



WASTE RECOVERY PLAN

Environmental and sustainability solutions provided to
BRYN RECYCLING LTD

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1.0 INTRODUCTION

Walker Resource Management Ltd (WRM) are acting consultants for Bryn Recycling Ltd (hereon referred to as Bryn Recycling) in their application for a Bespoke Environmental Permit for the deposit of waste for recovery at Gelliargwellt Farm, Hengoed. The waste would be recovered on the land for the extension of the materials processing and storage yard at the existing Materials Recycling Facility and for the creation of a screening bund surrounding the southern and southwestern boundaries of this storage yard. A bespoke permit is required as more than 60,000m³ of waste material is needed to carry out the proposed development. As the application is for a waste recovery permit, there is a requirement to produce a Waste Recovery Plan.

This Waste Recovery Plan (WRP) has been produced in line with the Natural Resources Wales Guidance: Prepare a Waste Recovery Plan. This WRP has been produced in order to demonstrate the suitability of the proposed use of waste materials within the development as a waste recovery operation as defined below:

"The essential characteristic of a waste recovery operation is that its principal objective is that the waste serves a useful purpose in replacing other materials which would have had to be used for that purpose, thereby conserving natural resources."

This Waste Recovery Plan provides information on the following:

- The purpose of the proposed works
- The proposed quantity of waste to be used
- The proposed works meeting quality standards
- Evidence that the development is financially feasible if using non-waste materials
- Suitability of the waste for the purpose of the proposed works

1.1 Site Location

The area in which the waste would be deposited for recovery is within land that makes up part of Gelliargwellt Uchaf Farm and is centred on grid reference ST 12393 96501. The primary vehicle access is from Gelligaer Road, which is located to the northwest of the site. It also connects neighbouring towns including Gelligaer and Penpedairheol which are located approximately 800m and 2,000m respectively, to the northeast of the site. Penybryn is located approximately 1,300m to the east, with the Penallta Industrial Estate located slightly further east. Caerphilly is located approximately 8.5km south of the site.

The site is bound to the south by agricultural land and Parc Penallta Country Park, which comprises an area of public open space and woodland is located approximately 850m to the southeast. Nelson Bog Site of Special Scientific Interest (SSSI) is located 550m to the southeast of the site. Waun Rydd Site of Importance for Nature Conservation (SINC) is located to the east of the site and Coed Gelliau'r – Gwellt SINC is located immediately adjacent (west) to the site and comprises an ancient woodland.

The wider farm site contains an anaerobic digestion facility to the north of the deposit for recovery site with a sandstone quarry to the east. Immediately east of the site is a Materials Recycling Facility (MRF). Part of the deposit for recovery site lies within the permit boundary of the MRF (permit reference number TP3695FC).

The deposit for recovery site is largely agricultural in nature, used for grazing cattle, and it has an area of approximately 64,500m².



Figure 1 - Aerial view of Gelliargwellt Farm

1.2 Planning History

An application for planning permission for the extension of the materials processing and storage yard and for the creation of a screening bund surrounding the southern and southwestern boundaries of this storage yard was submitted on 24/06/2022 and was validated on 27/06/2022 (reference number 22/0567/FULL). The application is currently awaiting a decision.

Planning permission was previously granted for the permanent operation of the MRF together with the erection of a new processing building and associated material storage bays (APP/K6920/A/12/2173010 – LPA Ref 11/0226/FULL) in 2012.

1.3 Application for a Bespoke Permit

This WRP is part of a full application for a Bespoke Environmental Permit covering the use of waste in a deposit for recovery operation. It is accompanied by the following documents:

- BRY-A02 Non-Technical Summary
- BRY -A03 Site Condition Report
- BRY -A04 Environmental Setting and Site Design Report
- BRY -B01 Environmental Permit Management System Manual
- BRY -B02 Fugitive Emissions Management Plan
- BRY -B03 Environmental Risk Assessment
- BRY -B04 Dust Management Plan
- BRY -OP01 Environmental Permit Reporting
- BRY -OP02 Waste Acceptance Procedure
- BRY -OP03 Waste Recovery Procedure
- BRY-OP04 Maintenance Schedule
- BRY-OP05 Monitoring Schedule
- BRY-OP06 Recording Procedure

2.0 PURPOSE OF THE WORK

Bryn Recycling propose to recover approximately 420,000m³ or 672,000 tonnes (using a conversion factor of 1.6 tonnes per m³) of inert waste material for the extension of the existing material processing and storage yard at the MRF and creation of a screening bund to the south and southwest at Gelliargwellt Farm. The nature of the operations and the construction means that several differing materials will be used to form the plateau comprising cobbles, stones, soils and recycled inert materials consistent with Table 1 below. During the placement and construction phase, these will inevitably be mixed and compacted so as to create a homogeneous mass.

These materials will have varying densities, but the resulting mix is assessed as 1.6T/m³ in accordance with accepted values.

The fill placed in the construction of the bund will be similar to a 6F2 material which features in the Manual of Contract Documents for Highway Works (MCHW), the broad definition being "Selected granular material (coarse grading)", with a maximum particle size of 125mm.

An additional 3,000 tonnes of non-waste (PAS 100 accredited compost) will be used as a top layer on the screening bund to provide a growing medium for the planting of native broadleaf woodland linking to the existing Coed Gelliau'r-gwellt to the south and west. However, these 3,000 tonnes of compost are not considered in this WRP on the basis that it is not a waste material. This WRP and associated bespoke environmental permit application seeks to enable Bryn Recycling to make improvements to the way in which recycled material is stored which will increase the quality and recovery rate of sorted and recovered recycled materials and the proposed landscape bund would also provide better screening of the fire prevention wall serving the MRF.

The waste will be recovered in line with the requirements set out in this permit. Waste accepted onto site, following the strict protocols in the Waste Acceptance procedure which makes up part of the environmental management system, will be immediately deposited at its final location using a shovel loader and other agricultural and construction vehicles. If waste materials were not used, then non-waste materials would be used instead. The most likely source of an alternative would be to purchase virgin or recycled aggregates, clays and subsoil. These materials will likely come at a higher environmental cost.

The materials that will be used within this proposed development are wastes that have been brought to site directly by small local landscaping contractors or utility companies via the

MRF. These wastes will not contain any hazardous materials. The recovery of discarded material is justifiable as it potentially diverts waste that would normally be going to landfill for disposal. Table 1 below lists the waste types that may be used in the proposed development.

Table 1 - Waste types to be used in the proposed development

01 Waste resulting from exploration, mining, quarrying and physical and chemical treatment of minerals	
01 01	wastes from mineral excavation
01 01 02	Wastes from mineral non-metalliferous excavation
01 04	wastes from physical and chemical processing of non-metalliferous minerals
01 04 08	Waste gravel and crushed rocks other than those mentioned in 01 04 06
01 04 09	Waste sand and clays
17 Construction and demolition wastes	
17 01	concrete, bricks, tiles and ceramics
17 01 01	Concrete ¹
17 01 02	Bricks ¹
17 01 03	Tiles and ceramics ¹
17 01 07	Mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06 ¹
17 05	soil stones and dredging spoil
17 05 04	Soil and stones other than those mentioned in 17 05 03 ²
19 Wastes from waste management facilities	
19 12	wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified
19 12 09	Minerals (for example sand, stones) only ³
20 MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS	
20 02	separately collected fractions (except 15 01)
20 02 02	Soil and stones ⁴

Notes:

¹ Selected C&D waste can be accepted without testing: with low contents of other types of materials (like metals, plastic, soil, organics, wood, rubber, etc). The origin of the waste must be known. No C&D waste from constructions, polluted with inorganic or organic

dangerous substances e.g. because of production processes in the construction, soil pollution, storage and use of pesticides or other dangerous substances etc. unless it is made clear that the demolished construction was not significantly polluted. No C&D waste from constructions, treated, covered or painted with materials, containing dangerous substances in significant amounts.

² Can be accepted without testing excluding topsoil, peat; excluding soil and stones from contaminated site. Soil and stones will not be accepted directly from contaminated sites. They will be sampled and a site-specific risk assessment will be carried out.

³ Residual fines from mechanical treatment of mixed wastes at transfer stations will not be accepted at the site.

⁴ Can be accepted without testing if only from garden and park waste; excluding top soil, peat.

The work proposed in this application is for the purpose of creating a level area on which the existing MRF processes could be extended by means of a material processing and storage yard. In order to do this, the profile of the land on which the processing and storage would be needs to be altered to create a plateau. This would be done by means of steepening the existing hillslope in the form of a bund to create a plateau at the top. The bund will not only screen the extended material processing and storage yard and help to reduce the risk of fugitive releases from the extended area but it will also help to visually screen some of the existing infrastructure on the wider farm site.

2.1 Technical Drawings

Figures 2 and 3 below show the topography of the site pre and post waste recovery. Figure 3 also shows the location of the cross sections which feature in Figure 4 and Figure 5. Figures 2, 3, 4 and 5 can also be seen in Appendices A to D, respectively, accompanying this document.



Figure 2 – Map of the existing topography of the site

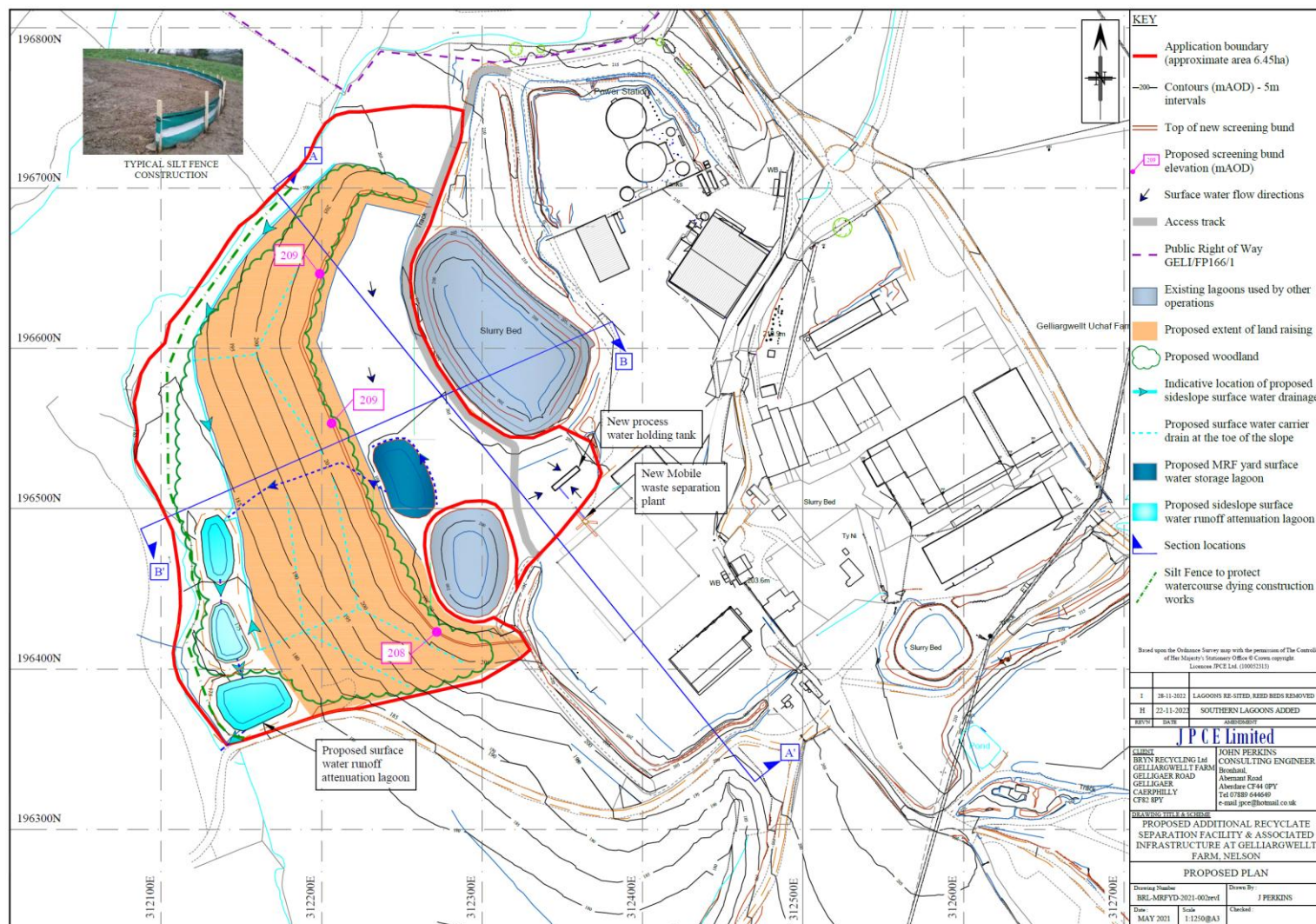


Figure 3 - Map of the post waste recovery topography of the site including cross section locations

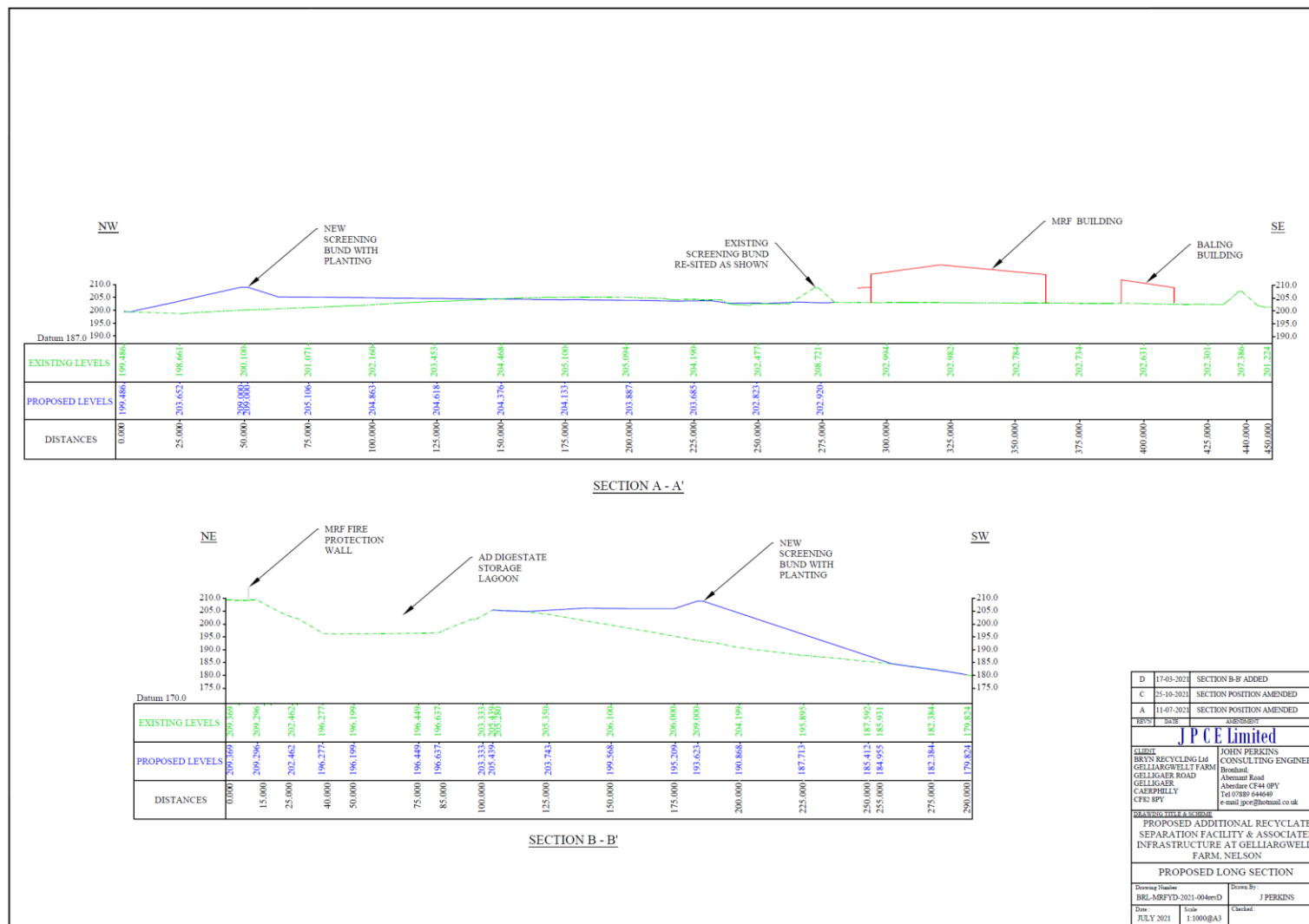


Figure 4 - Cross-sectional diagrams of the area on which waste is proposed to be recovered (pre and post recovery)

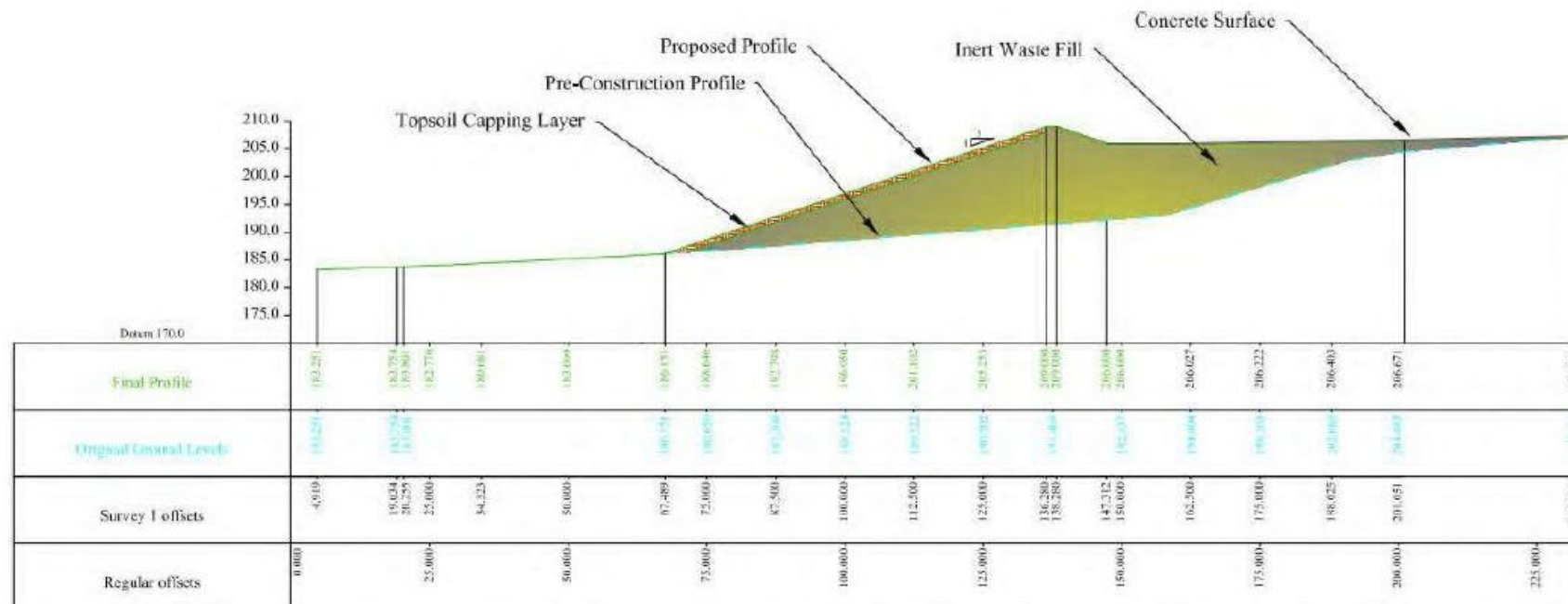


Figure 5 – Additional cross-sectional diagram of the area on which waste is proposed to be recovered (pre and post recovery)

As shown above, a plateau and screening bund will be created to the west of the existing slurry bed and MRF site. From the topographical survey, it has been calculated that 420,000m³ of material is required to create the plateau and screening bund. Bryn Recycling will follow this design which will ensure that only the quantity of waste required for this development will be used and no excess waste will be brought onto site. The strict Waste Acceptance procedure which makes up part of the environmental management system will also help to ensure that no surplus waste is brought onto site. Weekly calculations will be performed to determine the total amount of waste brought on to site.

PAS100 compost will be laid on top of the waste material up to a depth of 1m to provide a growing medium for the vegetation to be planted (mustard and broadleaf woodland).

2.2 Summary of required volumes

Please find below a summary of the required volume of waste as calculated above:

Table 2 - Summary of required volumes

Waste Recovery Operation	Required Volume
Creation of plateau and bund	420,000m ³
Total waste	420,000m³
PAS100 Compost	6,919m ³
Total material	428,824m³

It should be clarified that 420,000m³ (or 672,000 tonnes based on a conversion factor of 1.6 tonnes/m³) is the volume of inert waste that is required to be brought on to site to complete the proposed development. An additional 6,919m³ (or 3,000 tonnes based on a conversion factor of 0.434 tonnes/m³) of non-waste PAS100 compost will be laid on top of the inert waste to act as the growing medium for the planted vegetation.

2.3 Alternative proposals

There were three possible locations identified for the MRF extension. The first was between the farm buildings and the village of Gelligaer. This area would have needed no extensive ground works and therefore less waste material to be recovered, only the construction of

screening bunds but there is a public footpath across the centre of the field, and it is less than 350m from the houses. This location was decided against because of the impact it would have on sensitive receptors and the presence of the footpath that would have run across the site.

The second area investigated was the field to the south of the quarry entrance. This area has no footpath, but the lower half of the field would be required for settlement lagoons should the application to extend the quarry be granted. This would reduce the size of the workable area, once screening bunds are in place, and it would not comply with the requirements of the Fire Prevention Plan guidance once the area is being used for waste management. Therefore although it may have required less waste to be recovered, the workable area would not have been sufficient for its purpose.

The third possible location for the MRF extension area is the location presented in this Waste Recovery Plan, next to the current permitted MRF area. The extension area is adjacent to the soil recovery bay from the MRF. It is these soils that shall be undergoing further processing and storage. This means that the soils will not have to be transported around the farm site, thus reducing the operations environmental footprint and ensuring site safety. Additionally, the area presented ensures sufficient space is provided to meet the requirements of the Fire Prevention Plan guidance once the area is being used for waste management. Therefore, this area was chosen as the only workable option for the MRF extension.

3.0 QUALITY STANDARDS

The proposal for recovery operation has been designed by qualified personnel. The proposal was produced following an initial topography survey carried out by JPCE Ltd. The same company also completed the cross sections and levels calculations using the information gathered by the topographical survey. JPCE Ltd are a well-established consulting engineering company who provide technical advice services within the waste industry to waste management companies, such as MRF developments; foundations and drainage infrastructure; landfill cell designs. Surveying and ground modelling are also integral elements within their portfolio. The company Director, John Perkins, who carried out the surveys, calculations and design, as well as producing the maps, is a chartered civil engineer with nearly 40 years of experience including as a Section Engineer for Glamorgan County Council and as a Senior Engineer at George Crowder Associates.

The design has been carried based on standard slopes used in the construction of embankments. The stability of the slope was confirmed using the proprietary software GEO5 and in all cases the factor of safety against failure was greater than the required minimum value of 1.3. A stability risk assessment detailing the design and the calculations can be seen in the accompanying Appendix E Stability Risk Assessment.

The construction of the entire area i.e. both the embankment and the plateau, will be carried using standard earthworks techniques of filling from the base of the embankment to the crest using a combination of truck, bulldozer and excavator. The combination of the trucks and dozer will serve to compact the placed material in discrete layers. Each layer shall not exceed 0.5m thickness and should be repeatedly tracked into place before the succeeding layer is placed.

The final profile shall be trimmed with a dozer prior to the placement of any final dressing to form a growing medium.

As per the cross-sections presented above, the recovery of the waste shall enable a plateau to be constructed next to the AD digestate storage lagoon and MRF building. The area proposed in this Waste Recovery Plan will provide the appropriate amount of space required for the additional MRF soil material processing and storage proposed. The exposed waste on the plateau area shall be covered in concrete to create an impermeable surface to protect the ground from the activities taking place above it. The specification, performance, production and conformity of the concrete used shall follow the requirements of BS EN 206:2013+A2:2021. The specification of the concrete shall consider the following in ensure adequate strength and durability:

1. concrete in non-hazardous conditions;
2. exposure to climatic and atmospheric conditions;
3. exposure to aggressive ground conditions;
4. exposure to sulphates and acids in groundwater;
5. effects of chlorides;
6. effects of alkali-silica reaction; and,
7. aggregates.

Due to the weight of machinery and stockpiles the concrete will need reinforcing. Specifications for the reinforcement will consider:

1. compliance with appropriate standards;

2. end restraint;
3. concrete cover;
4. fire resistance; and,
5. carbonation.

The exposed fill material on the embankment created shall be covered in a layer of compost. It is proposed that 3,000 tonnes of non-waste (PAS 100 accredited compost) will be used as a top layer on the screening bund to provide a growing medium for the planting of native broadleaf woodland linking to the existing Coed Gelliau'r-gwellt to the south and west.

The waste recovery work associated with the proposal will follow the detailed designs presented above. The Site Manager, Jennifer Price, will oversee the waste recovery operations.

The materials that will be used within the development at Gelliargwellt Farm are wastes that will be brought into the Materials Recycling Facility. As previously mentioned, the materials that will be used within this proposed development are wastes that have been brought to site directly by small local landscaping contractors or utility companies.

Detailed waste acceptance procedures will be in place to minimise the risk that unacceptable waste materials are accepted at the site and procedures will be in place for the rejection of nonconforming loads. The waste acceptance procedures will include robust waste characterisation and testing procedures. No wastes will be accepted from contaminated sites. Only waste that is suitable for the intended purpose will be imported as to do otherwise would undermine the potential to develop the site as in accordance with the obligations of the planning permission. The detailed waste acceptance procedures are presented at Section 3.1.

3.1 Waste Acceptance Procedure

Waste shall only be accepted if it is of a type listed in Table 1 above. No waste will be accepted at the site unless it has been subjected to an appropriate basic characterisation procedure as specified below.

3.2 Level 1 – Basic Characterisation

No waste will be accepted at the site unless it has been subjected to an appropriate basic characterisation procedure. The minimum information to be collected includes:

- the EWC code of the waste;
- the full address where the waste was produced;

- the original source of the waste;
- the identity of the producer;
- all the reasonably identifiable previous uses of the producer site where the waste is excavation waste;
- the process giving rise to the waste;
- the physical appearance of the waste including colour and texture;
- confirmation and evidence that the waste has been classified as non-hazardous;
- where a weighbridge isn't used a metric conversion factor for volume (cubic metres) to weight (tonnes) for each waste stream;
- the quantity of waste to be imported;
- details of any treatment undertaken on the waste; and
- evidence of compliance with these procedures.

All waste producers are required to complete a Waste Questionnaire to ensure the materials suitability and quality. All Waste Questionnaires will be reviewed by the Technically Competent Manager (or otherwise appointed representative) to ensure the suitability of the material prior to acceptance at the site.

A Hydrogeological Risk Assessment (HRA) dated November 2023 has been produced for the site by Hydrogeo Ltd which is presented alongside this document and application. The HRA describes the risk from imported inert waste materials on local receptors assuming that the inert landfill waste acceptance criteria screening values are not exceeded. The 2003/33/EC: Council Decision of 19 December 2002 (the Council Decision) describes in Section 2.1.1 of the Annex the limit values for waste acceptable at landfills for inert waste (WAC). The HRA highlights that there are determinants tested as part of the WAC test suite which have inert waste screening limits that are comparably higher than the relevant UK-DWS and/or EQS freshwater screening values. The HRA also concludes that as the site already operates a Water Quality and Quantity Monitoring Scheme & Contingency Plan as part of the quarry activities then the risk to local receptors from imported waste materials is low. Based in the conclusions of the HRA the compliance testing required to be carried out by waste producers prior to acceptance of material to the site is described in Table 3.

Table 3 - General fill waste acceptance testing suite and limits

Parameter	Parameters determined on the waste – total concentration using BS EN 12457	
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Total organic carbon (%w/w)	3%	-
Loss on ignition (%w/w)	10%	-
BTEX (mg/kg)	6	-
PCBs (7 congeners) (mg/kg)	1	-
Mineral oil C10-C40 (mg/kg)	500	-
PAHs (mg/kg)	100	-
pH	>6	-
	Limit values (mg/kg) for compliance leaching test using BS EN 12457 at L/S 10 l/kg	Equivalent leachability (mg/l)
As	0.5	0.05
Ba	20	2
Cd	0.04	0.004
Cr total	0.5	0.05
Cu	2	0.2
Hg	0.01	0.001
Mo	0.5	0.05
Ni	0.4	0.04
Pb	0.5	0.05
Sb	0.06	0.006
Se	0.0	0.01
Zn	4	0.4
Chloride	800	80
Fluoride	10	1
Sulphate	1000	100
Phenol index	1	0.1
Dissolved Organic Carbon	500	50
Total Dissolved Solids	4000	400

All waste types listed in Table 4 are included in NRW's *Prepare a management system for a deposit of waste for recovery activity* guidance as the types of waste a producer may not need to test. Consistent with the recovery guidance, where the waste is from a single waste stream (from only one source) and where there is no suspicion of contamination the waste will be accepted without testing. These materials will be recovered as general fill.

Table 4 - Waste types that may be accepted without testing

01 Waste resulting from exploration, mining, quarrying and physical and chemical treatment of minerals	
01 01	wastes from mineral excavation
01 01 02	Wastes from mineral non-metalliferous excavation
01 04	wastes from physical and chemical processing of non-metalliferous minerals
01 04 08	Waste gravel and crushed rocks other than those mentioned in 01 04 06
01 04 09	Waste sand and clays
17 Construction and demolition wastes	
17 01	concrete, bricks, tiles and ceramics
17 01 01	Concrete
17 01 02	Bricks
17 01 03	Tiles and ceramics
17 01 07	Mixtures of concrete, bricks, tiles and ceramics
17 05	soil stones and dredging spoil
17 05 04	Soil and stones other than those mentioned in 17 05 03 ¹
20 MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS	
20 02	separately collected fractions (except 15 01)
20 02 02	Soil and stones ¹

Notes:

¹ Soil and stones will not be accepted directly from contaminated sites. They will be sampled and a site-specific risk assessment will be carried out.

3.3 Level 2 – Compliance Testing

Level 2 compliance testing comprises testing periodically to determine whether the waste complies with the results of the basic characterisation testing and the site-specific conditions of the Permit. Additional samples will be collected by the waste producer and analysed for the same parameters as shown in Table 3.

If the waste received at the site is from a regularly generated source, then the results of compliance testing carried out by the waste producer will be reviewed periodically. The period of review will vary with the type of waste with a minimum period of:

- once per year for homogenous waste generally contains the same or similar components, or
- three times per year for heterogenous waste containing a wide range of different components or new waste sources.

3.4 Level 3 – On-site Verification

Verification testing will comprise a visual inspection of the incoming waste and verification of the accompanying documentation. The basic characterisation information will be available prior to the acceptance of the waste at the site.

All incoming waste loads to the site will be checked. On arrival of each load of waste at the Gelliargwellt Farm weighbridge, the Duty of Care (DoC) documentation will be reviewed by the site personnel to confirm that it conforms with the basic characterisation. Once it is determined that the waste is potentially suitable for acceptance at the site, a visual inspection where possible of the waste will be carried out at the weighbridge to confirm that the waste conforms with the description on the DoC documentation. If any waste does not conform with the description in the DoC documentation or if on the DoC documentation the waste described is unsuitable for acceptance for deposit at the site, the waste will be rejected.

The site personnel and plant operative will be trained to recognise the types of waste that may be accepted at the site and to identify the details which should be presented on the DoC documentation. A record will be kept of the date and time of waste deliveries, the quantities and the nature of waste deposited at the site, the name of the company, the name of the representative delivering each load of waste and the vehicle registration number. DoC documentation for the waste received will be kept on record for the statutory period which comprises 6 years.

Any waste which is identified at the weighbridge as unsuitable for deposit at the site will be rejected. The event will be recorded in the site diary.

In the unlikely event that waste items admixed with the waste are identified as unsuitable following deposit in the recovery area they will be isolated and removed processing at a suitably permitted waste management facility. The event will be recorded in the site diary.

Additional samples will be collected by Bryn Recycling and analysed for the same parameters as used in the Level 2 compliance testing suite at a minimum period of:

- once per year for homogenous waste generally contains the same or similar components,
- three times per year for heterogenous waste containing a wide range of different components or new waste sources,
- whenever there is a suspicion of contamination.

3.5 Physical Suitability of the Material

The material imported to site via this process shall be deemed physically suitable for the works if it comprises material that has a generally soils and stone structure and physically capable of supporting the weight of the plant used to place and compact it.

Much of the material required to create the landform will be sourced from small landscaping contractors and utility companies working within the local area together with suitable materials from the Materials Recycling Facility. We would expect that the materials generated from these sources would typically have acceptable physical properties to support the weight of the plant used on site.

The following definitions shall apply wherever reference is made to the defined material:

a) "Suitable fill material" shall comprise of all that material, which is deemed by the Operator to be suitable.

b) "Unsuitable material" shall mean material other than suitable material and shall include:

- i. Peat, material from swamps, marshes, and bogs
- ii. Logs, stumps, and perishable material
- iii. Material in a frozen condition
- iv. Material susceptible to spontaneous combustion
- v. Materials having a moisture content greater than 25%

Materials of Class v) above, if otherwise suitable, shall be classified as suitable when wetted or dried sufficiently as appropriate. It is most likely that any materials that does not meet the physical criteria would be because it is too wet and in the form of a sludge and would be rejected.

3.6 Placement Criteria and General Procedures – Fill Material

Materials shall be placed generally in a series of discrete (loose) horizontal layers not exceeding 500mm in thickness. After placement, the material should be repeatedly tracked-in using the available construction plant until there is no discernible compaction. Succeeding layers can then be placed and the tracking-in process repeated until works area at final level.

If material to be placed is in a condition (e.g. is too wet) such that it cannot be placed in compliance with the requirements, then one of the following courses of action shall be undertaken:

- The affected material shall be rejected from site, a Reject Waste Form will be completed, and the incident will be recorded in the Site Diary.

3.7 Site Location

An Environmental Risk Assessment (BRY-C03) has been produced and submitted as part of this permit application which shows the residual risk of the development to be low. This includes the risk of contamination of groundwater. The site is located outside any groundwater source protection zones.

There are two types of Bedrock Aquifer under the site. At the western portion of the site, it is designated as a Secondary A Aquifer. These are permeable layers of rock capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flows to rivers. They are generally aquifers formerly classified as minor aquifers. At the south-western portion of the site it has been determined that there is a Secondary Undifferentiated Aquifer, with this aquifer type it is not possible to apply either a secondary A or B definition because of the variable characteristics of the rock type. These of minor value. There is a productive superficial aquifer under the south-western portion of the site. The bedrock beneath site is classified as a Secondary A aquifer meaning it is capable of supporting water supplies at a local rather than strategic scale, in some cases forming an important source of base flows to rivers. Although at medium risk of groundwater vulnerability, the inert nature of the waste in addition to the stringent waste acceptance procedures means that the residual risk of soil and groundwater contamination is low.

3.8 Sustainability of the Proposed Development

The site is in location where the risk of flooding is low. There is also limited potential for groundwater flooding to occur on site. However, the proposed development will create surface water runoff from the extended MRF storage area and as the gradient of the slope increases.

To combat this, prior to the import of material under the Waste Recovery permit a new appropriately sized southern surface water attenuation lagoon will be constructed with appropriately placed temporary drainage channels directing surface water runoff from the works area directing waters to the lagoon. The location and number of these channels will vary as the works progress.

Where necessary the operator may:

- Install hay bales at points along the temporary drainage channels to slow the flow to the attenuation lagoon and allow any suspended solids to settle before entering the southern attenuation lagoon.
- Block the outflow from the southern attenuation lagoon to stop or restrict flow out of the lagoon system.
- Deal with the situation either in the works area, the drainage system or both to remediate whatever the source of any potential contamination or excess flow.
- Re-instate the flow once ready.

The new storage yard will be used to store clean soils only. All surface waters from the new storage yard extension will be directed to a new Class 1 interceptor via falls in the newly laid impermeable concrete surface before being collected in a new appropriately sized storage lagoon. Water from this lagoon will be discharged to the watercourse via the new southern attenuation lagoon.

The western and southern slopes of the storage yard extension will be planted to create a native broadleaf species woodland habitat. Following tree planting there will be no works associated with the MRF in this area. In the short term, drainage ditches will be installed to direct surface water runoff to the southern attenuation lagoon. Once the woodland is established the runoff of any rainfall from this area will be reduced by the natural uptake of the trees.

The use of inert waste in combination with the stringent waste acceptance procedures on site shall ensure that there is no harm caused to human health or the natural environment such as the soils beneath the recovered waste, surface water or ground water.

4.0 FINANCIAL ASSESSMENT

This development would be completed using non-waste materials even if inert wastes were not available for use due to the financial benefits to be gained by completing the works by Bryn Recycling. The proposed development is associated with the Materials Recycling Facility. Bryn Recycling are seeking to recover more from the waste coming onto site. There is not currently sufficient space to do this due to the requirements of the site's Fire Prevention Mitigation Plan. Therefore, more space is required and the proposed storage yard extension via the raising of land would provide this.

Due to the availability of waste materials and the cost of obtaining non-waste materials there is no financial benefit from using a non-waste material in the proposed development. Therefore, a financial feasibility assessment has been provided to demonstrate that the development would otherwise be financially feasible if it were to be completed using non-waste materials.

It is considered that the use of non-waste materials in this development would involve the use of virgin minerals that would be obtained from other sources, some of which would possibly not be local. The use of such materials does not offer any advantage to the development over the proposed use of inert waste. The substitution of non-waste for a waste material in the proposed development at the site supports Recital 8 of the Waste Framework Directive which states that – “... *the recovery of waste and the use of recovered materials should be encouraged in order to conserve natural resources*”.

The use of waste materials as opposed to non-waste meets the definition of a waste recovery operation as defined below in the European Court of Justice Abfall case:

“The essential characteristic of a waste recovery operation is that its principal objective is that the waste serves a useful purpose in replacing other materials which would have had to be used for that purpose, thereby conserving natural resources.”

The use of waste and non-waste in the proposed development have both been considered in this financial assessment section. It includes a comparison of the costs for the completing

the proposed development using inert waste materials and using non-waste. The income that could be generated from the completion of the development is also considered.

4.1 Cost of Using Waste in the Development

To comply with waste management regulations, there are costs associated with acquiring consent to use waste in the form of this Waste Recovery Plan and an application for an Environmental Permit. Following the issue of the appropriate environmental permit are annual subsistence fees. The permit will have a requirement for a technically competent person to oversee the development and ensure compliance with things such as the Waste Acceptance Procedure which also includes analysis of samples of the waste. On completion of the works associated with the proposed development there will also be a requirement to surrender the permit for which there is an associated cost. All of these costs are presented in the table below.

Table 5 - Cost of development associated with use of waste materials

Cost Using Waste	
Planning application fee	£13,500
Permit application fee	£2,583
Waste Recovery Plan assessment	£800
Production of Environmental Management System	£15,440
Waste materials testing	£4,000
Provision of technically competent manager	£4,000
Annual permit subsistence	£5,166
Permit surrender	£2,593
Cost of handling waste material	£672,000
Total cost	£720,082

The table above shows that the proposed development using waste would cost £720,082 taking into account the specific costs associated with using waste.

4.2 Cost of Using Non-Waste in the Development

If waste materials were not available for use, then the proposed development would be completed using non-waste materials. This would be in the form of inert general fill products that are not classed as waste materials. The cost of these materials is presented in Table 5 below. As presented in Section 2.2 above, 672,000 tonnes of material would be required for the completion of the proposed development.

Table 6 - Cost of development associated with use of non-waste materials

Cost Using Waste	
Planning application fee	£13,500
Purchase of non-waste	£11,424,000
Cost of handling non-waste material	£672,000
Total cost	£12,109,500

The table above shows that the cost of the proposed development using non-waste materials would be £12,109,500. This includes the cost of purchasing non-waste materials and the cost of handling the waste material on site.

It is considered that the proposed development will enable higher recovery rates from the material received at the MRF site which would enable Bryn Recycling to sell their recycled products at a higher market rate due to the increased quality. It is Bryn Recycling's intention to produce 20,000 tonnes per annum of topsoil by mixing recovered soil from the MRF with compost from their composting facility and dust from the neighbouring quarry in equal parts. This would therefore generate additional income which would help to protect the future of the business. There is a higher cost associated with the use of non-waste materials, but it is considered that the benefits of a more sustainable business are substantial enough to prove financial feasibility of the development.

4.3 Financial Feasibility

It is considered that the proposed development will result in a more sustainable and profitable business. The development would enable Bryn Recycling to increase recycling rates which will

increase the income generated through selling the topsoil that they would produce to the open market.

Projected annual income, costs and profits for the development over a 15-year period can be seen in the table below. Table 6 contains a row for the cost of the concrete required for the extension to the storage yard. This would be required regardless of whether waste or non-waste materials were used in the development. The table also includes the costs of purchasing quarry dust to create the topsoil in the future as well as the current costs associated with using the soil that is currently recovered to restore the quarry and the cost of transporting compost off-site. It should also be noted that whilst a loan has not been secured yet to cover the cost of the proposed development, Bryn Recycling intend on using a bank loan to fund 50% of the cost of the site build (c. £6,204,750). The values in the interest row are based on an interest rate of 6% which was indicated to Bryn Recycling in recent discussions with their bank manager. The remaining 50% of the cost of the proposed would be covered by a combination of cash flow and capital investment from the company. All income and costs, with the exception of the cost of the interest in the loan, have accounted for inflation at a rate of 4% year on year. This is an average based on current rates of inflation and expected rates of inflation over the period covered by the feasibility covered. The current market rate for topsoil is £60 per tonne. The cost of dust for topsoil is currently £10 per tonnes. It costs Bryn Recycling £17 per tonne to send the soil that is currently recovered at the MRF to the quarry for restoration whilst it also currently costs Bryn Recycling £2 per tonne to transport the compost from the site to its end destination.

Table 7 - Projected income, costs and profit from Years 1-15

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
Income															
Gate fee for topsoil (£60/t in yr 1)	£0	£0	£1,297,920	£1,349,837	£1,403,830	£1,459,983	£1,518,383	£1,579,118	£1,642,283	£1,707,974	£1,776,293	£1,847,345	£1,921,239	£1,998,088	£2,078,012
Total	£0	£0	£1,297,920	£1,349,837	£1,403,830	£1,459,983	£1,518,383	£1,579,118	£1,642,283	£1,707,974	£1,776,293	£1,847,345	£1,921,239	£1,998,088	£2,078,012
Costs															
Site build	£6,054,750	£6,054,750	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
Cost of concrete		£300,000													
Cost of dust for topsoil (£10/t)	£0	£0	£75,712	£78,740	£81,890	£85,166	£88,572	£92,115	£95,800	£99,632	£103,617	£107,762	£112,072	£116,555	£121,217
Cost of soil to quarry (£17/t)	£119,000	£123,760	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
Cost of compost transport off site (£8/t)	£56,000	£58,240	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0
Site maintenance	£5,000	£5,200	£5,408	£5,624	£5,849	£6,083	£6,327	£6,580	£6,843	£7,117	£7,401	£7,697	£8,005	£8,325	£8,658
Staff costs	£0	£0	£6,050	£6,292	£6,544	£6,805	£7,078	£7,361	£7,655	£7,961	£8,280	£8,611	£8,955	£9,314	£9,686
Equipment purchase/hire	£6,000	£6,240	£3,025	£3,146	£3,272	£3,403	£3,539	£3,680	£3,828	£3,981	£4,140	£4,306	£4,478	£4,657	£4,843
Legal and professional fees	£0	£0	£1,500	£1,560	£1,622	£1,687	£1,755	£1,825	£1,898	£1,974	£2,053	£2,135	£2,220	£2,309	£2,402
Fuel	£3,500	£3,640	£1,520	£1,581	£1,644	£1,710	£1,778	£1,849	£1,923	£2,000	£2,080	£2,163	£2,250	£2,340	£2,434
Total	£6,244,250	£6,551,830	£93,215	£96,944	£100,821	£104,854	£109,048	£113,410	£117,947	£122,665	£127,571	£132,674	£137,981	£143,500	£149,240
EBITDA	£6,244,250	£6,551,830	£1,204,705	£1,252,893	£1,303,009	£1,355,129	£1,409,334	£1,465,708	£1,524,336	£1,585,310	£1,648,722	£1,714,671	£1,783,258	£1,854,588	£1,928,772
Loan repayment	£413,650	£413,650	£413,650	£413,650	£413,650	£413,650	£413,650	£413,650	£413,650	£413,650	£413,650	£413,650	£413,650	£413,650	£413,650
Outstanding loan brought forward	£6,204,750	£5,791,100	£5,377,450	£4,963,800	£4,550,150	£4,136,500	£3,722,850	£3,309,200	£2,895,550	£2,481,900	£2,068,250	£1,654,600	£1,240,950	£827,300	£413,650
Interest on outstanding loan	£372,285	£347,466	£322,647	£297,828	£273,009	£248,190	£223,371	£198,552	£173,733	£148,914	£124,095	£99,276	£74,457	£49,638	£24,819
EBTDA	£6,616,535	£6,899,296	£882,058	£955,065	£1,030,000	£1,106,939	£1,185,963	£1,267,156	£1,350,603	£1,436,396	£1,524,627	£1,615,395	£1,708,801	£1,804,950	£1,903,953

In the table above, Years 1 and 2 are classed as the build years hence why there is no income for the sale of topsoil and the costs associated with sending the soil to the quarry and transporting compost off-site appear in these two years. Taking all costs into account, in Years 1 and 2, Bryn Recycling will make a loss. However, once the MRF soil storage extension area is fully operational in Year 3, the site will make an estimated profit and this will continue in all future years.

It is estimated that the EBITDA (Earnings Before Interest, Tax, Depreciation and Amortisation) will be approximately £1.2m in Year 3 and will remain at this level but for the effects of inflation in future years. When the interest payment on the bank loan is accounted for, the total EBDTA (Earnings Before Tax, Depreciation and Amortisation) over Years 3 to 15 is £17,771,905. This is greater than the total cost of the development using non-waste which stands at £12,409,500 (which includes the cost of concrete). In fact, the total cost of the development would be met by the end of year 12.

Given the total cost of the proposed development using non-waste and the 15-year returns period, it is considered financially feasible to proceed with the proposed development using non-waste materials. It is also considered that the proposed development will provide a substantial benefit to Bryn Recycling and would therefore be completed even if waste materials were not available.

5.0 SUITABILITY OF WASTE

The proposed waste recovered for use on the site would be limited to inert waste materials. The proposals would only use the waste streams specified in NRW guidance; these primary waste types are presented in Table 1 above. The European Waste Catalogue code is provided along with the description of the waste type and qualifying standard for inclusion.

Materials to be used within the development at the MRF at Gelliargwell Farm are wastes that will be brought to site directly by small local landscaping contractors or utility companies via the MRF to site either directly from local development sites or via a waste transfer station.

To ensure that only suitable waste materials are imported for use in the proposed works, the operator will apply strict waste acceptance procedures. These waste acceptance procedures will be carried out as part of the implementation of Environmental Management System (EMS) in accordance with the requirements of the Environmental Permit for these operations. Bryn Recycling shall undertake diligent pre-acceptance checks on all potential waste suppliers. Before agreeing to accept a delivery of waste, the following information about the characteristics of the waste shall be obtained and documented within the site office:

- The full address where the waste was produced;
- The identity of the producer;
- All the reasonably identifiable previous uses of the producer site, where the waste is excavation waste;
- The process giving rise to the waste;
- The physical appearance of the waste including colour and texture;
- Where a weighbridge isn't used a metric conversion factor for volume (cubic metres) to weight (tonnes) for each waste stream; and
- The quantity of waste to be received.

6.0 CONCLUSION

The requirements for the recovery of waste materials to be used in the completion of the proposed development are stated throughout. Given the need for the work in order to expand the MRF materials storage yard to enable higher recycling rates and generate additional revenue, the use of recovered materials and not non-waste equivalents demonstrates that there are clear recovery operations at the site. This document also clearly demonstrates that the development would be financially viable and would still go ahead using non-waste materials if waste materials were not available.

This document follows Natural Resources Wales's 'Prepare a waste recovery plan' guidance as set out below:

- Purpose of the work – evidence how the work will be carried out and why the work is needed.
- Quantity of waste used – provide evidence that the waste used will directly replace non-waste, evidence that you will only use the amount of waste required to carry out the function and provide evidence that other proposals have been considered (see Section 2 above).
- Evidence that the waste is suitable.
- Sustainability of the proposed development.
- Financial gain or other worthwhile benefit.