



## **BUTTINGTON ENERGY RECOVERY FACILITY**

### **NON-TECHNICAL SUMMARY**



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## NON- TECHNICAL SUMMARY

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## List of Acronyms

ASNW	Ancient Semi-Natural Woodland
Broad Energy	Broad Energy (Wales) Limited
DNS	Development of National Significance
Development	All activities within the red line planning boundary
Development Site	The physical site on which the Development is to be located as defined by the DNS planning boundary
Installation	Refers only to the ERF Buildings and ancillary plant and buildings (forming part of the Development)
EPR	Environmental Permitting Regulations
ERF	Energy Recovery Facility
ES	Environmental Statement
GCN	Great Crested Newt
Ha	Hectare
HIA	Health Impact Assessment
LDP	Local Development Plan
LVIA	Landscape and Visual Impact Assessment
NRW	Natural Resources Wales
NTS	Non Technical Summary
OMH	Open Mosaic Habitat
PAWS	Plantation on an Ancient Woodland Site
PINS	Planning Inspectorate Wales
PC	Process Contribution
PCC	Powys County Council
RCV	Refuse Collection Vehicle
SAC	Special Area of Conservation
sHRA	Shadow Habitats Risk Assessment
SSSI	Site of Special Scientific Interest
SUDs	Sustainable Urban Drainage System
SWMP	Surface Water Management Plan
WHIASU	Wales Health Impact Assessment Support Unit
ZOI	Zone of Influence

## **1. INTRODUCTION**

### **1.1. This Document**

- 1.1.1. This document is the Non-Technical Summary (“NTS”) of the Environmental Statement (“ES”) which has been prepared to support an application for Planning Permission to Welsh Ministers, under Part 5 of the Planning (Wales) Act 2015, for the construction and operation of an Energy Recovery Facility (“ERF”) and ancillary infrastructure (“the Development”).

### **1.2. The Proposal**

- 1.2.1. The proposal is for the construction and operation of an Energy Recovery Facility for the importation, storage and treatment of non-recyclable i.e. residual waste from municipal, commercial and industrial sources and generation of heat and electricity. The proposal includes:

- the partial re-profiling of quarry void, earth works;
- alteration to existing residential access and provision of new vehicular site access from the A458,
- ancillary buildings and structures,
- sub-station and grid connection,
- parking, hardstanding including laydown areas for materials storage and plant,
- fencing,
- gates and CCTV,
- weighbridge and office,
- sustainable drainage measures,
- landscape works; and ecological enhancements

on land at Buttington Quarry, Welshpool, Powys, SY21 8SZ – collectively known as “the Development”.

- 1.2.2. In summary, the Development would comprise the following elements:

- a waste reception hall and bunker;
- an Energy Recovery Facility (“ERF”) to recover the energy and heat from the residual waste;
- facilities to manage the products and outputs from the ERF; and
- ancillary infrastructure described below.

- 1.2.3. The ERF would be capable of generating around 12.8MWe of low carbon and renewable energy through the thermal treatment of up to 167,000 tonnes per annum of residual municipal, commercial and industrial wastes. The energy generated would be exported to the local electricity grid. Based on the maximum electrical output and approximately 7,900 operational hours per year, the Development would export circa 101,120MWe hours per annum.

- 1.2.4. The ERF will be Combined Heat and Power (“CHP”) ready. Should there be a future demand and an end user identified in the future, it is anticipated that heat generated by the Development could, in principle, be exported by underground pipework to local agricultural or commercial/industrial uses.

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- 1.2.5. The Development would be fully compliant with all relevant European Union (“EU”), United Kingdom (“UK”) and Welsh Government legislation and will be required to operate under the conditions of an Environmental Permit to be issued by Natural Resources Wales (“NRW”).
- 1.2.6. The planning boundary is shown on Figure 1.



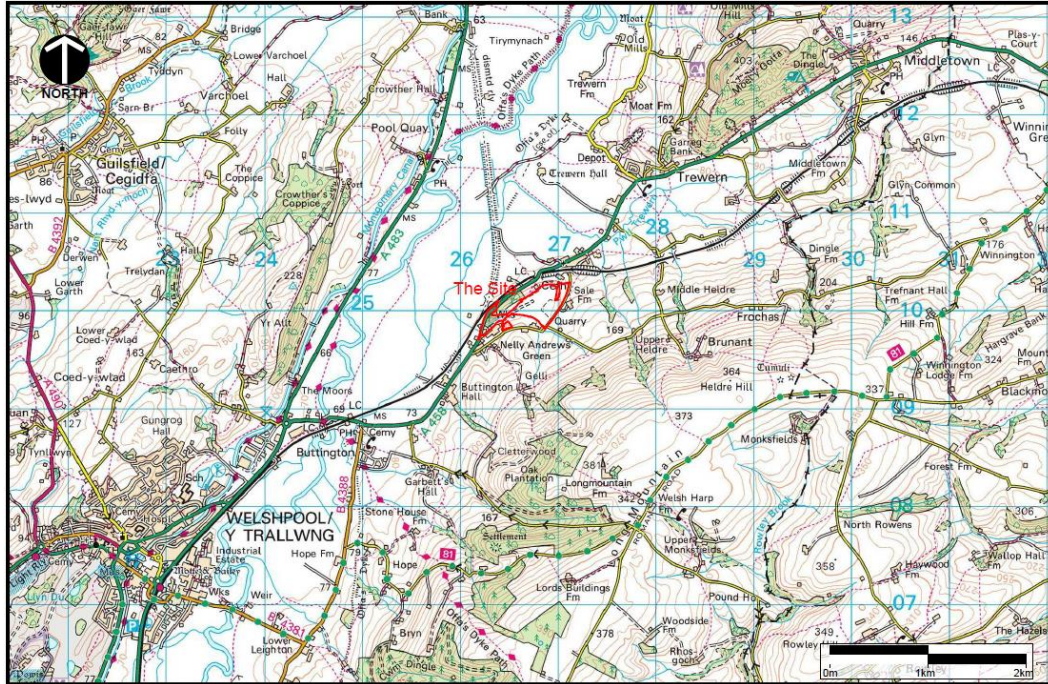
**Figure 1: Planning Boundary**



### 1.3. The Site

- 1.3.1. Buttington Quarry is located on the A458 Shrewsbury to Welshpool Road (at NGR: 326690, 310106) located approximately 1.5km to the south of the village of Trewern, as shown in Figure 2.

**Figure 2: Site Context**



- 1.3.2. Buttington Quarry occupies a total land area of 18 hectares and is bounded by the A458 to the northwest, Sale Lane to the east and Heldre Lane to the south. The Welshpool-Shrewsbury railway line runs immediately northwest of the A458, towards the northernmost point of the quarry crossing under the A458 and for a short section runs between the A458 and the Development Site boundary. The quarry is accessed from the A458 and the existing access road is located within the landownership of the quarry.
- 1.3.3. The quarry operated from the late 19<sup>th</sup> Century and included a brickworks with permissions approved in 1961 and 1997 for extensions to the original quarry workings. Buttington Quarry is a working claypit which previously supplied clay to the adjoining Buttington Brickworks but, since the closure of the brickworks in 1990, has continued to produce only small amounts of clay for low grade construction purposes. The former brickworks buildings are now occupied and used for third party commercial uses including storage and distribution.
- 1.3.4. Six hectares of the Quarry, including the existing quarry void and the former brickworks site, has been allocated for B1, B2 and B8 employment development under Policy E1 - Employment Proposals on Allocated Employment Sites, in the adopted Powys Local Development Plan ("LDP") 2011-2026. The supporting text in the LDP also suggests that it may also be an appropriate location for the storage and processing of wastes arising from construction and demolition. Policy E1 also enables the provision of uses that fall outside the B use class, including waste recycling.



#### **1.4. The Applicant**

- 1.4.1. The Broad Group is a multi-disciplinary group of companies providing, Environmental Waste Management Services, Renewable Energy Infrastructure Development and Alternative Fuel Supply Chain Services to the renewable energy sector. Broad has grown into one of the industry's leading waste management businesses with a multi-million-pound turnover and an ever-growing client base of some of the UK's largest private and public businesses.
- 1.4.2. Broad Energy (Wales) Limited ("Broad Energy") is a special purpose company that has been established by Broad Group (UK) Limited to develop the proposed ERF. This independently owned and operated company will form the key anchor delivering long term cost effective and efficient energy and heat services as part of the wider aspirations of the owners of Buttington Quarry to create a sustainable eco-business park.
- 1.4.3. Broad Energy has formed a strategic partnership with global leader Hitachi Zosen AG ("HZI") to design, build and operate a facility that will support the generation of renewable energy and heat through the use of non-recyclable waste.
- 1.4.4. This partnership is keen to ensure that future changes at the Development Site wherever possible, contribute to the local economy, offer new job opportunities to the local community, and assist Powys County Council ("PCC") with local recycling initiatives.

#### **1.5. The Operator**

- 1.5.1. HZI is a wholly owned subsidiary of Hitachi Zosen Corporation and would be both the main technology supplier and operator of the ERF.
- 1.5.2. HZI is a global technology leader for energy and material recovery from waste. HZI solutions are based on efficient and environmentally sound in-house technology, are thoroughly tested, can be flexibly adapted to user requirements, and cover the entire plant life cycle.
- 1.5.3. HZI is the global leader in the design, procurement and construction of moving grate Energy from Waste facilities, with over 500 Energy from Waste references worldwide including 12 in the UK and Ireland. Currently, operational plants utilising HZI's proven technology include Kidderminster- Worcestershire, Greatmoor – Buckinghamshire, Ferrybridge - West Yorkshire and Millerhill – Edinburgh.

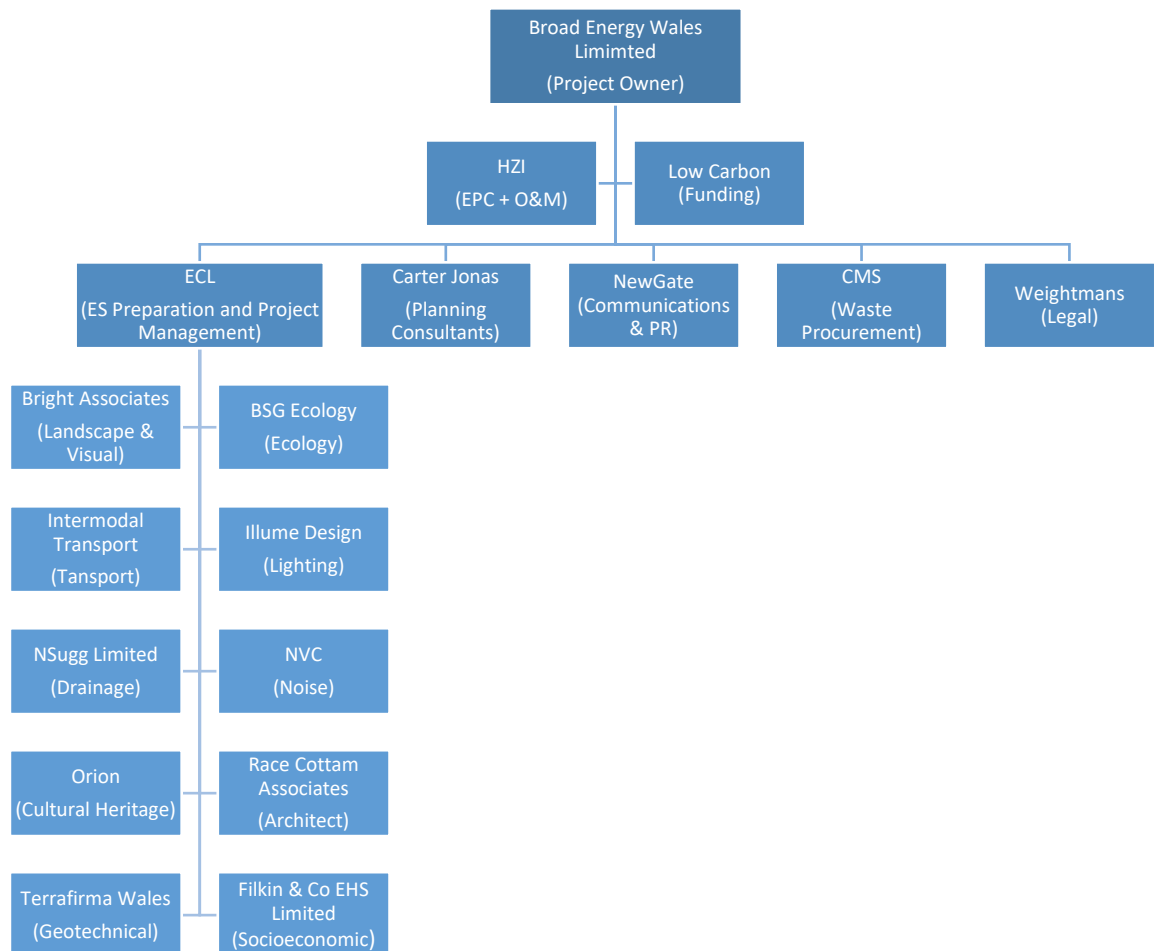
#### **1.6. Project Funding**

- 1.6.1. Low Carbon Investment Management Ltd ("Low Carbon") is a privately-owned UK investment and asset management company focused on renewable energy investments. To date, Low Carbon have invested in and developed more than 700MW of renewable energy projects and has a renewable energy development pipeline of around 4GW. Low Carbon currently owns five waste to energy projects and the team has reached financial close on more 175MW of waste to energy with a total expected value of around £1.5 billion over the last 10 years. Low Carbon's dedicated Asset Management team also manages around 1GW of operating renewable energy assets for Low Carbon and other third parties.

## 1.7. The Environmental Impact Assessment Team

- 1.7.1. To deliver this project, Broad Energy has put together a team of consultants with the relevant expertise and experience to complete this project.
- 1.7.2. The planning application and Environmental Statement (“ES”) preparation has been co-ordinated and managed by Environmental Compliance Limited (“ECL”) who have overall responsibility for the preparation of the ES and Non-Technical Summary. Figure 3 lists the Environmental Impact Assessment (“EIA”) Team together with their relevant discipline.

**Figure 3: The EIA Team**



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## **2. KEY ENVIRONMENTAL ASPECTS AND ASSESSMENT METHODOLOGY**

### **2.1. Introduction**

- 2.1.1. This section discusses how key environmental aspects (“KEAs”) have been identified and provides the assessment methodology for the ES.
- 2.1.2. A KEA is defined as an environmental attribute or component of the environment that is valued by society as identified through the scoping process, for example, Air Quality, Ecology, Transport etc. Each KEA identified is then assessed and forms an individual Chapter of the ES. Scoping is a key part of the EIA process in identifying potential likely significant effects to be considered within the ES, and it is the scoping phase that identifies the KEA’s for assessment.

### **2.2. Selection of Key Environmental Aspects**

- 2.2.1. The selection of KEAs is an important step in the completion of the ES. It is a process that reflects a balanced and knowledgeable investigation into a wide range of information about a development, the environmental setting where it is to be located and an understanding of concerns and issues associated with it.
- 2.2.2. The scoping process has a key role not just to identify significant environmental aspects but also to exclude those environmental aspects where there are no likely significant effects, either adverse or beneficial.
- 2.2.3. Scoping is undertaken with consultation with key stakeholders (Statutory and Non-Statutory) and using the professional judgment of those undertaking the assessments. The EIA team have used a wide variety of information in the determination of a range of KEAs to reflect both the scope and scale of the Development and the potential Development-environment interactions. All information considered is provided in Figure 4.

**Figure 4: Identification of KEAs**



- 2.2.4. Broad Energy has conducted an evaluation of the Development in the environmental setting and developed an informed perspective on the potential Development-environment interactions. Based on systematic and scientific technical analysis as well as input from the consultation process, Broad Energy has also developed an understanding of the concerns and issues associated with the Development in the context of the local area, its residents, industry and activities.

### **2.3. Scoping Request**

- 2.3.1. Once the EIA Team had identified potential KEA's, consultation on the KEAs' and the assessment methodology for each was undertaken with The Planning Inspectorate Wales ("PINS").
- 2.3.2. The objectives of the scoping process were to identify:
- potential likely significant effects of the Development to be assessed within the Environmental Statement;
  - key points arising from relevant regulations and standards;



- engineering design and environmental management strategies early in the project planning stage so that they can be factored into the Development and thereby avoid or minimise any adverse effects;
- potential cumulative environmental effects early in the planning process so that they can be factored into the environmental assessment at the earliest stage.

2.3.3. Potential environmental effects for the Development were identified through consultation with PINS and the Local Planning Authority (“LPA”) Powys County Council (“PCC”).

2.3.4. A Scoping Request was sent to PINS in August 2018 and their Scoping Direction was dated 3rd October 2018.

## 2.4. Key Environmental Aspect Selection

2.4.1. Based on the information collated as part of the identification of KEAs and the Scoping Direction received from PINS, Figure 5 lists all the KEAs to be assessed in the ES.

**Figure 5: KEAs for ES Chapters**



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## **2.5. Baseline for the EIA**

- 2.5.1. The Development Site comprises an operational quarry and an area of rough ground to the south of the quarry where various stone stockpiles remain. To the south of the Development Site, elevated from the main quarry void is an area where disused lorries and several lorry trailers are parked.
- 2.5.2. For the purpose of the assessment the baseline scenario is the existing physical current state of the environment. Consequently, the ES describes the works and impacts that would arise in preparing the site and site access and for the Development.

### **3. NEEDS AND ALTERNATIVES**

#### **3.1. Need for the Development**

- 3.1.1. An assessment of the waste arising within the Development catchment has been undertaken. The catchment area initially considered was generally defined as a 2 hour drive from the Development Site. However, given the rural nature of large parts of Powys, and west and south west Wales, it was considered that waste arising from these areas would in fact travel far further than a simple 2 hour drive time. Consequently, in addition to Powys, the catchment area considered for the purposes of the ES and Waste Planning Statement included Welsh counties to the north (Isle of Anglesey, Gwynedd, Conwy, Denbighshire, Flintshire, Wrexham), and south west (Ceredigion).
- 3.1.2. Given the Development's close proximity to the English Border, the 2 hour catchment area also included English Counties such as Herefordshire, Shropshire, Cheshire and other West Midlands Counties.
- 3.1.3. Therefore, within the catchment area, there is a total of 2,660,000 to 2,720,000 tonnes per annum of waste arising.
- 3.1.4. Within the catchment area there are other competing energy recovery facilities, with the total treatment capacity [within the catchment area] of 2,020,000 to 2,030,000 tonnes per annum.
- 3.1.5. Therefore, within the catchment area of the Buttington ERF there is a surplus of 640,000 to 690,000 tonnes of residual municipal waste, and commercial and industrial waste. This is nearly 4 times more than the capacity of the ERF, therefore clearly demonstrates a need for such a facility.
- 3.1.6. It should also be noted that due to the rural nature of Wales, and the lack of motorway infrastructure within West and Mid Wales, there is potential for residual waste to travel from counties such as Carmarthenshire and Pembrokeshire, particularly as there are no ERF/EFW facilities within these counties. Therefore, the waste available within a wider catchment is likely to be higher. However, waste arisings from these counties has not been considered at this time.

#### **3.2. Alternative Sites**

- 3.2.1. A long-term, more sustainable, low-carbon solution is needed for the management of residual waste generated within Powys County, and the wider catchment area of the Buttington ERF.
- 3.2.2. In choosing a suitable location for ERF in line with the requirements of national and local planning policies, a broad search was undertaken for land safeguarded, or allocated for, waste or employment use. Given the industrial nature of quarry related activities, mineral sites were also included.
- 3.2.3. The sites were identified from a list of locations in the Powys LDP. Sixty-one locations were

considered – thirty safeguarded for employment, thirteen safeguarded for employment, fifteen for employment and fifteen mineral sites.

- 3.2.4. Of these 34 sites were omitted from detailed consideration, many of which would not provide the 5-6 hectares of land necessary to accommodate an ERF and associated ancillary areas.
- 3.2.5. Fifteen sites were assessed in more detail taking into account factors such as land area, proximity to the primary road network, current level of use/activity, key 'high-level' environmental designations, ownerships and published information relating to the availability of land for sale or long-term lease.
- 3.2.6. Following detailed assessment Buttington Quarry was identified as the most preferable site. It is located on a major arterial route, unaffected by any planning or unmitigable environmental constraints and benefits from a 6 Ha LDP employment allocation, which incorporates a deep quarry void. Most of the land is in single freehold ownership and is available for the duration of the operational life of the facility. The former brickworks buildings are occupied for commercial activities and there is scope to provide heat and electricity as part of wider plans to create a sustainable business park. The Development in this location would also bring forward the early restoration of part of the quarry.

### **3.3. Alternative Combustion Technology**

- 3.3.1. A number of combustion technologies were considered including:
- various incineration technologies including fixed hearth, moving grate, rotary kiln, fluidised bed, gas and drum incinerators;
  - gasification;
  - pyrolysis; and
  - cyclonic combustors.
- 3.3.2. Of these technologies, many were discounted due to either the waste they treat or due to the lack of proven performance and commercial applicability. Of the conventional, well proven and robust technologies, moving grate, rotary kiln and fluidised bed incineration were further assessed.
- 3.3.3. The costs of running a fluidised bed combustion plant is more than twice that of a rotary kiln and moving grate, also, it should be noted that fluidised beds using residual MSW have a record of poor reliability therefore it is not considered that they can be regarded as a reliable technology for MSW treatment.
- 3.3.4. The rotary kiln system is less efficient, evidenced by the lower power output and the capital cost is likely to be higher for a rotary kiln since more streams are required.
- 3.3.5. Broad Energy has chosen moving grate incineration as the most appropriate combustion technology for the Buttington Energy Recovery Facility ("ERF"). The HZI-designed moving grate was chosen because it allows a vigorous, stable fire, in which all the combustion phases - drying, gasification, ignition and combustion - occur simultaneously and consecutively at the front end of the grate. The constant stoking motion results in a uniform



heat release and ensures excellent burnout. The HZI-designed grate has been used in more than 350 combustion systems in over 200 plants worldwide since 1965.

### **3.4. Stack Height**

- 3.4.1. Following confirmation of the technology type, a stack height assessment was undertaken to determine the optimum height for releases to air. The optimum height is a height at which increasing the stack any further would not provide any further material environmental benefit. The modelling study showed that as the stack height increased the ground level concentrations of the various pollutants decreased. The results of the stack height screening assessment demonstrated that the optimum height was 70m.

### **3.5. Design**

- 3.5.1. The mass of the main building has been designed to be an efficient use of space and reflects the minimum space requirements of the process equipment within the building. The boiler hall at 46m is the highest element, with other areas having a reduced internal height requirement, consequently, have been designed to sit within the quarry void in a stepped manner to soften the profile.
- 3.5.2. Various options for the cladding and building materials were considered, including the use of building materials that reflect the quarry or a colour palette that allows the building to blend into the landscape with either fibre cement board cladding or metal sheet cladding. It was concluded that a design whereby the building elevations are integrated into the landscape provided a reduced visual impact given the rural setting of the ERF.

### **3.6. Great Crested Newt Habitat Creation**

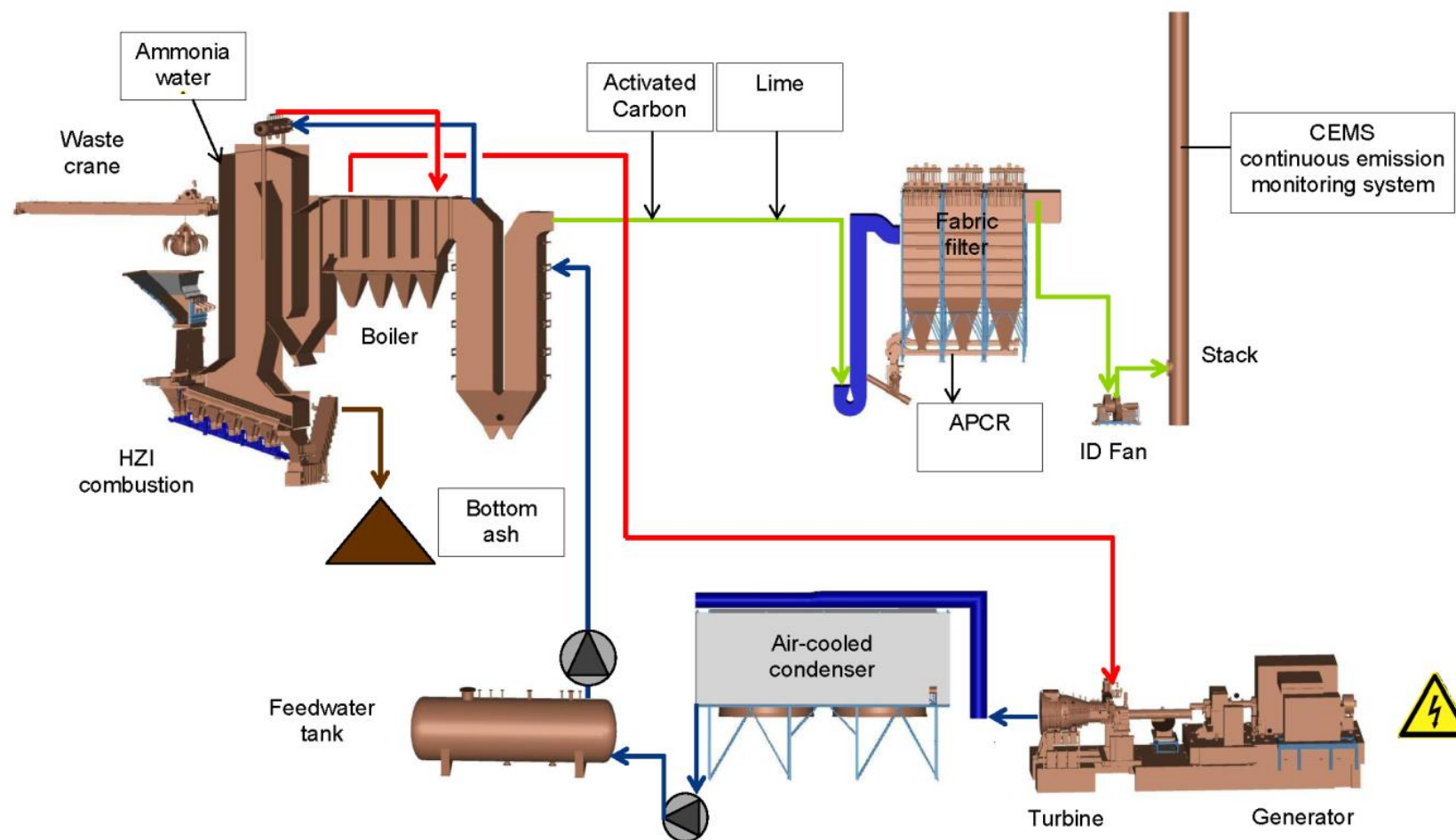
- 3.6.1. Great Crested Newt ("GCN") surveys were undertaken in 2015 and 2018 and returned negative results. On this basis, it was considered that removal of the two settlement lagoons to allow the development of the surface water attenuation pond, and the construction of the Development access would not have any impact on GCN. However, following update GCN surveys in 2020, a positive result was obtained for CGN from the northern of the two lagoons.
- 3.6.2. Due to the physical constraints of the quarry void, if the ponds were to be retained the Development access road would have to pass in close proximity to them. This would substantially increase the risk of road mortality of GCN and the low quality nature of the settlement ponds are likely to limit the productivity and size of newt populations. Consequently, the best solution for the newt population is to create and manage ponds elsewhere on site.
- 3.6.3. The proposed new newt ponds, which will be subject to a management plan and monitoring, will considerably enhance the potential of the site to support GCN in the medium and long term, and will increase the resilience of the species to decline / extinction at the local level.

## **4. DESCRIPTION OF PROPOSED BUTTINGTON QUARRY ENERGY RECOVERY FACILITY**

### **4.1. Overview of the Buttington ERF**

- 4.1.1. The ERF will use proven, highly regulated technology to extract energy from residual waste that would otherwise be sent to landfill.
- 4.1.2. Further information on the architectural treatment and the iteration of the design is set out in the Design and Access Statement that accompanies the DNS submission.
- 4.1.3. The key elements of the Installation are
- waste reception area including tipping hall;
  - storage bunker;
  - waste feed hopper;
  - combustion line;
  - boiler and water steam cycle;
  - flue gas treatment;
  - a single stack;
  - bottom ash extraction and storage;
  - steam turbine and generator;
  - electrical transformers;
  - air cooled condensers; and
  - associated utilities infrastructure.
- 4.1.4. The plant will be configured as a CHP-ready plant and will export power to the National Grid and could have the capability of exporting heat to local users should there be sufficient demand and future need for this.
- 4.1.5. The main process stages in the proposed Installation will be:
- 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.
- 4.1.6. A simplified process flow diagram for the proposed arrangements is provided as Figure 6.
- 4.1.7. In addition, the ERF will also include:
- a dedicated site access road network;
  - weighbridge and weighbridge office;
  - car-parking areas;
  - HGV parking areas;
  - substation and grid connection;
  - offices and ancillary rooms; and
  - a detailed landscaping scheme.

Figure 6: Simplified Process Flow Diagram for ERF Process



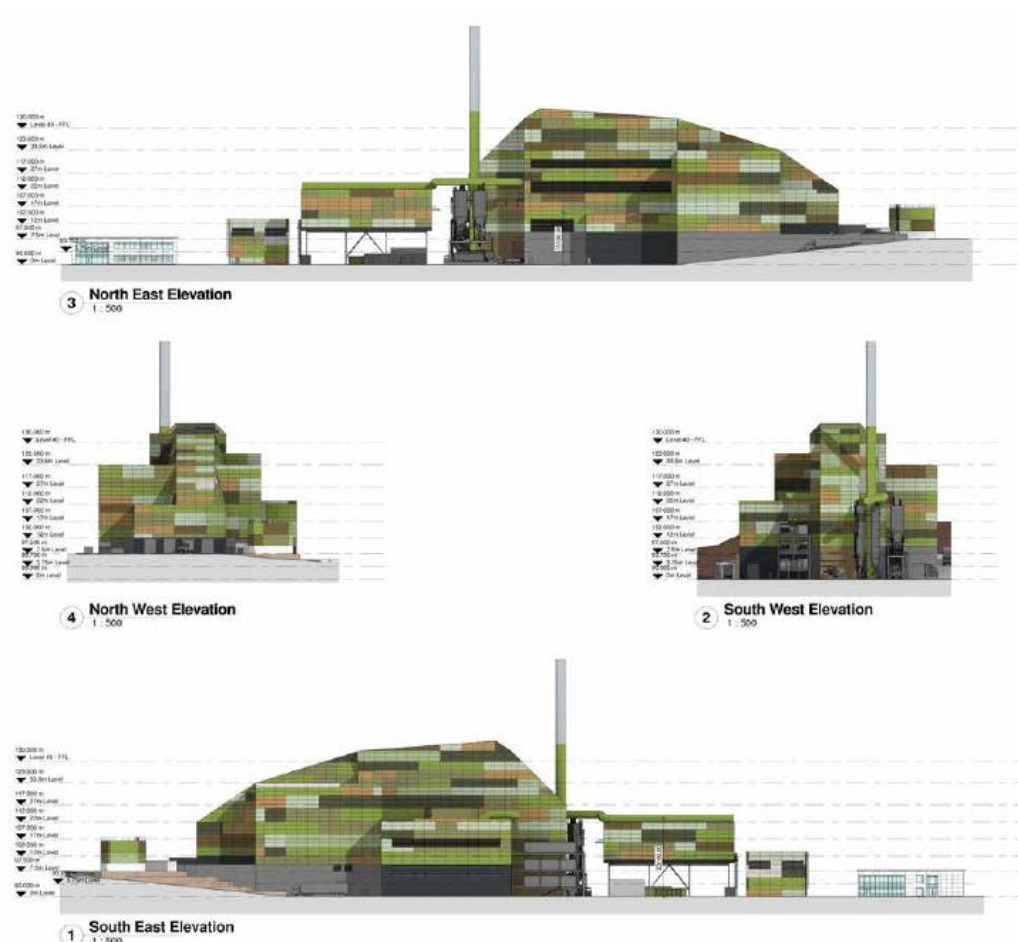
## 4.2. The Physical Development

4.2.1. The operational element of the Buttington ERF will be contained within a single building and a single stack; all wastes will be deposited within the building and there will be no external storage of waste. The main building will contain the following features:

- Waste Reception Hall;
- Waste Bunker;
- Boiler Hall;
- Bottom Ash Storage;
- Flue Gas Treatment facility;
- Flue stack;
- Turbine Hall; and
- Bottom Ash (Storage and Loading) Hall.

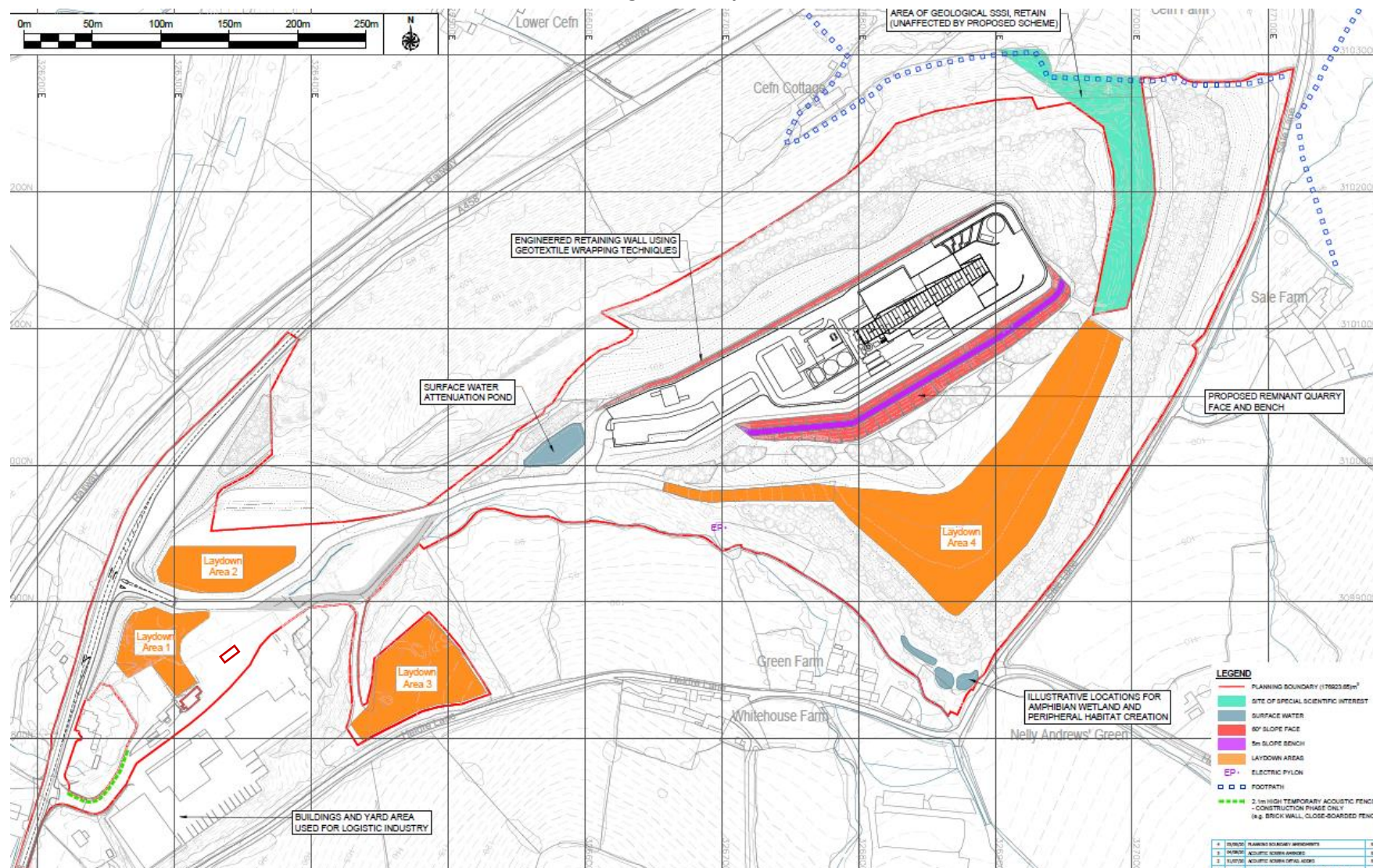
4.2.2. Elevations drawings for the main building are provided in Figure 7, and the proposed site plan is shown as Figure 8.

**Figure 7: Elevations**





**Figure 8: Proposed Site Plan**



- 4.2.3. The building 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.
- 4.2.4. 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 circa 46m above ground level down to circa 33m for the roof of the Waste Reception Hall.
- 4.2.5. The principle material finishes for the building are as follows:
- waste reception hall, boiler hall, flue gas treatment hall, turbine hall, incinerator bottom ash building – colour coated profiled cladding to walls and roof with translucent roof lights;
  - air cooled condensers – colour coated profiled cladding;
  - main stack - colour coated sectional cladding;
  - store and workshop – colour coated profiled cladding the walls and roof, with translucent rooflights and colour coated roller shutter doors;
  - office mess, gatehouse and canopy – colour coated profiled cladding the walls and roof;
  - electrical building, substation and sprinkler tank building – fair faced brickwork with colour coated profiled cladding to the roof;
  - transformer - insitu concrete blast wall;
  - electrical houses – colour coated profiled cladding to walls and roof;
  - chemical silos – colour coated cladding; and
  - sprinkler tank – colour coated sectional cladding with colour coated profiled cladding to the roof.
- 4.2.6. The main stack will be located adjacent to the main building envelope and will measure 70m in height.

#### **4.3. Access and Parking**

- 4.3.1. Access and highway improvements will be made to the A458 to facilitate access to the Development approximately 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 off the A458 and increased junction visibility (see Chapter 8 – Highways and Traffic for further information). The existing access would then be closed off, allowing access to the property known as Brookside only.

#### **4.4. Drainage**

- 4.4.1. The ERF will be served by a surface water drainage system, during the operational phase of the Development, surface water runoff will be managed as follows:
- runoff from the re-profiled quarry walls will be intercepted by filter drains at the toe of the slope, additional proposed measures to minimise suspended solids in runoff from the quarry walls include appropriate planting and the use of silt fences, as required;
  - the area of carparking would be developed as permeable paving with sub-base

storage;

- all site runoff would ultimately discharge to a final settlement/attenuation pond, with controlled discharge, at the pre-development Greenfield rate, to the tributary watercourse;
- all elements of the surface water management plan ("SWMP") for the ERF have been designed to accommodate the 1:100 year rainfall event, with a 20% allowance for long-term climate change; and
- appropriate Sustainable Urban Design System ("SuDS") design is also provided within the SWMP for the site access road.

#### **4.5. Lighting**

4.5.1. An external lighting strategy encompasses the following:

- lighting levels for each area have been designed in accordance with BSEN 12464-2 for outdoor work places;
- additional localised lighting will be required for ladders and platforms;
- lighting has been designed to be in keeping with a site in a rural location;
- luminaires have been selected to minimise the impact on bats;
- mounting heights have been selected to minimise lighting impacts;
- external backlight shields have been provided where required to minimise back spill;
- external lighting will operate all night with the exception of the ERF access road and firewater storage areas; and
- all external lighting will have primary photocell control to ensure it is not operational during daylight hours.

#### **4.6. Utilities**

4.6.1. The ERF will require connection to a number of utilities, including water, telecommunications and electricity. These are all existing within the wider quarry and will be extended beneath the access road to the ERF.

4.6.2. There is no process effluent generated. Domestic foul water will be managed on an on-site package water treatment facility to avoid any reliance on public sewer systems.

4.6.3. A new connection would be required to export electricity off site. The substation will be located within the Development boundary, from where cabling will run underground to the base of the quarry void, prior to emerging to overhead cable. All connection points are within the planning boundary.

#### **4.7. Security Fencing, Gates and CCTV**

4.7.1. The Buttington ERF will be located within the quarry void, thus the quarry walls are an effective security barrier. A boundary fence will run around the Installation with security gates to the staff and visitor carpark separated from the security gates to the weighbridge.

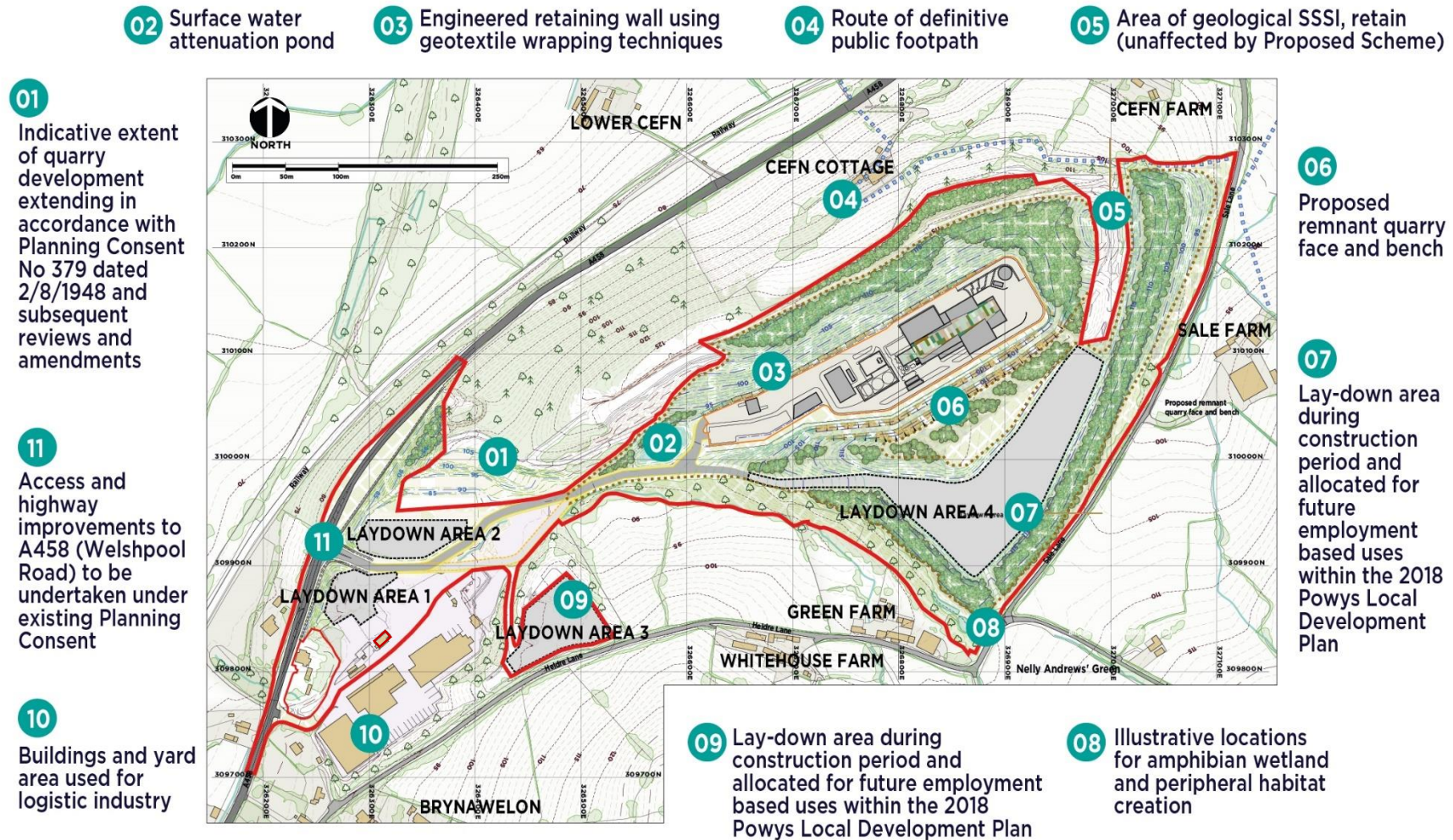
- 4.7.2. Closed circuit television systems (CCTV) as required will be installed with CCTV cameras positioned at strategic locations to provide surveillance of the ERF access points, carparking areas and the quarry rim.

**4.8. Landscaping**

- 4.8.1. The landscaping proposals are shown on Figure 9. In summary, a screening bund will be formed around the quarry rim which will be planted with broadleaved woodland, with further areas being restored to open mosaic habitat and grassland.



Figure 9: Landscape Master Plan



#### **4.9. Employment**

- 4.9.1. In the construction phase the Development will provide employment for approximately 300 workers sourced through local job fair, and once operational will provide permanent employment for up to 30 people including skilled operatives and management.

#### **4.10. Construction Phase**

- 4.10.1. The timetable for the construction period will be dependent on the grant of planning permission for the Development and subsequent contract negotiations. The current programme of works is based on the assumption of a construction start date towards the early part of 2022.
- 4.10.2. The construction period is anticipated to take approximately 36 months thus the estimated date for the opening of the plant is early to mid 2025.
- 4.10.3. The core ground works including site clearance, earthworks, foundations and drainage will occur within the first five months. The erection of building frames and the main structural works will be staggered throughout the construction period. The first major structure to be erected will be the boiler hall and flue gas treatment building, which will begin immediately following the main ground works.
- 4.10.4. The final building structure to be completed will be the air cooled condensers. These structures will be erected between months 17 and 22, towards the end of the construction period.
- 4.10.5. Following completion of the structural building works, external hardstandings including roads and car parks will be completed along with lighting, signage and landscaping. All of the construction works will be managed within the site.
- 4.10.6. The construction operations will generally be limited to 07:00 – 19:00hrs Monday to Friday and 07:00 – 12:00hrs Saturday.
- 4.10.7. A new access road will be constructed off the A458 trunk road, to the north of the existing quarry access as part of the construction activities. For the construction phase, traffic would enter the Development Site from the existing quarry access.
- 4.10.8. The existing access to the Development Site is a simple T-junction which has operated safely and securely with the level of traffic currently accessing the site.
- 4.10.9. The separate new access (circa 170m north of the existing access) to be created includes improvements such as a dedicated right turn lane and increased junction visibility. Furthermore, as part of the proposals, an approximate length of 375m of existing trunk road would be realigned to improve forward visibility and thus removing the significant bend along this stretch of the A458.
- 4.10.10. The construction activities are set out below in the likely construction sequence. However, it is expected that a number of the operations will overlap:
- **Site Preparation** - the perimeter of the site will be secured for the duration of the construction and a one-way traffic system will be set up on site. The site entrance

and exit will be gated and 24 hour manned security will operate throughout the construction period.

- **Re-profiling of the Quarry** - to accommodate the ERF the base of the former quarry will need to be widened; it is intended that the existing north-western quarry face will remain largely unchanged. To enable widening of the existing quarry floor, it is proposed that the south-eastern quarry face will be excavated and reprofiled to accommodate the Development.
- **Earthworks, Foundations and Piling** - The construction will involve the excavation of materials at the site which will be used as part of the landscaping scheme. Foundations for the main building will consist of a combination of traditional raft, pad and piled foundations. Building slabs will be cast in-situ and concrete will be delivered directly to the site via concrete mix lorry.
- **Erection and Cladding of Building Frames** - The buildings are likely to be of steel frame construction with the external envelope formed from a combination of masonry blocks, cold rolled sheeting rails, metal cladding and polycarbonate cladding. The roofs of the buildings will be constructed of composite cladding panel.
- **Installation of Plant and Equipment** - the installation of the main plant and equipment will be undertaken following the completion of the boiler hall and flue gas treatment facility approximately 12 months after the start of construction and will take approximately 12 months. Commissioning of the plant will take a period of 7 months and will commence following installation of the main plant.
- **External Civil Engineering and Infrastructure** - much of the external civil engineering works will be undertaken towards the end of the main construction works in parallel with the installation of plant and the commissioning period. The works will comprise the laying of access roads, the car park, external hard standing areas to the buildings and earthworks associated with the final landscape scheme.

- 4.10.11. Appropriate bunding and environmental protection measures will be implemented within the fuel and material storage areas situated within the construction site. The protection measures will be defined in the Construction Environmental Management Plan, the purpose of which will be to manage and report environmental effects of the project during construction.

#### **4.11. Site Operations**

- 4.11.1. The ERF will operate on a 24 hour a day, 7 days a week. This is necessary to ensure operational efficiency. Incoming waste and deliveries of consumables, together with export of bottom ash could take place for up to 12 hours on weekdays (7am – 7pm) and 5 hours on Saturdays (7am-12pm).
- 4.11.2. Deliveries of waste are based on a 278 working day year (5.5 day week minus 8 public holiday days) and an average load of 15 tonnes per vehicle. Additionally, taking into account deliveries of consumables and the collection of Incinerator Bottom Ash (“IBA”) residues and Air Pollution Control (“APCR”) residues the average daily HGV levels attracted to Buttington ERF is expected to comprise 50 vehicular loads per day.
- 4.11.3. All waste will be delivered to the Installation by road, after weighing, the delivery vehicles will be directed to the Waste Reception Hall which is accessed by means of a fast action



roller-shutter door which will be operated automatically on the approach of a vehicle. Waste will be tipped into the waste bunker, and the vehicle will exit the Installation.

- 4.11.4. The energy recovery process comprises the following elements:
- waste bunker – to store the waste;
  - feed hopper and chute – an overhead crane picks up waste from the bunker and deposits it into the feed hopper to be fed into the combustion chamber;
  - combustion chamber – where waste is combusted;
  - selective non-catalytic reduction (“SNCR”) denitrification system – this forms part of the flue gas treatment and lowers emissions of oxides of nitrogen;
  - boiler – to raise steam;
  - steam turbine and power generator – to generate energy from the steam raised in the boiler;
  - air cooled condensers – to provide cooling of the steam; and
  - grid connection – to export the electricity to the national grid.;
  -
- 4.11.5. Emissions controls will comprise the following elements: a comprehensive flue gas treatment system with associated discharge stack and continuous emissions monitoring system.
- 4.11.6. Odour control will be provided by the atmosphere control system ducting the air from the Waste Reception Hall into the combustion chamber to be used as combustion air within the combustion process.
- 4.11.7. Fire protection systems will be installed to all required areas of the Installation, together with a comprehensive range of alarms and indicators. In the event of a major system failure, the Installation will have the capability of being closed down in a controlled manner through an integrated emergency stop procedure initiated in the Control Room.
- 4.11.8. The site will be operated under an Environmental Permitting Regulations Permit (“EPR Permit”), issued and regulated by Natural Resources Wales (“NRW”). The EPR Permit will identify the potential for effects on the environment and public amenity. As part of the determination of the Permit application, NRW will review the management measures proposed to ensure that the Buttington ERF is operated in a sound environmental manner and does not give rise to unacceptable environmental impacts or detriment to the amenities of the locality.
- 4.11.9. In addition to the Environmental Permit the site will be managed in accordance with an environmental management system, compliant with ISO 14001 (Environmental Management).

## 5. THE EXISTING ENVIRONMENT

### 5.1. Development Setting

- 5.1.1. The quarry itself occupies a total land area of 24 hectares and is bounded by the A458 to the northwest, Sale Lane to the east and Heldre Lane to the south.
- 5.1.2. The quarry is surrounded by open countryside with the village of Buttington located approximately 2km to the south-west and Trewern approximately 1.5km to the north-east. Directly to the north-east of the Development Site is an outlying area of Trewern known as Cefn. This comprises an additional area of sporadic isolated houses and a larger area of residential development, including a school (Buttington Trewern County Primary School).
- 5.1.3. The quarry operated from the late 19<sup>th</sup> Century and included a brickworks. The quarry now operates in accordance with the requirements of planning permission granted in 2010. Buttington Quarry is a working clay pit which previously supplied clay to the adjoining Buttington Brickworks. However, since the closure of the brickworks in 1990, the Quarry has continued to produce only small amounts of clay for low grade construction purposes. The former brickworks buildings are now occupied and used for third party commercial uses including storage and distribution. The Development Site character is shown in Figure 10.

**Figure 10: Development Site Character**



## **5.2. Historical Land Use**

- 5.2.1. A review of the historical OS maps from 1884 to 2019 has been undertaken for the Development and the surrounding area. In summary, it would appear that parts of the Development Site have been subject to quarrying since 1884 with the surrounding area comprising farmland and open space. By 1903 the Buttington Brickworks was established with further evidence of quarrying activities within the Development Site, which has further increase by 1954. By 1972 the village of Cefn is now shown as a larger settlement to the north with further expansion by 2006.
- 5.2.2. Anecdotal evidence from Border Hardcore Company Limited who currently operate the quarry for the supply of stone products on the Development Site suggests that the Brick Works closed in 1990. Additionally, the former Brick Works buildings are used for commercial uses, such as storage and distribution. Quarrying activities are on-going, particularly in the area to the south of the Development Site, where the new site access is proposed.

## **5.3. Environmental Consents, Licences, Authorisations, Permits and Designations for the Development Site and Surrounding Areas (within 1km)**

- 5.3.1. There are a number of discharge consents within 1km of the Development, used for the discharge of sewage effluent.
- 5.3.2. As mentioned in Paragraph 5.2.2. Border Hardcore who operate the existing quarry are the holders of a Local Authority Permit for General Mineral Processes.
- 5.3.3. There is also one water abstraction point, at Buttington New Hall for private water for general farming and domestic use.
- 5.3.4. In addition to the Development Site, there are 3 further mineral development sites – however, these have all ceased.

## **5.4. Geological, Hydrogeological and Hydrological Data**

- 5.4.1. Buttington Quarry is excavated within the Cefn Formation, comprising sandstones and mudstones of the Silurian Period and Stone House Shale Formation of the Ordovician Period. Strata are steeply dipping towards the southeast within the quarry, resulting in a narrow band of high-quality brick making material being exposed at surface.
- 5.4.2. Buttington Quarry was originally operated to produce mudstone and clay for use at the neighbouring brickworks. Since closure of the brickworks, the Development Site has been worked to produce medium quality general aggregate from more competent slate/shale horizons on the northern flank of the Development Site.
- 5.4.3. The glaciofluvial superficial deposits found beneath the Development have been categorised as an undifferentiated layered secondary aquifer with intergranular flow. A lower permeability Secondary (B) Aquifer sits below these deposits.



- 5.4.4. The Development is not within a Groundwater Source Protection Zone ("SPZ"). The closest primary river is the River Severn located to the west of the Development Site, however the Development Site is considered to be at little or no risk of fluvial or coastal/tidal flooding. Within the south-west of the Development Site are areas designated as high risk of flooding from surface water, mainly attributable to the minor tributary watercourse contained therein.

## **5.5. Ecological Conditions**

- 5.5.1. Most of the area on which the Buttington ERF is to be constructed is of negligible ecological value with extremely limited scope to support protected species. This comprises the existing quarry void, access tracks and laydown areas which are dominated by compacted bare or sparsely vegetated ground, along with recently felled woodland at the proposed new access off the A458.
- 5.5.2. The remainder includes ephemeral/short perennial and tall ruderal vegetation, scattered scrub and areas of semi-improved neutral grassland which together meet the criteria for Open Mosaic Habitat on previously developed land ("OMH"), a Section 7 priority habitat. Two existing settlement lagoons also represent priority habitat (ponds) due to the presence of a small population of great crested newt ("GCN").

## **5.6. Surrounding Land Use**

- 5.6.1. The Development is not located within 10km of a Site Protection Areas ("SPA") or Ramsar Convention on Wetlands of International Importance ("Ramsar") sites. However, there are two Special Area of Conservation ("SAC") sites as follows;
- Granllyn – located approximately 4.5km north west; and
  - Montgomery Canal – located approximately 1.39km to the west of the Development.
- 5.6.2. Buttington Brickworks is designated as a SSSI for its geological interest and is located within the north east region of the Development Site, but is excluded from the planning boundary. Additionally, the Montgomery Canal is also designated as a SSSI and Moel Y Golfa SSSI is located approximately 1.88km north east of the Development Site.
- 5.6.3. The Development Site is not located within 2km of any National Nature Reserves ("NNR") or Local Nature Reserves ("LNR").
- 5.6.4. Ancient woodland is located within the north west region of the Development Site within the planning boundary and is categorised as; ancient woodland of unknown category, restored ancient woodland and plantation on ancient woodland site. The ancient woodland will not be affected by the Development, and will be retained to provide ecological habitat and visual screening.

## **6. AIR QUALITY**

### **6.1. Summary**

- 6.1.1. An assessment has been carried out to determine the local air quality impacts associated with the emissions from the proposed Buttington ERF from both the Installation and the associated vehicle emissions at all phases of Development. In addition, a qualitative assessment of odour impact has been undertaken for the operational phase.
- 6.1.2. Impacts of dust generated from construction phase was not significant and will be limited to the confined of the Development site. A Construction Environmental Management Plan will be provided containing all construction control measures.
- 6.1.3. As a worst-case, emissions from the Installation's stack have been assumed to be at the maximum emission limit values which represents a conservative assessment of the impact as the actual emissions from the Installation are likely to be significantly lower.
- 6.1.4. A detailed screening assessment confirmed that the optimum stack height for the Installation would be 70m.
- 6.1.5. Predicted maximum ground level concentration process contributions are within the short and long term air quality objectives and are assessed as not significant (less than 1% of the air quality standard / environmental assessment level) for most pollutants assessed. For those that are potentially significant, further screening has demonstrated that it is unlikely that any AQSS will be exceeded as a result of emissions from the proposed Installation at the maximum point of GLC or at any of the potentially significant human receptors.
- 6.1.6. For the sensitive habitat sites, it has again been demonstrated that the impact from the proposed Installation is unlikely to result in a breach of the relevant Critical Loads or Critical Levels or have a detrimental effect on local habitat sites.
- 6.1.7. An assessment of plume visibility was also undertaken, which concluded that visible plumes would only occur around 30% of the time, and for 95% of the time, any visible plumes would remain within the site boundary.
- 6.1.8. An assessment was also made of the impact of the proposed plant when operating under the abnormal conditions permitted under Article 46(6) of the Industrial Emissions Directive. The results of the assessment indicated that it would be unlikely that any AQSS would be exceeded under such abnormal operating conditions.
- 6.1.9. The impact of road traffic emissions associated with the Installation, in all phases of the development can also be classed as not significant.
- 6.1.10. The odour assessment also confirmed that the Installation will have a negligible effect on the nearest sensitive receptors.
- 6.1.11. In summary, therefore, it can be concluded that the proposed Buttington 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.

## **7. SOCIO-ECONOMIC**

### **7.1. Summary**

- 7.1.1. The location of the Buttington ERF is rural in nature, with Welshpool as the closest, most substantial conurbation. The planning policy review has demonstrated in socio-economic terms that the Development is in keeping with local requirements. The density of population for the Local Study Area is below the County average and the age distribution is the same as the County and country average. Access to Services are highlighted by the Welsh Index of Multiple Deprivation as a potential issue for some areas in the Local Study Area. All areas in proximity to the proposed Development have higher than the County average for those entering higher education. The Local Study Area has comparatively high levels of employment with a lower percentage of those in the construction sector; therefore it is likely that construction workers are likely to come from the Wider Study Area.
- 7.1.2. Tourist attractions of note within the Local Study Area and Wider Study Area include the town of Welshpool, Powis Castle and Gardens and Welshpool & Llanfair Railway. There is one Public Right of Way in proximity to the development (footpath B39 that was re-routed in 1999 and so will not be affected or interrupted by the Development). Powys has a number of national trails but none are expected to be affected by the proposed Buttington ERF.
- 7.1.3. The likely numbers of construction (300 full time equivalent) and operation (30 full time equivalent) workers will require a mix of technical and support staff that will offer the opportunity of direct and indirect employment. Employment and supply chain effects will result in a positive effect but this is not considered to be significant for the Local or Wider Study Areas. The length of time employment and supply chain requirements are required for operation makes this positive effect greater than for construction and decommissioning.
- 7.1.4. In terms of the socio-economic assessment a number of issues have been explored, the assessment concludes no significant negative effect from the introduction of the Development to the area. Therefore, no mitigation is proposed. A negligible positive effect will result in terms of employment and supply chain particularly during operation but this is not significant.

## **8. TRANSPORTATION AND HIGHWAYS**

### **8.1. Summary**

- 8.1.1. The scope of the Transport Assessment report was agreed with the Transport Network Management Division at the Welsh Government Office and also Powys County Council highway department prior to its preparation.
- 8.1.2. In addition, scoping enquiries were also sent to Highways England and Shropshire County Council. The investigations undertaken as part of those scoping enquiries confirmed that the development would be likely to add modest traffic levels only to the road network within England and Highways England confirmed that as a result assessment of trunk roads within England was not required as part of this study.
- 8.1.3. The relevant National and Local transportation planning policies have been identified and it has been demonstrated that the proposal would comply with those policies.
- 8.1.4. The baseline transport conditions within the agreed study area have been established and that has included reference to the results of an ATC survey on the A458 and the results of manual classified traffic counts at the three agreed key junctions for this study. In addition, the level of traffic attracted to the identified but as of yet un-implemented 'committed' developments has been calculated.
- 8.1.5. The level of traffic attracted to the Development Site during the construction and operational phases of the development has then been identified. As the construction and decommissioning phases would be temporary and, with the exception of the short construction period for the site access junction, no significant effects are likely, the junction capacity assessments for this study have only been undertaken for the operational phase of the development. The operational phase of the Development would span a far longer time period and would, with the exception of the relatively short enabling phase, attract higher daily HGV levels.
- 8.1.6. Notwithstanding the above it is considered that the 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.
- 8.1.7. It is considered that the operational development traffic would have a direct, permanent, negligible adverse effect only on the operation of the local highway network.
- 8.1.8. Likewise, the decommissioning phase would have a direct, temporary, minor adverse effect only on the operation of the local highway network
- 8.1.9. Finally, it is considered that during all phases of the Development, the traffic attracted to the site would have direct and minor adverse impact only on pedestrian severance, amenity, delay, fear and intimidation.

## **9. LANDSCAPE AND VISUAL**

### **9.1. Summary**

- 9.1.1. The LVIA has been carried out in line with current guidance and best practice specified for landscape professionals, and advice set out in relevant guidance and with due regard to comments in the Scoping Direction in relating to landscape and visual matters. Cultural heritage designations have been taken into account.
- 9.1.2. Relevant national and local planning policies have been addressed and the Development will comply with policies. Of particular note, are landscape and visual matters relating to the design of built form and incorporated mitigation measures.
- 9.1.3. The baseline situation with regards to landscape setting, character and designations has been established through the LVIA. Direct and indirect effects have been explored in terms of landscape character. A neutral nature of effect was determined with regards to both the construction/decommissioning and operation phases of the Development. This also applies to indirect effects on the assessed landscape designations. No significant effects were identified.
- 9.1.4. With regard to visual receptors, a significant effect was recorded in a small number of cases. This mainly occurred in the construction/decommissioning phases as opposed to operation. With regards to the latter, overall magnitude of impact was also lower and effects generally of a neutral rather than adverse nature of effect in comparison. An important consideration is the location of the Development Site in a wider context as it occupies part of a transitional landscape with the Severn Valley to the west and the higher uplands of Breidden Hill and Long Mountain to the east. Consequently, it is often viewed against a backdrop of land rather than skyline.
- 9.1.5. The LVIA concluded that there would be sufficient landscape and visual capacity to enable the Development without overriding adverse effects on either landscape character or visual amenity.
- 9.1.6. No adverse cumulative landscape or visual effects have been identified due to the Development.
- 9.1.7. Mitigation measures form an integral part of the Development and have been considered as part of the assessment of landscape and visual effects. Of note, is the siting of the ERF building and stack which will be located in the quarry void in the central environs of the Development Site (i.e. at a low level). The screen bunds will be planted with native broadleaved trees and provide screening properties as well as long term neutral or beneficial effects. The selection of cladding colours which is intended to be sympathetic to the landscape setting is an important consideration for landscape and visual receptors as demonstrated by the assessment.

The Development will result in notable changes both regarding the Development Site and in a wider context in landscape and visual terms. 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.

## **10. ECOLOGY**

### **10.1. Summary**

- 10.1.1. Ecological features and the likely effects of the Development on them have been evaluated and assessed in line with current best practice guidance for ecology.
- 10.1.2. Several designated conservation sites are within the Zone of Influence ("ZOI"). These are Montgomery Canal Special Area of Conservation ("SAC") and Special Area of Conservation ("SSSI"), Granllyn SAC, Moel y Golfa SSSI and Midland Meres and Mosses (Phase 1) Ramsar Site. Ten areas of Ancient Semi-Natural Woodland ("ASNW") are also occur within the ZOI.
- 10.1.3. A shadow Habitats Regulations Assessment ("sHRA") has been prepared which addresses impacts of the Development on the SACs and Ramsar. This along with the air quality chapter concluded that there will be no significant impacts on European designated sites.
- 10.1.4. 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. There will be no exceedances of the critical levels set for the protection of ecosystems at either European Protected sites or all other ecological sites. In most cases, long term process contributions ("PCs") are less than 1% of the critical level and only just over a maximum of 2.66% for one ancient woodland site.
- 10.1.5. Nutrient nitrogen deposition critical loads will not be exceeded at the that majority of local nature sites, and will not cause any significant pollution at one of the ancient woodland sites. At Moel-y Golfa the process contributions are a maximum of 2.96% of the lower critical load. The magnitude of change for Moel-y-Golfa is so small with respect to the background levels that significant impacts are not expected. To the elevated baseline air quality levels for all the sites; the Development is not considered likely to have a significant effect on the qualifying features of any SSSI or area of ancient woodland. Process Contributions on both RAMSAR sites considered are less than 1% consequently are not significant.
- 10.1.6. For acid deposition, the process contributions are a maximum of 3.98% at the local nature sites and less than 1% at the SSSIs, SACs and RAMSAR sites
- 10.1.7. Most of the Development footprint is of negligible ecological value with extremely limited scope to support protected species. This comprises the existing quarry void, access tracks and laydown areas which are dominated by compacted bare or sparsely vegetated ground, along with recently felled woodland at the proposed new access off the A458.
- 10.1.8. The remainder includes ephemeral/short perennial and tall ruderal vegetation, scattered scrub and areas of semi-improved neutral grassland which together meet the criteria for Open Mosaic Habitat on previously developed land ("OMH"), a Section 7 priority habitat. Two existing settlement lagoons also represent priority habitat (ponds) due to the presence of a small population of great crested newt ("GCN").
- 10.1.9. Habitats immediately adjacent to, but outside the Development footprint include a small stream, broadleaved and coniferous woodland, including an area of Plantation on an Ancient Woodland Site ("PAWS"). Habitats associated with the remnant agricultural field



system are also present within the wider land holding, including hedgerow, scrub, and scattered trees, poor semi-improved and neutral grassland, and tall ruderal vegetation.

- 10.1.10. Targeted ecological surveys have identified that habitats at the fringes of the Development area and within the wider land holding support or have the potential to support, fauna that could be affected by the proposals. These include GCN, bats, nesting birds, badger, hedgehog, reptiles, and common amphibians.
- 10.1.11. The main impacts of the development are direct loss of priority (but relatively low quality) OMH and pond habitats; degradation of aquatic habitats resulting from pollution; and risk of harm to or displacement of protected species.
- 10.1.12. A range of mitigation and enhancement measures have been designed into the development proposals. These include the creation of approximately 2 ha of new, high quality OMH habitat along with a series of 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 outlined in this chapter.
- 10.1.13. Precautionary measures in respect of the protection of habitats and species will be incorporated into a CEMP to ensure minimisation of effects during construction and operation. A European Protected Species Mitigation Licence ("EPSML") will be secured to ensure legal compliance with respect to GCN.
- 10.1.14. The measures proposed will minimise the effects of the Development on ecological features of importance and ensure legal compliance in respect of protected species. The development is consistent with relevant biodiversity planning policy and is considered to contribute to the aims of the Environment (Wales) Act in maintaining and enhancing biodiversity and promoting the resilience of ecosystems, particularly OMH and ponds. Local habitat connectivity will be maintained and there will be an overall increase in the quality of priority habitats.

## **11. THE WATER ENVIROMENT**

### **11.1. Summary**

- 11.1.1. The Development currently comprises a historic mudstone and clay quarry void with associated access road and storage areas. The bedrock geology comprises Silurian shales and mudstones which dip steeply towards the south-east and are highly weathered where exposed.
- 11.1.2. The bedrock geology is classified as a Secondary B aquifer, with porosity and permeability limited to the near-surface weathered horizon and discontinuities including bedding planes and fractures.
- 11.1.3. Groundwater levels have been locally influenced by quarrying, within the site monitoring boreholes indicate a hydraulic gradient into the quarry void, with groundwater levels at or just below ground level in the quarry floor. Incident rainfall forms surface water runoff or shallow, perched groundwater throughflow, providing baseflow to the tributary watercourse which flows through the site.
- 11.1.4. The watercourse is a tributary of Pwll Trewern (a Water Framework Directive surface water body) and is culverted for the majority of its course through the Development.
- 11.1.5. The baseline groundwater and surface water environment within the Development is strongly influenced by the historic quarrying activities. Site drainage is managed informally via a series of settlement/attenuation ponds but elevated suspended solids are evident in runoff entering the tributary watercourse.
- 11.1.6. The Development is not at a significant risk of flooding and therefore a Flood Consequences Assessment is not required to support the planning application.
- 11.1.7. In the absence of appropriate mitigation and design the proposed Development of Buttington ERF has the potential to:
- increase suspended solids content in site drainage entering the receiving watercourse during site preparation and construction.
  - increase surface water runoff rates and volumes due to the introduction of impermeable surfaces; and
  - impact groundwater and surface water quality due to storage and handling of hazardous wastes and the use or accidental release of other chemical pollutants including hydrocarbons.
- 11.1.8. 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 Sustainable Urban Drainage Systems ("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.
- 11.1.9. 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.

- 11.1.10. 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.

## **12. ARCHAEOLOGY AND HERITAGE**

### **12.1. Summary**

#### **Non-Designated Archaeological Assets**

- 12.1.1. The assessment has 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.
- 12.1.2. Considering the above information, 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.
- 12.1.3. It is possible, however, that 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.
- 12.1.4. 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.

#### **Designated Heritage Assets**

- 12.1.5. There are no World Heritage Sites, Conservation Areas and Historic Battlefields either within the Development Site or the 5 km study area. Therefore, the Development will not impact upon the setting or significance of these designated heritage assets.
- 12.1.6. A single Scheduled Monument is assessed to have a minor adverse effect upon its wider setting from the Development in the long-term at the national level, which is not significant.
- 12.1.7. There are 4 Grade II, one Grade II\* and one Grade I Listed Buildings that are considered to have a minor adverse effect upon their wider settings from the Development in the long-term at the national level, which is not significant.
- 12.1.8. Seventeen Grade II Listed Buildings are considered to have a negligible to none effect upon their wider settings from the Development in the long-term at the national level, which is not significant.

## **13. GEOTECHNICAL AND MATERIALS MANAGEMENT**

### **13.1. Summary**

- 13.1.1. Intrusive investigation of the Development Site has confirmed the underlying ground conditions and characterised the chemistry of soils and groundwater.
- 13.1.2. The Development Site is underlain by Silurian mudstones, which are bedded very steeply towards the southeast, and young towards the southeast. Slope stability analysis concluded that the slope stabilisation will be required for all newly created slopes angled between 34° and 60°. An angle of 60° is considered the steepest angle at which the slope may be safely stabilised for long term integrity.
- 13.1.3. A section of rock exposure just beyond the northeast end of the Development Site and non-operation quarry is classed as a geological SSSI. The new Development and associated earthworks and slope stabilisation have been designed to ensure long term preservation of the SSSI.
- 13.1.4. Soils were confirmed to be uncontaminated with regards to the human health of construction workers, future site occupiers and neighbouring site users. Groundwater is not considered to present a risk to the aquatic environment.
- 13.1.5. Best practice will be employed during the construction phase of development and therefore no adverse environmental effects on human health or the soil and water environment. Prior to construction, a Construction Environmental Management Plan will be developed to ensure there are sufficient control measures in place to prevent or control any potential adverse effects on human health and the aquatic environment.
- 13.1.6. The Buttington ERF has been designed to meet best available techniques as described in National Resources Wales guidance and associated Best Available Techniques Reference Documents and as such it is not anticipated that the operational phase of the development will have any impact on human health or the aquatic environment.
- 13.1.7. During the decommissioning phase, as with the construction phase, best practice will be employed to ensure that there are no adverse environmental effects. Control measures as specified in a Decommissioning Environmental Management Plan will be followed.
- 13.1.8. It is considered that the implementation of the above construction phase and operation phase design and control features will ensure any potential detrimental effects to land and human health are minimised.

## **14. NOISE**

### **14.1. Summary**

- 14.1.1. An assessment has been undertaken of the noise impacts of the Development during its operational period at the identified noise sensitive receptors. The study benefits from a baseline study to inform the assessment and to ensure that the impacts are determined in context with the baseline sound climate.
- 14.1.2. The assessment has been undertaken to inform and guide the design of the Development such that any likely noise and vibration impact on noise sensitive receptors complies with appropriate and relevant guidance and standards.
- 14.1.3. 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.
- 14.1.4. 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.
- 14.1.5. 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.
- 14.1.6. 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.
- 14.1.7. In summary, no significant noise effects have been identified by the assessment in relation to site construction/decommissioning or operational phases of the development.



## **15. HEALTH IMPACT**

### **15.1. Introduction**

- 15.1.1. A Health Impact Assessment (“HIA”) was undertaken to determine the health impacts from the Development. The HIA has been undertaken using the methodology and tools provided by Wales Health Impact Assessment Support Unit (WHIASU). The HIA also considered recommendations to address identified potential unintended consequences and to also maximise positive health impacts.

### **15.2. Summary of Impacts - Short Term Impacts**

- 15.2.1. There are a number of potential short term impacts that may affect the locality and present health impacts during the construction period. Initial noise impacts will be from the re-profiling of the quarry to facilitate the construction and layout of the proposed development. Much of this will be within the quarry bowl, but working at higher levels and transportation of materials could impact to a greater extent on the local neighbouring community. Particular activities, such as piling, often cause concern for neighbouring residents, resulting in anxiety and potential mental health issues.
- 15.2.2. Types of noise, and duration, are likely to change during the construction period as work progresses, this will also be the case for associated traffic movements. There are likely to be ‘lulls’ in the levels of noise at different stages. Weather conditions can dictate when certain construction activities take place; this can impact on neighbours’ ability to enjoy their outdoor space if noise from the site is intrusive. Uncertainty of noise sources, their duration and the lack of control over it, can be a psychological issue for some people and therefore affect their well-being.
- 15.2.3. Dust is often an issue for construction sites, such as when soils and overburden are being moved and stockpiled. HGV movements can also create dust generation, not only on the Development Site but along the local highway network. Excessive dust can cause soiling of properties and impact health, particularly for those with existing respiratory conditions.
- 15.2.4. Extra vehicle trips will be created during the construction phase, many of them HGV. This will result in more traffic pollution and potential road safety issues, especially in respect of older members of the community and younger children attending the local school.
- 15.2.5. Lighting of a construction site is likely to alter as construction progresses. Temporary lighting is often used as it can be relocated easily to areas where and when needed. Inappropriate use of such lighting can impact on neighbouring premises and cause concern for residents. Use of such lighting is more difficult to plan.
- 15.2.6. Access to and use of the footpath and other local green space may be considered no longer viable by members of the local communities. This could be due to safety concerns of being near to the construction site, or accessing along roads with an increased number of HGV vehicles related to the Development. This could result in less physical activity for some, and mean less enjoyment of the natural surroundings. Both of these impacts can result in further impact on mental well-being.

- 15.2.7. For those opposed to the Development, the fact that construction will be (if permission is granted) could be detrimental to their mental health. The Development has been under discussion for a number of years and some members of the communities are very emotional about the proposal and have strong objections.
- 15.2.8. The local economy could receive a boost during the construction period with a larger number of people in the area working at the Development Site. Potentially, a lot of these could be 'locally' employed, which would help create income for local families, consequently, having the potential to improve their health and lifestyle as a result of more disposable income.
- 15.2.9. If improvements to the footpath and / or other local green space can be identified, and delivered, as part of the Development proposal then this could benefit the local communities with more attractive natural surroundings to visit and help keep them physically active. This turn would improve mental well-being.

### **15.3. Summary - Long Term Impacts**

- 15.3.1. Noise could become a long term impact if not mitigated appropriately. Operation of the ERF would be continuous and, therefore, noise will be generated all day and night. Intrusive noise for long periods of time, whether deemed a nuisance or not, can have severe detrimental health impacts, such as sleep deprivation.
- 15.3.2. Air pollution will be emitted continuously from the stack serving the ERF. If the Installation is not operated to the necessary standards and with the correct controls in place, then the pollutant emission could impact on health, particularly those with existing poor health.
- 15.3.3. Odour from waste deliveries and storage prior to processing could be an impact if the proposed mitigation measures are not implemented or maintained. The odours would impact neighbouring premises, and could lead to pest or fly infestations. Impacts could range from annoyance to potential spread of disease.
- 15.3.4. Light intrusion from the Development Site could affect local residents if the lighting plan has not been designed correctly. This could impact on sleep for those affected which can lead to health impacts associated with sleep deprivation, which can include mental health impacts.
- 15.3.5. For those strongly opposed to the Development, having witnessed the construction (assuming permission is granted) and then seeing the development operational may cause them severe anxiety and concern for their long term well-being. If they do not have the means to move, if that was their only perceived way of dealing with the situation, then this could be a significant impact on their mental health and well-being.
- 15.3.6. If the proposed Development does not end up creating 'local' jobs, but instead employees are sourced elsewhere, this could cause resentment and community divisions, particularly for those who move to the area for the employment. This would potentially impact the 'sense of belonging', neighbourliness, and community cohesion. For some, it could affect their well-being and lead to other health impacts.

- 15.3.7. The proposed Development could deliver more local jobs, not just for the site but for support services. This could in turn lead to educational improvements and potential apprenticeships or training programmes.
- 15.3.8. Locally, greater awareness of waste issues could be delivered through the proposed Development, and over time the awareness may spread and therefore help to reduce the generation of waste.
- 15.3.9. The new jobs create more local income which would boost the local economy and perhaps help make improvement some local housing, which in turn could improve health for those residents.
- 15.3.10. If the proposed Development resulted in support for local organisations, community groups or sports teams, then this could encourage community spirit, cohesion and pride in the communities.
- 15.3.11. If an excellent health and safety ethos is enshrined within site activities this could lead to improved health and safety standards within the community. This would benefit everyone in the locality.
- 15.3.12. Wider benefits result from waste that cannot be recycled or landfilled is used to create energy. Some of this energy could be used locally, if suitable proposals are identified.
- 15.3.13. The longer term aim is to provide more business uses on the overall quarry site which would create more jobs and further boost the local economy.
- 15.3.14. 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.

#### **15.4. Measures to be Implemented**

- 15.4.1. A Liaison Group will be established with relevant stakeholders and with links to the community such that concerns can be raised and discussed and effective communication about the proposed Development can be disseminated.
- 15.4.2. 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.
- 15.4.3. The Lighting Plan, as approved, will be installed to ensure that minimum light impact is created for the surrounding area.
- 15.4.4. Odour mitigation measures identified through the waste reception hall and bunker design methodology will be implemented such that odour issues are not created.
- 15.4.5. 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.

- 15.4.6. Both Broad Energy, in conjunction with HZI will liaise and collaborate with Powys County Council and other stakeholders for establishing an educational and training programme centred around the ERF activities.
- 15.4.7. Broad Energy (Wales) Limited and Powys County Council, 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.
- 15.4.8. Broad Energy (Wales) Limited and HZI will continue to seek participation from the local community to identify other beneficial outcomes from the proposed Development, and identify any negative impacts that are, as yet, not known.

## **15.5. Conclusion**

- 15.5.1. The HIA has been undertaken using the methodology and tools provided by WHIASU, gathering evidence from literature reviews, technical documentation, and feedback received through engagement. It is recognised that the level of engagement has not been as extensive as anticipated.
- 15.5.2. The Development has the potential to impact on the locality both through the construction phase and the operational phase. Many of the environmental factors are appraised by Technical experts within the various EIA Chapters. Mitigation is proposed where potential impact is identified. Ensuring the mitigation is implemented is crucial to minimising the impact.
- 15.5.3. Some potential benefits have been identified, but further work is required to formalise these benefits, particularly in respect of the local communities.
- 15.5.4. Perception and miss-trust of the HIA process has limited the level of engagement and potentially identifying more vulnerable groups that may be affected by the proposed Development. It is hoped that a greater level of engagement may be achieved through the planning consultation stages and any further findings will be taken into consideration and discussed within the HIA prior to final submission [Note: this paragraph will be updated following the outcome of the 42day consultation].

## **16. CUMULATIVE AND MITIGATION**

### **16.1. Cumulative Impact**

- 16.1.1. An assessment of the likely significant cumulative effects of the Development in relation to identified 'Other Developments' has been undertaken. The type of 'Other Developments' considered include those that have been granted planning permission, are not yet operational, have yet to be constructed or are submitted applications which are yet to be determined. Only major developments within 5km of the Development Site have been considered as these have the greatest potential to result in cumulative impact in the surrounding area of the Development.
- 16.1.2. The assessment methodology was based on the Cumulative Effects Assessment Advice Note 17 which was referenced in the Scoping Direction. The methodology consisted of a multi-stage approach comprising four main stages.
- 16.1.3. Stage 1 included the identification of 'Other Developments' which together with the Development could give risk to cumulative or in-combination effects. This involved a comprehensive review of the PCC planning application records within the last three years falling within 5km radius of the Development Site.
- 16.1.4. Stage 2 involved the shortlisting of the relevant 'Other Developments'. It became apparent during the shortlisting that the vast majority identified were minor developments and could be discounted from the assessment. Only major developments, those subject to an EIA, waste developments, winning and working of minerals or the use of land for mineral working deposits and those which involved the construction of tall structures or buildings were shortlisted.
- 16.1.5. Once the shortlisted 'Other Developments' had been determined, Stage 3 and 4 involved information gathering and the cumulative assessment. Information was obtained through reviewing the planning history and making reasonable assumptions on the likely significant environmental effects based on the supporting documentation available.
- 16.1.6. It has been established that the cumulative effect from the 'Other Developments' and the Buttington ERF relates to traffic and transportation. The Transport Impact Assessment undertaken for the Development incorporated modelled traffic data growth for future traffic flows and therefore, the assessment is considered to be comprehensive and worst case within the defined assessment parameters. As such, no additional cumulative assessment is required.
- 16.1.7. It has been concluded that no significant cumulative impacts have been identified as a result of the Development or as a result of the Development in combination with the identified shortlisted 'Other Developments'.
- 16.1.8. No additional mitigation measures other than those proposed within the technical assessments of this EIA are required in order to mitigate against any adverse cumulative impacts.



## 16.2. Summary of Mitigation

16.2.1. The mitigation measures for the Development are largely incorporated mitigation. Each KEA Chapter provides detail on the mitigation required, and Chapter 16 provides a detailed table outlining all mitigation measures. Table 16-1 provides a high level description of the mitigation proposed.

**Table 16-1: Summary of Mitigation**

KEA	Mitigation Proposed	Means of Securing Delivery
Air Quality Ecology Health Impact Water Environment Geotechnical and Materials Management Noise	<ul style="list-style-type: none"> <li>Provision of a Construction Environmental Management Plan ("CEMP")</li> <li>Provision of a Decommissioning Environmental Management Plan ("CEMP")</li> </ul>	<p>Planning Condition requiring CEMP.</p> <p>DEMP will form part of the Decommissioning Plan for the Installation to be submitted to NRW as part of an EPR Permit Condition</p>
Air Quality Health Impact	<ul style="list-style-type: none"> <li>Design measures and management and operational procedures.</li> <li>Integrated Management System</li> <li>Environmental Permit</li> <li>Process Control Measures</li> <li>Flue Gas Treatment System</li> <li>Continuous Emissions Monitoring Systems</li> <li>Odour Control Systems</li> </ul>	<p>Design of Development</p> <p>The Installation will be required to obtain and Environmental Permit.</p>
Highways and Transportation	<ul style="list-style-type: none"> <li>Traffic Management Plan including HGV Routing Strategy</li> <li>Travel Plan</li> </ul>	<p>Planning Condition requiring both</p>
Ecology	<ul style="list-style-type: none"> <li>Creation of Areas of Open Mosaic Habitat</li> <li>Removal of Vegetation outside breeding bird season where required</li> <li>Creation of Wildlife Ponds suitable for great crested newts and other species</li> <li>Lighting Plan to minimise impact on Bats</li> <li>Low speed limit</li> <li>Checks to ensure no changes to baseline ecology immediately prior to construction.</li> </ul>	<p>Planning Condition requiring Habitat Management Plan ("HMP")</p> <p>European Protected Species Management Licence and HMP</p> <p>Planning Condition requiring implementation of Lighting Plan</p> <p>Design of Development</p> <p>Planning Condition requiring CEMP</p>
Water Environment	<ul style="list-style-type: none"> <li>Implementation of Surface Water Management Plan</li> </ul>	<p>Planning Condition implementation of SWMP.</p>
Archaeology and Heritage	<ul style="list-style-type: none"> <li>Programme of archaeological works, with an archaeological watching brief on groundworks which have not been subject to previous modern disturbance.</li> </ul>	<p>Planning Condition</p>

**Table 16-2: Summary of Mitigation**

KEA	Mitigation Proposed	Means of Securing Delivery
Geotechnical and Materials Management	<ul style="list-style-type: none"> <li>Pre-import assessment of chemical test data for materials and post-import sampling, testing and quantitative assessment of import materials to confirm suitable for use.</li> <li>Inspection, sampling and testing to test soils</li> <li>Install radon gas protection</li> </ul>	Design of Development Planning Condition requiring CEMP
Noise	<ul style="list-style-type: none"> <li>The introduction of a temporary acoustic screen at site entrance along boundary with Brookfield House for the construction/decommissioning phase of the development.</li> <li>Noise control measures have been incorporated into the design of the Development</li> </ul>	Planning Condition containing noise limits
Health	<ul style="list-style-type: none"> <li>Creation of a Liaison Group</li> </ul>	n/a – dependant on Community Involvement
Landscape and Visual	<ul style="list-style-type: none"> <li>A screening bund will be formed around the quarry rim which will be planted with broadleaved woodland, with further areas being restored to open mosaic habitat and grassland.</li> </ul>	Landscape Masterplan to be implemented as a Planning Condition

### 16.3. Major Accidents and Disasters

16.3.1. The Development has the potential to be affected, by the risk of major accidents or disasters, and consequently there is the potential for the Development to impact the environment. Accidents are considered to result from an uncontrolled event during the construction or operational phase of the Development. A Disaster is considered to be a naturally occurring event which is beyond human control e.g. an extreme weather event.

16.3.2. Various types of accidents and disasters were considered including:

- severe weather;
- poor air quality;
- transport incidents;
- terrorist incident;
- fire or explosion;
- landslide;
- contamination;
- volcanic eruption;
- biological epidemic; and
- utilities failure.

16.3.3. It is considered that were there is a potential risk from the various accidents and disasters this has been addressed in the ES. In addition, the majority of emergency response plans

and contingency measures will be addressed in the Environmental Permit Application to be submitted to Natural Resources Wales. Health and Safety effect arising from accident and disaster would be dealt with through relevant industry controls.

16.3.4. Therefore, no likely significant effects are anticipated from major accidents and disasters.