1.14 Any discrepancies found, i.e. suspect non-conforming loads, as a result of the checks detailed above will result in the vehicle being detained whilst some, or all, of the following supplementary management decisions are taken:

- Referral to the site foreman or company management;
- Referral to the waste producer to confirm the nature of the waste load;
- Referral to Natural Resources Wales;
- Redirection of delivery vehicle off site, to a suitably authorised facility; and
- If the waste has been discharged, removal of the waste to a secure quarantine area, prior to off-site removal either to the waste producer or suitably authorised facility.

2.1.15 Only permitted wastes will be accepted at Ty Mawr Farm.

2.1.16 Materials that require processing before use in Site restoration works will be screened and separated etc at the adjacent soil treatment facility, in accordance with that site's Standard Rules permit (see above). Suitable inert soils and subsoils will then be transferred to the Site for use in restoration works.

2.1.17 Copies of all records required in accordance with the Environmental Permit will be kept in a dedicated office at Ty Mawr Farm or off-Site in a secure location. Where at all possible, records will be electronic.

3 BENEFIT OF WORK

3.1.1 The benefit of the work is to enable compliance with the Planning Permission (ref 99/0621), which conditions the Site to be restored in accordance with the approved Restoration Plan (Drawing No 3231dwg102, Rev C). Newport City Council Planning Authority has confirmed that the Planning Permission and approved Restoration Plan are still valid and therefore there is a legal requirement to restore the Site. The proposed work will enable the Site to fulfil this obligation.

4 MINIMUM AMOUNT OF WASTE

4.1 QUANTITY

4.1.1 The activities shall not be carried out other than in accordance with the approved Waste Recovery Plan, and in any case no more than the permit's waste quantity limit shall be stored or used.

4.1.2 In order to achieve the objectives of the scheme the minimum quantity of material required to restore the Site to the approved restoration contours of 11m AoD, with a centralised local area to 11.2m AoD, has been calculated using 3D KTF modelling. Site levels based on the topographic survey of December 2016 and the approved restoration contours are entered into the model, which is then used to calculate the volume between the two profiles and create cross-sections of the fill requirement.

4.1.3 Cross Sections are shown on Drawing No CE-TM-0937.DW05,

4.1.4 A total fill volume of 151,793m^3 is needed to achieve the approved restoration profile and meet the requirements of the Planning Permission.

5 SUBSTITUTE FOR A NON-WASTE MATERIAL

5.1.1 The European court has stated that the essential characteristic of 'a waste recovery operation is that its principal objective is that the waste serve a useful purpose in replacing other materials which would have had to be used for that purpose, thereby conserving natural resources.'

5.1.2 To restore the Site from non-waste material would entail the use of virgin soils and subsoils excavated from a greenfield site or quarry specifically for that purpose. The use of primary materials would be less sustainable for restoring the Site than by the recovery of waste materials. Consequently, the proposed works will be carried out using suitable imported waste soil materials.

5.1.3 It is considered that the above use of waste is a recovery operation. Furthermore, In Tarmac Aggregates Limited versus the Secretary of State for Environment, Food and Rural Affairs and the Environment Agency, the Court of Appeal ruled that where there is a legal obligation, by reason of a relevant planning condition, to carry out restoration work then if waste materials are not to be used, virgin materials will be required.

5.1.4 Therefore, it is clear that the use of waste at the Site is replacing other virgin materials that would otherwise have to be used.

6 APPROPRIATE STANDARDS OF WORK

6.1 SUITABILITY OF WASTES

6.1.1 The Site restoration works will be carried out in accordance with the Planning Permission and approved Restoration Plan.

6.1.2 Restoration works will be subject to supervision by a technically competent manager with an appropriate WAMITAB Certificate. Only suitable inert soils and subsoils will be used in the works, placed and compacted in accordance with the cross sections shown on Drawing No CE-TM-0937-DW05, Figure 2 to achieve the approved restoration profile shown on Drawing No 3231dwg102, Rev C.

6.1.3 To minimise risks of any damage to the soil and subsoil structures, whenever possible, materials will be moved directly to the area where they will be deposited and levelled. The stockpiling of materials will be avoided whenever possible. In the unlikely event that stockpiling is unavoidable, heaps will be tipped loosely and the surface firmed and shaped to shed water. Top soils and subsoils will be stockpiled separately. Any stockpiles will be sited so as to avoid any risk that suspended solids in run-off water could run off directly or indirectly into the nearby reens.

6.1.4 The suitability of the sub-soil and top soils for restoration will be inspected for variability, and handling properties before being accepted onto Site. The Operator is aware that the Duty of Care applies to the acceptance of all soils and that there should be no risk of contamination of surface water and groundwater from leaching and runoff from them.

6.1.5 All soils will therefore be surveyed and assessed for suitability, including:

- Quantify volumes of soils required at each stage throughout the course of the restoration works;
- Assess sources of potentially suitable / available materials;
- Undertake inert Waste Acceptance Criteria (WAC) testing of potentially suitable soils to confirm no risk of contamination(see Section 2.1)
- Import materials, noting suitable handling techniques to avoid deformation and compaction;
- Deposit waste onto previously prepared restoration area; and
- Carry out grass seeding of the restored area at earliest available opportunity to minimise the risk of soil erosion.

6.1.6 Subsoil materials will be placed to within 0.5m of the final restoration profile.

6.1.7 Prior to the spreading of final restoration soils any undesirable material brought to the surface including stones and clay balls larger than 0.1m in any dimension, roots, tufts of grass and foreign matter will be removed.

6.1.8 The final 0.5m thick layer to achieve the restoration profile required by the Planning Permission will comprise topsoil to support grass growth. Reading Agricultural Consultants have provided a 'Commentary on the suitability of stockpiled soil material for grass growth' (July 2017). The work included laboratory testing of soils stockpiled at Ty Mawr Farm for proposed use in the restoration works. Samples were tested for pH, organic matter, phosphorus (P), potassium (K) and magnesium (Mg). The laboratory results demonstrate that the chemical properties of the soil are suited to grass production as the major nutrient indices are satisfactory (see Appendix 4).

6.1.9 The maximum thickness of each layer of waste (including sub-soils and topsoils) will be 0.3m. Each layer of waste will be ripped after placement to avoid any possibility of over compaction (see

Section 6.2).

6.2 WASTE DEPOSIT

6.2.1 Soil deposit to achieve the required Site restoration will be undertaken during suitable weather conditions. The Operator will ensure that

- Specified soil types are removed from the appropriate storage mounds at Ty Mawr Farm and placed to specified depths in the correct location on Site;
- Soils are placed in lifts and loosened after each placement by ripping with machinery. Each lift will not exceed 300mm in thickness and ripping will take place to a minimum depth of 600 mm using a ripper blade at least 50 mm wide;
- Checks will be made to verify that the deposited soils are suitably fractured and fissured to ensure adequate drainage through the soil profile and enable grass growth;
- The Operator will ensure the works are organised to cause minimum compaction to replaced soils and ensure the restored soil profile will be adequately drained and support grass growth;
- Soil placement will be completed sufficiently early to enable cultivation, grass seeding and establishment prior to the on-set of winter conditions.

6.2.2 Soils will not be over-compacted during deposit and levelling, as over-compaction may prevent plant root growth and function and reduce water attenuation and the ability of excess water from draining away through the subsoil. Any stones or other objects larger than 0.1m brought to the Site surface by ripping will be removed.

6.2.3 In the event of sustained heavy rainfall during material deposit and levelling operations, work will be suspended and not restarted until the ground has had at least one dry day or until a suitable moisture content has been reached.

6.2.4 Following soil ripping and any de-compaction works, the surface will be raked with a chain harrow or similar to form an even surface, suitable for subsequent grass seeding. All restored areas will be grass seeded immediately following restoration in dry weather conditions. Grass seed will be spread evenly according to the seed mixtures and rates specified by the supplier. All areas will be rolled after seeding to ensure good contact between soil and seed.

6.2.5 In the unlikely event that any materials are deemed unsuitable for re-use or are surplus to requirements they will be segregated and transported to an authorised waste facility. Materials will be fully characterised and identified prior to leaving the Site. All hauliers will be registered waste carriers and all loads will be accompanied by an appropriate waste transfer note. All final disposal sites will be identified before materials leave the Site and their details recorded and maintained on site. Records of dates, quantities and types of material will be maintained in the Site waste management plan.

6.2.6 The Site will be surveyed to ensure the completed works comply with the approved Restoration Plan.

6.3 NUTRIENT VALUE OF SOILS

6.3.1 Laboratory testing of soils to be used in the final restoration layers, i.e. final 0.5m thick layers of material, has been undertaken. Samples were tested for pH, organic matter, phosphorus (P), potassium (K) and magnesium (Mg). The laboratory results demonstrate that the chemical properties of the soil are suited to grass production as the major nutrient indices are satisfactory (see Appendix 6).

6.4 STABILITY

6.4.1 The soils to be used in Site restoration works will comprise a combination of cohesive and non-cohesive materials. The maximum lift height of each layer will be 0.3m.

6.4.2 3D KTF modelling shows that the maximum side slope angle of the restored Site will be 10.6^{o}, i.e. circa 1 vertical in 5.26 horizontal (1v:5.6h), see Drawing No CE-TM-0937-DW05, Figure 2.

6.4.3 The Environment Agency often mandates a maximum lift height of 2m and a maximum side slope of 1(v):3(h), irrespective of the waste fill characteristics, in order to prevent the risk of failures of waste slopes. This slope angle will ensure that whatever the strength and moisture content of the waste, stability will not be compromised.

6.4.4 The actual maximum slope angle of the restored Site, i.e. 1v:5.6h, is considerably gentler than the Environment Agency's maximum guideline value of 1v:3h, meaning that the risk of slope failure at the Site is negligible. At this gradient the restoration soils will be inherently stable, because at 1v:5.6h it is extremely unlikely that any soils used in the restoration layer will have an angle of internal shearing resistance so low that failure is likely to occur.

6.4.5 In addition, grass seeding of the restored area will take place at earliest available opportunity to minimise the risk of soil erosion and further enhance stability of the Site.

7 CONCLUSION

7.1.1 This revised Waste Recovery Plan is submitted in support of a bespoke permit application for the restoration of the former landfill site at Ty Mawr Farm.

7.1.2 A previous Waste Recovery Plan was submitted to Natural Resources Wales (NRW) on 30 January 2017. As a result of that submission NRW raised a number of points in a letter of 2 June 2017 and in an email of 7 June 2017, which provided further clarification of its position.

7.1.3 This revised Waste Recovery Plan supersedes the original of 30 January 2017 and includes addressing the points raised by NRW in the aforementioned letter of 2 June 2017 and email of 7 June 2017.

7.1.4 NRW has confirmed in writing in both its letter and email that there is a valid Planning Permission requirement to restore the Site in accordance with the approved Restoration Plan that was approved by Newport City Council, as part of the Planning Permission requirements. The approved Restoration Plan is based on restoring the Site to 11m AoD, with a localised central area to 11.2m

AoD.

7.1.5 Newport City Council Planning Authority has confirmed in writing in its email of 18 May 2017 that the Planning Permission requirement is still expedient and that "*Should the work not take place, the Local Authority would probably serve a breach of condition notice requiring the remediation work to be done."*

7.1.6 An up to date topographic survey and the final restoration contours for the Site, as shown on the approved Restoration Plan, were used in 3D KFT modelling to calculate the precise volume of material required to comply with the Planning Permission. In total 151,793m^3 of material is needed. This amount of material will not be exceeded in the restoration works. Only strictly inert soils will be used.

7.1.7 The proposed waste types are suitable for the restoration works as they do not present an unacceptable risk to human health or the environment as part of the proposed deposit. Ongoing testing and field trials will provide further evidence of the suitability of the proposed waste materials.

7.1.8 The use of waste as a replacement for virgin materials will conserve natural resources as well as reusing material which would otherwise be sent to landfill sites for disposal.

7.1.9 The information provided in this Waste Recovery Plan demonstrates that the proposed activity complies with the requirements of the Waste Framework Directive and https://www.gov.uk/guidance/waste-recovery-plans-and-permits, and that the activity satisfies the recovery test.

APPENDICES

Appendix 1	Planning Permission (ref 99/0621)
Appendix 2	Approved Restoration Plan - Drawing No 3231dwg102, Rev C
Appendix 3	Email from Newport City Council, Which Confirms Planning Permission Requirement to Restore Site to 11m AoD (with two small localised areas at 11.2m AoD), i.e. in Accordance with Approved Restoration Plan (18 May 2017)
Appendix 4	Email from Natural Resources Wales to Confirm Agreement that Site Requires Restoration to 11m AoD (with two small localised areas at 11.2m AoD), i.e. in Accordance with Approved Restoration Plan (07 June 2017)
Appendix 5	Topographic Survey (December 2016)
Appendix 6	Commentary on the Suitability of Stockpiled Soil Material for Grass Growth (Reading Agricultural Consultants, July 2017)

LIST OF DRAWINGS

Drawing No CE-TM-0937-DW03	Phase 1 Habitat Plan	1:1,800@A3
Drawing No CE-TM-0937-DW05	Outline Landraise Plan	1:2,000@A3
Drawing No CE-TM-0937-DW05, Figure 2	Cross Sections	1:1,000@A3

TOWN AND COUNTRY PLANNING ACT 1990((6;s,7))

WYNTHOMASGORDONLEWIS
21, PARK PLACE
CARDIFF
S WALES
CF10 3DQ

Application number: **99/0621**

Application Type: **FULL**

Proposal: ***EXTENSION TO LANDFILL SITE (REVISED SCHEME)***

Site/location: ***TY MAWR FARM LIGHTHOUSE ROAD ST BRIDES WENTLOOGE NEWPORT***

In pursuance of its powers under the above Act, the Council of the City of Newport notifies you of its decision in respect of your application, registered by them on 14/06/1999. The application has been:

GRANTED WITH CONDITIONS

STANDARD CONDITIONS

The development must begin not later than the expiration of **five years** from the date of this permission.
Reason: To conform with the requirements of Section 91 of the Town and Country Planning Act 1990.

ADDITIONAL CONDITIONS

01 The development shall be carried out fully in accordance with an approved Method Statement regarding the Environmental Code of Practice relating to construction works. The Code of Practice shall be submitted to and approved by the Local Planning Authority before development commences. The development shall be carried out in accordance with the code of practice (or in accordance with any variation which may be agreed in writing by the Local Planning Authority).
Reason: To ensure the construction works are carried out without an adverse affect on the SSSI.

02 Prior to work commencing on site details of the mitigation measures and management plan compensating for any loss of habitat due to the tipping and a timescale for the implementation of such measures shall be submitted to and approved in writing by the Local Planning Authority. These mitigation measures shall then be implemented in accordance with the timescale as agreed.
Reason: To protect the special interest of the SSSI.

03 Before the development is commenced, approval of the Local Planning Authority is required for a scheme of landscaping and tree planting for the site (indicating inter alia the number, species, heights on planting and positions of all trees and shrubs). Such a scheme, as approved shall be carried out in its entirety by a date not later than the end of the full planting season immediately following the completion of the development. Thereafter, the trees and shrubs shall be adequately maintained for a period of five years from the date of planting and any which die or are damaged shall be replaced and maintained until satisfactorily established. For the purposes of this condition a full planting season shall mean the period from October to April.
Reason: To safeguard the rights of control of the Local Planning Authority in these respects and to ensure that the site is landscaped in a satisfactory manner, in the interests of visual amenity.

04 The approval hereby granted relates to the tipping of material which will not physically or chemically react or undergo biodegredation within the landfill environment and shall not include the tipping of reinforced concrete, blast furnace slag, pulverised fuel ash, china clay or marine dredge aggregates.
Reason: To protect the special interests of the SSSI.

05 No development shall take place until an archaeological programme of investigation is submitted to and approved in writing by the Local Planning Authority. The development shall be carried out in accordance with the programme as approved.
Reason: To safeguard any artifacts and historical remains which may exist on or under the site.

06 No development approved by this permission shall be commenced until a scheme for the provision and implementation of a surface water regulation system has been approved by and implemented to the satisfaction of the Local Planning Authority.
Reason: To prevent the increased risk of flooding.

07 Details of the measures for the protection of all bank side trees and vegetation within 7m of all watercourse or water features shall be submitted to and approved by the Local Planning Authority prior to development commencing.
Reason: To protect the special interests of the SSSI.

08 All reens and ditches, including the replacement reen will need to be protected from the physical development, including bunds, by a buffer zone of 7m . Within this buffer zone there shall be no storage of spoil and material and no trafficking of vehicles.
Reason: To protect the special interests of the SSSI

((6))

NOTE TO APPLICANT

The development should be carried out fully in accordance with the proposals shown in the application and in the plans and particulars accompanying such application as varied and amended by this permission.

This decision notice is in respect of **Planning Permission** and does not convey any decision which may be required under The Building Regulations.

01 This decision relates to plan nos: 3231/ 100REVC, 102REVC,

02 The applicant shall have regard to the terms of the S106 Agreement.

Signed on behalf of the Council

Newport City Council

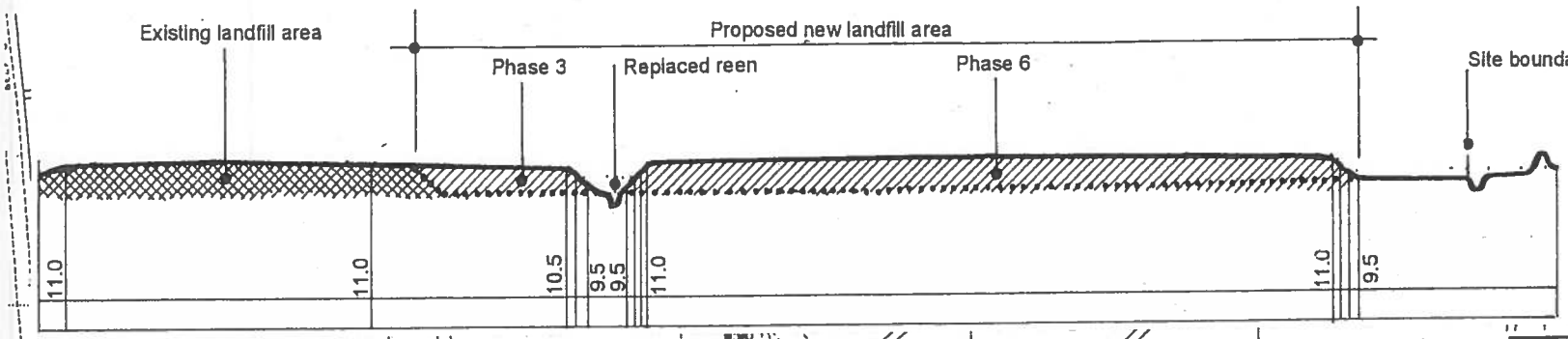
Civic Centre
Newport
South Wales
NP20 4UR

Head of Planning and Economic Regeneration

Application No: 99/0621

Decision Date: 30/06/2003

IMPORTANT! PLEASE READ THE NOTES ON THE REVERSE OF THIS FORM



Section A-A

Horizontal scale 1:2 500
Vertical scale 1:500

NORTH

LEGEND

- Existing reens or ditches retained
- Proposed replacement reen
- Proposed contours

Based upon the Ordance Survey map with the permission of The Controller of Her Majesty's Stationery Office, © Crown copyright, WynThomasGordonLewis Ltd, 21 Park Place, Cardiff CF103DQ Licence no. AR100018255

Client
D. Shervington

Drawing title
TY MAWR FARM, LANDFILL SITE, Restoration plan.

Scale at A3	Date	Drawn
1:2 500	Feb 2001	EE
Checked	Drawing number	Revision
	3231dwg102	C

Do not scale Use figured dimensions only

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21 Park Place, Cardiff CF10 3DQ
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Wyn Thomas Gordon Lewis
Town Planning
Architecture
Landscape Architecture
Urban Design
Economic Development

Steve Barnes

From: Neil Gunther (Senior Planning Enforcement Officer) <Neil.Gunther@newport.gov.uk>
Sent: 18 May 2017 10:34
To: Ieuan Williams (Ieuan.Williams@readingagricultural.co.uk); Steve Barnes
Subject: FW: Ty Mawr site 99/0621

Ieuan

In view of the site's proximity to the Wales Coast Path, and presence in the Green Wedge and a Special Landscape Area; it is my view that the Local Authority would consider that the remediation would be expedient to pursue. Should the work not take place, the Local Authority would probably serve a breach of condition notice requiring the remediation work to be done.

The only caveat I would add is, unless the planning permission in question has been superseded by a subsequent permission. However, I would add that there did not appear to be any other permissions within the area of this permission at Ty Mawr Farm.

Regards

Neil Gunther

Uwch Swyddog Gorfodi Cynllunio / Senior Planning Enforcement Officer
Adfywio, Buddsoddi a Thai / Regeneration Investment & Housing
Cyngor Dinas Casnewydd / Newport City Council
Ffôn/Tel: (01633) 210079

(Working days Tuesday to Friday)
(Yn y gwaith Mawrth i Gwener)

From: Ieuan Williams [mailto:Ieuan.Williams@readingagricultural.co.uk]
Sent: 11 May 2017 16:56
To: Neil Gunther (Senior Planning Enforcement Officer)
Subject: Ty Mawr site 99/0621

Neil
Further to our conversation, please could you confirm that Newport CC wish Condition 1 in planning application 99/0621 to be complied with and that this condition has not been superseded and is still in force?
The approved site restoration plan is attached and it is my understanding that you wish this to be followed as per the plan.
Please could you confirm these matters as confirmation is required to satisfy NRW queries in order to complete site restoration?
Many thanks

Ieuan Williams

01633 430418
07790 285572

Reading Agricultural Consultants
Gate House, Beechwood Court
Long Toll, Woodcote, Reading, RG8 0RR

Tel: 01491 684233 Fax: 01491 680800
www.readingagricultural.co.uk
Registered Company Number: 3282982

Mae'r Cyngor yn croesawu gohebiaeth yn Gymraeg, Saesneg neu yn y ddwy iaith. Byddwn yn cyfathrebu â chi yn ôl eich dewis. Ni fydd gohebu yn Gymraeg yn arwain at oedi.

The Council welcomes correspondence in English or Welsh or both, and will respond to you according to your preference. Corresponding in Welsh will not lead to delay.

Disclaimer/Ymwadiad

Steve Barnes

From: Burton, Luke <Luke.Burton@cyfoethnaturiolcymru.gov.uk>
Sent: 07 June 2017 17:08
To: Steve Barnes
Cc: Edd Shervington; Ieuan Williams; David Lowe
Subject: RE: Ty Mawr Farm - confirmation of site restoration planning requirement

Good afternoon Steve.

Please see my response to your comments below.

Kind regards,

Luke Burton LCIWM
Swyddog Trwyddedu (Gwastraff) / Permitting Officer (Waste)
Gwasanaeth Trwyddedu / Permitting Service
Cyfoeth Naturiol Cymru / Natural Resources Wales
Ffon /telephone 03000 654 229

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Facebook: facebook.com/NatResWales
Flickr: flickr.com/NatResWales
Youtube: youtube.com/NatResWales

From: Steve Barnes [mailto:Stephen@crestwoodenvironmental.co.uk]
Sent: 07 June 2017 11:50
To: Burton, Luke <Luke.Burton@cyfoethnaturiolcymru.gov.uk>
Cc: Edd Shervington <edd@shervingtonfarms.co.uk>; Ieuan Williams <Ieuan.Williams@readingagricultural.co.uk>; David Lowe <David@crestwoodenvironmental.co.uk>
Subject: FW: Ty Mawr Farm - confirmation of site restoration planning requirement

Dear Luke

Further to your letter above and our subsequent telephone conversation, I have set out my understanding of the points and requirements in terms of demonstrating waste recovery to the satisfaction of NRW.

1. NRW has formally agreed that the former landfill at Ty Mawr Farm has the benefit of a valid planning permission and approved restoration plan to restore the site to a final level of 11m AoD (with two small localised areas at 11.2m AoD). Yes, this is correct.

2. If the Waste Recovery Plan is amended to show that the Primary Function of importing inert soils and subsoils is to restore the site in accordance with the Planning Permission there is no requirement to demonstrate the financial viability of using a non-waste material (as well as a waste material), provided that restoring the site for cattle grazing / agricultural use is not a stated purpose of the work? Yes, this is correct, on the basis that the only function of the scheme is to restore the landfill in line with the planning permission and approved restoration plan.

3. If the Waste Recovery Plan does not include the clause about the land being made in keeping with the SSSI, then there is no need to demonstrate the point in the document (please note that an Ecological Risk Assessment has been prepared, as part of the Environmental Permit application, which shows that the restoration work will not have any detrimental impacts on ecology or the SSSI). If a function of your work is not to make the land in keeping with the surrounding SSSI, we will not need to see evidence to demonstrate how you will achieve this function. However, the impact of your work on the surrounding SSSI and any other sensitive receptors will be assessed at the permit application stage. At that stage we may request that you demonstrate how you will mitigate against any significant affects your activity poses on those sensitive receptors. Please note: I only refer to the requirements for your waste recovery plan and permit application here; it may be the case that you must complete the restoration in-keeping with the surrounding SSSI as part of your planning permission. This point should be clarified with the appropriate authority on the matter.

4. The Waste Recovery Plan needs to include evidence that deposited soils and subsoils will contain appropriate nutrients (e.g. Nitrogen, Potassium, Phosphorus etc) to support grass growth. Only the top 500m of restoration soils need to contain the appropriate nutrients. You need to include evidence that the top 500mm contains the appropriate nutrients to support grass growth.

5. The Waste Recovery Plan needs to contain evidence of how the inert soils and subsoils will be deposited and lightly compacted (including the depth of each layer) and has suitable physical characteristics to ensure suitable restoration. You must explain how the scheme will be constructed (i.e. depths of each soil profile and what wastes will make up each profile) to achieve the stated function. You will also need to confirm how the scheme will be constructed to ensure that it will not cause soil erosion. You must provide confirmation from an appropriately qualified person (e.g. a civil engineer) to demonstrate that the proposed waste types are physically suitable, compared to their non-waste counterparts i.e. explanation of what non-waste materials would need to be used to complete the scheme and if the proposed waste materials can meet the physical properties of those non-waste counterparts. On the assumption that the profiles in your planning permission and restoration plan have already been deemed to be stable - For your scheme it will be important that that the qualified person confirms that the wastes pose no more of a stability risk than those non-waste materials that would otherwise be used. You should also confirm how you will ensure those physical properties are maintained i.e. how you will ensure overly wet or contaminated wastes are not used.

Please can you confirm the points above or provide comments as appropriate.

I am keen to have absolute clarity concerning the way forward so that we can submit a Waste Recovery Plan (and permit application) that meets all of NRW's requirements. – Please note, we recommend that you gain confirmation that your waste recovery plan is recovery before submitting an environmental permit application.

Best regards
Steve

Regards and thanks

Steve Barnes
Director & Principal Environmental Consultant

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Pendeford Business Park
Wolverhampton
West Midlands
WV9 5HF
T: +44 (0)1902 229563

Waste / Environmental Consultancy | Ecology | Landscape Architecture | Archaeology | Lab Services

www.crestwoodenvironmental.co.uk

From: Burton, Luke [mailto:Luke.Burton@cyfoethnaturiolcymru.gov.uk]
Sent: 02 June 2017 09:42
To: Steve Barnes <Stephen@crestwoodenvironmental.co.uk>
Subject: RE: Ty Mawr Farm - confirmation of site restoration planning requirement

Good morning Mr Barnes.

Pre-application reference: PPN-00099
Proposed Operator: Mr Edd Shervington
Site: Ty Mawr Farm Former Landfill, St Brides, Wentlooge, Newport, NP10 8SF

In light of reviewing the planning permission relating to the referenced proposal, please find attached a revised 'assessment of latest submission of waste recovery plan' .

Should you have any queries or wish to discuss any aspect of the attached document, please don't hesitate to call me on Tel: 03000 654 229.

Kind regards,

Luke Burton

From: Steve Barnes [mailto:Stephen@crestwoodenvironmental.co.uk]
Sent: 22 May 2017 14:57
To: Burton, Luke <Luke.Burton@cyfoethnaturiolcymru.gov.uk>
Subject: RE: Ty Mawr Farm - confirmation of site restoration planning requirement

Dear Luke

Many thanks for the update.

Best regards
Steve Barnes
Director & Principal Environmental Consultant

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1 & 2 Nightingale Place
Pendeford Business Park
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West Midlands
WV9 5HF
T: +44 (0)1902 229563

Waste / Environmental Consultancy | Ecology | Landscape Architecture | Archaeology | Lab Services

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From: Burton, Luke [mailto:Luke.Burton@cyfoethnaturiolcymru.gov.uk]
Sent: 22 May 2017 11:29
To: Steve Barnes <Stephen@crestwoodenvironmental.co.uk>
Subject: RE: Ty Mawr Farm - confirmation of site restoration planning requirement

Good morning Mr Barnes, I hope you are well.

Just a quick email to keep you updated.

Thank you for providing the below emails and the attachments.

I'm currently reviewing the planning permission and hoping to meet with a member Natural resources Wales' legal department this week to discuss the conditions in the permission.

I'm also awaiting some clarification from Mr Gunther at Newport City Council.

As soon as I have completed the above tasks I hope to have an answer for you and Mr Shervington regarding the legal requirement for your proposal.

In the meantime, please do not hesitate to contact me should you wish to discuss anything relating to the above.

Kind regards,

Luke Burton LCIWM
Swyddog Trwyddedu (Gwastraff) / Permitting Officer (Waste)
Gwasanaeth Trwyddedu / Permitting Service
Cyfoeth Naturiol Cymru / Natural Resources Wales
Ffon /telephone 03000 654 229

Twitter: twitter.com/NatResWales
Facebook: facebook.com/NatResWales
Flickr: flickr.com/NatResWales
Youtube: youtube.com/NatResWales

From: Steve Barnes [mailto:Stephen@crestwoodenvironmental.co.uk]
Sent: 18 May 2017 11:02
To: Burton, Luke <Luke.Burton@cyfoethnaturiolcymru.gov.uk>
Cc: Edd Shervington <edd@shervingtonfarms.co.uk>; Ieuan Williams <Ieuan.Williams@readingagricultural.co.uk>
Subject: Ty Mawr Farm - confirmation of site restoration planning requirement

Luke

Further to my phone call this morning concerning the Planning Permission requirement to restore the former landfill site at Ty Mawr farm, please see attached email communications between myself, Ieaun Williams (Reading Agricultural) and Mr Neil Gunther (Senior Planning Enforcement Officer at Newport City Council).

Neil has confirmed that the Planning Permission for the site (ref 99/0621) and the Approved Restoration Plan (3231 dwg 102c), which were submitted to NRW with the Waste Recovery Plan, are still valid and that the site requires restoration in accordance with the Planning Permission and 3231 dwg 102c. Neil also states that *"Should the work not take place, the Local Authority would probably serve a breach of condition notice requiring the remediation work to be done."*

Please note also that before we submitted the Environmental Permit Application for Waste Recovery, Neil had discussions with you colleague at National Resources Wales, Mr Damien Downes, who subsequently also informed me that the Planning Permission and Approved Restoration Plan are valid (as stated in the Waste Recovery Plan).

Please can you now confirm that there is a planning permission requirement to complete the work.

Best regards
Steve

Regards and thanks

Steve Barnes
Director & Principal Environmental Consultant

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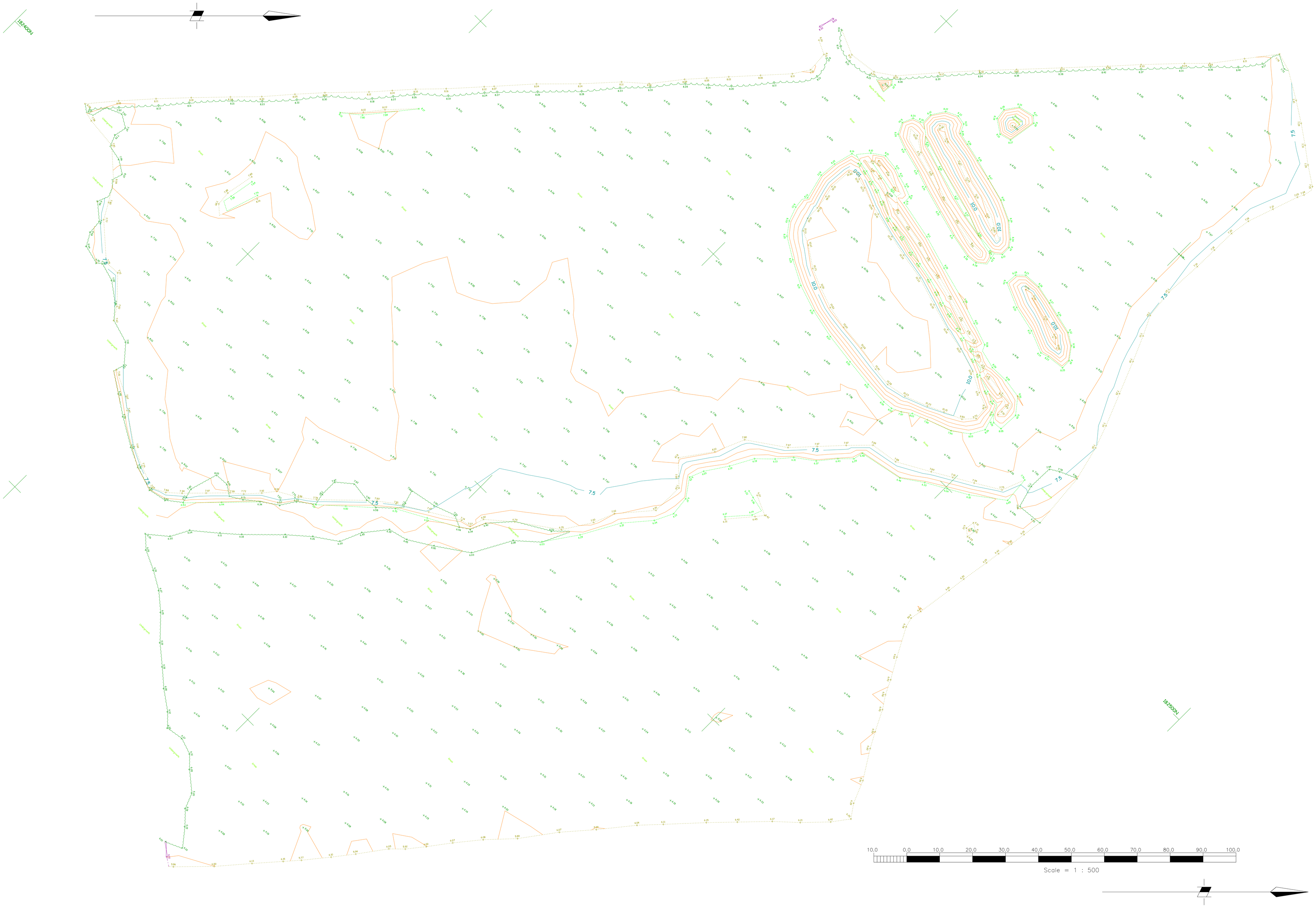
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Scale = 1 : 500

Mr E Shervington

Countryside Recycling

Commentary on the suitability of stockpiled soil material for grass growth

Ty Mawr Farm,

St. Brides Wentlooge,

Newport

July 2017

Reading Agricultural Consultants Ltd

Beechwood Court, Long Toll, Woodcote, RG8 0RR

www.readingagricultural.co.uk

1 Introduction

1.1 Reading Agricultural Consultants Ltd (RAC) is instructed by Mr E Shervington, of Countryside Recycling, Ty Mawr Farm, St. Brides Wentlooge, Newport, to assess the suitability of stockpiled soil material for use in a constructed soil profile capable of sustaining grass growth. Natural Resources Wales (NRW) has requested a report that investigates the suitability of soil material, which is proposed to be placed to a depth of 500mm, to restore a landfill site at Ty Mawr Farm. The soil will be sown with grass, which is to be grown for aesthetic reasons. The grass will be grown under a low-intensity, non-agricultural system.

1.2 NRW has stated that the soil material could be investigated using laboratory tests to describe the physical and chemical properties of the soil, or by any other method. The parameters (e.g. major and micro-nutrients, pH, texture, organic matter etc.) investigated should be justified and the capacity of the new soil profile to support grass growth assessed.

1.3 The site was visited by Harry Day and Ieuan Williams of RAC on 10th June 2017 to inspect the stockpile and collect soil samples, which were submitted for laboratory testing. They were analysed as part of a 'soil health' suite, which included physical, chemical and biological parameters critical to supporting vegetative growth.

2 Sampling regime

2.1 Composite and point samples were collected from the stockpile at varying depths, ranging from 0-15cm to 2m, using a 3cm gouge auger and a 5cm Edelman auger.

3 Results

3.1 A summary of the laboratory results is shown at Table 1. The results are shown in full at Appendix 1.

Table 1: Summary of soil health laboratory test results

				Index					
Sample Ref.	**Depth**	**Type**	**Texture**	**P**	**K**	**Mg**	**OM%**	**pH**	**CO_2 burst**
7700/2	0-15cm	Composite	Clay loam	2	2-	3	4.2	8.1	Low
7700/3	1m depth	Point	Clay loam	2	2-	3	4.6	8.1	Very low
7700/4	1m depth	Composite	Clay loam	2	2-	3	4.3	8.3	Very low
7700/6	1-2m depth	Point	Clay loam	2	2-	3	4.0	8.2	Low
7700/9	2m depth	Two points	Sandy clay loam	2	2-	3	6.5	8.3	Low/ moderate

3.2 Physical

3.3 The texture of the soil samples ranged from clay loam to sandy clay loam. These textures are suitable for, and provide a matrix capable of providing a structure capable of supporting grass growth.

3.4 RAC has not observed soil structure as the soil has been manufactured, and thus has been grossly disturbed. The material will have to be carefully handled and an aftercare programme put in place to develop a suitable soil structure in the restored profile.

3.5 Nutrient status

3.6 Correct soil nutrient status is key to ensuring that plants have an adequate supply of nutrients for satisfactory plant growth and health.

3.7 The target soil indices to maintain for agricultural continuous grassland are: phosphorous 2; potassium 2-; and magnesium 2.

3.8 The soil sample nutrient indices are consistent across all samples: phosphorus 2; potassium 2-; and magnesium 3. The nutrient status of the samples are adequate for the production of grass.

3.9 To ensure good establishment of the grass, the balanced application of manufactured and/or organic manurial phosphorous and nitrogen should be considered to provide the nutrients for crop growth.

3.10 pH

3.11 The soil samples range from pH 8.1-8.3. Whilst the pH is alkali, and at the upper end of the acceptable scale, it should not restrict the ability of the grass to grow satisfactorily.

3.12 pH is a key factor in crop production as it can restrict nutrient uptake.

3.13 Organic matter

3.14 The organic matter (OM) levels in the samples range from 4.0 - 6.5%. These levels are adequate for grass growth. OM levels in the soil material will increase over time, as OM levels increase under grass naturally with root growth and senescence.

3.15 Organic matter levels are important as they provide: micronutrients; buffering against pH extremes; moisture and nutrient retention; and a supply of microbes.

3.16 Microbial activity

3.17 Soil biota are an important indication of soil health. Microbes assist with nutrient cycling, pest and disease management, and carry out other crop-beneficial functions. Degraded soils often contain low levels of biota.

3.18 The microbial activity status of the soil samples range from very low to moderate. The microbial status of the soils were tested to assess if soil at greater depth in the stockpile were anaerobic or not. It is acknowledged that the deepest sample taken was 2m depth, and that the stockpile was more than 8m high. The sample taken from 2m depth had a higher level of microbial activity than samples taken from shallower depths. Given the poor soil structure at this depth, the relatively high CO_2

burst may indicate anaerobic activity, although there was no odour to indicate that this was the case.

3.19 Since the stored soil comprises a mixture of top- and sub-soils stored in large bunds at depths of up to 8m, it is not surprising the microbial levels are low. Microbial levels will increase as the soil is cropped with grass, which will increase OM levels and, with those, microbial populations. The plant roots will penetrate the lower soil horizons and improve soil structure and aeration. This will increase the microbial activity and thus the soil health.

4 Conclusion

4.1 RAC is instructed to assess stockpiled soil material for its suitability for sustaining grass growth, as part of landfill restoration. The soil material will be placed in a new engineered soil profile to a depth of 500mm and will be cropped with permanent grass, which will be grown for aesthetic reasons. It is understood the land will not be used for agricultural purposes.

4.2 Samples were collected from a stockpile and submitted for laboratory testing. The soil samples have chemical properties suited to grass production as the major nutrient indices are adequate. The pH is relatively high, but should not impede grass growth.

4.3 The physical characteristics of the soil are expressed as texture and structure. Textures were observed as clay loam and sandy clay loam, both which are adequate for grass growth. RAC has not observed soil structure as the soil has been manufactured and thus has been grossly disturbed.

4.4 The microbial activity in the samples are low. However, levels are expected to increase in line with the increase in organic matter levels under permanent grass.

4.5 The soil material stockpiled at Ty Mawr Farm is suitable for growing permanent, low-yielding grass.

4.6 The soil should be placed in line with Defra guidance for the successful reclamation of mineral and waste sites[1], and the site managed according to suitable aftercare programme for a period of five years.

[1] http://webarchive.nationalarchives.gov.uk/20090318074725/http://www.defra.gov.uk/farm/environment/land-use/reclamation/guidance-full.pdf

Appendix 1

REPORT

Report No. 63795 **Sample No.** 345906 **Sample Ref.** RAC/7700/2	**Cropping:** *No cropping details given* **Field Area:** 0 Ac	**Farm Details:** 7700 7700	**Client:** **H 95** READING AGRICULTURAL CONS BEECHWOOD COURT LONG TOLL WOODCOTE READING RG8 0RR
Date Received: 22/06/2017	**Date Reported:** 28/06/2017		

Soil Chemical Analysis

	Index	Result	Low	Marginal	Target	Marginal	High
P	2	23.8 mg/l					
K	2-	134 mg/l					
Mg	3	138 mg/l					
Organic Matter (LOI)		4.2%	*Level data not available for this crop*				

			Very Acid	Acid	Neutral	Alkali	Very Alkali
Soil pH		8.1					

Where no future crop code has been given, levels are calculated assuming an arable crop. If general fertiliser and lime recommendations have been requested, these are given on the following sheets. The analytical methods used are as described in DEFRA Reference Book 427. The index values are determined from the DEFRA Fertiliser Recommendations RD209 8th Edition (Appendix 4).

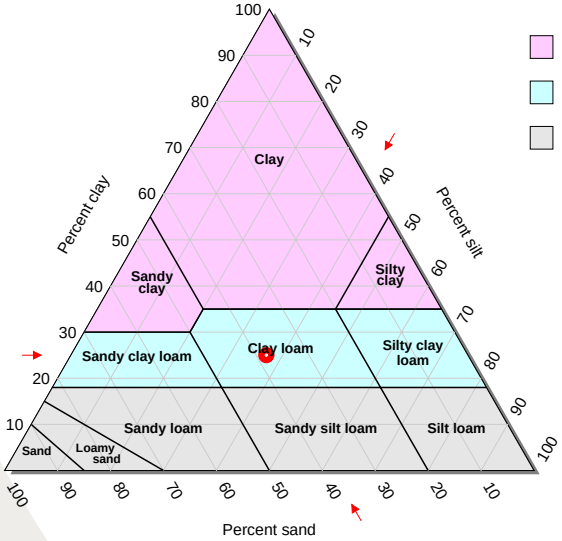
Microbial Activity

	Index	Result	Very Low	Low	Moderate-Low	Moderate	High	Very High
CO_2 Burst	1.7	9 mg/kg						

Potential N Mineralisation (kg/ha/yr) - Based on CO_2 Burst

Very Low (<15) | **Low (15-25)** | Moderate-Low (25-45) | Moderate (45-75) | High (75-105) | Very High (105-123)

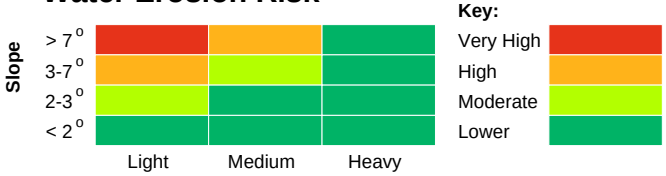
Textural Classification



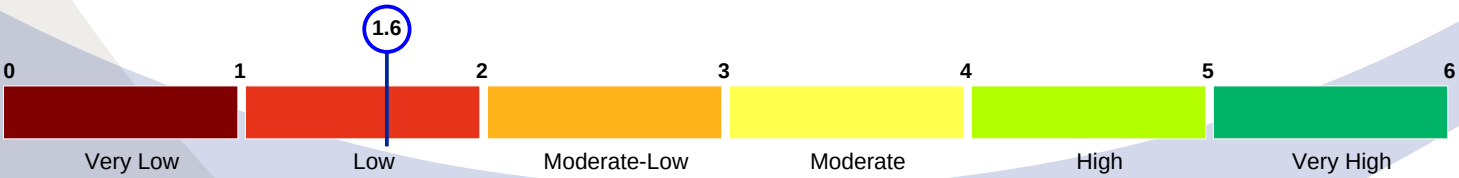
Heavy Soil
Medium Soil
Light Soil

Breakdown:	Sand **38%**	Silt **37%**	Clay **25%**
Soil Textural Class:	Clay Loam		
Major Soil Classification:	Medium		
Slope:	0°		

Water Erosion Risk



Soil Health Index - Based on soil chemical, physical and biological results.



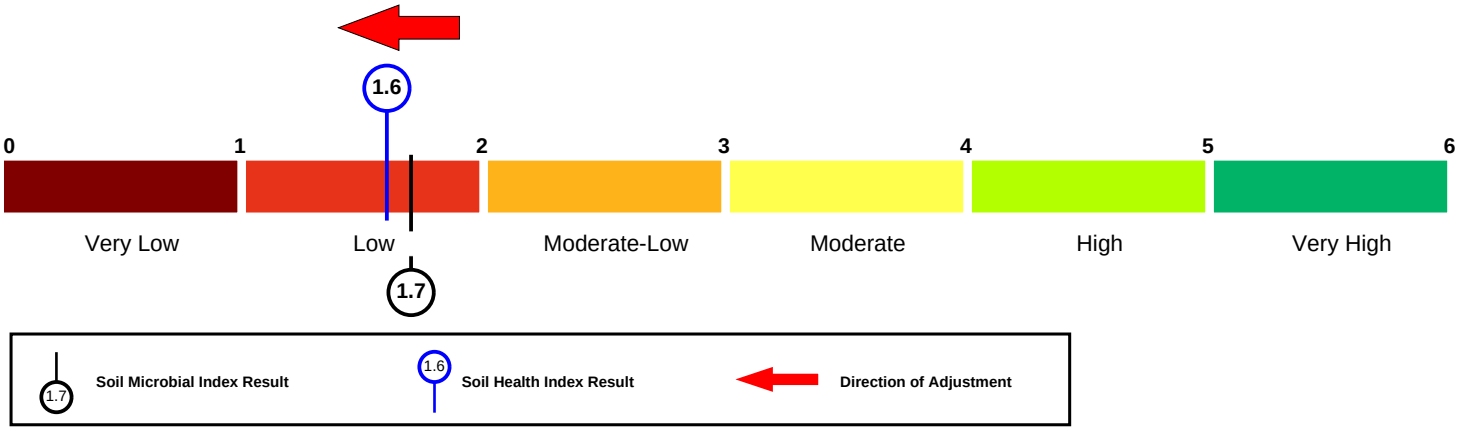
NRM Coopers Bridge, Braziers Lane, Bracknell, Berkshire RG42 6NS
Tel: +44 (0) 1344 886338 **Fax:** +44 (0) 1344 890972 **Email:** enquiries@nrm.uk.com **www.**nrm.uk.com

REPORT (Continued)

Laboratory Reference:

Report No. 63795
Sample No. 345906
Date Reported: 28/06/2017

Soil Health Index Adjustments



Adjustments to the above soil microbial index are made to create the Soil Health Index. The results from the chemical and physical tests summarised on the first page are used to make these adjustments. The table below provides the justification to these adjustments.

Parameter	Adjustment	Justification
pH	Large Negative	Your soil pH is high. Cation trace elements essential for plant health and growth may become locked up in the soil making them unavailable for uptake by the plant. See section 4.1 of the soil health handbook for more information on the influence of high soil pH.
P	No Adjustment	Phosphorus availability should be adequate to encourage effective root development and associated microbial activity. See section 4.2 of the soil health hand book for more information on the importance of phosphorus to plant health.
K	No Adjustment	Potassium availability is adequate for good leaf and root development. Plant-microbe interactions should be optimal. See section 4.2 of the soil health handbook for more information on the influence of potassium on soil health.
Mg	Slight Positive	Magnesium availability is above adequate and will provide plants with improved ability to recover nitrogen, manufacture root exudates and tolerate environmental stress. See section 4.2 of the soil health handbook for more information on the influence of magnesium on soil health.
Soil Texture	No Adjustment	The fine micro-aggregate structure of this soil type maintains low exchange rates of air and water, resulting in very slow conversion or loss of soil carbon. Microbial respiration rates will be regulated by soil temperature and available carbon sources, which may be lower than other mineral soil types, but should be sustained over very long periods of time. For more information on how soil texture influences soil health see section 3.1 of the soil health handbook.
Soil Organic matter	Slight / Moderate Positive	Organic matter is above average and is making a positive contribution to soil structure, nutrient retention, water holding and microbial activity. In addition, this level of organic matter is reducing soil erosion risk. For information on how Organic matter influences the health of your soil see section 3.2 of the soil health handbook.

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

REPORT (Continued)

Laboratory Reference:

Report No. 63795
Sample No. 345906
Date Reported: 28/06/2017

Field Observations

Parameter	Observation	Comment
Soil Compaction	Absent	Soil compaction can have a major impact on Soil Health and severely limits the performance of your field. The reduced soil pore size will lead to inhibition of root growth and emergence, poor aeration, slow movement of nutrients through the soil and a build-up of toxic gases and root exudates. Compaction can cause a shift in microbial populations from aerobic to anaerobic this will cause a rapid increase in the production of gaseous nitrogen released to the atmosphere denitrification of nitrate. See section 6.6 of the Soil Health Handbook for more information on soil compaction.
Earthworms per cubic foot	0	The presence of earthworms can be a good indication of a health soil system. They thrive in soils rich in organic matter and nutrients and with good aeration all major components of Soil Health. Earthworms in turn improve the health of a soil. They ingest soil particles as they burrow which increases the availability of nutrients both from the chemical and physical breakdown of minerals and organic matter. The burrowing activity also increases the aeration of the soil. For more information on the role of Earthworms in Soil health please see section 6.6 of the handbook.
Nutrient Deficiency	Absent	Nutrient deficiency symptoms in your crop can be the first sign that there is either an imbalance of nutrients in the soil inhibiting uptake or that there is a deficiency of particular nutrients. It is often possible to identify the deficiency from the characteristics of the symptoms however there are some symptoms that could indicate a number of possible deficiencies. If the deficiency issues are not highlighted from the chemical analysis of the major nutrients, additional analysis of trace elements may be required to aid identification of the deficiency/imbalance. There are a number of published descriptions of nutrient deficiencies in crops and these should be referred to when making your assessment. Symptoms of the major nutrient deficiencies (P, K and Mg) are described in section 4 of the handbook.

REPORT (Continued)

Report No. 63795 **Sample No.** 345907 **Sample Ref.** RAC/7700/3	**Cropping:** *No cropping details given* **Field Area:** 0 Ac	**Farm Details:** 7700 7700	**Client:** **H 95** READING AGRICULTURAL CONS BEECHWOOD COURT LONG TOLL WOODCOTE READING RG8 0RR
Date Received: 22/06/2017	**Date Reported:** 28/06/2017		

Soil Chemical Analysis

	Index	Result	Low	Marginal	Target	Marginal	High
P	2	24.2 mg/l					
K	2-	154 mg/l					
Mg	3	158 mg/l					
Organic Matter (LOI)		4.6%	*Level data not available for this crop*				

			Very Acid	Acid	Neutral	Alkali	Very Alkali
Soil pH		8.1					

Where no future crop code has been given, levels are calculated assuming an arable crop. If general fertiliser and lime recommendations have been requested, these are given on the following sheets. The analytical methods used are as described in DEFRA Reference Book 427. The index values are determined from the DEFRA Fertiliser Recommendations RD209 8th Edition (Appendix 4).

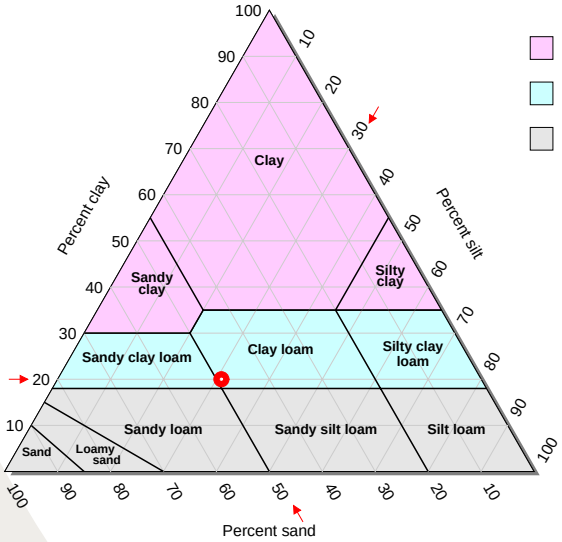
Microbial Activity

	Index	Result	Very Low	Low	Moderate-Low	Moderate	High	Very High
CO_2 Burst	0.8	4 mg/kg						

Potential N Mineralisation (kg/ha/yr) - Based on CO_2 Burst

Very Low (<15) | Low (15-25) | Moderate-Low (25-45) | Moderate (45-75) | High (75-105) | Very High (105-123)

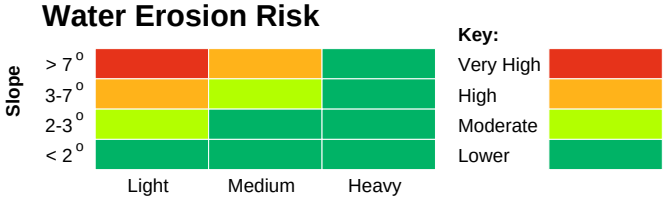
Textural Classification



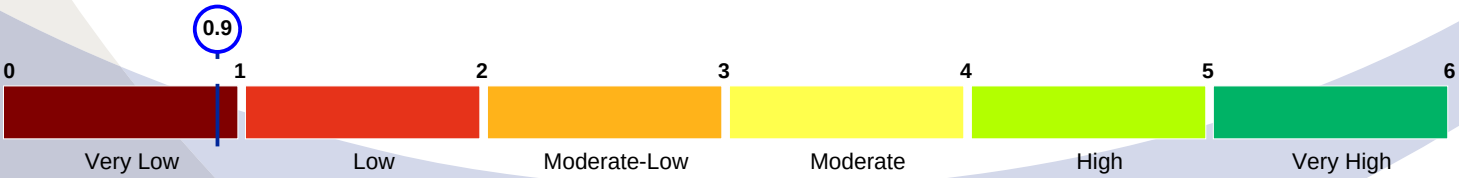
Heavy Soil
Medium Soil
Light Soil

Breakdown:	Sand **49%**	Silt **31%**	Clay **20%**
Soil Textural Class:	Clay Loam		
Major Soil Classification:	Medium		
Slope:	0°		

Water Erosion Risk



Soil Health Index - Based on soil chemical, physical and biological results.



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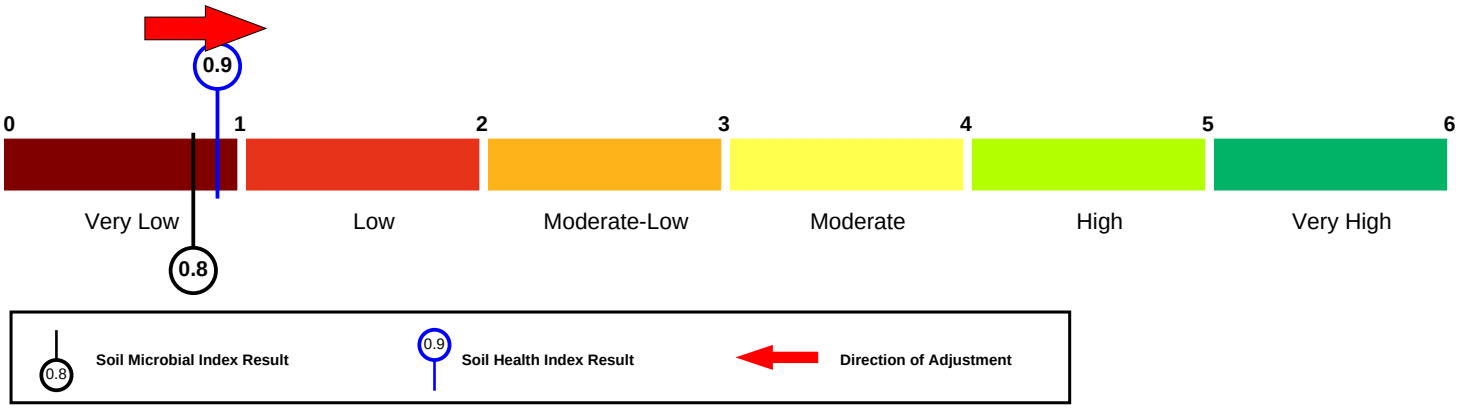
REPORT (Continued)

Laboratory Reference:

Report No. 63795
Sample No. 345907
Date Reported: 28/06/2017

Soil Health Index Adjustments



Adjustments to the above soil microbial index are made to create the Soil Health Index. The results from the chemical and physical tests summarised on the first page are used to make these adjustments. The table below provides the justification to these adjustments.

Parameter	Adjustment	Justification
pH	Large Negative	Your soil pH is high. Cation trace elements essential for plant health and growth may become locked up in the soil making them unavailable for uptake by the plant. See section 4.1 of the soil health handbook for more information on the influence of high soil pH.
P	No Adjustment	Phosphorus availability should be adequate to encourage effective root development and associated microbial activity. See section 4.2 of the soil health hand book for more information on the importance of phosphorus to plant health.
K	No Adjustment	Potassium availability is adequate for good leaf and root development. Plant-microbe interactions should be optimal. See section 4.2 of the soil health handbook for more information on the influence of potassium on soil health.
Mg	Slight Positive	Magnesium availability is above adequate and will provide plants with improved ability to recover nitrogen, manufacture root exudates and tolerate environmental stress. See section 4.2 of the soil health handbook for more information on the influence of magnesium on soil health.
Soil Texture	No Adjustment	The fine micro-aggregate structure of this soil type maintains low exchange rates of air and water, resulting in very slow conversion or loss of soil carbon. Microbial respiration rates will be regulated by soil temperature and available carbon sources, which may be lower than other mineral soil types, but should be sustained over very long periods of time. For more information on how soil texture influences soil health see section 3.1 of the soil health handbook.
Soil Organic matter	Large Positive	Organic matter is above average and is making a positive contribution to soil structure, nutrient retention, water holding and microbial activity. In addition, this level of organic matter is reducing soil erosion risk. Microbial conversion of organic matter will be making a valuable contribution to nitrogen and phosphorus availability. For information on how organic matter influences the health of your soil see section 3.2 of the soil health handbook.

REPORT (Continued)

Laboratory Reference:

Report No. 63795
Sample No. 345907
Date Reported: 28/06/2017

Field Observations

Parameter	Observation	Comment
Soil Compaction	Absent	Soil compaction can have a major impact on Soil Health and severely limits the performance of your field. The reduced soil pore size will lead to inhibition of root growth and emergence, poor aeration, slow movement of nutrients through the soil and a build-up of toxic gases and root exudates. Compaction can cause a shift in microbial populations from aerobic to anaerobic this will cause a rapid increase in the production of gaseous nitrogen released to the atmosphere denitrification of nitrate. See section 6.6 of the Soil Health Handbook for more information on soil compaction.
Earthworms per cubic foot	0	The presence of earthworms can be a good indication of a health soil system. They thrive in soils rich in organic matter and nutrients and with good aeration all major components of Soil Health. Earthworms in turn improve the health of a soil. They ingest soil particles as they burrow which increases the availability of nutrients both from the chemical and physical breakdown of minerals and organic matter. The burrowing activity also increases the aeration of the soil. For more information on the role of Earthworms in Soil health please see section 6.6 of the handbook.
Nutrient Deficiency	Absent	Nutrient deficiency symptoms in your crop can be the first sign that there is either an imbalance of nutrients in the soil inhibiting uptake or that there is a deficiency of particular nutrients. It is often possible to identify the deficiency from the characteristics of the symptoms however there are some symptoms that could indicate a number of possible deficiencies. If the deficiency issues are not highlighted from the chemical analysis of the major nutrients, additional analysis of trace elements may be required to aid identification of the deficiency/imbalance. There are a number of published descriptions of nutrient deficiencies in crops and these should be referred to when making your assessment. Symptoms of the major nutrient deficiencies (P, K and Mg) are described in section 4 of the handbook.

REPORT (Continued)

Report No. 63795 **Sample No.** 345908 **Sample Ref.** RAC/7700/4	**Cropping:** *No cropping details given* **Field Area:** 0 Ac	**Farm Details:** 7700 7700	**Client:** **H 95** READING AGRICULTURAL CONS BEECHWOOD COURT LONG TOLL WOODCOTE READING RG8 0RR
Date Received: 22/06/2017	**Date Reported:** 28/06/2017		

Soil Chemical Analysis

	Index	Result	Low	Marginal	Target	Marginal	High
P	2	17.6 mg/l					
K	2-	142 mg/l					
Mg	3	155 mg/l					
Organic Matter (LOI)		4.3%	*Level data not available for this crop*				

			Very Acid	Acid	Neutral	Alkali	Very Alkali
Soil pH		8.3					

Where no future crop code has been given, levels are calculated assuming an arable crop. If general fertiliser and lime recommendations have been requested, these are given on the following sheets. The analytical methods used are as described in DEFRA Reference Book 427. The index values are determined from the DEFRA Fertiliser Recommendations RD209 8th Edition (Appendix 4).

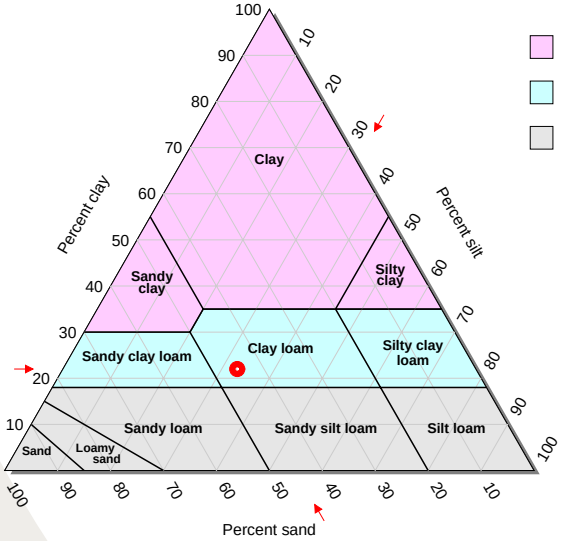
Microbial Activity

	Index	Result	Very Low	Low	Moderate-Low	Moderate	High	Very High
CO_2 Burst	0.5	3 mg/kg						

Potential N Mineralisation (kg/ha/yr) - Based on CO_2 Burst

Very Low (<15) | Low (15-25) | Moderate-Low (25-45) | Moderate (45-75) | High (75-105) | Very High (105-123)

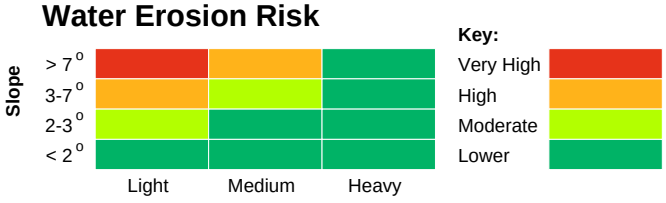
Textural Classification



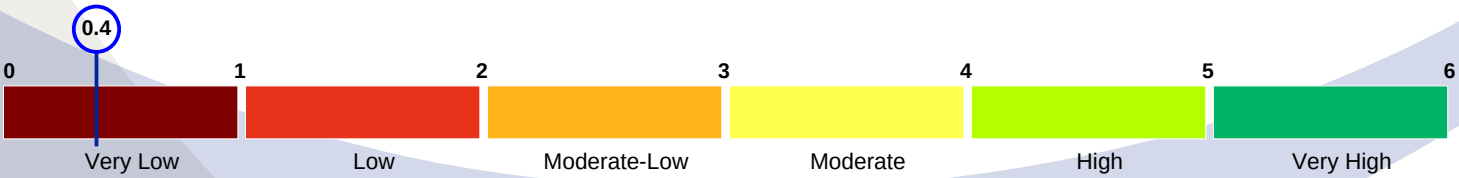
Heavy Soil
Medium Soil
Light Soil

Breakdown:	Sand **45%**	Silt **33%**	Clay **22%**
Soil Textural Class:	Clay Loam		
Major Soil Classification:	Medium		
Slope:	0°		

Water Erosion Risk



Soil Health Index - Based on soil chemical, physical and biological results.



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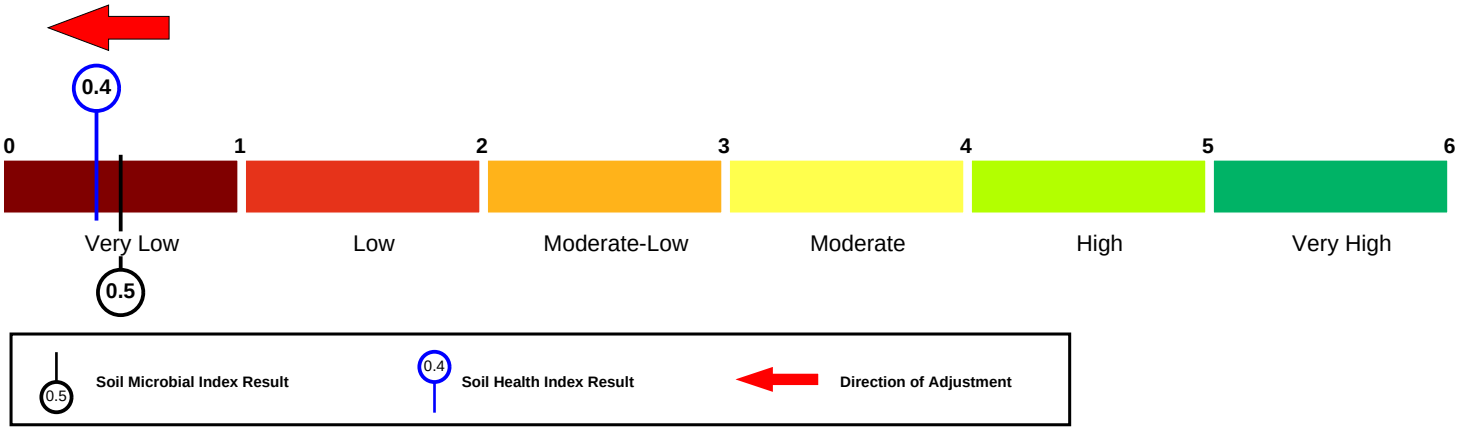
REPORT (Continued)

Laboratory Reference:

Report No. 63795
Sample No. 345908
Date Reported: 28/06/2017

Soil Health Index Adjustments



Adjustments to the above soil microbial index are made to create the Soil Health Index. The results from the chemical and physical tests summarised on the first page are used to make these adjustments. The table below provides the justification to these adjustments.

Parameter	Adjustment	Justification
pH	Large Negative	Your soil pH is high. Cation trace elements essential for plant health and growth may become locked up in the soil making them unavailable for uptake by the plant. See section 4.1 of the soil health handbook for more information on the influence of high soil pH.
P	No Adjustment	Phosphorus availability should be adequate to encourage effective root development and associated microbial activity. See section 4.2 of the soil health hand book for more information on the importance of phosphorus to plant health.
K	No Adjustment	Potassium availability is adequate for good leaf and root development. Plant-microbe interactions should be optimal. See section 4.2 of the soil health handbook for more information on the influence of potassium on soil health.
Mg	Slight Positive	Magnesium availability is above adequate and will provide plants with improved ability to recover nitrogen, manufacture root exudates and tolerate environmental stress. See section 4.2 of the soil health handbook for more information on the influence of magnesium on soil health.
Soil Texture	No Adjustment	The fine micro-aggregate structure of this soil type maintains low exchange rates of air and water, resulting in very slow conversion or loss of soil carbon. Microbial respiration rates will be regulated by soil temperature and available carbon sources, which may be lower than other mineral soil types, but should be sustained over very long periods of time. For more information on how soil texture influences soil health see section 3.1 of the soil health handbook.
Soil Organic matter	Slight / Moderate Positive	Organic matter is above average and is making a positive contribution to soil structure, nutrient retention, water holding and microbial activity. In addition, this level of organic matter is reducing soil erosion risk. For information on how Organic matter influences the health of your soil see section 3.2 of the soil health handbook.

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REPORT (Continued)

Laboratory Reference:

Report No. 63795
Sample No. 345908
Date Reported: 28/06/2017

Field Observations

Parameter	Observation	Comment
Soil Compaction	Absent	Soil compaction can have a major impact on Soil Health and severely limits the performance of your field. The reduced soil pore size will lead to inhibition of root growth and emergence, poor aeration, slow movement of nutrients through the soil and a build-up of toxic gases and root exudates. Compaction can cause a shift in microbial populations from aerobic to anaerobic this will cause a rapid increase in the production of gaseous nitrogen released to the atmosphere denitrification of nitrate. See section 6.6 of the Soil Health Handbook for more information on soil compaction.
Earthworms per cubic foot	0	The presence of earthworms can be a good indication of a health soil system. They thrive in soils rich in organic matter and nutrients and with good aeration all major components of Soil Health. Earthworms in turn improve the health of a soil. They ingest soil particles as they burrow which increases the availability of nutrients both from the chemical and physical breakdown of minerals and organic matter. The burrowing activity also increases the aeration of the soil. For more information on the role of Earthworms in Soil health please see section 6.6 of the handbook.
Nutrient Deficiency	Absent	Nutrient deficiency symptoms in your crop can be the first sign that there is either an imbalance of nutrients in the soil inhibiting uptake or that there is a deficiency of particular nutrients. It is often possible to identify the deficiency from the characteristics of the symptoms however there are some symptoms that could indicate a number of possible deficiencies. If the deficiency issues are not highlighted from the chemical analysis of the major nutrients, additional analysis of trace elements may be required to aid identification of the deficiency/imbalance. There are a number of published descriptions of nutrient deficiencies in crops and these should be referred to when making your assessment. Symptoms of the major nutrient deficiencies (P, K and Mg) are described in section 4 of the handbook.

REPORT (Continued)

Report No. 63795 **Sample No.** 345909 **Sample Ref.** RAC/7700/6	**Cropping:** *No cropping details given* **Field Area:** 0 Ac	**Farm Details:** 7700 7700	**Client:** **H 95** READING AGRICULTURAL CONS BEECHWOOD COURT LONG TOLL WOODCOTE READING RG8 0RR
Date Received: 22/06/2017	**Date Reported:** 28/06/2017		

Soil Chemical Analysis

	Index	Result	Low	Marginal	Target	Marginal	High
P	2	19.8 mg/l					
K	2-	141 mg/l					
Mg	3	160 mg/l					
Organic Matter (LOI)		4.0%	*Level data not available for this crop*				

			Very Acid	Acid	Neutral	Alkali	Very Alkali
Soil pH		8.2					

Where no future crop code has been given, levels are calculated assuming an arable crop. If general fertiliser and lime recommendations have been requested, these are given on the following sheets. The analytical methods used are as described in DEFRA Reference Book 427. The index values are determined from the DEFRA Fertiliser Recommendations RD209 8th Edition (Appendix 4).

Microbial Activity

	Index	Result	Very Low	Low	Moderate-Low	Moderate	High	Very High
CO_2 Burst	1.7	9 mg/kg						

Potential N Mineralisation (kg/ha/yr) - Based on CO_2 Burst

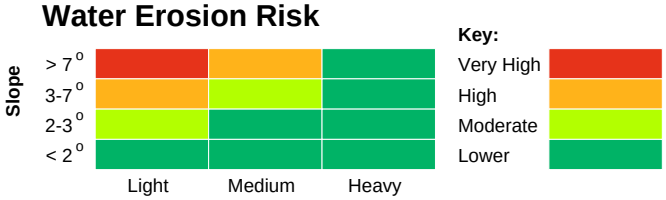
Very Low (<15) | **Low (15-25)** | Moderate-Low (25-45) | Moderate (45-75) | High (75-105) | Very High (105-123)

Textural Classification

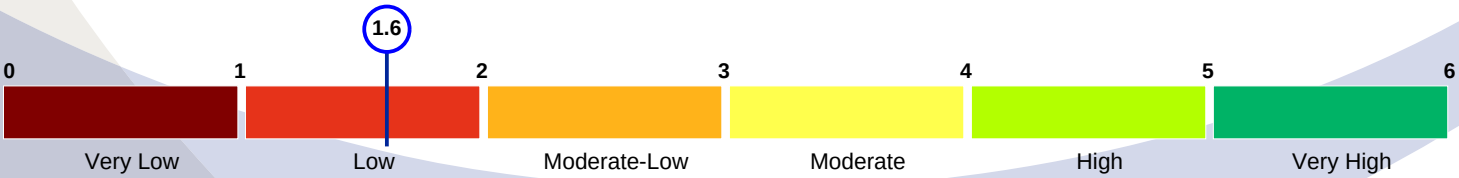
Heavy Soil
Medium Soil
Light Soil

Breakdown:	Sand **49%**	Silt **30%**	Clay **21%**
Soil Textural Class:	Clay Loam		
Major Soil Classification:	Medium		
Slope:	0°		

Water Erosion Risk



Soil Health Index - Based on soil chemical, physical and biological results.



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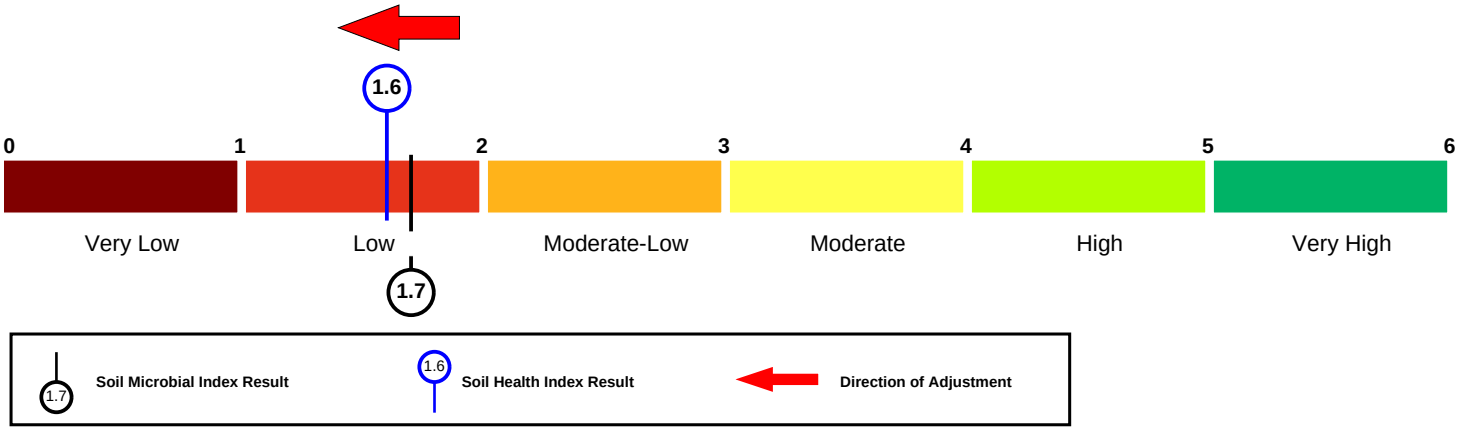
REPORT (Continued)

Laboratory Reference:

Report No. 63795
Sample No. 345909
Date Reported: 28/06/2017

Soil Health Index Adjustments



Adjustments to the above soil microbial index are made to create the Soil Health Index. The results from the chemical and physical tests summarised on the first page are used to make these adjustments. The table below provides the justification to these adjustments.

Parameter	Adjustment	Justification
pH	Large Negative	Your soil pH is high. Cation trace elements essential for plant health and growth may become locked up in the soil making them unavailable for uptake by the plant. See section 4.1 of the soil health handbook for more information on the influence of high soil pH.
P	No Adjustment	Phosphorus availability should be adequate to encourage effective root development and associated microbial activity. See section 4.2 of the soil health hand book for more information on the importance of phosphorus to plant health.
K	No Adjustment	Potassium availability is adequate for good leaf and root development. Plant-microbe interactions should be optimal. See section 4.2 of the soil health handbook for more information on the influence of potassium on soil health.
Mg	Slight Positive	Magnesium availability is above adequate and will provide plants with improved ability to recover nitrogen, manufacture root exudates and tolerate environmental stress. See section 4.2 of the soil health handbook for more information on the influence of magnesium on soil health.
Soil Texture	No Adjustment	The fine micro-aggregate structure of this soil type maintains low exchange rates of air and water, resulting in very slow conversion or loss of soil carbon. Microbial respiration rates will be regulated by soil temperature and available carbon sources, which may be lower than other mineral soil types, but should be sustained over very long periods of time. For more information on how soil texture influences soil health see section 3.1 of the soil health handbook.
Soil Organic matter	Slight / Moderate Positive	Organic matter is above average and is making a positive contribution to soil structure, nutrient retention, water holding and microbial activity. In addition, this level of organic matter is reducing soil erosion risk. For information on how Organic matter influences the health of your soil see section 3.2 of the soil health handbook.

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REPORT (Continued)

Laboratory Reference:

Report No. 63795
Sample No. 345909
Date Reported: 28/06/2017

Field Observations

Parameter	Observation	Comment
Soil Compaction	Absent	Soil compaction can have a major impact on Soil Health and severely limits the performance of your field. The reduced soil pore size will lead to inhibition of root growth and emergence, poor aeration, slow movement of nutrients through the soil and a build-up of toxic gases and root exudates. Compaction can cause a shift in microbial populations from aerobic to anaerobic this will cause a rapid increase in the production of gaseous nitrogen released to the atmosphere denitrification of nitrate. See section 6.6 of the Soil Health Handbook for more information on soil compaction.
Earthworms per cubic foot	0	The presence of earthworms can be a good indication of a health soil system. They thrive in soils rich in organic matter and nutrients and with good aeration all major components of Soil Health. Earthworms in turn improve the health of a soil. They ingest soil particles as they burrow which increases the availability of nutrients both from the chemical and physical breakdown of minerals and organic matter. The burrowing activity also increases the aeration of the soil. For more information on the role of Earthworms in Soil health please see section 6.6 of the handbook.
Nutrient Deficiency	Absent	Nutrient deficiency symptoms in your crop can be the first sign that there is either an imbalance of nutrients in the soil inhibiting uptake or that there is a deficiency of particular nutrients. It is often possible to identify the deficiency from the characteristics of the symptoms however there are some symptoms that could indicate a number of possible deficiencies. If the deficiency issues are not highlighted from the chemical analysis of the major nutrients, additional analysis of trace elements may be required to aid identification of the deficiency/imbalance. There are a number of published descriptions of nutrient deficiencies in crops and these should be referred to when making your assessment. Symptoms of the major nutrient deficiencies (P, K and Mg) are described in section 4 of the handbook.

REPORT (Continued)

Report No. 63795 **Sample No.** 345910 **Sample Ref.** RAC/7700/9	**Cropping:** *No cropping details given* **Field Area:** 0 Ac	**Farm Details:** 7700 7700	**Client:** **H 95** READING AGRICULTURAL CONS BEECHWOOD COURT LONG TOLL WOODCOTE READING RG8 0RR
Date Received: 22/06/2017	**Date Reported:** 28/06/2017		

Soil Chemical Analysis

	Index	Result	Low	Marginal	Target	Marginal	High
P	2	17.6 mg/l					
K	2-	152 mg/l					
Mg	3	111 mg/l					
Organic Matter (LOI)		6.5%	*Level data not available for this crop*				

			Very Acid	Acid	Neutral	Alkali	Very Alkali
Soil pH		8.3					

Where no future crop code has been given, levels are calculated assuming an arable crop. If general fertiliser and lime recommendations have been requested, these are given on the following sheets. The analytical methods used are as described in DEFRA Reference Book 427. The index values are determined from the DEFRA Fertiliser Recommendations RD209 8th Edition (Appendix 4).

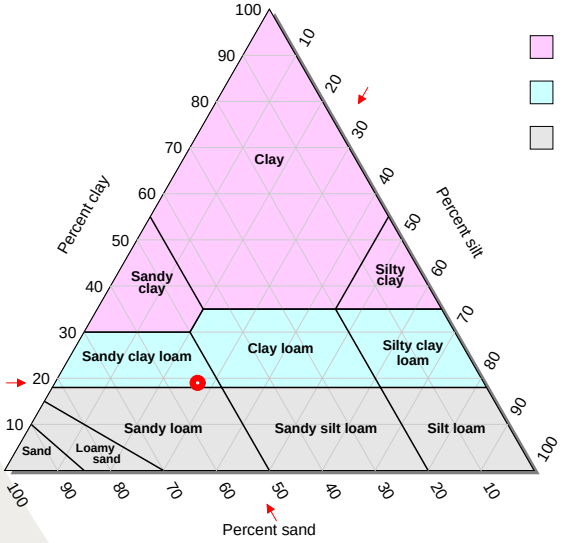
Microbial Activity

	Index	Result	Very Low	Low	Moderate-Low	Moderate	High	Very High
CO_2 Burst	2.0	12 mg/kg						

Potential N Mineralisation (kg/ha/yr) - Based on CO_2 Burst

Very Low (<15) | Low (15-25) | **Moderate-Low (25-45)** | **Moderate (45-75)** | **High (75-105)** | **Very High (105-123)**

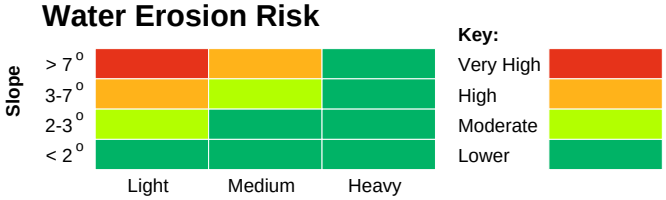
Textural Classification



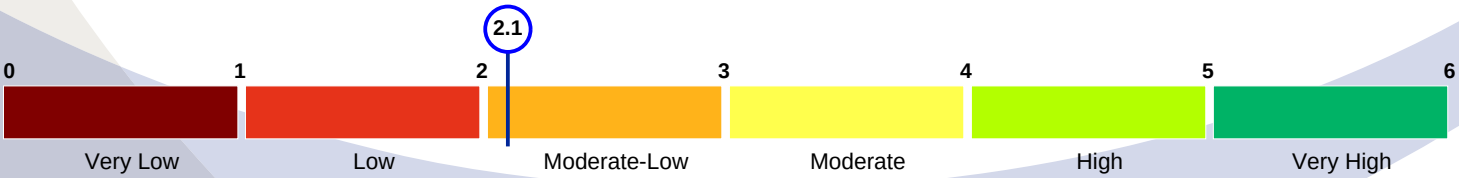
Heavy Soil
Medium Soil
Light Soil

Breakdown:	Sand **54%**	Silt **27%**	Clay **19%**
Soil Textural Class:	Sandy Clay Loam		
Major Soil Classification:	Medium		
Slope:	0°		

Water Erosion Risk



Soil Health Index - Based on soil chemical, physical and biological results.



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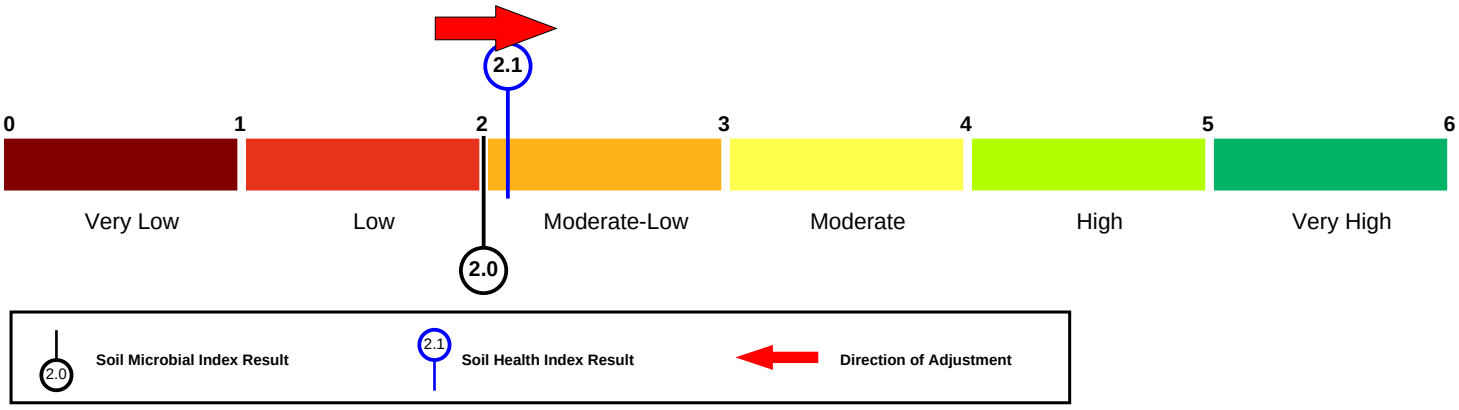
REPORT (Continued)

Laboratory Reference:

Report No. 63795
Sample No. 345910
Date Reported: 28/06/2017

Soil Health Index Adjustments



Adjustments to the above soil microbial index are made to create the Soil Health Index. The results from the chemical and physical tests summarised on the first page are used to make these adjustments. The table below provides the justification to these adjustments.

Parameter	Adjustment	Justification
pH	Large Negative	Your soil pH is high. Cation trace elements essential for plant health and growth may become locked up in the soil making them unavailable for uptake by the plant. See section 4.1 of the soil health handbook for more information on the influence of high soil pH.
P	No Adjustment	Phosphorus availability should be adequate to encourage effective root development and associated microbial activity. See section 4.2 of the soil health hand book for more information on the importance of phosphorus to plant health.
K	No Adjustment	Potassium availability is adequate for good leaf and root development. Plant-microbe interactions should be optimal. See section 4.2 of the soil health handbook for more information on the influence of potassium on soil health.
Mg	Slight Positive	Magnesium availability is above adequate and will provide plants with improved ability to recover nitrogen, manufacture root exudates and tolerate environmental stress. See section 4.2 of the soil health handbook for more information on the influence of magnesium on soil health.
Soil Texture	No Adjustment	This soil texture provides a suitable aggregate platform for air and water exchange that favours plant-microbe interactions. Provided soil carbon levels are adequate, microbial respiration rates should be readily sustainable. For more information on how soil texture influences soil health see section 3.1 of the soil health handbook.
Soil Organic matter	Large Positive	Organic matter is above average and is making a positive contribution to soil structure, nutrient retention, water holding and microbial activity. In addition, this level of organic matter is reducing soil erosion risk. Microbial conversion of organic matter will be making a valuable contribution to nitrogen and phosphorus availability. For information on how organic matter influences the health of your soil see section 3.2 of the soil health handbook.

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REPORT (Continued)

Laboratory Reference:

Report No. 63795
Sample No. 345910
Date Reported: 28/06/2017

Field Observations

Parameter	Observation	Comment
Soil Compaction	Absent	Soil compaction can have a major impact on Soil Health and severely limits the performance of your field. The reduced soil pore size will lead to inhibition of root growth and emergence, poor aeration, slow movement of nutrients through the soil and a build-up of toxic gases and root exudates. Compaction can cause a shift in microbial populations from aerobic to anaerobic this will cause a rapid increase in the production of gaseous nitrogen released to the atmosphere denitrification of nitrate. See section 6.6 of the Soil Health Handbook for more information on soil compaction.
Earthworms per cubic foot	0	The presence of earthworms can be a good indication of a health soil system. They thrive in soils rich in organic matter and nutrients and with good aeration all major components of Soil Health. Earthworms in turn improve the health of a soil. They ingest soil particles as they burrow which increases the availability of nutrients both from the chemical and physical breakdown of minerals and organic matter. The burrowing activity also increases the aeration of the soil. For more information on the role of Earthworms in Soil health please see section 6.6 of the handbook.
Nutrient Deficiency	Absent	Nutrient deficiency symptoms in your crop can be the first sign that there is either an imbalance of nutrients in the soil inhibiting uptake or that there is a deficiency of particular nutrients. It is often possible to identify the deficiency from the characteristics of the symptoms however there are some symptoms that could indicate a number of possible deficiencies. If the deficiency issues are not highlighted from the chemical analysis of the major nutrients, additional analysis of trace elements may be required to aid identification of the deficiency/imbalance. There are a number of published descriptions of nutrient deficiencies in crops and these should be referred to when making your assessment. Symptoms of the major nutrient deficiencies (P, K and Mg) are described in section 4 of the handbook.

REPORT (Continued)

Laboratory Reference:

Report No. 63795
Date Reported: 28/06/2017

Fertiliser Recommendations

The recommendation should be increased or decreased where yields are substantially more or less than that specified. The amount to apply can be calculated using the expected yield and values for the offtake of phosphate and potash per tonne of yield given in Appendix 5 of RB209 8th edition.
All recommendations are given for the mid-point of each Index.
Where a soil analysis value (as given by the laboratory) is close to the range of an adjacent Index, the recommendation may be reduced or increased slightly taking account of the recommendation given for the adjacent Index. Small adjustments of less than 10 kg/ha are generally not justified.
Don't forget to deduct nutrients applied as organic manures.
For Nitrogen recommendations please refer to the RB209 8th edition or seek advice from an FACTS qualified adviser.
For established grassland or other situations where there is no, or only minimal, soil cultivation, no more than 7.5 t/ha should be applied in one application.

Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime (Arable)*	*(Grass)*
RAC/7700/2		*Units/Acre*				*T/Ac* **0**	**0**
345906 / Medium		*Kg/Ha*				*Te/Ha* **0**	**0**

Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime (Arable)*	*(Grass)*
RAC/7700/3		*Units/Acre*				*T/Ac* **0**	**0**
345907 / Medium		*Kg/Ha*				*Te/Ha* **0**	**0**

Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime (Arable)*	*(Grass)*
RAC/7700/4		*Units/Acre*				*T/Ac* **0**	**0**
345908 / Medium		*Kg/Ha*				*Te/Ha* **0**	**0**

Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime (Arable)*	*(Grass)*
RAC/7700/6		*Units/Acre*				*T/Ac* **0**	**0**
345909 / Medium		*Kg/Ha*				*Te/Ha* **0**	**0**

Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime (Arable)*	*(Grass)*
RAC/7700/9		*Units/Acre*				*T/Ac* **0**	**0**
345910 / Medium		*Kg/Ha*				*Te/Ha* **0**	**0**

Fertiliser recommendations are based on **DEFRA RB209 (Eighth Edition - 2010).** If a nutrient is deficient and no recommendation is given, either no recommendation is given in RB209 or we have insufficient data to give a recommendation.
NRM is a UKAS accredited laboratory to ISO/IEC 17025:2005

Steve Barnes

From: Thomas, Kate <Kate.Thomas03@cyfoethnaturiolcymru.gov.uk>
Sent: 21 September 2017 15:51
To: Steve Barnes
Cc: Edd Shervington
Subject: RE: Ty Mawr Farm - submission of revised Waste Recovery Plan

Dear Steve

Environmental permitting – Permanent deposit of waste on land

Application Reference: PPN-00999
Proposed Operator: Mr Edd Shervington
Facility: Ty Mawr Farm Former Landfill, St Brides, Wentlooge, Newport, NP10 8SF

Thank you for your waste recovery plan **CE-TM-0937-RP05-Final, Rev B** received on 21 September 2017. We have assessed it against the standards set out in our guidance – How to apply for a waste recovery environmental permit to permanently deposit waste on land.

We agree that your activity is a recovery operation. This advice is based on the information provided in your waste recovery plan*.

The revised waste recovery plan makes references to a permit application. To date a permit application has not been submitted to us or determined by us. Please be aware that we have assessed the activity in principle to determine that it is for recovery purposes. We have not assessed the risks to sensitive receptors. Potential risks from the activity will be assessed as part of permit determination.

If you change your waste recovery plan between now and when you submit an environmental permit application, this advice may no longer apply. You should tell us about the changes when you submit the application. Or, submit the amended plan for re-assessment before-hand.

*Please note: the approved 'waste recovery plan' consists of the initial submission and all amendments, additional information and correspondence sent to us as part of the assessment and on which we based our decision.

If you have any questions please contact your local compliance officer.

Yours sincerely

Kate

Kate Thomas
Uwch Swyddog Trwyddedu (Gwastraff)/Senior Permitting Officer (Waste)
Gwasanaeth Trwyddedu/ Permitting Service
Cyfarwyddiaeth Tystiolaeth, Polisi a Thrwyddedu /Evidence, Policy and Permitting Directorate
Cyfoeth Naturiol Cymru / Natural Resources Wales
Ffôn /Tel: 03000 654487

Twitter: twitter.com/NatResWales
Facebook: facebook.com/NatResWales

Legend:

- Environmental Permit Boundary
- Limit of Infilling
- Proposed Landraise Contours
- Existing Drains (retained)

0m 40m 100m

Disclaimer:

This drawing is not for construction.

All services to be checked on site and not scaled from this drawing.

-	-	-	-	-
-	-	-	-	-
Final Revision:	Date:	Description:	By:	Chk:

Consultant:

Crestwood Environmental Ltd
Units 1 & 2
Nightingale Place
Pendeford Business Park
Wolverhampton
WV9 5HF

Tel: 01902 229563

info@crestwoodenvironmental.co.uk
www.crestwoodenvironmental.co.uk

Client:

Ty Mawr Farm

Site: **TY MAWR FARM**

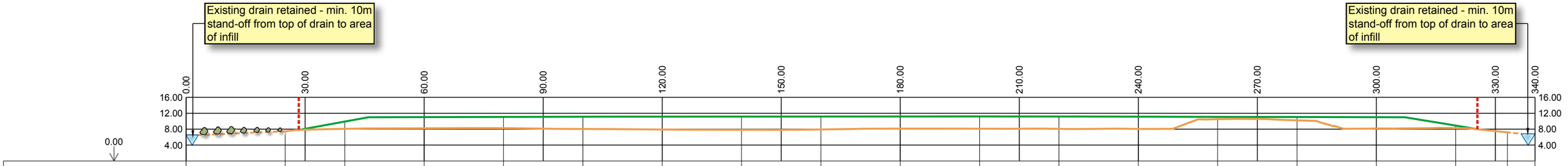
Drawing Title: **Oultine Landraise Plan**

Date:	Scale:	Paper Size:
16 Jan 2017	1:2,000	A3 (420×297 mm)

Drawn By:	Checked By:	Status:	Final Revision:
AC	SB	FINAL	-

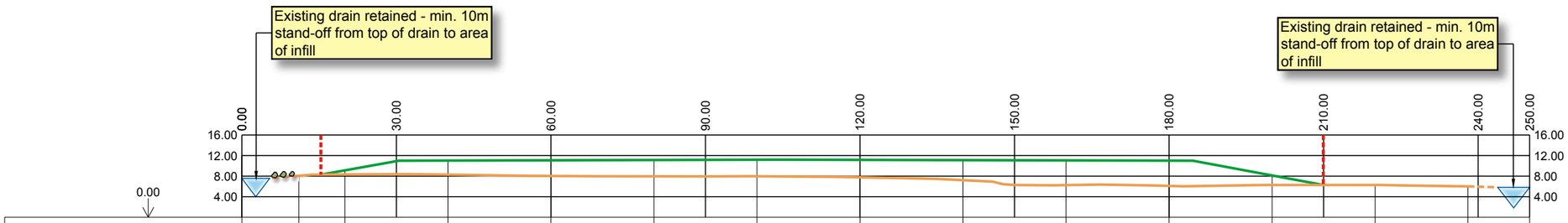
CAD Ref:	Drawing No:
CE-TM-0937-DW05 - FINAL	**CE-TM0937-DW05**

Cross Section B - B' (Scale - 1:1,000)



Existing Levels	7.456	8.084	8.215	8.250	8.050	7.911	7.835	7.922	8.132	8.110	8.076	8.058	10.508	10.219	8.165	8.263	7.205							
Chainage	24.972	40.000	60.000	80.000	100.000	120.000	140.000	160.000	180.000	200.000	220.000	240.000	260.000	280.000	300.000	320.000	333.041							
Landraise Levels		9.910	11.032	11.077	11.126	11.146	11.156	11.169	11.185	11.197	11.178	11.138	11.087	11.059	11.016	8.903								

Cross Section A - A' (Scale - 1:1,000)

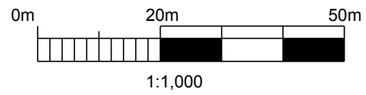


Existing Levels	8.073	8.319	8.284	8.030	7.962	7.972	7.771	7.216	6.252	6.105	6.278	6.273	6.004											
Chainage	11.065	20.000	40.000	60.000	80.000	100.000	120.000	140.000	160.000	180.000	200.000	220.000	238.006											
Landraise Levels		9.122	11.026	11.082	11.136	11.189	11.161	11.111	11.062	11.012	8.131													

Disclaimer:

This drawing is not for construction.

All services to be checked on site and not scaled from this drawing.



Legend:

- Existing Ground Levels
- Proposed Landraise Profile
- Limits of Infilling

Final Revision:	Date:	Description:	By:	Chk:
-	-	-	-	-

Consultant:

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Units 1 & 2
Nightingale Place
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Wolverhampton
WV9 5HF

Tel: 01902 229563

info@crestwoodenvironmental.co.uk
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Client:

Ty Mawr Farm

Site: **TY MAWR FARM**

Drawing Title: **Cross Sections**

Date:	Scale:	Paper Size:
16 Jan 2017	1:1,000	A3 (420×297 mm)

Drawn By:	Checked By:	Status:	Final Revision:
AC	SB	FINAL	-

CAD Ref:	Drawing No:
CE-TM-0937-DW05 - FINAL	**DW05 Figure 2**