

Richards, Moorehead and Laing Ltd



Ffos-y-Fran Final Restoration Strategy 2025

Environmental Statement – Non-Technical Summary – January 2025

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ISSUE RECORD				
Rev:	Date:	Description	Prepared by:	Checked by:
V1	07/02/2025	S73 Planning Application	J. Stoddard	A. Sumner

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Foreword

The Ffos-y-Fran final restoration strategy will signal the end of a long legacy of coal mining in the South Wales Valleys and the final phase of the wider East Merthyr Reclamation Strategy. Coal mining in Merthyr Tydfil has played a significant part in the lives of the local community spanning many generations. It has also had a major impact on the environment and caused a significant transformation of the physical and social landscape over a long period of time.

The final restoration strategy for Ffos-y-Fran, presents a valuable opportunity to rehabilitate the landscape that has been lost and despoiled over centuries of industrial exploitation, to a new landscape that can develop and adapt for use by future generations. Within a new landscape framework, there is opportunity to create and enhance opportunities for biodiversity, while returning much of the land back to Common that has been absent during several periods of coal mining. The final restoration of the land and the surrounding area of Ffos-y-Fran is the start of a long road of recovery for biodiversity and natural ecosystems, but also brings fresh opportunities for diversity, including community benefits and alternative development.

Merthyr (South Wales) Ltd is committed to rehabilitating the land that has seen several million tonnes of coal extracted by opencast methods over the last fifteen years. Since the original restoration proposals were prepared in 2003, there have been many changes in environmental legislation and government policy, particularly surrounding the subject of climate change and sustainability. There is also more responsibility on public authorities to promote and deliver, more sustainable and long-term solutions. The Well-being of Future of Generations (Wales) Act 2015 has made a significant change in how we approach sustainable development and how we should all work towards the same purpose and the seven well-being goals as set out in the Act.

Merthyr (South Wales) Ltd are keen to work collaboratively with the local authority, statutory environmental bodies, and key stakeholders to develop and agree a final restoration strategy that will significantly contribute towards some of these seven common goals. The final restoration strategy will take some time to start delivering against these goals, but this is a long-term project that requires involvement from a range of public bodies and an integrated approach to deliver long term benefits.

The closure of the Ffos-y-Fran mine in November 2023 was a significant step change enforced by Welsh Government policies addressing climate change and pressures from climate action groups. 2023 was a symbolic year when a traditional coal mining industry, historically so important to the working culture and identity of the South Wales valleys, drew to a close, and a new healthier and globally responsible part of Wales emerged as an opportunity for future generations.



The seven goals of The Well-being of Future of Generations (Wales) Act 2015

- A Prosperous Wales
- A Resilient Wales
- A More Equal Wales
- A Healthier Wales
- A Wales of Cohesive Communities
- A Wales of Vibrant Culture and Thriving Welsh Language
- A Globally Responsible Wales

Preface

This document is the Non-Technical Summary (NTS) of the Environmental Statement (ES) for the Ffos-y-Fran Final Restoration Scheme. The scheme is proposed by the owner and operator of the mine Merthyr (South Wales) Ltd as a variation to the approved final restoration and aftercare scheme of the previously consented Ffos-y-Fran Land Reclamation Scheme (FLRS).

This Non-Technical Summary is one of four documents that report the findings of the Environmental Impact Assessment (EIA) undertaken of the scheme in accordance with the Environmental Impact Assessment Regulations (Wales) 2017, the other documents of the Environmental Statement are: -

Volume 1: Technical Report (Written Statement)

Volume 2: Figures

Volume 3: Technical Appendices

The Environmental Statement may be inspected by members of the public at all reasonable hours at:

Merthyr Tydfil County Borough Council,
Planning Department,
Unit 5,
Triangle Business Park,
Pentrebach,
Merthyr Tydfil,
CF48 4TQ

1. Introduction

1.1 Background

Merthyr (South Wales) Ltd (MSW) is seeking approval for the final restoration proposals of the former surface mine at Ffos-y-Fran as a variation to a previously approved scheme by means of a Section 73 planning application. The approved scheme was for the extraction of coal and restoration of the site, all coal has now been extracted, and the site has been partly restored. The purpose of the application is therefore to seek approval for variation of the final restoration and aftercare of the site. The application covers the whole site.

1.2 Context

The Ffos-y-Fran Land Reclamation Scheme (FLRS) covers a total area of approximately 400 hectares of land to the east of Merthyr Tydfil and approximately 1.5 kilometres from the town centre. The site encompasses an extensive upland area that has been subject to open cast mining activities over several years and that will cease at the end of November 2023. The Ffos-y-Fran site forms the final part (and Phase III) of the East Merthyr Reclamation Scheme (EMRS) and has seen the extraction of circa 11 million tons of coal over the last 16 years. In 2016 the original owners of the company who were operating the mine were released from their original obligations to restore the mine, this was subsequently replaced by an Escrow Account in the amount of £15m which is fully funded along with a parent guarantee provided by Merthyr Holdings Limited. This last period of mining activity commenced in 2007 following planning permission being granted by the National Assembly for Wales under appeal on 11th April 2005. The original applicant and mine operator was Miller Argent (South Wales) Ltd and it has been operated by the same company throughout albeit its name has been changed to Merthyr (South Wales) Limited.

1.3 Environmental Impact Assessment

The proposed scheme has been subjected to an Environmental Impact Assessment (EIA) undertaken in accordance with The Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017. The preparation of the EIA has included the following stages of screening and scoping:-

- Screening Opinion – MSW request to MTCBC 27/10/2023 – MTCBC response on 04/12/2023
- Scoping Report – MSW submitted to MTCBC 22/07/2024 – MTCBC response on 04/10/2024

The EIA commenced in the summer of 2024 following the appointment of several environmental consultants and specialists and involved several surveys and monitoring exercises to inform the EIA process. A Technical Working Group (TWG) was convened by MSW and meetings and presentations held at the offices of MSW at the Cwmbargoed Disposal Point. Site visits were also arranged for those interested following the TWG meetings.

Organisations and key stakeholders who attended the TWG are listed below:-

- Merthyr Tydfil County Borough Council (Planning, Engineering & Ecology)
- The Coal Authority
- Natural Resources Wales
- Welsh Government
- Health and Safety Executive

1.4

Baseline Conditions

For the purposes of the EIA, the baseline conditions of the site are generally taken as being at the end of November 2023 when coal extraction stopped. However, it is useful to understand what the baseline conditions of the site were prior to the current opencast operations commencing in 2007. The Environmental Impact Assessment (EIA) undertaken prior to the publication of the Environmental Statement (ES) in May 2003¹, paints a picture of old colliery spoil heaps, derelict and despoiled land, disused railway lines, former refuse tips, fly tipping, burnt out cars, a typically bleak and exposed landscape.

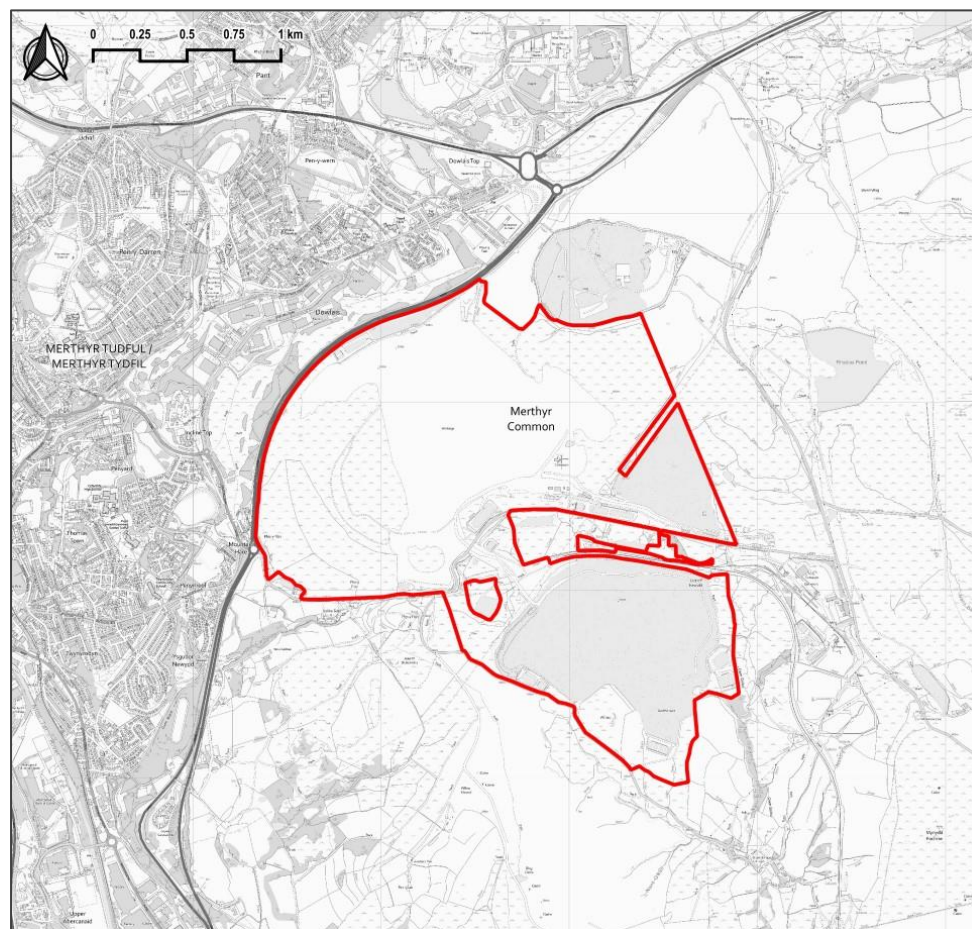


Photograph of the Ffos-y-Fran site prior to open cast mining commencing in 2007

¹ Ffos-y-Fran Land Reclamation Scheme – Environmental Statement – May 2003 - Leek and Weston Ltd

1.5 Site Description

The site lies to the south-east of the A4060 that connects the A470 at Pentrebach, south of Merthyr Tydfil, to the A465 Heads of Valleys Road at Dowlais Top. To the north of the site lies the Trecatti Landfill site and to the east, a minor road that serves the nearby villages of Fochriw, and Pontlloftyn, and Pentwyn to the south. The Cwmbargoed Disposal Point including a coal washery and rail head, lies on the eastern boundary and central section of the site. It also contains several buildings associated with the Ffos-y-Fran mining operation including site offices and welfare facilities and is the entrance to the operational mine. Bogey Road, a minor road runs through the central section of the site in an east-west direction connecting Cwmbargoed to the A4060 at Mountain Hare. Bogey Road effectively divides the site into two forming the northern and southern sections of the site. South of the site runs another minor road and beyond to open moorland and wooded river valleys of Nant Gyrwad and Taff Bargoed. An overhead 400 KW power line supported by pylons crosses the central section of the site and Bogey Road in a north-east to south-west direction.



Site Location Plan

Within the site lies the main void approximately 175 metres deep, this was the final excavation to enable the extraction of the remaining coal reserves from deep lying seams. There are three main tips or overburden mounds within the site formed by the recent surface mining operations that began in 2007. The three overburden mounds, referred to as OB1, OB2 and OB3, contain a total of approximately 37 million cubic metres of material removed during the opencast operations. OB1 lies adjacent to the main void, OB2 to the east of OB1 and the main void, and OB3 south of the Bogey Road in the southern section of the site.

The site forms the upper part of the river catchments of the Bargod Taff and Nant Gyrwad which flow south towards the Afon Taff. Historically, the site has drained via a network of surface water drainage ditches, ponds, reservoirs, and leats, some of which form part of historic workings on the site from previous mining activity and known as the Dowlais Free Drainage System (DFDS), that provided water to the Dowlais Ironworks. The system also acted to drain a variety of coal seams and eventually drained into a water pit at Tyle Dowlais Pit located within the western flank of the site. Some of these features are reservoirs and leats that form part of a wider drainage system and are now designated Scheduled Monuments (SM's). These include SM's such as Sarn Howell Pond, Penydarren Pond and Isaac Morgan Pond that formed part of the Dowlais Free Drainage System and lie in the central section of the site. Many of the historic workings such as the Tyle Dowlais Pit Building, discovered in 2017, were carefully uncovered by mining operations and recorded by GGAT before operations continued.



Photographs north across the main void and eastern exposure as it was being worked in August 2023 and an existing pond that has started to colonise naturally with reeds and marginal

1.5 Planning Permission A-PP 152-07-014

Planning Permission A-PP 152-07-014 for the FLRS, incorporating the extraction of coal using opencast methods and to undertake the final phase and restoration of the EMRS was initially refused but granted by the National Assembly for Wales under appeal on 11th April 2005 subject to various conditions. Planning conditions 50, 51, 52 and 53, relate to the restoration and aftercare strategy and are extracted below for ease of reference: -

Condition 50

“No development shall commence until a Restoration Strategy for the restoration and management of the site has been approved by the Planning Authority. Such a scheme shall detail the sequence and phasing of backfilling and reclamation showing clearly their relationship to the working scheme and shall include appropriate landscape mitigation and restoration, taking into account the historic landscape character, features of ecological interest and intended after-use of the land.”

Reason - To protect and conserve the heritage and biodiversity value of the site.

Condition 51

“The site shall be reclaimed (progressively) in accordance with the Restoration Strategy.”

Condition 52

“In the event of a cessation of winning and working of coal prior to the achievement of the completion of the approved Restoration Strategy, which in the opinion of the Planning Authority constitutes a permanent cessation within the terms of paragraph 3 of Schedule 9 of the Town and Country Planning Act 1990, a scheme for approval shall be submitted in writing to the Planning Authority within 6 months of the cessation of winning and working and shall include details of reclamation and aftercare. The approved scheme shall be fully implemented within 3 years (excluding any aftercare) of the written approval, unless otherwise approved in writing by the Planning Authority.”

Reason - To enable the Planning Authority to adequately control the development and to ensure that the land is restored to a condition capable of beneficial use and in the interests of amenity.

Condition 53

An aftercare scheme for each phase of the restoration, requiring that such steps as may be necessary to bring each phase of the land reclaimed to the required standard for use for agriculture, amenity and conservation, shall be submitted for the written approval of the Planning Authority not later than 6 months prior to the completion of restoration (including soil spreading) of each phase.

REASON To comply with the requirements of Schedule 5 of the Town and Country Planning Act 1990 and to ensure that the reclaimed land is correctly husbanded and to bring the land to the standard required for agricultural, amenity, and conservation use.

1.6 Ffos-y-Fran Land Reclamation Scheme - Restoration Strategy 2015

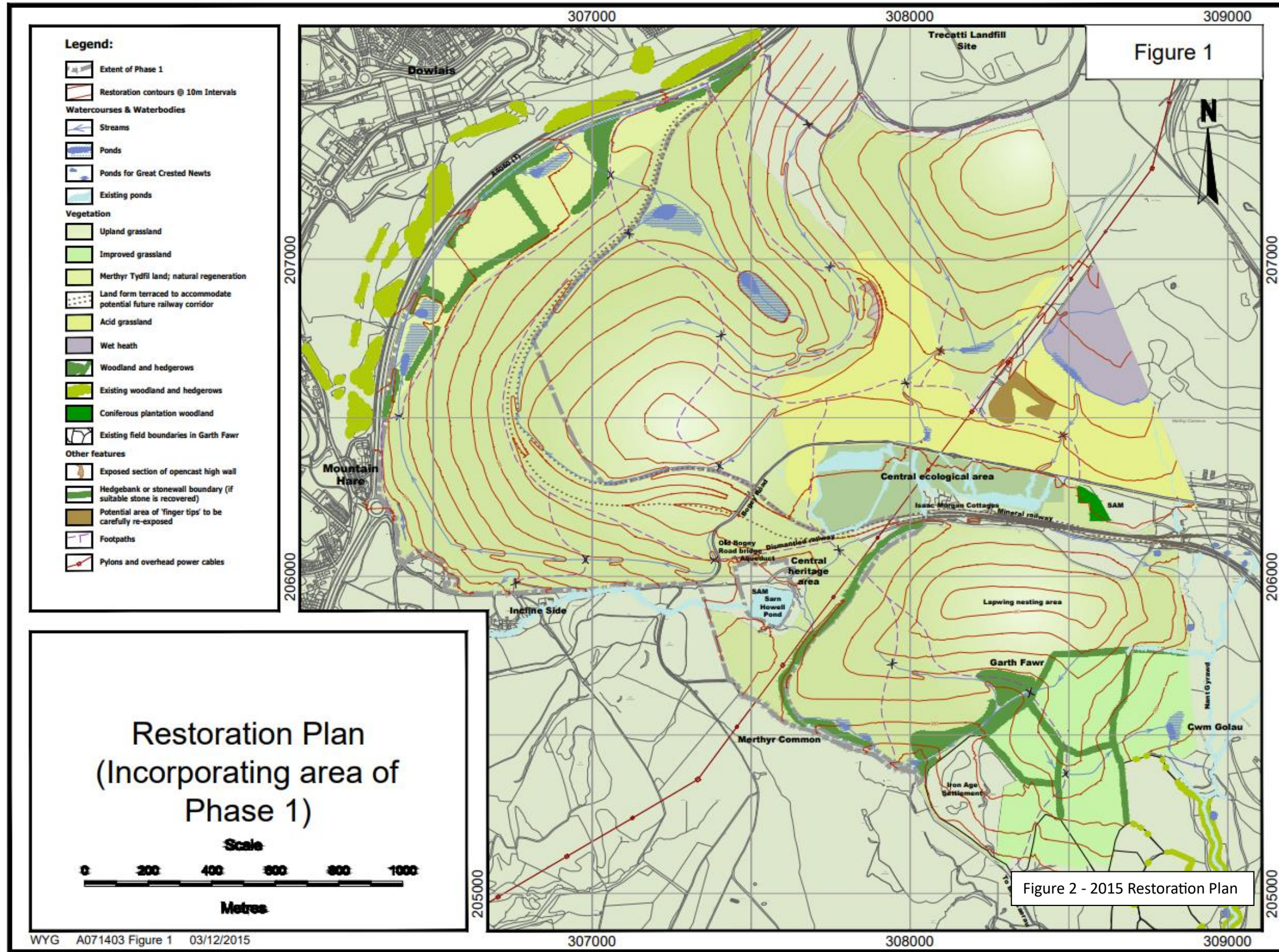
In accordance with these conditions a Restoration & Aftercare Strategy was agreed and approved by the local authority on 4th November 2005. This strategy was amended in 2007 and further modified and approved by the local authority on 11th February 2009.

Following a planning appeal (held on 8 – 11th Feb 2011) in respect of a refusal to grant Miller Argent (South Wales) permission under Section 78 of the TCPA 1990 for a variation of Condition 37, the Welsh Ministers Planning Inspectorate upheld the appeal (Ref: APP/U6925/A/10/2129921) on 6th May 2011 which reviewed and amended some of the original planning conditions including Conditions 50 – 53. Condition 50 was deleted (as the Restoration Strategy had already been approved by the local authority) and 51 & 53 were amended to reiterate the requirement to carry out restoration & aftercare in accordance with the original approved strategy (i.e. approved under permission APP 152-07-014).

It was a requirement of the approved restoration strategy to submit and agree the final detailed plans in phases, prior to the completion of each defined phase. Therefore, an application was submitted to the local authority in December 2015 (to comply with Condition 50 of permission A-PP 152-07-014 and Conditions 51 & 53 of permission APP-U6925-A-10-2129921) for Phase 1 of the restoration and aftercare scheme, which sought approval for 115 hectares of land situated primarily on the south-western side of the (as then) working area. This application was considered and approved by the local authority on 18th March 2016. As part of that submission, Figure 1 included detailed proposals for Phase 1 of the scheme and also provided indicative restoration proposals for the remainder of the site, subject to further detailed submissions for the consideration and approval of the local authority.

The 2015 scheme (i.e. as shown by Figure 1) indicates that the final void would be filled to form a basin, with extensive earthworks required to create a varied topography with steep sides rising up from the basin to a rounded flat-topped hill to a height of approximately 400 metres, and an exposed section of opencast high wall on the eastern flank. There is a linear plateau that skirts the western flank of the hill that could provide a route for a future rail corridor and a series of flat plateaux created adjacent to the A4060 dual carriageway. The scheme includes a number of flood storage lagoons and small ponds to attenuate run-off, with two main watercourses that discharge into a watercourse adjacent to the A4060 (T).

The final restoration profile for this scheme (i.e. Figure 1 overleaf) included for filling of the final void that would require approximately 26 million cubic metres of overburden material. The current overburden stored on site (in tips OB1, OB2 and OB3), amounts to approximately 37 million cubic metres indicating that there is potentially sufficient material on site to achieve this. However, the estimated cost to complete the final restoration profile and to fill the void would today, be likely to be in the region of £75-100 million, far in excess of the funds agreed between MSW and MTCBC for the final restoration of the site.



2.0 The Existing Environment

2.1 Key Features of the Site

The site lies to the south-east of the A4060 that connects the A470 at Pentrebach, south of Merthyr Tydfil, to the A465 Heads of the Valleys Road at Dowlais Top. To the north of the site lies Trecatti Landfill site (operated by Biffa Waste Services) and to the east, a minor road that serves the nearby villages of Fochriw, Pontlloftyn, and Pentwyn to the south. Bogey Road, a minor road, runs through the central section of the site in an east-west direction connecting Cwmbargoed to the A4060 at Mountain Hare. The Bogey Road effectively divides the site into two forming the northern and southern sections of the site. South of the site runs another minor road and beyond to open moorland and wooded river valleys of Nant Gyrawd and Taff Bargoed. An overhead 400 kW power line supported by pylons crosses the central section of the site and the Bogey Road in a north-east to south-west direction between two overburden mounds. The key elements of the existing site are described in more detail below.

2.2 Cwmbargoed Disposal Point

The Cwmbargoed Disposal Point including a coal washery and rail head, lies on the eastern boundary and central section of the site, south of the Bogey Road and was also the entrance to the operational surface mine. It contains several buildings associated with the Ffos-y-Fran mining operation such as a coal washery, rail head, site offices and welfare facilities. The CDP site continues to be used as the operational base of the site and is currently occupied by the C&M team. The facility is likely to be closed, or an alternative use found following completion of the final restoration.

2.3 Pit Lake

Surface mining operations in the main void in the northern section of the site ranged from around 60 metres deep in the north-west to a maximum of approximately 175 metres deep against the south-eastern high wall which was the final excavation profile to enable the extraction of the coal reserves from deep lying seams. During the operational phases of the mine, water was pumped from the void to keep the surface mine sufficiently dry to enable the extraction of coal from these lower seams. Towards the end of the operational phase the base of the void in the south-east was backfilled with overburden (to a height of circa 250m AOD) and the pumps were removed. Further tipping took place in the southern half of the void to a level of around 267m AOD at the base of the backfill slope before coaling operations

finally ceased in November 2023. As a result of the cessation of all mining and pumping operations, the void naturally filled at a controlled rate with a combination of direct rainfall, groundwater and surface water run-off. The pit lake level is anticipated to seasonally fluctuate in height between 275 – 285 metres AOD (Above Ordnance Datum).

2.4 Overburden Mounds

There are three main tips or overburden mounds within the site formed by the recent surface mining operations that began in 2007. The three overburden mounds, referred to as OB1, OB2 and OB3, contain a total of approximately 37 million cubic metres of overburden excavated and placed during the surface mining operations. OB1 lies adjacent to the main void, OB2 to the east of OB1, the power lines and north of the Bogey Road, and OB3 south of the Bogey Road in the southern section of the site.

The overburden mounds, comprising a mixture of glacial till, colliery spoil and sedimentary rock, were constructed during the early phases of the surface mine operation. The restoration proposals are to lower the western face of OB1 and re-profile the landform in line with geotechnical recommendations. OB2 and OB3 are considered as long-term stable structures and will remain as part of the final restoration scheme.



View of overburden mound OB3 that will remain as part of the final restoration scheme

2.5 Rivers and Watercourses

The site forms the upper part of the river catchments of the Bargod Taff and Nant Gyrawd which flow south towards the Afon Taff. Historically, the site has drained via a network of surface water drainage ditches, ponds, reservoirs, and leats, some of which form part of historic workings on the site from previous mining activity. These workings are known as the Dowlais Free Drainage System (DFDS) which provided water to the Dowlais Ironworks. Some of these features are reservoirs and leats that form part of a wider drainage system and are now designated Scheduled Monuments (SM's). The majority of the main surface water catchments at Ffos-y-Fran eventually feed into the River Taff to the south and west with some draining to the south-east towards the River Rhymney.

2.6 Ponds and Settlement Lagoons

There are several ponds and settlement lagoons that were constructed as part of an earlier phase of the surface mine and that remain on site today. These lagoons were used to contain water during periods of inclement weather to ensure suspended solids were settled out before discharging clean water back into the surrounding watercourses in accordance with NRW consents to discharge. Some of the ponds are lined to prevent water loss which is contained and managed by a combination of small dams and penstock valves. The majority of the ponds are fenced off to prevent access by grazing animals and to deter trespass by the general public. It is the intention to retain and improve these ponds, as some are showing signs of nature recovery with marginal vegetation colonising along some banks and some of which have tested positive for presence of great crested newts.

2.7 Ecology

The Ffos-y-Fran opencast mine lies within an area of upland moorland east of Merthyr Tydfil. The surrounding land is open and exposed and includes extensive areas of old tips and land reclaimed from the coal industry over long periods of time. Much of the site and surrounding area also lies within the Gelligaer and Merthyr Common, a vast area of upland with secondary heath and dry acid grasslands primarily grazed by sheep, cattle, and horses.

In November 2023, surface coal mining ceased leaving the ecological status of some areas of the site with some areas devoid of vegetation associated with mining activity past and present with patchy recolonisation. Some areas overlooking the town have been restored and progressively reclaimed under Phase 1, approved by MTCBC in 2016.

The overburden tips (OB2 and OB3) have consolidated and are now partially vegetated and many of the waterbodies at the base of the tips are showing signs of recovery with nascent willow carr and marsh habitats developing around the margins of some ponds and former reservoirs.

In the centre of the FLRS but outside the site boundary, lies the 'Central Ecological Area' to the south of the Bogey Road. Now incorporated into the LDP as the Merthyr Common Central Site of Importance for Nature Conservation (SINC), it comprises the retained part of a larger, former candidate SINC. The site benefits from a mosaic of interconnecting habitats, notably; acid grassland, dwarf shrub heath, small woodland, short ephemeral vegetation, wet flushes, and ponds. The vegetation includes plants such as lesser skullcap and marsh speedwell and Southern marsh orchids. The SINC supports several protected species; barn owl, bats, great crested newts, reptiles including common lizards and other amphibians such as palmate newts, toads, and frogs. It also offers foraging and breeding potential for birds such as lapwing and reed bunting.

3.0 Description of the Development

3.1 The Final Restoration Scheme

The Scheme involves the final restoration of 285 hectares of land that has previously been part of the surface mine operations at Ffos-y-Fran. The Scheme is a variation to an existing planning permission that is in place, and that has previously been approved in 2011 and subsequently revised and updated. Since that time, the approach to the restoration of former coal tips has adopted a more sustainable approach. The traditional approach to dutifully pursuing bulk earthworks in the restoration process is now considered outdated and unsustainable and more pragmatic alternatives involving less earthworks are also more affordable. Less bulk earthworks also vastly reduce potential environmental risks associated with such activities on air quality and noise sensitive receptors and the use of carbon in the process. Less bulk earthworks can also present opportunities to restore and deliver a more interesting and naturally biodiverse landscape.

Many areas of the Ffos-y-Fran site have already been progressively restored or have remained dormant and undisturbed for some time. These areas are starting to show signs of nature recovery. Wetland habitats have developed around the margins of ponds and watercourses. Evidence of great crested newts has been recorded (in 2024) in over half the ponds on site, southern marsh orchids have colonised in some of the wetland and peregrine falcons have been seen flying over the site.

To implement the original and consented scheme would require significant bulk earthworks, the removal of existing ponds and wetlands and inevitable potential disruption to the local environment. An alternative approach has therefore been adopted that embraces more recent Welsh Government policies and approach to climate change and biodiversity such as Planning Policy Wales (Edition 12) and the Environment (Wales) Act 2016.



Some areas of the site are showing signs of nature recovery with natural regeneration of heathland and grassland

3.2 Embracing the Principles of DECCA

Section 6 (S6) under Part 1 of the Environment (Wales) Act 2016 introduced an enhanced biodiversity and resilience of ecosystems duty (the S6 duty) for public authorities in the exercise of functions in relation to Wales. Under section 6 of the Act, public authorities that exercise their functions in relation to Wales have a duty to maintain and enhance biodiversity and promote the resilience of ecosystems

The S6 duty states that:-

“A public authority must seek to maintain and enhance biodiversity in the exercise of functions in relation to Wales, and in so doing promote the resilience of ecosystems, so far as consistent with the proper exercise of those functions.”

Section 6 of the Act also sets out the requirements for a public authority to take account of the resilience of ecosystems and in particular the following five key aspects.

- (a) diversity between and within ecosystems;
- (b) the connections between and within ecosystems;
- (c) the scale of ecosystems;
- (d) the condition of ecosystems (including their structure and functioning);
- (e) the adaptability of ecosystems.

These have been incorporated into Planning Policy Wales (11th Edition) where they are presented as the DECCA principles along with the stepwise approach. It was decided in the early stages of the project that these principles should be followed in the development of an alternative restoration strategy for Ffos-y-Fran and were subsequently incorporated into the scheme objectives.

D	Diversity: to ensure mechanisms are in place to minimise further loss and where circumstances allow for species’ populations to expand and recolonise their natural range (former range) or adapt to future change. More diverse ecosystems are more resilient to external influences (this includes biological, geological and physical diversity on a site). This means development should not cause any significant loss of habitats or populations of species, locally or nationally and must provide a net benefit for biodiversity;
E	Extent: to ensure mechanisms allow for the identification of potential habitat, the maintenance of existing assets and networks and promote the restoration of damaged, modified or potential habitat and the creation of new habitat. This means that planning decisions should incorporate measures which seek the creation, restoration and appropriate management of green networks and linkages between habitats and maintaining and enhancing other green infrastructure features and networks;
C	Condition: Ecosystems need to be in a healthy condition to function effectively, to deliver a range of important ecosystem services. Planning decisions should not compromise the condition of ecosystems. By taking an integrated approach to development, for example, which considers both direct and wider impacts and benefits it should be possible to make a positive contribution. Planning for the long-term management of retained habitats is key to maintaining condition through for example, the use of planning obligations;
C	Connectivity: to take opportunities to develop functional habitat and ecological networks within and between ecosystems and across landscapes, building on existing connectivity and quality and encouraging habitat creation, restoration and appropriate management. The opportunities could include enlarging habitat areas, developing buffers around designated sites or other biodiversity assets or corridors, including transport and river corridors, and the creation of ‘stepping stones’ which will strengthen the ability of habitats and ecological networks to adapt to change, including climate change; and
A	Adaptability to change: primarily in the form of climate change, for both species (diversity) and ecosystems requires action to protect the extent, condition and connectivity of habitats, features and ecological networks. Development plans, planning proposals and applications which build on protecting designated sites and securing and enhancing green infrastructure will be key ways of addressing the attributes of ecosystems resilience identified in the Environment (Wales) Act as well as facilitating social and economic resilience aspirations of the Well-being of Future Generations Act.

3.3 Scheme Objectives

The scheme objectives were identified at the early stages of the project in summer 2023 to align with national planning policy and approaches to biodiversity as referred to above. The scheme objectives were to :-

- Develop a restoration strategy to leave the site as a safe environment for future generations.
- Implement a progressive, cost effective, achievable and sustainable restoration scheme by 2025/2026 (Note: these dates are now time expired).
- Deliver community benefits on site for local communities of Merthyr Tydfil and Caerphilly
- Align with the Environment (Wales) Act 2016 and the principles DECCA (Diversity, Extent, Condition, Connectivity and Aspects of ecosystem resilience).
- Create a framework for a diverse landscape and a range of habitats that encourage long term net biodiversity benefit (NBB).

3.4 Alternatives Considered

The EIA regulations require that any alternatives to the proposed development that have been considered should be recorded in the ES as part of the EIA process. Alternative schemes were considered as options early on in the design development stages.

Two options were developed as alternatives to the approved scheme and presented to MTCBC in the report Ffos-y-Fran Final Restoration Strategy 2023. The two options presented in the document were for a low level and medium level restoration scheme. The two options are presented in the table below.

The preferred option of the two at that time was selected as Option 2 subject to further investigations and feasibility assessments. Option 2 medium level restoration was considered as having the most potential to deliver the scheme objectives

Option 1 – Low Level Restoration	Option 2 – Medium Level Restoration
Filling of void to circa 270 metres AOD with approximately 925,000 cubic metres of fill material – potential for permanent water body to form above minimum groundwater level of 269-270 AOD.	Main void filled to approximately 300 AOD with approximately 4.2 million cubic metres – reduced height of OB1 – batters trimmed – no lake – above minimum groundwater level of 269-270 AOD.
Resulting slopes likely to be extensive and steep sided and unsuitable for rough grazing and return to common land.	Approximate level of Rhas Las Seam – minimum risk of future slippage and subsidence and well below level of Big Seam.
Areas might need fencing off for health and safety reasons depending on steepness of slope profiles.	Potential for some level areas for access/maintenance.
Alternative land for Common Land return may be required	Some areas suitable for return to Common Land.
Relatively short time-period for restoration and cessation of earthworks – less environmental impact caused by construction period.	Potentially some funding available for landscape remediation and visual amenity and 5-year establishment maintenance period.
Remaining slopes of void could provide interesting opportunities for biodiversity on sheltered slopes.	Potential to further enhance restoration of areas of Phases I & II on western flank of reclaimed tip.
Potential for lake or wetland area to form naturally	Lake or wetland unlikely to form naturally at level of 300 AOD without remediation works to form lake-bed level.
Potentially more funding available for landscape remediation and visual amenity and 5-year establishment maintenance period.	Potential for localised tree planting on OB2 and OB3 and improve visual amenity from locally public areas i.e., Bogey Road and Phase I slopes visible from Dowlais
Potential to partially restore additional slopes on OB2 and OB3 and improve visual amenity from locally public and visible areas	Potential to partially restore additional slopes on OB2 and OB3 and improve visual amenity from locally public and visible areas

3.5 Design Development

Option 2 was initially taken forward as the preferred option through the design development stages and its feasibility evaluated. At the time (Summer 2023), the mine was still operational with the final seams being extracted from the bottom and lower levels of the pit void. Water was being pumped out of the void in significant volumes to keep the pit void operational for coal extraction. MSW had a water abstraction and discharge licence in place for this operation to continue which was granted by NRW subject to environmental conditions.

As coal extraction was reaching an end and all remaining coals had been removed from the deepest part of the mine, there was no requirement for the base of the pit void to remain dry, therefore, MSW took a commercial decision to cease pumping as this was a high-cost operation and was no longer required for the continued operation of mining activities which were still taking place at a higher level elsewhere in the void.

Following the cessation of pumping, the water levels in the void started to rise and recover back to its natural levels forming a pit lake. At this stage, backfill continued to be tipped into the base of the void above the rising water levels and a large part of the void was filled to a level of around 268m AOD before the water levels rose and submerged the backfill in this area. This made any further backfilling operations in the void impossible, unless the pumps were re-deployed, as backfill needs to be tipped and placed in a relatively 'dry' environment to ensure its long-term geotechnical stability. Following the final cessation of mining operations in November 2023, monitoring of the lake levels continued to better understand the relationship between rainfall, water levels and groundwater drainage.

Lake levels continued to rise reaching a maximum level of approximately 281m AOD in April 2024 and then started to stabilise over the summer months. The only way that backfilling could recommence in the void to enable Option 2 to be a viable proposal would have been to undertake a long and extremely expensive pumping operation to fully dewater the void, which would have led to lengthy delays and additional environmental disturbances. It was therefore decided that the most pragmatic and environmentally sensible approach to the design of the restoration proposals was to incorporate the existing groundwater lake into the scheme as a permanent body of water which would rise and fall seasonally in line with groundwater levels which were recorded before mining operations commenced. This would also significantly reduce the need for bulk earthworks, significantly reducing carbon emissions into the atmosphere and saving time and money that could be spent on other aspects of the restoration scheme such as planting and habitat creation.

3.6 Restoration and Aftercare Proposals

The key elements of the restoration and aftercare proposals are proposed as follows

Key Features

1. The overburden mound OB1 in the northern part of the site and that is visible from parts of Merthyr and sections of the Heads of Valley Road, A4060 and surrounding area, would be reduced in height, re-profiled and grass seeded.
2. Sections of exposed rock on the western side of OB1 would be retained as open scree and as a geological feature for visual amenity and open cliff habitat providing potential habitat for lichens and mosses, and possibly a suitable location for breeding birds such as Raven and Peregrine.
3. The two overburden mounds OB2 and OB3 would remain largely as they appear today, and the lower slopes grass seeded and planted with native tree species.
4. Old reservoirs, dams and leats that remain from previous phases of mining activity including the Dowlais Free Drainage System would be retained and enhanced for biodiversity. Other water bodies such as settlement lagoons used in the earlier phases of Ffos -y-Fran would also be retained and protected
5. The groundwater lake that has formed naturally in the main void would be retained with shallow banks and margins around the shores of the lake. The surrounding slopes of the lake would be re-profiled and planted with native trees to form a mixed woodland
6. Demolition and removal of existing buildings associated with the operational mine such as workshops used for vehicle maintenance and storage of materials such as fuel and machinery would be demolished and removed from the site.
7. A proportion of the site would be returned to urban common as rough grazing land. This would require areas to be fenced off to aid establishment of vegetation and to prevent grazing by livestock.
8. Areas outside the urban common would be prepared to enable habitat creation and the establishment of species rich grassland, broad-leaved and mixed woodland, open cliff, acid wetland and flushes and heath.
9. Land adjacent to A4060 would be re-profiled to provide potential for future light industrial use and grass seeded for general amenity until opportunities for development come forward.
10. Creation of a network of footpaths and Public Rights of Way (PRoW) and a Byway Open to all Traffic (BOAT)

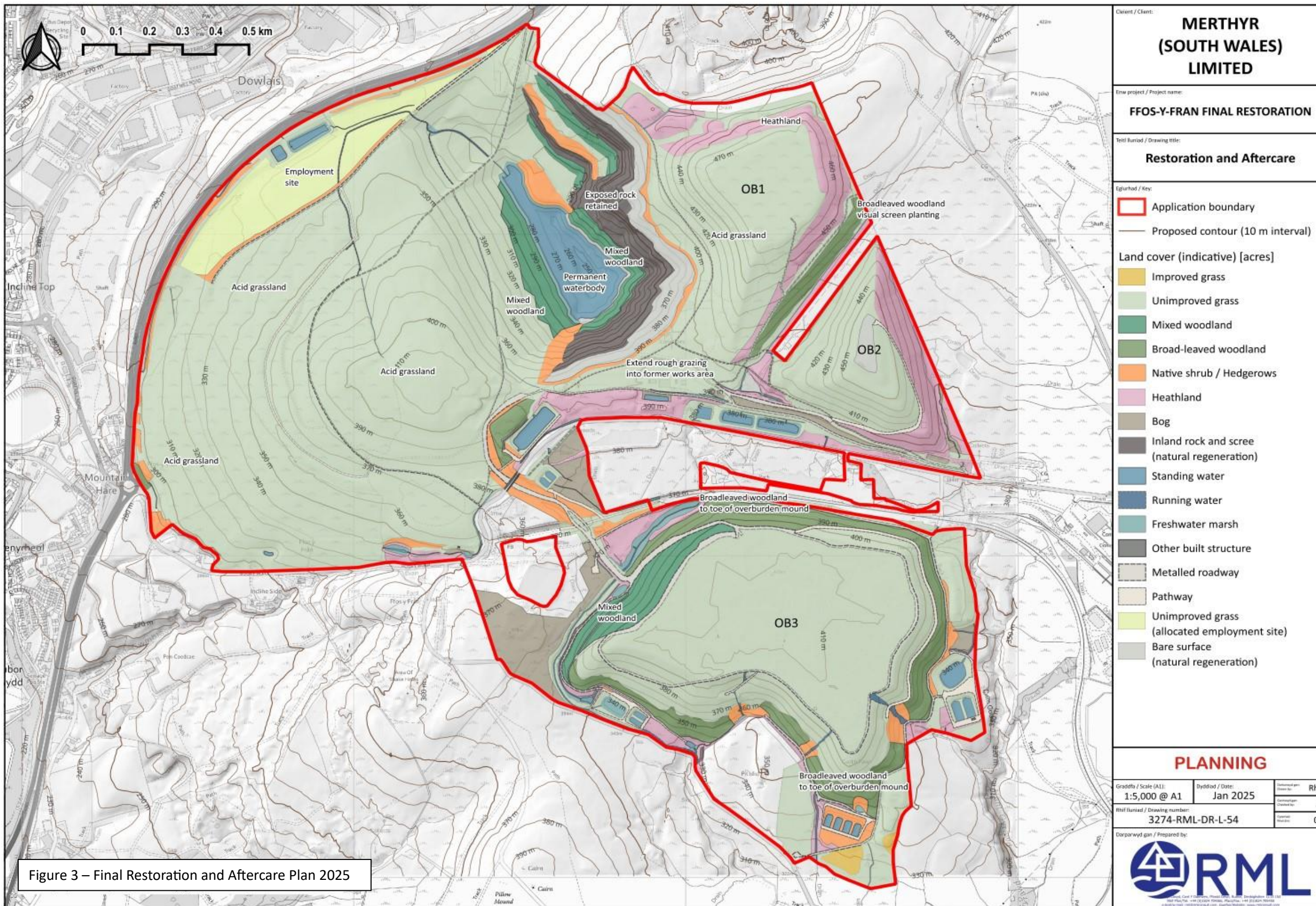


Figure 3 – Final Restoration and Aftercare Plan 2025

4.0 Assessment of Environmental Effects

4.1 Scope of the Assessment

The scope of the EIA was agreed with MTCBC in October 2024 following a scoping request in July 2024 that set out the proposals for the contents and assessment methodologies of the Environmental Impact Assessment (EIA) that will accompany the Section 73 application for amending the final restoration strategy.

The aim of the EIA was to establish if the implementation of the final restoration proposals would be likely to cause any significant adverse or beneficial effects on the existing site and surrounding area. The scope of the EIA was discussed at Technical Working Group meetings that were attended by Merthyr Tydfil County Borough Council, the statutory environmental bodies and other key stakeholders and hosted by MSW and the EIA team of consultants. This gave opportunities for the key environmental issues to be discussed and addressed in the EIA process.

The key concerns were surrounding the water environment of the groundwater lake that had naturally re-charged in the bottom of the void. Concerns from the statutory bodies such as NRW were surrounding potential water quality of the lake and groundwater discharging to surface water bodies downstream. There were also concerns raised by third parties in relation to potential flood risk if the lake levels continued to rise, and the classification of the groundwater lake in relation to the Reservoirs Act.

The cessation of mining at the end of November 2023 gave the opportunity for more data to be gathered and analysed to inform the EIA. Water levels within the pit lake continued to be monitored against rainfall events and further investigations made into the surface water discharge locations downstream of the site. Water quality samples were taken from several locations and the chemical nature of the backfill material analysed. The design of the final landform was developed in collaboration with a geotechnical specialist and volumes of overburden and soil forming materials measured to achieve an earthworks balance to reduce the need for bulk earthworks and the need to import any further material. Further surveys were also undertaken and eDNA testing for great crested newts carried out on water bodies within and adjacent to the site for evidence of presence/absence.

The data gathered over the period 2023-2024 has proved to be invaluable for undertaking the EIA with up-to-date information that can be used to forecast likely events and assess the likelihood of any potential environmental risks associated with the site and the proposed restoration strategy.

The environmental topics and scope of assessment were agreed as follows:

Environmental Topic	Scope of assessment
Geology and Soils	Geotechnical considerations and slope stability of the backfill and side slopes surrounding the void and pit lake. Design of final slopes and assessment of geotechnical risks including existing overburden mounds.
Hydrogeology*	Assessment of ground water discharge and sub-surface drainage, pit lake levels and preparation of conceptual hydrological model. Analysis of historical data pre-surface mining operations and post-closure in November 2023.
Hydro-Geochemical*	Acid and Metalliferous Drainage (AMD) risk assessment and water quality analysis. Assessment of potential impact pathways on surface water quality downstream and potential risks from upstream sources to pit lake.
Hydrology*	Assessment of surface water catchments and drainage pathways. Assessment of potential flood risk within site and downstream surface water network. Assessment of effects (of proposals) and impact on water framework directive.
Ecology	Review of historical baseline data and further ecological baseline surveys. Assessments of likely significant effects and mitigation measures. Considerations to stepwise approach and measures to promote biodiversity benefits.
Landscape and Visual*	Assessment of potential effects on landscape character areas during restoration works (short term) and post-restoration. (long term). Assessment of significant effects on visual receptors such as local residents and communities.
Cultural Heritage	Desk based assessment on likely effects of final restoration strategy on remaining heritage assets and scheduled monuments and their setting. Identification of future opportunities for interpretation.
Air Quality and Greenhouse Gases*	Assessment of likely effects resulting from restoration and aftercare operations – comparisons between alternative restoration scheme to consented scheme.
Population and Human Health	Potential effects of implementing restoration proposals on human health and well-being. Assessment of likely health advantages of the proposed scheme compared to approved scheme and narrative on potential noise issues.
Climate Change	A narrative surrounding potential climate change issues in relation to future climatic events and lake levels.
Cumulative Effects	Assessment of Inter (in combination effects) and intra (with other development) cumulative environmental effects
Environmental Management Plan (EMP)	An outline EMP that describes the responsibilities for the restoration and aftercare process and likely contents of a Construction Environmental Management Plan (CEMP) to cover future restoration works.
*	Additional Technical Reports prepared – refer to ES Volume 3 – Appendices

4.2 Geology and Soils

The extraction of nearly 11 million tonnes of high-quality steam coal has inevitably had a significant impact on the sites underlying geology creating a large void and exposing the natural groundwater as a pit lake. With all coal extraction ceasing at the end of November 2023, no further impacts of this magnitude on the existing geology will occur and the remaining landform will be left as stable ground in the final restoration of the site.

A geotechnical assessment of the existing void and side slopes including exposed cliffs and rock face has been undertaken in accordance with the requirements of The Quarries Regulations 1999. Throughout the operational period of the surface mine, geotechnical assessments were undertaken on a three-monthly basis, with occasional intermediate assessments of operational activities where necessary.

In developing the proposals for the final restoration strategy, assessments of the final landform and profiles have been undertaken using a combination of fieldwork and development of a detailed 3-dimensional (Triangular Integrated Network – TIN) model. The proposals to retain the exposed rock strata have been assessed and remedial works have been undertaken towards the end of coaling operation to ensure its future stability. Other areas of the side slopes that were subject to instability during coaling operations were also stabilised prior to operations ceasing in 2023.

A number of lagoons and water treatment areas will be retained and form a part of the final site restoration proposals. The structures were all excavated into original and / or previously made-up-ground and have remained stable throughout the life of the site. Subject to these structures being un-affected by any future engineering works, they should remain stable in perpetuity. Overburden mounds OB2 and OB3 have been constructed in accordance with the geotechnically approved designs and remained stable throughout the life of the mine. The very few instabilities which have occurred have been small-scale, localised, associated with minor water seepages, and of no significance. The magnitude of failures has been such that the overall stability of the tips has never been compromised. OB2 and OB3 would remain in place as part of the final restoration, the assessment has found that in their present form they can be considered as 'long-term stable' structures.

For the first three years following the completion of restoration works an annual site inspection by an appointed geotechnical specialist will be undertaken and the findings of the inspection submitted to the local planning authority who, under Part II of the Mines and Quarries (Tips) Act 1969, assumes responsibility for the monitoring of the site.



Photograph north across the main void and eastern exposure as it was being worked in October 2023 with exposed strata, rock face and open scree and visible above working area

4.3 Hydrogeology

The below ground drainage of the site is complex due to the nature of the underlying geology and previous mining activities that have occurred since iron and coal extraction began in the 18th century. The hydrogeological assessment revisits and builds upon previous assessments, particularly those conducted by Celtic Energy Limited in 1996 and Miller Argent (Consultant R.G. Edwards) in May 2002, which highlighted the main drainage routes and their role in the site's underground water flow system.

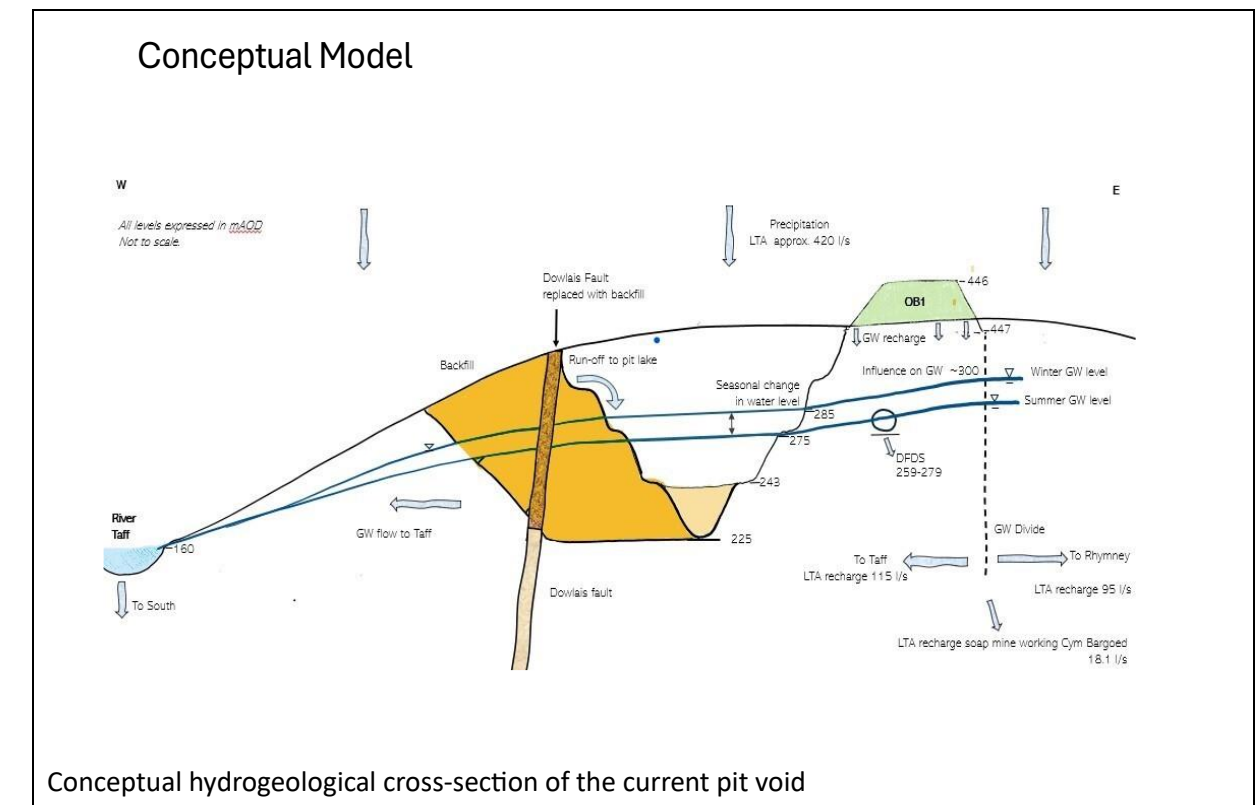
The scope of the hydrogeological assessment includes both consideration of change to groundwater level and potential effects on watercourses downstream, and the long-term pit lake level changes following implementation of the proposed final restoration scheme. The evaluation was carried out within the framework of relevant legislation and policies that regulate water resources, water quality, and pollution control. This legislation supports comprehensive management plans that ensure water sustainability, while protecting aquatic ecosystems and groundwater from pollution.

The assessment details the existing conditions, and the methodologies employed to analyse the likely hydrogeological effects of the proposed restoration scheme. The baseline conditions for this assessment covers a period from November 2023 to June 2024 (including previous studies), during which time pumping of water out of the void and mining operations ceased. The water levels within the pit lake were regularly monitored and flow paths to surface water bodies investigated. Water levels within the pit void returned to equilibrium during this period have not shown significant deviations in groundwater drainage patterns compared to the pre-mining situation.

A 3D numerical groundwater model was built to assess potential spatial impacts related to the implementation of the proposed restoration scheme, and to provide inputs to a pit lake water balance model designed to provide projections of future pit lake level fluctuations. This model was calibrated to records of groundwater level observations, measured and inferred discharge rates from the Dowlais Free Drainage System, and operational dewatering rates.

The impacts of the reclamation on groundwater levels, availability, and discharge to surface water receptors were carefully evaluated using the predictive model. The predicted changes were found to be minimal and localised, with no significant impact on regional groundwater users or water bodies. Groundwater discharge to surface water bodies is also expected to remain within acceptable limits, with minimal deviations that are unlikely to influence water quality or ecological conditions. The hydrogeological impact assessment provides a robust analysis supported by extensive data and modelling, concluding that the proposed restoration scheme activities at the Ffos-y-Fran site are unlikely to cause significant hydrogeological impacts.

A pit lake water balance model was developed to generate future projections of pit lake level for both the existing and proposed restoration landforms. The model tracks the water level and volume within the pit void in response to climatic inputs and user-defined relationships between pit lake stage and groundwater inflow/outflows and is matched to observations of pit lake level.



Post restoration, the water level in the pit lake is predicted to fluctuate between 275 and 285 metres AOD (Above Ordnance Datum) with a maximum level of 286m AOD used as a worst-case scenario in the model to predict extreme weather events due to climate change. At 286m AOD the volume of water would be just over 1,500,000 and represent approximately 16% of available storage within the void.

These projections or simulations from the model suggest that, even in the wettest future scenario, the pit lake level remains more than 40 metres below the spill point of the void in the northern section of the site thus rendering the level of risk as negligible and the event being highly unlikely.



Visualisation 1 – View north across pit lake and eastern side slopes of OB1 towards Dowlais Top.

4.4 Hydro-Geochemical

The primary emphasis of the hydro-geochemical assessment is to examine potential sources of water pollution, particularly from soluble parameters of concern such as manganese, in the context of the site's restoration plan. Various sources including exposed pit walls, backfill material, overburden, and old mine workings are considered for their potential to contribute to elevated levels of dissolved or suspended solids that could impact both onsite and downgradient water bodies such as culverts, ditches, streams and rivers.

The assessment contains a historical overview of hydrological and hydrogeological assessments previously undertaken at the site. Previous assessments by Miller Argent in 2023 (R.G Edwards), noted the generally good water quality and low potential for acid rock drainage due to the alkaline nature of the mine water and its capacity to neutralize acidity. The scope of the current hydro-geochemical assessment is to detail potential impacts of the restoration plan on surface and groundwater quality. It includes development of an acid mine drainage risk assessment specifically for the pit void and overburden sites.

The restoration plan involves several key activities such as the reduction in height and reprofiling of overburden areas, backfilling of the main void, and revegetation of disturbed areas. The post-restoration scenario expects the formation of a stable groundwater lake within the pit void, which is anticipated to integrate into the local hydrological regime as a permanent water body.

The assessment contains details of legislation and policy considerations, referencing both local and international regulations that guide the environmental impact assessment process. These include directives from the EU, even though the UK is no longer a member, and various UK-specific environmental regulations that focus on maintaining good water status and preventing pollution and deterioration of water bodies.

The methodology of the assessment uses a source-pathway-receptor model to conceptualize potential contamination risks. This model helps in understanding how contaminants might move from their sources through environmental pathways to affect various receptors. Key sources of contamination considered include overburden areas and the pit void waterbody, with pathways through groundwater and surface water flows delineated.

The results from water quality monitoring indicate the potential for elements such as manganese, iron, and selenium to exceed Pollution Alert Values (PAVs) at several monitoring points. Despite some elements being above PAVs, the settling ponds and other mitigation measures currently in place are deemed effective in reducing metals to acceptable levels.

The final restoration scheme retains all but one of the existing water bodies on site. Several of these have been genetically tested as positive for evidence of great crested newts. The retention of these water bodies will enable naturalisation of the ponds and marginal habitats over time. As such, monitoring has been suggested along with establishment of a planned settling pond management or enhanced wetland to ensure the removal of metals continues.

Elevated concentrations of ammonia have been recorded in a perimeter borehole on the Trecatti landfill. This location is directly upgradient of the pit void. Groundwater monitoring has shown an increase in ammonia in some locations within the pit void, and the level of ammonia measured in the pit waterbody and modelled over a longer time, is found to be elevated, although the source is unlikely to be from the Ffos-y-Fran site. Although levels of ammonia are elevated, they are currently at a level that is considered low risk to human health and livestock. Water quality would be monitored and reviewed on a regular basis during the restoration and aftercare period.

The assessment emphasises that the chemistry of inflows into the pit lake and its consequent water quality have been modelled to predict future conditions, indicating that while parameters like ammonia might occasionally exceed PAVs, overall water quality is managed effectively.

The assessment concludes that the restoration will not significantly alter the hydrogeochemical regime in a way that would cause environmental concern. The predicted post-closure scenario suggests that natural processes and planned mitigation measures will continue to manage any potential contamination. Revegetation and other stabilisation methods are expected to further reduce the mobility of contaminants. The settling ponds, particularly those in the south of OB3, are noted for their role in effectively managing metal levels, with suggestions for their future management to maintain effectiveness.

In consideration of all the quality monitoring taking place at the mine, the hydrogeochemical impact assessment of the proposed restoration scheme implementation does not identify a high risk of significant effects to identified recipient water quality that will require any significant adjustments to the proposed plans.



Visualisation 2 – View south towards pit lake from northern point in the site with re-profiled OB1 left in view.

4.5 Hydrology

The assessment of the restoration scheme on the hydrology of the site covers aspects of the water environment namely flood risk, drainage and surface water including an assessment of the effects on the Water Framework Directive (WFD) and hydraulic modelling of the re-profiled landform. The flood risk and drainage assessment focussed on the area of the site north of the Bogey Road and centred around the main void where most of the surface water would be captured from the north-eastern part of the site, or flow to the west and south-west and join the network of ditches and culverts that ultimately feed into the Nant Morlais culvert, Bargoed Taff, River Rhymney and the river Taff. The assessment involved extensive modelling of various scenarios of flood events and flood risk to receiving watercourses downstream of the site.

The NRW 'Flood Map for Planning (Rivers and Sea)' shows that the site is located within an area outside of the extreme flood extent (Flood Zone 1), meaning it has a less than 0.1% annual probability of flooding from rivers, including the effects of climate change. The site forms a high point within the surrounding topography and is elevated above all nearby watercourses. The risk of flooding from rivers is therefore very low and the site does not comprise functional floodplain.



The Isaac Morgan Pond lies outside the site boundary north of OB3 and south of the Bogey Road. The pond is a Scheduled Monument and within a Site of Importance for Nature Conservation

In order to fully quantify the surface water flood risk to the site, and the impact that the proposed restoration scheme would likely to have on surface water flood risk off-site, a detailed surface water hydraulic modelling study was undertaken. During the existing scenario, surface water flows are generally contained within existing drainage features such as ditches, ponds and lagoons. Water levels within the quarry void increase from 284m AOD (starting water level in the model) to 284.26m AOD, an increase of 26 centimetres allowing annual exceedances and for climate change.

The assessment concluded that the risk of surface water flooding remains similar post-development with flows generally contained within drainage features and the quarry void. No additional flow is directed towards the site boundary and to third party land beyond. Minimum variation in the quarry void lake water level occurs as a result of the restoration scheme and significant freeboard is available between the quarry void lake water level and the ground elevations at the perimeter of the quarry void. The quarry void water level is groundwater influenced with direct surface water flows (rainfall) having minimal impact.

A preliminary Water Framework Directive (WFD) Assessment was prepared to understand what the likely effects that the final restoration scheme may have on the water bodies within the site and any other connected water bodies outside the site boundary. Preliminary investigations have proven that there is no hydraulic connection to the Rhas Las Pond to the east of the site and Fochriw Road that has a limited localised catchment area and lies on land generally above the level of the Ffos-y-Fran site.

The Water Environment Regulations (WER) 2017 (Water Framework Directive) (England and Wales) transpose the Water Framework Directive into UK law. The WFD protects surface waters including rivers, lakes, transitional waters (referred to in this advice as estuarine waters), coastal waters and groundwater.

The site is intersected by a network of unnamed drainage ditches; natural and manmade channels, some of which form part of historic workings on the site from previous mining activity. These carry rainfall runoff and discharge to watercourses local to the site. There are also a series of ponds and lagoons on site, several of which are designated as water treatment areas (sediment settlement lagoons).

The assessment found that during the restoration works (earthworks), there may be some effects on the biological and chemical status of some of the local watercourses but that the effects would be negligible if best practice working methods are followed. In the long term, and with the retention and protection of the existing water bodies on site, it is expected that the implementation of the restoration strategy would result in improvements to the ecological diversity of the site including the WFD status of the receiving waterbodies.



Visualisation 3 – View west across site from OB1 towards Merthyr Tydfil.

4.6 Ecology and Nature Conservation

The history of the Ffos-y-Fran site is one of considerable disruption resulting from mining activities and with the gradual reduction and now cessation of these operations, the ecological baseline in the disturbed areas, while poor, is likely to continue improving with time. Baseline ecological conditions were established through a combination of field surveys and reviews of existing ecological data. These baseline assessments provided a thorough understanding of the site's current ecological features, which include various habitats and species, some of which are legally protected or of notable conservation interest. The assessment methodology employed a rigorous approach, using a 'source-pathway-receptor' model to evaluate the potential impacts on ecological receptors.

There are now several habitats and protected species which have established within the context of a landscape altered by mining activity that that may otherwise not have existed. It is necessary for the restoration to protect and retain these, particularly around the water features rather than attempting to return the site to a pre-mining condition which would mean their loss. It is considered likely that the residual effects would, upon establishment of the various habitat types proposed, increase over time to be a positive benefit compared to the baseline conditions that currently prevail.

The implementation of the final restoration strategy would see the restoration of the main void to a permanent water body, the re-profiling of the OB1 overburden tip and retention of the open cliff to the east of the pit lake. The remaining areas of the site would generally remain as they stand today, and a variety of habitats encouraged to continue regenerating naturally and developing habitats further enhanced. The existing waterbodies such as ponds and settlement lagoons, several of which contain evidence of great crested newts, would be retained and enhanced through the formation of shallower banks and margins.

The proposed reclamation would provide net benefits for biodiversity. This would link to the economic, social, environmental, and cultural well-being improvements which could be achieved, as set out in The Well-being of Future Generations (Wales) Act 2015. Management plans would be produced which would protect the important existing habitats and species on site, as well as introducing new habitats, appropriate to the site's conditions, and enhancing those which already exist.

This alternative and final restoration scheme protects and enhances the areas of the site that have started to recover naturally and causes significantly less disruption to the site than the currently approved scheme. In the short term it avoids unnecessary impacts that would be caused by bulk earthworks operations and destruction of valuable waterbodies, wetlands and associated protected species. In the long term, it provides opportunities for a much more diverse landscape to provide a wide variety of habitats and support future biodiversity.



Southern marsh orchids have started to naturally colonise on the site in wetland flushes around the margins of waterbodies such as settlement lagoons and old reservoirs



Visualisation 4 – View north-west across site towards Merthyr Tydfil from OB1.

4.7 Landscape and Visual

The landscape character of the South Wales Valleys and Merthyr Tydfil has been transformed by the activities of the industrial revolution spanning the 18th and 19th centuries. The upland landscape surrounding Ffos-y-Fran contains relic landforms of old tips, reservoirs and ponds, defunct railways and overhead lines, an industrial landscape that has escaped sanitisation unlike many other areas subjected to the traditional land reclamation process. Ffos-y-Fran is situated within National Landscape Character Area (NLCA) 37 South Wales Valleys, a region marked by deep, urbanized valleys amidst a broad upland area renowned for its industrial history and cultural identity.

The assessment process follows the Guidelines for Landscape and Visual Impact Assessment Third Edition (GLVIA3), which details the methodology for evaluating landscape and visual sensitivity, the magnitude of impacts, and the overall significance of effects. The study area for the assessment was delineated based on the potential visual influence of the restoration, extending to areas from where the site's changes are perceptible. The baseline conditions for the landscape and visual resources were established through a combination of desk studies and field surveys, utilizing tools like the Landscape Character Map for Wales and the LANDMAP dataset from Natural Resources Wales.



View towards Ffos-y-Fran and OB1 from Mitchell Crescent, Penydarren

The Ffos-y-Fran site is elevated above the town of Merthyr Tydfil and parts of the site visible from as far away as the Bannau Brycheiniog National Park (circa 2.8 km). The upper reaches of the northern overburden mound (OB1) is particularly visible and made more conspicuous by its dark horizon and lack of vegetation cover. This part of the site is particularly visible from areas of Merthyr Tydfil such as Dowlais Top, Treharris, Penydarren and Gellideg and further west from the A465 Heads of Valleys and Bike Park Wales in west Rhydyar.

The core of the assessment involves a detailed evaluation of how the restoration activities would alter the landscape character and visual experiences of various receptors. The assessment categorises landscapes and visual receptors based on their sensitivity, ranging from high to negligible, and evaluates the magnitude of impact from the proposed changes. This includes considerations of how the site's alterations would be perceived from various distances and by different viewer groups, such as local residents, visitors, and road users.

The assessment concludes that the restoration is expected to have a net positive impact on the landscape and visual amenity of the area. While there will be temporary disturbances during the restoration activities, the long-term outcomes are anticipated to improve the visual quality and landscape character. This improvement is attributed to the reclamation of mining waste, the restoration of natural vegetation, and the careful management of visual impacts. The expected outcomes indicate substantial benefits to the landscape and visual environment, contributing positively to the local area's aesthetic and ecological value. The retention of the existing waterbodies and overburden mounds can be considered as an honest interpretation of the site's history and resistance to further sanitise the industrial landscape of South Wales Valleys.



View west-north-west of Ffos-y-Fran and OB1, OB2 and OB3 from slopes of Mynydd Fochriw

4.8 Cultural Heritage

The Ffos-y-Fran Land Reclamation Scheme (FLRS) undertook extensive assessment and recording of heritage assets during the operational period of coal extraction. Some heritage assets were discovered during surface mining operations and recorded, and some preserved and relocated on the site. The remaining heritage assets of ponds, lagoons, least and reservoirs are testament to the areas mining heritage.

The assessment methodology undertaken for the proposed restoration and aftercare scheme involved a Desk-Based Assessment (DBA), which collected and analysed existing data about known archaeological and historic sites within the area. Consultations with Cadw and Archaeological Planning – Heneb Glamorgan Gwent Archaeology (APHGGA) helped define the scope of the assessment, focusing primarily on non-designated heritage assets within the development area. The DBA was important in identifying which assets remain post-mining operations and evaluating their conditions and significance.

The assessment adheres to several key statutes and guidelines, including the Historic Environment (Wales) Act 2023, Planning Policy Wales (Edition 12, February 2024), and Technical Advice Note (TAN) 24: The Historic Environment. These frameworks ensure that the assessment aligns with current standards for managing impacts on heritage assets.

The DBA involved extensive data collection from various sources, including regional Historic Environment Records (HER), excavation reports, aerial and satellite imagery, and map regression analysis. This comprehensive approach allowed for a thorough understanding of the baseline conditions of the heritage environment within the proposed development area.

Key findings from the DBA indicated that while some heritage assets have been preserved, others have potentially been lost under overburden mounds or within the main extraction areas. The assessment also considered the visual impact of the proposed development on the setting of known sites of archaeological importance. Photographs taken during site visits helped in assessing these visual impacts, particularly how the restoration work would appear from and affect various designated sites.

The likely effects of the restoration are considered to be predominantly beneficial. The restoration is expected to improve the visual amenity of the area and make heritage assets more accessible, thereby enhancing their educational and recreational value. The integration of the site's historical elements into the final design is seen as a positive outcome that respects and validates the area's cultural heritage. Many of these heritage assets would be lost if the approved scheme were to be implemented and therefore the alternative and final restoration scheme is considered to be beneficial in terms of cultural heritage.

4.9

Air Quality and Greenhouse Gases (GHG)

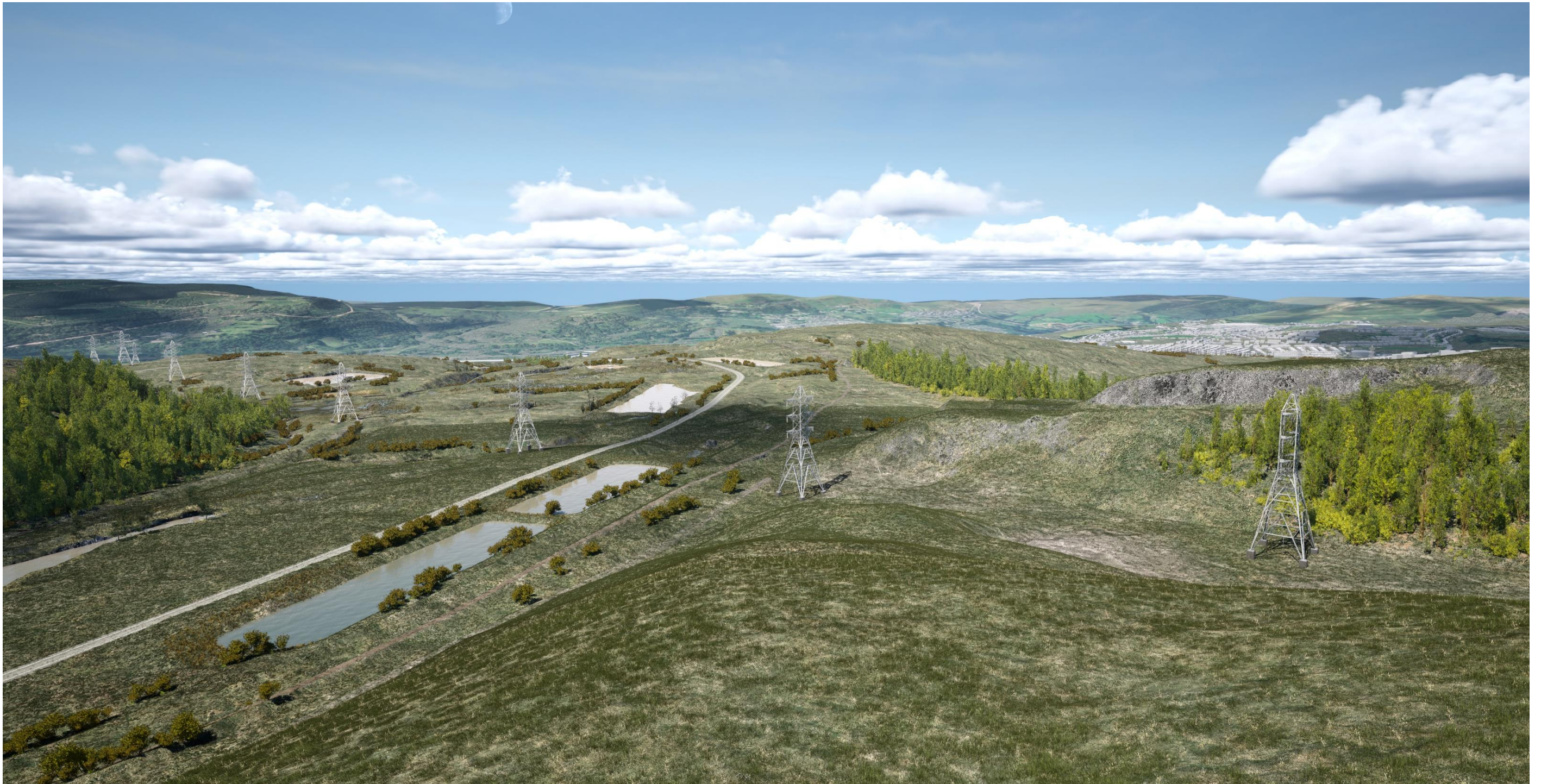
The assessment primarily focuses on local air quality and dust impacts that might arise from the proposed restoration activities at the site. Identified emissions include dust from material handling and internal haulage, as well as combustion emissions from non-road mobile machinery (NRMM) used on-site. The assessment notes that the impacts of these activities are expected to be less severe than those experienced during previous surface mining operations or under the existing currently approved restoration scheme. This is due to the absence of material importation or exportation outside of the site and the reduction in bulk earthworks needed to achieve the final restoration landform profiles, limiting the need for on-road vehicle emissions and thereby substantially reducing the overall environmental impact.

The potential impact that the final restoration scheme would cause by generating disamenity dust is considered to be negligible on all human receptors and sites of ecological value. It should be noted that the risk of the generation of dust and aerial emissions, and hence of adverse impacts and effects, during the implementation of the proposed scheme is substantially less than that during the recent surface mining operations undertaken between 2007 and November 2023.

Furthermore, the risk of the generation of dust and aerial emissions, and hence of adverse impacts and effects, during the proposed Scheme is predicted to be substantially less than that during the existing and approved scheme which would require the movement of about 25 million cubic metres of materials. If compared to the approved scheme, the proposals would therefore result in beneficial effects.

The GHG emissions that would be generated by the proposed restoration scheme would be substantially less than those that would be generated by the approved scheme. They would equally be substantially less than those associated with the surface mining operations which were undertaken until November 2023. These operations would also have had downstream GHG emissions associated with the transport and subsequent combustion of the coal extracted on the site. If compared to the approved scheme the proposals would therefore result in beneficial effects.

On the basis of the above, the GHG emissions that would be generated by the proposed scheme should not be considered significant or preclude the granting of planning permission to vary the restoration proposals from the scheme currently approved by the Local Planning Authority and would offer substantially improved benefits.



Visualisation 5 – View from OB2 across central section of the site and the Bogey Road north-west towards Merthyr Tydfil.

4.10 Population and Human Health

A population and human health assessment is a requirement of EIA Regulations 2017. It aligns closely with the considerations made in a Health Impact Assessment (HIA) that is a statutory requirement under the Public Health (Wales) Act 2017 for certain types of projects including opencast coal operations. HIA is defined in the Act as: *‘....an assessment of the likely effect, both in the short term and in the long term, of a proposed action or decision on the physical and mental health of the people of Wales or of some of the people of Wales.’*

The EIA undertaken for the approved scheme did not include an HIA as this was not a requirement in 2003. A HIA is now required under the regulations, so a simple assessment is considered suitable because the scheme is for a limited period of restoration and aftercare. The primary health concerns identified in the original environmental assessment related to air quality impacts from dust, nitrogen dioxide, and other emissions from plant machinery used during the mine’s operation. While these were deemed to fall within acceptable air quality objectives, ongoing concerns about dust and odour, particularly from the nearby landfill site, were noted as potential sources of minor adverse health effects.

The assessment of the potential health impacts critically evaluates the restoration and post-restoration phases when the site will be used for grazing, recreation, and nature conservation. Factors such as dust, air quality, and accessibility to green spaces are considered, with specific attention to how these elements affect different groups within the population, including vulnerable or disadvantaged members of local communities.

The likely effects of the reclamation scheme are generally considered to be positive. The cessation of mining activities and the subsequent restoration and aftercare of the site are expected to cause no further detriment to air quality and over time enhance the local environment. This environmental improvement is anticipated to have beneficial effects on the physical and mental well-being of the local population. Increased access to improved and new green spaces may encourage healthier lifestyles and provide social benefits by enhancing community interaction and recreational opportunities.

By transforming the site into a space that supports biodiversity and public amenity, the scheme aligns with sustainable practices that are not only environmentally responsible, but also supportive of community health and well-being.

4.11 Climate Change

The cessation of coaling at Ffos-y-Fran, can be seen as a direct result of Welsh Government’s implementation of climate change policies to reduce carbon emissions as part of the net zero pathway. The proposed restoration scheme requires a fraction of the carbon that would be required to deliver the approved scheme that also supports these policies. The amount of fuel used by plant and machinery to implement the bulk earthworks for the alternative restoration are also significantly less (circa 90%) than that would be required for the approved scheme.

The proposed restoration scheme would not make a significant contribution to climate change; however, it would offer some resilience to extreme climatic events. The retention of the main void and pit lake provides more than adequate capacity to store surface water from the site’s catchment areas. The existing ponds and reservoirs that will be retained, provide suitable habitat for wetland species around their margins and a valuable source of water for livestock during periods of dry weather. It is considered that on balance, the proposed restoration scheme would have greater resilience to climate change, than that of the approved scheme

4.12 Cumulative Effects

The Cumulative Effects Assessment (CEA) is structured to consider both intra-project effects, which occur within the project from multiple sources, and in-combination effects, which arise from the interaction of the project with other past, present, or reasonably foreseeable developments. The assessment utilises a staged approach that integrates existing good practices, professional judgment, expert opinions, and detailed knowledge of the project. The assessment found that there would be no significant in combination effects or cumulative effects with other known planned development.

4.13 Environmental Management Plan (EMP)

The EMP provides a detailed framework for managing the environmental impacts of the project’s final restoration strategy. The likely effects suggest that with implementation of a Construction Environmental Management Plan (CEMP) and ongoing monitoring and management, the project can achieve its environmental goals. This approach to environmental management is expected to mitigate potential adverse impacts effectively, ensuring compliance with environmental legislation and contributing to the sustainability of the local ecosystem.

The CEMP serves as the foundational document for managing environmental concerns during the construction phase. It is structured to address environmental issues at the outset and to continue managing these issues throughout the operation and aftercare phases.



Visualisation 6 – Elevated view across central section of the site towards Merthyr Tydfil.

5. Summary and Conclusions

The alternative final restoration scheme presents an opportunity to change and improve the approved scheme by implementing a pragmatic and sustainable alternative with significantly less adverse environmental effects and more opportunities for biodiversity enhancements.

The alternative scheme has a significantly reduced carbon footprint compared to the approved scheme that would represent a saving of around 90% of CO2 emissions. This accords with new approaches to best practice and Welsh Government environmental policies.

Conversely, the approved scheme does not align well with new approaches to nature conservation or national planning policies. To implement the approved scheme would see the destruction of waterbodies and wetland habitat that developed on the site during the operating period and that now support great crested newt and meadow orchids.

The footprint of the final restoration strategy is significantly less than the approved scheme with just over an eighth of the overall site being affected by most of the earthworks needed for the restoration. This can be delivered in works packages at the most appropriate times of year and due to its seasonal nature is a more flexible approach than a bulk earthworks programme associated with previous land reclamation projects such as would be required by the original approved scheme.

The alternative final restoration strategy aligns well with the stepwise approach advocated in Planning Policy Wales (12th Edition) by avoiding and minimising potential loss and damage to elements of biodiversity while promoting opportunities for mitigation. It is therefore considered that the alternative restoration scheme has many environmental merits and can offer and deliver substantial environmental benefits when compared to the approved scheme and that the application to amend the current scheme is therefore approved.