



Buttington Energy Recovery Facility

Design and Access Statement February 2021



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1. Introduction

This Design & Access Statement (“DAS”) has been prepared on behalf of Broad Energy (Wales) Ltd. (“the Applicant”) in support of an Energy Recovery Facility (“ERF”) up to 12.8 megawatts (“MWe”) and ancillary infrastructure (“the Development”) on land at Buttington Quarry which is located approximately 4.3km north-east of Welshpool, Powys.

The Development accords with the definition of a Generating Station as set out in Regulation 4(1) of the Developments of National Significance (Specified Criteria and Prescribed Secondary Consents) (Wales) Regulations 2016, which applies to facilities expected to have an installed generating capacity of between 10 and 50 MWe. The Development is therefore a Development of National Significance (“DNS”) and has been accepted as such by the Planning Inspectorate (“PINS”).

The Applicant is a special purpose company that has been established by Broad Group (UK) Limited (“The Broad Group”) to develop the ERF. Founded in 2013, The Broad Group provides environmental waste management services, renewable energy infrastructure development and alternative fuel supply chain services to the renewable energy sector.

Hitachi Zosen AG will design, build and operate the facility which will support the generation of renewable energy and heat through the use of non-recyclable waste. The ERF provides an innovative way to significantly reduce the amount of waste being sent to landfill.

The Welsh Government has set the target to become a zero-waste nation by 2050. The ERF represents a major step in helping Wales achieve this ambition.

This DAS has been prepared in accordance with current regulations, guidance and best practice:

- The Developments of National Significance (Procedure) (Wales) Order 2016 (as amended);
- Site & Context Analysis Guide: Capturing the Value of a site, Welsh Government, March 2016;
- Technical Advice Note 12: Design (TAN 12), Welsh Government, July 2016;
- Design and Access Statements in Wales, Welsh Government, April 2017;
- Future Wales The Nation Plan 2040, Welsh Government February 2021; and
- Planning Policy Wales (Edition 11), Welsh Government, February 2021.

The Development Site is located within the jurisdiction of Powys County Council (“PCC”) as the Local Planning Authority. Consideration has been given to the relevant policies set out in the Powys Local Development Plan 2011-2026.

The remainder of the DAS consists of the following Sections:

- Section 2 Summary of the Development;
- Section 3 The Brief and Vision;
- Section 4 Site and Context Analysis;
- Section 5 Interpretation;
- Section 6 Design Development;
- Section 7 The Development; and
- Section 8 Conclusion.

2. Summary of the Development

The Development Site is c.18 hectares (“ha”) in size and is located off the A458 Shrewsbury to Welshpool Road which provides access.

Figure 1 shows the Development Site location.

The Development is located on the site of the existing Buttington Quarry and a former industrial site that was linked to an adjacent brickworks. The brickwork buildings are now occupied and used for third party commercial uses such as storage and distribution. Currently, much of the Development Site consists of a quarry void, tracks and remnant quarry faces: typical features following extraction processes.

The Applicant is seeking full planning application for the construction and operation of the ERF which will use thermal treatment technology to generate up to 12.8MWe of renewable and low carbon energy in the form of electricity and heat. This will be achieved through the thermal treatment of up to a maximum of 167,000 tonnes per annum of residual waste. This would comprise non-hazardous Commercial and Industrial waste (“C&I waste”) and Municipal Solid Waste (“MSW”).

Based on the maximum electrical output and a projected c.7,900 operational hours per year, the Development could export circa 101,120MWe hours per annum to the National Grid. This equates enough electricity to supply 24,000 homes (based on 4.2MWh/year consumption, OFGEM 2020 medium consumption).

The ERF has been designed to be Combined Heat and Power Ready (“CHP-R”) which offers an opportunity to supply existing developments in the vicinity should suitable end users come forward.

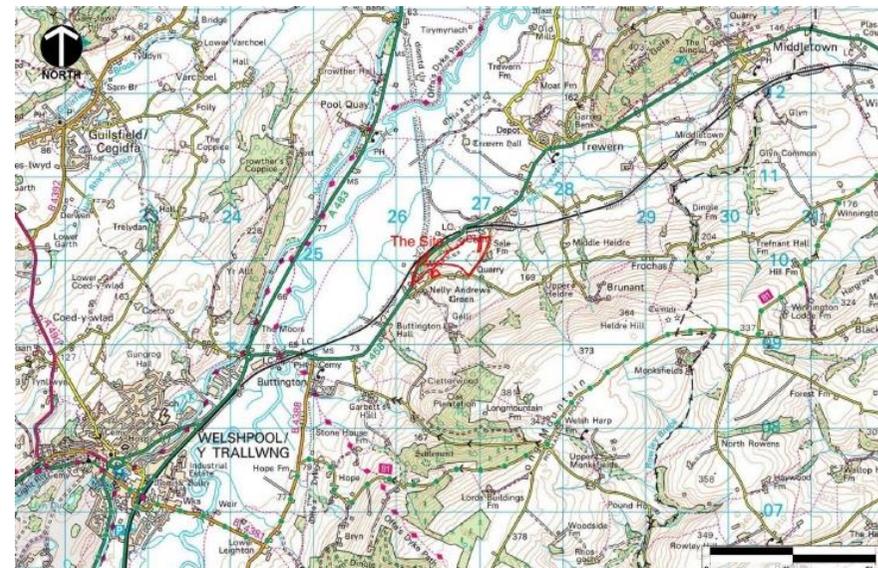


Figure 1 Site Location Plan

The Development comprises the following principal components:

- A waste reception hall and bunker;
- An ERF to recover the energy and heat from the residual waste; and
- Facilities to manage the products and outputs from the ERF.

Figure 2 shows the typical method involved from waste delivery and storage to energy transmission. The technical process is outlined in Section 7 of the DAS. A detailed description is provided in Chapter 4 of the Environmental Statement (“ES”).

Ancillary infrastructure includes a 70m high discharge stack, weighbridge and offices, associated buildings, security measures and parking. The Development incorporates a landscaping scheme, ecological enhancement works and a Sustainable Drainage Scheme (“SuDS”). Further details can be found in Section 7 of the DAS.

The construction phase will take c.36 months and consideration has been given to the design of compound areas on site. The ERF would have a design life of approximately 25-30 years. There is the potential for the equipment within the building to be upgraded/replaced as required in the future. Alternatively, the ERF could be decommissioned after this period and the Development Site used for other employment uses.

In summary, the Development will result in a number of key benefits:

- Provide a sustainable use for Buttington Quarry. Six hectares of which including the quarry void and the former brickworks site has been allocated for B1, B2 and B8 employment development under Policy E1 of the adopted Powys Local Development Plan 2011-2026;

- It will contribute to local and national targets to reduce the amount of waste sent to landfill and increase the production of green energy; and
- It will provide local employment opportunities. The Development will create 300 jobs during its construction phase and will employ 30 members of permanent staff once fully operational.



Figure 2 Diagram of the Process Flow Through an Energy Recovery Facility

3. The Brief and Vision

The design team consists of specialist consultants including architects, engineers and landscape professionals. Many offering expertise and experience with similar projects to the Development.

The design process has evolved over a number of years with pre application discussions held with PINS, PCC and the Design Commission for Wales. A pre-application consultation period took place in 2020.

The brief has been to design a custom-built ERF which is sympathetic to the existing landscape setting. It has been informed by the opportunities and constraints relevant to the Development Site and the surrounding area as well as consideration for impacts on the wider setting and the technical requirements involved.

The vision for the Development is to provide a sustainable use for a former quarry area by delivering a bespoke facility which will make a substantial contribution to waste management and the generation of low carbon energy. The long term objective is for the Development to act as a catalyst for the wider aspirations for the Development Site to create an eco-business park.

Figure 3 shows the planning boundary.



Figure 3 Planning Boundary

4. Site and Context Analysis

Introduction

The Development Site is c.18 hectares (“ha”) in size and is located off the A458 Shrewsbury to Welshpool Road which provides access. It is c.4.3km north-east of Welshpool.

The Development Site

The Development Site consists of three distinct areas (Areas 1 to 3) which are identified on Figure 4:

- **Area 1:** Occupying the northern part of the Development Site. Here, the quarry is c.450m long with a base width of 35m. It is orientated from the south-west to its head in the north-east. The north-western face has a consistent slope of c.40° with exposed rock and little vegetation. The south-eastern face is also exposed due to extraction;
- **Area 2:** The south-eastern part of the Development Site consists of an elevated landform (c.18-20m above the quarry bottom level). This Area fronts Sale Lane and is formed of disturbed scrubland and features an incomplete bund and boundary fence. Tracts of mature woodland are present on the southern Site boundary; and
- **Area 3:** The western part of the Development Site contains the site of the former brickworks. Several large buildings are now used for third party commercial uses. This Area is mainly tarmac with road access onto the A458.

Figure 5 includes photographs taken from Areas 1 to 3 of the Development Site.

The Development Site has access to the electricity network via cabling on site.



Figure 4 Areas 1 to 3



Figure 5 Site Photographs

Site Context and Surroundings

The Buttington Brickworks geological Site of Special Scientific Interest (“SSSI”) is located adjacent to the Development Site and will not be affected by the Development. (see Figure 6)

The Development Site is bordered to the north-west by an elevated area of land which features mixed broadleaved woodland adjacent to the A458. To the east is Sale Lane, whilst to the south it is bounded by small scale agricultural fields and farmsteads along Heldre Lane.

West of the Development Site beyond the A458 is the Welshpool-Shrewsbury railway line.

The Development Site is c.1.5km south of the village of Trewern and c.2.2km north-east of Buttington.

In summary, the wider area can be described as broadly agricultural with dispersed farmsteads and residential properties along with small villages. Industrial estates are located on the edge of settlement areas including at Buttington and Welshpool. The Development Site is located in a transitional area between the lower levels of the Severn Valley to the west and the higher uplands of Breidden Hill and Long Mountain to the east.

Access and Transport

The Development Site is well located to the strategic road network represented by the A458 which provides access for pedestrians and vehicles including Heavy Goods Vehicles (“HGVs”).

Existing access to the A458 is from the south-western end of the Development Site and an incline leads up the former brickworks site. A single width made road (147m) then continues up to the entrance of the quarry.

The A458 does not feature a dedicated footway close to the Development Site. Currently, the nearest bus stop is c.250m from the proposed access on the A458 close to the junction with Heldre Lane. The X75 bus service generally runs 1 per 2 hours weekdays. Welshpool railway station is the nearest railway station and is c.7.2km from the Development Site. The station can be accessed by the X75 bus service. (see ES Technical Appendix 8-1: Transport Assessment)

Planning Policy Background

Future Wales The National Plan 2040 is a spatial plan which sets out the direction for development in Wales to 2040.

Consideration has been given to matters relating to renewable energy, biodiversity enhancement measures and the future uses of the Development Site in the DAS. Policy 9 Resilient Ecological Networks and Green Infrastructure, Policy 17 Renewable and Low Carbon Energy and Associated Infrastructure and Policy 18 Renewable and Low Carbon Energy Developments of National Significance are of particular note.

At a national level, planning policy is contained in Planning Policy Wales (“PPW”) Edition 11, published in February 2021. In terms of design related policy, the following is of note:

- Chapter 2 People and Places: Achieving Well-being Through Placemaking states that a key planning principle is to achieve the right development in the right place. The Placemaking Wales Charter sets out six placemaking principles (people and community, location, movement, mix of uses, public realm and identity). Whilst *Planning Policy Wales* contains the principles and policies needed for Wales to recover from the Covid-19 pandemic in a positive manner and is supported by *Building*

Better Places (published by the Welsh Government in July 2020);

- Chapter 3 Strategic and Spatial Choices cites the five aspects of good design namely, access, character, community safety, environmental sustainability and movement;
- Chapter 5 Productive and Enterprising Places concerns the provision for well-connected employment and sustainable economic development; and
- Chapter 6 Distinctive and Natural Places sets out how landscapes, the historic environment and habitats can be beneficial for Wales.

The PPW is supplemented by Technical Advice Notes (“TAN”):

- TAN 5 Nature Conservation and Planning (September 2009) provides guidance on the protection and enhancement of biodiversity for proposals;
- TAN 12 Design (March 2016) emphasises the importance of promoting sustainability through good design and planning for sustainable buildings; and
- TAN 21 Waste (February 2014) concerns the location of new waste facilities.

At a local level, PCC adopted the Powys Local Development Plan 2011-2026 in April 2018. With regards to design, the following policies are relevant:

- Strategic Policy SP7 Safeguarding of Strategic Resources and Assets;
- Policy DM2 The Natural Environment;
- Policy DM4 Landscape;
- Policy DM6 Flood Prevention Measures and Land Drainage;
- Policy DM7 Dark Skies and External Lighting;

- Policy DM13 Design and Resources;
- Policy E1 Employment Proposals on Allocated Employment Sites;
- Policy M5 Restoration and Aftercare;
- Policy RE1 Renewable Energy;
- Policy T1 Travel, Traffic and Transport Infrastructure;
- Policy W1 Location of Waste Development; and
- Policy W2 Waste Management Proposals.

It is supported by adopted Supplementary Planning Guidance (“SPG”), Renewable Energy SPG (April 2019), Landscape SPG (April 2019) and Biodiversity and Geodiversity SPG (October 2018) are relevant in this instance.

Planning policy applied to the design of the Development is addressed in Section 7 of the DAS.

Site Analysis

Site analysis has been undertaken as part of the design process.

Figure 6 identifies aspects of the Development Site including the alignment of the quarry, adjacent natural rock face and location of the former brickworks. Areas of elevated disturbed ground occupy the southern part of the Development Site.

Outwith the Development Site, of note is the elevated topography and woodland block which separates it from the A458. The area of the high ridge which encompasses parts of the Development Site is denoted. The Buttington Brickworks geological SSSI is identified and as stated, will not be affected by the Development.

The key opportunities and constraints determined following Site analysis are summarised in Table 1.



Figure 6 Site Analysis Plan

Opportunities	Constraints
Culture & Community	
<ul style="list-style-type: none"> • Site area dominated by change due to quarrying and industrial activities. • Notable area of higher ground and mixed woodland immediately north-west of the Development Site. • Established planning history of the Development Site involving quarrying and industrial land use. • The Development Site is allocated in the Powys Local Development Plan 2011-2026 for employment development suitable for waste uses. • Potential for the Development to link to waste reduction and green energy targets at a national level. • Screen bund commenced adjacent to Sale Lane. • The Development offers local employment opportunities. • Potential for the Development Site to become an eco-business park. 	<ul style="list-style-type: none"> • Settlement pattern of small villages, dispersed farmsteads and residential properties. Relative proximity to the residential areas of Trewern and outlying area of Cefn. • The Development Site is located in a ‘quiet and ‘dark’ landscape setting. • Proximity to Sale Lane and Heldre Lane. Limited number of farmsteads and residential properties along routes. • Location of the Development Site within a transitional zone. Landform to the west (Severn Valley floodplain) and hill formations to the east. • Heritage and recreation activities in the broader area (e.g. Powis Castle). • Adjacent Buttington Brickworks geological SSSI.
Landscape	
<ul style="list-style-type: none"> • Earthworks already undertaken as part of quarrying. • Site topography including quarry void in the northern part of the Development Site. • The Development Site is viewed within a broader rural setting. • Chance to incorporate SuDS measures into mitigation scheme. • Potential to enhance the biodiversity value of the Development Site. Opportunity to consider the wider quarry area for landscape proposals. • The landform of the existing quarry offers an opportunity for the screening of built form from sensitive viewpoint locations. 	<ul style="list-style-type: none"> • Clearer views towards the Development Site from sections of minor roads to east and south of the Development Site with close range (i.e. Sale Lane and Heldre Lane). • Areas of mature woodland in the southern part of the Development Site.
Movement & Infrastructure	
<ul style="list-style-type: none"> • Site conveniently located on a crossing of two major trunk roads. • Site has access to the electricity network via existing cabling. 	<ul style="list-style-type: none"> • The Development Site is accessed by an existing sub-standard single junction off the A458. • Absence of footpath along the A458 from the closest bus stop (Heldre Turn).

Table 1 Site Analysis: Key Opportunities and Constraints

Opportunities	Constraints
Built Form	
<ul style="list-style-type: none"> Existing commercial development to the south on Heldre Lane (including former brickwork buildings) and in Buttington. Layout of built form could offer mitigation opportunities (e.g. screen bunds) elsewhere within the Development Site. The proposed ERF will utilise the latest technology which allows a compact facility to be designed. Landscape setting is broadly rural with agricultural land and notable hills (e.g. Long Mountain and Breidden Hill). 	<ul style="list-style-type: none"> The Development Site is located on a wider high ridge with potential views from settlement areas to the north and east. Resulting in possible skyline views for proposed built form.

Table 1 Site Analysis: Key Opportunities and Constraints (cont)

5. Interpretation

During the early stages of the design process, the design team reviewed the key opportunities and constraints relevant to the Development Site and its surrounding environs set out together with the proposed built form involved with an ERF.

The design team identified a number of **key factors** that would influence the layout of the proposals:

- Use the existing topography of the Development Site following quarrying which has resulted in a quarry void (see Figure 7);
- The size of the Development Site and layout/amount of built form which would be required in comparison;
- Current access to the Development Site and proposals to improve access to the A458;
- Layout of ancillary infrastructure required for HGV operations and staff parking etc. Circulation within the Development Site;
- Proximity of nearby sensitive receptors such as individual residential properties, farmsteads and villages including Trewern and outlying areas;
- The Development Site in terms of its immediate environs and wider setting which is broadly rural;
- The technical requirements of the ERF;
- The arrangement of individual buildings being proposed and scale, form and mass of the ERF as a whole;
- The orientation of proposed built form;
- Security and safety requirements of the Development; and
- Need to minimise environmental impacts including noise, air and visual matters.

Following this initial stage, the design team have been guided by the following **principles**:

- Use specific aspects of the Development Site resulting from the quarry process, for instance, the quarry void and immediate landscape setting to reduce wider visual effects during different phases of construction, operation and decommissioning;
- Landscape proposals should be an integral part of the Development and offer an opportunity to incorporate the broader quarry area; thereby, adopting a holistic approach for restoration;
- Consideration of the Development Site location when deciding on the overall design, layout, shape and form of the ERF with regards to a backdrop of landform or sky (with uncluttered skylines). Awareness of the context of the Development Site in terms of agricultural land, hills and villages in the county and neighbouring areas. Expansive views from low level (Severn Valley) and higher elevation (hill ranges); and
- Flexible future use of the Development Site following decommissioning of the ERF which may involve upgrading the ERF itself or an alternative employment use if not required.

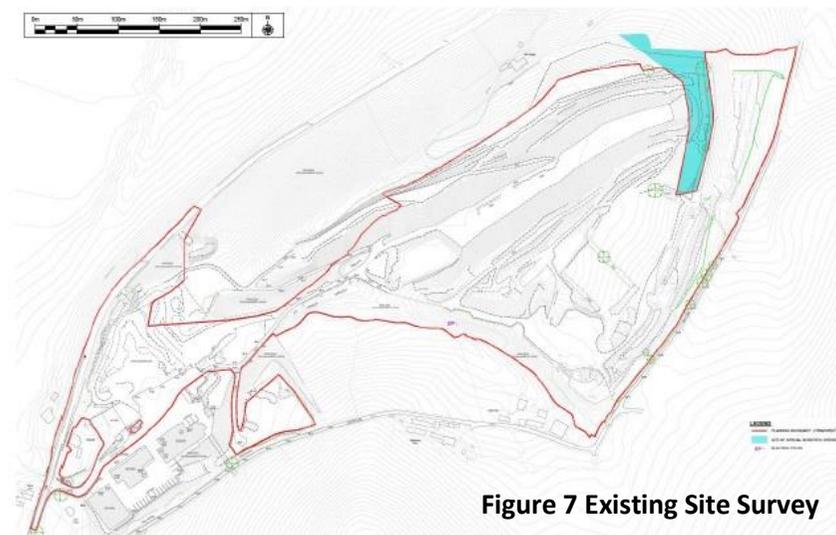


Figure 7 Existing Site Survey

6. Design Development

A number of design options have been considered and consulted upon with PCC dating back to 2015 with plans for a gasification plant on the Development Site. Details are included in Chapter 3 of the ES.

This DAS focuses on the design development since 2017.

Pre-Application Process with PCC

In February 2017, a Request for a Scoping Opinion was submitted by SLR Consulting Ltd. on behalf of the Applicant to PCC.

The proposal involved the thermal treatment of up to 100,000 tonnes per annum of residual wastes to generate c.9MW of low carbon and renewable energy. At the time, the exact technology had not been selected and the proposal did not fall within the definition of a Generating Station. A Conceptual Future Masterplan for Buttington Quarry was submitted to PCC (see Figure 8).

PCC issued a Scoping Opinion in April 2017.

Pre-Application Process with PINS

In August 2018, a Request for Scoping Direction was submitted by ECL on behalf of the Applicant to PINS. The proposals for the ERF would generate c.13MW of low carbon and renewable energy. This involved the thermal treatment of up to 150,000 tonnes per annum of residual commercial and industrial wastes at the Development Site.

Architectural Drawings were prepared by Race Cottam Associates. Figure 9 shows the elevations of the ERF and the cladding colour scheme considered at the time (Drawing No.0210 Rev P7, Date 07.06.18).

PINS issued a DNS: EIA Scoping Direction in October 2018.

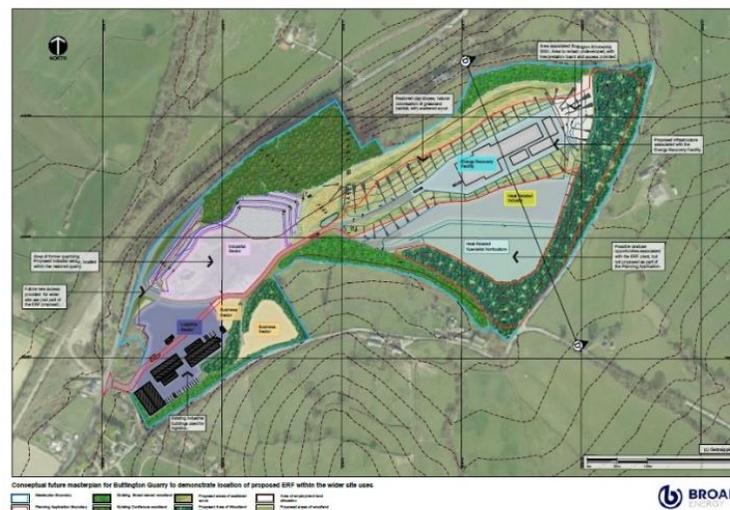


Figure 8 Conceptual Future Masterplan for Buttington Quarry

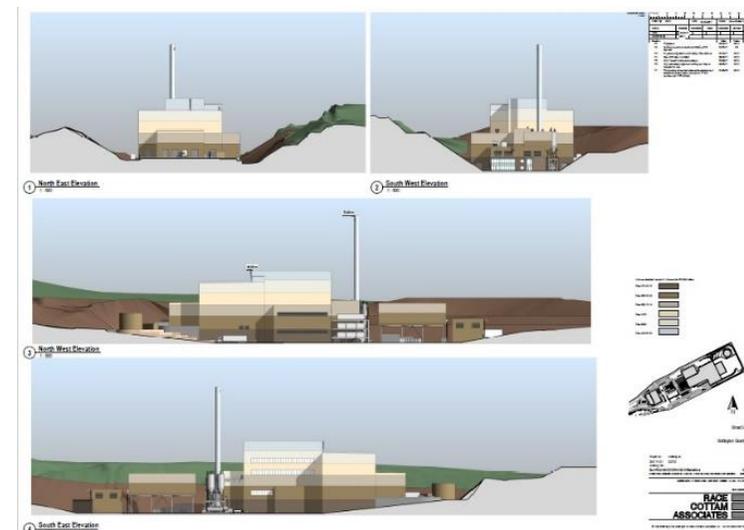


Figure 9 Elevations and Colour Scheme 2018

Summary of the Design Process 2019-2020

This section of the DAS outlines what has taken place 2019-2020.

The design process continued in 2019. This involved consideration of the following:

- A recognition that the ERF needs a substantially sized building, particularly the boiler house, yet a desire to keep the building as compact as possible;
- To minimise the built form by not including any non-functional wraps or additional cladding;
- Designing a building that fits well in the landscape context; and
- Not impacting on the Buttington SSSI.

Environmental performance testing/modelling and testing

The suitability of the height of the stack for environmental performance has been rigorously tested and informed by detailed air dispersion modelling (see Chapter 6 of the ES).

The technology provider (HZI) have reviewed the functionality of the building and have also future proofed the design in order to be able to meet any future environmental requirements.

The design of the quarry sides, i.e. 34° slope vs 60° slope has also been considered in detail. A 34° slope would involve substantially less earthworks, however, would also sterilise valuable employment land and minimise the opportunity for heat users to co-locate.

Broad has also consulted with the Design Commission for Wales (“DCW”) on the layout and detailed design of the ERF and its context.

Modelling has been undertaken by B&A to identify areas of potential visibility for the upper part of the main ERF building and stack. Preliminary

discussions were held with Design Commission for Wales as part of their Design Review Service in July 2020 and for which, comments regarding the design concept and building appearance have been received. As part of the presentation to the DCW, plans showing the Zone of Theoretical Visibility (“ZTV”) demonstrating the area of potential visibility based on the upper elevations of the main ERF building and stack were submitted. Further to these discussions refinements to the design were made which included changes to the office accommodation.

Figure 10 illustrates the massing option studies undertaken by the architects, Race Cottam Associates. The physical shape of the quarry is the limiting factor in the siting of the facility. The ERF is orientated along a north-east to south-west axis with higher elements at the north-eastern end of the quarry using its elevated topography to provide the maximum screening effects. An adjustment was made to move the plant to the south-west to protect the integrity and setting of the adjacent SSSI.



Figure 10 Massing Option Studies

The architects have assessed different options for the cladding colour scheme to be used for the Development.

Two Options were assessed in detail:

- **Option 1:** The building treatment could respond to the natural materials and textures of the quarry with a secondary transparent mesh (rock face retention) to add shadow, layers and colour variations to the proposed built form; and
- **Option 2:** The building treatment could be designed to blend into its landscape setting by using the varied colour palette present in the foreground and in a wider context.

Figures 11 and 12 illustrate the concept elevational treatment for Options 1 and 2 respectively.

The studies undertaken by the architects considered the technology involved and the minimum dimensions required by plant and equipment.

Table 2 provides a comparison of the Options 1 and 2 cladding colours.



Figure 12 Concept Elevational Treatment Option 2

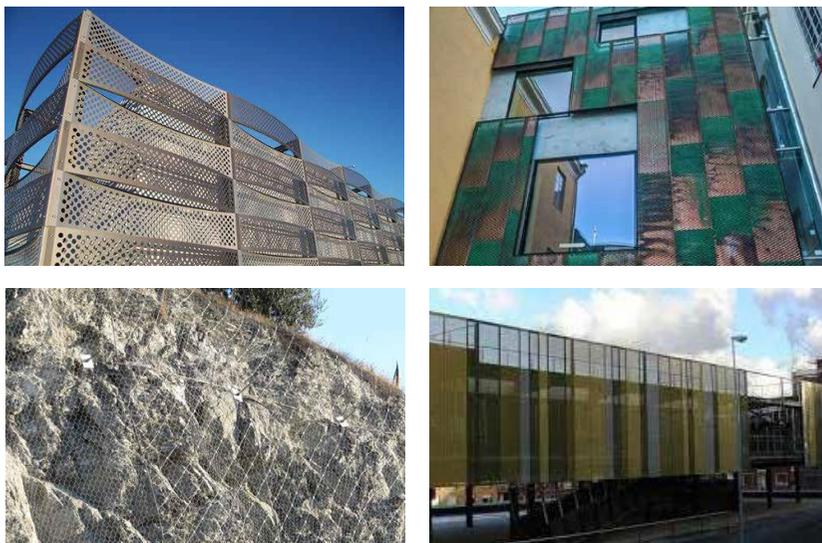


Figure 11 Concept Elevational Treatment Option 1

Aspect Considered	Option 1	Option 2
Overall Design Strategy		
Approach	<ul style="list-style-type: none"> The building treatment could respond to the natural materials and textures of the quarry with a secondary transparent mesh (rock face retention) to add shadow, layers and colour variations to the proposed built form. 	<ul style="list-style-type: none"> The building treatment could be designed to blend into its landscape setting by using the varied colour palette present in the foreground and in a wider context.
Concept Elevational Treatment		
Positive	<ul style="list-style-type: none"> Could blur the line of where blocks start and stop. Depth could be played with, different transparencies of mesh could add interest. Responds to the main ERF building's immediate context of the steep quarry faces. 	<ul style="list-style-type: none"> The cladding panel size and orientation could respond to the terracing of the landscape alongside the immediate geology strata. Use of natural materials that can weather to provide a variegated effect or a palette of earth toned cladding to blend in from installation. Darker shades could be used on the north facing elevations with lighter tones used on the southern sun facing elevations. A matt finish to cladding panels would be proposed.
Negative	<ul style="list-style-type: none"> Potential roosting opportunities for birds and consequently their droppings defacing buildings. A secondary skin would add volume to the building, mesh would respond to immediate foreground context but from distant views it could look like a fence or car park. 	

Table 2 Comparison of Options 1 and 2 Cladding Colours

Aspect Considered	Option 1	Option 2
Cladding Options		
Type	<ul style="list-style-type: none"> Fibre Cement Board - Equitone Natura. Panel size is 3100 x 1250mm, so would suggest there is no colour change in 3 panels horizontally resulting in a very linear colour panel size of 9300mm x 1250mm. Joins are generally 10mm. 	<ul style="list-style-type: none"> Metal sheet cladding with matt finish in RAL. Propose larger sheet size of 7.2 x 1200mm panels.
Positive	<ul style="list-style-type: none"> Natural selection of colours. Variations in texture and colour within same colour choice. Mottled texture mimics wooded landscape. 	<ul style="list-style-type: none"> More colour choices, particularly in the greens. Can match louvre colours to cladding panels.
Negative	<ul style="list-style-type: none"> Small panel size will require a considerable secondary frame. Expensive solution over metal cladding but a metal clad plinth could offset some of the cost. Limited colour range in the greens. Careful consideration of louvre colour to match cladding panel and will require a more random pattern of louvres to lose ribbon effect. 	<ul style="list-style-type: none"> Brighter stronger appearance would be created rather than a more blended appearance. No natural variation in texture and colour within panel. Limited colour ranges in matt. Less subtle. 9600mm plinth in profiled metal cladding - sheet size 1000mm high - sinusoidal shallow profile - earth tones/palette to tie in with quarry face colours.

Table 2 Comparison of Options 1 and 2 Cladding Colours (cont)

In summary, Option 2 provides the following benefits:

- A simple range of materials has been utilised that are robust and appropriate for the ERF;
- The selected cladding colours are sympathetic to the existing landscape setting and the colour palette has been drawn from the local and surrounding landscape which is primarily rural. This represents a positive design solution given that it uses prevailing natural shades of green and light brown hues;
- Using data from landscape studies undertaken as part of the LVIA process by B&A, each elevation has been designed to minimise the visual impacts of proposed built form. Using a combination of colours from the selected palette, the arrangement of building panels has been 'tuned' to suit the landscape setting and backdrop; and
- All the major elements of the Development have been considered. The materials selected for the building fabric have been chosen to suit the function of the building or the internal environment of particular buildings.

The schedule of materials and finishes comprise the following:

- Profiled Metal Wall Cladding;
- Profiled Metal Roof Cladding;
- Metal Framed Curtain Walling;
- Fair faced Concrete;
- Metal Louvres & Doors Galvanized;
- Steel tanks; and
- Coloured Metal Cladding to the Stack.

It was determined that overall, Option 2 would offer the best choice both in terms of materials and cladding colour. This strategy

complements the aim to design a discreet building that blends into its landscape, as opposed to a stark 'iconic' building form which contrasts with its surroundings. It also lends itself to a simple approach of horizontally and fractured blocks. Whilst the arrangement of panels responds to the setting of the visible elements of buildings in the landscape setting. This Option was also found suitable when taking into account seasonal changes in the landscape:

- The final cladding colour and proposed built form is considered in the Landscape and Visual Impact Assessment undertaken by B&A. Consideration is given to winter views from specific Viewpoint Locations. (see ES Technical Appendix 9-1); and
- Figures 13 and 14 include photomontage images from the LVIA and illustrate summer and winter views respectively. Note: photographs used in the DAS are taken from different locations.



Figure 13 Summer View

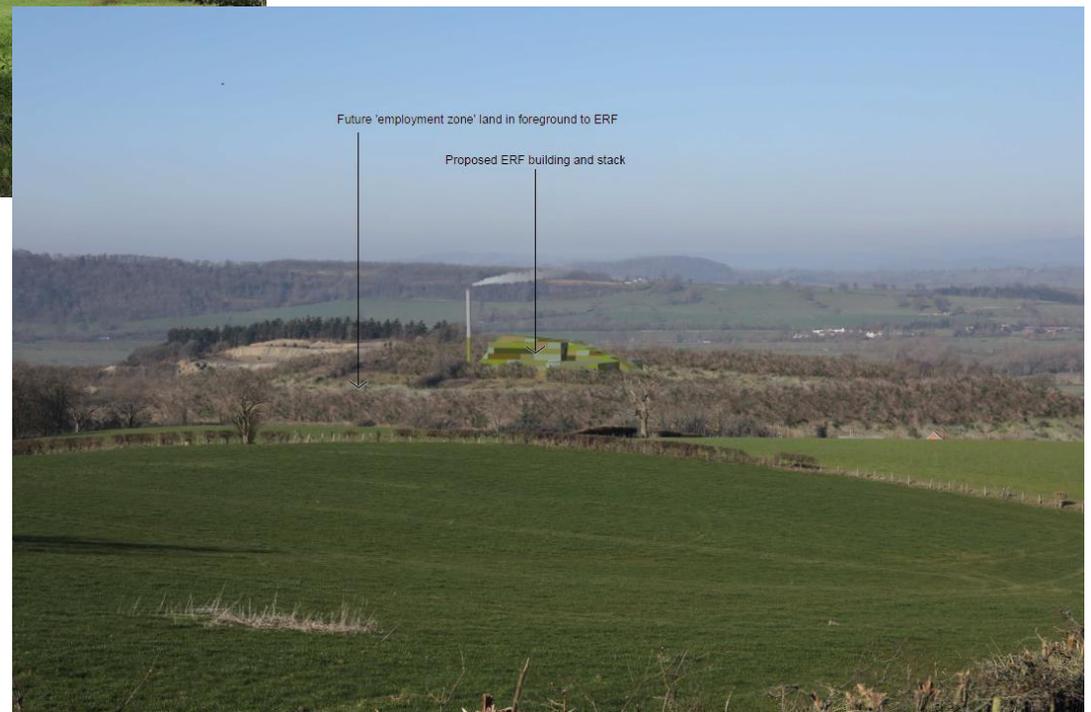


Figure 14 Winter View

Pre Application Consultation Process

A pre application consultation process was held from 14 September to 16 October 2020. Due to coronavirus restrictions, no open public exhibitions could be held at the time.

Consultation activity consisted of the following:

- Drop-in sessions with the project team, Thursday 15 October 2020 at Welshpool Livestock Market between 9:00 - 19:00 by appointment only with social distancing measures in place. Drop-in sessions were publicised in the Project Consultation Booklet and on the project website. Emails were sent directly to interested parties. Website notification on My Welshpool and press release submitted to the County Times. Statutory notices were placed near the Development Site;
- Project Consultation Booklet: Setting out the Development and consultation process. Made available online and posted to 3,500 addresses within a c.4.8km (3 mile) radius of the Development Site with pre-paid envelopes for questionnaires and comments to be returned;
- Project website:www.broadenergywales.co.uk/en/buttington-erf (live from 14 September 2020) with a Consultation Questionnaire providing online feedback;
- Freephone number (0800 130 3353), email address: info@broadenergywales.co.uk and FREEPOST address: c/o Newgate Communications; and
- Webinars: Held on Thursday 17 September 2020 and Saturday 10 October 2020.

Written information was provided in English and made available in Welsh on request.

Feedback was collated by the Applicant and appointed agents. Following which it was included in the Pre-Application Consultation Report submitted as part of the DNS application process.

Given the challenges presented by the COVID-19 pandemic and the social distancing measures in place, extra steps were taken to ensure the community was informed of the project and could comment. Whilst some concerns were raised amongst the community about why we were consulting at this time, the significant steps taken to engage and additional consultation events helped address these understandable points.

The majority of the environmental issues raised by local residents and other consultees included emissions, traffic and visual impacts resulting from the ERF.

No comments were raised which resulted in any design modifications to the Development.

7. The Development

Overview

The Development comprises of an ERF which will use thermal treatment technology to generate up to 12.8MWe of renewable and low carbon energy in the form of electricity and heat. This will be achieved through the thermal treatment of up to a maximum of 167,000 tonnes per annum of residual waste. The residual waste to be processed would comprise non-hazardous C&I waste and MSW.

The Development Site is c.18ha in size while the proposed built form associated with ERF covers an area of c.8ha. The Development Site layout is shown on Figure 16.

The Development comprises the following principal components:

- A waste reception hall and bunker;
- An ERF to recover the energy and heat from the residual waste; and
- Facilities to manage the products and outputs from the ERF.

Ancillary infrastructure includes a discharge stack, weighbridge and offices, associated buildings, security measures and parking.

The heights of the key components of the Development are:

- Boiler hall (46m high);
- Waste reception hall (23m high); and
- Stack (70m high).

The Development incorporates a landscaping scheme, ecological enhancement works and SuDS. To facilitate the Development will involve the re-forming the quarry faces (including gabion walls) and quarry floor to

create the building platform. The Development will also involve a new access road off the A458. Figure 17 Landscape Proposals illustrates mitigation measures such as screen bunds and proposed native broadleaved woodland planting. It also demonstrates the proposed internal access route to the ERF and an alternative option.

The selected colour scheme and materials, together with the arrangement and massing of built form is designed to be appropriate to the current landscape setting. Elevations showing the colour cladding together with the form and massing of the ERF are illustrated by Figure 15.

The five objectives of good design set out in PPW (Edition 11) and TAN 12 Design (March 2016) namely character, access, movement, environmental sustainability and community safety are considered later in this Section.

Figure 2 of the DAS shows a typical process from waste delivery and storage to energy transmission. Further details are provided in Chapter 4 of the ES. The main process stages in the proposed installation will involve:

- Waste reception, storage, crane and feed system;
- Thermal combustion of the waste to produce steam for the production of electricity; and
- Management of process products and outputs.

The process of generating energy from the waste feedstock within the ERF is described below:

- Waste is taken to the ERF;
- Waste is transferred to the ERF tipping hall and transferred to the boiler hall;
- Waste is combusted to produce heat;
- Heat is used to boil water to create steam;

- The steam is then used to generate electricity through the movement of turbines, which takes place in the turbine hall. The electricity is distributed to the national grid;
- State of the art air pollution control equipment cools and cleans the gases, and a baghouse controls the emissions. This takes place in the air cooling condenser and flue gas treatment building and released via the stack. Emissions are continuously monitored;
- Particulate matter is collected and metals are recovered for recycling; and
- Residual material is beneficially reused. Material which cannot be reused is disposed of to landfill.

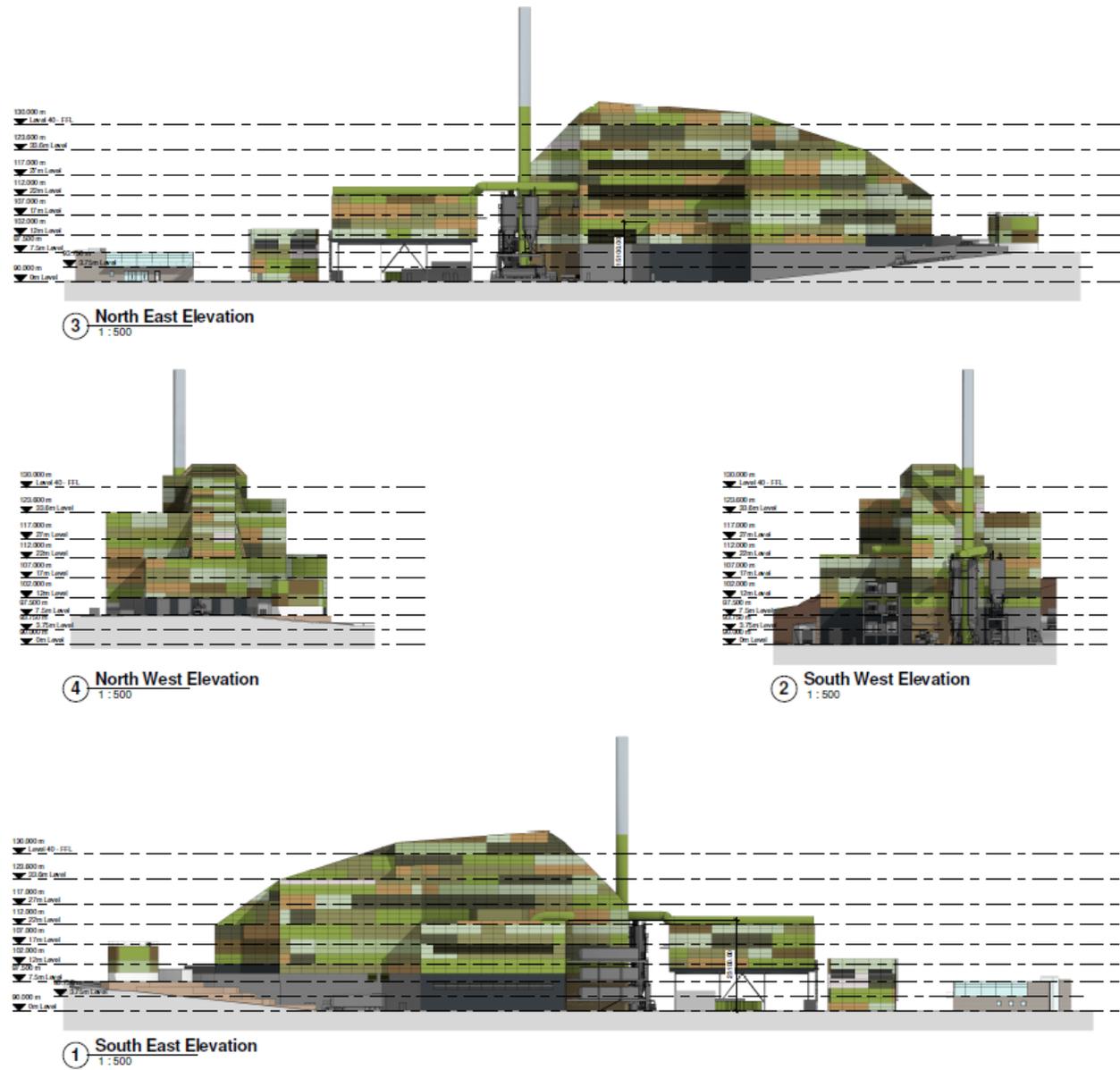


Figure 15 Massing and Elevations

Character

Placemaking

The aim has been to design a discreet building for the ERF which is sympathetic to the existing landscape setting rather than a stark 'iconic' building form which contrasts with its surroundings. Consideration has been given to the shape and massing of the proposed buildings and the tonal qualities of the landscape as outlined in Section 6 of the DAS. The landscape strategy is designed to enhance the existing biodiversity on site. (see Figure 17)

Amount and Density

The main ERF building will house the majority of the technical processes involved. The size of the Development Site itself when compared to the wider Site area has allowed the integration of extensive landscape proposals to be incorporated into the design as part of mitigation measures. (see Figure 17)

Spaces and Public Realm

Hard landscaping will be used for the proposed access road, hardstanding areas for the equipment/components and for parking areas. Soft landscaping will be incorporated around the perimeter of the Development Site with new land modelling, grassed areas and structural vegetation. (see Figure 17)

Scale

The Development is centred around a main building that consists of the tipping hall, bunker, boiler and flue gas treatment facility. These functions are required to be linear and with the final connection to the stack of critical importance.

The mass of the main building has been designed to be an efficient use of space and reflects the minimum space requirements of process equipment to be housed. The boiler hall forms the highest element, and this is reflected as the tallest part of the building. Other zones have a reduced internal height requirement and so have been designed to sit below in a stepped fashion with a sloping transition piece softening the profile.

The ERF will have a total length of 90.3m, with a further 64.4m to account for the air-cooled condensers. The width ranges from a maximum of 56.65m to 21.7m at the narrowest part of the main building at the upper levels. The height of the main building will also vary reflecting the operational heights required for the various elements of process equipment housed therein. The highest part of the main building will house the boiler hall which will measure c.46m above ground level down to c.33m for the roof of the tipping hall.

In summary, the design takes account of the following:

- The scale and massing of the main building allows associated functional elements such as the turbine house and ash residue building can be treated as subservient structures with a simple form so they do not detract. All are considerably lower in height and screened by the main building and by the topography of the quarry from external viewpoints;
- The technology to be used for the air cooled condensers (ACCs) has enabled the size of this structure to be reduced to a minimum. However, due to the topography of the quarry, the ideal site for the ACC is on top of the turbine hall. Acoustic modelling has shown to reduce noise levels, the ACCs would be better located on the quarry floor;
- The approach of locating ancillary accommodation close to the main building elevations has allowed the 'developed footprint'

to be efficient and compact. When viewed from the key viewpoints this will minimise any ‘clutter’ surrounding the main building;

- The stack height and location has been determined through the detailed air dispersion modelling for both the DNS and the Environmental Permit Application; and
- The stack will have a slender single flue profile and the insulated flue will be clad in coloured cladding to reflect the overall design of the buildings. The proposed stack is bicolour to mitigate skyline views where available.

Layout

The proposed built form is arranged in a cluster and set on a north-east to south-west alignment and is described in more detail later in this Section.

The layout of the ERF has taken into account the spatial relationship of built form to the vehicle entrance point, service areas and car parking etc.

Figure 16 illustrates the layout and features:

- Single access from the south-west due to the new proposed access from the A458;
- Clockwise single direction of travel to allow the safe movement of all vehicles with minimal cross traffic which allows staff and visitors to be segregated away from all HGV manoeuvres at the earliest opportunity;
- A separate exit for the car park allows staff and visitors to join the circulation road just prior to the exit from the Development Site;
- The clockwise circulation of the delivery vehicles permits a safe reversing manoeuvre in the tipping hall; and

- The same access to the Development Site is also available for emergency vehicles.

Access and highway improvements will be made to the A458 to facilitate access to the Development c.170m to the north of the existing access currently serving Buttington Quarry. During the construction phase, the existing quarry access would be used until the new site access is constructed. The new access proposal includes a dedicated right turn ghost island facility and increased junction visibility (see ES Technical Appendix 8-1). The existing access would then be closed off, allowing access to the property known as Brookside only.

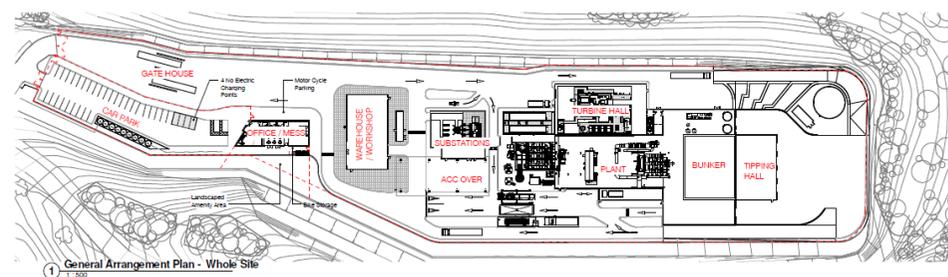


Figure 16 Proposed ERF Layout

Detail Design

Section 6 of the DAS outlines the design process involved in the choice of cladding colours along with the shape and massing of proposed built form. In summary, this will feature:

- The building design incorporates cladding which uses subtle hues of green, brown and cream to imitate the natural colours experienced in the landscape setting which is mainly a rural with woodland and agricultural land uses;
- The palette of colours has been drawn from the local and surrounding landscape: Earth (quarry faces - pinks, browns and oranges), Greens/yellow tones (trees, fields, dark greens of boundary walls and hedges) Purple (Haze of distant moorland and Sky (Blues/greys));
- The proposed stack is bicolour to mitigate skyline views where available;
- Buildings are designed to be simplistic in shape and form. An integral element is a sloping central roof feature that links the various smaller building components. Visually, this breaks up the large massing and scale of the overall building;
- Detailed design will mitigate against a dominant built form which is situated in an otherwise irregular landscape comprising the lower levels of the Severn Valley and the higher uplands of hills (e.g. Breidden Hill and Long Mountain);
- The proposed cladding colour scheme is designed to merge and not contrast with the landscape. In addition, it intended to be regressive into views and not form a focus;
- The built form reflects the infrastructure technology required for the ERF facility. Each element has been designed to the minimum size needed to reduce the mass. Only where required

to integrate the structure into the landscape has the functional form of the buildings been altered;

- Materials have been selected based on their thermal and acoustic performance and robustness.

The main building and other components of the ERF have been designed in accordance with the principles of similar modern facilities.

Other components of the facility adjoin and/or are adjacent to the principal building including the control and administration room, turbine hall, residue building and fuel tanks. The air cool condenser, stack and silos are also adjacent to the main building. Design considerations taken into account in terms of individual buildings are summarised in Table 3.

Component	Summary of Design
Tipping Hall	The tipping hall is where the waste is first taken to and is designed to allow for the HGVs to back-in toward the waste bunker. The tipping hall shall be totally enclosed except for the roll-up doors, 4no on the north east elevation. The design shall be provided to prevent release of dust and odours. Odours will be controlled by continuously drawing air from the waste bunker for the combustion units i.e. the negative air pressure will suck any odours into the building rather than let them out. The tipping floor material will be concrete, suitable for HGV, and the floor will be sloped to the bunker to contain any spillage.
Boiler Hall	The boiler hall is where the waste feedstock combusts in a furnace, releasing heat. There will be a single stream transferring waste into the boiler. The hot gases which are generated pass through the boiler, which contains steam and water. As the combustion gases from the furnace pass through the boiler, they are cooled to a temperature suitable for the flue gas cleaning system. Fuel oil is required to start and shutdown the plant but once operating temperatures are reached, waste can be burned without the need for auxiliary fuel.
Turbine Hall	The steam generated by the boilers passes a single condensing steam turbine generator. The steam expands through the turbine, so releasing its energy, which is converted into electricity by the generator.
Air Cooled Condenser	The steam is exhausted at low pressure from the turbine into an air-cooled condenser which condenses the steam back into water. The water is then pumped back into the boiler to produce more steam. The air-cooled condenser has fans which draw air across the condenser tubes to assist cooling.
Flue Gas Treatment Building	The flue gas treatment (FGT) building houses air pollution control (APC) equipment for the boilers, which cleans the gas prior to being discharged at atmosphere.
Stack	Once cleaned, the flue-gases from the boilers are discharged to atmosphere via a stack. The stack will be located to the south west of the Principal Building (and will be 70 metres high). A single circular outer shell chimney will cover the insulated steel flue.
Residue Building	Recovered metals and residual bottom ash will be stored in a residue storage bunker building. Storage bunkers will be sized to store 3 days of residue and metals generation. FGT residue is collected and transferred to storage silos. The silos will feed transfer trucks and will be sized for 3 days of storage.
Fuel Oil and Ammonia (or Urea) Storage	Fuel oil will be utilised for the start-up and shutdown at outage periods of the ERF Facility. A fuel oil storage tank, with a secondary containment, will be provided. An HGV unloading area adjacent to the road will also be provided. Aqueous ammonia (or Urea solution) will be used on site in the flue gas treatment process. Ammonia (or Urea) solution will be delivered to the facility in tank HGVs and stored in a storage tank, which will be sized to hold 7 days of expected consumption.
Fire Fighting Water Tank	A fire protection water storage tank will be provided on site.
Switch yard and HV Transformer	The turbine generator will generate power at 11 kV. The electrical system shall include a generator step-up transformer from 11 kV to 33 kV. An interconnection study between the facility and utility will be performed to ensure that the interconnection is designed and established in accordance with local grid code and utility requirements.

Table 3: Design Considerations

Component	Summary of Design
Standby Diesel Generator	In case of a power interruption or outage, a standby diesel generator is provided to power the auxiliaries necessary to assure an orderly shutdown of the plant in the event of a total loss of power. The generator and the diesel engine will be mounted on a steel base frame. The diesel generator shall be enclosed.
Gatehouse	The gatehouse will be located adjacent to the HGV weigh scales at the entrance to the Development Site, which shall house the scale control room and a single restroom. The scale house shall be a pre-engineered metal frame structure designed to complement the aesthetics of the main plant building.
Continuous Emissions Monitoring System (CEMS)	The CEMS are contained within a small kiosk that will house equipment to continuously monitor the flue gasses as they pass up the stack.
Control and Administration Building	This houses the main control room for the facility and includes changing rooms, locker and mess facilities for operatives and training, and administration and management facilities for staff. The facility is designed to receive visitors, with display area, views of the facility and seminar spaces.
Equipment Fuelling Station	This is a bunded area that has the connection points for the fuel oil tank so that in the event of leakage the spillage is contained.

Table 3: Design Considerations (cont)

Landscape Proposals

The landscape proposals provide extensive mitigation measures and are an integral part of the Development, notwithstanding the location of the ERF within the quarry void. Figure 17 illustrates the landscape proposals. They are described in detail in the LVIA (see ES Technical Appendix 9-1).

During the construction phase, the screen bunds will be grass seeded and planted with native broadleaved woodland. Materials and plant used during the construction of the ERF will be temporarily stored in four Laydown Areas. Following which, it is proposed that Laydown Areas 3 and 4 will be used for future employment based uses.

The adopted strategy has been informed by a holistic approach for the Development Site and the overall Buttington Quarry site rather than solely designed for the operational life of the Development. Consequently, this will offer long term visual and landscape enhancements.

Key elements of the strategy include:

- Making use of the existing topography where it provides an efficient existing screen for the Development (see Figure 16);
- Retain excavated soils and clay generated through the construction process to create a peripheral screen bund where existing screening is limited. A comprehensive screen bund design along the south-western and south-eastern boundaries will ensure that a high proportion of the ERF and also Laydown Area 4 remains hidden from view;
- Remnant faces in the northern sector of the quarry will be restored;
- Extensive areas of native broadleaved woodland will be established on the screen bunds and restored northern quarry

slopes to provide both visual and biodiversity enhancement in the long term;

- Proposed planting will strengthen the existing framework of woodland both within and adjacent to the Development Site;
- Provision for detailed landscape treatment of the new access road by creating areas of native broadleaved woodland together with open mosaic habitat and species rich neutral grassland to the grass verges;
- SuDS include a surface water attenuation pond together with amphibian wetland and peripheral habitat creation;
- Retained mature woodland on the southern Site boundary as part of the Development; and
- The existing Buttington Brickworks geological SSSI will not be affected by the Development.

The LVIA includes Illustrative Sections to demonstrate the landform changes required to facilitate the Development and mitigation measures. They also illustrate the context of the Development Site to its immediate environs. Figure 18 illustrates the footprint width of the ERF development base.

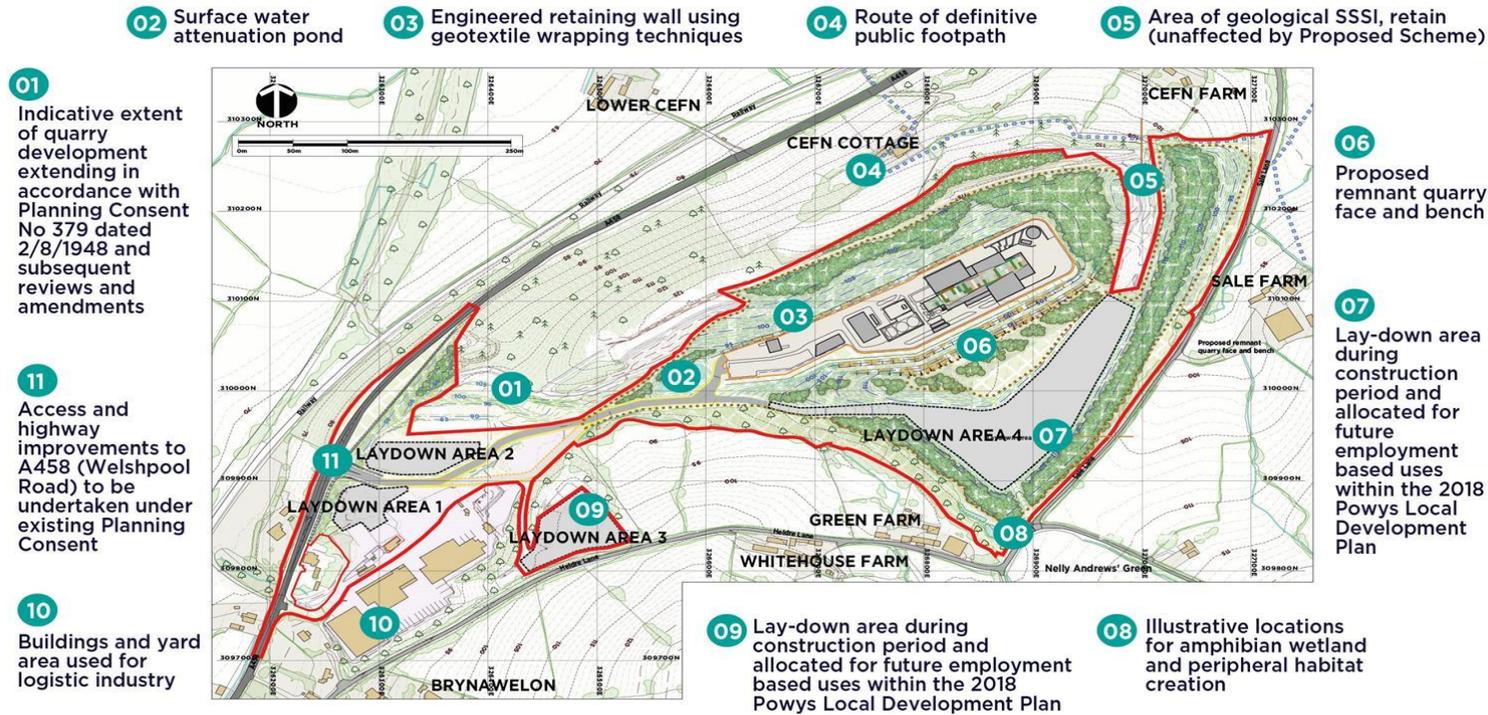
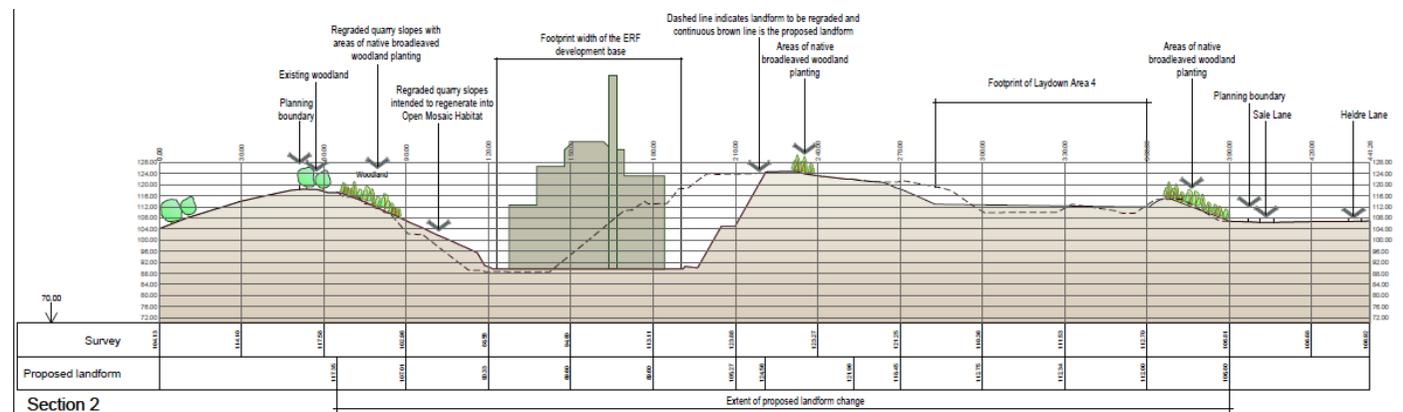


Figure 17 Landscape Proposals



Access

The Development will be accessed by employees, visitors, operational HGVs and other operational vehicles.

Site access arrangements have been carefully considered with respect to:

- HGV access and circulation within the Development Site;
- Staff vehicles access and parking; and
- Alternative access to the Development Site for pedestrians, public transport and cycling.

As noted previously, although there is a regular bus service along the A458, the road does not include a footway.

The Development will include a car park with a dedicated vehicular route from the main site access. Accessible bays will be specifically marked out in accordance with current guidance. There will be 38 car parking spaces including 2 disabled spaces and 4 with electric charging facilities. The number of parking spaces accommodates the expected staffing levels and takes account of shift changes. Dedicated bays for motorcycles (10 spaces) and a bicycle shelter will be provided.

The new access proposals are set out earlier in this Section.

Access For All

The proposed access arrangements to the Development Site have been fully designed in accordance with current legislation at a national and local level including the Equality Act 2010 and design guidance.

The following matters will be taken into account for the detailed design of external areas:

- **External levels:** The external routes illustrated on the proposed plans will be graded to be generally level;
- **External surface materials:** To consist of even and durable materials such as concrete blocks or concrete paving (which will be flush and with no up stands), this will ensure a firm, slip resistant surface suitable for all users;
- **Paving design:** Consideration will be given to paving of differing colour, tone and pattern or with contrasting delineation to help all users distinguish between pedestrian paths and surrounding paved areas. This gives a durable, aesthetically pleasing approach and also prevents potential trip hazards;
- **External signage:** Should be clear with defining signage provided to all external routes. This will include directional and location signage at entrances;
- **Bollards:** Bollards and gaps in protective barriers will be positioned at least 1800mm apart to allow unimpeded wheelchair access. Bollards will be at least 1000mm high and not linked with chains to avoid being hazardous to users with visual impairments; and
- **External furniture/equipment:** All items of external furniture or equipment in the vicinity of external circulation routes will be made to contrast adequately in colour and luminance with surroundings. The furniture or plant must be logically positioned as not to protrude into circulation routes.

Internal Access Principles

Internal access principles have been devised to guide the detailed design of the internal layout of buildings and associated fixtures at a later stage:

- **Signage and wayfinding:** Signage should give clear direction, information and instructions. Signs giving the same type of

information will have the same shape, positioning, colouring and format. Consideration will be given to visual and audible information systems;

- **Lighting and acoustics:** To assist in wayfinding and orientation through a strategy of balanced lighting;
- **Materials colour palette:** The colour and luminance of the walls will be noticeably different from that of the ceilings and of the floor area to be easily distinguished by visually impaired people. Consideration will be given to using the appropriate non reflective glass within viewing areas;
- **Horizontal circulation:** Layouts will generally be a mix of cellular and open plan office areas (e.g. Control and Administration Building). The specifications for doors will be developed at a detailed stage;
- **Door frames/panels:** Doors will be distinguishable against the surroundings by adding contrast to the frames or panels. Vision panels will be provided (where appropriate);
- **Vertical circulation:** Stairwells - detailed design features of steps will consider tactile warnings, level signage, handrails etc. Lift shafts which are designated for general staff and visitors will include the following design aspects: audio, support rails, braille/tactile buttons, induction loop coupler to the internal controls etc.;
- **Staff rest rooms/kitchens:** All appliances and equipment will contrast in colour and luminance to aid people with visual impairments. Switches and controls should be fully accessible to wheelchair users if feasible;
- **Accessible WCs for disabled persons:** Located on the ground floor of the Control and Administration Building. Installed in line with current guidance;

- **Showers and changing facilities:** Located on the ground floor of the Control and Administration Building;
- **Office furniture:** Such as desks etc. should be suitable for wheelchair users; and
- **Means of Escape:** It is envisaged at the ERF a specific evacuation procedure will be in place. Evacuation chairs should be provided at all points of vertical circulation. An intercom should be installed within the refuge areas. Intercoms should have an LED display to allow hearing impaired people to use them. Visual beacons supplementing the fire alarm system to aid hearing impaired will be provided where staff members could potentially be sited alone.

Movement

During construction, the perimeter of the Development Site will be secured for the duration of the construction works by either timber hoardings or Heras (or similar) fencing.

A one way traffic system will be set up on site with a separate entrance and exit providing access to/from the internal site access road. The site entrance and exit will be gated and 24 hour manned security will operate throughout the construction period.

During operation, as the ERF will be located within the quarry void, thus the quarry walls will act as an effective security barrier. A 2.4m boundary fence will run around the Installation with security gates to the staff and visitor car park with security gates to the weighbridge.

As outlined previously, the Development will include a car park with a dedicated vehicular route from the main site access. Accessible bays will be specifically marked out in accordance with current guidance. There will be 38 car parking spaces including 2 disabled spaces and 4 with electric

charging facilities. The number of parking spaces accommodates the expected staffing levels and takes account of shift changes. Dedicated bays for motorcycles (10 spaces) and a bicycle shelter will be provided.

The nearest bus stop is located c.250m from the proposed access on the A458 close to the junction with Heldre Lane. The X75 bus service generally runs 1 per 2 hours weekdays. Welshpool railway station is the nearest railway station and is c.7.2km from the Development Site. The station can be accessed by the X75 bus service. (see ES Technical Appendix 8-1)

Environmental Sustainability

Air Quality

The impact on air quality is assessed in detail in ES Chapter 6.

- Impacts of dust generated from construction phase was not significant and will be limited to the confined of the Development site;
- A detailed screening assessment confirmed that the optimum stack height for the Installation would be 70m;
- The impact of road traffic emissions associated with the Installation in all phases of the development can also be classed as not significant. The odour assessment also confirmed that the Installation will have a negligible effect on the nearest sensitive receptors; and
- It was concluded that the ERF will not have a significant impact on local air quality, human health or sensitive habitat sites, nor give rise to any significant odour impacts.

Health Impact

The impact on health is assessed in detail in ES Chapter 15.

- Although more vehicle trips will be created for the construction phase, for the operational phase it is planned that the refuse collection vehicle (“RCV”) fleet will be ‘green’ such that emissions from them will be as low as possible. This would be a longer term benefit and contribute towards improving air quality;
- The Construction Environment Management Plan will include all necessary mitigation measures, along with inclusion of industry best practice to minimise any impacts on the environment and human health;
- The Lighting Plan, as approved, will be installed to ensure that minimum light impact is created for the surrounding area;
- Odour mitigation measures identified through the waste reception hall and bunker design methodology will be implemented such that odour issues are not created;
- The Surface Water Management Plan will be implemented as designed to ensure that water management on site is controlled to minimise any pollution from site activities and to enhance the biodiversity of the relocated pond; and
- The Applicant and PPC, along with other stakeholders, if possible will collaborate to promote the use of the footpath and surrounding green space for physical activity and well-being.

Landscape and Visual

The impact on landscape and visual matters are assessed in detail in ES Chapter 9.

- The landscape proposals form an integral part of the Development and consideration has been given to the restoration of the wider quarry area;

- Further to the location of the Development within the quarry void, mitigation measures include a series of screen bunds and proposed native broadleaved woodland (N.B. the latter is not taken into account in the assessment of effects);
- The landscape strategy also entails an open mosaic habitat and species rich neutral grassland will feature to grass verges. SuDS will include a surface water attenuation pond together with amphibian wetland and peripheral habitat creation. Mature woodland will be retained on the southern Site boundary as part of the Development;
- The LVIA concluded that the Development will result in notable changes both regarding the Development Site and in a wider context. Mitigation measures form an integral part of the Development and the choice of cladding colours is intended to be sympathetic to the landscape setting;
- Of the adverse impacts or effects that have been identified in the Assessment, none are so overriding that it would have a wholly dominant or intrusive visual effect nor will it remove distinctive attributes of landscape character identified through LANDMAP; and
- The landscape proposals in the long term will offer visual and landscape enhancements as they develop and mature together with biodiversity benefits on site compared to the existing situation.

Ecology

The impact on ecology matters is assessed in detail in ES Chapter 10.

- Air quality modelling undertaken by ECL shows that operation of the ERF will result in a slight increase in air pollution levels but can be considered not significant at all ecological receptors;

- A range of mitigation and enhancement measures have been designed into the Development. A high quality open mosaic habitat, dedicated wildlife ponds and new native woodland planting which will ensure no net loss of habitats and an overall increase in habitat quality once established;
- A habitat management plan will identify long-term management and monitoring provision for mitigation, compensation and enhancement measures;
- The measures proposed will minimise the effects of the Development on ecological features of importance and ensure legal compliance in respect of protected species; and
- Maintaining and enhancing biodiversity and promoting the resilience of ecosystems, particularly open mosaic habitat and ponds. Local habitat connectivity will be maintained and there will be an overall increase in the quality of priority habitats.

Historic Environment

The impact on archaeology and heritage are assessed in detail in ES Chapter 12.

- The assessment established that the Development has the potential to contain limited artefactual remains of prehistoric, Roman, Saxon, Medieval and Post-Medieval date. Potential from the Post-Medieval period is limited to remnants of agricultural activity;
- However, previous quarrying activities will have removed most remains from within the Development Site boundary. Therefore, any remains that may survive from these periods would be fragmentary and lie around the perimeter of the Development where less quarrying activity would have been undertaken;

- The magnitude of change to any below ground remains from the Development will be substantial, resulting in the likely loss of any of these archaeological assets. These assets are of local significance. Therefore, prior to any mitigation measures, there will be major adverse magnitude of change to archaeological assets of low value, resulting in a moderate/minor effect, which is not significant;
- A programme of archaeological works may be required by the archaeological advisor to the Local Planning Authority to determine their extent and level of preservation, with an archaeological watching brief on groundworks which have not been subject to previous modern disturbance is suggested as suitable mitigation. Such a programme of works could be secured as a condition to planning consent;
- Once the mitigation measures outlined above have been implemented, no further archaeological work will be required. The residual impacts on any potential below ground archaeological remains will be negligible in the long-term at the local level, which is not significant; and
- No significant effects were identified in relation to identified Scheduled Monuments and Listed Buildings.

Noise

The impact on noise is assessed in detail in ES Chapter 14.

- During the operational phase impacts from industrial noise sources and on-site vehicle movements on nearest sensitive receptors have been assessed and compared with appropriate and relevant noise guidance and standards;
- An example of noise mitigation measures has been provided relating to plant design levels and building construction detail to

control radiated noise from the Development Site and the assessment concludes that there would be no significant impacts;

- Noise from road traffic movements as a result of the Development have been considered on the local road network relative to existing receptors and the assessment concludes that this would not produce any significant change or impact;
- Cumulative noise effects from proposed and existing noise sources in the vicinity of the Development have been considered and the assessment shows no significant increase in overall noise levels at noise sensitive receptors and therefore no significant impact is likely;
- Construction and Decommissioning noise was also considered in this assessment and best practice would be applied during this phase in accordance with relevant British Standards; and
- No significant noise effects have been identified by the assessment in relation to site construction/decommissioning or operational phases of the development.

Transport

The impact on highways and transportation are assessed in detail in ES Chapter 8.

- Construction vehicle movements would have a direct, temporary, minor adverse effect only on the operation of the local highway network;
- It is acknowledged that the construction of the new site access junction, which would lead to highway safety and operational gains once it replaces the existing access junction, would have a major, adverse effect on traffic flows on the A458 adjacent to

the Development Site but that effect would be for a very limited temporary period only;

- The operational development traffic would have a direct, permanent, negligible adverse effect only on the operation of the local highway network. Likewise, the decommissioning phase would have a direct, temporary, minor adverse effect only on the operation of the local highway network; and
- Finally, it is considered that during all phases of the Development, the traffic attracted to the Development Site would have direct and minor adverse impact only on pedestrian severance, amenity, delay, fear and intimidation.

Water

The impact on the water environment is assessed in detail in ES Chapter 11.

- A comprehensive Surface Water Management Plan (“SWMP”) has been prepared to address the management of surface water runoff throughout the life of the development. The SWMP maximises the use of SuDS within the site constraints and the outline drainage design has received a positive pre-application response from Powys County Council’s Land Drainage team;
- The Construction Environmental Management Plan and Decommissioning Environmental Management Plan will ensure appropriate construction and demolition techniques are employed to minimise the risk of pollution to groundwater and surface water. Measures would include appropriate staff induction and the secure storage of appropriate spill response equipment on site; and
- The environmental effects analysis for the water environment concludes that there would be no significant residual effects,

with the SWMP providing a minor beneficial effect on site drainage (quality and quantity) compared to baseline conditions.

Energy and Resource Efficiency

- The Development involves the reduction of the amount of waste sent to landfill and will also produce green energy;
- The ERF has been designed to be CHP-R which offers an opportunity to supply existing developments in the vicinity should suitable end users come forward;
- The Development Site involves the sustainable use of Buttington Quarry. Excavated soils and clay generated through the construction process will be retained to create screen bunds on site; and
- The cladding materials were one of the reasons why Option 2 has been selected as outlined in Section 6 of the DAS.

Community Safety

It is expected that construction operations will take place from 7am – 7pm Monday to Friday and 7am-12pm (noon) on Saturdays.

During operations, the ERF will operate on a 24 hour a day, 7 days a week which is necessary to ensure operational efficiency. Incoming waste and deliveries of consumables, together with export of bottom ash could take place from 7am – 7pm weekdays and 7am-12pm (noon) on Saturdays.

Further to the security fencing and entrance/exit gate measures previously described (see Movement). During operation, the following measures will be adopted:

- The layout of the Development aims to incorporate the concept of defensible space and self-policing to minimise the possibility of crime and ensure a safe and secure working environment;
- Appropriate levels of illumination in all car parks, on walkways and in open spaces will ensure that they remain a safe environment during the evening and at night but designed with the policy of dark sky and rural location in mind (See ES Technical Appendix 4-2);
- The landscape scheme will be modelled to provide natural surveillance and safety by way of limited blind spots and concealed spaces (See ES Technical Appendix 9-1);
- The ERF will be manned on a consistent 24-hour basis; and
- Closed circuit television systems (“CCTV”) will be installed, maintained and operated in accordance with current guidance. CCTV cameras will be positioned at strategic locations to provide surveillance of the ERF access points, car parking areas and the quarry rim. Cameras will be mounted on building walls, roofs, canopies and lighting columns as appropriate to provide full coverage of the Installation.

Response to Planning Policy

Future Wales The National Plan 2040

Challenges & Opportunities refers to the importance of a low carbon economy to deliver clean growth and renewable energy which could provide the opportunity for Wales to become a world leader in renewable energy technologies. This is echoed in Future Wales Outcome 11 which aims to create *“A Wales where people live in places which are decarbonised and climate-resilient”*.

The Development Site is located in the Mid Wales region and all renewable energy generation proposals should seek to maximise the economic, environmental and social benefits to the communities of Mid Wales.

Policy 9 Resilient Ecological Networks and Green Infrastructure aims to identify opportunities where existing and potential green infrastructure could be maximised as part of placemaking. It stresses the importance of nature-based solutions for securing sustainable growth, ecological connectivity, social equality and well-being.

The landscape proposals for the Development are designed to provide long term biodiversity enhancement for the quarry area (see Figure 17). This includes broadleaved woodland planting to strengthen the existing framework of woodland both within and adjacent to the Development Site, SuDS measures and peripheral habitat creation including open mosaic habitat and species-rich neutral grassland.

With reference to Policies 17 and 18 set out below, a summary of the findings from the technical reports submitted as part of the ES is provided in this DAS (see Environmental Sustainability).

Policy 17 Renewable and Low Carbon Energy and Associated Infrastructure states that the Welsh Government strongly supports the principle of developing renewable and low carbon energy from all technologies and at all scales to meet future energy needs.

Policy 18 Renewable and Low Carbon Energy Developments of National Significance sets out criteria to be considered:

- The Development will not have an unacceptable adverse impact on the surrounding landscape (see ES Technical Appendix 9-1);

- The Development is designed to minimise its visual impact in terms of local communities, individual properties and there will be no cumulative effects (see ES Technical Appendix 9-1);
- 4. Emphasises the importance of biodiversity enhancement measures to provide a net benefit for biodiversity. See Policy 9 above; and
- 10. With regards to decommissioning, as stated, the ERF would have a design life of approximately 25-30 years. Equipment within the building could be upgraded/replaced as required in the future, alternatively, the ERF could be decommissioned after this period and the Development Site used for other employment uses. The long term objective is for the Development to act as a catalyst for the wider aspirations for the Development Site to create an eco-business park.

The five objectives of good design set out in PPW (Edition 11) and TAN 12 Design (March 2016) have been addressed earlier in this Section.

PPW (Edition 11)

Chapter 2 People and Places: Achieving Well-being Through Placemaking states that a key planning principle is to achieve the right development in the right place.

- The Development will provide a sustainable use for Buttington Quarry;
- The scale and layout of proposed built form including the boiler hall and stack etc. uses the quarry void to reduce potential visual effects. The scale of built form respects the character of the surrounding area. (see ES Technical Appendix 9-1); and

- The choice of cladding colours is intended to be sympathetic to the landscape setting and uses prevailing natural shades of green and light brown hues.

Placemaking in regards to the Development is addressed in detail in Section 7 of the DAS.

Chapter 3 Strategic and Spatial Choices cites the five aspects of good design namely, access, character, community safety, environmental sustainability and movement. The five aspects of good design are addressed in Section 7 of the DAS.

Chapter 5 Productive and Enterprising Places concerns the provision for well-connected employment and sustainable economic development.

- Consideration should be given to how to avoid or minimise, adverse impacts by addressing location, scale, design and other measures (paragraph 5.9.21). The design process has been undertaken over an extended period and is outlined in this DAS;
- Consideration has been given to comments with consultees through the planning process such as PINS, PCC, the Design Commission for Wales and pre-application consultation; and
- Mitigation measures incorporated into the Development include the selection of colour cladding for built form and location of screen bunds illustrated by the landscape proposals (see Figure 17).

Chapter 6 Distinctive and Natural Places sets out how landscapes, the historic environment and habitats can be beneficial for Wales.

- The Buttington Brickworks geological SSSI will not be affected by the Development;

- Broadleaved woodland planting shown on the landscape proposals (see Figure 17) will strengthen the existing framework of woodland both within and adjacent to the Development Site in the long term; and
- SuDS measures include a surface water attenuation pond together with amphibian wetland and peripheral habitat creation including open mosaic habitat and species-rich neutral grassland to grass verges.

TAN

TAN 12 Design (March 2016) sets out land use planning policy regarding promoting sustainability through good design and planning for sustainable buildings.

Reference is made to the opportunities for innovation design proposals which is dependent on current context of a site and the specific considerations relating to the historic, architectural, social or environmental characteristics of an area. The design process outlined in this DAS and technical appendices which form part of the ES have examined the Development Site and its landscape setting in detail.

TAN 21 Waste (February 2014) concerns the location of new waste facilities.

In principle, the Development Site would be deemed as suitable in location terms, given its current uses, namely a quarry/industrial site. This would also be relevant to the planning considerations listed in Annex C such as the prudent use of land and resources.

Other items listed under Annex C are relevant to the design and layout of the ERF which incorporates mitigation measures such as cladding colour, screen bunds and proposed planting. The landscape proposals (see Figure

17) will integrate SuDS measures and provide long term biodiversity benefits through new habitats and planting. This would also be relevant for TAN 5 Nature Conservation and Planning (September 2009).

At a local level, PCC adopted the Powys Local Development Plan 2011-2026 in April 2018. With regards to design, the following policies are relevant and have been applied to the Development.

Strategic Policy SP7 Safeguarding of Strategic Resources and Assets seeks to safeguard strategic resources and assets in the County and development proposals must not have an unacceptable adverse impact on the resource or asset and its operation. (See Policy DM4 Landscape for mitigation measures)

The LVIA refers to landscape character resources including LANDMAP (see ES Technical Appendix 9-1). Site analysis identified local variations as the Development Site represents an altered landscape due to quarrying activities. It currently displays few of the valued characteristics and qualities of the county, or identified through LANDMAP, namely, MNTGMVS370 Crewgreen to Forden Hill and Scarp Visual and Sensory Aspect Area and the MNTGMLH033 Landscape Habitat Aspect Area. Mature woodland along the southern Site boundary will be retained as part of the Development. Proposed native broadleaved planting will complement the recommendations of the aforementioned Aspect Areas;

With regards to Development Management Policies.

Policy DM2 The Natural Environment seeks to improve biodiversity through the enhanced connectivity of habitats within and beyond individual sites. Proposed native woodland planting illustrated by the landscape proposals will strengthen the existing framework of woodland both within and adjacent to the Development Site in the long term.

Policy DM4 Landscape notes that development proposals outwith Towns, Large Villages, Small Villages and Rural Settlements should not, individually or cumulatively, have an unacceptable adverse effect on the valued characteristics and qualities of the Powys landscape:

- The ERF building and stack is located in the quarry void and is at a low level when compared to the other areas of the Development Site and the immediate vicinity. The aforementioned built form is arranged in a tight cluster and is set back from the eastern and southern Site boundaries which will feature screen bunds as part of mitigation measures shown on the landscape proposals (see Figure 17);
- Ground modelling within the central environs of the Development Site includes the formation of the screen bund immediately south of the ERF building and the restored northern quarry face. The layout takes advantage of the existing topography of the elevated landform and mature woodland adjacent to the north-west;
- During the construction phase, materials will be stored in Laydown Areas, the largest of which will be used for future employment purposes; and
- Mitigation measures include the selection of cladding colours which is intended to be sensitive to the landscape setting. The Development Site topography, its immediate vicinity and the presence of mature vegetation and incorporated mitigation measures, combine to create a relatively well contained site.

Policy DM13 Design and Resources: States that proposals should demonstrate good quality design and consider the qualities and amenity of the surrounding area. The design process outlined in this DAS has outlined the key opportunities and constraints relating to the current landscape setting the Development Site and its wider environs. The mitigation

measures including the location of built form, choice of colour classing and screen bunds etc. will assist in integrating the proposals into a mainly rural setting.

The following policies are also relevant to the design of the Development:

- **Policy DM6 Flood Prevention Measures and Land Drainage:** Satisfactory provision shall be made for land drainage in all developments and this should include consideration of the use of SuDS;
- **Policy DM7 Dark Skies and External Lighting:** Refers to lighting schemes for new developments. The Development will include a proposed lighting scheme (See ES Technical Appendix 4-2);
- **Policy E1 Employment Proposals on Allocated Employment Sites:** refers to Buttington Quarry (Site Allocation Ref. No. P59 EA1) as a Local Site which is suitable for waste uses through Policy W1. It is described as a brownfield site which is partly in employment use and is reserved for further expansion for General Industrial Uses;
- **Policy M5 Restoration and Aftercare:** Concerns proposals for mineral working and refers to the restoration and aftercare of land the potential for beneficial re-use and enhancement. The landscape proposals will incorporate the broader quarry area; thereby, adopting a holistic approach;
- **Policy RE1 Renewable Energy:** Mitigation measures form an integral part of the Development and include the location and layout of built form within the Development Site (i.e. in a quarry void), the choice of cladding colour for proposed buildings and proposed screen bunds illustrated by the landscape proposals;
- **Policy T1 Travel, Traffic and Transport Infrastructure:** The Development will involve a new access point to the A458 to improve existing access for HGVs, staff and visitors etc.;

- **Policy W1 Location of Waste Development:** The explanatory text notes that new development must be appropriate regarding size and scale and must not have an adverse impact upon the landscape, the natural environment or local amenity. See Policy DM4 Landscape and Policy DM13 Design and Resources; and
- **Policy W2 Waste Management Proposals** states that proposals for new development will be permitted where they meet specific criteria. See Policy DM4 Landscape and Policy DM13 Design and Resources.

The mitigation measures noted previously and illustrated by the landscape proposals (see Figure 17) will adhere with the guidance set out in the Landscape SPG (April 2019) and Biodiversity and Geodiversity SPG (October 2018).

With reference to the design and construction of renewable/low carbon energy developments, the Renewable Energy SPG (April 2019) highlights the importance of minimising visual intrusion for proposals.

As outlined in the DAS, the design process has resulted in a scheme which is designed to blend into the existing landscape setting which is mainly rural through the choice of cladding colour. Consideration has been given the scale, mass and form of individual buildings as well as the overall scheme. The proposed built form is arranged in a cluster and will be located in a quarry void, thereby reducing potential visual effects. The siting of the Development also allows mitigation measures to be incorporated into the scheme such as screen bunds and proposed native woodland planting.

8. Conclusion

The design process involved with the Development has considered the key opportunities and constraints relevant to the Development Site and the surrounding area as well as consideration for impacts on the wider setting and the technical requirements involved.

It has involved an extensive period of design development by specialists and consultation with stakeholders and consultees including the local community.

Currently, much of the Development Site consists of a quarry void, tracks and remnant quarry faces: typical features following extraction processes. This provides an opportunity to use the unique nature of the Development Site in the design.

The Development comprises of an ERF which will use thermal treatment technology to generate up to 12.8MWe of renewable and low carbon energy in the form of electricity and heat. This will be achieved through the thermal treatment of up to a maximum of 167,000 tonnes per annum of residual waste. The residual waste to be processed would comprise non-hazardous C&I waste and MSW.

The design of the ERF and mitigation measures have been conceived following a long process as detailed in this DAS. The scale, form and massing of the proposed built form, colour cladding scheme and mitigation measures are intended to be sympathetic to the existing landscape setting of the Development Site.

The layout of the proposals and new access road have been shown to be appropriate in terms of circulation and safety. Whilst the landscape strategy will provide long term biodiversity benefits through new habitats and planting and encompass the restoration of the wider quarry area.

The vision for the Development is to provide a sustainable use for a former quarry area by delivering a bespoke facility which will make a substantial contribution to waste management and the generation of low carbon energy. The long term objective is for the Development to act as a catalyst for the wider aspirations for the Development Site to create an eco-business park.

The Welsh Government has set the target to become a zero-waste nation by 2050. The ERF represents a major step in helping Wales achieve this ambition.