



Cyngor Castell-nedd Port Talbot
Neath Port Talbot Council



Llywodraeth Cymru
Welsh Government

Global Centre of Rail Excellence

Environmental Statement Non-Technical Summary

March 2021





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1 What is the Global Centre of Rail Excellence?

The Welsh Government is proposing to develop a rail testing, maintenance, research, development and storage facility, known as the Global Centre of Rail Excellence (GCRE). It is proposed at the site of the Onllwyn Washery and Nant Helen Surface Mine where coaling operations are coming to an end and final site restoration by Celtic Energy is consented.

The site for the proposed development is approximately 475ha and includes the components represented on the Masterplan (Figure 1). These are described in more detail within this Non-Technical Summary (NTS) and it is these components which have been assessed within the Environmental Impact Assessment (EIA).

GCRE aims to meet a number of objectives which have been developed to address the issues and needs of the UK rail industry. This includes:

- To deliver a UK-based modern and comprehensive rail testing facility to provide the capacity and capabilities for rigorous testing of rolling stock, infrastructure and integrated systems from prototype to implementation;
- To act as a catalyst for the creation of a rail technology hub in Wales, providing a flexible, open-market platform for leading research and development activity that drives innovation;
- To provide opportunities to work with industry to support skills development through high-quality employment in fair, secure and sustainable jobs that contribute to reducing regional inequality and promoting regeneration in Wales; and
- To develop and test rail sector principles, standards and specifications which improve the UK's competitive strengths as a world leader in achieving carbon neutrality, contributing to an overall decrease in carbon emissions across the rail industry.

The planning application is being made by Welsh Government. Because the site crosses the local authority boundary between Powys and Neath Port Talbot, the application is being submitted to both Local Authorities who will be working together to determine whether it should be consented.

The Environmental Statement (ES) is submitted to accompany the planning application. It describes the environmental effects of the proposed project, assessed in accordance with the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017. This document is the Non-Technical Summary (NTS) of the ES, providing an overview of the proposals and summarising the assessment outcomes.

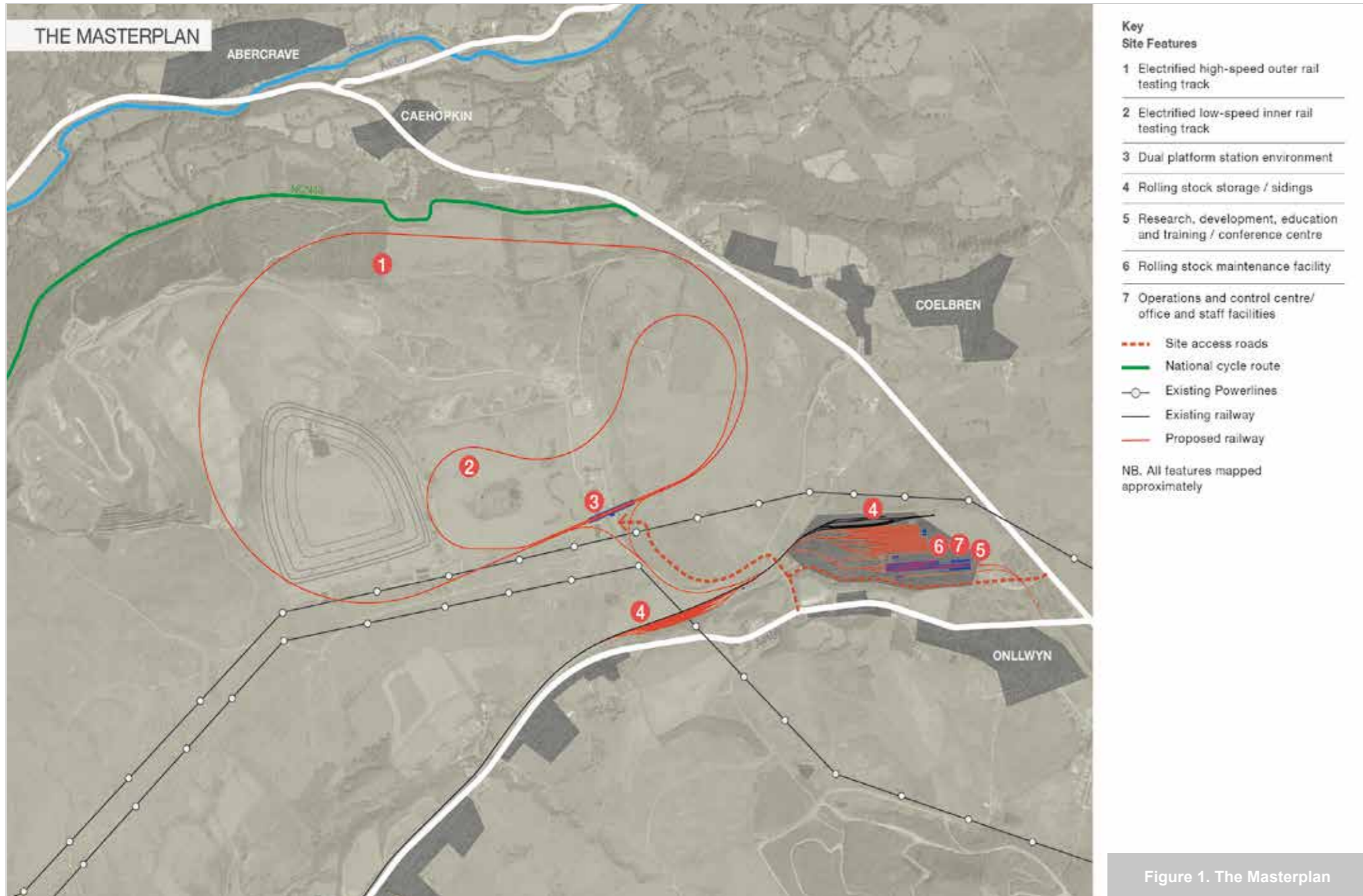


Figure 1. The Masterplan

2 What is being proposed?

GCRE would provide facilities for testing and maintaining trains. There would also be facilities for storage, rail related research and development along with the required staff facilities.

Figure 1 shows the location of the various project components which includes:

- Rolling stock test track (outer track): An electrified high-speed rail testing track (6.9 km) which would extend around the perimeter of the site to enable the testing of moderate and higher-speed trains up to a maximum 110 mph. This is the larger of the rail tracks;
- High tonnage infrastructure test track (inner track): an electrified low speed test track (4.5km) for testing of rail infrastructure, including track systems, civil structures, secondary lineside equipment, signalling, power and telecommunications equipment. Trains would be able to run up to a line speed of 40mph;
- An operations and control centre/office plus separate staff accommodation: A multi-storey control building from which testing activities would be managed. Separate staff accommodation which would also act as a general hub for site personnel;

- Research and development centre: This centre would provide opportunities for research, development, education and training/conference facilities including laboratory space;
- 4-road rolling stock maintenance shed: A facility for trains undergoing testing at the facility. Capacity for 2no. 400m trains and 2no. 230m trains simultaneously. Internal provision of light and heavy maintenance roads;
- Warm and Cold Storage Sidings: Sets of storage roads for the medium-long term storage of trains. Storage capacity for up to 400 vehicles with connections to shore supply units located incrementally along sidings;
- Carriage wash and CET spine facility: A carriage wash facility to service trains up to 400m in length. Controlled Emission Toilet (CET) point with canopy to control wash equipment, water and cleaning materials;
- Site Access - Access to the external highway network is proposed to be taken from existing junctions of the A4109 Wembley Avenue with Onllwyn Road, the A4221 Celtic Energy – Nant Helen access road, and the A4221 Washery and Distribution centre access. See Figure 2 for location of access;
- Decommissioning facility: This is a facility which allows for the decommissioning of rolling stock; and
- Associated development: Across the site associated development would include access routes, staff car parking, drainage, lighting, mobile and land based communications, CCTV, fencing (including acoustic mitigation as required), Neath and Brecon Branch Line connection and signalling upgrade.

The submitted planning application is in outline with all matters reserved, this means that full details of the project would be decided and agreed on following any approval of outline planning.



Figure 2. Proposed site access

OPERATIONAL DETAILS

The majority of the rolling stock (which refers to railway vehicles, including both powered and unpowered vehicles) and infrastructure testing at GCRC would take place during the daytime (defined as 0700-1900). However, to provide the flexibility necessary to enable the facility to attract clients and ensure the viability of the business, planning permission is also being sought for some evening (1900-2300) and night-time (2300-0700) operation. Evening and/or night-time testing would be offered to clients only when necessary to meet tight testing deadlines.

The facility could, subject to demand, be operational 24/7 with personnel on site at all times. The next section sets out the potential maximum frequency of train movements and operations on the site.

Operational details for GCRC

Train movements on rolling stock track (outer loop)

When trains are being tested a train would be running continuously around the rolling stock testing track at speeds up to 110mph, albeit with speeds being restricted on the tighter (eastern) curve to 85mph. Typically this would mean that 20 laps of the track would be completed each hour. Factoring this number of 20 up by the assumed operating hours of five days (0700-1900), three evenings (1900-2300) and two nights (2300-0700) per week, this results in the following assumed maximum train laps per time period as follows:

Day – 175 | Evening – 35 | Night – 50

The test track itself will be single-train working, meaning that in the occurrence of 2 users at the facility at once, while one customer's train is on the loop, the other will likely be in the maintenance shed. This will ultimately increase the overall test track usage since there are two parties alternating.

Likely train types: Likely to mostly be powered electrically (25kV OLE) but potentially could be some diesel / bi-mode stock and potentially some hydrogen trains in the future. If electric, trains will require hauling up N&B branch line using diesel locomotive but will be able to move between sidings and test facilities (as these will be electrified). Alternatively, electric trains could be transported to site by road.

Train movements on inner track (infrastructure testing)

A train would be running continuously at linespeed (40mph) between 0700-1900 / Evening 1900-2300 / 2300-0700. This results in 14 completed laps/hour with a maximum number of journeys being:

Day – 170 | Evening – 25 | Night – 35

At night-time only trains with electric traction would be used as standard, with any diesel traction being used only in exceptional circumstances. More likely to be used on an ad-hoc basis, with frequency of users less than for the rolling stock testing. An assumption has been made that the track would be in use seven days out of seven during the daytime. For evenings (1900-2300) and night-times (2300-0700), it has been assumed that the track would operate on average over a year for three evenings and two night-times per week.

Likely train types: initially diesel locomotives hauling wagons carrying old ballast (up to 500m with locomotive at both ends which produces vehicle of approximately 2000t). In the future trains are likely to be electric and hydrogen locomotives. An assumption has been made that in the first 2 years of the testing the train types would be approximately 70% electric, 20% hydrogen, 10% diesel. It is assumed that once on the test track, the vehicle will remain and not be required to move around the sidings area.



Train movements on siding

A maximum of 1 train per day transported up the branch line onto the sidings for storage (from outside the facility). Likely to be 10-12 cars long (250m-300m long) travelling 15-30mph.

10-16 movements within the facility from one siding to another at speeds of max. 5mph bar those trains which would be starting or finishing a test run on the rolling stock test track and therefore going from the sidings to the test. Train movements would not take place in evenings or night-time.

Likely train types

As above, it is likely the mix of trains would be approximately 70% electric, 20% hydrogen, 10% diesel in the first 2 years of testing.

Stabled trains on warm storage sidings

The sidings would be used for longer-term train storage, rather than overnight stabling for next-day service (such as a typical depot). Train movements onto and off these sidings would therefore be very infrequent.

Rolling stock decommissioning area

If decommissioning of trains is carried out on site then this would consist of the dismantling of trains to retain components which could then be re-used. These dismantling works would be carried out on the apron to the north of the maintenance sheds and/or inside the maintenance sheds themselves.

Outdoor decommissioning/train dismantling activities would not take place during evening or night-time. During night-time, maintenance would be carried out with the shed doors closed.

Maintenance works

The maintenance facility would be able to host multiple train operators / manufacturers simultaneously, meaning the likelihood of continuous maintenance is increased. It is possible that maintenance would be carried out 24/7.

Carriage wash facility

The wash would be in use for 10% of the time during the daytime (0700-1900hrs). It would not be used during the night.

Staff car park

The staff car park would be located north of the staff facilities building.

Lighting on trains

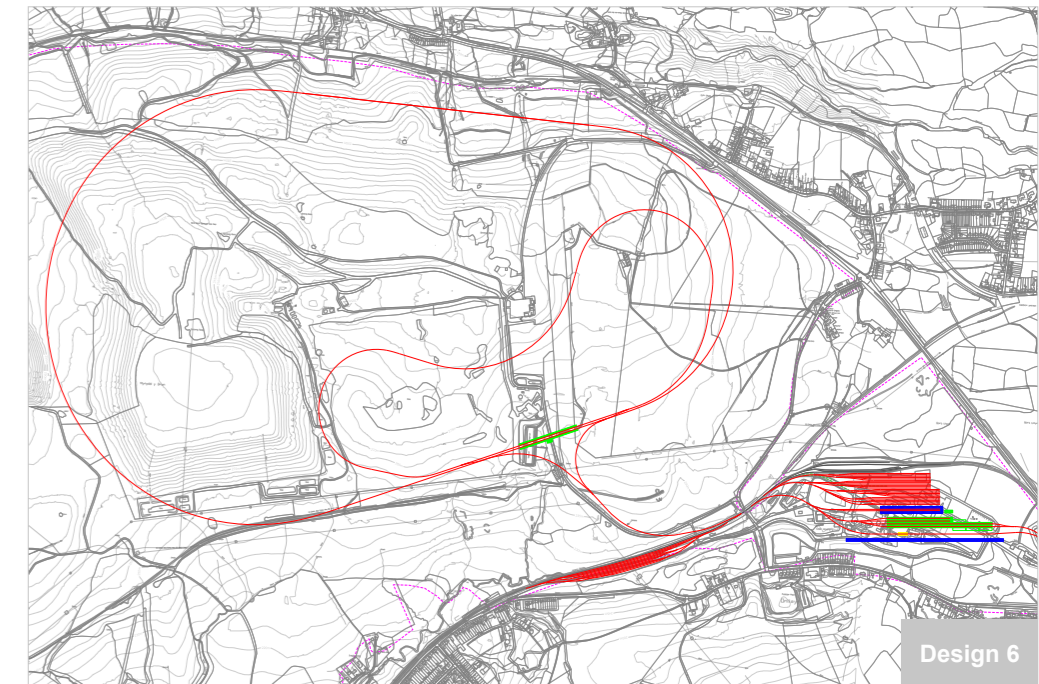
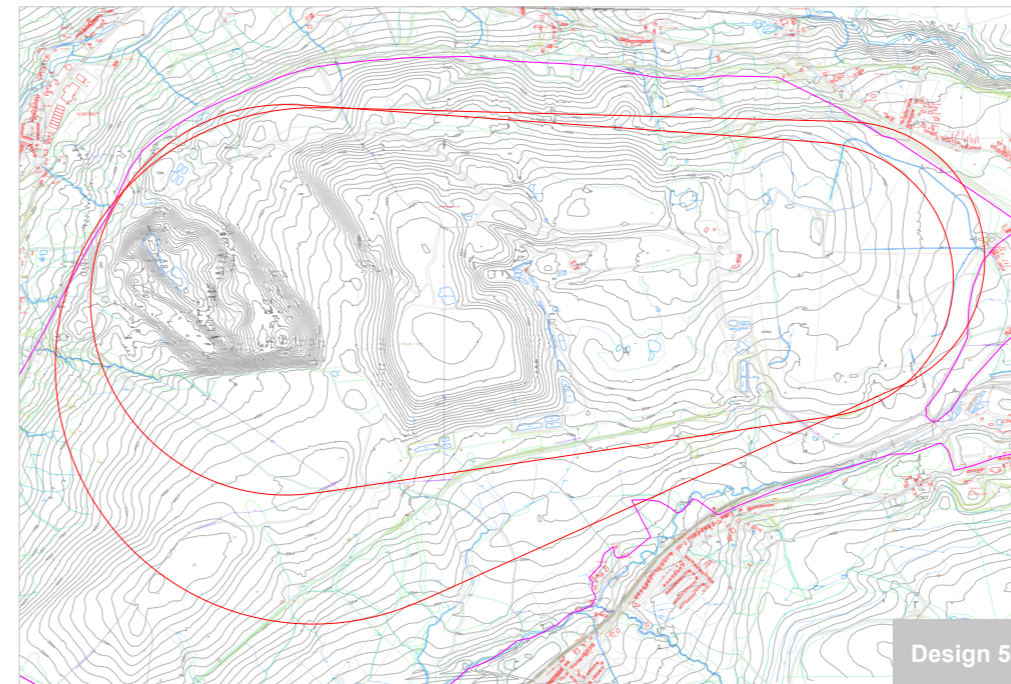
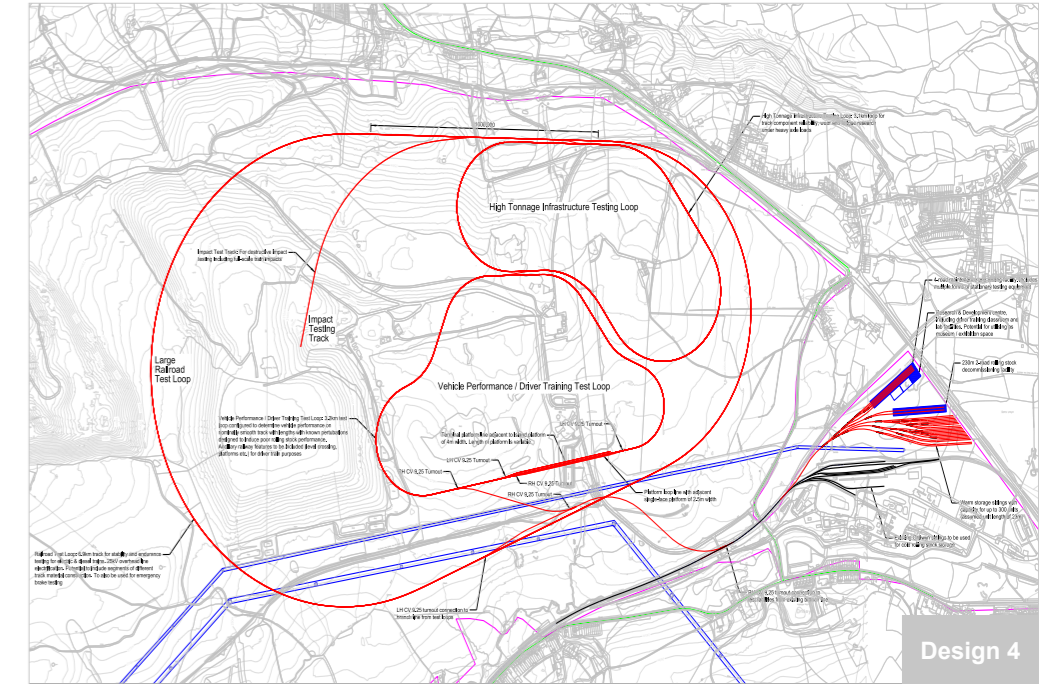
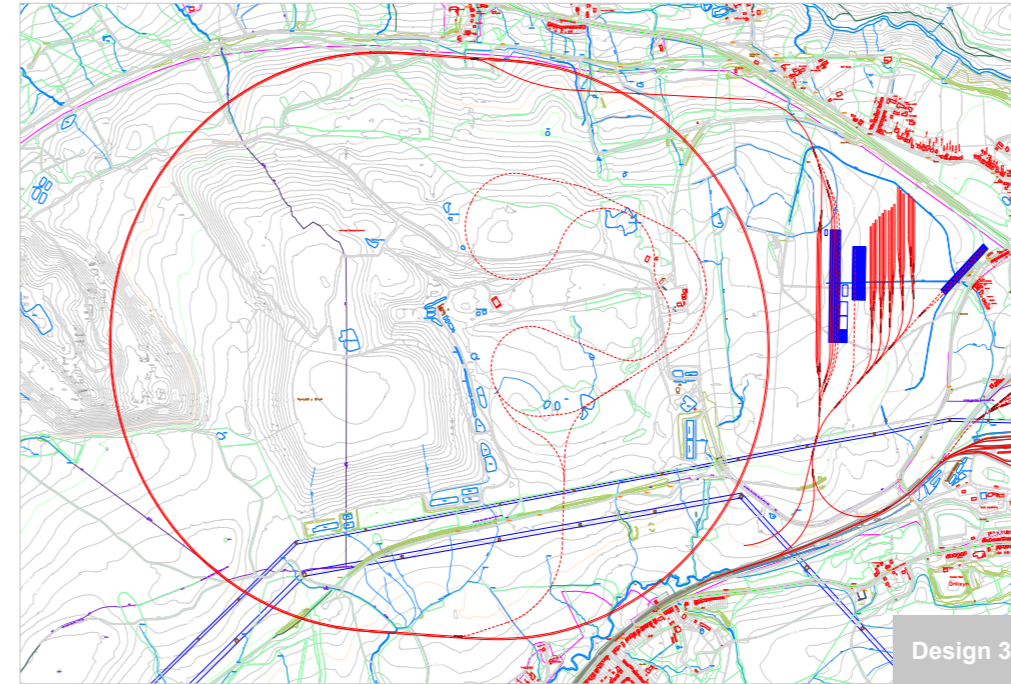
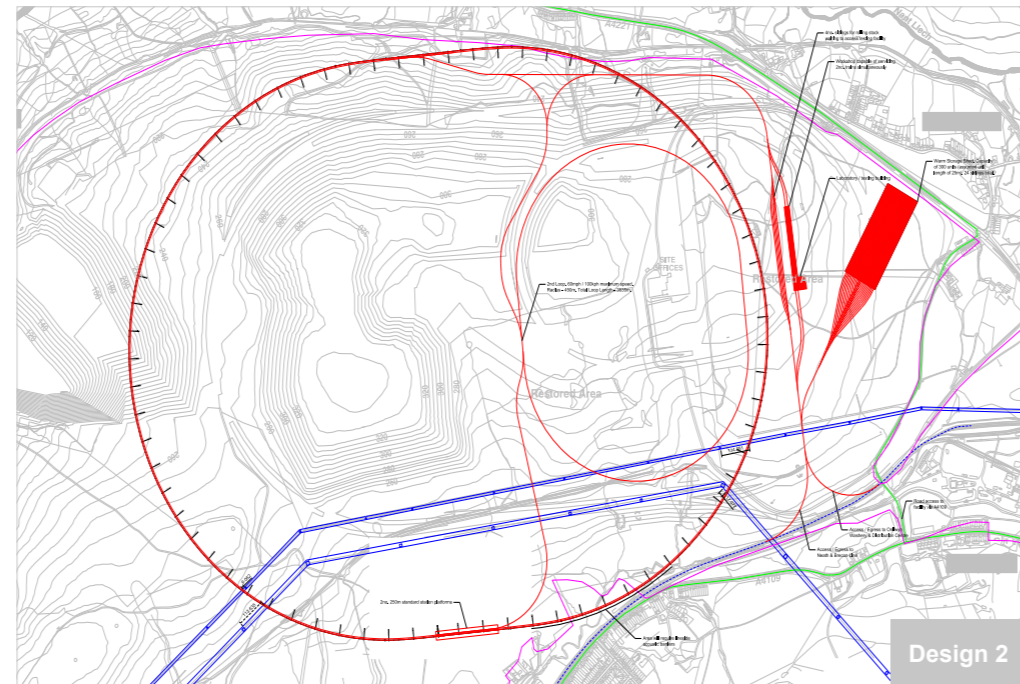
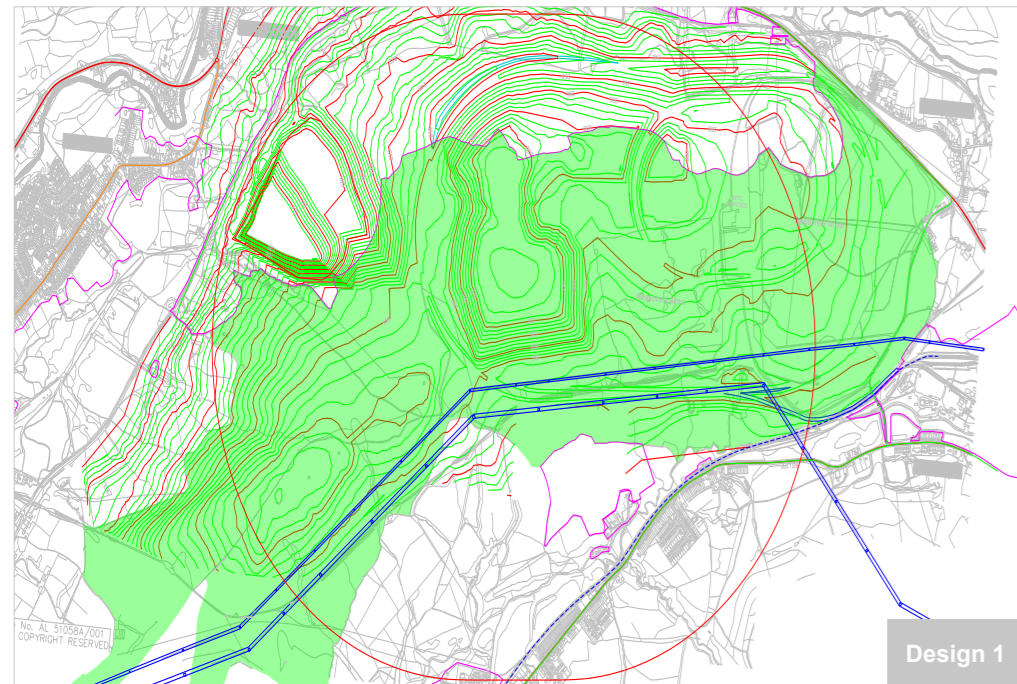
In order to minimise disturbance from light, any test trains running after dusk would have their train interior lights switched off.

3 How have the plans evolved?

The proposed GCRE project has been shaped through engagement with the rail industry, rail academic and other institutions over a period of nearly two years. This engagement with the rail industry has shaped the illustrative layout and components of the project.

The GCRE project would use the earthworks created under the planning approval granted in July 2020 for Celtic Energy's Nant Helen Complementary Restoration Earthworks. These earthworks would form the layout required for the inner and outer rail track loops.

Once the site had been selected for the project, the designs for GCRE have evolved over time as rail experts, engineers and environmental specialists have worked together to develop plans that meet the needs of the rail industry whilst also being sympathetic to the environmental, engineering and other constraints within the site itself and also beyond. The design evolution is represented in the Figures below.



4 How would GCRE be constructed?

The construction of GCRE would be carried out over a period of approximately four years alongside site restoration and complementary earthworks that have been approved for the Nant Helen part of the site.

It is likely that the delivery of the project would be phased dependent upon the requirements of the industry and the market demand. However, it is likely that the following phasing would be followed:

PHASE	CONSTRUCTION DURATION
Phase 1: High tonnage infrastructure testing (operational 2023)	12 months
Phase 2: Rolling Stock Testing (operational 2024)	12 months
Phase 3: Aspirational inclusions (operational 2025)	18 months

CONSTRUCTION ACCESS

The existing access into the washery site from the A4221 would be the main access into/out of the site during construction with additional access from Onllywn Road (which runs north into the site from A4109).

CONSTRUCTION TRAFFIC

Deliveries to the site are likely to be made via a mix of road and rail vehicle movements. Whilst the exact split of deliveries is not known at this stage, a logical approach has been taken to generate assumptions around the split of vehicles. It has been assumed that equipment associated with the track works (formation, ballast, sleepers, rails, clips etc.) and other rail infrastructure (overhead line equipment, switches and crossings etc) will primarily be delivered by rail.

CONSTRUCTION WORKING HOURS

Construction working hours would be standard construction hours of 0800-1800 Monday to Fridays and 0800-1300 Saturdays.

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

A Construction Environmental Management Plan (CEMP) will be prepared which describes the ways in which the impact of the construction on the local environment will be managed. An outline (CEMP) is submitted with the planning application which describes some of the control measures and standards that would be implemented throughout the construction of the proposed development. The detailed CEMP will be approved as part of the detailed planning applications and will include details of the working hours.

CONSTRUCTION JOBS

The construction of GCRE is expected to create temporary employment and training opportunities over a period of approximately four years. This employment estimate is based on the total cost of the proposed development and the average output per worker in the construction industry. It is estimated that the construction of the proposed development would deliver up to 163 net direct construction jobs.

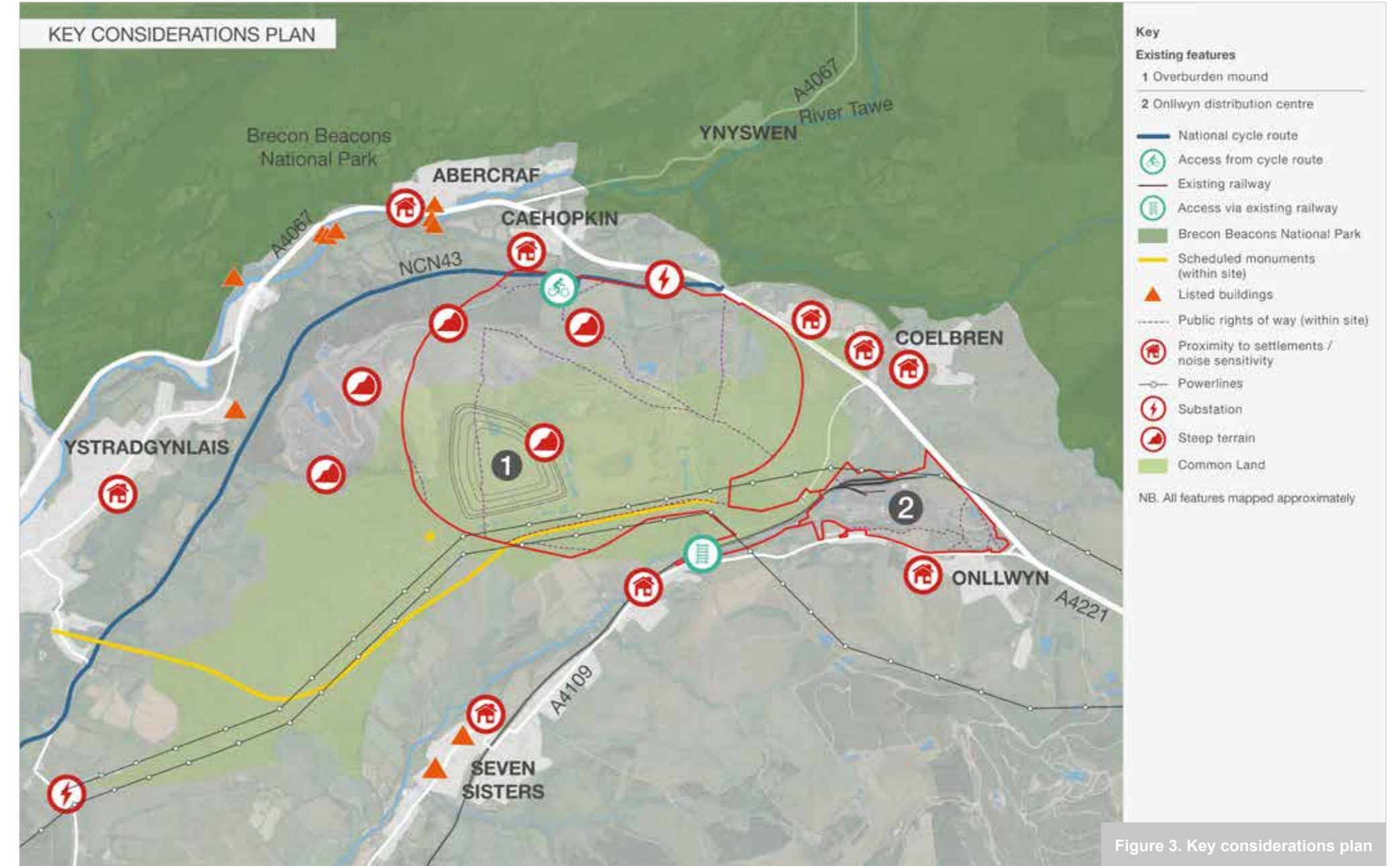


Figure 3. Key considerations plan



5 Summary of Environmental Statement findings

The environmental impact assessment (EIA) is a statutory requirement to enable an understanding of likely significant effects and to use the process to identify options for preventing, reducing and monitoring these effects where appropriate. The assessment also identifies and proposes enhancement for positive effects where this is possible. It is standard practice to split the assessment into construction effects and on-completion effects (i.e. once the development has been completed).

A scoping exercise was initially carried out to identify where likely significant effects may occur in relation to the GRCE project. It was determined that the following aspects of the environment should be covered within the EIA:

- Traffic and transport;
- Hydrology and flooding;
- Ground conditions;
- Biodiversity;
- Air quality;
- Noise and vibration;
- Archaeology and cultural heritage;
- Socio-economics;
- Health and well-being;
- Landscape and visual assessment; and
- Climate change.

Throughout the EIA process, consultation has been carried out with specialist teams within the Local Authorities, Natural Resources Wales and Cadw to agree topic assessment scopes and methodologies and to provide input into the development of the earthworks' design. The sections below provide a summary of each of the topic assessments and outcomes, focusing on any significant effects.

Figure 3 identifies general considerations that were taken into account during the iterative assessment and design process for GCRE.

TRAFFIC AND TRANSPORT

The transport assessment identified effects relating to severance, driver delay, pedestrian and cycle delay, pedestrian and cycle amenity, accidents and safety, and fear and intimidation (of pedestrians).

The temporary increase in HGVs in the busiest phase of construction would have a significant effect on severance on Onllwyn Road.

There would also be effects with regards to severance, pedestrian and cycle delay, fear and intimidation, driver delay and accident and safety, although these are not considered to be significant.

In order to manage these adverse effects of the construction phase, a Construction Traffic Management Plan (CTMP) will be secured with a planning condition.

The identified access routes to the project site make use of roads with limited sensitivity and it is proposed that construction traffic is monitored as part of the CTMP to review compliance.

Once GCRE is established and operational there are unlikely to be any significant adverse traffic effects. As a result, it is not thought that further mitigation measures would be required. However, it is proposed that a Travel Plan is introduced to mitigate and minimise traffic arriving to the site. This would align with the requirements of the Well-being of Future Generations (Wales) Act, 2015 and relevant technical guidance.

As a result of these measures, no residual traffic and access effects are considered likely.

WATER RESOURCES

The water resources assessment considers effects related to surface water quality and quantity, hydromorphology, ground water quality and flood risk.

The study area includes the River Dulais, River Nant Llech, River Tawe, River Dulais and their associated tributaries. Also included are ponds, wetlands, drainage ditches, groundwater dependent ecosystems and groundwater bodies. Once the Nant Helen Earthworks have been completed, the site will be drained by a series of drainage ditches that feed into drainage ponds before being discharged to surface water features at natural run off rates. There are no areas of the site at risk of flooding.

An outline CEMP has been prepared which sets out how the site is to be managed during construction works. Provided the measures set out in the CEMP are followed there would be no significant effects on water resources.

During operation, discharge from the individual facilities within the washery site would be managed to avoid any impacts on water resources.

GROUND CONDITIONS

The site has been subject to extensive surface and sub-surface coal mining activities over the past century and therefore, most features identified are related to coal mining. The existing site has been extensively worked through opencast coal mining operations since c.1946 with opencast activities still ongoing within the Nant Helen Extension site. Several historical collieries have been identified along the northern and southern boundaries of the site. Additionally, various rail tracks and tramways are shown to have crossed through and run along the boundaries of the site.

Due to the history of extensive coal mining activities it is necessary to implement mitigation measures which are set out within the CEMP such that human health and environmental risks are reduced to, and controlled at, levels which do not represent a risk.

Once operational, ground conditions are likely to have improved from the existing conditions and there are no adverse effects predicted.

BIODIVERSITY

There are a number of important habitats within the 5km study area including three Special Areas of Conservation (SACs), twelve Sites of Special Scientific Interest (SSSIs) and five Non-statutory Designated Sites (SINCs).

The majority of habitat loss in the washery part of the site will comprise buildings, hardstanding, tarmac surfaces and spoil (man-made habitats which will be demolished). Other habitats likely to be lost, due to being in the footprint of the development will include unimproved neutral grassland, semi-improved acid grassland, marshy grassland, scrub, ponds, ditches and mixed conifer woodland. However, habitat loss will be limited to very small areas of these habitats.

Surveys have found these habitats to support notable vascular plants and invertebrates. In addition, other species are present including breeding birds, common reptiles, badgers, foraging bats and otter, and mammals such as polecat.

The acid grassland and heathland are rich in fungi, lichen and bryophytes. Invasive species have also been recorded within the site. There is the potential for these species to be affected during construction and operation, particularly as a result of vehicle collision.

During site clearance/construction and operation, mitigation would include the development of an Ecological Protection Plan detailing measures to protect habitats during clearance and construction, such as the use of fencing and appropriate buffers from sensitive adjacent habitats.

It will also detail the treatment of habitats which will be translocated into other areas, for retention and future enhancement through sympathetic management. New habitats will also be created in areas of the site which will be disturbed by the works, or are of low nature conservation value, and will therefore be enhanced by habitat creation. All newly created/translocated or retained habitat will be subject to long term management measures to maintain and enhance their condition for nature conservation, including notable species where they are associated with these habitats.

Specific mitigation for species during construction will comprise:

- The provision of an Ecological Clerk of Works to advise on ecological mitigation;
- Pre-construction surveys for bats, badger, otter and nesting birds;

- Obtaining protected species licences from Natural Resources Wales (NRW), where these are required;
- The temporary closure of badger setts during the site clearance and construction. A protected species licence from NRW would be needed for this work, which will be obtained prior to construction commencing;
- Implementation of a reptile mitigation strategy including the relocating of reptiles away from the works area, and sensitive vegetation clearance under ecological supervision;
- Implementation of a sensitive lighting scheme (avoiding illumination of habitats for bat, otter and badger);
- Implementation of a sensitive vehicle traffic plan (limiting traffic to agreed low limits);
- Construction pollution and sediment control measures; and
- Implementation of an Invasive Species Management Plan.

Species enhancements will also be provided through the installation of bat and bird boxes, reptile refugia and otter holts.

During operation, a sensitive lighting scheme will need to be designed, and a barn owl nest box installed in suitable habitat further than 3km from the Site. In addition to the creation and enhancement of habitats within the Site for the benefit of local species, opportunities will be sought to incorporate the passage of animals such as foraging/commuting bats, otter and badger, beneath the track, for example through the adaptation of culverts.

Management and monitoring of the Site will be required post construction/during operation, to ensure the re-establishment and enhancement of habitats and populations of notable species, which are currently present within the Site. These measures will be set out in the Ecological Mitigation and Management Plan (EMMP).

The implementation of identified mitigation measures prior to, during and post construction, means that the scale of all impacts from the Project on protected sites, and the majority of habitats and species, would be reduced sufficiently, resulting in no significant adverse effects on biodiversity.

With the inclusion of ecological enhancement measures which will be detailed within EMMP, there would be an overall positive residual effect from the project for some habitats and species; namely marshy grasslands and wetlands, short grassland and invertebrates.

AIR QUALITY

The air quality assessment examines the effects of air quality changes on humans and ecology associated with construction activities, including impacts from construction traffic. The air quality effects associated with traffic travelling to and from the completed development has also been assessed.

Construction activities would be managed by the CEMP which will include measures to control air quality effects from construction including pollutants and dust. A CTMP will be prepared by the contractor and used to manage vehicle movements to the site.

With implementation of the measures identified in these construction management documents air quality effects from construction activities and associated traffic would not be significant to humans or ecology.

Once operational the project would not have any significant impact on air quality due to the small additional associated traffic and the distance between the test tracks and sensitive receptors.

Nitrogen deposition has been assessed in relation to impacts on designated habitats. It was concluded that whilst no significant effects are likely, a precautionary approach should be taken and appropriate mitigation measures, including monitoring of nitrogen levels, should be implemented.

NOISE AND VIBRATION

As a facility which will be available to operate into the evenings and night-times when required, special attention has been paid to potential noise impacts at nearby communities.

Noise predictions from the operational phase of the project have been made from the three main areas of the proposed facility: the rolling stock test track, the high tonnage infrastructure test track, and the facilities located on and around the old washery. Two noise indices have been considered: the overall annual noise levels from all sources during day/evening/night-times, and the maximum noise levels from the trains using the rolling stock test track. Noise mitigation in the form of barriers or earth bunds has been included in the design to control both the overall annual noise levels and the maximum train noise levels to ensure that no operational phase noise impacts are predicted on local communities.

For the purposes of the noise impact assessment and noise mitigation design, reasonable worst-case assumptions were made about the operation of the facility.

For the two test tracks reasonable 'worst case' assumptions have been considered for the purpose of assessment. However, it is emphasized that use of the test tracks are likely to vary over the year. This includes:

Rolling stock test track assumptions

- When in use, a train would typically complete approximately 20 circuits of the test track per hour, and a typical train is assumed to be 12 cars (carriages) in length;
- On average over a typical year, the rolling stock test track has been assumed to be in active use for five daytimes (defined as 0700-1900) out of every seven;
- On average over a typical year, the rolling stock test track has been assumed to be in active use for five evenings (defined as 1900-2300) out of every seven; and
- On average over a typical year, the rolling stock test track has been assumed to be in active use for two night-times (defined as 2300-0700) out of every seven.



Infrastructure test track

- The typical train used to stress-test infrastructure would comprise of two locomotives pulling 40 freight wagons;
- When in use, the train would complete approximately 14 circuits of the test track per hour;
- On average over a typical year, the high tonnage infrastructure test track has been assumed to be in active use for seven daytimes (defined as 0700-1900) out of every seven;
- On average over a typical year, the high tonnage infrastructure test track has been assumed to be in active use for five evenings (defined as 1900-2300) out of every seven; and
- On average over a typical year, the high tonnage infrastructure test track has been assumed to be in active use for two night-times (defined as 2300-0700) out of every seven.

In order to avoid the risk of low-frequency noise causing noise impacts at nearby communities during the night-time when background noise levels are lowest, diesel trains will only be used in exceptional circumstances.

Construction noise will be managed by following the best practicable means measures set out in the CEMP which includes measures to minimise noise such as limiting most construction work to 0800-1800 Monday to Fridays and 0800-1300 Saturdays.

Noise mitigation has been integrated into the design and includes

- Provision of a 3m noise fence barrier placed close to the north of the site. This would be opaque and solid with a timber outer finish. The embankment slopes would be planted with woodland;
- A 5m landscape bund where the scheme faces the community of Coelbren to the east;
- Engineered cuttings provide noise mitigation for a section facing the community at Onllwyn to the south; and
- Another section facing the Onllwyn community to the south includes a noise fence barrier.

Due to the fact that ground-borne vibration reduces rapidly with distance and is hence only a potential problem within tens of metres of a facility such as this, no vibration impacts are predicted at sensitive receptors.

ARCHAEOLOGY AND CULTURAL HERITAGE

The site has been significantly affected by the large-scale opencast mining that has taken place within it which means that the archaeological and historical background of the site is well understood due to the extensive archaeological work that was carried out prior to previous mining activities being granted permission. The remaining areas of the site have had a mixture of past land uses, including extensive post-medieval and early 20th century mining and quarrying.

The site can broadly be divided into the following areas:

- a. An area where 20th century opencast mining has taken place;
- b. The upland landscape of Mynydd y Drum, which extends into the area south of Nant Helen opencast mine, crossed by a 19th century tramroad; and
- c. An area in the north of the site where intensive 19th century extraction is known to have taken place, but which has not subsequently been mined.

124 heritage assets were identified and assessed within and in proximity to the site. This includes one Scheduled Monument located within the site; 35 non-designated heritage assets within the site; 40 designated heritage assets and 48 non-designated heritage assets located beyond the site. Additionally, 11 historic landscape areas were identified within or in proximity to the site.

Out of these heritage assets, only 12 of those within the site will potentially be affected by the proposed scheme. This is because many of the recorded sites of archaeological remains or features identified from historic maps have been removed by open cast mining or will have been removed during the restoration of Nant Helen by Celtic Energy.

Whilst the archaeological potential for much of the site is negligible, due to past open cast mining, there are several areas in the northern and southern parts of the site where there is greater archaeological potential.

Additionally, 6 heritage assets were identified which have views of the development and have the potential to be affected by changes to their setting arising from the project.

The Scheduled Monument within the site, the Tramroad at Ystradgynlais is a nationally important earthwork dating to the 1830s. No impacts on the monument have been identified arising from this application.

No significant residual effects have been identified resulting from effects to non-designated archaeological remains, changes to the setting of heritage assets or from physical alterations to historic landscapes.

SOCIO-ECONOMICS

The socio-economic assessment focusses on potential effects of GCRE on broad receptor groups, including:

- Local Residents;
- Local Businesses;
- Land use (existing and future);
- The local and regional economy (employment and supply chain); and
- Tourism and recreational facilities, including Public Rights of Way (PRoW).

An analysis of the socio-economic context of the local and wider study area, identified the following key considerations for the assessment:

- There are a number of businesses and private properties within proximity of the proposed development boundary, although the overall the sensitivity of these receptors is considered to be low;
- Approximately 115 hectares of land within the development boundary is designated as Common Land, protected under The Commons Act 2006; and
- There are several PRoW which cross the proposed development site.

During construction, the proposed development has the potential to result in both positive and adverse socio-economic effects. Positive effects include employment and training opportunities; it is expected that approximately 53 net direct jobs would be created during Phase 1 of the works, rising to 163 net direct jobs in Phase 3.

During operation, if each element of the facility and the research and development centre is realised the site is expected to sustain c.298 net direct and net indirect permanent jobs. The facilities would also attract regular visitors to the area throughout the year as engineers, academics and support teams use the site on a project by project basis, providing a potential boost to local service industries.

Whilst the existing PRoW would need to be altered, the effects of this are not considered to be significant because new, better connected routes would be created. The exact details of these changes will be agreed through separate applications, should the development proceed. Changes to the PRoW and Common Land are managed through a separate process to the planning application. This is being progressed by Powys County Council and relevant stakeholders will be consulted. The illustrative masterplan gives an indication of where PRoW may be altered but this is not yet confirmed.



HEALTH AND WELL-BEING

The health and wellbeing assessment considers how the GCRE proposals may impact a number of health determinants, which are which are factors that influence a person's health. Health determinants considered include: social networks, transport and connectivity, access to open space and nature, neighbourhood quality (covering air quality, noise and visual impacts), climate change and employment. The health assessment has considered impacts on people within the local area and along the branch railway line.

The health assessment identifies a significant beneficial effect during the construction period due to increased employment opportunities for local residents. No other significant adverse impacts are identified during construction or operation in relation to health and wellbeing.

This is due to the range of mitigation measures that will be implemented. For example, noise barriers would be erected to reduce noise impacts for local residents, there would be extensive planting to screen visual impacts and a Public Rights of Way Mitigation Strategy would be implemented to deliver long-term improvements to the local network.

LANDSCAPE AND VISUAL

Effects on landscape and visual receptors are closely related but separately assessed. Landscape assessment looks at the character and characteristics of the landscape, whilst the visual assessment looks at how the proposals may affect views and the visual amenity of people. The Landscape and Visual Impact Assessment (LVIA) looked at effects during the construction phase and at year 1 and year 15 of operation.

As the scheme was developed, the landscape and visual environment were considered and fed into the overall design in order to mitigate any adverse effects.

The design of GCRE include a number of mitigation measures which are outlined below:

- Landscape and visual mitigation planting (the design of areas shown to receive mitigation planting would be developed at detailed design);
- Acoustic barriers are to have wooden cladding on external faces to minimise visual impacts;
- Train carriages are to be unlit outside of daylight operational hours;
- The vehicle maintenance track would be on the outside of the rail track. This ensures that the tallest features (overhead line equipment and trains) are furthest back from the embankment edge and any screening planting is most effective; and
- Overhead line equipment would be cantilevered to minimise visual effects.

LANDSCAPE EFFECTS

Within the study area there are 20 landscape character areas (LCAs). These are areas defined to distinguish one landscape from another, with reference to their regionally distinct natural, cultural and perceptual characteristics.

Of the 20 landscape character areas (LCAs) within the study area, only one was identified as being significantly adversely affected during construction; the Nant Helen Reclaimed Uplands LCA. This is a restored landscape which would be affected by the introduction of construction activity.

Once operational, three of the 20 LCAs would be affected by the proposals. This includes the Nant Helen Reclaimed Uplands LCA, Wooded Tawe Valley LCA and Y Mynydd Du LCA.

Effects to the Nant Helen Reclaimed Uplands LCA would be as a result of the introduction of large-scale activity across a large proportion of the LCA on a prominent elevated position.

Effects to the Wooded Tawe Valley LCA would be as a result of the introduction of urbanising features and train movement to the valley slopes across a small proportion of the overall LCA. It is anticipated that mitigation planting for GCRE, as well as for the Nant Helen development as well as the Nant Helen Complementary Restoration Earthworks would minimise effects, once planting 15 years from completion, once planting is established, reinstating the wooded character of the valley.

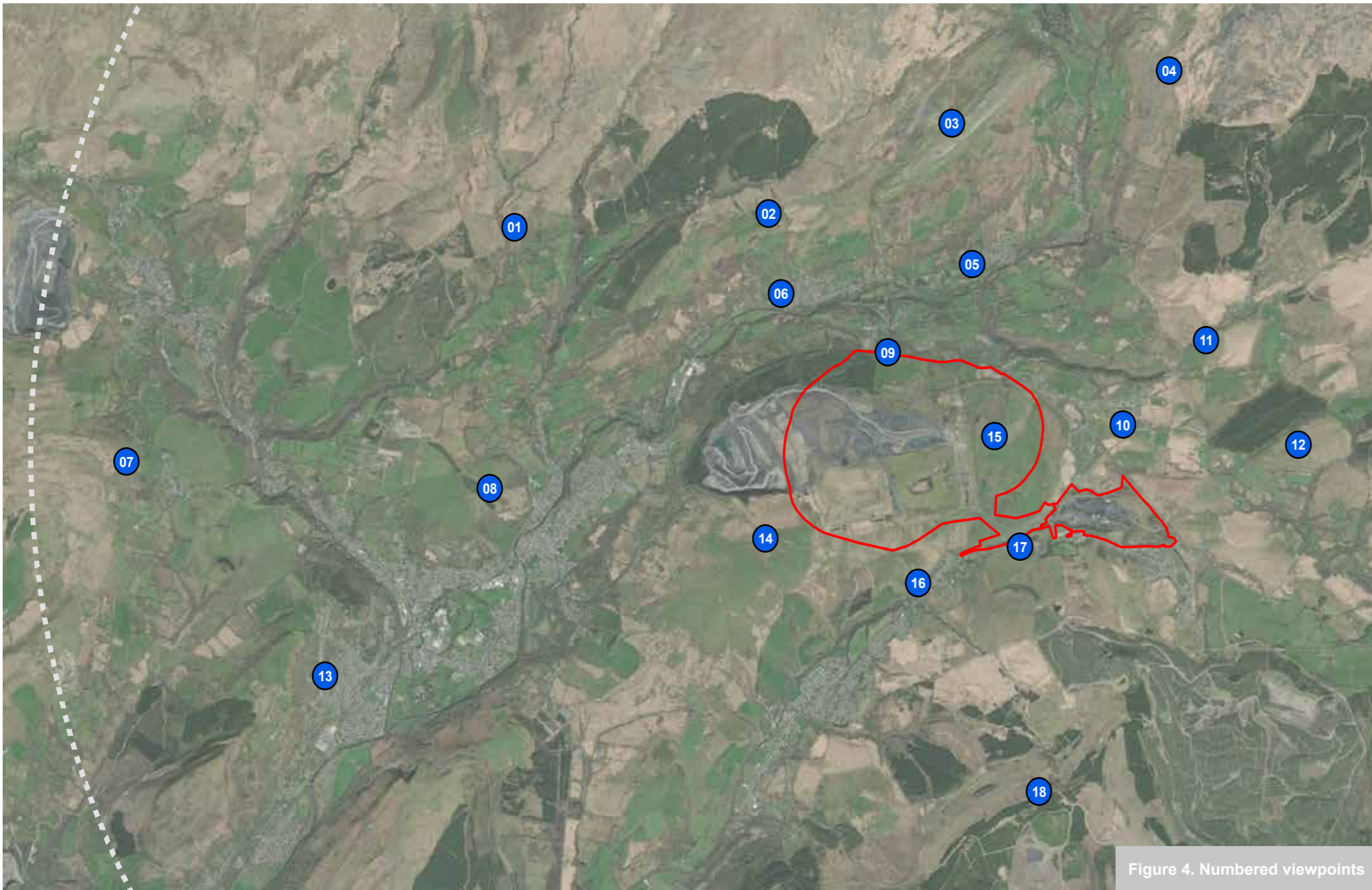


Figure 4. Numbered viewpoints

Effects to the Y Mynydd Du LCA would be as a result of changes to the sense of peace and tranquillity at the southern extent of the LCA. However, it is anticipated that mitigation planting implemented as part of the GCRE development as well as the Nant Helen Complementary Restoration Earthworks would minimise effects, once planting is established and begins to screen urban features and passing trains.

VISUAL EFFECTS

Visual effects are assessed based on consideration of how views change from identified viewpoints (VPs). Eighteen VPs for the assessment were selected in consultation with the Local Authority based on the result of desktop studies and site survey work. Visual receptors include, but are not limited to, recreational users of footpaths and inhabitants of residential properties. Figure 4 identifies where these VPs were located.

Significant, short-term, adverse visual effects during construction were identified for a number of receptors listed in Table 2.

RECEPTOR	VP AFFECTED
Recreational receptors within the National Park	VP1, VP2, VP3, VP4, VP12
General recreational receptors	VP8, VP9, VP14, VP18
Residential receptors	VP5, VP10, VP16

Table 2 Significant visual effects during construction

Table 3 identifies which VPS would experience significant adverse effects once GCRE is operational. The increase in significant effects at operation is a result of the fast movement of trains which would result in people being more aware of the development than would be the case if there were no moving elements within the landscape.

RECEPTOR	VP AFFECTED
Recreational receptors within the National Park	VP1, VP2, VP3, VP4, VP11, VP12
General recreational receptors	VP8, VP9, VP14, VP18
Residential receptors	VP5, VP6, VP7, VP10, VP13, VP16

Table 3 Significant visual effects during operation

For all but four VPs, the significance of effect would reduce 15 years from the start of operation, once mitigation planting has been established. Effects beyond year 15 would remain for four visual receptors: two points on the Ystradgynlais Footpath, the Trig point on Cribarth and the view from National Cycle Route 43.

Viewpoints:

- Viewpoint 2 from Ystradgynlais Footpath 64;
- Viewpoint 3 from the Trig point on Cribarth;
- Viewpoint 9 from National Cycle Route 43; and
- Viewpoint 14 from Ystradgynlais Footpath 10.

Photomontages:

Photomontages were produced to inform the reporting of landscape and visual effects and to demonstrate the effectiveness of mitigation proposals by year 15, once mitigation planting has established. Key viewpoints from the north and south of the proposed development were selected for the production of photomontages (these can be seen as Viewpoint 3 and Viewpoint 16 on pages 24 and 25).



CLIMATE CHANGE

Consideration of climate is assessed through the following:

- A Greenhouse Gas (GHG) assessment – this quantifies the potential GHG emissions associated with the construction and operation of the proposed development and identifies mitigation measures to reduce these emissions; and
- A Climate Change Resilience (CCR) assessment – this evaluates the effectiveness and feasibility of adaptation measures integrated into the proposed development to avoid or reduce hazards and / or increase resilience of the proposed development to climate change impacts.

In addition, the combined effects of the scheme and potential changes in climate are considered in each topic in the relevant chapter of the ES.

The GHG assessment identified a potential average increase of 0.2% in GHG emissions generated from the Neath Port Talbot and Powys areas combined during the roughly four-and-a-half-year construction period. The assessment also identified a potential increase equivalent to 0.01% of the annual emissions from the local authority areas during the opening year of operation.

The CCR assessment did not identify any significant risks associated with climate change. This is a result of mitigation being built into the designs. For example, designing drainage capacity to be able to deal with potential future extreme flood events and designing the railway tracks to be able to deal with the effects of increased temperatures and potential increased wind speeds.

CUMULATIVE EFFECTS

Cumulative effects are those that arise as a result of additive impacts from more than one project (under construction or reasonably foreseeable projects), combining together to have an effect on a receptor that may be larger than if the effect were considered separately. Broadly, reasonably foreseeable projects are those that are known to the planning system or are already consented (but not yet built).

The Nant Helen Restoration Works is the only project which was considered relevant to a cumulative effects assessment.

As the Nant Helen Restoration Works are committed, the environmental baseline for the GCRE project is, in most cases, the restored site.

Consequently, the assessment for GCRE has already included consideration of the restoration works in the assessment. No further assessment was required to identify cumulative effects.



Viewpoint 3. Existing view



Viewpoint 16. Existing view



Viewpoint 3. Montage



Viewpoint 16. Montage

